

**2015 WATER QUALITY MONITORING
BELTZVILLE RESERVOIR
LEHIGHTON, PENNSYLVANIA**



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

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**2015 Water Quality Monitoring
Beltzville Reservoir
Lehighton, Pennsylvania**

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1.0 INTRODUCTION

1.1 PURPOSE OF THE MONITORING PROGRAM

The U.S. Army Corps of Engineers (USACE) manages Beltzville Reservoir located in east-central Pennsylvania within the Delaware River Basin. Beltzville Reservoir provides flood control and a dependable water supply to downstream communities along the Pohopoco Creek and Lehigh River. Additionally, the reservoir provides important habitat for fish, waterfowl, and other wildlife, and recreational opportunities through fishing, boating, and swimming. Due to the broad range of uses and demands that Beltzville Reservoir serves, the USACE monitors water quality to compare with state water quality standards and to diagnose other problems that commonly effect reservoir health such as nutrient enrichment and toxic loadings. This report summarizes the results of water quality monitoring at Beltzville Reservoir from 04 June to 31 August 2015.

1.2 DESCRIPTION OF BELTZVILLE RESERVOIR

Beltzville Reservoir was designed to provide flood control, water supply, and enhanced water quality to downstream communities along the Lehigh River. The damming of Pohopoco Creek approximately three miles upstream of its confluence with the Lehigh River formed the reservoir. The reservoir is located in Carbon County, 3 miles northeast of Lehighton and about 20 miles northwest of Allentown, Pennsylvania. The reservoir dams a drainage area of 96.3 square miles and can impound up to 13 billion gallons of water. The primary water source feeding into the lake is Pohopoco creek as it flows southwest to the Lehigh River. Secondary water sources include Pine Run and Wild Creek, both entering the reservoir from the north. The reservoir is approximately 7 miles long and, when full, covers an area of 947 acres. The maximum depth of the lake is 140 feet near the face of the dam.

1.3 ELEMENTS OF THE STUDY

The USACE, Philadelphia District, has been monitoring the water quality of Beltzville Reservoir since 1975. Over this time, the yearly monitoring designs have evolved to address new concerns such as the health of public drinking water and contamination of reservoir bottom sediments. The 2015 monitoring program included the following major elements:

- Monthly water quality and bacteria surface water monitoring of reservoir and upstream sources to evaluate compliance with Pennsylvania state water quality standards and to evaluate the health of the reservoir ecosystem starting on 04 June and ending on 31 August 2015; and
- Monthly profile samples for temperature, dissolved oxygen, chlorophyll a, pH, turbidity, and conductivity at all stations in the reservoir and watershed.

2.0 METHODS

2.1 STRATIFICATION MONITORING

Physical stratification monitoring of the water column was conducted five times at Beltzville Reservoir between 04 June and 31 August 2015 (Table 2-1). Physical stratification parameters included depth, temperature, dissolved oxygen (DO), pH, turbidity, chlorophyll a, and conductivity. Physical stratification was monitored at seven fixed stations throughout the reservoir watershed (Fig. 2-1). Three stations were located within the reservoir body (BZ-3, BZ-6, and BZ-7) for which water quality was measured from the surface to the bottom at 5-foot intervals. Surface water quality was measured at four stations, located on upstream source waters (BZ-2S on Pine Run, BZ-4S on Wild Creek, and BZ-5S on Pohopoco Creek) and BZ-1S downstream of the reservoir on Pohopoco Creek. The physical water quality parameters were measured with a calibrated YSI 6600 V2-4 water quality probe. For this report, all of the stratification monitoring results were summarized and compared to water quality standards enacted by the Pennsylvania Department of Environmental Protection (PADEP), where applicable.

2.2 WATER COLUMN CHEMISTRY MONITORING

Water column chemistry monitoring was conducted five times (once a month) at Beltzville Reservoir between 04 June and 31 August 2015 (Table 2-1). Water samples were collected at the seven fixed stations in the reservoir watershed (Fig. 2-1). Surface water samples were collected downstream of the reservoir (BZ-1S) and on upstream tributary sources Pine Run (BZ-2S), Wild Creek (BZ-4S), and Pohopoco Creek (BZ-5S). Surface, middle, and bottom water samples were collected at three reservoir stations (BZ-3, BZ-6, and BZ-7). Surface water samples were collected by opening sample containers approximately 1 foot below the water's surface. Middle and bottom water samples were collected with a Van Dorn design horizontal water bottle. MJ Reider Associates in Reading, Pennsylvania conducted the laboratory water sample analysis for 2015.

Water samples from all depths were analyzed for ammonia, nitrite, nitrate, total Kjeldahl nitrogen, total phosphorus, ortho-phosphate, soluble phosphorus, total dissolved solids, total suspended solids, biochemical oxygen demand, alkalinity, and total organic carbon. Table 2-2 summarizes the laboratory method detection limits, laboratory/Corps required reporting limits, state regulatory criteria, and allowable maximum hold times for each water quality parameter monitored.

Table 2-1. Beltzville Reservoir water quality monitoring schedule for 2015

Date of Sample Collection	Physical Stratification Monitoring (All Stations)	Water Column Chemistry Monitoring (All Stations)	BTEX Monitoring ⁽²⁾ (BZ-3 and -6)	Trophic State Assessment (BZ-6)	Coliform Bacteria Monitoring (All Surface Stations)	Drinking Water Monitoring ⁽¹⁾
04 June	X	X		X	X	
01 July	X	X		X	X	
23 July	X	X		X	X	
13 August	X	X		X	X	
31 August	X	X		X	X	

(1) Drinking water samples are sampled quarterly by personnel at each reservoir. This data has not been included within the reservoir water quality sampling report.

(2) BTEX sampling was not conducted in 2015 based on historically low and non-detectable levels of these parameters.

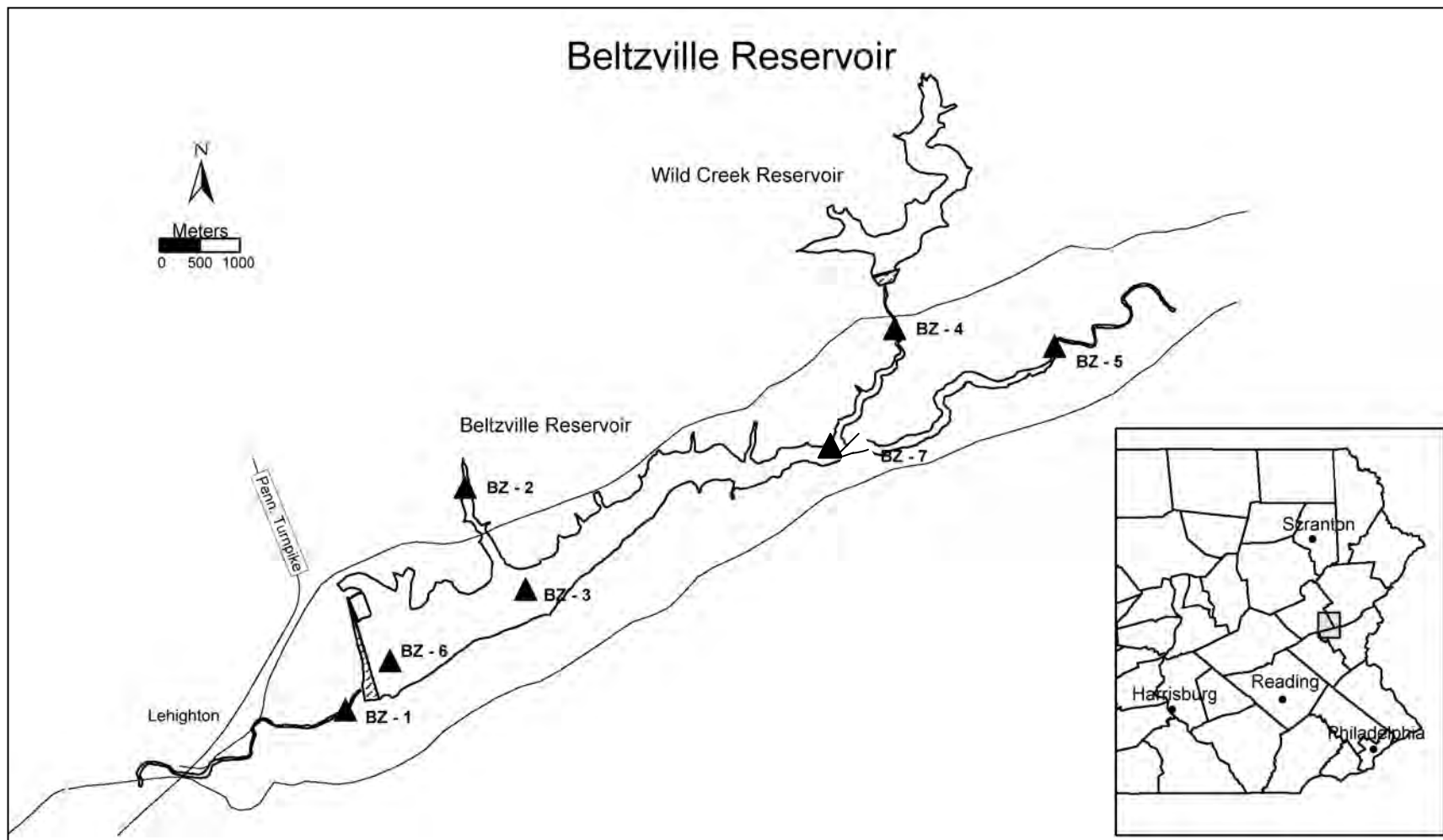


Figure 2-1. Beltzville Reservoir and the location of water quality monitoring stations in 2015.

Table 2-2. Water quality test methods, detection limits, state regulatory criteria, and sample holding times for water quality parameters monitored at Beltzville 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 4500-PE	0.01 mg/L	None	28
Diss./Ortho-Phosphate	SM20 4500-PE	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	NA	None	28
Total Carbon (TOC + TIC) *	SM-20 5310B	NA	None	28
(1) Chlorophyll a	YSI Probe	----	None	In Situ
Total Kjeldahl Nitrogen	351.2 MCAWW	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 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.

* Total Inorganic Carbon and Total Carbon were not sampled for in 2015

2.3 TROPIC STATE DETERMINATION

The trophic state of Beltzville Reservoir was determined by methods outlined by Carlson (1977). In general, this method calculated trophic state indices (TSIs) independently for measures of total phosphorus, chlorophyll *a*, and secchi disk depth. Surface water measures of total phosphorus and chlorophyll *a* from chemistry monitoring were used independently in the determination of monthly trophic state (Table 2-1). Secchi disk depth was measured monthly at reservoir-body station BZ-6. Trophic state determinations were made using criteria defined by Carlson and EPA (1983) and calculated only for Station BZ-6 within the deepest portion of the reservoir.

2.4 RESERVOIR BACTERIA MONITORING

Monitoring for coliform bacteria contaminants was conducted five times at Beltzville Reservoir between 04 June and 31 August 2015 (Table 2-1). Surface water samples were collected at all seven stations and analyzed for total coliform and fecal coliform. The samples were collected in the same manner as the chemistry samples or approximately 1-foot below the surface of the water. Table 2-3 presents the test methods, detection limits, PADEP standards, and sample holding times for the bacteria parameters monitored at Beltzville 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.

Table 2-3. Water quality test methods, detection limits, PADEP standards, and sample holding times for bacteria parameters monitored at Beltzville Reservoir in 2015.		
Parameter	Total Coliform/E-coli	Fecal Coliform
Test method	SM 9223B	SM9222D
Detection limit	1 clns/100-mls	2 clns/100-mls
PADEP standard	None	Geometric mean < 200 clns/100-mls or a single sample reading of < 1000 clns/100-mls
Maximum allowable holding time	30 hours	30 hours
Achieved holding time	< 30 hours	< 30 hours

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

3.0 RESULTS AND DISCUSSION

3.1 STRATIFICATION MONITORING

The following sections summarize the water quality monitoring results of the physical and chemical parameters: temperature, dissolved oxygen, and pH. Seasonal and spatial patterns of surface water quality measured throughout the reservoir watershed, and seasonal and depth related patterns of the stratified lake water column based on measures from the deepest portion of the reservoir (station BZ-6 or the “Tower”) are described. The discussion of stratification is focused on this station as water quality problems related to depth are generally most severe in deeper water habitats. Corps personnel collected the physical and chemical water quality data discussed herein over the monitoring period from June to August 2015. All of the parameters were measured with a calibrated YSI 6600 V2-4 water quality probe and are presented in Appendix A.

3.1.1 Temperature

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

Temperatures of the tributary and downstream release surface waters generally followed a similar seasonal pattern throughout the watershed of Beltzville Reservoir during 2015 (Fig. 3-1). The maximum upstream tributary station temperature of 24.00 °C was seen at station BZ-4S on 23 July. The maximum downstream release (BZ-1S) surface water temperature was 17.83 °C on 31 August. Upstream and downstream waters have a variety of environmental and anthropogenic factors potentially influencing water temperature. Station BZ-1S is directly influenced by Beltzville Reservoir releases that come from various locations in the water column and is dictated by reservoir release operations. Downstream release temperatures are managed to meet Pennsylvania State High Quality Cold Water Fishery standards. Station BZ-2S is a small well vegetated cold water tributary. Station BZ-4S is influenced by Wild Creek Reservoir releases upstream of Beltzville Reservoir and maintained the highest recorded tributary surface water temperatures throughout the sampling season. Station BZ-5S is located in an open water area where Pohopoco Creek enters Beltzville Reservoir. These factors, amongst others, likely result in the temperature variations in surface water temperatures at each tributary station shown in Figure 3.1.

Beltzville Reservoir was stratified with respect to temperature in 2015 (Fig. 3-2). The reservoir surface waters are warmed by the sun and account for warmer surface water temperatures recorded at lake stations (BZ-3, BZ-7, and BZ-6). In June, stratification was apparent with surface temperatures (20.08 °C) approximately 14.39 °C warmer than the lower water column (5.69 °C). A strong stratification pattern was evident from early June into late August. In late August, cooling surface temperatures and erosion of the epilimnion marked the onset of fall turnover within the reservoir.

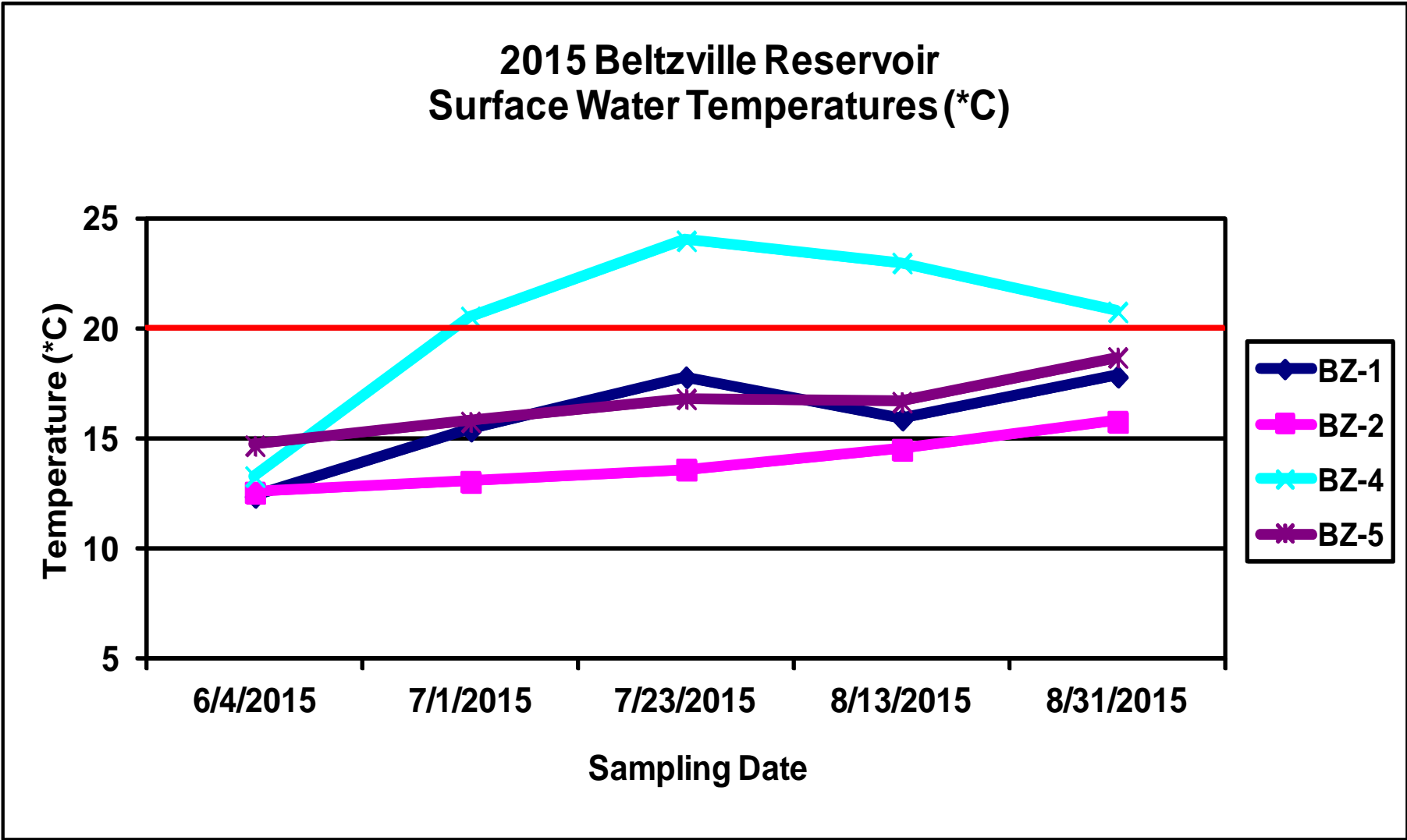


Figure 3-1. Tributary and downstream surface water temperature (°C) measured at Beltzville Reservoir in 2015. See Appendix A for Summary of plotted values. Station BZ-1 reflects releases surface water temperatures downstream of Beltzville Reservoir.

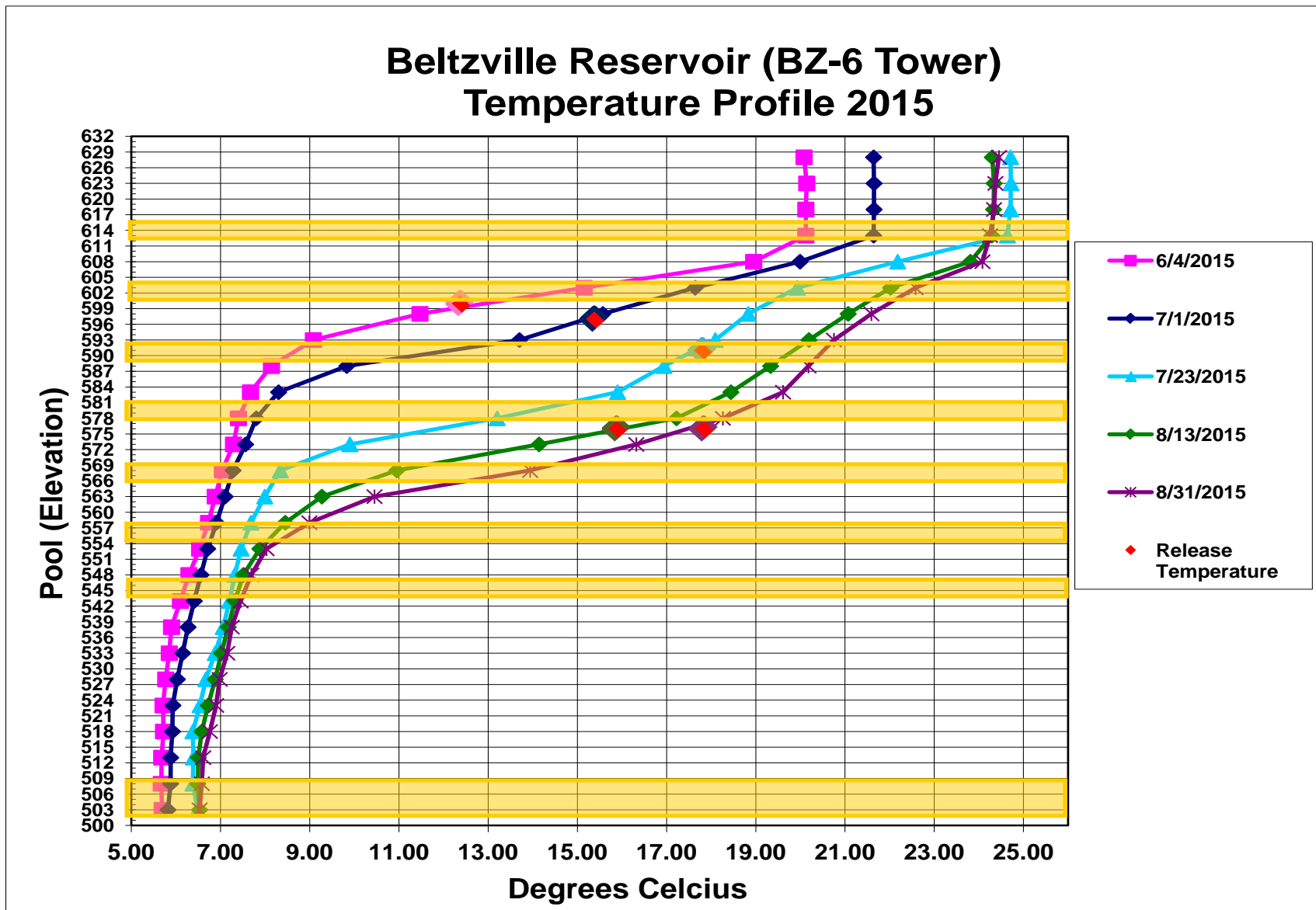


Figure 3-2. Lake temperature profile at station BZ-6 of Beltzville Reservoir in 2015. See Appendix A for summary of plotted values. The yellow bars represent the locations of water control gates in the Beltzville Reservoir control tower.

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 air and water 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 dissolved oxygen can facilitate the release of nutrients from bottom sediments.

Dissolved oxygen (DO) in the tributary and release surface waters remained within an 8-11 mg/L range of values and generally followed a similar seasonal pattern throughout the watershed of Beltzville Reservoir during 2015 (Fig. 3-3). Dissolved oxygen concentrations downstream of the reservoir (BZ-1S) and at the upstream tributary stations (BZ-2S, -4S, -5S) averaged 9.55 mg/L for the sampling season. The maximum DO reading of 10.7 mg/L occurred at BZ-1S on 31 August and a minimum reading of 8.22 mg/L occurred at BZ-4S on 23 July.

Dissolved Oxygen in the water column at station BZ-6 of Beltzville Reservoir from early July through late August, exhibited a metalimnetic oxygen minimum (negative heterograde curve) with concentrations decreasing and increasing rapidly as measurements were taken from the surface to the lake bottom (Fig. 3-4). This general pattern has been observed at station BZ-6 in previous years and may be due to a lens of low oxygenated water passing through the reservoir from upstream sources, a result of portal operations at the reservoir tower, respiratory oxygen consumption or some other factor or combination of factors.

DO concentrations in the water column of Beltzville Reservoir were in compliance with PADEP water quality standards during 2015. The state water quality standard for DO is a minimum concentration of 5-mg/L in the epilimnion of stratified lakes. As shown in Figure 3-4, concentrations falling below the standard were encountered in early and late August, but were located below the epilimnion. DO concentrations measured in all surface waters of the reservoir were in compliance with the standard.

The health of aquatic ecosystems is impaired by low DO concentrations in the water column. Hypoxia, or conditions of DO less than 2 mg/L, is generally accepted as the threshold at which the most severe effects on biota occur. Bottom waters that are not mixed during stratification are depleted of oxygen primarily through biological respiration. In 2015, these conditions were not seen in the water column at station BZ-6 (Appendix A).

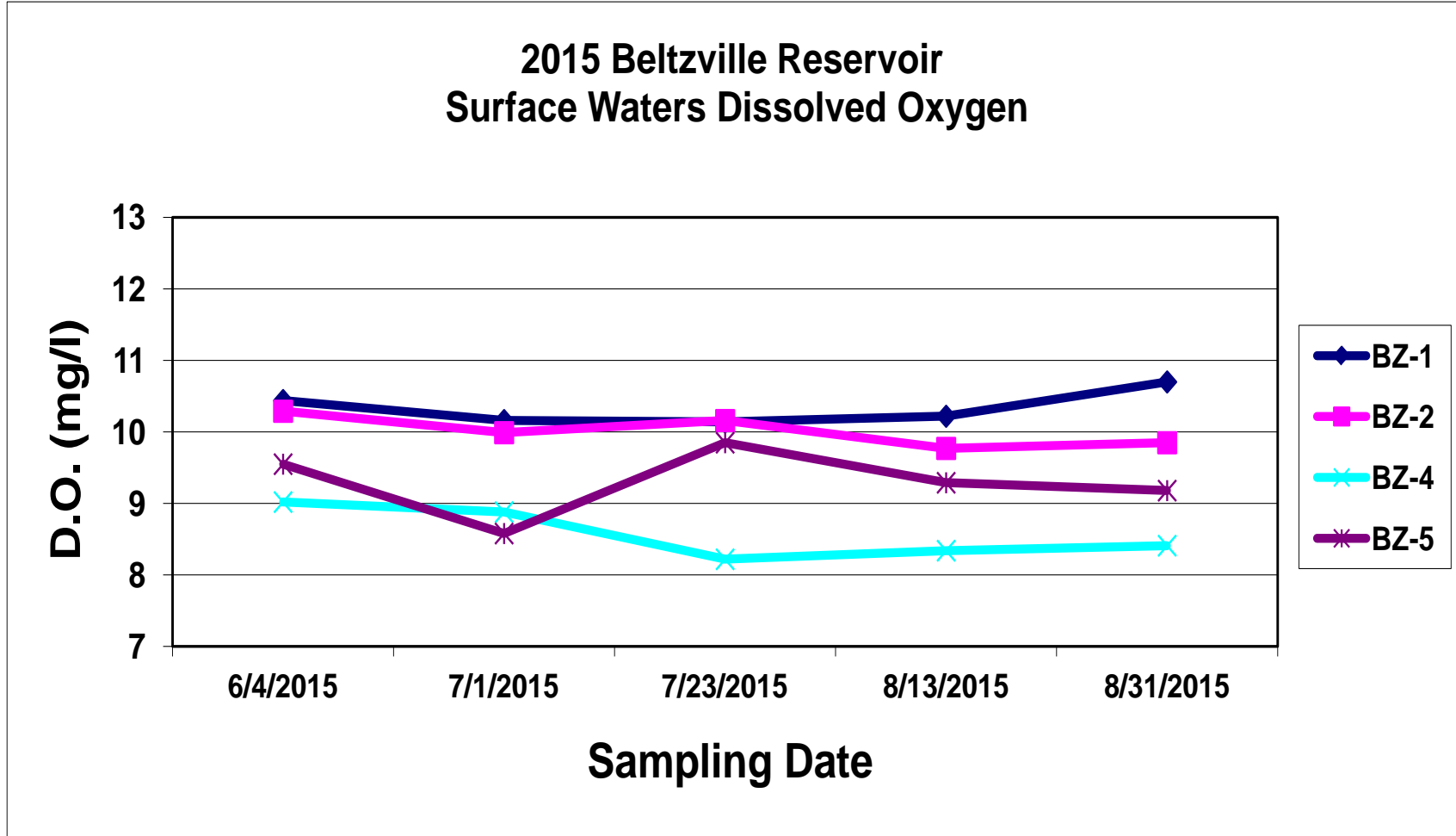


Figure 3-3. Dissolved oxygen concentrations measured in tributary and downstream surface waters at Beltzville Reservoir in 2015. (The PADEP water quality standard for dissolved oxygen is a minimum concentration of 5 mg/L.) See Appendix A for summary of plotted values. Station BZ-1 reflects reservoir release surface waters downstream of Beltzville Reservoir

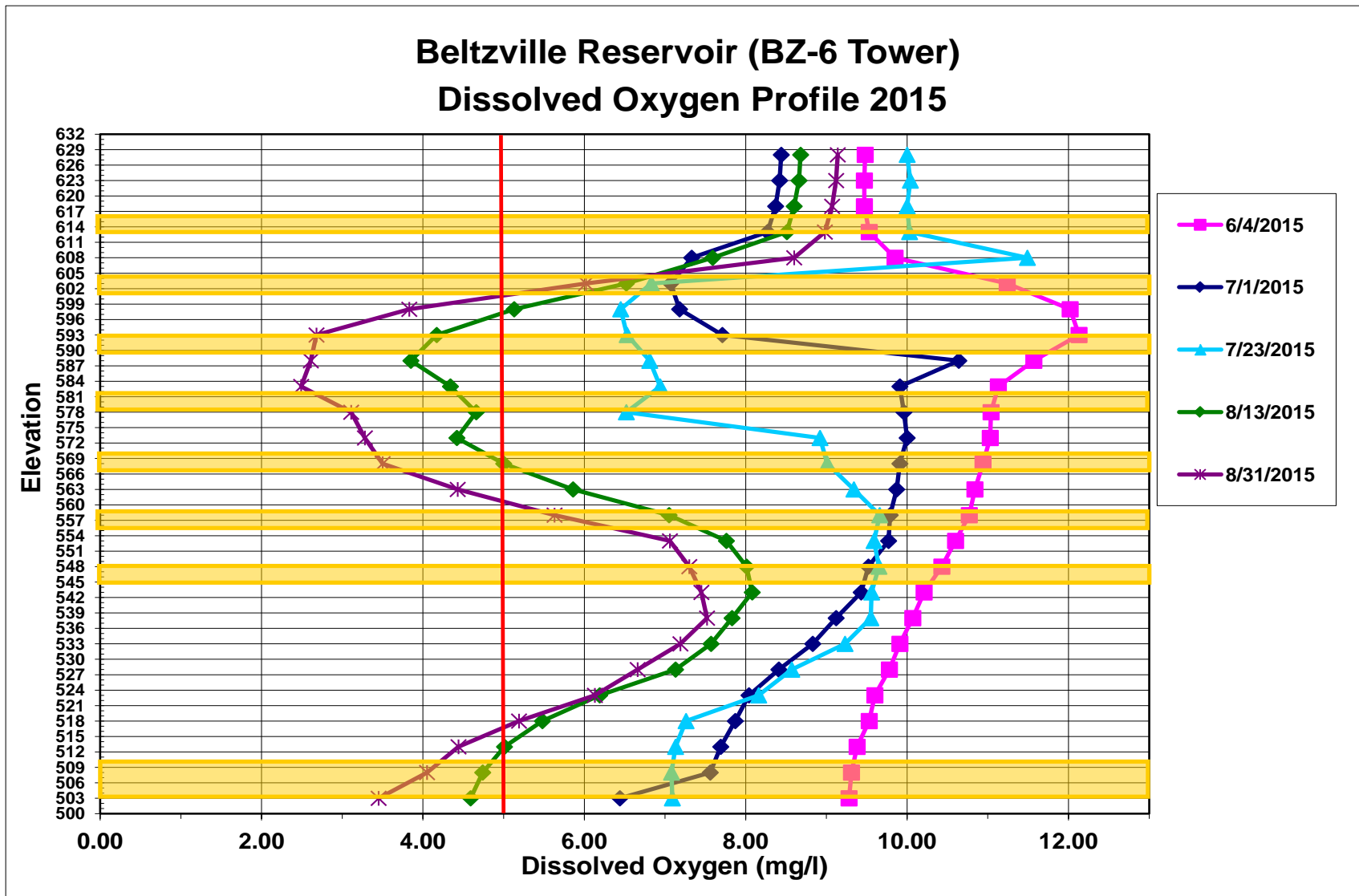


Figure 3-4. Dissolved oxygen profile at station BZ-6 of Beltzville Reservoir in 2015. (The PADEP water quality standard for DO is a minimum concentration of 5 mg/L.) See Appendix A for summary of plotted values.

3.1.3 pH

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

Measures of pH at upstream tributary (BZ-2S, BZ-4S and BZ-5S) and release (BZ-1S) surface water stations stayed within a tight range of values and followed a similar seasonal pattern at Beltzville Reservoir during 2015 (Fig. 3-5). The maximum pH value of 7.92 was recorded at Station BZ-4S on 23 July. The minimum pH value of 6.38 was recorded at station BZ-4S on 04 June.

In all months sampled in 2015, pH values in the lake water column were slightly higher near the water surface, declined rapidly, and remained relatively constant or slightly increasing throughout most of the remaining water column (Fig. 3-6). The higher pH readings near the surface can be attributed to algal productivity in the trophic zone of the lake. A slight increase in pH in bottom waters occurred in the portions of the water column experiencing anoxic or low oxygen conditions. This increase in pH may be attributed to anaerobic oxidation processes in the bottom waters of the lake. The pH measures at lake and tributary stations of Beltzville Reservoir during 2015 were in compliance with PADEP pH criteria. The standard for pH is a range of acceptable measures between 6 and 9.

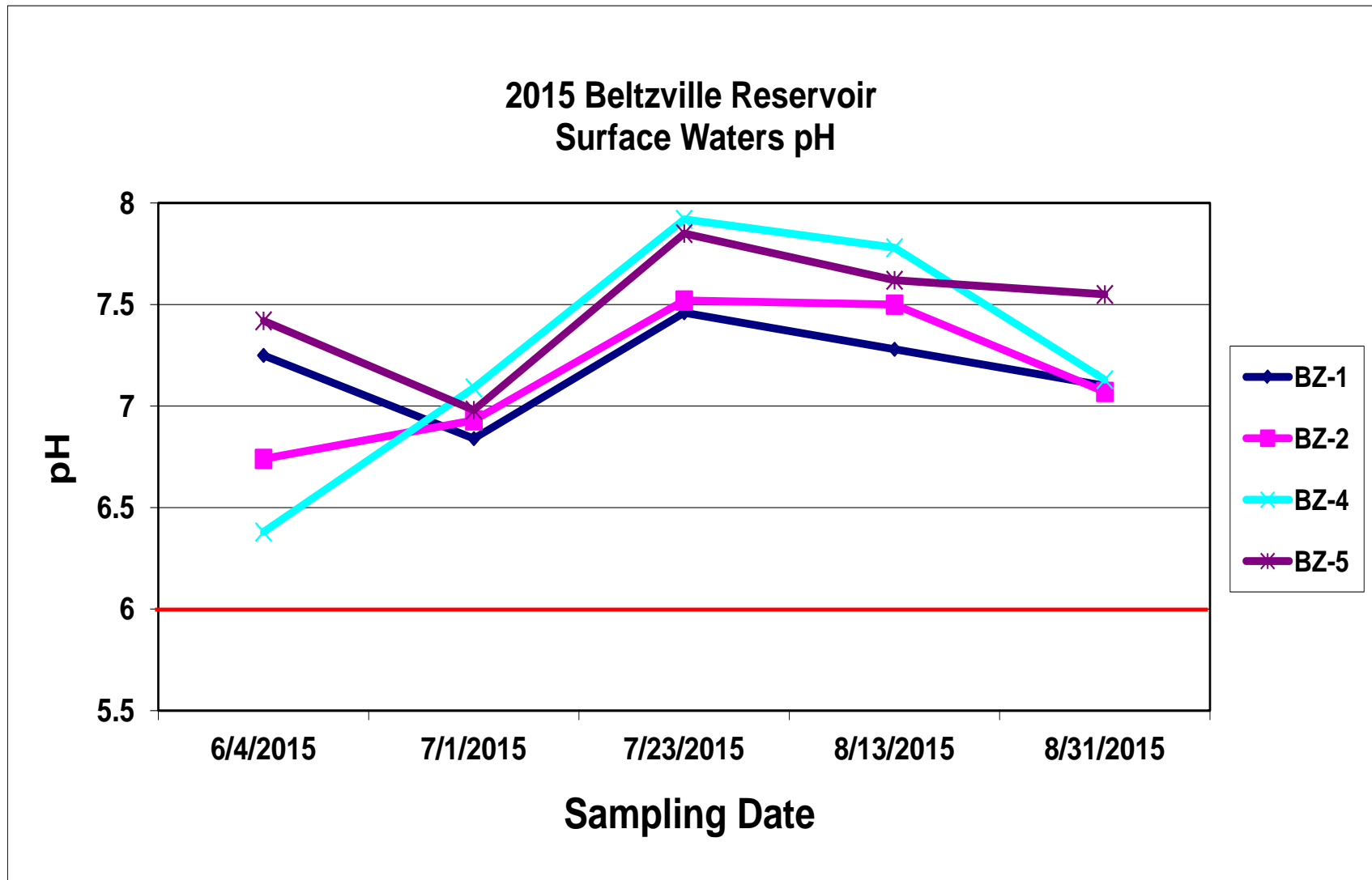


Figure 3-5. pH concentrations measured in tributary and downstream surface waters at Beltzville Reservoir in 2015. (The PADEP water quality standard for pH is between 6 and 9) See Appendix A for summary of plotted values.

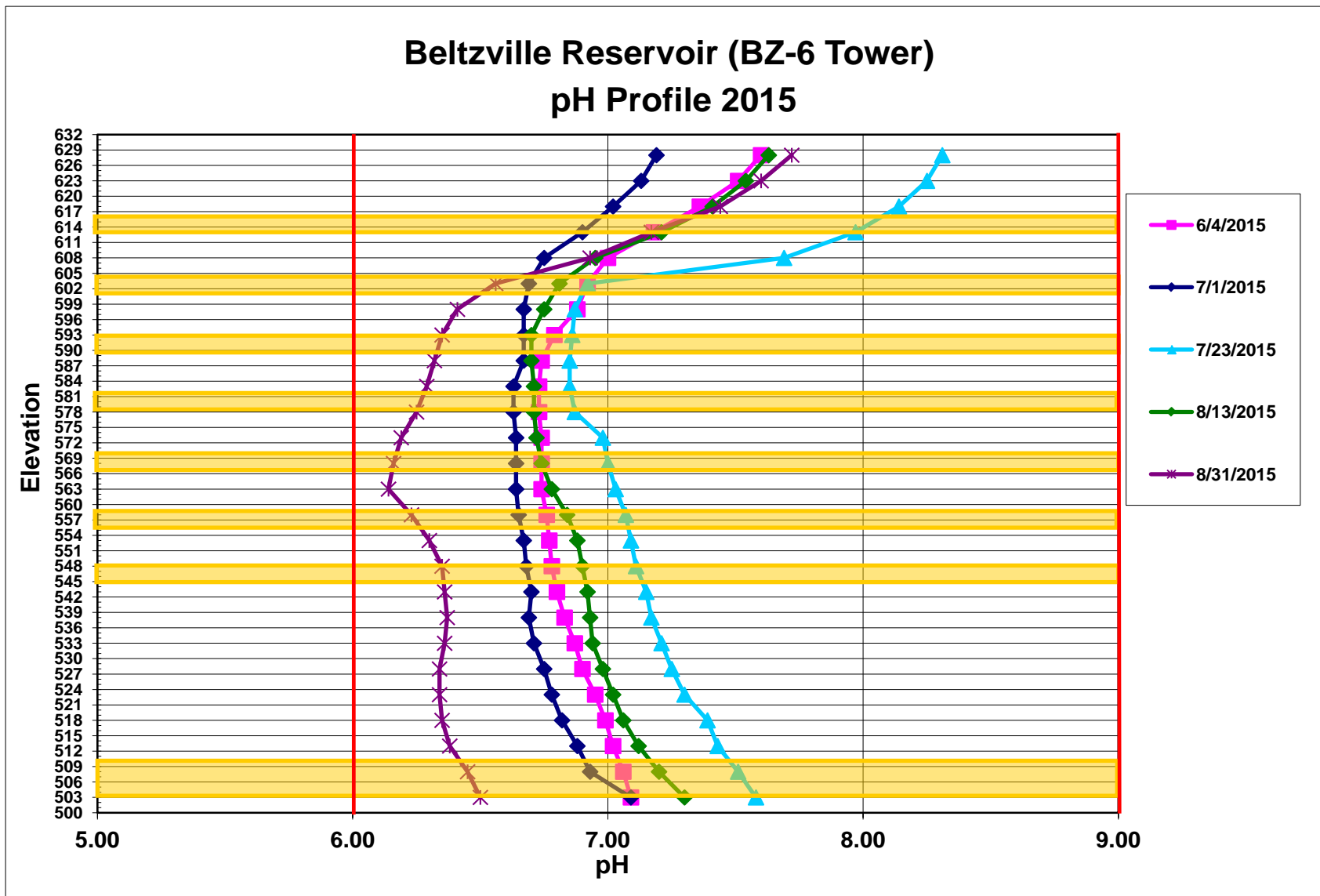


Figure 3-6. pH profile at station BZ-6 of Beltzville Reservoir in 2015. (The PADEP water quality standard for pH is between 6 and 9) See Appendix A for summary of plotted value

Results and Discussion

3.2 WATER COLUMN CHEMISTRY MONITORING

The following sections describe temporal, spatial, and patterns relating to depth for the water quality parameters measured in surface, middle, and bottom waters of Beltzville Reservoir during 2015 (Table 3-2).

3.2.1 Ammonia

Total Ammonia (NH₃) is a measure of the most reduced inorganic form of nitrogen in water and includes dissolved ammonia and the ammonium ion. Ammonia is a small component of the nitrogen cycle but as an essential plant nutrient, it contributes to the trophic status of a water body. Elevated ammonia in the lower water column of deep, stratified lakes and reservoirs usually results in those that are affected by eutrophication. 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 concentrations were low in Beltzville Reservoir during 2015. Concentrations measured at all stations and depths were less than the laboratory reporting limit of 0.05 mg/L during the entire sampling season and at all stations and depths. Concentrations of ammonia measured at Beltzville Reservoir were in compliance with the PADEP water quality standards during 2015. The state water quality standard for ammonia is dependent on temperature and pH (Table 3-1).

PH	10 °C	15 °C	20 °C	25 °C	30 °C
6.50	25.5	17.4	12.0	8.4	5.9
6.75	23.6	16.0	11.1	7.7	5.5
7.00	20.6	14.0	9.7	6.8	4.8
7.25	16.7	11.4	7.8	5.5	3.9
7.50	12.4	8.5	5.9	4.1	2.9
7.75	8.5	5.8	4.0	2.8	2.0
8.00	5.5	5.8	4.0	2.8	2.0
8.25	3.4	2.3	1.6	1.2	0.9
8.50	2.0	1.4	1.0	0.7	0.6
8.75	1.2	0.9	0.6	0.5	0.4
9.00	0.8	0.5	0.4	0.3	0.3
9.25	0.36	0.24	0.17	0.12	0.08
9.50	0.20	0.13	0.10	0.07	0.05

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
BZ-1S	6/4/2015	10	<2	<.05	<.05	<.05	0.67	0.02	32	0.44	1.5	0.02	<3
	7/1/2015	11	<2	<.05	<.05	<.05	0.64	<.01	54	0.31	1.3	<.01	<3
	7/23/2015	12	<2	<.05	<.05	<.05	0.72	<.01	42	<.25	2.6	0.02	17
	8/13/2015	12	<2	<.05	<.05	<.05	0.75	<.01	43	<.25	1.8	<.01	137
	8/31/2015	12	<2	<.05	<.05	<.05	0.7	<.01	83	0.3	1.8	<.01	<3
	Mean	11.4	2	0.05	0.05	0.05	0.696	0.012	50.8	0.310	1.80	0.014	32.6
	Stdev	0.9	0	0	0	0	0.043	0.004	19.6	0.078	0.49	0.005	58.7
	Max	12	2	0.05	0.05	0.05	0.75	0.02	83	0.44	2.6	0.02	137
	Min	10	2	0.05	0.05	0.05	0.64	0.01	32	0.25	1.3	0.01	3
	No. of Det.	5	0	0	0	0	5	1	5	3	5	2	2
BZ-2S	6/3/2015	8	<2	<.05	<.05	<.05	0.21	<.01	46	<.25	<1	<.01	<3
	7/1/2015	6	<2	0.05	<.05	<.05	0.21	0.02	62	0.3	3	0.06	11
	7/23/2015	7	<2	<.05	<.05	<.05	0.15	<.01	40	<.25	<1	<.01	<3
	8/13/2015	8	<2	<.05	<.05	<.05	0.22	<.01	38	<.25	<1	0.01	<3
	8/31/2015	8	<2	<.05	<.05	<.05	0.14	<.01	67	<.25	<1	<.01	<3
	Mean	7.40	2.00	0.05	0.05	0.05	0.19	0.01	50.60	0.26	1.40	0.02	4.60
	Stdev	0.89	0.00	0.00	0.00	0.00	0.04	0.00	13.15	0.02	0.89	0.02	3.58
	Max	8.00	2.00	0.05	0.05	0.05	0.22	0.02	67.00	0.30	3.00	0.06	11.00
	Min	6.00	2.00	0.05	0.05	0.05	0.14	0.01	38.00	0.25	1.00	0.01	3.00
	No. of Det.	5.00	0.00	1.00	0.00	0.00	5.00	1.00	5.00	1.00	1.00	2.00	1.00

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville 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
BZ-3S	6/4/2015	11	<2	<.05	<.05	<.05	0.62	<.01	48	0.37	1.3	0.02	<3
	7/1/2015	12	<2	<.05	<.05	<.05	0.52	0.01	46	0.28	1.4	0.02	<3
	7/23/2015	10	<2	<.05	<.05	<.05	0.37	0.01	44	0.26	1.6	0.01	<3
	8/13/2015	13	<2	<.05	<.05	<.05	0.26	<.01	39	0.3	1.6	<.01	<3
	8/31/2015	11	<2	<.05	<.05	<.05	0.14	0.01	29	0.28	1.6	0.01	<3
	Mean	11.40	2.00	0.05	0.05	0.05	0.38	0.01	41.20	0.30	1.50	0.01	3.00
	Stdev	1.14	0.00	0.00	0.00	0.00	0.19	0.00	7.60	0.04	0.14	0.01	0.00
	Max	13.00	2.00	0.05	0.05	0.05	0.62	0.01	48.00	0.37	1.60	0.02	3.00
	Min	10.00	2.00	0.05	0.05	0.05	0.14	0.01	29.00	0.26	1.30	0.01	3.00
	No. of Det.	5.00	0.00	0.00	0.00	0.00	5.00	3.00	5.00	5.00	5.00	4.00	0.00
BZ-3M	6/4/2015	11	<2	<.05	<.05	<.05	0.72	<.01	46	0.25	1.2	<.01	<3
	7/1/2015	10	<2	<.05	<.05	<.05	0.66	<.01	66	<.25	<1	<.01	<3
	7/23/2015	12	<2	<.05	<.05	<.05	0.68	<.01	57	<.25	1.5	<.01	<3
	8/13/2015	11	<2	<.05	<.05	<.05	0.83	0.04	43	<.25	1.7	0.04	<3
	8/31/2015	12	<2	<.05	<.05	<.05	0.71	0.01	70	<.25	1	0.01	<3
	Mean	11.20	2.00	0.05	0.05	0.05	0.72	0.02	56.40	0.25	1.28	0.02	3.00
	Stdev	0.84	0.00	0.00	0.00	0.00	0.07	0.01	11.89	0.00	0.31	0.01	0.00
	Max	12.00	2.00	0.05	0.05	0.05	0.83	0.04	70.00	0.25	1.70	0.04	3.00
	Min	10.00	2.00	0.05	0.05	0.05	0.66	0.01	43.00	0.25	1.00	0.01	3.00
	No. of Det.	5.00	0.00	0.00	0.00	0.00	5.00	2.00	5.00	1.00	4.00	2.00	0.00

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville 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
BZ-3B	6/4/2015	11	<2	<.05	<.05	<.05	0.69	0.05	42	<.25	<1	0.05	<3
	7/1/2015	11	<2	<.05	<.05	<.05	0.61	<.01	53	0.28	<1	0.02	<3
	7/23/2015	11	<2	<.05	<.05	<.05	0.61	<.01	54	<.25	1	<.01	<3
	8/13/2015	11	<2	<.05	<.05	<.05	0.67	0.06	66	<.25	<1	0.06	<3
	8/31/2015	12	<2	<.05	<.05	<.05	0.55	<.01	71	0.33	<1	0.03	4
	Mean	11.20	2.00	0.05	0.05	0.05	0.63	0.03	57.20	0.27	1.00	0.03	3.20
	Stdev	0.45	0.00	0.00	0.00	0.00	0.06	0.02	11.48	0.03	0.00	0.02	0.45
	Max	12.00	2.00	0.05	0.05	0.05	0.69	0.06	71.00	0.33	1.00	0.06	4.00
	Min	11.00	2.00	0.05	0.05	0.05	0.55	0.01	42.00	0.25	1.00	0.01	3.00
	No. of Det.	5.00	0.00	0.00	0.00	0.00	5.00	2.00	5.00	2.00	1.00	4.00	1.00
BZ-4S	6/4/2015	9	<2	<.05	<.05	<.05	0.66	0.02	30	0.28	<1	0.02	10
	7/1/2015	6	<2	<.05	<.05	<.05	0.05	<.01	28	0.27	1.1	0.04	<3
	7/23/2015	7	<2	<.05	<.05	<.05	1.39	<.01	52	<.25	<1	<.01	<3
	8/13/2015	6	<2	<.05	<.05	<.05	0.27	<.01	29	0.43	1.7	0.02	<3
	8/31/2015	6	<2	<.05	<.05	<.05	0.27	<.01	34	<.25	1.5	0.01	<3
	Mean	6.80	2.00	0.05	0.05	0.05	0.53	0.01	34.60	0.30	1.26	0.02	4.40
	Stdev	1.30	0.00	0.00	0.00	0.00	0.53	0.00	9.99	0.08	0.32	0.01	3.13
	Max	9.00	2.00	0.05	0.05	0.05	1.39	0.02	52.00	0.43	1.70	0.04	10.00
	Min	6.00	2.00	0.05	0.05	0.05	0.05	0.01	28.00	0.25	1.00	0.01	3.00
	No. of Det.	5.00	0.00	0.00	0.00	0.00	5.00	1.00	5.00	3.00	3.00	4.00	1.00

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville 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
BZ-5S	6/4/2015	14	2	<.05	<.05	<.05	1.13	0.15	75	1.52	2	0.31	309
	7/1/2015	11	2	<.05	<.05	<.05	0.62	<.01	67	0.75	9.2	0.1	33
	7/23/2015	12	<2	<.05	<.05	<.05	1.15	<.01	65	<.25	1.3	0.03	10
	8/13/2015	19	<2	<.05	<.05	<.05	1.17	<.01	31	0.34	1.8	0.07	<3
	8/31/2015	14	<2	<.05	<.05	<.05	1.12	0.02	101	0.43	1.1	0.03	10
	Mean	14.00	2.00	0.05	0.05	0.05	1.04	0.04	67.80	0.66	3.08	0.11	73.00
	Stdev	3.08	0.00	0.00	0.00	0.00	0.23	0.06	25.08	0.52	3.44	0.12	132.41
	Max	19.00	2.00	0.05	0.05	0.05	1.17	0.15	101.00	1.52	9.20	0.31	309.00
	Min	11.00	2.00	0.05	0.05	0.05	0.62	0.01	31.00	0.25	1.10	0.03	3.00
	No. of Det.	5.00	2.00	0.00	0.00	0.00	5.00	2.00	5.00	4.00	5.00	5.00	4.00
BZ-6S	6/4/2015	11	<2	<.05	<.05	<.05	0.62	0.02	48	0.4	1.3	0.02	<3
	7/1/2015	12	<2	<.05	<.05	<.05	0.52	<.01	53	0.32	1.6	0.03	<3
	7/23/2015	12	<2	<.05	<.05	<.05	0.38	<.01	55	<.25	1.7	<.01	<3
	8/13/2015	11	<2	<.05	<.05	<.05	0.27	0.02	43	0.35	1.5	0.03	<3
	8/31/2015	12	<2	<.05	<.05	<.05	0.14	<.01	64	0.36	1.6	<.01	<3
	Mean	11.60	2.00	0.05	0.05	0.05	0.39	0.01	52.60	0.34	1.54	0.02	3.00
	Stdev	0.55	0.00	0.00	0.00	0.00	0.19	0.01	7.89	0.06	0.15	0.01	0.00
	Max	12.00	2.00	0.05	0.05	0.05	0.62	0.02	64.00	0.40	1.70	0.03	3.00
	Min	11.00	2.00	0.05	0.05	0.05	0.14	0.01	43.00	0.25	1.30	0.01	3.00
	No. of Det.	5.00	0.00	0.00	0.00	0.00	5.00	2.00	5.00	4.00	5.00	3.00	0.00

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville 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
BZ-6M	6/4/2015	11	<2	<.05	<.05	<.05	0.72	<.01	63	0.28	<1	<.01	<3
	7/1/2015	10	<2	<.05	<.05	<.05	0.66	<.01	69	<.25	<1	<.01	<3
	7/23/2015	13	<2	<.05	<.05	<.05	0.7	0.05	63	<.25	1.2	0.06	<3
	8/13/2015	11	<2	<.05	<.05	<.05	0.76	<.01	65	<.25	1.5	<.01	<3
	8/31/2015	10	<2	<.05	<.05	<.05	0.71	<.01	68	0.28	<1	<.01	<3
	Mean	11.00	2.00	0.05	0.05	0.05	0.71	0.02	65.60	0.26	1.14	0.02	3.00
	Stdev	1.22	0.00	0.00	0.00	0.00	0.04	0.02	2.79	0.02	0.22	0.02	0.00
	Max	13.00	2.00	0.05	0.05	0.05	0.76	0.05	69.00	0.28	1.50	0.06	3.00
	Min	10.00	2.00	0.05	0.05	0.05	0.66	0.01	63.00	0.25	1.00	0.01	3.00
	No. of Det.	5.00	0.00	0.00	0.00	0.00	5.00	1.00	5.00	2.00	2.00	1.00	0.00
BZ-6B	6/4/2015	10	<2	<.05	0.05	<.05	0.65	<.01	56	1.79	1.6	1.4	51
	7/1/2015	12	<2	<.05	<.05	<.05	0.56	0.02	70	0.27	<1	0.03	3
	7/23/2015	12	<2	<.05	<.05	<.05	0.58	<.01	64	<.25	<1	<.01	<3
	8/13/2015	12	<2	<.05	<.05	<.05	0.54	<.01	58	0.29	1.1	0.02	<3
	8/31/2015	12	<2	<.05	<.05	<.05	0.55	0.09	77	0.62	1.2	0.11	34
	Mean	11.60	2.00	0.05	0.05	0.05	0.58	0.03	65.00	0.64	1.18	0.31	18.80
	Stdev	0.89	0.00	0.00	0.00	0.00	0.04	0.03	8.66	0.66	0.25	0.61	22.45
	Max	12.00	2.00	0.05	0.05	0.05	0.65	0.09	77.00	1.79	1.60	1.40	51.00
	Min	10.00	2.00	0.05	0.05	0.05	0.54	0.01	56.00	0.25	1.00	0.01	3.00
	No. of Det.	5.00	0.00	0.00	1.00	0.00	5.00	2.00	5.00	4.00	3.00	4.00	3.00

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville 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
BZ-7S	6/4/2015	11	<2	<.05	<.05	<.05	0.6	<.01	59	0.44	1.4	<.01	<3
	7/1/2015	11	<2	<.05	<.05	<.05	0.51	0.01	68	0.27	1.3	0.02	<3
	7/23/2015	9	<2	<.05	<.05	<.05	0.24	<.01	43	<.25	1.8	0.01	<3
	8/13/2015	12	<2	<.05	<.05	<.05	0.21	<.01	42	0.47	1.7	0.02	<3
	8/31/2015	10	<2	<.05	<.05	<.05	0.09	<.01	49	0.36	1.6	<.01	<3
	Mean	10.60	2.00	0.05	0.05	0.05	0.33	0.01	52.20	0.36	1.56	0.01	3.00
	Stdev	1.14	0.00	0.00	0.00	0.00	0.22	0.00	11.12	0.10	0.21	0.01	0.00
	Max	12.00	2.00	0.05	0.05	0.05	0.60	0.01	68.00	0.47	1.80	0.02	3.00
	Min	9.00	2.00	0.05	0.05	0.05	0.09	0.01	42.00	0.25	1.30	0.01	3.00
	No. of Det.	5.00	0.00	0.00	0.00	0.00	5.00	1.00	5.00	4.00	5.00	3.00	0.00
BZ-7M	6/4/2015	11	<2	<.05	<.05	<.05	0.72	0.01	51	0.29	<1	0.03	<3
	7/1/2015	11	<2	<.05	<.05	<.05	0.55	<.01	67	0.62	6.2	0.1	27
	7/23/2015	11	<2	<.05	<.05	<.05	0.82	<.01	66	<.25	1.7	<.01	<3
	8/13/2015	10	<2	<.05	<.05	<.05	0.45	<.01	43	0.3	2.3	0.02	<3
	8/31/2015	13	<2	<.05	<.05	<.05	0.66	<.01	68	0.32	1.3	<.01	<3
	Mean	11.20	2.00	0.05	0.05	0.05	0.64	0.01	59.00	0.36	2.50	0.03	7.80
	Stdev	1.10	0.00	0.00	0.00	0.00	0.14	0.00	11.34	0.15	2.12	0.04	10.73
	Max	13.00	2.00	0.05	0.05	0.05	0.82	0.01	68.00	0.62	6.20	0.10	27.00
	Min	10.00	2.00	0.05	0.05	0.05	0.45	0.01	43.00	0.25	1.00	0.01	3.00
	No. of Det.	5.00	0.00	0.00	0.00	0.00	5.00	1.00	5.00	4.00	4.00	3.00	1.00

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville 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
BZ-7B	6/4/2015	11	<2	0.05	<.05	<.05	0.7	0.07	59	0.3	<1	0.3	<3
	7/1/2015	11	<2	<.05	<.05	<.05	0.62	<.01	66	<.25	<1	<.01	<3
	7/23/2015	11	<2	<.05	<.05	<.05	0.69	<.01	54	<.25	1.7	0.02	<3
	8/13/2015	13	<2	<.05	<.05	0.06	0.76	<.01	63	0.26	1.8	0.06	<3
	8/31/2015	13	<2	<.05	<.05	<.05	0.54	<.01	37	0.3	1.4	<.01	<3
	Mean	11.80	2.00	0.05	0.05	0.05	0.66	0.02	55.80	0.27	1.38	0.08	3.00
	Stdev	1.10	0.00	0.00	0.00	0.00	0.08	0.03	11.43	0.03	0.38	0.12	0.00
	Max	13.00	2.00	0.05	0.05	0.06	0.76	0.07	66.00	0.30	1.80	0.30	3.00
	Min	11.00	2.00	0.05	0.05	0.05	0.54	0.01	37.00	0.25	1.00	0.01	3.00
	No. of Det.	5.00	0.00	1.00	0.00	1.00	5.00	1.00	5.00	3.00	3.00	3.00	0.00

< Laboratory analysis result was less than the method or reporting limit.

3.2.2 Nitrite and Nitrate

Nitrite (NO₂) is a measure of a form of nitrogen that occurs as an intermediate in the nitrogen cycle. It is unstable and can rapidly be oxidized to nitrate or reduced to nitrogen gas. Nitrite is a source of nutrients for plants and can be toxic to aquatic life in relatively low concentrations. Nitrite concentrations in the waters of Beltzville Reservoir measured at all stations and depths exceeded the laboratory reporting limit of 0.05 mg/L in one sample (0.06 mg/L) during the 2015 sampling season. This sample was collected 13 August in the reservoir bottom waters at station BZ-7B.

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 distributed uniformly in the water column of Beltzville Reservoir during 2015 with sample results ranging from 0.05 mg/L to 1.39 mg/L (Table 3-2). The highest recorded single nitrate measure of 1.39 mg/L was measured on 23 July at station BZ-4S. Station BZ-5S maintained the highest seasonal mean concentration (1.04 mg/L) of all stations.

Beltzville Reservoir was in compliance with the PADEP water quality standard for nitrite and nitrate during 2015. The standard is a summed concentration of nitrite and nitrate of less than 10 mg/L. Throughout the monitoring period, a maximum summed concentration across all stations and depths of 1.44 mg/L was measured at station BZ-4S on 23 July.

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 inorganic form occurs. Total kjeldahl nitrogen (TKN) was low in the water column of Beltzville Reservoir during 2015 with many sample concentrations measuring less than or slightly exceeding the 0.25 mg/L laboratory reporting limit (Table 3-2). The highest concentration of 1.79 mg/L was recorded at station BZ-6B on 04 June.

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. In 2015, greater than half of the samples measured for total phosphorus were less

than or slightly exceeding the EPA suggested maximum concentration and laboratory reporting limit of 0.01 mg/L (Table 3-2). In-lake bottom water samples typically exceeded this concentration. The highest single sample concentration of 1.40 mg/L measured in the reservoir bottom waters was at Station BZ-6B on 04 June. The elevated TP readings in deep reservoir waters are typically associated with phosphorus release from bottom sediments during low oxygen conditions. Upstream tributary station BZ-5S (Pohopoco Creek) exceeded the EPA 0.01 mg/L suggested concentration throughout the sampling season. Land use or some other watershed factors contribute to nutrient loading in this tributary. Total Phosphorus sample results for 04 June (0.31 mg/L) and 01 July (0.10 mg/L) at station BZ-5S is attributed to rainstorm runoff occurring during those sampling events. A spike in TP readings associated with these rainstorm events is also reflected in Station BZ-7B located downstream of Station BZ-5S within the upper lake.

3.2.5 Dissolved Phosphorus

In 2015, dissolved phosphorus (Diss. P) concentrations measured at all stations and depths in the water column of Beltzville Reservoir were less than or equal to the reporting limit of 0.05 mg/L (Table 3-2).

3.2.6 Dissolved Phosphate

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 freshwater environments, dissolved phosphate is usually a limiting nutrient and is readily taken up by freshwater plants and algae. In 2015, dissolved phosphate concentrations were low with most sample concentrations remaining below the laboratory reporting limit of 0.01 mg/L. The highest concentration of 0.15 mg/L was measured at station BZ-5S on 04 June. This spike in PO₄ at Station BZ-5S is attributed to rainstorm runoff during the sampling event.

3.2.7 Total Dissolved Solids

Total dissolved solids (TDS) is a measure of the amount of non-filterable dissolved material in the water. Dissolved salts such as sulfate, magnesium, chloride, and sodium contribute to elevated levels. Concentrations of TDS in the water column of Beltzville Reservoir were consistently low during 2015 (Table 3-2). Concentrations among all stations and depths ranged from 28 to 101 mg/L. Total dissolved solids measured at Beltzville Reservoir in 2015 were in compliance with PADEP water quality standards. The state water quality standard for TDS is a maximum concentration of 500 mg/L.

3.2.8 Total Suspended Solids

Total suspended solids (TSS) are a measure of the amount of filterable particulate matter that is suspended within the water column. High concentrations increase the turbidity of the water and can hinder photosynthetic activity, result in damage to fish gills, and cause

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impairment to spawning habitat (smothering). Total suspended solids concentrations in the waters of Beltzville Reservoir were low during 2015 (Table 3-2). Many concentrations measured at all stations and depths were less than or near the laboratory reporting limit of 3.0 mg/L. The maximum concentration of 309 mg/L was measured in tributary surface waters at station BZ-5S on 04 June. This spike in TSS at Station BZ-5S is attributed to stormwater runoff experienced during that sampling event. High measures of TSS can also be the result of sample collection error associated with capturing disturbed fine sediments in the lake bottom sample during field sampling. This sample error particularly applies to any elevated or unexplained high TSS water samples collected at bottom water sampling stations BZ-6B, BZ-3B, and BZ-7B.

3.2.9 Biochemical Oxygen Demand

Five-day biochemical oxygen demand (BOD₅) is a measure of the oxygen-depleting burden imposed by organic material present in water. It measures the rate of oxygen uptake by organisms in the water sample over a period of time. It is an indicator of the quality of a water body and the degree of pollution by biodegradable organic matter can therefore be inferred. The five-day biochemical oxygen demand and commonly accepted water quality inferences are as follows:

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

Biochemical oxygen demand concentrations in the water column of Beltzville Reservoir were consistently low in all months and stations sampled (Table 3-2). All samples were below the laboratory reporting limit of 2.0 mg/L for the entire sampling season. Based on the seasonal sampling results, it is inferred that in 2015 Beltzville 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 CaCO₃ except where natural conditions are less.

Alkalinity in the waters of Beltzville Reservoir was relatively low during 2015 (Table 3-2). For all sampling stations and depths, alkalinity measures ranged from 19.0 mg/L to 6.0 mg/L and remained below the state minimum criteria for all samples. The natural alkalinity of water is largely dependent on the underlying geology and soils within the surrounding watershed. The

low alkalinity measured at Beltzville Reservoir probably results from the regional geology, which is primarily sandstone and shale. Based on this, the reservoir waters and surrounding tributaries are in compliance with the PADEP alkalinity criteria, due to the regional natural conditions.

3.2.11 Total Organic Carbon

Total organic carbon (TOC) is a measurement of the amount of dissolved and particulate carbon that is bound in organic compounds. TOC can be derived from decaying vegetation, bacterial growth, and metabolic activities of living organisms. The bulk of organic carbon in water is composed of humic substances and partly degraded animal and plant materials. Other sources of TOC can include agricultural chemicals such as herbicides and insecticides and also wastewater treatment plant discharges. The amount of carbon in a freshwater stream is an indicator of the organic character of the stream or water body. High organic content can increase the growth of microorganisms which contribute to the depletion of oxygen. Total organic carbon concentrations in the water column and tributaries of Beltzville Reservoir were low during 2015 (Table 3-2). Concentrations of TOC at all stations and depths in 2015 ranged from 9.20 mg/L to <1.0 mg/L (laboratory reporting limit).

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. Chlorophyll a concentrations in the surface waters (0-15 feet) of Beltzville Reservoir were low during 2015 (Appendix A). Concentrations measured in surface waters at all lake body stations ranged between 1.5 and 13.4 ug/L with an average concentration of 4.19 ug/L. The highest concentrations during the sampling season were routinely recorded at lake station BZ-7 located in the upstream area of the reservoir in close proximity to tributary inflows.

3.3 TROPHIC STATE DETERMINATION

Carlson's (1977) trophic state index (TSI) is a method of quantitatively expressing the magnitude of eutrophication for a lake. The trophic state analysis calculates separate indices for eutrophication based on measures of total phosphorus, chlorophyll a, and secchi disk. 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 Beltzville Reservoir was based on a single sample each month during the sampling season taken at station BZ-6 (Figure 3-7).

TSIs calculated for measures of total phosphorus (Figure 3-7) classified Beltzville Reservoir as eutrophic in early July (53.20) and early August (53.20), oligotrophic in late July (37.35) and late August (37.35), and mesotrophic in June (47.35). TSIs calculated for measures of secchi disk depth (Figure 3-7) classified Beltzville Reservoir as mesotrophic in June (47.94), early July (44.81), late July (42.20), early August (42.80) and late August (43.93). TSIs

Results and Discussion

calculated for measures of chlorophyll *a* (Figure 3-7) classified Beltzville Reservoir as oligotrophic in early July (37.74), and mesotrophic in June (47.01), late July (40.23), early August (42.31) and late August (43.43).

Carlson (1977) warned against averaging TSI values estimated for different parameters, and instead suggested giving priority to chlorophyll *a* in the summer and to phosphorus in the spring, fall, and winter. With this in mind, the trophic state of the reservoir, based on TSI's, was mesotrophic throughout the 2015 sampling season.

The EPA (1983) also provides criteria for defining the trophic conditions of lakes of the north-temperate zone based on concentrations of total phosphorus, chlorophyll *a*, and secchi depth (Table 3-3). Taking into account the general agreement between the EPA classifications with that of the Carlson TSI's, the trophic condition of Beltzville Reservoir was predominantly mesotrophic/oligotrophic in 2015.

Water Quality Variable	Oligo-trophic	Meso-trophic	Eutrophic	04 June	01 July	23 July	13 August	31 August
Total phos. (ppb)	<10	10-20	>20	20	30	<10	30	<10
Chlorophyll <i>a</i> (ppb)	<4	4-10	>10	5.37	2.07	2.67	3.3	3.7
Secchi depth (meters)	>4	2-4	<2	2.31	2.87	3.44	3.30	3.05

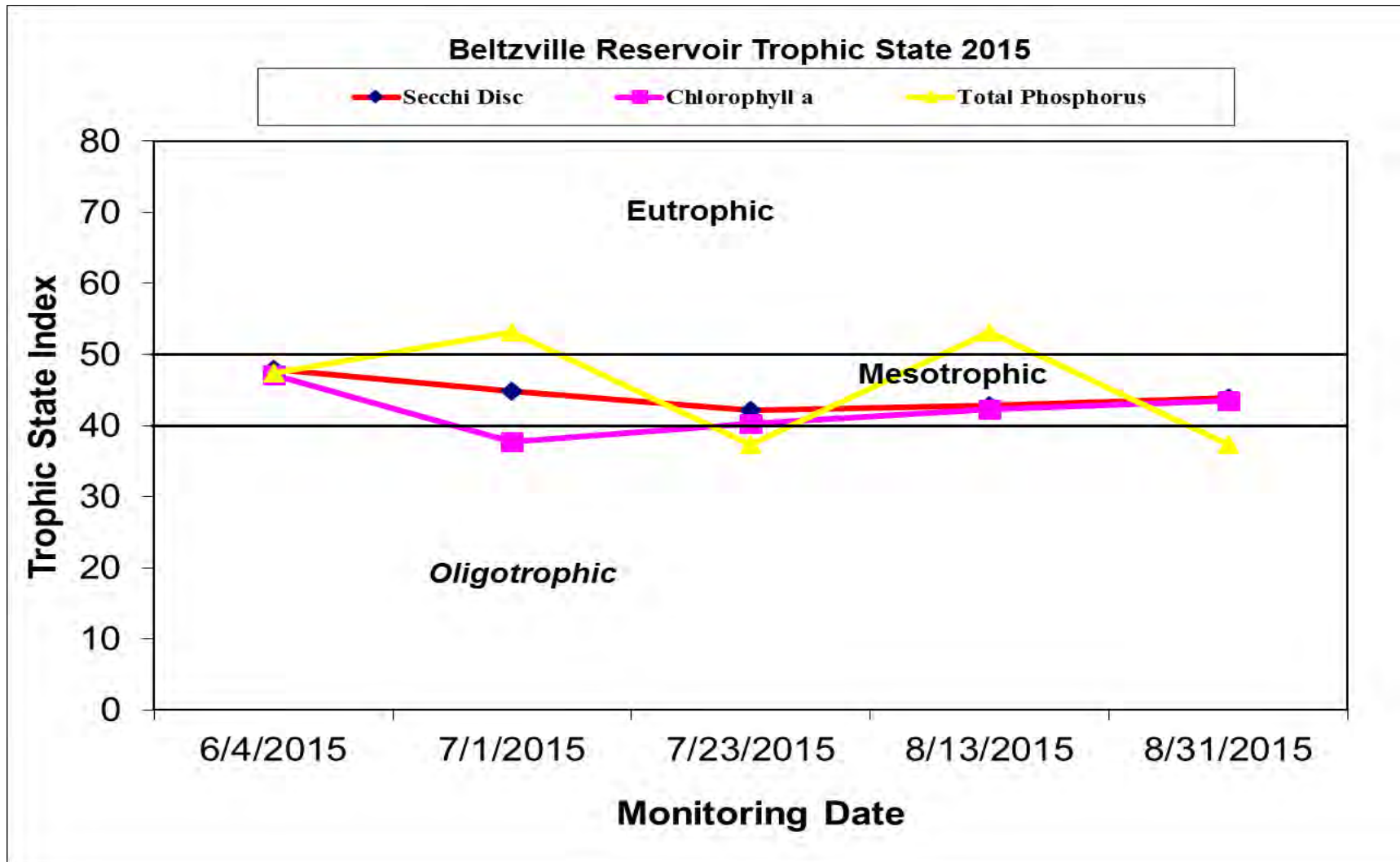


Figure 3-7. Trophic state indices calculated from secchi disk depth and concentrations of total phosphorus and chlorophyll a at Beltzville Reservoir in 2015.

3.4 RESERVOIR BACTERIA MONITORING

Two forms of coliform bacteria contamination were monitored in the tributary and lake surface waters at Beltzville 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 values for all stations ranged from 28 colonies/100-ml to greater than the detection limit of 2400 colonies/100-ml. Bacteria in natural waters are common and their presence in the sample is not necessarily a human health concern.

With respect to PADEP water quality standards, fecal coliform bacteria contamination was low in Beltzville Reservoir and its tributaries during 2015. The PADEP standard for fecal coliform bacteria during the swimming season (from 1 May to 30 September) is a geometric mean not greater than 200 colonies/100-ml calculated for not less than five fecal coliform samples collected over a consecutive thirty day period. Given that our regular monitoring was completed on one day as grab samples, single sample results were then compared to the Pennsylvania Department of Health single sample standard of <1000 colonies/100-ml. The fecal coliform samples collected at Beltzville Reservoir did exceed this standard on one occasion in 2015. Fecal coliform values for all tributary and lake stations ranged from less than the detection limit of 2 colonies/100ml to 6500 colonies/100ml at upstream tributary station BZ-5S on 01 July. This single elevated sample occurred during a stormwater runoff event in the watershed and is reflective of the land use types upstream that directly influence the water quality of the reservoir and tributaries. Water contact recreation is permitted at Beltzville Reservoir. However, the recreational swimming beach is monitored and managed by the Commonwealth of Pennsylvania. No long term elevated bacteria counts were recorded in the main reservoir body where public water recreation is also permitted.

Results and Discussion

Table 3-4 Bacteria counts (colonies/100ml) at Beltzville Reservoir and tributaries during 2015. NS = Not Sampled in 2015

STATION	DATE		Total Coliform (TC)		Fecal Coliform (FC)		Escherichia coli
BZ-1S	6/04/2015		410		54		NS
	7/1/2015	>	2400		86		NS
	7/23/2015	>	2400		21		NS
	8/13/2015		1300		30		NS
	8/31/2015	>	2400		13		NS
BZ-2S	6/04/2015		1100		2		NS
	7/1/2015	>	2400		430		NS
	7/23/2015	>	2400		15		NS
	8/13/2015		2000		38		NS
	8/31/2015		980		16		NS
BZ-3S	6/4/2015		28	<	2		NS
	7/1/2015		210		3		NS
	7/23/2015		190	<	2		NS
	8/13/2015		250		5		NS
	8/31/2015		360		2		NS
BZ-4S	6/4/2015	>	2400		15		NS
	7/1/2015		2400		58		NS
	7/23/2015		1000		3		NS
	8/13/2015	>	2400		20		NS
	8/31/2015	>	2400		11		NS
BZ-5S	6/4/2015	>	2400		260		NS
	7/1/2015	>	2400		6500		NS
	7/23/2015	>	2400		56		NS
	8/13/2015	>	2400		440		NS
	8/31/2015	>	2400		140		NS
BZ-6S	6/4/2015		56	<	2		NS
	7/1/2015		110		2		NS
	7/23/2015		440	<	2		NS
	8/13/2015		460		5		NS
	8/31/2015		290		2		NS
BZ-7S	6/4/2015		160		2		NS
	7/1/2015		690		11		NS
	7/23/2015		440	<	2		NS
	8/13/2015		1400		11		NS
	8/31/2015		770		2		NS

- Highlighted counts exceed single sample State (1000 fecal colonies/100ml) bathing beach criteria.

4.0 REFERENCES

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APPENDIX A

STRATIFICATION DATA TABLES

2015 Beltzville Reservoir Water Column Profile

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
BZ-1S Outfall Pohopoco	6/4/2015	6:07:31	0.5	12.37	97.7	10.44	7.25	-49.6	172.7	39.1	6.7	0.175
	7/1/2015	10:16:56	0.5	15.38	102	10.16	6.84	-26.7	169	39.2	1.6	0.098
	7/23/2015	11:12:39	0.5	17.8	107	10.14	7.46	-62.1	137.3	38.8	1.9	0.096
	8/13/2015	10:35:16	0.5	15.88	103	10.22	7.28	-51.7	116.8	39.6	1.2	0.115
	8/31/2015	12:02:36	0.5	17.83	113	10.7	7.1	-41.5	119.2	38.6	1.3	0.104
BZ-2S Pine Run Trib.	6/4/2015	10:02:07	0.5	12.56	96.8	10.29	6.74	-21.2	191.8	39.4	0	0.197
	7/1/2015	10:05:15	0.5	13.05	95	9.99	6.93	-31.9	168.8	47.6	2.2	0.108
	7/23/2015	11:02:26	0.5	13.61	97.8	10.16	7.52	-64.8	125.8	38.3	0.7	0.075
	8/13/2015	10:23:50	0.5	14.51	95.9	9.77	7.5	-63.8	112.7	39.2	0	0.111
	8/31/2015	11:51:38	0.5	15.78	99.4	9.85	7.07	-39.8	123.2	38.9	1.1	0.082
BZ-3 Bouy/Beach	6/4/2015	8:14:10	0.5	20.14	105	9.55	7.71	-76.9	155.7	34.5	5.4	0.177
		8:13:33	5	20.14	105	9.54	7.63	-72.2	157.8	34.6	6.5	0.177
		8:12:46	10	20.13	106	9.56	7.49	-64	161.2	35.1	6.7	0.177
		8:11:48	15	20.05	106	9.62	7.29	-52.6	165.1	35.3	7.4	0.175
		8:10:35	20	17.77	108	10.26	7.04	-38.2	179	35.7	12	0.175
		8:09:34	25	14.55	103	10.48	6.98	-34.7	187.3	35.4	6.6	0.178
		8:08:36	30	11.21	108	11.89	6.99	-35.3	187.5	34.1	3.5	0.182
		8:07:36	35	9.23	102	11.7	6.96	-33.3	191.9	33.7	6.7	0.187
		8:06:47	40	8.25	93.4	10.99	6.93	-32.1	196.6	33.8	5.7	0.19
		8:05:54	45	7.67	90.3	10.78	6.95	-32.8	197.5	33.6	3.2	0.193
		8:04:34	50	7.4	90.8	10.91	6.97	-34.2	196.9	33.5	4.1	0.194
		8:03:45	55	7.13	90	10.89	7	-35.7	196.5	33.4	2.5	0.195
		8:02:26	60	6.97	88.7	10.77	7.03	-37.5	196.2	33.4	2.3	0.195
		8:01:34	65	6.82	87.8	10.7	7.06	-38.7	196	33.2	2.7	0.196
		8:00:40	70	6.66	87.1	10.66	7.08	-40.1	195.7	33.3	2.4	0.197
		7:59:32	75	6.53	85.9	10.55	7.12	-42.3	195	33.1	3	0.197
		7:58:38	80	6.36	85.6	10.55	7.15	-44.1	194.5	33	2.6	0.198
		7:57:52	85	6.21	83.8	10.38	7.17	-45.3	194.5	32.9	2	0.198
		7:57:15	90	5.94	82.3	10.26	7.2	-46.7	194.7	32.7	2	0.199
		7:56:14	95	5.85	80.9	10.11	7.24	-49.1	194.5	32.6	2	0.2
7:54:55	99	5.83	81.3	10.16	7.32	-53.3	193.6	32.2	1.3	0.202		

2015 Beltzville Reservoir Water Column Profile

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	
BZ-3 Bouy/Beach	7/1/2015	8:20:17	0.5	21.63	95.6	8.42	7.17	-45.5	142.3	37.9	2.4	0.095	
		8:19:53	5	21.63	95.6	8.41	7.14	-43.8	143.5	37.7	2.5	0.095	
		8:19:08	10	21.63	95.4	8.4	7.07	-39.9	146.1	37.8	2.4	0.095	
		8:18:04	15	21.62	94.7	8.34	6.93	-31.8	152.2	38.1	1.8	0.095	
		8:17:07	20	21.22	91.1	8.08	6.78	-22.9	161.2	39	2.8	0.096	
		8:16:03	25	18.52	84.5	7.91	6.66	-16.1	172.5	46.4	2	0.098	
		8:15:07	30	16.31	75	7.35	6.59	-12.4	177.4	39.8	1.9	0.101	
		8:14:02	35	12.72	75.3	7.99	6.58	-12.2	182	38.5	2.9	0.097	
		8:12:34	40	9.29	81.2	9.32	6.6	-13.4	184.5	37.9	2	0.095	
		8:11:34	45	8.29	79.3	9.33	6.61	-13.8	186	37.9	1.6	0.095	
		8:10:50	50	7.72	82.2	9.8	6.62	-14.9	185.2	37.7	2	0.094	
		8:09:56	55	7.47	82.6	9.9	6.64	-15.8	184.5	37.4	1.7	0.094	
		8:08:24	60	7.28	79.2	9.54	6.65	-16.6	184.6	37.5	1.6	0.094	
		8:06:40	65	7.13	81.4	9.84	6.69	-18.6	182.9	37.4	1.8	0.094	
		8:05:33	70	6.99	79.5	9.66	6.7	-19.3	182.8	37.5	1.8	0.094	
		8:04:48	75	6.75	78.9	9.63	6.72	-20	182.6	37.5	1.6	0.094	
		8:04:19	80	6.61	78.1	9.58	6.73	-20.8	182.2	37.7	1.7	0.094	
		8:03:15	85	6.42	76.5	9.42	6.76	-22.2	181.4	37.3	1.5	0.094	
		8:02:08	90	6.28	75.2	9.3	6.78	-23.5	180.6	37	2	0.094	
		8:01:06	95	6.12	73.5	9.12	6.81	-25.2	179.7	36.8	1.8	0.094	
7:59:28	100	6.08	68.3	8.48	6.85	-27.7	177.9	37.2	1.6	0.094			
7:58:17	105	5.94	60.9	7.59	6.89	-29.9	178	38.9	1.6	0.095			
BZ-3 Bouy/Beach	7/23/2015												
		9:16:00	0.5	25.07	115	9.47	8.49	-123.2	58	33.2	1.8	0.088	
		9:14:53	5	25.16	115	9.44	8.38	-116.8	62.2	33.3	2	0.088	
		9:13:56	10	25.15	115	9.44	8.18	-105	66.2	33.6	3.6	0.088	
		9:12:38	15	24.14	127	10.63	7.78	-81.7	71.1	34	5	0.088	
		9:11:53	20	21.89	110	9.63	7.12	-42.9	99.6	34.2	7.3	0.089	
		9:10:34	25	20.28	80.5	7.27	6.99	-35.3	112.7	34	5	0.092	
		9:09:24	30	18.83	69.6	6.48	6.94	-32.3	118.1	34.1	3.7	0.096	
		9:08:38	35	18.18	69.1	6.51	6.93	-31.8	119.6	34.3	2.8	0.098	
		9:07:36	40	17.38	68.6	6.57	6.91	-30.8	122.3	34.4	2.4	0.1	
		9:06:53	45	15.77	65.3	6.48	6.92	-31	124.5	34.1	3.1	0.1	
		9:04:48	50	13.26	57.5	6.03	6.93	-31.5	128.6	34.6	3	0.096	
		9:03:07	55	9.32	57.2	6.55	6.98	-34.4	131.7	34.5	2	0.097	
		9:01:22	60	8.26	65.9	7.75	7.05	-38.5	130.2	34.3	1.8	0.097	
		9:00:11	65	7.94	72.6	8.6	7.09	-40.9	128.6	34.1	1.7	0.097	
		8:59:02	70	7.65	74	8.84	7.14	-43.4	127	34.1	1.5	0.097	
		8:57:56	75	7.43	72.8	8.74	7.17	-44.9	126.5	34	1.7	0.097	
		8:56:18	80	7.27	69.1	8.34	7.2	-46.7	126.2	34.1	1.7	0.098	
		8:55:17	85	7.13	64.9	7.85	7.23	-48.3	126	34.2	1.8	0.098	
8:54:21	90	7.03	62.1	7.53	7.27	-50.4	124.9	34	1.6	0.098			
8:52:21	95	6.86	57.2	6.97	7.34	-54.6	123.3	34	1.3	0.098			
8:49:50	100	6.74	49	5.98	7.45	-60.4	120.6	33.9	1.7	0.099			

2015 Beltzville Reservoir Water Column Profile

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	
BZ-3 Bouy/Beach		8:50:40	0.5	24.34	104	8.7	7.91	-89	63.6	38.1	3.2	0.106	
		8:49:59	5	24.36	104	8.7	7.8	-82.8	66.5	38.3	3.4	0.106	
		8:49:12	10	24.36	103	8.63	7.65	-73.9	69.7	38.1	3.9	0.105	
		8:48:14	15	24.35	102	8.56	7.4	-59	75.4	38.4	4.3	0.105	
		8:46:59	20	23.51	84.7	7.19	6.88	-28.9	102.8	38.5	3	0.104	
		8:45:56	25	22	75.6	6.61	6.76	-21.5	111.2	38	2.4	0.112	
		8:44:37	30	20.86	55.9	5	6.6	-12.5	121.9	37.7	3.4	0.117	
		8:43:47	35	20.28	52.4	4.74	6.64	-14.6	120.6	37.7	2.7	0.12	
		8:42:45	40	19.41	47.9	4.41	6.65	-15.5	121.6	37.8	3.1	0.12	
		8/13/2015	8:41:42	45	18.43	47.6	4.47	6.7	-18.5	120.7	38	3	0.122
			8:40:53	50	17.15	48.1	4.64	6.71	-19.2	122.1	38.1	1.9	0.125
			8:39:40	55	15.05	44	4.43	6.73	-20.5	124.8	38.7	3.1	0.124
			8:38:45	60	11.2	42.3	4.64	6.75	-21.8	128.9	38.2	2	0.126
			8:37:53	65	9.92	44.9	5.08	6.8	-24.7	129.1	38.1	2.2	0.127
			8:36:44	70	8.68	52.3	6.09	6.87	-28.2	128.4	37.8	1.7	0.127
			8:35:40	75	8.18	57.9	6.82	6.93	-31.7	127.1	37.7	1.6	0.127
			8:34:05	80	7.57	64.8	7.76	7.01	-36.4	124.5	37.4	1.6	0.128
			8:33:00	85	7.41	60.3	7.24	7.06	-38.8	124.1	37.4	1.8	0.128
		8:32:04	90	7.26	60.5	7.3	7.12	-42.2	121.6	37	1.8	0.129	
		8:30:44	95	7.11	56.1	6.79	7.21	-47.2	118.2	36.7	1.5	0.134	
	8:29:17	100	6.9	53.2	6.48	7.34	-54.5	113.6	58.9	2.3	0.139		
BZ-3 Bouy/Beach	8/31/2015	9:45:28	0.5	24.64	110	9.13	7.87	-86.8	60	37.6	2.9	0.106	
		9:44:30	5	24.6	110	9.13	7.73	-78.7	61.7	37.6	4.9	0.106	
		9:42:57	10	24.53	108	9.01	7.44	-61.3	67.4	37.8	5.6	0.106	
		9:41:50	15	24.33	105	8.74	7.09	-40.7	77.6	37.9	6.2	0.106	
		9:40:45	20	23.93	93.7	7.89	6.75	-21	95.6	38.3	4.3	0.107	
		9:39:53	25	22.4	60.7	5.27	6.6	-12.4	113.9	37.5	4.3	0.113	
		9:38:53	30	21.39	41.4	3.66	6.54	-8.9	119.2	37.3	3	0.119	
		9:38:16	35	20.75	36.5	3.27	6.53	-8.7	121.4	37.2	2.4	0.12	
		9:36:43	40	20.03	34.2	3.11	6.55	-9.5	124.3	37.7	2.3	0.121	
		9:35:54	45	19.08	33.6	3.11	6.56	-10.2	126.3	38	2.1	0.122	
		9:35:14	50	18	34	3.21	6.57	-11.2	128.1	38.7	1.8	0.123	
		9:34:35	55	15.52	35.7	3.56	6.57	-11.5	131.8	38.5	2	0.125	
		9:34:09	60	12.88	38.7	4.09	6.6	-13.2	133.5	38.1	2.2	0.126	
		9:33:39	65	10.26	43.2	4.85	6.63	-15.1	134.2	37.6	2.2	0.128	
		9:32:59	70	8.98	47.7	5.52	6.67	-17.5	133.2	37.4	1.5	0.129	
		9:31:28	75	8.34	52.6	6.18	6.73	-20.9	132.3	37.4	2.3	0.129	
		9:30:15	80	7.79	58	6.9	6.78	-23.6	130.6	37.4	1.8	0.13	
		9:29:08	85	7.43	54.4	6.53	6.81	-25.2	131	37.6	2.5	0.131	
		9:28:02	90	7.2	55.3	6.67	6.85	-27.5	129.1	37.3	2	0.131	
		9:27:00	95	7.07	51	6.18	6.88	-29.2	128.4	37.1	1.6	0.133	
9:25:36	100	6.92	43.4	5.27	6.93	-32.1	127.1	37.4	1.9	0.136			
9:24:17	105	6.83	38.6	4.7	6.99	-35.1	124.4	37.6	2.3	0.138			

2015 Beltzville Reservoir Water Column Profile

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
BZ-4S Wild Creek Upstream	6/4/2015	9:48:50	0.5	13.29	86.2	9.02	6.38	-0.7	197.9	36.2	0	0.154
	7/1/2015	9:53:20	0.5	20.54	98.7	8.88	7.09	-41.1	129.7	39.3	1.9	0.037
	7/23/2015	10:49:56	0.5	24	97.7	8.22	7.92	-89.8	89.3	38.6	1.6	0.039
	8/13/2015	10:11:19	0.5	22.99	97.2	8.34	7.78	-81.1	62.3	41.1	2.7	0.056
	8/31/2015	11:34:03	0.5	20.77	93.9	8.41	7.13	-43.1	120.6	39.1	0.6	0.075
BZ-5S Pohopoco Upstream	6/4/2015	9:34:21	0.5	14.69	94.2	9.55	7.42	-59.4	139.6	47.3	0.7	0.198
	7/1/2015	9:43:47	0.5	15.77	86.5	8.58	6.98	-34.6	127.5	99.8	6.9	0.069
	7/23/2015	10:39:57	0.5	16.82	102	9.85	7.85	-84	86.4	47.1	0.8	0.114
	8/13/2015	10:01:23	0.5	16.67	95.5	9.29	7.62	-71	-8.4	45.5	1.2	0.135
	8/31/2015	11:20:11	0.5	18.7	98.4	9.18	7.55	-67.4	75.5	45.7	0.5	0.138
BZ-6 In-Lake Tower Secchi 2.31 m	6/4/2015	7:46:28	0.5	20.08	105	9.48	7.6	-70.2	152	34.9	3.9	0.177
		7:45:48	5	20.14	105	9.47	7.51	-65.2	154.2	35	6.3	0.177
		7:44:57	10	20.12	104	9.47	7.36	-56.5	157.8	36	5.9	0.177
		7:44:06	15	20.12	105	9.53	7.18	-46.2	162.4	35.8	6.9	0.176
		7:43:16	20	18.95	106	9.85	7	-35.8	173.4	37.1	13.5	0.176
		7:41:46	25	15.15	112	11.24	6.92	-31	179.4	35.5	6.8	0.178
		7:40:45	30	11.47	110	12.02	6.88	-28.7	183.8	34.7	5.5	0.183
		7:39:04	35	9.08	105	12.13	6.79	-24.3	188.3	34.4	7.7	0.188
		7:38:16	40	8.14	98.1	11.57	6.74	-21.4	193.6	34.2	9.4	0.191
		7:37:23	45	7.67	93.3	11.13	6.73	-20.7	195.6	34	6	0.193
		7:36:43	50	7.4	91.9	11.04	6.73	-20.7	195.9	33.9	3.9	0.194
		7:36:11	55	7.29	91.6	11.03	6.74	-21.1	195.6	33.8	2.4	0.194
		7:35:01	60	7.04	90.2	10.94	6.74	-21.4	195.5	33.7	2.8	0.195
		7:34:09	65	6.88	89.1	10.84	6.74	-21.6	195.6	33.7	1.8	0.195
		7:33:19	70	6.73	88.1	10.77	6.76	-22.6	194.8	33.7	2.5	0.195
		7:32:07	75	6.53	86.4	10.6	6.77	-23.1	194.5	33.7	2.1	0.196
		7:31:22	80	6.29	84.5	10.43	6.78	-23.8	194.4	33.9	2.1	0.196
		7:30:28	85	6.1	82.3	10.21	6.8	-24.6	194.2	33.7	1.4	0.197
		7:29:31	90	5.9	80.7	10.07	6.83	-26.3	193.3	33.6	1.5	0.197
		7:28:22	95	5.85	79.3	9.91	6.87	-28.5	191.8	33.7	1.4	0.198
7:27:25	100	5.77	78.2	9.78	6.9	-30.4	190.8	33.6	1.5	0.198		
7:26:05	105	5.71	76.6	9.6	6.95	-33.1	188.9	33.7	1.3	0.198		
7:25:11	110	5.72	76	9.53	6.99	-35.3	187.5	33.5	2	0.199		
7:24:12	115	5.68	74.8	9.38	7.02	-37	186.6	33.5	1.5	0.199		
7:23:30	120	5.67	74.2	9.31	7.06	-39	185.6	36.3	1.9	0.2		
7:22:23	125	5.69	74	9.28	7.09	-40.7	184.7	33.6	1.9	0.201		

2015 Beltzville Reservoir Water Column Profile

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
BZ-6 In-Lake Tower	7/1/2015	7:50:01	0.5	21.64	95.8	8.44	7.19	-46.8	127.7	37.8	2.3	0.095
		7:49:24	5	21.65	95.7	8.42	7.13	-43.4	129.7	38.1	1.9	0.095
		7:48:26	10	21.65	95.1	8.37	7.02	-37	133.9	38.1	2	0.095
		7:47:38	15	21.64	93.9	8.27	6.9	-30.1	138.9	38.5	1.5	0.095
		7:46:35	20	19.99	80.6	7.33	6.75	-21.5	151.8	40	2.9	0.093
		7:45:31	25	17.64	74.2	7.07	6.69	-18.1	157.9	39	3.1	0.101
		7:44:42	30	15.57	72.1	7.18	6.67	-17.1	161.8	38.6	2.8	0.1
		7:43:55	35	13.7	74.3	7.71	6.67	-17.1	164.1	38.3	1.9	0.098
		7:40:58	40	9.83	93.9	10.64	6.67	-17.1	168.7	38.2	1.3	0.095
		7:39:28	45	8.3	84.3	9.91	6.63	-15.2	173.3	37.9	1.2	0.094
		7:38:20	50	7.8	83.7	9.96	6.63	-15.3	173.9	37.8	1.7	0.094
		7:37:28	55	7.56	83.5	10	6.64	-15.5	174.1	37.6	0.8	0.094
		7:36:36	60	7.28	82.2	9.91	6.64	-15.7	174.5	37.6	1.1	0.094
		7:35:30	65	7.1	81.6	9.87	6.64	-16.1	174.5	37.5	1.2	0.094
		7:34:41	70	6.91	80.5	9.79	6.65	-16.5	174.6	37.5	1.4	0.094
		7:33:47	75	6.71	79.9	9.77	6.67	-17.2	174.2	37.4	2.2	0.094
		7:32:43	80	6.56	77.6	9.52	6.68	-18.1	174.1	37.5	2.1	0.094
		7:31:47	85	6.41	76.6	9.43	6.7	-19.3	173.3	37.5	1.5	0.094
		7:30:37	90	6.27	73.8	9.12	6.69	-18.8	174.7	37.5	1.4	0.094
		7:29:41	95	6.15	71.2	8.83	6.71	-19.7	174.8	37.4	1.5	0.094
7:28:33	100	6.03	67.6	8.41	6.75	-21.7	174.1	37.3	1.5	0.094		
7:27:43	105	5.93	64.5	8.04	6.78	-23.7	173.6	37.3	1.5	0.094		
7:26:56	110	5.92	63.1	7.87	6.82	-26.1	172.4	37.3	1.6	0.094		
7:25:57	115	5.88	61.6	7.69	6.88	-29	170.8	37.4	2	0.094		
7:25:12	120	5.88	60.5	7.56	6.93	-31.8	169.2	37.2	1.5	0.095		
7:23:12	125	5.82	51.5	6.44	7.09	-40.7	163.7	55.2	4.3	0.095		
BZ-6 In-Lake Tower	7/23/2015	8:36:10	0.5	24.71	120	10	8.31	-112.7	58.6	33.3	3.3	0.05
		8:35:00	5	24.72	121	10.04	8.25	-108.8	60.2	33.3	2.2	0.089
		8:33:56	10	24.71	120	10	8.14	-102.9	63	33.5	2.5	0.089
		8:32:26	15	24.64	121	10.03	7.97	-92.6	69.5	33.6	3.7	0.089
		8:30:23	20	22.18	132	11.49	7.69	-75.7	74	34.1	5.4	0.093
		8:28:32	25	19.93	75	6.83	6.92	-31.3	117.3	34.3	4.7	0.094
		8:26:07	30	18.83	69.3	6.45	6.87	-28.3	122.5	34.3	2.4	0.095
		8:24:32	35	18.09	69.1	6.53	6.86	-27.5	125.7	34.5	2.6	0.098
		8:22:43	40	16.94	70.4	6.81	6.85	-27	129.6	34.6	2.5	0.097
		8:21:25	45	15.9	70.2	6.94	6.85	-27.2	132.2	34.5	2.3	0.097
		8:18:48	50	13.2	62.2	6.52	6.87	-28.6	136.3	34.7	1.7	0.096
		8:15:55	55	9.9	78.9	8.92	6.98	-34.4	136.4	34.7	1	0.097
		8:14:59	60	8.34	76.7	9.01	7	-35.6	137.7	34.4	1.8	0.097
		8:13:49	65	7.99	78.8	9.34	7.03	-37.5	137.1	34.4	1.5	0.097
		8:12:30	70	7.68	81	9.66	7.07	-39.3	136.2	34.4	1.6	0.096
		8:11:31	75	7.46	79.9	9.59	7.09	-40.5	136.2	34.4	1.2	0.096
		8:10:49	80	7.32	80.2	9.65	7.11	-41.6	135.6	34.3	1.3	0.096
		8:08:58	85	7.2	79.1	9.56	7.15	-43.9	134.6	34.5	1.7	0.096
		8:08:07	90	7.06	78.8	9.55	7.17	-45.2	133.9	34.4	1.6	0.096
		8:06:28	95	6.88	75.8	9.23	7.21	-47.3	133.4	34.3	1.6	0.096
8:04:59	100	6.67	70	8.57	7.25	-49.5	133.1	34.4	1.1	0.097		
8:03:34	105	6.54	66.5	8.16	7.3	-52.3	132.4	40.5	3.1	0.097		
8:00:58	110	6.38	58.9	7.26	7.39	-57.2	131.3	34.6	1	0.097		
8:00:13	115	6.39	57.9	7.13	7.43	-59.6	130	45.2	2.1	0.098		
7:58:49	120	6.38	57.5	7.08	7.51	-63.7	128.4	79.6	4.7	0.098		
7:57:46	125	6.49	57.7	7.09	7.58	-67.7	126.4	43.3	1.7	0.099		

2015 Beltzville Reservoir Water Column Profile

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
BZ-6 In-Lake Tower	8/13/2015	8:21:28	0.5	24.3	104	8.68	7.63	-72.9	62	38.2	2.5	0.104
		8:20:46	5	24.34	104	8.66	7.54	-67.1	63.4	38.2	3.4	0.104
		8:20:08	10	24.33	103	8.6	7.41	-59.7	65.8	38.4	4	0.104
		8:19:19	15	24.29	102	8.51	7.21	-47.8	70.2	38.7	3.5	0.104
		8:18:20	20	23.81	89.9	7.59	6.95	-32.6	93.2	38.8	2.7	0.106
		8:16:42	25	22.02	74.6	6.52	6.81	-24.7	103.4	38.4	4.3	0.111
		8:15:33	30	21.07	57.6	5.13	6.75	-21.2	108.6	38.2	1.6	0.114
		8:13:54	35	20.19	46	4.17	6.7	-18.5	113.5	38.3	1.6	0.116
		8:12:57	40	19.33	41.8	3.85	6.7	-18.2	116.4	38.4	2.1	0.117
		8:11:51	45	18.44	46.3	4.34	6.71	-18.8	117.9	38.4	1.2	0.12
		8:10:32	50	17.22	48.4	4.66	6.71	-19.4	120.2	38.6	2.2	0.121
		8:09:26	55	14.14	43	4.42	6.72	-20	124.4	38.7	1.2	0.117
		8:08:11	60	10.95	45.3	5	6.74	-21.3	128	38.3	2	0.119
		8:07:03	65	9.27	51	5.86	6.78	-23.6	128.8	38.3	1.2	0.119
		8:05:33	70	8.45	60.2	7.05	6.84	-27	128	38.3	1.8	0.12
		8:04:21	75	7.88	65.4	7.76	6.88	-29	127.2	38.3	1.3	0.12
		8:03:23	80	7.51	66.8	8.01	6.9	-30.1	126.9	38.4	1.1	0.12
		8:02:21	85	7.32	67.1	8.08	6.92	-31	126.7	38.4	1.7	0.12
		8:01:15	90	7.17	64.8	7.83	6.93	-31.8	126.9	38.2	1	0.121
		8:00:22	95	7.02	62.4	7.57	6.94	-32.6	127	38.3	1.4	0.121
7:59:25	100	6.88	58.6	7.13	6.98	-34.5	126.2	38.3	1.8	0.121		
7:57:37	105	6.72	50.6	6.19	7.02	-36.7	126.3	38.3	1.2	0.122		
7:56:30	110	6.58	44.7	5.48	7.06	-38.9	126.1	38.4	1.8	0.123		
7:55:14	115	6.5	40.7	5.01	7.12	-42.6	124.6	38.5	1.5	0.124		
7:54:09	120	6.49	38.6	4.74	7.2	-46.6	122.3	38.5	0.9	0.125		
7:52:56	125	6.53	37.4	4.59	7.3	-52.1	118.1	38.8	0.6	0.127		
BZ-6 In-Lake Tower	8/31/2015	9:08:49	0.5	24.45	110	9.14	7.72	-78.1	52.5	38	2.7	0.106
		9:07:57	5	24.37	109	9.12	7.6	-70.7	53.8	38.1	3.6	0.106
		9:07:02	10	24.34	109	9.07	7.44	-61.2	56.2	38.1	4.8	0.106
		9:06:09	15	24.25	107	8.98	7.17	-45.7	57.6	38.2	4.5	0.106
		9:05:20	20	24.08	102	8.6	6.93	-31.6	68.9	38.4	5.6	0.106
		9:03:09	25	22.58	69.7	6.02	6.56	-9.8	99.6	37.7	3.5	0.113
		9:00:59	30	21.59	43.4	3.83	6.41	-1.4	106.7	37.7	1.9	0.117
		8:59:38	35	20.75	30	2.68	6.35	2	111.1	37.5	1.7	0.119
		8:58:17	40	20.18	28.8	2.61	6.32	3.6	114.5	37.6	2.9	0.12
		8:56:55	45	19.61	27.2	2.49	6.29	5.1	118.5	37.8	0.8	0.121
		8:55:14	50	18.26	33	3.11	6.25	7.2	123.9	37.9	1.8	0.123
		8:54:00	55	16.32	33.5	3.28	6.19	10.5	130.5	38.2	1.8	0.126
		8:50:53	60	13.94	33.9	3.5	6.16	12	137.9	38.2	1.6	0.126
		8:49:38	65	10.45	39.6	4.43	6.14	12.6	142.3	38	1.8	0.127
		8:48:02	70	8.99	48.7	5.63	6.23	7.2	139.3	37.9	2.1	0.128
		8:46:08	75	8.03	59.6	7.06	6.3	3.3	136.7	37.7	1	0.129
		8:44:57	80	7.69	61.2	7.3	6.35	0.3	134	38	1.3	0.129
		8:43:54	85	7.45	62.1	7.45	6.36	-0.3	133.5	37.9	1.5	0.129
		8:42:34	90	7.25	62.4	7.52	6.37	-0.7	133.1	37.9	1	0.13
		8:40:58	95	7.15	59.4	7.19	6.36	-0.2	133.3	37.9	1.4	0.131
8:39:28	100	6.98	54.9	6.66	6.34	0.5	133.9	37.8	1.7	0.133		
8:38:11	105	6.9	50.4	6.13	6.34	0.6	133.3	38	1.6	0.135		
8:36:54	110	6.76	42.5	5.19	6.35	0.1	132.5	38.2	1.9	0.137		
8:35:41	115	6.61	36.2	4.44	6.38	-1.5	130.9	38.3	1.9	0.138		
8:33:54	120	6.58	33	4.05	6.45	-5.2	123.4	38.5	2.2	0.14		
8:32:18	125	6.53	28.1	3.45	6.5	-8.3	114.3	42.7	2.7	0.142		

2015 Beltzville Reservoir Water Column Profile

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
BZ-7 Upper Lake No-Wake	6/4/2015	8:39:43	0.5	19.5	108	9.94	7.69	-75.7	163.9	34.7	4.6	0.106
		8:38:30	5	19.65	108	9.89	7.47	-63	166.1	34.6	9.4	0.174
		8:37:52	10	19.51	107	9.83	7.31	-53.8	167.7	34.8	9.8	0.173
		8:37:07	15	18.47	102	9.56	7.16	-44.9	181	35.3	13.3	0.167
		8:35:56	20	15.81	88.5	8.77	7.05	-38.8	192.8	37.7	8.3	0.183
		8:34:47	25	11.84	80.5	8.71	7.07	-39.6	199.9	35.6	3.4	0.183
		8:33:40	30	8.95	80.5	9.31	7.13	-43.2	202.1	33.8	3.1	0.187
		8:32:40	35	8.29	79.2	9.31	7.18	-45.9	202.5	33.7	3.3	0.19
		8:31:43	40	7.74	78.8	9.38	7.23	-48.7	202.5	33.5	2.7	0.193
		8:30:30	45	7.51	78.7	9.42	7.3	-52.3	202.4	33.1	1.7	0.195
		8:29:21	50	7.38	78.5	9.43	7.37	-56.4	202	33.2	1.9	0.196
8:27:51	55	7.32	78.8	9.48	7.48	-62.1	201.7	32.4	1.5	0.2		
BZ-7 Upper Lake No-Wake	7/1/2015	8:54:23	0.5	21.53	95.4	8.41	7.02	-36.7	131.3	38	1.8	0.093
		8:53:53	5	21.51	94.9	8.37	6.97	-34.1	132.6	38	3.1	0.093
		8:52:40	10	21.31	90	7.97	6.86	-27.4	139.2	38.7	2.9	0.093
		8:52:08	15	20.77	89	7.97	6.89	-29.2	138.5	42.9	2.5	0.072
		8:51:06	20	19.07	88	8.15	6.77	-22.3	145.3	67	4	0.09
		8:50:14	25	17.82	86.7	8.23	6.74	-20.9	147.6	82.8	5.9	0.08
		8:48:45	30	16.78	84.1	8.16	6.69	-18.1	148.6	91.9	6.3	0.079
		8:46:37	35	16.59	81.9	7.99	6.63	-14.4	145.9	94.8	6.1	0.083
		8:45:51	40	15.76	77.8	7.72	6.59	-12.4	144.1	87	5.3	0.086
		8:44:27	45	12.96	60.5	6.38	6.51	-8.2	144.4	40.4	2.5	0.1
		8:43:17	50	8.16	57.2	6.75	6.52	-9.2	140.5	39.3	1.5	0.096
8:40:19	55	7.98	3.4	0.4	6.5	-8	94.8	38.8	4.7	0.095		
BZ-7 Upper Lake No-Wake	7/23/2015	9:43:18	0.5	26.13	106	8.53	7.72	-78.5	80.9	33.3	2.3	0.074
		9:42:25	5	26.14	106	8.57	7.65	-74.1	83.7	33.5	1.8	0.074
		9:41:36	10	26.06	105	8.53	7.59	-70.8	84.9	33.8	2.9	0.075
		9:39:28	15	22.19	98.1	8.55	7.31	-54	106.6	34.4	2	0.099
		9:38:27	20	20.53	88	7.92	7.27	-51.5	112	34.7	1.6	0.103
		9:36:59	25	19.34	82.3	7.58	7.26	-50.6	115.5	34.6	0.5	0.1
		9:36:16	30	18.63	79.7	7.45	7.27	-51.2	116.6	34.5	1.9	0.099
		9:35:40	35	18.03	76.5	7.23	7.29	-52.2	117.2	34.3	1.4	0.1
		9:34:47	40	17.53	73	6.98	7.32	-54.1	117.6	34.1	2.1	0.101
		9:33:41	45	16.72	66.8	6.49	7.38	-57.2	118.6	34.3	2.1	0.102
		9:32:19	50	15.11	55.7	5.6	7.47	-62.5	119.4	34.3	2.3	0.102
9:30:44	55	10.65	48.4	5.39	7.63	-71.1	120.6	33.2	1.6	0.101		
BZ-7 Upper Lake No-Wake	8/13/2015	9:15:06	0.5	24.51	107	8.9	8.1	-100.5	64.5	38.8	5.2	0.062
		9:14:22	5	24.54	107	8.89	8.06	-97.8	63	38.7	5.3	0.097
		9:13:29	10	24.52	106	8.85	7.91	-89.1	66.1	38.8	6	0.098
		9:12:33	15	24.5	105	8.77	7.64	-73.2	70.3	39	6.2	0.098
		9:11:05	20	23.36	91.1	7.76	7.27	-51.6	95.7	38.9	2.9	0.069
		9:10:06	25	21.26	87.4	7.75	7.13	-43.5	100.5	40.9	5.8	0.111
		9:09:10	30	20.61	80.1	7.2	7.1	-41.5	103.1	41	4.9	0.115
		9:08:14	35	19.93	74.3	6.76	7.09	-41	103.8	40.3	2.2	0.117
		9:07:12	40	19.56	65.4	6	7.1	-41.6	104	40.5	1.8	0.118
		9:05:48	45	18.59	41.4	3.87	7.15	-44	103.4	39.1	1.6	0.123
9:04:45	50	17.99	35.7	3.38	7.24	-49.6	91.5	39.9	4.1	0.123		

2015 Beltzville Reservoir Water Column Profile

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
BZ-7 Upper Lake No-Wake	8/31/2015	10:19:20	0.5	25.2	111	9.16	8.07	-98.8	54.6	38	3.7	0.102
		10:18:37	5	25.15	111	9.14	7.94	-91.2	54.7	38.2	5.3	0.102
		10:17:17	10	25.1	109	9	7.62	-72	57.5	38.3	5.6	0.102
		10:16:11	15	24.56	92.5	7.71	7.12	-42.5	89.8	38.4	4.6	0.099
		10:15:16	20	23.1	77.7	6.65	7.07	-39.7	96	38.1	3.7	0.103
		10:14:25	25	21.8	81.4	7.14	7.04	-37.8	95.7	38.2	2.3	0.119
		10:13:12	30	21.05	81.7	7.27	7.01	-36.3	95.2	38.4	1.8	0.122
		10:12:14	35	20.47	78.3	7.05	7	-35.5	93.8	38.6	1.9	0.123
		10:11:12	40	19.99	55.9	5.08	6.95	-33.1	95.6	38.6	2.2	0.123
		10:10:33	45	19.14	31.5	2.91	6.96	-33.4	97.4	38.2	1.2	0.123
		10:09:30	50	18.34	23.6	2.22	7.04	-38.1	91.2	38.2	2	0.124
10:08:07	55	17.07	14.3	1.38	7.19	-46.8	77.3	43	0.5	0.127		

APPENDIX B

LABORATORY CUSTODY SHEETS



M.J. Reider Associates, Inc.

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

107 ANGELICA STREET □ READING, PA 19611 □ WWW.MJREIDER.COM (610) 374-5129 FAX (610) 374-7234

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

INVOICE NO. 325258
Date 06/15/15

Acct. No. 03157
P.O. No. 1115743
Receipt No. 0
C of C No. 257588
Contact Richard Wheeler

Sample Description	Price
15 0020176 WA-1 Surface	254.00
15 0020177 WA-2 Surface	254.00
15 0020178 WA-2 Mid-Depth	194.00
15 0020179 WA-2 Deep	194.00
15 0020180 WA-3 Surface	254.00
15 0020181 WA-4 Surface	254.00
15 0020182 WA-5 Surface	254.00
15 0020183 WA-6 Surface	254.00
15 0020184 WA-6 Mid-Depth	194.00
15 0020185 WA-6 Deep	194.00
15 0020186 WA-7 Surface	254.00
15 0020187 WA-7 Mid-Depth	194.00
15 0020188 WA-7 Deep	194.00
15 0020552 PR-1 Surface	254.00
15 0020553 PR-2 Surface	254.00
15 0020554 PR-2 Mid-Depth	194.00
15 0020555 PR-2 Deep	194.00
15 0020556 PR-3 Surface	254.00
15 0020557 PR-3 Mid-Depth	194.00
15 0020558 PR-3 Deep	194.00
15 0020559 PR-4 Surface	254.00
15 0020570 BZ-1 Surface	254.00
15 0020571 BZ-2 Surface	254.00
15 0020572 BZ-3 Surface	254.00
15 0020573 BZ-3 Mid-Depth	194.00
15 0020574 BZ-3 Deep	194.00
15 0020575 BZ-4 Surface	254.00
15 0020576 BZ-5 Surface	254.00
15 0020577 BZ-6 Surface	254.00

1.5% PER MONTH SURCHARGE WILL BE APPLIED TO INVOICES NOT PAID IN 30 DAYS

Remit To:

M. J. REIDER ASSOCIATES, INC.
107 Angelica St.
Reading, PA 19611

**PLEASE RETURN THIS PORTION
WITH YOUR PAYMENT**

INVOICE NO. \$ 325258
Date 06/15/2015
Acct. No. 3157
Amount Due \$ 0.00



M.J. Reider Associates, Inc.

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

107 ANGELICA STREET □ READING, PA 19611 □ WWW.MJREIDER.COM (610) 374-5129 FAX (610) 374-7234

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

INVOICE NO. 325258
Date 06/15/15
Acct. No. 03157
P.O. No. 1115743
Receipt No. 0
C of C No. 257590
Contact Richard Wheeler

Sample Description			Price
15	0020578	BZ-6 Mid-Depth	194.00
15	0020579	BZ-6 Deep	194.00
15	0020580	BZ-7 Surface	254.00
15	0020581	BZ-7 Mid-Depth	194.00
15	0020582	BZ-7 Deep	194.00
Analytical			7,676.00

Due Date: 07/15/2015

TOTAL AMOUNT DUE: =====
\$7,676.00

1.5% PER MONTH SURCHARGE WILL BE APPLIED TO INVOICES NOT PAID IN 30 DAYS

Remit To:

M. J. REIDER ASSOCIATES, INC.
107 Angelica St.
Reading, PA 19611

**PLEASE RETURN THIS PORTION
WITH YOUR PAYMENT**

INVOICE NO.\$ 325258
Date 06/15/2015
Acct. No. 3157
Amount Due \$ 7676.00



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: 3157-15-0020570

Date Collected: 06/04/15 06:30
 Collected By: Client

Sample Desc: BZ-1 Surface

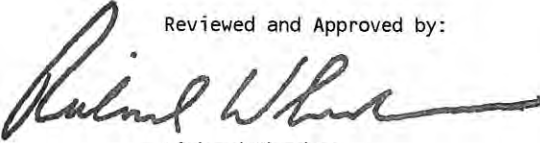
Date Received: 06/04/15 14:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	54	/100ml	2	1	SM 9222D	06/04	16:25	RES
Total Coliform	410	mpn/100ml	1	1	SM 9223B	06/05	11:45	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	06/05	14:55	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	12:15	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	06/05	12:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	16:19	JCL
Nitrogen, Nitrate	0.67	mg/L	.05	1	EPA 353.2	06/04	18:42	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:03	JCL
Nitrogen, Total Kjeldahl	0.44	mg/L	.25	1	EPA 351.2	06/08	16:14	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	1.5	mg/L	1	1	SM5310 C	06/09	12:12	ALD
RESIDUES								
Solids, Total Dissolved	32	mg/L	5	1	SM 2540C	06/08	13:30	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/08	13:30	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	06/05	15:15	HRG

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

Reviewed and Approved by:


 Richard Wheeler

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 NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes.





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: 3157-15-0020570

Date Collected: 06/04/15 06:30
Collected By: Client

Sample Desc: BZ-1 Surface

Date Received: 06/04/15 14:45

PWSID: 3130843

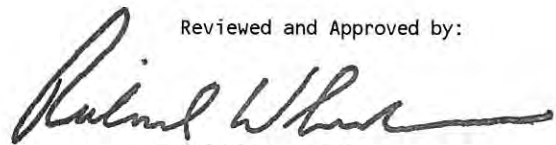
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
--------	------	-----------	---------------	-----------	-----------	-----------	---------

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 06/04/15 at 17:30.

Distribution of Reports:
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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: 3157-15-0020571

Date Collected: 06/03/15 10:25
 Collected By: Client

Sample Desc: BZ-2 Surface

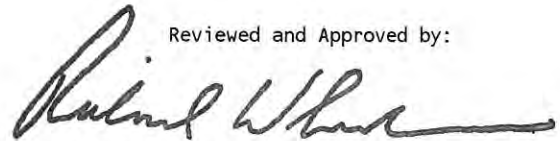
Date Received: 06/04/15 14:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	2	/100ml	2	1	SM 9222D	06/04	16:25	RES
Total Coliform	1100	mpn/100ml	1	1	SM 9223B	06/05	11:45	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/05	15:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	12:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/05	12:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	16:34	JCL
Nitrogen, Nitrate	0.21	mg/L	.05	1	EPA 353.2	06/04	18:47	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:08	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	06/08	16:17	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 c	06/09	13:00	ALD
RESIDUES								
Solids, Total Dissolved	46	mg/L	5	1	SM 2540C	06/08	13:30	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/08	13:30	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	06/05	15:15	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: 06/15/15
Lab ID: 3157-15-0020571

Date Collected: 06/03/15 10:25
Collected By: Client

Sample Desc: BZ-2 Surface

Date Received: 06/04/15 14:45

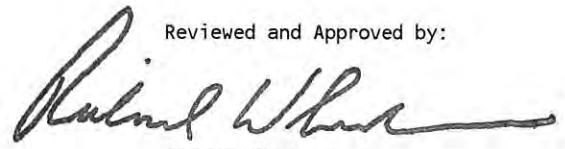
PWSID: 3130843

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 06/04/15 at 17:30.

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: 3157-15-0020572

Date Collected: 06/04/15 09:25
 Collected By: Client

Sample Desc: BZ-3 Surface

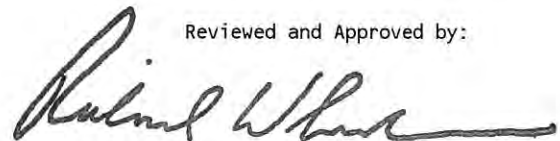
Date Received: 06/04/15 14:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	06/04	16:25	RES
Total Coliform	28	mpn/100mL	1	1	SM 9223B	06/05	11:45	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/05	15:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	12:15	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	06/05	12:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	16:48	JCL
Nitrogen, Nitrate	0.62	mg/L	.05	1	EPA 353.2	06/04	18:48	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:09	JCL
Nitrogen, Total Kjeldahl	0.37	mg/L	.25	1	EPA 351.2	06/08	16:18	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	1.3	mg/L	1	1	SM5310 C	06/09	13:51	ALD
RESIDUES								
Solids, Total Dissolved	48	mg/L	5	1	SM 2540C	06/08	13:30	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/08	13:30	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	06/05	15:30	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: 06/15/15
 Lab ID: 3157-15-0020572

Date Collected: 06/04/15 09:25
 Collected By: Client

Sample Desc: BZ-3 Surface

Date Received: 06/04/15 14:45

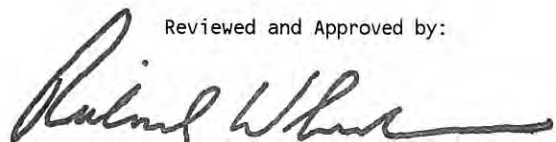
PWSID: 3130843

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 06/04/15 at 17:30.

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: 06/15/15
 Lab ID: 3157-15-0020573

Date Collected: 06/04/15 08:25
 Collected By: Client

Sample Desc: BZ-3 Mid-Depth

Date Received: 06/04/15 14:45

PWSID: 3130843

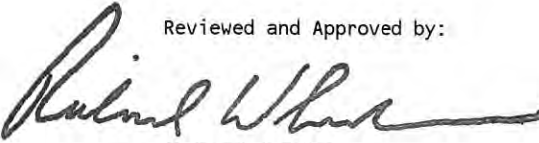
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/05	15:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	12:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/05	12:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	17:03	JCL
Nitrogen, Nitrate	0.72	mg/L	.05	1	EPA 353.2	06/04	18:49	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:10	JCL
Nitrogen, Total Kjeldahl	0.25	mg/L	.25	1	EPA 351.2	06/08	16:19	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	1.2	mg/L	1	1	SM5310 C	06/09	14:07	ALD
RESIDUES								
Solids, Total Dissolved	46	mg/L	5	1	SM 2540C	06/08	13:30	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/08	13:30	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	06/05	15:45	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
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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/15/15
 Lab ID: 3157-15-0020574

Date Collected: 06/04/15 08:25
 Collected By: Client

Sample Desc: BZ-3 Deep

Date Received: 06/04/15 14:45

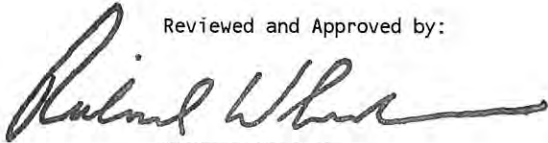
PWSID: 3130843

	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	06/05	15:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	12:20	HRG
Phosphorus as P, Total	0.05	mg/L	.01	1	SM 4500P-E	06/05	12:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	17:17	JCL
Nitrogen, Nitrate	0.69	mg/L	.05	1	EPA 353.2	06/04	18:50	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:11	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	06/08	16:20	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	06/09	14:54	ALD
RESIDUES								
Solids, Total Dissolved	42	mg/L	5	1	SM 2540C	06/08	13:30	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/08	13:30	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	06/05	15:45	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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 Richard Wheeler

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

Date of Report: 06/15/15
 Lab ID: 3157-15-0020575

Date Collected: 06/04/15 10:15
 Collected By: Client

Sample Desc: BZ-4 Surface

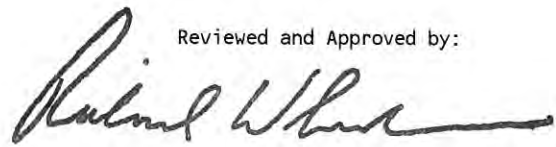
Date Received: 06/04/15 14:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	15	/100mL	2	1	SM 9222D	06/04	16:25	RES
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	06/05	11:45	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	06/05	15:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	12:20	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	06/05	12:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	17:32	JCL
Nitrogen, Nitrate	0.66	mg/L	.05	1	EPA 353.2	06/04	18:51	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:12	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	.25	1	EPA 351.2	06/08	16:21	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	06/09	15:24	ALD
RESIDUES								
Solids, Total Dissolved	30	mg/L	5	1	SM 2540C	06/08	13:30	TMH
Solids, Total Suspended	10	mg/L	3	1	SM 2540D	06/08	13:45	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/L	1	1	SM 2320 B	06/05	15:45	HRG

Distribution of Reports:
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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: 3157-15-0020575

Date Collected: 06/04/15 10:15
Collected By: Client

Sample Desc: BZ-4 Surface

Date Received: 06/04/15 14:45

PWSID: 3130843

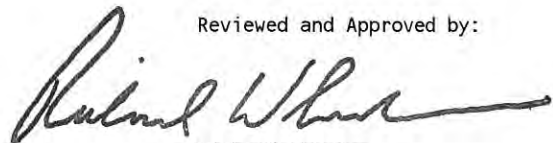
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 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 06/04/15 at 17:30.

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

Date of Report: 06/15/15
 Lab ID: 3157-15-0020576

Date Collected: 06/04/15 09:50
 Collected By: Client

Sample Desc: BZ-5 Surface

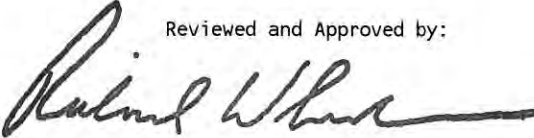
Date Received: 06/04/15 14:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	260	/100ml	2	1	SM 9222D	06/04	16:25	RES
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	06/05	11:45	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.15	mg/L	.01	1	SM 4500P-E	06/05	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	12:20	HRG
Phosphorus as P, Total	0.31	mg/L	.01	1	SM 4500P-E	06/05	12:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	17:47	JCL
Nitrogen, Nitrate	1.13	mg/L	.05	1	EPA 353.2	06/04	18:52	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:13	JCL
Nitrogen, Total Kjeldahl	1.52	mg/L	.25	1	EPA 351.2	06/08	16:24	JCL
OTHER								
Biochemical Oxygen Demand	2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	2.0	mg/L	1	1	SM5310 C	06/09	15:42	ALD
RESIDUES								
Solids, Total Dissolved	75	mg/L	5	1	SM 2540C	06/08	13:30	TMH
Solids, Total Suspended	309	mg/L	3	1	SM 2540D	06/08	13:45	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	14	mg/L	1	1	SM 2320 B	06/05	16:00	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: 3157-15-0020576

Date Collected: 06/04/15 09:50
Collected By: Client

Sample Desc: BZ-5 Surface

Date Received: 06/04/15 14:45

PWSID: 3130843

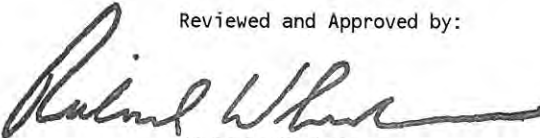
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 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 06/04/15 at 17:30.
- 03 The SM 5210B sample did not have a DO depletion of at least 2 mg/L.

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

Date of Report: 06/15/15
 Lab ID: 3157-15-0020577

Date Collected: 06/04/15 07:55
 Collected By: Client

Sample Desc: BZ-6 Surface

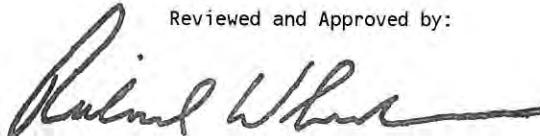
Date Received: 06/04/15 14:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100ml	2	1	SM 9222D	06/04	16:25	RES
Total Coliform	56	mpn/100ml	1	1	SM 9223B	06/05	11:45	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	06/05	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	12:20	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	06/05	12:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	18:45	JCL
Nitrogen, Nitrate	0.62	mg/L	.05	1	EPA 353.2	06/04	18:53	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:14	JCL
Nitrogen, Total Kjeldahl	0.40	mg/L	.25	1	EPA 351.2	06/08	16:25	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	1.3	mg/L	1	1	SM5310 C	06/09	16:13	ALD
RESIDUES								
Solids, Total Dissolved	48	mg/L	5	1	SM 2540C	06/08	13:30	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/08	13:45	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	06/05	16:00	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: 06/15/15
Lab ID: 3157-15-0020577

Date Collected: 06/04/15 07:55
Collected By: Client

Sample Desc: BZ-6 Surface

Date Received: 06/04/15 14:45

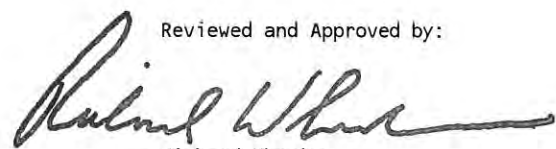
PWSID: 3130843

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 06/04/15 at 17:30.

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

Date of Report: 06/15/15
 Lab ID: 3157-15-0020578

Date Collected: 06/04/15 07:55
 Collected By: Client

Sample Desc: BZ-6 Mid-Depth

Date Received: 06/04/15 14:45

PWSID: 3130843

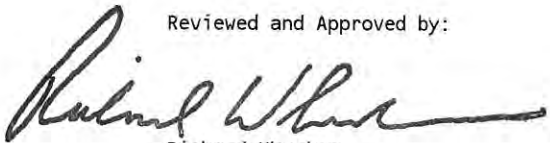
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/05	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	12:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/05	12:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	19:00	JCL
Nitrogen, Nitrate	0.72	mg/L	.05	1	EPA 353.2	06/04	18:54	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:15	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	.25	1	EPA 351.2	06/08	16:26	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	06/09	17:32	ALD
RESIDUES								
Solids, Total Dissolved	63	mg/L	5	1	SM 2540C	06/08	13:30	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/08	13:45	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	06/05	16:00	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)

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 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: 3157-15-0020579

Date Collected: 06/04/15 07:55
 Collected By: Client

Sample Desc: BZ-6 Deep

Date Received: 06/04/15 14:45

PWSID: 3130843

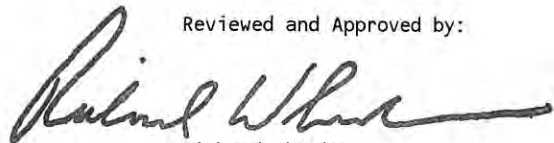
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
 COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/05	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	12:20	HRG
Phosphorus as P, Total	1.40	mg/L	.01	1	SM 4500P-E	06/05	12:10	HRG
 NITROGENS								
Nitrogen, Ammonia	0.05	mg/L	.05	1	D6919-03	06/04	19:14	JCL
Nitrogen, Nitrate	0.65	mg/L	.05	1	EPA 353.2	06/04	18:55	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:16	JCL
Nitrogen, Total Kjeldahl	1.79	mg/L	.25	1	EPA 351.2	06/08	16:27	JCL
 OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	1.6	mg/L	1	1	SM5310 C	06/09	17:49	ALD
 RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	06/08	13:30	TMH
Solids, Total Suspended	51	mg/L	3	1	SM 2540D	06/08	13:45	TMH
 TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	06/09	11:15	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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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: 3157-15-0020580

Date Collected: 06/04/15 08:55
 Collected By: Client

Sample Desc: BZ-7 Surface

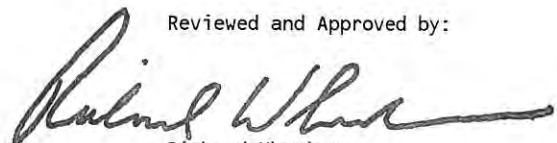
Date Received: 06/04/15 14:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	2	/100ml	2	1	SM 9222D	06/04	16:30	RES
Total Coliform	160	mpn/100ml	1	1	SM 9223B	06/05	11:45	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/05	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	12:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/05	12:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	19:29	JCL
Nitrogen, Nitrate	0.60	mg/L	.05	1	EPA 353.2	06/04	18:56	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:17	JCL
Nitrogen, Total Kjeldahl	0.44	mg/L	.25	1	EPA 351.2	06/08	16:28	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	1.4	mg/L	1	1	SM5310 C	06/09	18:06	ALD
RESIDUES								
Solids, Total Dissolved	59	mg/L	5	1	SM 2540C	06/08	13:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/08	13:45	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	06/09	11:15	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: 06/15/15
 Lab ID: 3157-15-0020580

Date Collected: 06/04/15 08:55
 Collected By: Client

Sample Desc: BZ-7 Surface

Date Received: 06/04/15 14:45

PWSID: 3130843

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

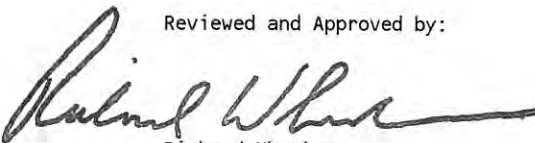
COMMENTS

- 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 06/04/15 at 17:30.

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: 3157-15-0020581

Date Collected: 06/04/15 08:55
 Collected By: Client

Sample Desc: BZ-7 Mid-Depth

Date Received: 06/04/15 14:45

PWSID: 3130843

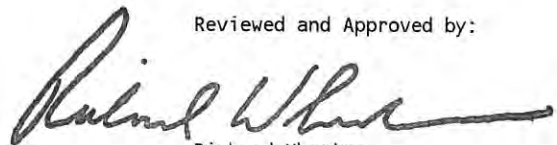
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	06/05	15:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	12:20	HRG
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	06/05	12:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	19:43	JCL
Nitrogen, Nitrate	0.72	mg/L	.05	1	EPA 353.2	06/04	18:59	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:20	JCL
Nitrogen, Total Kjeldahl	0.29	mg/L	.25	1	EPA 351.2	06/08	16:29	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	06/09	18:22	ALD
RESIDUES								
Solids, Total Dissolved	51	mg/L	5	1	SM 2540C	06/08	13:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/08	13:45	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	06/09	11:30	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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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: 3157-15-0020582

Date Collected: 06/04/15 08:55
 Collected By: Client

Sample Desc: BZ-7 Deep

Date Received: 06/04/15 14:45

PWSID: 3130843

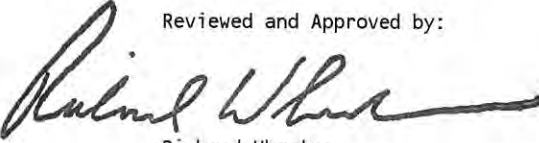
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.07	mg/L	.01	1	SM 4500P-E	06/05	15:10	HRG
Phosphorus as P, Dissolved	0.05	mg/L	.05	1	SM 4500P-E	06/08	12:20	HRG
Phosphorus as P, Total	0.30	mg/L	.01	1	SM 4500P-E	06/05	12:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	19:58	JCL
Nitrogen, Nitrate	0.70	mg/L	.05	1	EPA 353.2	06/04	19:02	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	17:23	JCL
Nitrogen, Total Kjeldahl	0.30	mg/L	.25	1	EPA 351.2	06/08	16:30	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/05	13:30	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	06/09	18:53	ALD
RESIDUES								
Solids, Total Dissolved	59	mg/L	5	1	SM 2540C	06/08	13:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/08	13:45	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	06/09	12:10	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: 006226 Project Leader: rxcw No: 257590
Customer: David Wertz Work Order Description: Beltzville 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: 3 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: BSW

20570

Sample No: 1 Desc: BZ-1 Surface
nh3-n, tkm, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tc, HG

Matrix: o Date: 6/4/15
Time: 0630
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;

20571

Sample No: 2 Desc: BZ-2 Surface
nh3-n, tkm, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tc, HG

Matrix: o Date: 6/2/15
Time: 1025
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;

20572

Sample No: 3 Desc: BZ-3 Surface
nh3-n, tkm, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tc, HG

Matrix: o Date: 6/4/15
Time: 0925
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: 6/4/15 Time: 1130

Received by: [Signature]
Received for laboratory by: [Signature]
Date: 6-4-15 Time: 1445

Sample entered by: [Signature]

Chain of Custody

Account: 3157 Work Order: 006226

Work Order Description: Beltzville Reservoir

Project Leader: rxw

No: 257590

Customer: David Wertz

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

Phone: 703-387-5516 Ext:

Samplers: WDACIK

Total Sampling Time (hours):

Bottle Prep by:

Laboratory Receipt Temp: 3 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: BSW

20573
Sample No: 4 Desc: BZ-3 Mid-Depth

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

^{HL}no2-n, ^{HL}no3-n, ^{HL}d-po4-p, ^{HL}o-po4, ^{HL}bod

20574
Sample No: 5 Desc: BZ-3 Deep

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

^{HL}no2-n, ^{HL}no3-n, ^{HL}d-po4-p, ^{HL}o-po4, ^{HL}bod

20575
Sample No: 6 Desc: BZ-4 Surface

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

^{HL}no2-n, ^{HL}no3-n, ^{HL}d-po4-p, ^{HL}o-po4, ^{HL}bod
^{HL}fc, tc, ^{HL}8

Matrix: o Date: 6/14/15

Time: 0825

- 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: 6/14/15

Time: 0825

- 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: 6/14/15

Time: 1015

- 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: 6/14/15 Time: 1130

Received for laboratory by: [Signature]

Date: 6/14/15 Time: 1445

Sample entered by: [Signature]

Chain of Custody

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

Work Order: 006226
Work Order Description: Beltzville Reservoir

Project Leader: rxw
No: 257590

Phone: 703-387-5516
Ext: WDACIK
Samplers: _____

Remarks: _____
Total Sampling Time (hours): _____
Bottle Prep by: _____
Laboratory Receipt Temp: 3 Deg C. If Temp Unacceptable, On Ice? Y N
Approved BY: BSV

20576

Sample No: 7 Desc: BZ-5 Surface

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

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

VES fc, tc,

20577

Sample No: 8 Desc: BZ-6 Surface

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

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

VES fc, tc,

20578

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

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

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

Matrix: o Date: 6/4/15
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: 6/4/15
Time: 0755

- 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: 6/4/15
Time: 0755

- 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: 6/4/15 Time: 1130

Received by: [Signature]
Received for Laboratory by: [Signature]
Date: 6/4/15 Time: 1445

Sample entered by: [Signature]

bsw
05/11/15 12:11:10 PM

M. J. REIDER ASSOCIATES, INC.

COFC.PRT
Page: 4

Chain of Custody

Account: 3157

Work Order: 006226

Project Leader: rxw

No: 257590

Customer: David Wertz

Work Order Description: Beltzville Reservoir

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:

WAGICK

Laboratory Receipt Temp: 3 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: BSW

20579

Sample No: 10 Desc: BZ-6 Deep

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

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

Matrix: 0

Date:

6/14/15

20580

Sample No: 11 Desc: BZ-7 Surface

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

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

fec, tc,

Matrix: 0

Date:

6/14/15

20581

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

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

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

Matrix: 0

Date:

6/14/15

- 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/Na2SS2O3;

Relinquished by:

Received by:

Received for Laboratory by:

Date: 6/14/15

Time: 1:30

Date: 6-14-15

Time: 1445

Sample entered by:

W

bsw
05/11/15 12:11:10 PM

M. J. REIDER ASSOCIATES, INC.

COFC.PRT
Page: 5

Chain of Custody

Account: 3157

Work Order: 006226

Project Leader: rxw

No: 257590

Customer: David Wertz

Work Order Description: Beltzville Reservoir

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: 3 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: BSW

Sample No: 13 Desc: BZ-7 Deep

Matrix: 0

Date: 6/4/15

Time: 0855

nh3-n, tkm, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
H₂O
H₂O
GW

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

Relinquished by: [Signature]
Date: 6/4/15 Time: 1130

Received by: [Signature]

Received for laboratory by: [Signature]

Date: 6-4-15

Time: 1445

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: 07/13/15
 Lab ID: 3157-15-0023009
 Date Collected: 07/01/15 10:40
 Collected By: Client
 Date Received: 07/01/15 12:30

Sample Desc: BZ-1 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	86	/100ml	2	1	SM 9222D	07/01	15:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/02	12:10	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/02	15:40	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/06	12:35	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/02	12:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	16:37	JCL
Nitrogen, Nitrate	0.64	mg/L	.05	1	EPA 353.2	07/01	17:43	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:54	JCL
Nitrogen, Total Kjeldahl	0.31	mg/L	.25	1	EPA 351.2	07/02	17:04	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	1.3	mg/L	1	1	SM5310 C	07/02	02:07	ALD
RESIDUES								
Solids, Total Dissolved	54	mg/L	5	1	SM 2540C	07/06	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	07/07	09:15	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: 07/13/15
Lab ID: 3157-15-0023009

Date Collected: 07/01/15 10:40
Collected By: Client

Sample Desc: BZ-1 Surface

Date Received: 07/01/15 12:30

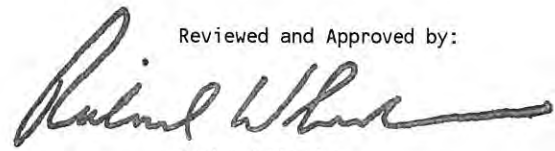
PWSID: 3130843

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 was placed in the incubator on 07/01/15 at 17:45.

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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: 3157-15-0023010

Date Collected: 07/01/15 10:30
 Collected By: Client

Sample Desc: BZ-2 Surface

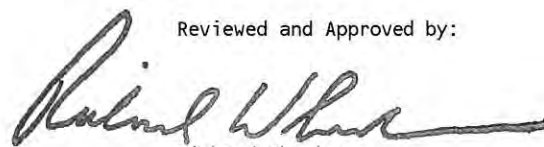
Date Received: 07/01/15 12:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	430	/100mL	2	1	SM 9222D	07/01	15:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/02	12:10	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	07/02	15:40	HRG
Phosphorus as P, Dissolved	0.05	mg/L	.05	1	SM 4500P-E	07/06	12:35	HRG
Phosphorus as P, Total	0.06	mg/L	.01	1	SM 4500P-E	07/02	12:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	16:51	JCL
Nitrogen, Nitrate	0.21	mg/L	.05	1	EPA 353.2	07/01	17:45	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:57	JCL
Nitrogen, Total Kjeldahl	0.30	mg/L	.25	1	EPA 351.2	07/02	17:05	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	3.0	mg/L	1	1	SM5310 C	07/02	02:23	ALD
RESIDUES								
Solids, Total Dissolved	62	mg/L	5	1	SM 2540C	07/06	14:00	TMH
Solids, Total Suspended	11	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	07/07	09:30	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: 07/13/15
 Lab ID: 3157-15-0023010

Date Collected: 07/01/15 10:30
 Collected By: Client

Sample Desc: BZ-2 Surface

Date Received: 07/01/15 12:30

PWSID: 3130843

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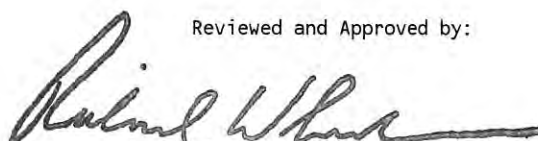
COMMENTS

- 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 was placed in the incubator on 07/01/15 at 17:45.

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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: 3157-15-0023011

Date Collected: 07/01/15 08:25
 Collected By: Client

Sample Desc: BZ-3 Surface

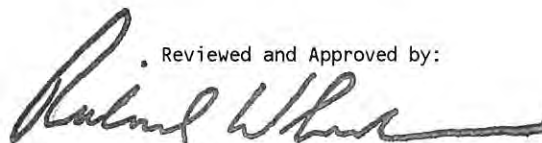
Date Received: 07/01/15 12:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	3	/100mL	2	1	SM 9222D	07/01	15:00	TNS
Total Coliform	210	mpn/100mL	1	1	SM 9223B	07/02	12:10	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	07/02	15:45	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/06	12:35	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	07/02	12:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	17:06	JCL
Nitrogen, Nitrate	0.52	mg/L	.05	1	EPA 353.2	07/01	17:46	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:58	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	.25	1	EPA 351.2	07/02	17:08	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	1.4	mg/L	1	1	SM5310 C	07/02	02:39	ALD
RESIDUES								
Solids, Total Dissolved	46	mg/L	5	1	SM 2540C	07/06	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	07/07	09:30	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: 07/13/15
Lab ID: 3157-15-0023011

Date Collected: 07/01/15 08:25
Collected By: Client

Sample Desc: BZ-3 Surface

Date Received: 07/01/15 12:30

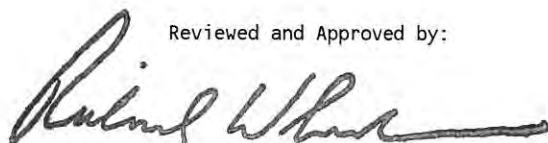
PWSID: 3130843

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 was placed in the incubator on 07/01/15 at 17:45.

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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: 07/13/15
 Lab ID: 3157-15-0023012
 Date Collected: 07/01/15 08:25
 Collected By: Client
 Date Received: 07/01/15 12:30

Sample Desc: BZ-3 Mid-Depth

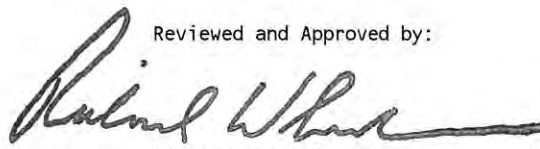
PWSID: 3130843

	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	07/02	15:45	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/06	12:40	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/02	12:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	17:20	JCL
Nitrogen, Nitrate	0.66	mg/L	.05	1	EPA 353.2	07/01	17:47	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:59	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/02	17:09	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	07/02	03:54	ALD
RESIDUES								
Solids, Total Dissolved	66	mg/L	5	1	SM 2540C	07/06	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	07/07	09:30	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.

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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: 3157-15-0023013
 Date Collected: 07/01/15 08:25
 Collected By: Client
 Date Received: 07/01/15 12:30

Sample Desc: BZ-3 Deep

PWSID: 3130843

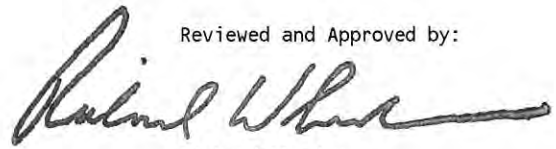
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/02	15:45	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/06	12:40	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	07/02	12:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	18:19	JCL
Nitrogen, Nitrate	0.61	mg/L	.05	1	EPA 353.2	07/01	17:48	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	16:00	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	.25	1	EPA 351.2	07/02	17:10	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	07/02	04:23	ALD
RESIDUES								
Solids, Total Dissolved	53	mg/L	5	1	SM 2540C	07/06	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	07/07	09:45	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:
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Richard Wheeler

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

Date of Report: 07/13/15
 Lab ID: 3157-15-0023014

Date Collected: 07/01/15 10:25
 Collected By: Client

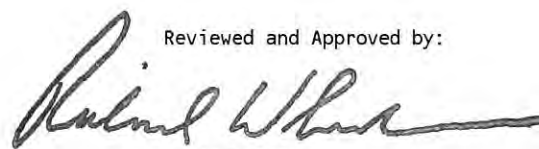
Sample Desc: BZ-4 Surface

Date Received: 07/01/15 12:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	58	/100mL	2	1	SM 9222D	07/01	15:00	TNS
Total Coliform	2400	mpn/100mL	1	1	SM 9223B	07/02	12:10	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/02	15:45	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/06	12:40	HRG
Phosphorus as P, Total	0.04	mg/L	.01	1	SM 4500P-E	07/02	12:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	18:33	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	07/01	17:49	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	16:01	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	07/02	17:13	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	1.1	mg/L	1	1	SM5310 C	07/02	05:08	ALD
RESIDUES								
Solids, Total Dissolved	28	mg/L	5	1	SM 2540C	07/06	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	07/07	09:45	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: 07/13/15
Lab ID: 3157-15-0023014

Date Collected: 07/01/15 10:25
Collected By: Client

Sample Desc: BZ-4 Surface

Date Received: 07/01/15 12:30

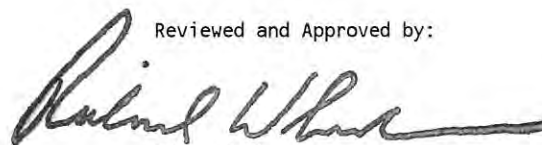
PWSID: 3130843

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 was placed in the incubator on 07/01/15 at 17:45.

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: 3157-15-0023015

Date Collected: 07/01/15 10:10
 Collected By: Client

Sample Desc: BZ-5 Surface

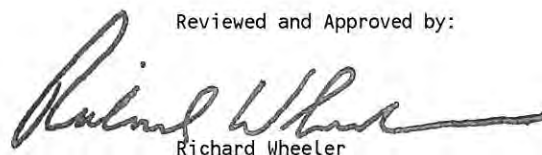
Date Received: 07/01/15 12:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	6500	/100mL	2	1	SM 9222D	07/01	15:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/02	12:10	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/02	15:45	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/06	12:40	HRG
Phosphorus as P, Total	0.10	mg/L	.01	1	SM 4500P-E	07/02	12:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	18:48	JCL
Nitrogen, Nitrate	0.62	mg/L	.05	1	EPA 353.2	07/01	17:50	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	16:02	JCL
Nitrogen, Total Kjeldahl	0.75	mg/L	.25	1	EPA 351.2	07/02	17:14	JCL
OTHER								
Biochemical Oxygen Demand	2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	9.2	mg/L	1	1	SM5310 C	07/02	05:28	ALD
RESIDUES								
Solids, Total Dissolved	67	mg/L	5	1	SM 2540C	07/06	14:00	TMH
Solids, Total Suspended	33	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	07/07	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: 07/13/15
Lab ID: 3157-15-0023015

Date Collected: 07/01/15 10:10
Collected By: Client

Sample Desc: BZ-5 Surface

Date Received: 07/01/15 12:30

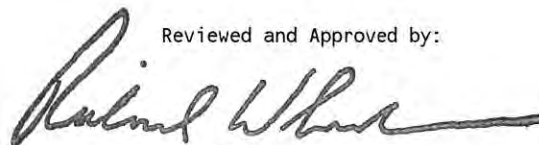
PWSID: 3130843

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 was placed in the incubator on 07/01/15 at 17:45.
- 03 The SM 5210B sample did not have a DO depletion of at least 2 mg/L.

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: 07/13/15
 Lab ID: 3157-15-0023016

Date Collected: 07/01/15 07:50
 Collected By: Client

Sample Desc: BZ-6 Surface

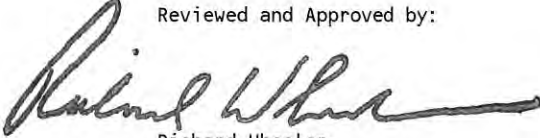
Date Received: 07/01/15 12:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	2	/100mL	2	1	SM 9222D	07/01	15:00	TNS
Total Coliform	110	mpn/100mL	1	1	SM 9223B	07/02	12:10	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/02	15:45	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/06	12:40	HRG
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	07/02	12:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	19:03	JCL
Nitrogen, Nitrate	0.52	mg/L	.05	1	EPA 353.2	07/01	17:51	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	16:03	JCL
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	07/02	17:14	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	1.6	mg/L	1	1	SM5310 C	07/02	05:44	ALD
RESIDUES								
Solids, Total Dissolved	53	mg/L	5	1	SM 2540C	07/06	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	07/07	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: 07/13/15
Lab ID: 3157-15-0023016

Date Collected: 07/01/15 07:50
Collected By: Client

Date Received: 07/01/15 12:30

Sample Desc: BZ-6 Surface

PWSID: 3130843

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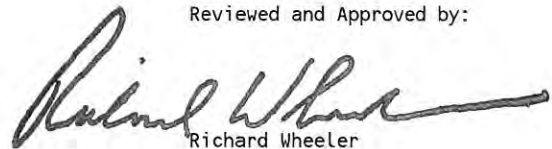
COMMENTS

- 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 07/01/15 at 17:45.

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

Date of Report: 07/13/15
 Lab ID: 3157-15-0023017

Date Collected: 07/01/15 07:50
 Collected By: Client

Sample Desc: BZ-6 Mid-Depth

Date Received: 07/01/15 12:30

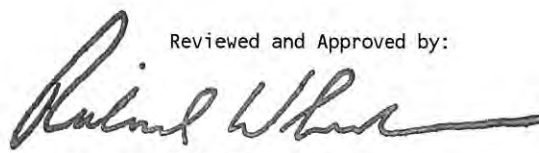
PWSID: 3130843

	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	07/02	15:45	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/06	12:40	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/02	12:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	19:17	JCL
Nitrogen, Nitrate	0.66	mg/L	.05	1	EPA 353.2	07/01	17:54	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	16:06	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/02	17:15	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	07/02	05:59	ALD
RESIDUES								
Solids, Total Dissolved	69	mg/L	5	1	SM 2540C	07/06	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	07/07	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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Attention: David Wertz
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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0023018

Date Collected: 07/01/15 07:50
 Collected By: Client

Sample Desc: BZ-6 Deep

Date Received: 07/01/15 12:30

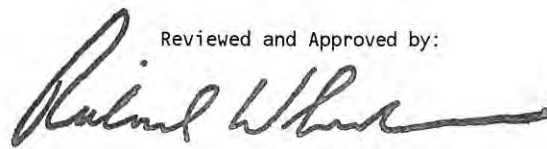
PWSID: 3130843

	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	07/02	15:45	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/06	12:40	HRG
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	07/02	12:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	19:32	JCL
Nitrogen, Nitrate	0.56	mg/L	.05	1	EPA 353.2	07/01	17:57	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	16:09	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	07/02	17:18	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	07/02	06:13	ALD
RESIDUES								
Solids, Total Dissolved	70	mg/L	5	1	SM 2540C	07/06	14:00	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	07/07	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:
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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 07/13/15
 Lab ID: 3157-15-0023019

Date Collected: 07/01/15 08:50
 Collected By: Client

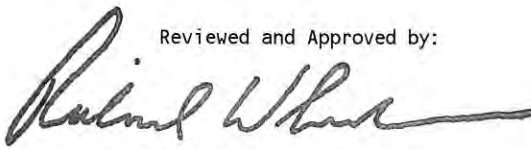
Sample Desc: BZ-7 Surface

Date Received: 07/01/15 12:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	11	/100ml	2	1	SM 9222D	07/01	15:00	TNS
Total Coliform	690	mpn/100ml	1	1	SM 9223B	07/02	12:10	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	07/02	15:50	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/06	12:40	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	07/02	12:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	19:47	JCL
Nitrogen, Nitrate	0.51	mg/L	.05	1	EPA 353.2	07/01	17:58	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	16:10	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	07/02	17:19	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	1.3	mg/L	1	1	SM5310 C	07/02	06:42	ALD
RESIDUES								
Solids, Total Dissolved	68	mg/L	5	1	SM 2540C	07/06	14:20	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	07/07	10:15	HRG

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: 07/13/15
 Lab ID: 3157-15-0023019
 Date Collected: 07/01/15 08:50
 Collected By: Client
 Date Received: 07/01/15 12:30

Sample Desc: BZ-7 Surface

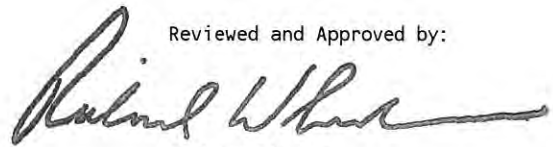
PWSID: 3130843

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 07/01/15 at 17:45.

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

Date of Report: 07/13/15
 Lab ID: 3157-15-0023020
 Date Collected: 07/01/15 08:50
 Collected By: Client
 Date Received: 07/01/15 12:30

Sample Desc: BZ-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	07/02	15:50	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/06	12:45	HRG
Phosphorus as P, Total	0.10	mg/L	.01	1	SM 4500P-E	07/02	12:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	20:01	JCL
Nitrogen, Nitrate	0.55	mg/L	.05	1	EPA 353.2	07/01	17:59	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	16:11	JCL
Nitrogen, Total Kjeldahl	0.62	mg/L	.25	1	EPA 351.2	07/02	17:20	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	6.2	mg/L	1	1	SM5310 C	07/02	07:02	ALD
RESIDUES								
Solids, Total Dissolved	67	mg/L	5	1	SM 2540C	07/06	14:20	TMH
Solids, Total Suspended	27	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	07/07	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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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: 3157-15-0023021
 Date Collected: 07/01/15 08:50
 Collected By: Client
 Date Received: 07/01/15 12:30

Sample Desc: BZ-7 Deep

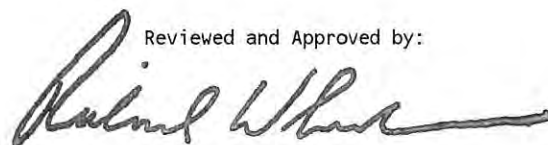
PWSID: 3130843

	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	07/02	15:50	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/06	12:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/02	12:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	20:16	JCL
Nitrogen, Nitrate	0.62	mg/L	.05	1	EPA 353.2	07/01	18:00	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	16:12	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/02	17:21	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	14:20	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	07/02	07:17	ALD
RESIDUES								
Solids, Total Dissolved	66	mg/L	5	1	SM 2540C	07/06	14:20	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/06	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	07/07	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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ejb
05/27/15 8:28:35 AM

M. J. REIDER ASSOCIATES, INC.

CORC.PRT
Page: 1

Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: rkw No: 258471

Customer: David Wertz Work Order Description: Beltzville Reservoir

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

Phone: 703-387-5516 Ext:

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

Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N

Samplers: WACIK

Approved By: ASW

13009

Sample No: 1 Desc: BZ-1 Surface

Matrix: 0 Date: 7/1/15
Time: 1040

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-p04-p, o-p04, bod

23010

Sample No: 2 Desc: BZ-2 Surface

Matrix: 0 Date: 7/1/15
Time: 1030

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-p04-p, o-p04, bod

23011

Sample No: 3 Desc: BZ-3 Surface

Matrix: 0 Date: 7/1/15
Time: 0825

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-p04-p, o-p04, bod

Relinquished by: [Signature]

Received by: [Signature]

Received for laboratory by: [Signature]

Date: 7/1/15 Time: 1115

Date: 7-1-15 Time: 1230

Sample entered by: [Signature]

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05/27/15 8:28:36 AM

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COFC.PRT
Page: 2

Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: rxw No: 258471

Customer: David Wertz Work Order Description: Beltzville Reservoir

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

Phone: 703-387-5516 Ext:

Samplers: WPAcik

Remarks:

Total Sampling Time (hours):

Bottle Prep by:

Laboratory Receipt Temp: 0 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: BSW

23012

Sample No: 4 Desc: BZ-3 Mid-Depth

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

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

Matrix: 0 Date: 7/1/15
Time: 0825

- 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;

23013

Sample No: 5 Desc: BZ-3 Deep

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

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

Matrix: 0 Date: 7/1/15
Time: 0825

- 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;

23014

Sample No: 6 Desc: BZ-4 Surface

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

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

Matrix: 0 Date: 7/1/15
Time: 1025

- 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;

Relinquished by: [Signature]

Received by: [Signature]

Received for laboratory by: [Signature]

Date: 7/1/15 Time: 1115

Date: 7.1.15 Time: 1230

Sample entered by: [Signature]

ejb
05/27/15 8:28:36 AM

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CONF. PRT
Page: 3

Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: rxw No: 258471

Customer: David Wertz Work Order Description: Beltzville 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: 6 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: BSW

Sample No: 7 Desc: BZ-5 Surface

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

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

fc, tc, pk

Sample No: 8 Desc: BZ-6 Surface

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

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

fc, tc, pk

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

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

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

fc, tc, pk

- Matrix: o Date: 7/1/15 Time: 10:10
 - 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: 7/1/15 Time: 07:50
 - 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: 7/1/15 Time: 11:15

Received by: [Signature]

Received for Laboratory by: [Signature]
Date: 7-1-15 Time: 12:30

Sample entered by: [Signature]

ejb
05/27/15 8:28:36 AM

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CORC.PRT
Page: 4

Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: rkw No: 258471

Customer: David Wertz Work Order Description: Beltzville Reservoir

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

Phone: 703-387-5516 Ext:

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

Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N

Samplers: WAGIK

Approved By: PSW

23018

Sample No: 10 Desc: BZ-6 Deep

Matrix: 0 Date: 7/1/15 Time: 0750

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;

23019

Sample No: 11 Desc: BZ-7 Surface

Matrix: 0 Date: 7/1/15 Time: 0850

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

73020

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

Matrix: 0 Date: 7/1/15 Time: 0850

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] Date: 7/1/15 Time: 1115

Received by: [Signature]

Received for Laboratory by: [Signature] Date: 7-1-15 Time: 1230

Sample entered by: [Signature]

ejb
05/27/15 8:28:36 AM

M. J. REIDER ASSOCIATES, INC.

COFC.PRT
Page: 5

Chain of Custody

Account: 3157

Work Order: 006226

Project Leader: rxw

No: 258471

Customer: David Wertz

Remarks:

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

Total Sampling Time (hours):

Bottle Prep by:

Phone: 703-387-5516 Ext:

Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: BSW

Samplers: WACIK

Sample No: 13 Desc: BZ-7 Deep

Matrix: 0

Date:

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

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

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

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

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

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

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

He

Relinquished by: [Signature]

Received by: [Signature]

Received for laboratory by: [Signature]

Date: 7/1/15

Time: 1115

Date: 7-1-15

Time: 1230

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

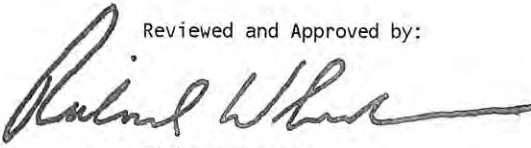
Date of Report: 07/31/15
 Lab ID: 3157-15-0028785
 Date Collected: 07/23/15 11:05
 Collected By: Client
 Date Received: 07/23/15 13:15

Sample Desc: BZ-1 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	21	/100mL	2	1	SM 9222D	07/23	14:30	RES
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/24	11:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:10	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	07/27	14:20	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	20:12	JCL
Nitrogen, Nitrate	0.72	mg/L	.05	1	EPA 353.2	07/23	17:48	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:04	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/27	16:02	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	2.6	mg/L	1	1	SM5310 C	07/27	20:00	ALD
RESIDUES								
Solids, Total Dissolved	42	mg/L	5	1	SM 2540C	07/29	14:00	TMH
Solids, Total Suspended	17	mg/L	3	1	SM 2540D	07/29	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	07/27	14:00	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: 3157-15-0028785

Date Collected: 07/23/15 11:05
Collected By: Client

Date Received: 07/23/15 13:15

Sample Desc: BZ-1 Surface

PWSID: 3130843

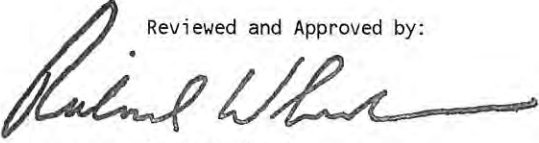
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
--------	------	-----------	---------------	-----------	-----------	-----------	---------

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 07/23/15 at 16:45.

Distribution of Reports:
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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: 3157-15-0028786

Date Collected: 07/23/15 10:50
 Collected By: Client

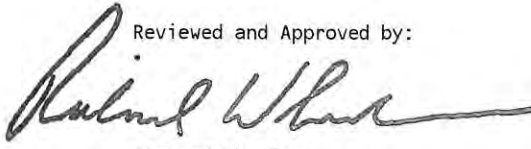
Sample Desc: BZ-2 Surface

Date Received: 07/23/15 13:15

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	15	/100mL	2	1	SM 9222D	07/23	14:30	RES
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/24	11:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:10	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:20	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	20:56	JCL
Nitrogen, Nitrate	0.15	mg/L	.05	1	EPA 353.2	07/23	17:52	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:09	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/27	16:03	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	07/27	20:15	ALD
RESIDUES								
Solids, Total Dissolved	40	mg/L	5	1	SM 2540C	07/29	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/29	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	07/27	14:15	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: 07/31/15
Lab ID: 3157-15-0028786

Date Collected: 07/23/15 10:50
Collected By: Client

Date Received: 07/23/15 13:15

Sample Desc: BZ-2 Surface

PWSID: 3130843

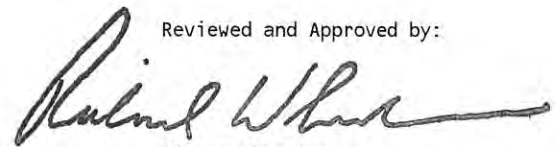
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

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 07/23/15 at 16:45.

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: 3157-15-0028787

Date Collected: 07/23/15 08:35
 Collected By: Client

Sample Desc: BZ-3 Surface

Date Received: 07/23/15 13:15

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100ml	2	1	SM 9222D	07/23	14:30	RES
Total Coliform	190	mpn/100ml	1	1	SM 9223B	07/24	11:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:15	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	07/27	14:20	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	21:11	JCL
Nitrogen, Nitrate	0.37	mg/L	.05	1	EPA 353.2	07/23	17:53	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:10	JCL
Nitrogen, Total Kjeldahl	0.26	mg/L	.25	1	EPA 351.2	07/28	11:00	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	1.6	mg/L	1	1	SM5310 C	07/27	20:30	ALD
RESIDUES								
Solids, Total Dissolved	44	mg/L	5	1	SM 2540C	07/29	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/29	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	07/27	14:15	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: 07/31/15
Lab ID: 3157-15-0028787

Date Collected: 07/23/15 08:35
Collected By: Client

Sample Desc: BZ-3 Surface

Date Received: 07/23/15 13:15

PWSID: 3130843

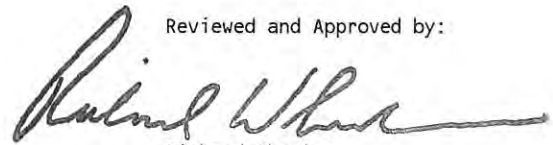
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

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 07/23/15 at 16:45.

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: 3157-15-0028788

Date Collected: 07/23/15 08:35
 Collected By: Client

Sample Desc: BZ-3 Mid-Depth

Date Received: 07/23/15 13:15

PWSID: 3130843

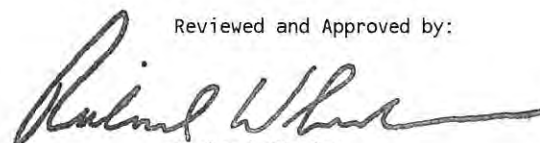
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:20	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	21:25	JCL
Nitrogen, Nitrate	0.68	mg/L	.05	1	EPA 353.2	07/23	17:54	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:11	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/28	11:02	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	1.5	mg/L	1	1	SM5310 C	07/27	20:44	ALD
RESIDUES								
Solids, Total Dissolved	57	mg/L	5	1	SM 2540C	07/29	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/29	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	07/27	14:15	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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 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: 3157-15-0028789

Date Collected: 07/23/15 08:35
 Collected By: Client

Sample Desc: BZ-3 Deep

Date Received: 07/23/15 13:15

PWSID: 3130843

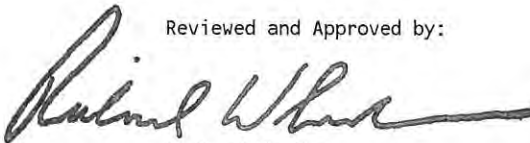
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:20	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	21:40	JCL
Nitrogen, Nitrate	0.61	mg/L	.05	1	EPA 353.2	07/23	17:55	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:12	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/28	11:03	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	1.0	mg/L	1	1	SM5310 C	07/27	20:59	ALD
RESIDUES								
Solids, Total Dissolved	54	mg/L	5	1	SM 2540C	07/29	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/29	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	07/27	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:
 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: 3157-15-0028790

Date Collected: 07/23/15 10:45
 Collected By: Client

Sample Desc: BZ-4 Surface

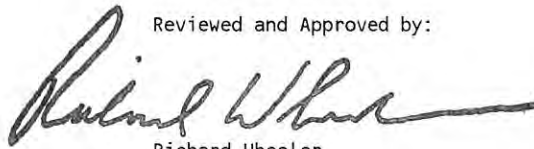
Date Received: 07/23/15 13:15

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	3	/100ml	2	1	SM 9222D	07/23	14:30	RES
Total Coliform	1000	mpn/100ml	1	1	SM 9223B	07/24	11:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/29	11:00	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:20	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	21:55	JCL
Nitrogen, Nitrate	1.39	mg/L	.05	1	EPA 353.2	07/23	17:56	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:12	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/28	11:04	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	07/27	21:14	ALD
RESIDUES								
Solids, Total Dissolved	52	mg/L	5	1	SM 2540C	07/29	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/29	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	07/27	14:30	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: 07/31/15
Lab ID: 3157-15-0028790

Date Collected: 07/23/15 10:45
Collected By: Client

Sample Desc: BZ-4 Surface

Date Received: 07/23/15 13:15

PWSID: 3130843

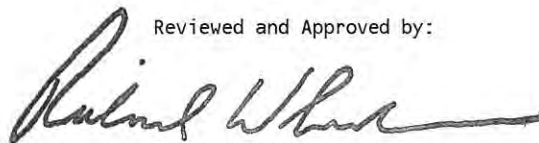
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 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 07/23/15 at 16:45.

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Reviewed and Approved by:

Richard Wheeler

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Attention: David Wertz
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 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028791

Date Collected: 07/23/15 10:30
 Collected By: Client

Sample Desc: BZ-5 Surface

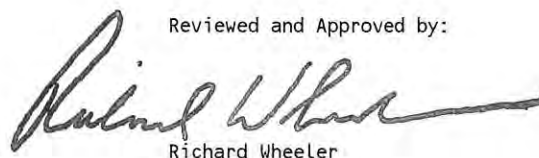
Date Received: 07/23/15 13:15

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	56	/100mL	2	1	SM 9222D	07/23	14:30	RES
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/24	11:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/29	11:00	HRG
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	07/27	14:20	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	22:09	JCL
Nitrogen, Nitrate	1.15	mg/L	.05	1	EPA 353.2	07/23	17:57	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:13	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/28	11:05	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	1.3	mg/L	1	1	SM5310 C	07/27	21:28	ALD
RESIDUES								
Solids, Total Dissolved	65	mg/L	5	1	SM 2540C	07/29	14:00	TMH
Solids, Total Suspended	10	mg/L	3	1	SM 2540D	07/29	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	07/27	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: 07/31/15
Lab ID: 3157-15-0028791
Date Collected: 07/23/15 10:30
Collected By: Client
Date Received: 07/23/15 13:15

Sample Desc: BZ-5 Surface

PWSID: 3130843

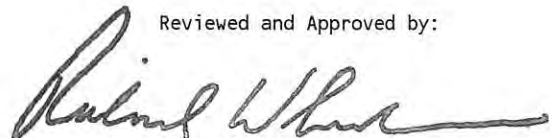
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 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 07/23/15 at 16:45.

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

Reviewed and Approved by:


Richard Wheeler

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 Arlington VA 22201

Date of Report: 07/31/15
 Lab ID: 3157-15-0028792

Date Collected: 07/23/15 07:45
 Collected By: Client

Sample Desc: BZ-6 Surface


Date Received: 07/23/15 13:15

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	07/23	14:30	RES
Total Coliform	440	mpn/100mL	1	1	SM 9223B	07/24	11:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/29	11:00	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	22:24	JCL
Nitrogen, Nitrate	0.38	mg/L	.05	1	EPA 353.2	07/23	17:58	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:14	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/28	11:06	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	1.7	mg/L	1	1	SM5310 C	07/27	21:43	ALD
RESIDUES								
Solids, Total Dissolved	55	mg/L	5	1	SM 2540C	07/29	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/29	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	07/27	14:45	HRG

Distribution of Reports:
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Reviewed and Approved by:


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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: 3157-15-0028792

Date Collected: 07/23/15 07:45
Collected By: Client

Sample Desc: BZ-6 Surface

Date Received: 07/23/15 13:15

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 07/23/15 at 16:45.

Distribution of Reports:
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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: 07/31/15
 Lab ID: 3157-15-0028793
 Date Collected: 07/23/15 07:45
 Collected By: Client
 Date Received: 07/23/15 13:15

Sample Desc: BZ-6 Mid-Depth

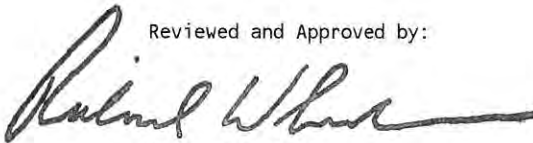
PWSID: 3130843

	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	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/29	11:05	HRG
Phosphorus as P, Total	0.06	mg/L	.01	1	SM 4500P-E	07/27	14:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	22:38	JCL
Nitrogen, Nitrate	0.70	mg/L	.05	1	EPA 353.2	07/23	17:59	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:15	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/28	11:09	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	1.2	mg/L	1	1	SM5310 C	07/27	21:58	ALD
RESIDUES								
Solids, Total Dissolved	63	mg/L	5	1	SM 2540C	07/29	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/29	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	13	mg/L	1	1	SM 2320 B	07/27	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.

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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: 3157-15-0028794

Date Collected: 07/23/15 07:45
 Collected By: Client

Sample Desc: BZ-6 Deep

Date Received: 07/23/15 13:15

PWSID: 3130843

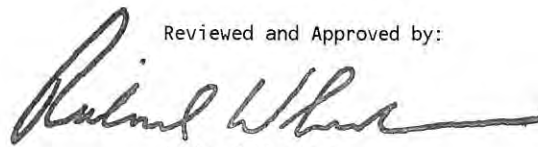
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/29	11:05	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	22:53	JCL
Nitrogen, Nitrate	0.58	mg/L	.05	1	EPA 353.2	07/23	18:00	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:16	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/28	11:10	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	07/27	23:26	ALD
RESIDUES								
Solids, Total Dissolved	64	mg/L	5	1	SM 2540C	07/29	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/29	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	07/27	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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ENVIRONMENTAL TESTING LABORATORY 107 ANGELICA STREET, READING, PA 19611
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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: 07/31/15
 Lab ID: 3157-15-0028795

Date Collected: 07/23/15 09:10
 Collected By: Client

Sample Desc: BZ-7 Surface

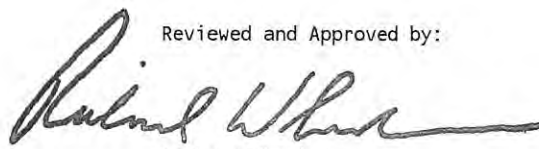
Date Received: 07/23/15 13:15

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	07/23	14:30	RES
Total Coliform	440	mpn/100mL	1	1	SM 9223B	07/24	11:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/29	11:05	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	07/27	14:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	23:08	JCL
Nitrogen, Nitrate	0.24	mg/L	.05	1	EPA 353.2	07/23	18:01	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:17	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/28	11:11	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	1.8	mg/L	1	1	SM5310 C	07/28	08:21	ALD
RESIDUES								
Solids, Total Dissolved	43	mg/L	5	1	SM 2540C	07/29	14:25	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/29	14:25	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/L	1	1	SM 2320 B	07/27	15:00	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: 07/31/15
Lab ID: 3157-15-0028795
Date Collected: 07/23/15 09:10
Collected By: Client
Date Received: 07/23/15 13:15

Sample Desc: BZ-7 Surface

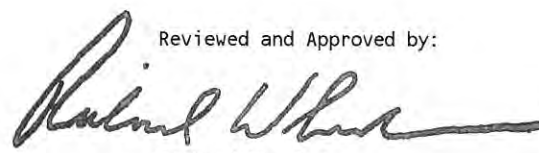
PWSID: 3130843

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 07/23/15 at 16:45.

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: 3157-15-0028796

Date Collected: 07/23/15 09:10
 Collected By: Client

Sample Desc: BZ-7 Mid-Depth

Date Received: 07/23/15 13:15

PWSID: 3130843

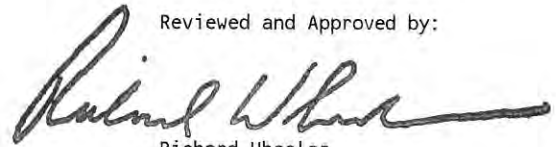
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/29	11:05	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/24	00:06	JCL
Nitrogen, Nitrate	0.82	mg/L	.05	1	EPA 353.2	07/23	18:06	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:22	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/28	11:12	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	1.7	mg/L	1	1	SM5310 C	07/28	08:06	ALD
RESIDUES								
Solids, Total Dissolved	66	mg/L	5	1	SM 2540C	07/29	14:25	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/29	14:25	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	07/27	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.

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: 3157-15-0028797

Date Collected: 07/23/15 09:10
 Collected By: Client

Sample Desc: BZ-7 Deep

Date Received: 07/23/15 13:15

PWSID: 3130843

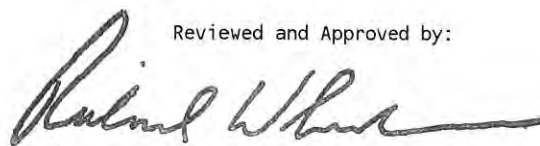
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	15:28	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/29	11:05	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	07/27	14:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/24	00:21	JCL
Nitrogen, Nitrate	0.69	mg/L	.05	1	EPA 353.2	07/23	18:07	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	16:23	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/28	11:13	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/24	10:30	EMW
Total Organic Carbon	1.7	mg/L	1	1	SM5310 C	07/28	08:37	ALD
RESIDUES								
Solids, Total Dissolved	54	mg/L	5	1	SM 2540C	07/29	14:25	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/29	14:25	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	07/27	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.

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: 006226
Customer: David Wertz Work Order Description: Beltzville Reservoir

No: 260281

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: 6 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: Rxw

Remarks:

Sample No: 1 Desc: BZ-1 Surface

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

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

28785

Sample No: 2 Desc: BZ-2 Surface

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

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

28786

Sample No: 3 Desc: BZ-3 Surface

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

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

28787

Matrix: 0 Date: 7/23/15
Time: 1105

- 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: 7/23/15
Time: 1050

- 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: 7/23/15
Time: 0835

- 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: 7/23/15 Time: 1145

Received for laboratory by: [Signature]

Date: 7/23/15 Time: 1315

Sample entered by: WTC

Chain of Custody

Account: 3157

Work Order: 006226

Project Leader: rxw

No: 260281

Customer: David Wertz

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: 6 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: rxw

Remarks:

Sample No: 4 Desc: BZ-3 Mid-Depth

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

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

Sample No: 5 Desc: BZ-3 Deep

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

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

Sample No: 6 Desc: BZ-4 Surface

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

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

Matrix: 0 Date: 7/23/15

Time: 0835

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: 0 Date: 7/23/15

Time: 0835

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: 0 Date: 7/23/15

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;

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

Received for laboratory by: [Signature]

Date: 7/23/15 Time: 1145

Date: 7/23/15 Time: 1315

Sample entered by: [Signature]

28789

28789

28790

Chain of Custody

Account: 3157 Work Order: 006226
Customer: David Wertz Work Order Description: Beltzville Reservoir

No: 260281

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: 6 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: RW

Sample No: 7 Desc: BZ-5 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tc, pin

Sample No: 8 Desc: BZ-6 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tc, pin

Sample No: 9 Desc: BZ-6 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tc, pin

Matrix: 0 Date: 7/23/15
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;

Matrix: 0 Date: 7/23/15
Time: 0745
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: 7/23/15
Time: 0745
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: 7/23/15 Time: 1145

Received for laboratory by: [Signature]
Date: 7/23/15 Time: 1315

Sample entered by: MR

Chain of Custody

Account: 3157 Work Order: 006226
Customer: David Wertz Work Order Description: Beltzville Reservoir

No: 260281

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: 6 Deg C, If Temp Unacceptable, On Ice? Y N
Approved By: RW

Remarks: _____

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

Matrix: o Date: 7/23/15
Time: 0745

- 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: BZ-7 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

Matrix: o Date: 7/23/15
Time: 0910

- 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: 12 Desc: BZ-7 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,

Matrix: o Date: 7/23/15
Time: 0910

- 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: 7/23/15 Time: 1145

Received for laboratory by: [Signature]
Date: 7/27/15 Time: 1315

Sample entered by: MJ

Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: rxw No: 260281
Customer: David Wertz Work Order Description: Beltzville 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: 6 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: [Signature]

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

Matrix: o Date: 7/23/15
Time: 0910
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: 7/23/15 Time: 1145

Date: 7/23/15 Time: 1315

Sample entered by: WAC

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: 3157-15-0032805

Date Collected: 08/13/15 10:30
 Collected By: Client

Sample Desc: BZ-1 Surface

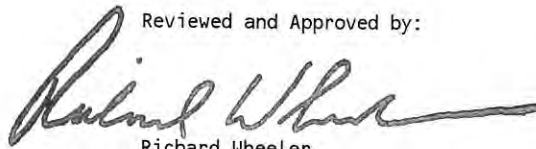
Date Received: 08/13/15 14:40

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	30	/100mL	2	1	SM 9222D	08/13	15:30	TNS
Total Coliform	1300	mpn/100mL	1	1	SM 9223B	08/14	11:30	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/14	15:15	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/19	13:40	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/18	13:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	15:07	JCL
Nitrogen, Nitrate	0.75	mg/L	.05	1	EPA 353.2	08/13	17:24	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	16:07	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	08/24	16:17	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	1.8	mg/L	1	1	SM5310 C	08/17	21:31	ALD
RESIDUES								
Solids, Total Dissolved	43	mg/L	5	1	SM 2540C	08/18	13:15	TMH
Solids, Total Suspended	137	mg/L	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	08/17	11:30	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: 3157-15-0032805

Date Collected: 08/13/15 10:30
Collected By: Client

Sample Desc: BZ-1 Surface

Date Received: 08/13/15 14:40

PWSID: 3130843

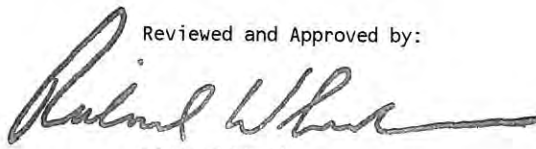
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 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 placed in the incubator on 08/13/15 at 16:40

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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: 08/28/15
 Lab ID: 3157-15-0032806

Date Collected: 08/13/15 10:45
 Collected By: Client

Sample Desc: BZ-2 Surface

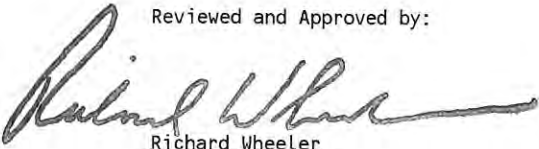
Date Received: 08/13/15 14:40

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	38	/100ml	2	1	SM 9222D	08/13	15:30	TNS
Total Coliform	2000	mpn/100ml	1	1	SM 9223B	08/14	11:30	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/14	15:15	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/19	13:40	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	08/18	13:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	15:22	JCL
Nitrogen, Nitrate	0.22	mg/L	.05	1	EPA 353.2	08/13	17:29	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	16:12	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	08/24	16:18	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	08/17	21:46	ALD
RESIDUES								
Solids, Total Dissolved	38	mg/L	5	1	SM 2540C	08/18	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	08/17	11:30	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: 08/28/15
 Lab ID: 3157-15-0032806

Date Collected: 08/13/15 10:45
 Collected By: Client

Sample Desc: BZ-2 Surface

Date Received: 08/13/15 14:40

PWSID: 3130843

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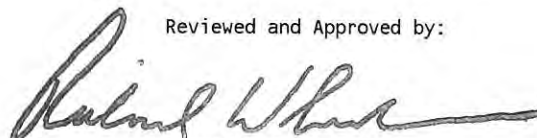
COMMENTS

- 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 placed in the incubator on 08/13/15 at 16:40

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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: 3157-15-0032807

Date Collected: 08/13/15 08:30
 Collected By: Client

Sample Desc: BZ-3 Surface

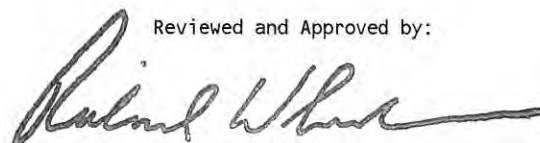
Date Received: 08/13/15 14:40

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	5	/100ml	2	1	SM 9222D	08/13	15:30	TNS
Total Coliform	250	mpn/100ml	1	1	SM 9223B	08/14	11:30	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/14	15:15	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	08/19	13:40	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	08/18	13:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/13	15:37	JCL
Nitrogen, Nitrate	0.26	mg/l	.05	1	EPA 353.2	08/13	17:30	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:13	JCL
Nitrogen, Total Kjeldahl	0.30	mg/l	.25	1	EPA 351.2	08/24	16:19	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	1.6	mg/l	1	1	SM5310 C	08/17	22:29	ALD
RESIDUES								
Solids, Total Dissolved	39	mg/l	5	1	SM 2540C	08/18	13:15	TMH
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	13	mg/l	1	1	SM 2320 B	08/17	12:15	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: 08/28/15
Lab ID: 3157-15-0032807

Date Collected: 08/13/15 08:30
Collected By: Client

Sample Desc: BZ-3 Surface

Date Received: 08/13/15 14:40

PWSID: 3130843

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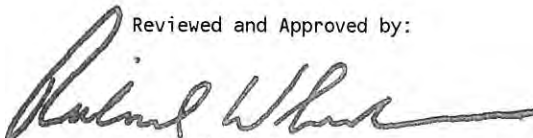
COMMENTS

- 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 placed in the incubator on 08/13/15 at 16:40

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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: 3157-15-0032808

Date Collected: 08/13/15 08:30
 Collected By: Client

Sample Desc: BZ-3 Mid-Depth

Date Received: 08/13/15 14:40

PWSID: 3130843

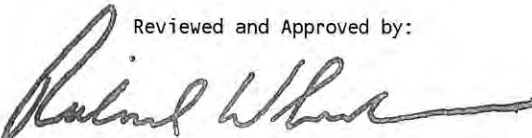
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.04	mg/L	.01	1	SM 4500P-E	08/14	15:20	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/19	13:40	HRG
Phosphorus as P, Total	0.04	mg/L	.01	1	SM 4500P-E	08/18	13:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	15:51	JCL
Nitrogen, Nitrate	0.83	mg/L	.05	1	EPA 353.2	08/13	17:30	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	16:14	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	08/24	16:24	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	1.7	mg/L	1	1	SM5310 c	08/17	23:15	ALD
RESIDUES								
Solids, Total Dissolved	43	mg/L	5	1	SM 2540C	08/18	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	08/17	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.

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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: 3157-15-0032809

Date Collected: 08/13/15 08:30
 Collected By: Client

Sample Desc: BZ-3 Deep

Date Received: 08/13/15 14:40

PWSID: 3130843

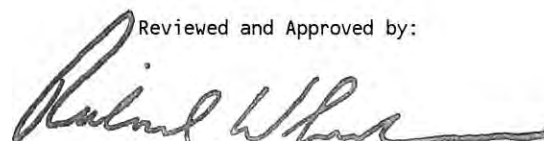
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.06	mg/L	.01	1	SM 4500P-E	08/14	15:20	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/19	13:40	HRG
Phosphorus as P, Total	0.06	mg/L	.01	1	SM 4500P-E	08/18	13:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	16:06	JCL
Nitrogen, Nitrate	0.67	mg/L	.05	1	EPA 353.2	08/13	17:31	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	16:15	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	08/24	16:25	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	08/17	23:30	ALD
RESIDUES								
Solids, Total Dissolved	66	mg/L	5	1	SM 2540C	08/18	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	08/17	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.

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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: 3157-15-0032810

Date Collected: 08/13/15 10:05
 Collected By: Client

Sample Desc: BZ-4 Surface

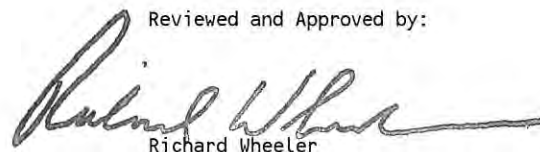
Date Received: 08/13/15 14:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	20	/100mL	2	1	SM 9222D	08/13	16:00	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	08/14	11:30	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/14	15:20	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/19	13:45	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	08/18	13:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	16:21	JCL
Nitrogen, Nitrate	0.27	mg/L	.05	1	EPA 353.2	08/13	17:32	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	16:16	JCL
Nitrogen, Total Kjeldahl	0.43	mg/L	.25	1	EPA 351.2	08/27	13:58	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	1.7	mg/L	1	1	SM5310 C	08/17	23:45	ALD
RESIDUES								
Solids, Total Dissolved	29	mg/L	5	1	SM 2540C	08/18	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	08/17	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: 08/28/15
Lab ID: 3157-15-0032810

Date Collected: 08/13/15 10:05
Collected By: Client

Sample Desc: BZ-4 Surface

Date Received: 08/13/15 14:30

PWSID: 3130843

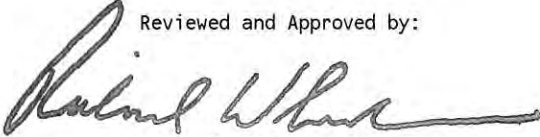
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 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 08/13/15 at 16:40

Distribution of Reports:
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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: 08/28/15
 Lab ID: 3157-15-0032811

Date Collected: 08/13/15 09:50
 Collected By: Client

Sample Desc: BZ-5 Surface

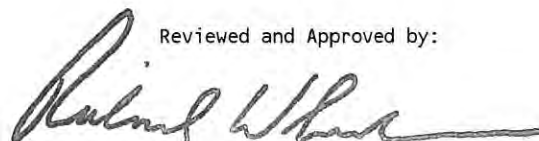
Date Received: 08/13/15 14:40

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	440	/100mL	2	1	SM 9222D	08/13	16:00	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	08/14	11:30	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/14	15:20	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/19	13:45	HRG
Phosphorus as P, Total	0.07	mg/L	.01	1	SM 4500P-E	08/18	13:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	16:35	JCL
Nitrogen, Nitrate	1.17	mg/L	.05	1	EPA 353.2	08/13	17:33	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	16:17	JCL
Nitrogen, Total Kjeldahl	0.34	mg/L	.25	1	EPA 351.2	08/27	14:01	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	1.8	mg/L	1	1	SM5310 C	08/19	23:14	ALD
RESIDUES								
Solids, Total Dissolved	31	mg/L	5	1	SM 2540C	08/18	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	19	mg/L	1	1	SM 2320 B	08/17	12:15	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: 3157-15-0032811

Date Collected: 08/13/15 09:50
Collected By: Client

Sample Desc: BZ-5 Surface

Date Received: 08/13/15 14:40

PWSID: 3130843

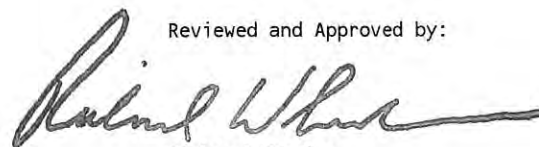
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
--------	------	--------------	------------------	-----------	--------------	--------------	---------

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 placed in the incubator on 08/13/15 at 16:40

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: 3157-15-0032812

Date Collected: 08/13/15 07:45
 Collected By: Client

Sample Desc: BZ-6 Surface

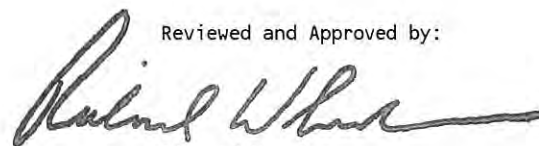
Date Received: 08/13/15 14:40

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	5	/100ml	2	1	SM 9222D	08/13	16:00	TNS
Total Coliform	460	mpn/100ml	1	1	SM 9223B	08/14	11:30	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	08/14	15:20	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/19	13:45	HRG
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	08/18	13:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	16:50	JCL
Nitrogen, Nitrate	0.27	mg/L	.05	1	EPA 353.2	08/13	17:34	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	16:18	JCL
Nitrogen, Total Kjeldahl	0.35	mg/L	.25	1	EPA 351.2	08/27	14:02	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	1.5	mg/L	1	1	SM5310 C	08/19	23:42	ALD
RESIDUES								
Solids, Total Dissolved	43	mg/L	5	1	SM 2540C	08/18	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	08/17	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: 08/28/15
Lab ID: 3157-15-0032812

Date Collected: 08/13/15 07:45
Collected By: Client

Sample Desc: BZ-6 Surface

Date Received: 08/13/15 14:40

PWSID: 3130843

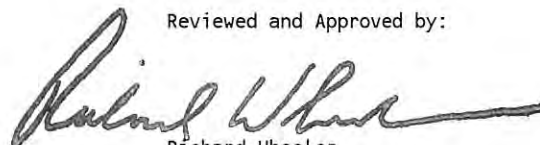
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2S04 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample placed in the incubator on 08/13/15 at 16:40

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

Date of Report: 08/28/15
 Lab ID: 3157-15-0032813

Date Collected: 08/13/15 07:45
 Collected By: Client

Sample Desc: BZ-6 Mid-Depth

Date Received: 08/13/15 14:40

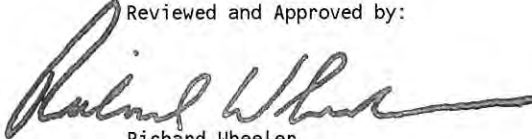
PWSID: 3130843

	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	08/14	15:20	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/19	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/18	13:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	17:04	JCL
Nitrogen, Nitrate	0.76	mg/L	.05	1	EPA 353.2	08/13	17:35	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	16:19	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	08/27	14:03	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	1.5	mg/L	1	1	SM5310 C	08/19	13:58	ALD
RESIDUES								
Solids, Total Dissolved	65	mg/L	5	1	SM 2540C	08/18	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	08/17	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.

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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: 3157-15-0032814

Date Collected: 08/13/15 07:45
 Collected By: Client

Sample Desc: BZ-6 Deep

Date Received: 08/13/15 14:40

PWSID: 3130843

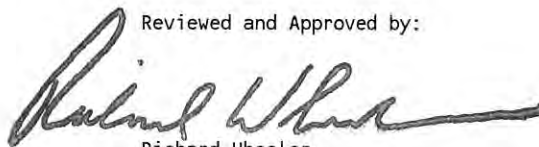
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/14	15:25	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/19	13:45	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	08/18	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	17:09	JCL
Nitrogen, Nitrate	0.54	mg/L	.05	1	EPA 353.2	08/13	17:36	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	16:20	JCL
Nitrogen, Total Kjeldahl	0.29	mg/L	.25	1	EPA 351.2	08/27	14:04	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	1.1	mg/L	1	1	SM5310 C	08/19	14:42	ALD
RESIDUES								
Solids, Total Dissolved	58	mg/L	5	1	SM 2540C	08/18	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	08/17	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)

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: 3157-15-0032815

Date Collected: 08/13/15 08:55
 Collected By: Client

Sample Desc: BZ-7 Surface

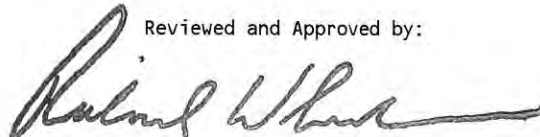
Date Received: 08/13/15 14:40

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	11	/100mL	2	1	SM 9222D	08/13	16:00	TNS
Total Coliform	1400	mpn/100mL	1	1	SM 9223B	08/14	11:30	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/14	15:25	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/19	13:50	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	08/18	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	18:17	JCL
Nitrogen, Nitrate	0.21	mg/L	.05	1	EPA 353.2	08/13	17:37	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	16:21	JCL
Nitrogen, Total Kjeldahl	0.47	mg/L	.25	1	EPA 351.2	08/27	14:05	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	1.7	mg/L	1	1	SM5310 C	08/19	14:57	ALD
RESIDUES								
Solids, Total Dissolved	42	mg/L	5	1	SM 2540C	08/18	13:40	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	08/17	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: 08/28/15
Lab ID: 3157-15-0032815

Date Collected: 08/13/15 08:55
Collected By: Client

Sample Desc: BZ-7 Surface

Date Received: 08/13/15 14:40

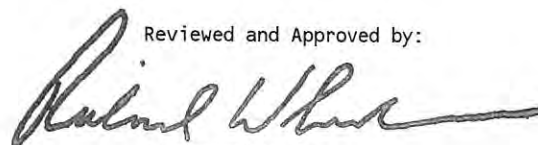
PWSID: 3130843

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 placed in the incubator on 08/13/15 at 16:40

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: 08/28/15
 Lab ID: 3157-15-0032816

Date Collected: 08/13/15 08:55
 Collected By: Client

Sample Desc: BZ-7 Mid-Depth

Date Received: 08/13/15 14:40

PWSID: 3130843

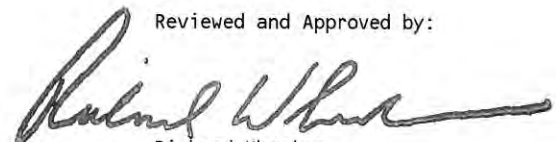
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/14	15:25	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/19	13:50	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	08/18	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	18:32	JCL
Nitrogen, Nitrate	0.45	mg/L	.05	1	EPA 353.2	08/13	17:42	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	16:26	JCL
Nitrogen, Total Kjeldahl	0.30	mg/L	.25	1	EPA 351.2	08/27	14:08	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	2.3	mg/L	1	1	SM5310 C	08/19	15:26	ALD
RESIDUES								
Solids, Total Dissolved	43	mg/L	5	1	SM 2540C	08/18	13:40	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	08/17	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)

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: 3157-15-0032817

Date Collected: 08/13/15 08:55
 Collected By: Client

Sample Desc: BZ-7 Deep

Date Received: 08/13/15 14:40

PWSID: 3130843

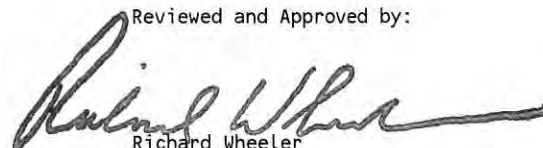
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/14	15:25	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/19	13:50	HRG
Phosphorus as P, Total	0.06	mg/L	.01	1	SM 4500P-E	08/18	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	18:47	JCL
Nitrogen, Nitrate	0.76	mg/L	.05	1	EPA 353.2	08/13	17:43	JCL
Nitrogen, Nitrite	0.06	mg/L	.05	1	EPA 353.2	08/13	16:27	JCL
Nitrogen, Total Kjeldahl	0.26	mg/L	.25	1	EPA 351.2	08/27	14:09	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	17:30	ALD
Total Organic Carbon	1.8	mg/L	1	1	SM5310 C	08/19	15:42	ALD
RESIDUES								
Solids, Total Dissolved	63	mg/L	5	1	SM 2540C	08/18	13:40	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/18	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	13	mg/L	1	1	SM 2320 B	08/17	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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 Richard Wheeler

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Chain of Custody

No: 261505

Project Leader: rxw

Work Order: 006226
Work Order Description: Beltzville Reservoir

Account: 3157

Customer: David Wertz

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: 7 Deg C If Temp Unacceptable, On Ice? Y N

Approved By: RAC

Remarks:

Sample No: 1 Desc: BZ-1 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

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

Sample No: 2 Desc: BZ-2 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

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

Sample No: 3 Desc: BZ-3 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

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

Matrix: 0 Date: 8/13/15
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;

Matrix: 0 Date: 8/13/15
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: 8/13/15
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;

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

Received for Laboratory by: _____

Date: 8/13/15 Time: 1130
1115

Date: 8/13/15 Time: 1440

Rafael Mujica

Sample entered by: WZ

Chain of Custody

Account: 3157

Work Order: 006226
Work Order Description: Beltzville Reservoir

Project Leader: rxw

No: 261505

Customer: David Wertz

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: 7 Deg C If Temp Unacceptable, On Ice? Y N

Approved By: [Signature]

- Sample No: 4 Desc: BZ-3 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tc, TMS
- Sample No: 5 Desc: BZ-3 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tc, TMS
- Sample No: 6 Desc: BZ-4 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tc, TMS

Matrix: 0 Date: 8/13/15
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: 0 Date: 8/13/15
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;

Matrix: 0 Date: 8/13/15
Time: 1105

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: _____

Date: 8/12/15 Time: 1130

Date: 8/12/15 Time: _____

1115

Sample entered by: [Signature]

[Signature]
Rafael Quijada
Date: 1446

Chain of Custody

Account: 3157 Work Order: 006226
Customer: David Wertz Work Order Description: Beltzville Reservoir
Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

No: 261505

Project Leader: rxw

Remarks:

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

Laboratory Receipt Temp: 7 Deg C, If Temp Unacceptable, On Ice? Y N

Approved By: [Signature]

Sample No: 7 Desc: BZ-5 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tc, TK

Matrix: 0 Date: 8/13/15
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;

Sample No: 8 Desc: BZ-6 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tc, TK

Matrix: 0 Date: 8/13/15
Time: 0745
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: 9 Desc: BZ-6 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tc, TK

Matrix: 0 Date: 8/13/15
Time: 0745
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: _____

Date: 8/13/15 Time: 1130

Date: 8/13/15 Time: 1440

1115

Sample entered by: [Signature]

[Signature]
M. J. REIDER ASSOCIATES, INC.

Chain of Custody

Account: 3157 Work Order: 006226
Customer: David Wertz Work Order Description: Beltzville Reservoir
Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

No: 261505

Project Leader: rxw

Remarks:

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

Phone: 703-387-5516 Ext: _____

Laboratory Receipt Temp: 7 Deg C If Temp Unacceptable, On Ice? Y N
Approved By: PAE

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

Matrix: o Date: 8/13/15
Time: 0745

- 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: BZ-7 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

Matrix: o Date: 8/13/15
Time: 0855

- 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: 12 Desc: BZ-7 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,

Matrix: o Date: 8/13/15
Time: 0855

- 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: 8/13/15 Time: 1130

Received for laboratory by: [Signature]
Date: 8/13/15 Time: 1440

Rafael Quijada

Sample entered by: [Signature]

M. J. REIDER ASSOCIATES, INC.

Jlg
07/17/15 3:15:38 PM

Chain of Custody

No: 261505

Project Leader: rxw

Work Order: 006226

Work Order Description: Beltzville Reservoir

Customer: David Wertz

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

Phone: 703-387-5516 Ext:

Samplers: WACIK

Remarks: None
8/13/15

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

Laboratory Receipt Temp: 77 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: [Signature]

Sample No: 13 Desc: EZ-7 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
du
no2-n, no3-n, d-po4-p, o-po4, bod,
HTG HA

Matrix: 0
Date: 8/13/15
Time: 0855

- 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: Rafael Quijada

Date: 8/13/15

Time: 1:30

Date: 8/13/15

Time: 1440

Sample entered by: MTL

[Signature]
Rafael Quijada



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: 3157-15-0036178

Date Collected: 08/31/15 11:50
 Collected By: Client

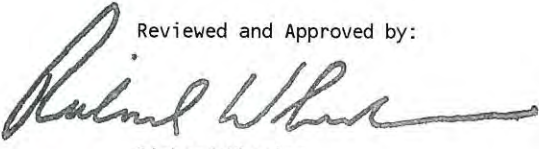
Sample Desc: BZ-1 Surface

Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	13	/100mL	2	1	SM 9222D	08/31	14:30	PLW
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	09/01	11:40	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/01	16:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/01	14:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/01	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/03	12:46	JCL
Nitrogen, Nitrate	0.70	mg/L	.05	1	EPA 353.2	09/02	15:24	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/01	14:38	JCL
Nitrogen, Total Kjeldahl	0.30	mg/L	.25	1	EPA 351.2	09/08	16:07	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	1.8	mg/L	1	1	SM5310 C	09/02	22:37	ALD
RESIDUES								
Solids, Total Dissolved	83	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	09/01	14:30	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: 09/11/15
Lab ID: 3157-15-0036178

Date Collected: 08/31/15 11:50
Collected By: Client

Sample Desc: BZ-1 Surface

Date Received: 08/31/15 13:45

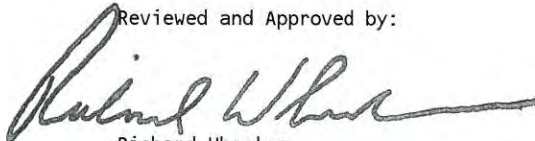
PWSID: 3130843

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 08/31/15 at 16:00.
- 03 The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.
- 04 The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.

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: 09/11/15
 Lab ID: 3157-15-0036179

Date Collected: 08/31/15 11:35
 Collected By: Client

Sample Desc: BZ-2 Surface

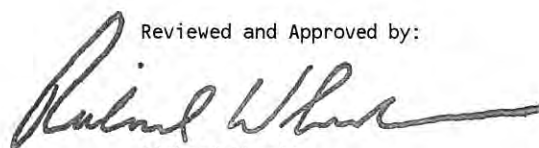
Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	16	/100mL	2	1	SM 9222D	08/31	14:30	PLW
Total Coliform	980	mpn/100mL	1	1	SM 9223B	09/01	11:40	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/01	16:15	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/01	14:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/01	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/03	13:01	JCL
Nitrogen, Nitrate	0.14	mg/L	.05	1	EPA 353.2	09/02	15:27	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/01	14:41	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	09/08	16:10	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	09/02	22:52	ALD
RESIDUES								
Solids, Total Dissolved	67	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	09/01	14:45	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: 09/11/15
 Lab ID: 3157-15-0036179
 Date Collected: 08/31/15 11:35
 Collected By: Client
 Date Received: 08/31/15 13:45

Sample Desc: BZ-2 Surface

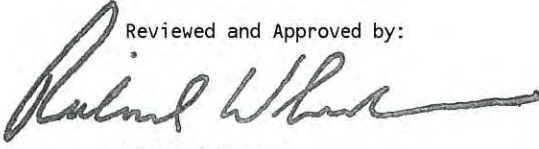
PWSID: 3130843

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 08/31/15 at 16:00.
- 03 The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.
- 04 The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.

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: 09/11/15
 Lab ID: 3157-15-0036180

Date Collected: 08/31/15 09:10
 Collected By: Client

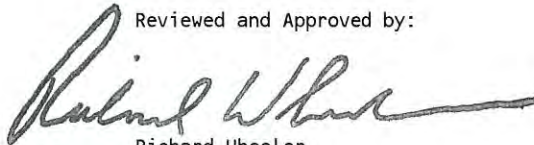
Sample Desc: BZ-3 Surface

Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	2	/100mL	2	1	SM 9222D	08/31	14:30	PLW
Total Coliform	360	mpn/100mL	1	1	SM 9223B	09/01	11:40	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	09/01	16:15	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/01	14:20	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	09/01	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/03	13:15	JCL
Nitrogen, Nitrate	0.14	mg/L	.05	1	EPA 353.2	09/02	15:28	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/01	14:42	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	.25	1	EPA 351.2	09/08	16:11	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	1.6	mg/L	1	1	SM5310 C	09/02	23:07	ALD
RESIDUES								
Solids, Total Dissolved	29	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	09/01	14:45	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: 09/11/15
Lab ID: 3157-15-0036180

Date Collected: 08/31/15 09:10
Collected By: Client

Date Received: 08/31/15 13:45

Sample Desc: BZ-3 Surface

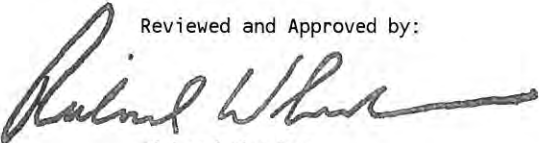
PWSID: 3130843

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 08/31/15 at 16:00.
- 03 The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.
- 04 The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.

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: 09/11/15
 Lab ID: 3157-15-0036181

Date Collected: 08/31/15 09:10
 Collected By: Client

Sample Desc: BZ-3 Mid-Depth

Date Received: 08/31/15 13:45

PWSID: 3130843

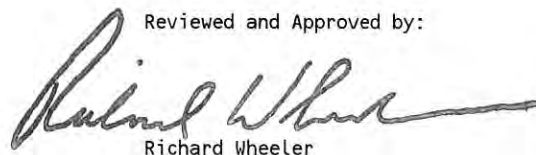
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	09/01	16:15	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/01	14:20	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	09/01	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/03	13:30	JCL
Nitrogen, Nitrate	0.71	mg/L	.05	1	EPA 353.2	09/02	15:29	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/01	14:43	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	09/08	16:12	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	1.0	mg/L	1	1	SM5310 C	09/02	23:22	ALD
RESIDUES								
Solids, Total Dissolved	70	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	09/01	15:00	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)

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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: 3157-15-0036181

Date Collected: 08/31/15 09:10
Collected By: Client

Sample Desc: BZ-3 Mid-Depth

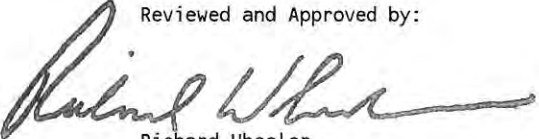
Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
02	The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.							
03	The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.							
04	The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.							
05	The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.							

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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: 3157-15-0036182

Date Collected: 08/31/15 09:10
 Collected By: Client

Sample Desc: BZ-3 Deep

Date Received: 08/31/15 13:45

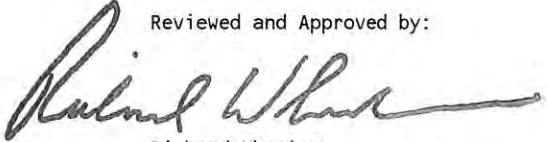
PWSID: 3130843

	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	09/01	16:15	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	09/01	14:20	HRG
Phosphorus as P, Total	0.03	mg/l	.01	1	SM 4500P-E	09/01	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/03	13:45	JCL
Nitrogen, Nitrate	0.55	mg/l	.05	1	EPA 353.2	09/02	15:30	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/01	14:44	JCL
Nitrogen, Total Kjeldahl	0.33	mg/l	.25	1	EPA 351.2	09/08	16:13	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	<1	mg/l	1	1	SM5310 C	09/03	00:38	ALD
RESIDUES								
Solids, Total Dissolved	71	mg/l	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	4	mg/l	3	1	SM 2540D	09/04	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/l	1	1	SM 2320 B	09/01	15:00	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:
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Reviewed and Approved by:

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

Date of Report: 09/11/15
 Lab ID: 3157-15-0036182

Date Collected: 08/31/15 09:10
 Collected By: Client

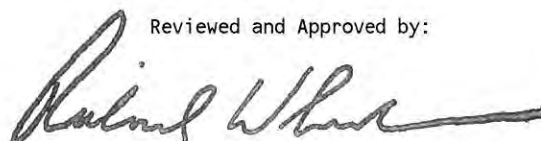
Sample Desc: BZ-3 Deep

Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
02	The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.							
03	The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.							

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: 09/11/15
 Lab ID: 3157-15-0036183

Date Collected: 08/31/15 11:20
 Collected By: Client

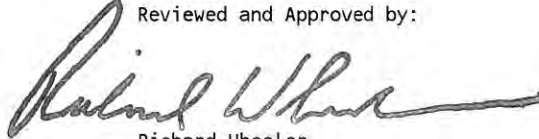
Sample Desc: BZ-4 Surface

Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	11	/100ml	2	1	SM 9222D	08/31	14:30	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	09/01	11:40	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/01	16:15	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/01	14:20	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	09/01	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/03	13:59	JCL
Nitrogen, Nitrate	0.27	mg/L	.05	1	EPA 353.2	09/02	15:31	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/01	14:45	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	09/08	16:14	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	1.5	mg/L	1	1	SM5310 C	09/03	00:49	ALD
RESIDUES								
Solids, Total Dissolved	34	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	09/01	15:00	HRG

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

Date of Report: 09/11/15
Lab ID: 3157-15-0036183

Date Collected: 08/31/15 11:20
Collected By: Client

Sample Desc: BZ-4 Surface

Date Received: 08/31/15 13:45

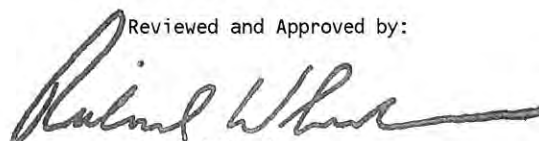
PWSID: 3130843

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 08/31/15 at 16:00.
- 03 The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.
- 04 The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.

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

Date of Report: 09/11/15
 Lab ID: 3157-15-0036184

Date Collected: 08/31/15 11:10
 Collected By: Client

Sample Desc: BZ-5 Surface

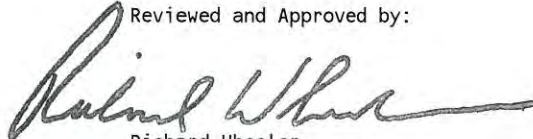
Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	140	/100ml	2	1	SM 9222D	08/31	14:30	PLW
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	09/01	11:40	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/l	.01	1	SM 4500P-E	09/01	16:15	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	09/01	14:20	HRG
Phosphorus as P, Total	0.03	mg/l	.01	1	SM 4500P-E	09/01	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/03	14:14	JCL
Nitrogen, Nitrate	1.12	mg/l	.05	1	EPA 353.2	09/02	15:32	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/01	14:46	JCL
Nitrogen, Total Kjeldahl	0.43	mg/l	.25	1	EPA 351.2	09/08	16:17	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	1.1	mg/l	1	1	SM5310 C	09/03	10:04	ALD
RESIDUES								
Solids, Total Dissolved	101	mg/l	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	10	mg/l	3	1	SM 2540D	09/04	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	14	mg/l	1	1	SM 2320 B	09/01	15:15	HRG

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

Date of Report: 09/11/15
 Lab ID: 3157-15-0036184
 Date Collected: 08/31/15 11:10
 Collected By: Client
 Date Received: 08/31/15 13:45

Sample Desc: BZ-5 Surface

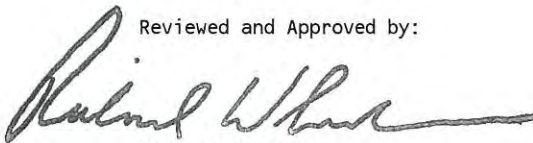
PWSID: 3130843

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 08/31/15 at 16:00.
- 03 The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.
- 04 The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.

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 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036185

Date Collected: 08/31/15 08:10
 Collected By: Client

Sample Desc: BZ-6 Surface

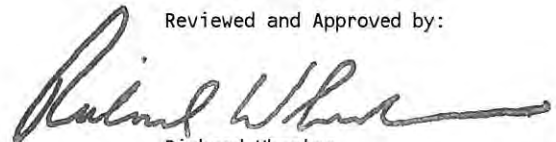
Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	2	/100mL	2	1	SM 9222D	08/31	14:30	PLW
Total Coliform	290	mpn/100mL	1	1	SM 9223B	09/01	11:40	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/01	16:15	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/01	14:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/01	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/03	14:28	JCL
Nitrogen, Nitrate	0.14	mg/L	.05	1	EPA 353.2	09/02	15:33	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/01	14:47	JCL
Nitrogen, Total Kjeldahl	0.36	mg/L	.25	1	EPA 351.2	09/08	16:18	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	1.6	mg/L	1	1	SM5310 C	09/03	01:19	ALD
RESIDUES								
Solids, Total Dissolved	64	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	09/01	15:15	HRG

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

Date of Report: 09/11/15
Lab ID: 3157-15-0036185

Date Collected: 08/31/15 08:10
Collected By: Client

Sample Desc: BZ-6 Surface

Date Received: 08/31/15 13:45

PWSID: 3130843

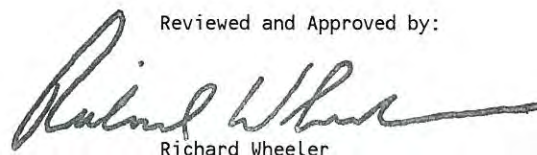
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

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 08/31/15 at 16:00.
- 03 The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.
- 04 The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.

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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: 3157-15-0036186

Date Collected: 08/31/15 08:10
 Collected By: Client

Sample Desc: BZ-6 Mid-Depth

Date Received: 08/31/15 13:45

PWSID: 3130843

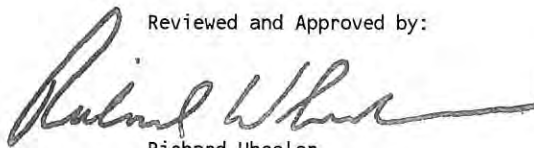
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/01	16:20	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/01	14:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/01	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/03	14:43	JCL
Nitrogen, Nitrate	0.71	mg/L	.05	1	EPA 353.2	09/02	15:33	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/01	14:50	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	.25	1	EPA 351.2	09/08	16:19	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	09/03	01:34	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	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	09/01	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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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: 3157-15-0036186

Date Collected: 08/31/15 08:10
Collected By: Client

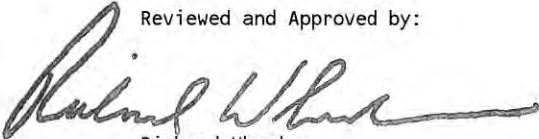
Sample Desc: BZ-6 Mid-Depth

Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
02	The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.							
03	The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.							

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: 3157-15-0036187

Date Collected: 08/31/15 08:10
 Collected By: Client

Sample Desc: BZ-6 Deep

Date Received: 08/31/15 13:45

PWSID: 3130843

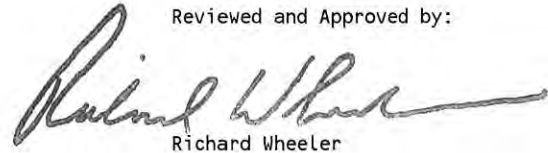
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.09	mg/l	.01	1	SM 4500P-E	09/01	16:20	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	09/01	14:25	HRG
Phosphorus as P, Total	0.11	mg/l	.01	1	SM 4500P-E	09/01	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/03	14:58	JCL
Nitrogen, Nitrate	0.55	mg/l	.05	1	EPA 353.2	09/02	15:38	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/01	14:51	JCL
Nitrogen, Total Kjeldahl	0.62	mg/l	.25	1	EPA 351.2	09/09	11:29	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	1.2	mg/l	1	1	SM5310 C	09/03	01:48	ALD
RESIDUES								
Solids, Total Dissolved	77	mg/l	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	34	mg/l	3	1	SM 2540D	09/04	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/l	1	1	SM 2320 B	09/01	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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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: 3157-15-0036187

Date Collected: 08/31/15 08:10
 Collected By: Client

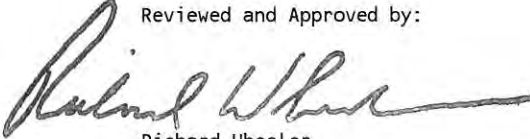
Sample Desc: BZ-6 Deep

Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
02	The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.							
03	The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.							

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: 3157-15-0036188

Date Collected: 08/31/15 09:55
 Collected By: Client

Sample Desc: BZ-7 Surface

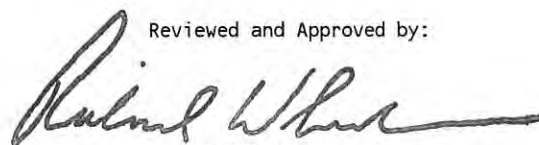
Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	2	/100mL	2	1	SM 9222D	08/31	14:30	PLW
Total Coliform	770	mpn/100mL	1	1	SM 9223B	09/01	11:40	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/01	16:20	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/01	14:25	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/01	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/03	15:41	JCL
Nitrogen, Nitrate	0.09	mg/L	.05	1	EPA 353.2	09/02	15:39	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/01	14:52	JCL
Nitrogen, Total Kjeldahl	0.36	mg/L	.25	1	EPA 351.2	09/09	11:30	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	1.6	mg/L	1	1	SM5310 C	09/03	02:03	ALD
RESIDUES								
Solids, Total Dissolved	49	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	09/01	15:30	HRG

Distribution of Reports:
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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: 3157-15-0036188

Date Collected: 08/31/15 09:55
Collected By: Client

Sample Desc: BZ-7 Surface

Date Received: 08/31/15 13:45

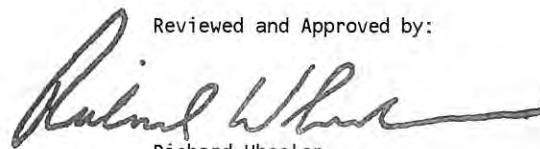
PWSID: 3130843

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 08/31/15 at 16:00.
- 03 The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.
- 04 The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.

Distribution of Reports:
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Richard Wheeler

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 Arlington VA 22201

Date of Report: 09/11/15
 Lab ID: 3157-15-0036189

Date Collected: 08/31/15 09:55
 Collected By: Client

Sample Desc: BZ-7 Mid-Depth

Date Received: 08/31/15 13:45

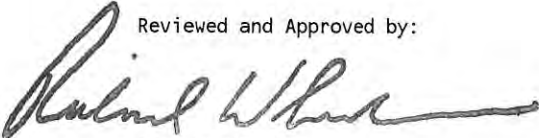
PWSID: 3130843

	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	09/01	16:20	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/01	14:25	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/01	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/03	15:57	JCL
Nitrogen, Nitrate	0.66	mg/L	.05	1	EPA 353.2	09/02	15:40	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/01	14:55	JCL
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	09/09	11:31	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	1.3	mg/L	1	1	SM5310 C	09/03	02:33	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	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	13	mg/L	1	1	SM 2320 B	09/01	15:45	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:
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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: 09/11/15
Lab ID: 3157-15-0036189

Date Collected: 08/31/15 09:55
Collected By: Client

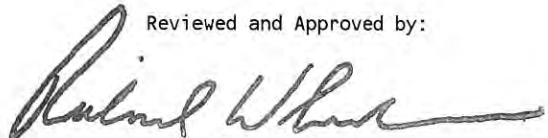
Sample Desc: BZ-7 Mid-Depth

Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
02	The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.							
03	The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.							

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

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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: 3157-15-0036190

Date Collected: 08/31/15 09:55
 Collected By: Client

Sample Desc: BZ-7 Deep

Date Received: 08/31/15 13:45

PWSID: 3130843

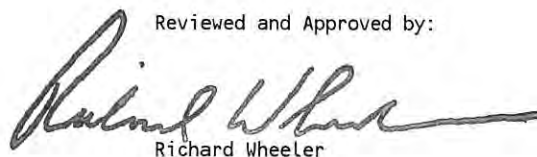
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/01	16:20	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/01	14:25	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/01	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/03	16:12	JCL
Nitrogen, Nitrate	0.54	mg/L	.05	1	EPA 353.2	09/02	15:41	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/01	14:56	JCL
Nitrogen, Total Kjeldahl	0.30	mg/L	.25	1	EPA 351.2	09/09	11:34	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/31	15:00	EMW
Total Organic Carbon	1.4	mg/L	1	1	SM5310 C	09/03	03:18	ALD
RESIDUES								
Solids, Total Dissolved	37	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	13:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	13	mg/L	1	1	SM 2320 B	09/01	15:45	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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1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/11/15
Lab ID: 3157-15-0036190

Date Collected: 08/31/15 09:55
Collected By: Client

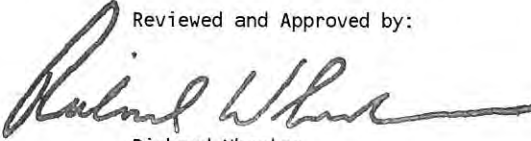
Sample Desc: BZ-7 Deep

Date Received: 08/31/15 13:45

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
02	The dissolved oxygen depletion of the SM5210B dilution water blank was greater than 0.2 mg/L.							
03	The BOD glucose/glutamic acid was biased low however all other quality control samples were within acceptable limits.							

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: 006226

Project Leader: rxw

No: 262656

Customer: David Wertz

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: 6 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: Rxw

36178 Sample No: 1 Desc: BZ-1 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

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

36179 Sample No: 2 Desc: BZ-2 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

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

36180 Sample No: 3 Desc: BZ-3 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

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

Matrix: 0 Date: 8/31/15
Time: 1150

- 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: 8/31/15
Time: 1135

- 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: 8/31/15
Time: 0910

- 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 for laboratory by: [Signature]

Date: 8/31/15 Time: 1215

Date: 8/31/15 Time: 1345

Sample entered by: WRT

M. J. REIDER ASSOCIATES, INC.

08/07/15 8:01:10 AM

Chain of Custody

No: 262656

Project Leader: rxw

Work Order: 006226

Work Order Description: Beltsville Reservoir

Customer: David Wertz

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: 6 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: rxw

Sample No: 4 Desc: BZ-3 Mid-Depth

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

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

ALD tlc 6

Sample No: 5 Desc: BZ-3 Deep

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

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

ALD tlc 6

Sample No: 6 Desc: BZ-4 Surface

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

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

fc, tc, tlc ALD 6

Matrix: o Date: 8/31/15

Time: 0910

- 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: 8/31/15

Time: 0910

- 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: 8/31/15

Time: 1120

- 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 for laboratory by: [Signature]

Date: 8/31/15 Time: 1215

Date: 8/31/15 Time: 1345

Sample entered by: [Signature]

Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: rxw No: 262656
Customer: David Wertz Work Order Description: Beltsville 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: 6 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: PK

Sample No: 7 Desc: BZ-5 Surface

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

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

Sample No: 8 Desc: BZ-6 Surface

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

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

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

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

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

Matrix: 0 Date: 8/31/15 Time: 11:0
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: 8/31/15 Time: 07:0
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: 8/31/15 Time: 08:10
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: 8/31/15 Time: 12:15

Date: 8/31/15 Time: 12:45

Sample entered by: [Signature]

Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: rxw No: 262656
Customer: David Wertz Work Order Description: Beltzville Reservoir
Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201
Phone: 703-387-5516 Ext:
Samplers: WACIK

Remarks: *one vial broken @ receipt.

Total Sampling Time (hours): Bottle Prep by:

Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: RAC

36187 Sample No: 10 Desc: BZ-6 Deep

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

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

36188 Sample No: 11 Desc: BZ-7 Surface

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

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

36189 Sample No: 12 Desc: BZ-7 Mid-Depth

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

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

Matrix: o Date: 8/31/15 Time: 0910
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: 8/31/15 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: 8/31/15 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: 8/31/15 Time: 1245

Received for laboratory by: [Signature]
Date: 8/31/15 Time: 1345

Sample entered by: [Signature]

M. J. REIDER ASSOCIATES, INC.

rxw
08/07/15 8:01:10 AM

Chain of Custody

Project Leader: rxw No: 262656

Work Order: 006226

Work Order Description: Beltzville Reservoir

Customer: David Wertz

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: 60° Deg C. If Temp Unacceptable, On Ice? (X) N

Approved By: PKW

=====

Sample No: 13 Desc: BZ-7 Deep

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

NO2-n, NO3-n, d-po4-p, o-po4, bod
HG HG

Matrix: o

Date: 8/31/15

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;

36190

Relinquished by: [Signature]
Date: 8/31/15 Time: 1215

Received by: [Signature]
Date: 8/31/15 Time: 1345

Received for laboratory by: [Signature]
Date: 8/31/15 Time: 1345

Sample entered by: MTZ