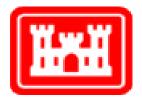
2014 WATER QUALITY MONITORING BELTZVILLE RESERVOIR LEHIGHTON, PENNSYLVANIA



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

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1.0 INTRODUCTION

1.1 PURPOSE OF THE MONITORING PROGRAM

The U.S. Army Corps of Engineers (USACE) manages 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 22 May to 11 September 2014.

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 2014 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 22 May and ending on 11 September 2014; 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 22 May and 11 September 2014 (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 22 May and 11 September 2014 (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 analysis for 2014.

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.

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⁾
22 May	Х	Х		Х	Х	
19 June	Х	Х		Х	Х	
17 July	Х	х		Х	Х	
13 August	Х	Х		Х	Х	
11 September	Х	Х		Х	Х	

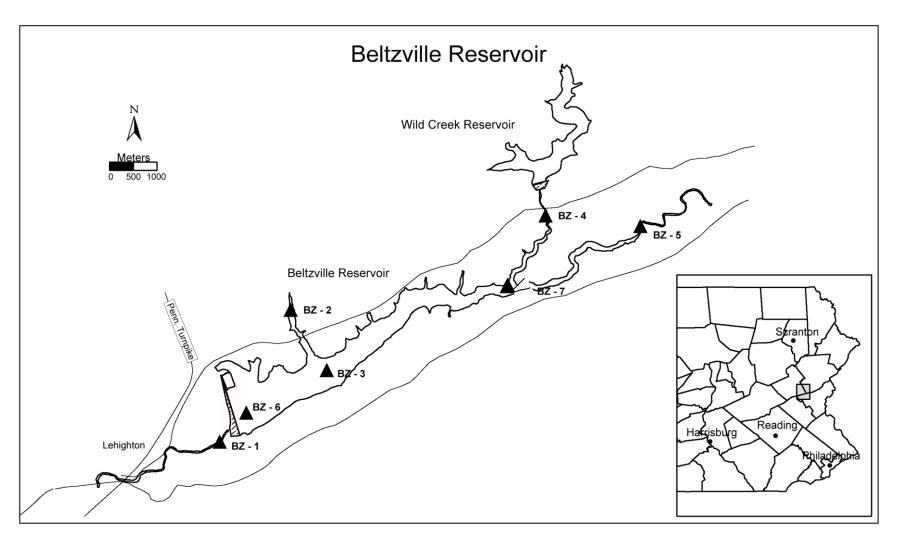


Figure 2-1. Beltzville Reservoir and the location of water quality monitoring stations in 2014.

•	•		, state regulatory comonitored at Beltzv	•
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	
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	28
Nitrite	MCAWW 353.2	0.05 mg/L	(nitrate + nitrite)	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,

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

* Total Inorganic Carbon and Total Carbon were not sampled for in 2014

2.3 TROPHIC 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 22 May and 11 September 2014 (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 2014. 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 2014.											
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	g 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 May to September 2014. 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 pattern throughout the watershed of Beltzville Reservoir during 2014 (Fig. 3-1). The maximum upstream tributary station temperature of 23.13 °C was seen at station BZ-4S on 19 June. The maximum downstream release (BZ-1S) surface water temperature was 16.35 °C on 24 July. 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 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 were 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 2014 (Fig. 3-2). The reservoir surface waters are warmed by the sun and would account for warmer surface water temperatures recorded at lake stations (BZ-3, BZ-7, and BZ-6). In May, the onset of stratification was apparent with surface temperatures (16.78 °C) approximately 10.6 °C warmer than the lower water column (6.18 °C). A strong stratification pattern was evident from late May into September. In September, cooling surface temperatures and erosion of the epiliminion marked the onset of fall turnover within the reservoir.

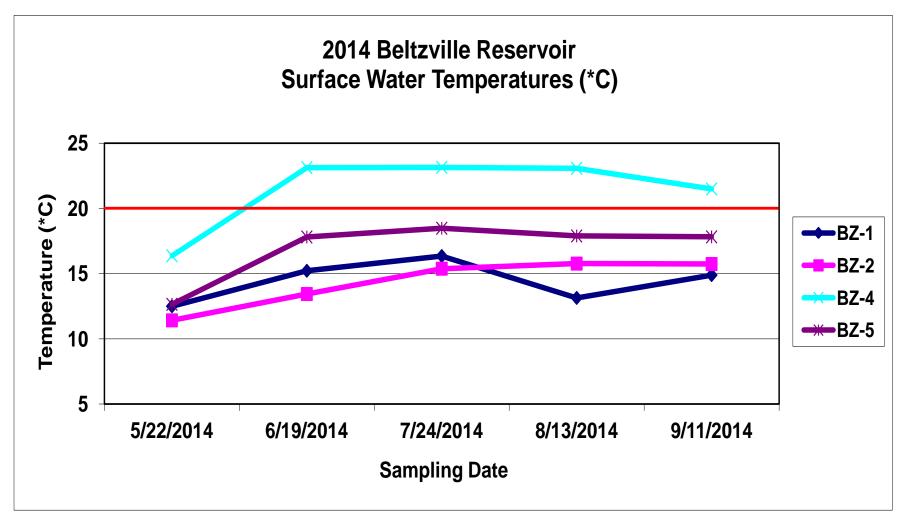


Figure 3-1. Tributary and downstream surface water temperature (°C) measured at Beltzville Reservoir in 2014. See Appendix A for Summary of plotted values. Station BZ-1 reflects releases surface water temperatures downstream of Beltzville Reservoir.

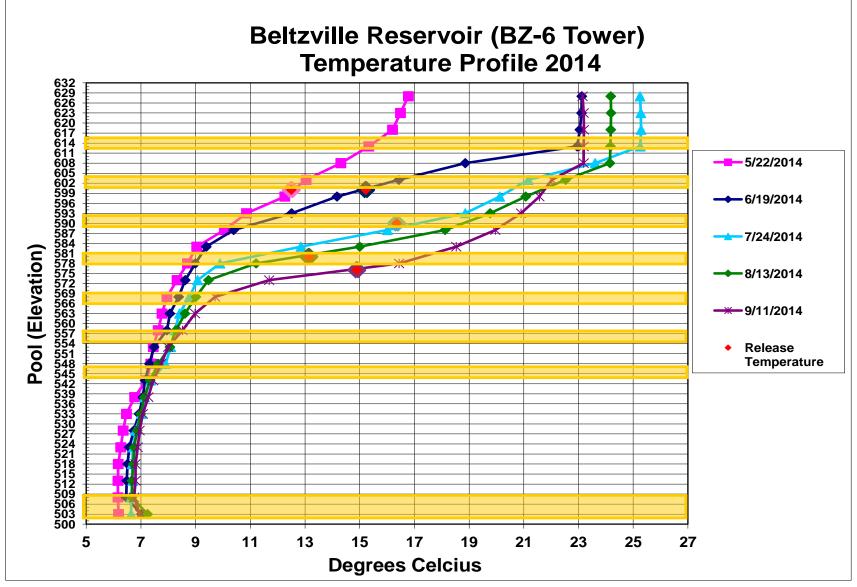


Figure 3-2. Lake temperature profile at station BZ-6 of Beltzville Reservoir in 2014. See Appendix A for summary of plotted values. The yellow bars represent the locations of water control gates in the Beltzville Reservoir control tower.

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 generally followed a similar pattern throughout the watershed of Beltzville Reservoir during 2014 (Fig. 3-3). Dissolved oxygen concentrations downstream of the reservoir (BZ-1S) and at the upstream stations (BZ-2S, -4S, -5S) averaged 9.38 mg/L for the sampling season. The maximum DO reading of 10.8 mg/L occurred at BZ-2S on 22 May and a minimum reading of 7.75 mg/L occurred at BZ-4S on 24 July.

Dissolved Oxygen in the water column at station BZ-6 of Beltzville Reservoir from late May through September, 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.

DO concentrations in the water column of Beltzville Reservoir were in compliance with PADEP water quality standards during 2014. 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 July, August, and September 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 2014, these conditions were not seen in the lower portion of the water column at station BZ-6 but were recorded in the middle of the water column profile during the August, and September sampling events (Appendix A).

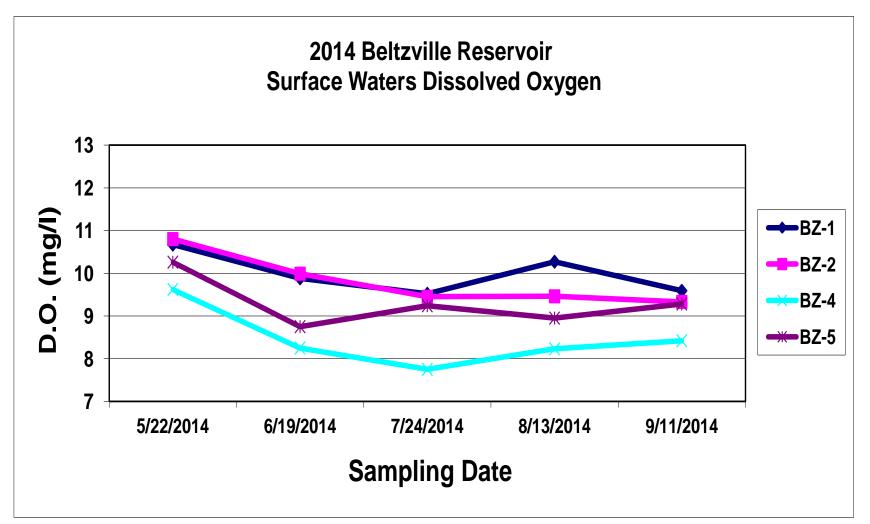


Figure 3-3. Dissolved oxygen concentrations measured in tributary and downstream surface waters at Beltzville Reservoir in 2014. (The PADEP water quality standard for dissolved oxygen is a minimum concentration of 5 mg/L.) See Appendix A for summary of plotted values. Station BZ-1 reflects reservoir release surface waters downstream of Beltzville Reservoir

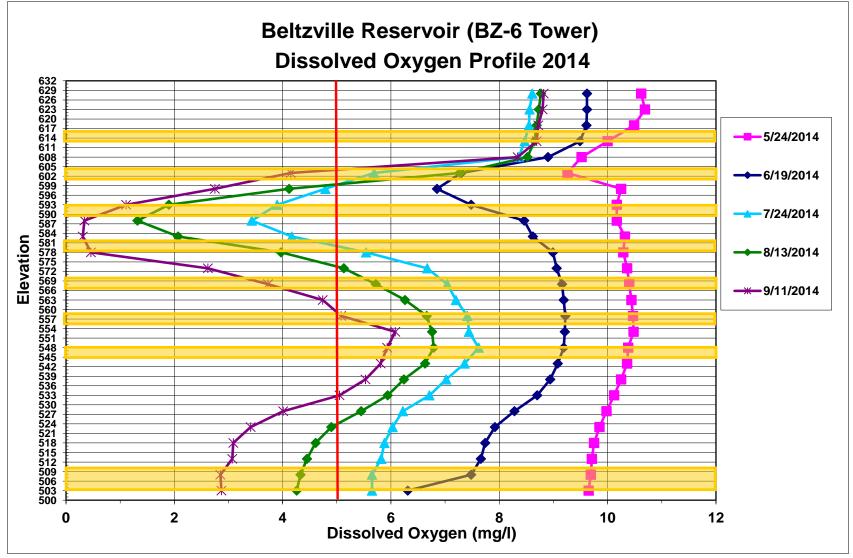


Figure 3-4. Dissolved oxygen profile at station BZ-6 of Beltzville Reservoir in 2014. (The PADEP water quality standard for DO is a minimum concentration of 5 mg/L.) See Appendix A for summary of plotted values.

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 2014 (Fig. 3-5). The maximum pH value of 7.53 was recorded at Station BZ-4S on 24 July and at station BZ-5S on 11 September. The minimum pH value of 6.52 was recorded at station BZ-2S on 22 May.

In all months sampled in 2014, 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 was most evident in July, August, and September. 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 2014 were in compliance with PADEP pH criteria for all profile measures at station BZ-6. The standard for pH is a range of acceptable measures between 6 and 9.

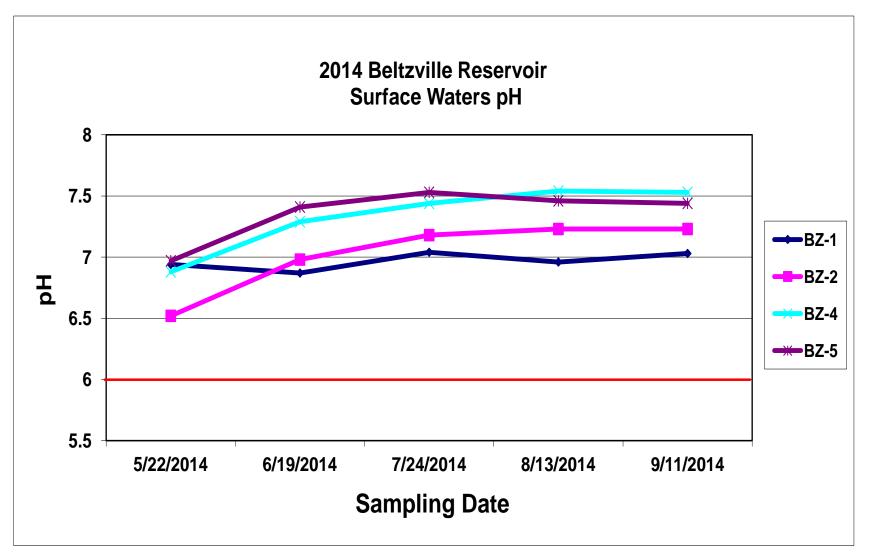


Figure 3-5. pH concentrations measured in tributary and downstream surface waters at Beltzville Reservoir in 2014. (The PADEP water quality standard for pH is between 6 and 9) See Appendix A for summary of plotted values.

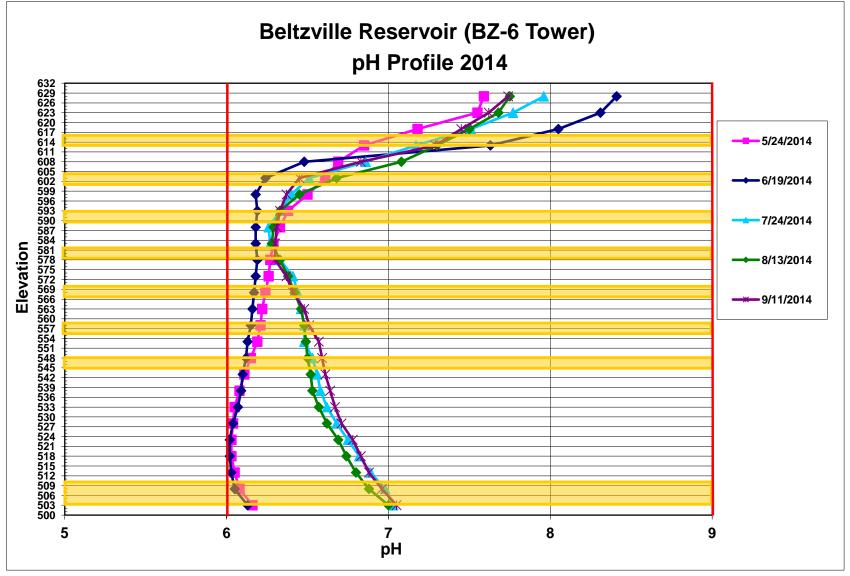


Figure 3-6. pH profile at station BZ-6 of Beltzville Reservoir in 2014. (The PADEP water quality standard for pH is between 6 and 9) See Appendix A for summary of plotted value

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 2014 (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 2014. 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 2014. The state water quality standard for ammonia is dependent on temperature and pH (Table 3-1).

Table 3-1. PA												
	96). Specific amr											
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							

Table 3.2.	Summary of s	surface, r	niddle, an	d bottom	water qu	uality mo	onitoring	data for	Beltzville	Reservoi	i <mark>r in 201</mark> 4	4	
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	5/22/2014	9	<2	< 0.05	< 0.05	< 0.05	0.68	< 0.01	20	0.27	1.8	< 0.01	<3
	6/19/2014	11	<2	< 0.05	< 0.05	< 0.05	0.68	0.04	47	< 0.25	1.5	0.04	14
	7/24/2014	10	<2	< 0.05	< 0.05	< 0.05	0.81	< 0.01	87	< 0.25	1.6	< 0.01	<3
	8/13/2014	10	<2	< 0.05	< 0.05	< 0.05	0.78	< 0.01	128	< 0.25	1.3	< 0.01	11
BZ-01S	9/11/2014	10	<2	< 0.05	< 0.05	< 0.05	0.77	< 0.01	57	< 0.25	1.4	< 0.01	<3
DZ-015	Mean	10	2	0.05	0.05	0.05	0.744	0.016	67.8	0.254	1.52	0.016	6.8
	Stdev	0.707	0	0	0	0	0.06	0.013	41.312	0.009	0.192	0.013	5.31
	Max	11	2	0.05	0.05	0.05	0.81	0.04	128	0.27	1.8	0.04	14
	Min	9	2	0.05	0.05	0.05	0.68	0.01	20	0.25	1.3	0.01	3
	No. of Dects	5	0	0	0	0	5	1	5	1	5	1	2
	5/22/2014	6	<2	< 0.05	< 0.05	< 0.05	0.15	0.07	10	< 0.25	<1	0.08	<3
	6/19/2014	6	<2	< 0.05	< 0.05	< 0.05	0.19	0.03	45	< 0.25	<1	0.04	3
	7/24/2014	8	<2	< 0.05	< 0.05	< 0.05	0.24	< 0.01	56	< 0.25	<1	< 0.01	3
	8/13/2014	8	<2	< 0.05	< 0.05	< 0.05	0.26	< 0.01	99	< 0.25	1.8	0.02	6
BZ-02S	9/11/2014	9	<2	< 0.05	< 0.05	< 0.05	0.24	< 0.01	62	< 0.25	<1	< 0.01	<3
DZ-025	Mean	7.4	2	0.05	0.05	0.05	0.216	0.026	54.4	0.25	1.16	0.032	3.6
	Stdev	1.342	0	0	0	0	0.045	0.026	32.052	0	0.358	0.029	1.342
	Max	9	2	0.05	0.05	0.05	0.26	0.07	99	0.25	1.8	0.08	6
	Min	6	2	0.05	0.05	0.05	0.15	0.01	10	0.25	1	0.01	3
	No. of Dects	5	0	0	0	0	5	2	5	0	1	3	3

Table 3.2	Continued. Su	mmary o	of surface	, middle, a	and botto	om water	[.] quality	monitori	ng data fo	r Beltzvi	lle Reser	voir in 20	014
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	5/22/2014	9	<2	< 0.05	< 0.05	< 0.05	0.62	0.05	22	< 0.25	1.8	0.05	<3
	6/19/2014	9	<2	< 0.05	< 0.05	< 0.05	0.43	0.05	41	< 0.25	1.6	0.04	<3
	7/24/2014	10	<2	< 0.05	< 0.05	< 0.05	0.37	< 0.01	68	0.33	1.5	0.01	<3
	8/13/2014	10	<2	< 0.05	< 0.05	< 0.05	0.33	< 0.01	99	< 0.25	1.4	< 0.01	<3
BZ-03S	9/11/2014	11	2	< 0.05	< 0.05	< 0.05	0.25	< 0.01	50	< 0.25	1.6	0.01	<3
DZ-035	Mean	9.8	2	0.05	0.05	0.05	0.4	0.026	56	0.266	1.58	0.024	3
	Stdev	0.837	0	0	0	0	0.139	0.022	29.198	0.036	0.148	0.019	0
	Max	11	2	0.05	0.05	0.05	0.62	0.05	99	0.33	1.8	0.05	3
	Min	9	2	0.05	0.05	0.05	0.25	0.01	22	0.25	1.4	0.01	3
	No. of Dects	5	1	0	0	0	5	2	5	1	5	4	0
	5/22/2014	9	<2	< 0.05	< 0.05	< 0.05	0.72	< 0.01	33	< 0.25	1.3	0.02	<3
	6/19/2014	9	<2	< 0.05	< 0.05	< 0.05	0.75	0.03	65	< 0.25	1.2	< 0.01	<3
	7/24/2014	11	<2	< 0.05	< 0.05	< 0.05	0.82	0.04	108	< 0.25	1.2	0.04	<3
	8/13/2014	9	<2	< 0.05	< 0.05	< 0.05	0.78	0.07	129	< 0.25	1.1	0.08	<3
BZ-03M	9/11/2014	11	<2	< 0.05	< 0.05	< 0.05	0.82	< 0.01	88	< 0.25	1.3	0.01	<3
DZ-05WI	Mean	9.8	2	0.05	0.05	0.05	0.778	0.032	84.6	0.25	1.22	0.032	3
	Stdev	1.095	0	0	0	0	0.044	0.025	37.34	0	0.084	0.029	0
	Max	11	2	0.05	0.05	0.05	0.82	0.07	129	0.25	1.3	0.08	3
	Min	9	2	0.05	0.05	0.05	0.72	0.01	33	0.25	1.1	0.01	3
	No. of Dects	5	0	0	0	0	5	3	5	0	5	4	0

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2014													
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	5/22/2014	9	<2	< 0.05	< 0.05	< 0.05	0.77	< 0.01	30	< 0.25	1.2	0.03	<3
	6/19/2014	9	<2	0.07	< 0.05	< 0.05	0.7	0.07	58	0.39	1.4	0.12	87
	7/24/2014	10	<2	< 0.05	< 0.05	< 0.05	0.72	< 0.01	87	1.93	1.9	1.32	95
	8/13/2014	11	<2	< 0.05	< 0.05	< 0.05	0.68	< 0.01	129	< 0.25	1.1	< 0.01	4
BZ-03B	9/11/2014	11	<2	< 0.05	< 0.05	< 0.05	0.62	< 0.01	70	< 0.25	1.2	< 0.01	18
DZ-03D	Mean	10	2	0.054	0.05	0.05	0.698	0.022	74.8	0.614	1.36	0.298	41.4
	Stdev	1	0	0.009	0	0	0.055	0.027	36.738	0.738	0.321	0.573	45.753
	Max	11	2	0.07	0.05	0.05	0.77	0.07	129	1.93	1.9	1.32	95
	Min	9	2	0.05	0.05	0.05	0.62	0.01	30	0.25	1.1	0.01	3
	No. of Dects	5	0	1	0	0	5	1	5	2	5	3	4
	5/22/2014	5	<2	< 0.05	< 0.05	< 0.05	0.5	< 0.01	7	< 0.25	1.2	0.02	<3
	6/19/2014	6	<2	< 0.05	< 0.05	< 0.05	0.66	0.01	46	< 0.25	<1	0.01	<3
	7/24/2014	6	<2	< 0.05	< 0.05	< 0.05	0.45	0.07	55	< 0.25	1.1	0.08	<3
	8/13/2014	6	<2	< 0.05	< 0.05	< 0.05	0.38	< 0.01	95	< 0.25	<1	< 0.01	<3
BZ-04S	9/11/2014	5	<2	< 0.05	< 0.05	< 0.05	0.06	< 0.01	34	< 0.25	1.2	< 0.01	<3
DZ-043	Mean	5.6	2	0.05	0.05	0.05	0.41	0.022	47.4	0.25	1.1	0.026	3
	Stdev	0.548	0	0	0	0	0.221	0.027	32.161	0	0.1	0.03	0
	Max	6	2	0.05	0.05	0.05	0.66	0.07	95	0.25	1.2	0.08	3
	Min	5	2	0.05	0.05	0.05	0.06	0.01	7	0.25	1	0.01	3
	No. of Dects	5	0	0	0	0	5	2	5	0	3	3	0

Table 3.2	Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2014													
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS	
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
	5/22/2014	12	<2	< 0.05	< 0.05	< 0.05	1.11	< 0.01	44	< 0.25	1.4	0.04	3	
	6/19/2014	12	2	< 0.05	< 0.05	< 0.05	1.29	0.02	61	0.3	3.9	0.03	36	
	7/24/2014	16	<2	< 0.05	< 0.05	< 0.05	1.28	< 0.01	77	0.28	1.7	0.05	<3	
	8/13/2014	13	<2	< 0.05	< 0.05	< 0.05	1.03	0.04	97	< 0.25	2	0.04	<3	
BZ-05S	9/11/2014	15	2	< 0.05	< 0.05	< 0.05	1.12	0.09	80	< 0.25	1.1	0.09	<3	
DZ-035	Mean	13.6	2	0.05	0.05	0.05	1.166	0.034	71.8	0.266	2.02	0.05	9.6	
	Stdev	1.817	0	0	0	0	0.114	0.034	20.117	0.023	1.103	0.023	14.758	
	Max	16	2	0.05	0.05	0.05	1.29	0.09	97	0.3	3.9	0.09	36	
	Min	12	2	0.05	0.05	0.05	1.03	0.01	44	0.25	1.1	0.03	3	
	No. of Dects	5	2	0	0	0	5	3	5	2	5	5	2	
	5/22/2014	9	<2	< 0.05	< 0.05	< 0.05	0.62	< 0.01	32	0.29	1.8	0.03	<3	
	6/19/2014	11	<2	< 0.05	< 0.05	< 0.05	0.45	< 0.01	36	< 0.25	1.6	< 0.01	4	
	7/24/2014	11	<2	< 0.05	< 0.05	< 0.05	0.37	< 0.01	55	0.37	1.6	< 0.01	<3	
	8/13/2014	11	<2	< 0.05	< 0.05	< 0.05	0.33	< 0.01	71	< 0.25	1.6	< 0.01	<3	
BZ-06S	9/11/2014	11	2	< 0.05	< 0.05	< 0.05	0.25	< 0.01	56	< 0.25	1.5	< 0.01	3	
DZ-005	Mean	10.6	2	0.05	0.05	0.05	0.404	0.01	50	0.282	1.62	0.014	3.2	
	Stdev	0.894	0	0	0	0	0.141	0	15.984	0.052	0.11	0.009	0.447	
	Max	11	2	0.05	0.05	0.05	0.62	0.01	71	0.37	1.8	0.03	4	
	Min	9	2	0.05	0.05	0.05	0.25	0.01	32	0.25	1.5	0.01	3	
	No. of Dects	5	1	0	0	0	5	0	5	2	5	1	2	

Table 3.2	Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2014													
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS	
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
	5/22/2014	9	<2	< 0.05	< 0.05	< 0.05	0.76	0.04	26	< 0.25	1.2	0.04	<3	
	6/19/2014	9	<2	< 0.05	< 0.05	< 0.05	0.72	< 0.01	62	< 0.25	1.4	< 0.01	<3	
	7/24/2014	10	<2	< 0.05	< 0.05	< 0.05	0.81	< 0.01	68	< 0.25	1.3	0.02	<3	
	8/13/2014	11	<2	< 0.05	< 0.05	< 0.05	0.77	< 0.01	96	< 0.25	1.1	< 0.01	<3	
BZ-06M	9/11/2014	10	<2	< 0.05	< 0.05	< 0.05	0.74	< 0.01	87	< 0.25	1.2	< 0.01	<3	
DZ-00WI	Mean	9.8	2	0.05	0.05	0.05	0.76	0.016	67.8	0.25	1.24	0.018	3	
	Stdev	0.837	0	0	0	0	0.034	0.013	27.133	0	0.114	0.013	0	
	Max	11	2	0.05	0.05	0.05	0.81	0.04	96	0.25	1.4	0.04	3	
	Min	9	2	0.05	0.05	0.05	0.72	0.01	26	0.25	1.1	0.01	3	
	No. of Dects	5	0	0	0	0	5	1	5	0	5	2	0	
	5/22/2014	9	<2	< 0.05	< 0.05	< 0.05	0.76	0.06	35	< 0.25	1.2	0.06	9	
	6/19/2014	10	<2	< 0.05	< 0.05	< 0.05	0.76	< 0.01	71	< 0.25	1.2	< 0.01	<3	
	7/24/2014	10	<2	< 0.05	< 0.05	< 0.05	0.74	< 0.01	38	< 0.25	1.1	0.02	<3	
	8/13/2014	11	<2	< 0.05	0.06	< 0.05	0.63	0.01	102	0.95	1.5	0.29	77	
BZ-06B	9/11/2014	13	2	< 0.05	< 0.05	< 0.05	0.59	0.02	85	< 0.25	1.1	0.02	5	
DZ-00D	Mean	10.6	2	0.05	0.052	0.05	0.696	0.022	66.2	0.39	1.217	0.08	19.4	
	Stdev	1.517	0	0	0.004	0	0.08	0.022	29.269	0.313	0.147	0.119	32.292	
	Max	13	2	0.05	0.06	0.05	0.76	0.06	102	0.95	1.5	0.29	77	
	Min	9	2	0.05	0.05	0.05	0.59	0.01	35	0.25	1.1	0.01	3	
	No. of Dects	5	1	0	1	0	5	3	5	1	6	4	3	

Table 3.2	Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2014													
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS	
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
	5/22/2014	10	2	< 0.05	< 0.05	< 0.05	0.51	0.01	17	0.41	2.6	0.08	<3	
	6/19/2014	10	<2	< 0.05	< 0.05	< 0.05	0.41	0.02	15	0.25	1.7	0.03	<3	
	7/24/2014	10	<2	< 0.05	< 0.05	< 0.05	0.33	0.02	27	< 0.25	1.6	0.02	<3	
	8/13/2014	10	<2	< 0.05	< 0.05	< 0.05	0.26	< 0.01	81	< 0.25	1.4	< 0.01	<3	
BZ-07S	9/11/2014	12	<2	< 0.05	< 0.05	< 0.05	0.24	0.02	79	< 0.25	1.3	0.02	<3	
DZ-075	Mean	10.4	2	0.05	0.05	0.05	0.35	0.016	43.8	0.282	1.72	0.032	3	
	Stdev	0.894	0	0	0	0	0.112	0.005	33.365	0.072	0.517	0.028	0	
	Max	12	2	0.05	0.05	0.05	0.51	0.02	81	0.41	2.6	0.08	3	
	Min	10	2	0.05	0.05	0.05	0.24	0.01	15	0.25	1.3	0.01	3	
	No. of Dects	5	1	0	0	0	5	4	5	2	5	4	0	
	5/22/2014	10	<2	< 0.05	< 0.05	< 0.05	0.87	< 0.01	49	< 0.25	1.7	0.05	<3	
	6/19/2014	11	<2	< 0.05	< 0.05	< 0.05	0.88	< 0.01	55	< 0.25	1.4	< 0.01	4	
	7/24/2014	12	<2	< 0.05	< 0.05	< 0.05	0.91	< 0.01	61	0.3	1.4	< 0.01	3	
	8/13/2014	12	<2	< 0.05	< 0.05	< 0.05	0.8	< 0.01	77	< 0.25	1.1	< 0.01	<3	
BZ-07M	9/11/2014	10	<2	< 0.05	< 0.05	< 0.05	0.23	< 0.01	54	< 0.25	1.3	< 0.01	3	
DZ-07WI	Mean	11	2	0.05	0.05	0.05	0.738	0.01	59.2	0.26	1.38	0.018	3.2	
	Stdev	1	0	0	0	0	0.287	0	10.826	0.022	0.217	0.018	0.447	
	Max	12	2	0.05	0.05	0.05	0.91	0.01	77	0.3	1.7	0.05	4	
	Min	10	2	0.05	0.05	0.05	0.23	0.01	49	0.25	1.1	0.01	3	
	No. of Dects	5	0	0	0	0	5	0	5	1	5	1	3	

Table 3.2	Continued. Su	ımmary	of surface	e, middle,	and bott	om wate	r quality	monitor	ing data fo	or Beltzvi	ille Resei	voir in 2	014
		ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	TDS	TKN	TOC	TP	TSS
Station	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	5/22/2014	8	<2	< 0.05	< 0.05	< 0.05	0.77	< 0.01	42	3.06	2.6	1	393
	6/19/2014	11	<2	< 0.05	< 0.05	< 0.05	0.72	< 0.01	54	< 0.25	1.2	< 0.01	<3
	7/24/2014	12	<2	< 0.05	< 0.05	< 0.05	0.75	0.07	11	< 0.25	1.4	0.09	8
	8/13/2014	14	<2	< 0.05	< 0.05	< 0.05	0.68	0.02	80	< 0.25	1.4	0.02	<3
BZ-07B	9/11/2014	13	<2	< 0.05	< 0.05	< 0.05	0.67	0.02	65	0.26	1.3	0.04	9
DZ-07D	Mean	11.6	2	0.05	0.05	0.05	0.718	0.026	50.4	0.814	1.58	0.232	83.2
	Stdev	2.302	0	0	0	0	0.043	0.025	26.102	1.256	0.576	0.43	173.206
	Max	14	2	0.05	0.05	0.05	0.77	0.07	80	3.06	2.6	1	393
	Min	8	2	0.05	0.05	0.05	0.67	0.01	11	0.25	1.2	0.01	3
	No. of Dects	5	0	0	0	0	5	3	5	2	5	4	3

3.2.2 Nitrite and Nitrate

Nitrite (NO2) is a measure of a form of nitrogen that occurs as an intermediate in the nitrogen cycle. It is unstable and can rapidly be oxidized to nitrate or reduced to nitrogen gas. Nitrite is a source of nutrients for plants and can be toxic to aquatic life in relatively low concentrations. Nitrite concentrations in the waters of Beltzville Reservoir measured at all stations and depths never exceeded the laboratory reporting limit of 0.05 mg/L throughout the 2014 sampling period.

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 2014 with sample results ranging from 0.15 mg/L to 1.29 mg/L (Table 3-2). The highest recorded single nitrate measure of 1.29 mg/L was measured on 19 June at station BZ-5S. Station BZ-5S also had the highest seasonal mean concentration of all stations of 1.17 mg/L.

Beltzville Reservoir was in compliance with the PADEP water quality standard for nitrite and nitrate during 2014. 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 1.34 mg/L was measured at station BZ-5S on 19 June.

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 2014 with many sample concentrations measuring less than the 0.25 mg/L laboratory reporting limit (Table 3-2). The highest concentration of 3.06 mg/L was recorded at station BZ-7B on 22 May.

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 2014, many of the samples measured for total phosphorus were less than the 0.01 mg/L suggested concentration and laboratory reporting limits (Table 3-2). In-lake bottom water

samples typically exceeded this concentration. The highest single sample concentration of 1.32 mg/L was measured in the reservoir bottom waters at Station BZ-3B on 24 July. 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.

3.2.5 Dissolved Phosphorus

With the exception of one sample occurring in June, dissolved phosphorus (Diss. P) concentrations measured at all stations and depths in the water column of Beltzville Reservoir were less than the reporting limit of 0.05 mg/L in 2014 (Table 3-2). The highest single sample concentration of 0.07 mg/L was measured in the bottom water sample at station BZ-3B on 19 June.

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 2014, dissolved phosphate concentrations were low with many sample concentrations remaining below the laboratory reporting limit of 0.01 mg/L. The highest concentration of 0.09 mg/L was measured at station BZ-5S on 11 September. Upstream tributary station BZ-5S (Pohopoco Creek) also had the highest seasonal mean concentration of all stations of 0.034 mg/L.

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 2014 (Table 3-2). Concentrations among all stations and depths ranged from 7 to 129 mg/L. Total dissolved solids measured at Beltzville Reservoir in 2014 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 impairment to spawning habitat (smothering). Total suspended solids concentrations in the waters of Beltzville Reservoir were low during 2014 (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 393 mg/L was measured in the lake bottom waters at

station BZ-7B on 22 May. High measures of TSS can be the result of sample collection error associated with capturing disturbed fine sediments in the lake bottom sample during field sampling. This sample error may apply to the elevated BZ-7B samples collected on 22 May when compared to all other samples collected on that date and throughout the season.

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 2014 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 2014 (Table 3-2). On only one occasion did a sample concentration exceed the PADEP 20 mg/L minimum criteria. For all sampling stations and depths, alkalinity measures ranged from 16.0 mg/L to 5.0 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 generally stable and remained low during 2014 (Table 3-2). Concentrations of TOC at all stations and depths in 2014 ranged from 3.90 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 2014 (Appendix A) when compared to results of past sampling years. Concentrations measured in surface waters at all lake stations ranged between 0.0 and 16.8 ug/L with the majority of samples less than 6.0 ug/L. The highest concentrations during the sampling season were recorded at lake station BZ-7 in the month of June.

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 May (53.20) and oligotrophic in June (37.35), July (37.35), August (37.35) and September (37.35). TSIs calculated for measures of secchi disk depth (Figure 3-7) classified Beltzville Reservoir as mesotrophic in June (45.48), July (44.31) and September (43.24), and oligotrophic during May (31.76) and August (39.18). TSIs calculated for measures of chlorophyll *a* (Figure 3-7) classified Beltzville Reservoir as oligotrophic in July (21.61), and mesotrophic in May (49.41), June (44.56), August (43.82) and September (47.32).

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 oligotrophic in fall and mid-summer, mesotrophic in early and late summer and eutrophic in spring of 2014.

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 2014.

	Reservoir in 2014.													
Water Quality Variable	Oligo- trophic	Meso- trophic	Eutrophic	22 May	19 June	24 July	13 August	11 September						
Total phos. (ppb)	<10	10-20	>20	30	<10	<10	<10	<10						
Chlorophyll a (ppb)	<4	4-10	>10	6.88	4.15	0.40	3.85	5.50						
Secchi depth (meters)	>4	2-4	<2	7.10	2.74	3.3	4.24	3.20						

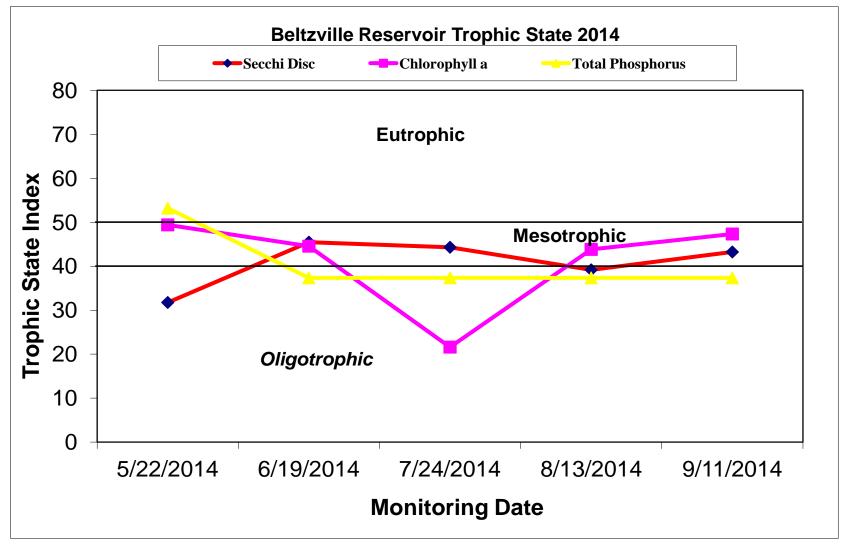


Figure 3-7. Trophic state indices calculated from secchi disk depth and concentrations of total phosphorus and chlorophyll *a* at Beltzville Reservoir in 2014.

3.4 RESERVOIR BACTERIA MONITORING

Three forms of coliform bacteria contamination were monitored in the tributary and lake surface waters at Beltzville Reservoir during 2014 including total and fecal coliform (Table 3-4). Total coliform includes *escherica coliform* (*E. coli*) and related bacteria that are associated with fecal discharges. Escherica coliform is used as an indicator of the presence of other potentially dangerous pathogens. 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 14 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 at Beltzville Reservoir during 2014. 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 then 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 not exceed this standard in 2014. Fecal coliform values for all tributary and lake stations ranged from less than the detection limit of 2 colonies/100ml to 760 colonies/100ml at upstream tributary station BZ-5S on 13 August. The EPA's swimming beach single sample standard of 235 colonies/100-ml was exceeded once (650 colonies/100-ml) at station BZ-5S on 13 August. Escherica coliform values for all tributary and lake surface water stations ranged from less than the detection limit of 1 colonies/100-ml to 650 colonies/100-ml. 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.

Table 3-4 Bacteria counts (colonies/100ml) at Beltzville Reservoir and tributaries during 2014.

STATION	DATE	То	tal Coliform (TC)	F	ecal Coliform (FC)	E	scherichia coli
	5/22/2014		160		58		33
	6/19/2014		920		10		2
BZ-1S	7/24/2014		550		10		2
	8/13/2014		2400		42		17
	9/11/2014	>	2400		10		10
	5/22/2014		460		44		22
	6/19/2014	>	2400		82		72
BZ-2S	7/24/2014		2000		90		88
	8/13/2014		2400		200		140
	9/11/2014		2400		21		18
	5/22/2014		14		3		3
	6/19/2014		69	<	2	<	1
BZ-3S	7/24/2014		55	<	1	<	1
	8/13/2014	>	2400		2		2
	9/11/2014	>	2400	<	2	<	1
	5/22/2014		54		6		5
	6/19/2014	>	2400		11		10
BZ-4S	7/24/2014		2000		30		18
	8/13/2014	>	2400		170		180
	9/11/2014	>	2400		11		5
	5/22/2014		1400		120		120
	6/19/2014	>	2400		210		200
BZ-5S	7/24/2014		2400		270		120
	8/13/2014		2400		760		650
	9/11/2014	>	2400		150		110
	5/22/2014		25		6		5
	6/19/2014		42	<	2	<	1
BZ-6S	7/24/2014		310		3	<	1
	8/13/2014		2400		2	<	1
	9/11/2014	>	2400	<	2	1	1
	5/22/2014		24		5		4
	6/19/2014		250	<	2		1
BZ-7S	7/24/2014		460		3		2
	8/13/2014		1100		5		4
	9/11/2014		2400	<	2	<	1

• Highlighted counts exceed single sample Federal (235 e-coli colonies/100ml) or State (1000 fecal colonies/100ml) bathing beach criteria.

4.0 **REFERENCES**

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APPENDIX A

STRATIFICATION DATA TABLES

2014 Beltzville Reservoir Water Column Profile
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Station	Date	Time	Depth	Temp	DO	DO	pН	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
	5/22/2014	7:33:43	1	12.5	100	10.67	6.94	-24.4	182	21.3	3.2	0.418
BZ-1	6/19/2014	11:01:43	1	15.22	98.4	9.88	6.87	-20.6	187	18.7	3.5	0.199
Outfall	7/24/2014	11:24:42	1	16.35	97.2	9.52	7.04	-29.8	155	18.4	0.7	0.142
Pohopoco	8/13/2014	11:12:48	1	13.14	97.8	10.27	6.96	-25.3	174	17.8	2	0.127
_	9/11/2014	11:22:57	1	14.89	94.9	9.59	7.03	-29.2	196.8	16.6	1	0.125
	5/22/2014	11:20:37	0.5	11.42	99	10.8	6.52	-0.9	195	20.3	1.3	0.396
BZ-2	6/19/2014	10:46:18	1	13.44	95.8	9.99	6.98	-26.3	184	18.4	0.4	0.193
Pine Run	7/24/2014	11:13:37	1	15.38	94.5	9.45	7.18	-38.1	151	20.1	1	0.125
Trib.	8/13/2014	11:00:00	0.5	15.77	95.4	9.46	7.23	-40.6	165	23.1	2	0.111
	9/11/2014	11:09:15	1	15.74	94	9.33	7.23	-41	186	15.9	0.1	0.096
		9:15:54	0.5	17.04	111	10.68	7.68	-66.5	178	19.5	6.8	0.376
		9:14:47	5	16.95	110	10.63	7.51	-56.8	179	19.7	9.4	0.375
		9:14:08	10	16.72	109	10.56	7.3	-45	181	19.7	10.8	0.374
		9:13:19	15	15.57	106	10.49	6.99	-26.9	185	19.8	5.8	0.381
		9:11:52	20	13.96	94.2	9.71	6.69	-10.5	189	20.3	3	0.388
BZ-3		9:10:37	25	13.01	87.8	9.24	6.66	-8.4	190	20.9	2.6	0.393
Bouy/Beach		9:08:34	30	11.98	89.2	9.6	6.55	-2.6	195	20.6	2	0.395
		9:07:39	35	10.86	90.7	10.02	6.55	-2.5	196	20	1.8	0.402
		9:06:30	40	9.72	90.2	10.24	6.52	-0.8	198	19.8	1.9	0.41
	5/22/2014	9:05:27	45	9.17	88.9	10.22	6.5	0.1	198	19.7	0.9	0.413
		9:04:25	50	8.71	87.6	10.18	6.49	0.5	198	19.7	2.2	0.416
		9:03:33	55	8.17	86.3	10.17	6.48	1.1	198	19.5	1.3	0.421
		9:02:22	60	8.07	86.4	10.2	6.47	1.8	198	19.6	1.4	0.423
		9:00:50	65	7.76	87.5	10.41	6.47	1.6	198	19.8	1.9	0.425
		8:59:49	70	7.56	87.3	10.44	6.47	1.3	197	19.6	1.8	0.427
		8:58:33	75	7.45	87	10.43	6.46	2.1	198	19.5	1.9	0.428
		8:57:08	80	7.26	85.6	10.31	6.44	3.4	198	19.8	1.3	0.43
		8:56:10	85	7.14	85.2	10.3	6.43	3.7	198	19.5	1.6	0.431
		8:55:03	90	6.94	83.8	10.18	6.43	3.6	197	19.5	1.6	0.434
		8:53:22	95	6.66	82.1	10.04	6.45	2.6	196	19.4	1.3	0.438
		8:52:03	100	6.55	81.3	9.97	6.48	1.1	194	19.3	1.8	0.441
		8:49:47	104	6.59	81.2	9.94	6.53	-1.9	191	19.2	1.8	0.443
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Station	Date	Time	Depth	Temp	DO	DO	pН	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
											Ŭ	
		9:06:58	0.5	24.16	113	9.45	8.49	-114.8	132	17.5	3.5	0.183
		9:05:36	5	24.18	113	9.46	8.43	-111.3	133	17.7	4	0.183
		9:04:13	10	23.1	115	9.8	8.4	-109.1	133	17.9	6	0.183
		9:03:02	15	21.76	116	10.14	8	-85.8	135	18.2	9.1	0.18
		9:01:27	20	18.65	99.3	9.27	6.83	-17.8	150	19.6	19.2	0.19
		8:59:51	25	17.17	75.1	7.23	6.64	-7	155	18.9	8.9	0.2
BZ-3		8:58:22	30	14.36	65.9	6.73	6.58	-4.2	155	18.5	4.6	0.2
Bouy/Beach		8:57:19	35	12.3	66.5	7.11	6.58	-4.4	156	18.3	4.6	0.202
-		8:55:54	40	10.58	70.7	7.87	6.61	-6.2	155	18.1	4.5	0.21
	6/19/2014	8:54:44	45	9.43	73.1	8.35	6.63	-6.9	155	18	2.3	0.215
		8:53:58	50	8.79	74.4	8.64	6.65	-8.3	154	18	1.4	0.217
		8:52:56	55	8.53	74.8	8.74	6.67	-9.6	152	18	1.4	0.218
		8:51:46	60	8.27	76.7	9.02	6.71	-11.8	150	18	1.7	0.219
		8:50:52	65	8.07	77.5	9.16	6.73	-13	149	17.9	1.3	0.22
		8:49:57	70	7.86	77.2	9.17	6.76	-14.7	148	17.9	1.3	0.221
		8:48:44	75	7.66	77.7	9.28	6.79	-16.2	146	17.9	1	0.222
		8:47:26	80	7.46	77.8	9.33	6.83	-18.5	143	17.9	1.1	0.222
		8:46:03	85	7.14	74	8.95	6.86	-19.9	142	17.9	1.7	0.224
		8:44:40	90	6.95	73.2	8.9	6.91	-22.6	139	17.8	1.7	0.225
		8:43:37	95	6.82	70.2	8.55	6.95	-25.1	136	17.8	1.4	0.227
		8:42:23	100	6.7	66.1	8.08	7.02	-28.7	133	17.6	1.2	0.228
		8:41:17	105	6.62	63.6	7.79	7.12	-34.1	128	18.4	1.2	0.23
		8:39:41	107	7.05	63.7	7.71	7.31	-44.6	121	19.2	8.3	0.26
		9:30:59	0.5	25.72	106	8.6	7.85	-77.6	154	19.9	15.2	0.068
		9:29:53	5	25.9	105	8.56	7.82	-75.7	148	17.3	1.6	0.124
		9:29:13	10	25.88	105	8.54	7.64	-65.1	149	17.6	2.4	0.124
		9:28:28	15	25.4	107	8.74	7.37	-49.3	149	17.8	4.3	0.125
		9:27:25	20	23.33	90.4	7.7	6.87	-20.1	158	18	4.6	0.131
BZ-3		9:26:24	25	21.35	74.4	6.59	6.75	-13.4	162	18.1	4.3	0.135
Bouy/Beach	7/24/2014		30	20	51.6	4.69	6.62	-5.6	165	18.6	3.8	0.14
		9:24:05	35	19.03	42.8	3.97	6.58	-3.5	165	19.1	2.8	0.143
		9:23:05	40	16.13	34.9	3.44	6.53	-1.3	167	18.7	1	0.145
		9:22:00	45	12.73	38.7	4.11	6.54	-1.8	168	18.5	1.9	0.147
		9:20:01	50	10.08	44.1	4.96	6.58	-4.1	167	18.5	1.7	0.153
		9:18:13	55	9.11	49.8	5.74	6.63	-7	166	18.4	1.1	0.159
		9:17:25	60	8.78	53.6	6.22	6.67	-9.2	164	18.3	1.8	0.162
		9:15:20	65	8.47	63.1	7.39	6.76	-14.3	161	18.3	2	0.169
		9:14:23	70	8.25	62.6	7.36	6.76	-14.6	161	18.1	1.9	0.172
		9:13:02	75	7.97	62.1	7.35	6.82	-17.8	158	18	1.8	0.176
		9:12:13	80	7.73	60.9	7.25	6.84	-18.9	157	18.1	1.4	0.181
		9:11:05	85	7.44	58.6	7.03	6.88	-20.9	156	18.3	1.7	0.184
		9:10:17	90	7.23	57.6	6.95	6.91	-23	154	17.9	1.6	0.186
		9:08:43	95	6.99	54.7	6.63	6.98	-26.6	152	18	1.5	0.189
┗━━━━	L	9:07:18	100	6.87	50.9	6.2	7.06	-30.8	150	18.1	1.2	0.192

Station	Date	Time	Depth	Temp	DO	DO	pН	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
												(————
		9:20:51	0.5	24.22	105	8.79	7.73	-70.6	181	17.1	4.4	0.11
		9:20:19	5	24.24	105	8.77	7.65	-65.9	181	17.1	4.7	0.11
		9:19:07	10	24.22	104	8.71	7.44	-53.3	182	17.3	4	0.111
		9:18:04	15	24.22	103	8.63	7.21	-40	184	17.3	3.5	0.111
BZ-3		9:17:05	20	24.18	99	8.3	6.92	-23.3	185	17.6	4.2	0.111
Bouy/Beach		9:16:17	25	22.24	76.6	6.66	6.63	-6.2	196	17.4	4.1	0.12
,		9:14:34	30	21.12	50.7	4.51	6.47	2.9	200	17.6	4.1	0.125
		9:12:39	35	19.91	31.9	2.9	6.37	8.4	202	17.9	1.7	0.129
		9:11:25	40	18.37	23.5	2.2	6.32	11.3	204	18.1	1.5	0.13
	8/13/2014	9:10:38	45	15.66	18.5	1.84	6.29	12.6	206	18	1.2	0.132
		9:07:34	50	11.89	30.5	3.29	6.32	10.4	206	18.1	1.3	0.131
		9:04:58	55	9.68	40.1	4.56	6.38	6.7	205	18	1.3	0.134
		9:02:12	60	9.14	46.3	5.34	6.46	2.3	204	18.1	1.1	0.138
		9:01:17	65	8.68	54.4	6.33	6.5	0	203	18	1.4	0.14
		9:00:27	70	8.42	57.3	6.72	6.53	-1.8	202	18.1	1.1	0.156
		8:59:13	75	8.09	59.1	6.98	6.56	-3.7	202	18.1	1.7	0.158
		8:58:00	80	7.77	57.6	6.86	6.59	-4.9	202	18.1	1.2	0.162
		8:57:00	85	7.48	58.4	7	6.62	-6.7	201	18.1	1.8	0.165
		8:55:42	90	7.2	58.9	7.11	6.67	-9.6	200	17.9	1.5	0.167
		8:53:10	95	7.08	52.1	6.31	6.77	-14.9	199	17.8	1.1	0.17
		8:51:52	100	6.86	43.6	5.31	6.84	-18.9	199	17.9	2.1	0.174
		8:50:47	105	6.88	42.6	5.18	6.94	-24.3	198	17.8	1.4	0.176
					_							
		9:15:52	0.5	23.21	103	8.77	7.36	-48.4	172	17.7	6.4	0.112
		9:15:52	0.5 5	23.21	103	8.73	7.30	-40.4 -42.8	172	17.7	6.8	0.112
		9:13:23	10	23.23	102	8.7	7.15	-42.0	170.7	17.0	0.8 7	0.112
		9:14:32	15	23.22	102	8.58	7.15	-27.6	170.7	17.7	5.9	0.112
		9:14:19	20	23.2	99.3	8.49	6.9	-21.7	170.5	17.7	5.5	0.112
		9:13:31	25	22.46	66.1	5.72	6.55	-1.8	178.8	17.8	4.6	0.112
BZ-3		9:12:11	30	21.54	42.9	3.72	6.42	6	181.6	17.0	2.9	0.117
Bouy/Beach		9:09:00	35	20.86					183	18.1	2.3	0.124
Bouy/Beach	9/11/2014	9:08:02	40	20.13	20.9	1.89	6.34	10	182.3	18.1	2.8	0.120
	5/11/2014	9:06:32	45	18.73	8.6	0.8	6.31	11.6	183.1	18.3	1.8	0.120
		9:05:19	50	15.73	5.2	0.51	6.32	10.7	182	18.2	1.2	0.133
		9:03:11	55	11.59	23.1	2.52	6.41	5.3	180.3	18.8	1	0.149
		9:01:51	60	9.72	28.2	3.21	6.47	1.9	178.9	18.7	2.3	0.158
		9:00:26	65	8.96	38.2	4.42	6.55	-2.8	175.9	18.7	1.2	0.16
		8:59:11	70	8.5	48.9	5.72	6.65	-8.1	170.7	18.6	1.3	0.161
		8:58:08	75	8.17	48.9	5.76	6.69	-10.5	168.4	18.6	1.3	0.163
		8:57:23	80	7.82	49.8	5.93	6.74	-13.4	165.2	18.6	1.8	0.165
		8:55:37	85	7.57	42.9	5.13	6.81	-17.2	161.4	18.9	1.5	0.167
		8:54:42	90	7.37	41.4	4.97	6.88	-21.2	157.4	18.4	1.3	0.169
		8:53:28	95	7.08	37.3	4.52	6.97	-26.1	151.4	18.5	2	0.172
		8:51:23	100	6.92	32.5	3.96	7.16	-36.3	132.1	18.6	1.7	0.176

2014 Beltzville Re	servoir Water	Column Profile
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Station	Date	Time	Depth	Temp	DO	DO	pН	pHmV	ORP	Turbidity	Chloro	SpCond
otation	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
			-			5				_		
BZ-4	5/22/2014	11:04:41	1	16.37	98.4	9.62	6.88	-21.1	168	19.7	1.5	0.378
Wild Creek	6/19/2014	10:33:41	1	23.13	96.5	8.25	7.29	-44.7	163	18	-0.2	0.142
Upstream	7/24/2014	11:01:58	1	23.15	90.6	7.75	7.44	-53.2	136	17.7	0.1	0.085
•	8/13/2014	10:47:46	1	23.08	96.2	8.23	7.54	-59	149	16.9	-0.7	0.067
	9/11/2014	10:56:06	0.5	21.49	95.4	8.42	7.53	-58.6	167.7	16.3	0.9	0.067
												•
BZ-5	5/22/2014	10:52:40	1	12.65	96.7	10.26	6.97	-26	158	21.6	0.9	0.425
Pohopoco	6/19/2014	10:23:40	1	17.81	92.1	8.75	7.41	-50.9	169	23.3	-0.2	0.219
Upstream	7/24/2014	10:51:04	1	18.48	98.6	9.24	7.53	-58.1	138	19.5	-0.4	0.159
-	8/13/2014	10:37:35	1	17.89	94.4	8.95	7.46	-54.2	151	19.8	0.4	0.137
	9/11/2014	10:41:52	1	17.82	97.7	9.28	7.44	-53	180.9	19.4	-0.5	0.146
		8:38:06	0.5	16.78	110	10.62	7.59	-61.4	172	19.3	3.3	0.379
		8:36:54	5	16.49	110	10.69	7.55	-58.8	173	19.6	10.3	0.381
		8:35:27	10	16.2	107	10.49	7.18	-38.1	176	20.7	57.6	0.381
		8:34:31	15	15.33	100	10	6.85	-19.4	180	20.1	5.5	0.385
		8:33:01	20	14.31	93.1	9.52	6.69	-10.5	183	20.5	2.7	0.387
		8:31:54	25	13.04	88.1	9.26	6.61	-5.8	187	21.2	3	0.394
		8:30:15	30	12.26	95.8	10.25	6.5	0.1	194	20.3	2	0.396
BZ-6		8:29:16	35	10.86	92	10.17	6.38	7.1	200	19.9	1.8	0.405
In-Lake		8:28:20	40	10.05	90.3	10.17	6.33	9.4	202	19.9	1.3	0.409
Tower		8:27:19	45	9.04	89.4	10.32	6.29	11.6	203	19.8	1.8	0.418
	5/22/2014	8:26:26	50	8.7	88.5	10.29	6.27	12.8	204	19.5	1.5	0.421
Secchi		8:25:31	55	8.32	88.2	10.36	6.26	13.4	204	19.6	1.5	0.424
7.1 M		8:24:25	60	7.95	87.8	10.4	6.24	14.5	205	19.6	1.5	0.428
		8:23:21	65	7.77	87.8	10.44	6.22	15.1	205	19.6	1.8	0.43
		8:22:16	70	7.63	87.7	10.47	6.21	16	205	19.6	2	0.432
		8:21:15	75	7.45	87.4	10.48	6.19	17	205	19.7	1.7	0.433
		8:19:32	80	7.36	86.4	10.38	6.15	19.4	205	19.5	1.6	0.434
		8:18:36	85	7.19	85.8	10.36	6.11	21.2	206	19.7	1.9	0.435
		8:17:38	90	6.77	84	10.25		22.9	207	19.6	1.5	0.44
		8:16:36	95	6.47	82.4	10.12	6.05	24.4	207	19.6	1.9	0.444
		8:15:54	100	6.35	81	9.98	6.04	24.9	207	19.5	2.2	0.446
		8:14:59	105	6.26	79.7	9.85	6.03	25.5	206	19.5	1.7	0.447
		8:14:19	110	6.17	78.8	9.75	6.03	25.3	206	19.5	1.6	0.449
		8:13:31	115	6.16	78.4	9.71	6.05	24.5	204	19.8	1.7	0.451
		8:12:54	120 125	6.16	78.3 78	9.69	6.08	22.5	202	21.1	1.5	0.453
		8:10:24	120	6.18	10	9.65	6.16	18.3	194	23	2.4	0.456

Station	Date	Time	Depth	Temp	DO	DO	pН	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
		8:29:52	0.5	23.12	112	9.62	8.41	-109.8	127	17.7	3.9	0.182
		8:29:09	5	23.11	113	9.62	8.31	-103.8	129	17.7	4.4	0.182
		8:28:18	10	23.05	112	9.61	8.05	-88.7	135	18	5.4	0.182
		8:27:22	15	22.95	111	9.49	7.63	-64.3	141	18.2	5	0.18
		8:25:54	20	18.86	95.7	8.9	6.48	2.3	161	20.7	33.2	0.192
		8:24:06	25	16.43	74.6	7.3	6.24	15.5	168	19.4	8.2	0.197
		8:22:42	30	14.17	66.7	6.85	6.18	18.7	169	18.6	6.2	0.2
		8:21:07	35	12.51	70.3	7.48	6.19	17.9	168	18.5	4.8	0.201
BZ-6		8:20:05	40	10.39	75.6	8.46	6.18	17.7	169	18.3	3.3	0.205
In-Lake		8:19:09	45	9.39	75.3	8.62	6.18	18	170	18.2	2.1	0.215
Tower	6/19/2014	8:17:47	50	8.99	77.8	8.99	6.19	17.4	169	18.1	2.4	0.217
		8:16:42	55	8.62	77.7	9.06	6.18	17.9	169	18.1	1.8	0.218
		8:15:50	60	8.38	78.1	9.16	6.17	18.2	168	18.1	1.8	0.219
Secchi		8:14:49	65	8.06	77.7	9.19	6.16	18.7	168	18.3	1.5	0.22
2.74 M		8:13:51	70	7.95	77.8	9.22	6.15	19	167	18	1.6	0.221
		8:12:42	75	7.48	76.8	9.21	6.13	20.2	168	18.1	1.3	0.223
		8:11:36	80	7.31	76.3	9.19	6.12	20.9	167	18.1	1.5	0.224
		8:10:38	85	7.15	75.1	9.08	6.1	21.6	167	18.2	1.8	0.225
		8:09:44	90	7.07	73.8	8.94	6.09	22.3	166	18.2	0.9	0.225
		8:08:41	95	6.93 6.74	71.6 67.8	8.7 8.28	6.07 6.04	23.6 25.1	166	18.2 18.2	1.6 1.9	0.225
		8:07:12 8:06:01	100 105	6.74 6.57	64.6	0.20 7.92	6.04	25.1	166 165	18.2	1.9	0.227
		8:04:38	110	6.51	63	7.92	6.02	26.2	163	18.4	1.5	0.228
		8:03:27	115	6.48	62.3	7.66	6.02	25.7	161	10.4	1.5	0.223
		8:02:02	120	6.46	60.8	7.48	6.05	24.2	157	40.1	1.5	0.231
		7:59:31	125	7.02	52.1	6.31	6.13	20.4	148	-13.7	10.4	0.256
	+	8:57:00	0.5	25.25	105	8.61	7.96	-83.8	128	17.8	-0.4	0.063
		8:55:54	5	25.28	104	8.56	7.77	-73	137	17.6	0.8	0.124
		8:55:02	10	25.29	104	8.55	7.51	-57.5	141	17.7	2	0.124
		8:54:12	15	25.26	103	8.47	7.17	-37.4	144	17.9	2.7	0.124
		8:53:34	20	23.61	98.6	8.36	6.86	-19.5	153	17.8	4	0.131
		8:51:42	25	21.16	64.1	5.69	6.51	0.4	164	18.2	5.6	0.137
		8:50:26	30	20.12	52.8	4.79	6.4	6.6	168	18.4	5.1	0.141
BZ-6		8:48:27	35	18.86	41.9	3.9	6.33	10.8	169	18.7	3.1	0.142
In-Lake		8:46:41	40	16.01	34.8	3.43	6.26	14.2	171	18.5	2.6	0.146
Tower	7/24/2014	8:45:07	45	12.85	39.4	4.17	6.27	13.4	171	18.6	2.9	0.145
		8:42:20	50	9.89	49	5.54	6.33	9.7	169	18.5	1.7	0.15
		8:39:51	55	9.07	57.8	6.67	6.41	4.8	165	18.4	2.3	0.156
Secchi		8:38:50	60	8.77	60.6	7.04	6.44	3.1	164	18.6	1.2	0.161
3.3 M		8:38:00	65	8.41	61.4	7.2	6.46	2.1	163	18.4	1.7	0.166
		8:37:00	70	8.24	62.9	7.41	6.48	1.3	162	18.4	1.1	0.17
		8:36:12	75	8.09	63	7.44	6.48	0.8	161	18.6	1.1	0.172
		8:34:57	80	7.9	64.2	7.62	6.53	-1.6	158	18.6	1.7	0.174
		8:32:43	85	7.36	61.2	7.36	6.56	-3.6	154	18.5	1.1	0.178
		8:31:41	90	7.13	58	7.02	6.58	-4.6	152	18.4	2	0.18
		8:30:27 8:28:57	95 100	7.01 6.8	55.3 51	6.71 6.22	6.62 6.68	-6.9 -10	148 144	18.5 18.5	1.6 1.8	0.181 0.182
		8:28:57	100	6.72	49.3	6.22	6.75	-10	144	18.5	1.8	0.182
		8:26:22	105	6.68	49.3 48.1	5.88	6.82	-14.1	138	18.5	1.4	0.183
		8:25:23	115	6.7	40.1	5.82	6.89	-17.7	133	18.5	1.0	0.184
		8:24:22	120	6.64	46.1	5.65	6.98	-26.4	127	26.4	2.3	0.184
		8:23:40	120	6.64	46.2	5.65	7.03	-20.4	115	20.4	1.7	0.185
		0.20.40	120	0.04	70.2	0.00	1.00	20.2	110	<u> </u>	1.7	0.100

Station	Date	Time	Depth	Temp	DO	DO	pН	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
		8:42:33	0.5	24.18	105	8.77	7.75	-71.7	168	17	3.6	0.11
		8:41:48	5	24.19	104	8.73	7.68	-67.1	170	16.9	4.1	0.11
		8:39:57	10	24.18	104	8.69	7.5	-56.8	171	16.9	3.7	0.11
		8:38:40	15	24.17	103	8.65	7.3	-45.4	171	17	3.5	0.11
		8:37:30	20	24.15	102	8.52	7.08	-32.4	172	17.1	2.7	0.11
		8:35:58	25	22.53	84	7.27	6.68	-9	180	17.1	4.7	0.119
		8:34:05	30	21.07	46.3	4.12	6.45	3.9	184	17.3	6.5	0.124
BZ-6		8:31:27	35	19.77	20.8	1.9	6.33	11.1	186	17.6	3.4	0.127
In-Lake		8:29:37	40	18.12	14	1.32	6.29	12.9	187	17.9	2.1	0.128
Tower		8:28:13	45	15	20.6	2.07	6.28	12.9	188	17.8	1.1	0.129
	8/13/2014	8:25:33	50	11.21	36.2	3.97	6.33	9.7	187	17.7	1.4	0.13
		8:22:23	55	9.47	44.9	5.13	6.38	6.8	186	17.8	1.7	0.131
Secchi		8:20:51	60	9.01	49.5	5.72	6.42	4.7	184	17.7	1.5	0.133
4.24 M		8:18:54	65	8.61	53.7	6.26	6.46	2.4	182	17.8	1	0.136
		8:17:51	70	8.28	56.7	6.66	6.48	1.2	181	17.7	1.8	0.139
		8:16:56	75	8.06	57.2	6.76	6.49	0.5	180	17.7	1.2	0.155
		8:15:31	80	7.63	56.9	6.79	6.5	-0.3	179	17.8	1	0.158
		8:14:14	85	7.33	55.1	6.63	6.52	-1.4	177	17.7	1.6	0.161
		8:12:36	90	7.13	51.6	6.24	6.53	-1.9	176	17.9	1.3	0.163
		8:11:33	95	6.99	49	5.94	6.57	-4	173	17.8	0.6	0.165
		8:09:25	100	6.86	44.7	5.45	6.62	-6.7	170	17.8	1.1	0.167
		8:07:21	105	6.75	40.2	4.9	6.69	-10.4	167	18	1	0.169
		8:05:43	110	6.72	37.8	4.61	6.74	-13.7	164	17.9	1.1	0.171
		8:04:34	115	6.67	36.4	4.45	6.8	-17	161	18	1.3	0.171
		8:03:15	120	6.67	35.4	4.33	6.88	-20.9	156	18.1	1.7	0.173
L	L	8:01:53	125	7.24	35.3	4.26	7	-27.8	162	20.6	1.4	0.174
		8:43:27	0.5	23.15	103	8.82	7.74	-70.8	164.3	18	5.9	0.111
		8:42:22	5	23.19	103	8.8	7.62	-63.7	162.8	18	5.1	0.111
		8:40:55	10	23.2	102	8.72	7.45	-53.8	161.1	18	6.2	0.111
		8:39:46	15	23.19	102	8.69	7.29	-44.5	159.7	18	5.9	0.111
		8:37:53	20	23.19	97.6	8.34	6.83	-17.8	159	18.1	5.6	0.112
		8:36:22	25	22.03	47.5	4.15	6.45	4.1	170.1	18	4.2	0.119
		8:34:31	30	21.57	31.2	2.75	6.37	8.5	168.3	18.1	3.6	0.122
BZ-6		8:32:46	35	20.9			6.33		162.4		1.1	0.126
In-Lake		8:31:27	40	19.96	3.7	0.34	6.31	11.9	155.8	18.6	3.1	0.128
Tower		8:30:25	45	18.53	3.3	0.31	6.3	12.3	139.5	18.6	1.6	0.128
O l. i	0/11/2011	8:29:15	50	16.44	4.7	0.46	6.3	11.9	180.1	18.6	1.8	0.13
Secchi	9/11/2014	8:25:59	55	11.69	24.1	2.62	6.37	7.4	193.7	18.8	1	0.136
3.2 M		8:24:01	60	9.71	32.8	3.73	6.41	4.9	192.9	18.9	1.3	0.153
		8:21:56	65 70	8.98	41	4.74	6.48	1.4	190.1	19.2	0.8	0.155
		8:20:36	70	8.52	43.4	5.08	6.51	-0.5	188.5	18.8	1.3	0.156
		8:18:35 8:16:58	75 80	7.99	51.3	6.08 5.93	6.57	-3.8 -4.9	184.9 183.3	18.9 18.9	1.3	0.158 0.159
		8:16:58	80	7.74 7.45	49.8 48.4	5.93	6.59 6.61	-4.9	183.3	18.9	0.8 1.7	0.159
		8:14:13	85 90	7.45	46.4	5.53	6.64	-6.4 -7.7	178.6	18.9	0.8	0.161
		8:12:30	90 95	7.07	45.9	5.05	6.67	-7.7	175.9	19	1.4	0.162
		8:09:48	95 100	6.95	33	4.01	6.71	-9.5	175.9	27.1	2.7	0.164
		8:07:48	100	6.88	- 33 - 28	3.41	6.71	-11.7	166.8	27.1	3	0.166
		8:06:35	105	6.8	20 25.3	3.41	6.83	-15.4 -18.1	163.3	29 21.3	2.9	0.168
		8:05:14	115	6.8	25.3	3.09	6.88	-10.1	159.9	21.3	2.9	0.169
		8:03:40	120	6.75	23.2	2.85	6.96	-21.3	159.9	20.9	5.2	0.17
		8:02:34	120	6.96	23.5	2.85	7.05	-25.5	154.5	849	28.1	0.171
		0.02.34	120	0.90	20.0	2.07	1.00	-30.2	101.0	049	20.1	0.170

Station	Date	Time	Depth	Temp	DO	DO	pН	pHmV	ORP	Turbidity	Chloro.	SpCond
otation		hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
	,, .										37 -	
		9:55:52	0.5	17.74	113	10.77	7.74	-70.2	182	19.8	9.3	0.368
		9:55:12	5	17.58	112	10.71	7.59	-61.6	180	20.4	16.8	0.367
		9:52:56	10	17.12	101	9.76	6.91	-22.3	184	19.8	4.8	0.355
BZ-7		9:51:46	15	14.99	96.7	9.75	6.8	-16.2	193	20.4	3.2	0.381
Upper Lake		9:50:51	20	13.84	94	9.71	6.73	-12.3	195	20.4	2.1	0.396
No-Wake	5/22/2014	9:48:45	25	12.52	88.5	9.41	6.53	-1.2	202	20.7	2.1	0.397
ino muno	0,22,2011	9:47:49	30	10.46	82.3	9.18	6.47	1.6	204	20.4	2.2	0.41
		9:46:24	35	9.21	80.3	9.23	6.44	3.2	205	20	1.2	0.417
		9:45:39	40	8.77	79.6	9.24	6.46	2.3	204	19.6	1.7	0.422
		9:43:07	45	8.57	78.9	9.2	6.46	2	204	19.6	2.3	0.425
		9:36:42	0.5	25.28	112	9.23	7.85	-77.3	156	18.3	4.2	0.177
		9:35:58	5	25.26	110	9.02	7.49	-56.3	156	18.4	5.1	0.176
		9:35:19	10	22.75	97.6	8.41	6.99	-27.1	166	18.8	6.2	0.162
BZ-7		9:34:08	15	19.66	90.5	8.28	6.84	-18.7	173	19.6	7.6	0.198
Upper Lake		9:33:15	20	17.43	78.7	7.54	6.76	-13.8	176	19.8	10.6	0.202
No-Wake	6/19/2014	9:32:13	25	16.27	71.3	6.99	6.72	-11.9	177	19.8	4.9	0.206
		9:30:57	30	15.69	66.1	6.56	6.7	-10.5	177	19.3	3.2	0.206
		9:29:44	35	13.88	57.9	5.98	6.66	-8.4	179	18.8	2.1	0.207
		9:28:50	40	12.85	55.4	5.86	6.66	-8.6	180	18.5	2.4	0.207
		9:28:11	45	11.01	52.7	5.81	6.68	-9.8	180	18.3	2	0.211
		9:27:07	50	9.84	52.5	5.94	6.74	-13.3	180	18	1.6	0.213
		9:26:17	55	9.46	52.3	5.97	6.81	-17.2	179	17.9	1.1	0.214
		10:02:06	0.5	26.78	105	8.4	7.73	-71	97	17.4	1.6	0.12
		10:01:33	5	26.77	105	8.38	7.58	-62.1	96	17.7	1.4	0.12
		10:01:02	10	26.74	104	8.35	7.4	-51	96	17.9	2.2	0.12
BZ-7		10:00:15 9:59:05	15 20	24.11 21.96	98.5 91.9	8.28 8.04	7.14	-35.9 -29.2	105 108	18.3 18.7	2.6 3.5	0.125
Upper Lake	7/24/2014	9:58:20	20	20.82	91.9 84	7.52	6.97	-29.2 -25.7	108	18.7	3.5	0.142
No-Wake	7/24/2014	9:57:20	30	19.75	74.6	6.82	6.89	-25.7	108	18.8	2.4	0.145
NO-Wake		9:56:23	35	19.02	67	6.21	6.89	-21.7	100	18.8	2.4	0.140
		9:55:06	40	18.23	58.7	5.53	6.9	-21.8	97	18.8	1.8	0.140
		9:53:37	45	16.73	40.7	3.96	6.93	-23.5	86	19.1	0.9	0.147
		9:52:32	50	12.38	30	3.2	7	-27.8	76	18.7	1.2	0.147
		9:49:55	55	10.44	3.5	0.39	, 7.11	-34	-31	36.3	2.6	0.159
		9:51:09	0.5	24.46	107	8.9	7.8	-74.3	136	17.2	4.6	0.066
		9:50:26	5	24.47	106	8.84	7.67	-66.8	135	17.3	6.2	0.105
		9:49:26	10	24.44	104	8.65	7.32	-46.5	133	17.5	3.4	0.105
		9:48:31	15	23.5	84.7	7.2	7	-27.7	141	17.7	2.6	0.095
		9:47:40	20	22.49	82.7	7.16	6.93	-23.5	143	17.8	3.1	0.125
BZ-7	8/13/2014	9:46:16	25	21.4	81	7.16	6.89	-21.5	140	18	2.2	0.132
Upper Lake		9:44:49	30	20.81	75.6	6.76	6.83	-18.1	137	17.9	2.5	0.134
No-Wake		9:43:24	35	20.41	63.7	5.74	6.77	-14.4	135	18.1	1.1	0.134
		9:41:08	40	19.41	39.4	3.63	6.68	-9.2	129	18.3	1.4	0.134
		9:39:47	45	16.52	17.6	1.72	6.64	-7.3	123	18.6	1.1	0.134
		9:38:45	50	14.45	14.5	1.48	6.69	-10.3	116	25	0.9	0.138
		9:37:39	55	10.55	19	2.11	6.8	-16.8	104	30.4	1.6	0.147

Station	Date	Time	Depth	Temp	DO	DO	рΗ	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	С	%	mg/L		mV	mV	NTU	ug/L	mS/cm
		9:41:55	0.5	23.3	106	9.05	7.47	-55.1	187.3	18.1	5.7	0.106
		9:41:43	5	23.31	106	9.02	7.42	-52	186.6	18	5.1	0.109
		9:41:17	10	23.29	105	8.92	7.31	-45.6	186.1	18	4.9	0.109
		9:40:38	15	23.28	104	8.86	7.17	-37.4	185.2	18	5.6	0.109
		9:39:54	20	23.22	101	8.58	6.98	-26.8	186.9	18.1	5.8	0.108
BZ-7		9:38:54	25	23.01	90.9	7.8	6.84	-18.2	189.5	18.1	5.9	0.103
Upper Lake	9/11/2014	9:37:57	30	22.4	79.4	6.88	6.8	-16.3	189	18.3	3.4	0.095
No-Wake		9:36:07	35	21	62.6	5.58	6.69	-9.9	193.1	18.8	3.6	0.127
		9:35:17	40	19.77	41.9	3.83	6.65	-7.9	194.9	18.8	1.8	0.131
		9:33:07	45	18.63	23.8	2.23	6.75	-13.2	195	18.3	1.8	0.132
		9:31:47	50	17.58	19.6	1.87	6.93	-23.7	195.6	18.7	1.3	0.133

APPENDIX B

LABORATORY CUSTODY SHEETS





Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	06/05 2295	/14 -14-0015795
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		05/22 Clien	/14 07:30 t
Sample Desc: BZ-1 Surface					Date Rece	ived:	05/22	/14 13:45
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI							<u> </u>	
MICROBIOLOGY								
Escherichia coli	33	mpn/100ml	1	1	SM 9223B	05/23	09:00	твр
Fecal Coliform	58	/100ml	2	1	SM 9222D	'	14:40	PLW
Total Coliform	160	mpn/100ml	1	1	SM 9223B	05/23	09:00	ТВР
CHEMISTRY						•		
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	05/22	16:30	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/02	15:00	HRG
Phosphorus as P, Total	<.01	.mg/l	.01	1	SM 4500P-E	05/28	14:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/05	03:28	JCL
Nitrogen, Nitrate	0.68	mg/l	.05	1	EPA 353.2	05/22	18:47	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/22	17:22	JCL
Nitrogen, Total Kjeldahl	0.27	mg/l	.25	1	EPA 351.2	05/30	14:54	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	05/22	14:55	EMW
Total Organic Carbon	1.8	mg/L	1	1	SM5310 C	05/28	18:51	ALD
RESIDUES								
Solids, Total Dissolved	20	mg/l	5	1	SM 2540C	05/28	12:35	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	05/28	12:35	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	05/27	13:45	HRG

Reviewed and Approved by:

Wisting M. stee

Christina Kistler Account Executive

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







Attention:	Gregory Wacik					Date of R	eport:	06/05	5/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	5–14–0015795
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	05/22	2/14 07:30
	Philadelphia PA 19107					Collected	By:	Clier	nt
Sample Desc:	BZ-1 Surface					Date Rece	ived:	05/22	2/14 13:45
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
			-						

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.

O2 The total coliform sample was placed in the incubator at 05/22/14 at 14:45.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District					Date of R Lab ID:	eport:		06/05/14 2295-14-0015796	
Environmental Resources Branch									
100 Penn Square East					Date Coll			/14 11:20	
Philadelphia PA 19107					Collected	By:	Clien	ıt	
Sample Desc: BZ-2 Surface					Date Rece	ived:	05/22	2/14 13:45	
PWSID: 3130843			Rep	Dilutn		Test	Test		
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst	
BACTI									
MICROBIOLOGY									
Escherichia coli	22	mpn/100ml	1	1	SM 9223B	05/23	09:00	TBP	
Fecal Coliform	44	/100mL	2	1	SM 9222D	05/22	14:40	PLW	
Total Coliform	460	mpn/100ml	1	1	SM 9223B	05/23	09:00	TBP	
CHEMISTRY									
COLORMETRIC									
Phosphate as P, Ortho	0.07	mg/l	.01	1	SM 4500P-E	05/22	16:30	HRG	
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/02	15:00	HRG	
Phosphorus as P, Total	0.08	mg/l	.01	1	SM 4500P-E	05/28	14:30	HRG 、	
NITROGENS									
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/05	03:44	JCL	
Nitrogen, Nitrate	0.15	mg/l	.05	1	EPA 353.2	05/22	18:50	JCL	
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/22	17:23	JCL	
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	05/30	14:55	ALD	
OTHER									
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	05/22	14:55	EMW	
Total Organic Carbon	<1	mg/l	1	1	SM5310 C	05/28	19:25	ALD	
RESIDUES									
Solids, Total Dissolved	10	mg/l	5	1	SM 2540C	05/28	12:35	ТМН	
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	05/28	12:35	ТМН	
TITRATIONS									
Alkalinity, Total to pH 4.5	6	mg/l	1	1	SM 2320 B	05/27	13:45	HRG	

Reviewed and Approved by:

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Attention:	Gregory Wacik					Date of R	eport:	06/05	6/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0015796
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	05/22	2/14 11:20
	Philadelphia PA 19107					Collected	Client		
Sample Desc:	BZ-2 Surface					Date Rece	ived:	05/22	2/14 13:45
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
				ب ب ب ب ب ب ب ا					

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.

O2 The total coliform sample was placed in the incubator at 05/22/14 at 14:45.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	06/05 2295	/14 -14-0015797
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		05/22 Clien	/14 08:50 t
Sample Desc: BZ-3 Surface					Date Rece	ived:	05/22	/14 13:45
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Escherichia coli	3	mpn/100ml	1	1	SM 9223B	05/23	09:00	TBP
Fecal Coliform	3	/100mL	2	1	SM 9222D	05/22	15:10	PLW
Total Coliform	14	mpn/100ml	1	1	SM 9223B	05/23	09:00	ТВР
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.05	mg/l	.01	1	SM 4500P-E	05/22	16:30	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/02	15:00	HRG
Phosphorus as P, Total	0.05	mg/l	.01	1	SM 4500P-E	05/28	14:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/05	04:29	JCL
Nitrogen, Nitrate	0.62	mg/l	.05	1	EPA 353.2	05/22	18:51	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/22	17:24	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	05/30	14:56	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	05/22	14:55	EMW
Total Organic Carbon	1.8	mg/l	1	1	SM5310 C	05/28	19:37	ALD
RESIDUES								
Solids, Total Dissolved	22	mg/l	5	1	SM 2540C	05/28	12:35	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	05/28	12:35	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	05/27	13:45	HRG

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Attention:	Gregory Wacik					Date of R	eport:	06/05	6/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0015797
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	05/22	2/14 08:50
	Philadelphia PA 19107					Collected	By:	Client	
Sample Desc:	BZ-3 Surface					Date Rece	ived:	05/22	2/14 13:45
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

O2 The total coliform sample was placed in the incubator at 05/22/14 at 14:45.

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Attention: Gregory Wacik					Date of R	eport:	06/05/14	
Reported To: USACE, Philadelphia District					Lab ID:		2295	-14-0015798
Environmental Resources Branch								
100 Penn Square East					Date Coll			/14 08:50
Philadelphia PA 19107					Collected	By:	Clien	t
Sample Desc: BZ-3 Mid-Depth					Date Rece	ived:	05/22	/14 13:45
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY	تراقي ها بين الله الله الله الله الله الله الله الل				<i></i>			
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	05/22	16:30	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/02	15:00	HRG
Phosphorus as P, Total	0.02	mg/l	.01	1	SM 4500P-E	05/28	14:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	d6919-03	06/05	04:44	JCL
Nitrogen, Nitrate	0.72	mg∕i	.05	1	EPA 353.2	05/22	18:53	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/22	17:25	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	05/30	14:57	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	05/22	14:55	EMW
Total Organic Carbon	1.3	mg/l	1	1	SM5310 C	05/28	19:48	ALD
RESIDUES								
Solids, Total Dissolved	33	mg/l	5	1	SM 2540C	05/28	12:35	тмн
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	05/28	12:35	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	05/27	14:00	HRG

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: Gregory Wacik					Date of R	eport:	06/05	/14
Reported To: USACE, Philadelphia District					Lab ID:		2295	-14-0015799
Environmental Resources Branch								
100 Penn Square East					Date Coll		•	/14 08:50
Philadelphia PA 19107					Collected By:		Clien	t
Sample Desc: BZ-3 Deep					Date Rece	ived:	05/22	/14 13:45
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY	د ها به رو هر ای تا ها هر ام م							
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	05/22	16:30	HRG
Phosphorus as P, Dissolved	<.05	mg/t	. 05	1	SM 4500P-E	06/02	15:00	HRG
Phosphorus as P, Total	0.03	mg/l	.01	1	SM 4500P-E	05/28	14:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/05	04:59	JCL
Nitrogen, Nitrate	0.77	mg/l	.05	1	EPA 353.2	05/22	18:53	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/22	17:00	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	05/30	15:00	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	05/22	14:55	EMW
Total Organic Carbon	1.2	mg/l	1	1	SM5310 C	05/28	20:44	ALD
RESIDUES								
Solids, Total Dissolved	30	mg/l	5	1	SM 2540C	05/28	12:35	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	05/28	12:35	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	05/27	14:00	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		06/05/14 2295-14-0015800	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		05/22 Clien	/14 10:10 t
Sample Desc: BZ-4 Surface					Date Rece	ived:	05/22	/14 13:45
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI					اللك لسا الما للما فعا عدا اعدا اعدا بعا هما هو			
MICROBIOLOGY								
Escherichia coli	5	mpn/100ml	1	1	SM 9223B	05/23	09:00	твр
Fecal Coliform	6	/100ml	2	1	SM 9222D	05/22	15:10	
Total Coliform	54	mpn/100ml	1	1	SM 9223B	05/23	09:00	твр
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	05/22	16:30	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/02	15:00	HRG
Phosphorus as P, Total	0.02	mg/l	.01	1	SM 4500P-E	05/28	14:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/05	05:14	JCL
Nitrogen, Nitrate	0.50	mg/L	.05	1	EPA 353.2	'	18:54	
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/22	17:27	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	05/30	15:01	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B		14:55	EMW
Total Organic Carbon	1.2	mg/l	1	1	SM5310 C	05/27	18:15	ALD
RESIDUES								
Solids, Total Dissolved	7	mg/l	5	1	SM 2540C	05/28	12:35	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	05/28	12:35	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/l	1	1	SM 2320 B	05/27	14:00	HRG

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Christina Kistler Account Executive

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Attention:	Gregory Wacik					Date of R	eport:	06/05	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0015800
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	05/22	/14 10:10
	Philadelphia PA 19107					Collected	Clien	rt	
Sample Desc:	BZ-4 Surface					Date Rece	ived:	05/22	2/14 13:45
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

O1 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.

O2 The total coliform sample was placed in the incubator at 05/22/14 at 14:45.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		06/05 2295	/14 -140015801
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		05/22 Clien	/14 10:00 t
Sample Desc: BZ-5 Surface					Date Rece	ived:	05/22	/14 13:45
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Escherichia coli	120	mpn/100ml	1	1	SM 9223B	05/23	09:00	ТВР
Fecal Coliform	120	/100mL	2	1	SM 9222D	05/22	15:10	PLW
Total Coliform	1400	mpn/100ml	1	1	SM 9223B	05/23	09:00	твр
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	05/22	16:30	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/02	15:00	HRG
Phosphorus as P, Total	0.04	mg∕L	.01	1	SM 4500P-E	05/28	14:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	. 05	1	D6919-03	06/05	05:29	JCL
Nitrogen, Nitrate	1.11	mg/l	.05	1	EPA 353.2	05/22	18:54	JCL
Nitrogen, Nitrite	<.05	mg/l	. 05	1	EPA 353.2	05/22	17:28	JCL
Nitrogen, Total Kjeldahl	< 25	mg/l	. 25	1	EPA 351.2	05/30	15:02	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	05/22	14:55	EMW
Total Organic Carbon	1.4	mg/l	1	1	SM5310 C	05/27	19:27	ALD
RESIDUES								
Solids, Total Dissolved	44	mg/l	5	1	SM 2540C	05/28	12:35	ТМН
Solids, Total Suspended	3	mg/l	3	1	SM 2540D	05/28	12:35	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/l	1	1	SM 2320 B	05/27	14:00	HRG

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Christina Kistler Account Executive

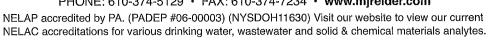
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Attention:	Gregory Wacik					Date of R	eport:	06/05	/14
Reported To:	USACE, Philadelphia District					Lab ID:	•	2295	-14-0015801
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	05/22	/14 10:00
	Philadelphia PA 19107					Collected	By:	Clien	t
Sample Desc:	BZ-5 Surface					Date Rece	ived:	05/22	/14 13:45
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

- O2 The total coliform sample was placed in the incubator at 05/22/14 at 14:45.
- 03 One TOC CCV was 111% recovery.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	06/05 2295	/14 -14-0015802
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		05/22 Clien	/14 08:00 t
Sample Desc: BZ-6 Surface					Date Rece	ived:	05/22	/14 13:45
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI		رهم رهم رهم است اسر المنا الما من الما						
MICROBIOLOGY								
Escherichia coli	5	mpn/100ml	1	1	SM 9223B	05/23	09:00	твр
Fecal Coliform	6	/100ml	2	1	SM 9222D	05/22	15:10	PLW
Total Coliform	25	mpn/100ml	1	1	SM 9223B	05/23	09:00	TBP
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	05/22	16:30	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/02	15:00	HRG
Phosphorus as P, Total	0.03	mg/l	.01	1	SM 4500P-E	05/28	14:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/05	05:44	JCL
Nitrogen, Nitrate	0.62	mg/l	.05	1	EPA 353.2	05/22	18:55	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/22	17:29	JCL
Nitrogen, Total Kjeldahl	0.29	mg/l	.25	1	EPA 351.2	05/30	15:03	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B		14:55	EMW
Total Organic Carbon	1.8	mg/l	1	1	SM5310 C	05/27	19:39	ALD
RESIDUES								
Solids, Total Dissolved	32	mg/l	5	1	SM 2540C	05/28	12:35	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	05/28	12:35	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	05/27	14:15	HRG

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Attention:	Gregory Wacik					Date of R	eport:	06/05	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0015802
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	05/22	/14 08:00
	Philadelphia PA 19107					Collected	By:	Clier	it
Sample Desc:	BZ-6 Surface					Date Rece	ived:	05/22	2/14 13:45
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

- O2 The total coliform sample was placed in the incubator at 05/22/14 at 14:45.
- 03 One TOC CCV was 111% recovery.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District					Date of Report: Lab ID:		06/05/14 2295-14-0015803	
Environmental Resources Branch					100 10.		22/3	14 0019005
100 Penn Square East					Date Coll	ected:	05/22	/14 08:00
Philadelphia PA 19107					Collected By: Date Received:		Clien	
Sample Desc: BZ-6 Mid-Depth							05/22	/14 13:45
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.04	mg/l	.01	1	SM 4500P-E	05/22	16:30	HRG
Phosphorus as P, Dissolved	<.05	mg/l	. 05	1	SM 4500P-E	06/02	15:00	HRG
Phosphorus as P, Total	0.04	mg/l	.01	1	SM 4500P-E	05/28	14:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/05	05:59	JCL
Nitrogen, Nitrate	0.76	mg/l	.05	1	EPA 353.2	05/22	18:56	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/22	17:30	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	05/30	15:06	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	05/22	14:55	EMW
Total Organic Carbon	1.2	mg/l	1	1	SM5310 C	05/27	19:50	ALD
RESIDUES								
Solids, Total Dissolved	26	mg/L	5	1	SM 2540C	05/28	12:35	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	05/28	12:35	ТМН
TITRATIONS						ŗ		
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	05/27	14:15	HRG

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:	Gregory Wacik					Date of R	eport:	06/05	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0015803
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	05/22	2/14 08:00
	Philadelphia PA 19107					Collected	By:	Clien	it
Sample Desc:	BZ-6 Mid-Depth					Date Rece	ived:	05/22	2/14 13:45
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
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OP One TOC CCV was 111% recovery.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	2295-14-00158	•
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		05/22 Clien	2/14 08:00 at
Sample Desc: BZ-6 Deep					Date Rece	ived:	05/22	2/14 13:45
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY						المراجع المراجع المراجع		
COLORMETRIC								
Phosphate as P, Ortho	0.06	mg/l	. 01	1	SM 4500P-E	05/22	16:45	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/02	15:00	HRG
Phosphorus as P, Total	0.06	mg/l	. 01	1	SM 4500P-E	05/28	14:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	. 05	1	D6919-03	06/05	06:14	JCL
Nitrogen, Nitrate	0.76	mg/l	.05	1	EPA 353.2	05/22	18:57	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/22	17:31	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	05/30	15:09	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	05/22	14:55	EMW
Total Organic Carbon	1.2	mg/l	1	1	SM5310 C	05/27	20:02	ALD
RESIDUES								
Solids, Total Dissolved	35	mg/l	5	1	SM 2540C	05/28	12:35	ТМН
Solids, Total Suspended	9	mg/l	3	1	SM 2540D	05/28	12:35	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	05/27	14:15	HRG

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:	Gregory Wacik					Date of R	eport:	06/05	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0015804
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	05/22	2/14 08:00
	Philadelphia PA 19107					Collected	By:	Clien	nt
Sample Desc:	BZ-6 Deep					Date Rece	ived:	05/22	2/14 13:45
PWSID: 31308	343			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
									······································

02 One TOC CCV was 111% recovery.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch		Date of R Lab ID:	eport:	06/05/14 2295-14-0015805				
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		05/22 Clien	/14 09:30 t
Sample Desc: BZ-7 Surface					Date Rece	ived:	05/22	/14 13:45
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI					ندر می می بین می بین این این این این این ا			
MICROBIOLOGY								
Escherichia coli	4	mpn/100ml	1	1	SM 9223B	05/23	09:00	твр
Fecal Coliform	5	/100ml	2	1	SM 9222D	05/22	15:10	PLW
Total Coliform	24	mpn/100ml	1	1	SM 9223B	05/23	09:00	ТВР
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg∕l	.01	1	SM 4500P-E	05/22	16:45	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/02	15:00	HRG
Phosphorus as P, Total	0.08	mg/l	.01	1	SM 4500P-E	05/28	14:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/05	06:29	JCL
Nitrogen, Nitrate	0.51	mg/l	. 05	1	EPA 353.2	05/22	19:02	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/22	17:34	JCL
Nitrogen, Total Kjeldahl	0.41	mg/l	.25	1	EPA 351.2	05/30	15:12	ALD
OTHER								
Biochemical Oxygen Demand	2	mg/l	2	1	SM 5210B	05/22	14:55	EMW
Total Organic Carbon	2.6	mg/l	1	1	SM5310 C	05/27	20:14	ALD
RESIDUES								
Solids, Total Dissolved	17	mg/l	5	1	SM 2540C	05/28	12:55	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	05/28	12:55	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	05/27	14:30	HRG

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Attention:	Gregory Wacik					Date of F	leport:	06/05	5/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0015805
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	05/22	2/14 09:30
	Philadelphia PA 19107					Collected	By:	Clier	nt
Sample Desc:	BZ-7 Surface					Date Rece	eived:	05/22	2/14 13:45
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

- O2 The total coliform sample was placed in the incubator at 05/22/14 at 14:45.
- 03 The SM 5210B sample did not have a DO depletion of at least 2 mg/L.
- 04 One TOC CCV was 111% recovery.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		06/05/14 2295-14-0015806	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		05/22 Clien	2/14 09:30 ht
Sample Desc: BZ-7 Mid-Depth					Date Rece	ived:	05/22	2/14 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	05/22	16:45	HRG
Phosphorus as P, Dissolved	<.05	mg/l	. 05	1	SM 4500P-E	06/02	15:00	HRG
Phosphorus as P, Total	0.05	mg/l	.01	1	SM 4500P-E	05/28	14:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	. 05	1	D6919-03	06/05	06:44	JCL
Nitrogen, Nitrate	0.87	mg/l	.05	1	EPA 353.2	05/22	19:03	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/22	17:35	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	05/30	15:13	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	05/22	14:55	EMW
Total Organic Carbon	1.7	mg/l	1	1	SM5310 C	05/27	20:27	ALD
RESIDUES								
Solids, Total Dissolved	49	mg/l	5	1	SM 2540C	05/28	12:55	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	05/28	12:55	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	05/27	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.

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







Attention:	Gregory Wacik					Date of R	eport:	06/05	5/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0015806
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	05/22	2/14 09:30
	Philadelphia PA 19107					Collected	By:	Clier	nt
Sample Desc:	BZ-7 Mid-Depth					Date Rece	ived:	05/22	2/14 13:45
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

02 One TOC CCV was 111% recovery.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		06/05/14 2295-14-0015807	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		05/22/14 09:30 Client	
Sample Desc: BZ-7 Deep					Date Rece	eived:	05/22	2/14 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	05/22	16:45	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/02	15:00	HRG
Phosphorus as P, Total	1.00	mg/l	.01	1	SM 4500P-E	05/28	14:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	. 05	1	D6919-03	06/05	06:59	JCL
Nitrogen, Nitrate	0.77	mg/l	. 05	1	EPA 353.2	05/22	19:04	JCL
Nitrogen, Nitrite	<.05	mg/l	. 05	1	EPA 353.2	05/22	17:36	JCL
Nitrogen, Total Kjeldahl	3.06	mg/l	.25	1	EPA 351.2	05/30	15:14	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	05/22	14:55	EMW
Total Organic Carbon	2.6	mg/l	1	1	SM5310 C	05/27	20:38	ALD
RESIDUES								
Solids, Total Dissolved	42	mg/l	5	1	SM 2540C	05/28	12:55	тмн
Solids, Total Suspended	393	mg/l	3	1	SM 2540D	05/28	12:55	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/l	1	1	SM 2320 B	05/27	14:45	HRG

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:

Reviewed and Approved by:

Ustrie M. Lister

Christina Kistler Account Executive

Page 1 of 2

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Attention:	Gregory Wacik					Date of F	eport:	06/05	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0015807
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	05/22	2/14 09:30
	Philadelphia PA 19107					Collected	By:	Clien	, it
Sample Desc:	BZ-7 Deep					Date Rece	ived:	05/22	2/14 13:45
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
			ور بر ای و و و و و و او و						

02 One TOC CCV was 111% recovery.

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Reviewed and Approved by:

Wistike 7 stee Christina Kistle

Account Executive

Page 2 of 2

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5796 Date: Relinguished by Sample No: Sample No: 04/17/14 3:47:34 PM Samplers: sq5 Customer: Account: Address: Phone: FC, EC, TC, W. Ht NO2-N, NO3-N, d-p04-p, o-p04, BOD M NH3-N, tkm, Alk, tds, tss, p04-p, toc, FC, EC, TC, QU He, H6 NO2-N, NO3-N, d-pb4-p, o-po4, BODW W NH3-N, tkm, Alk, tds, tss, po4-p, toc, 1640 Gregory Wacik 100 Penn Square East Philadelphia PA 19107 215-656-6561 Ext: USACE, Philadelphia District ч Environmental Resources Branch 2295 ง WACIK ĥ Desc: Desc: Time: 1145 **BZ-2** Surface **BZ-1** Surface Work Order: 004036 Project Leader: CMB Work Order Description: Beltzville Reservoir Received by: Laboratory Receipt Temp: Total Sampling Time (hours): Μ. Remarks: Chain of Custody J. REIDER ASSOCIATES, INC. Approved By: Date: 5-12-14 Received for laboratory by: ٢ -¤gr∰ ч н 11 н י י ו מש⊳ 너 শাস U 1 X 250mlMicro P w/ Sterile/Na25203; 1 X L Bod p w/ Cool to 6 C; 1 X 16ozN02N03 p w/ Cool to 6 C; 1 X 250mlMicro P w/ Sterile/Na2S2O3; Cool 1 X L Bod p w/ Cool to 6 C; 1 X 16ozNO2NO3 p w/ Cool to 6 C; Cool Matrix: Matrix: X 8oz Alk p w/ X 2xambervoa g w/ H3PO4/zero headspace; X 500ml NH3 p w/ H2SO4 (pH<2); X 2xambervoa g w/ H3PO4/zero headspace; X 8oz Alk p w/ pol to 6 C/Zero Headspace; X 500ml NH3 p w/ H2SO4 (pH<2); If Temp Unacceptable, On Ice? to 6 C/Zero Headspace; 0 0 Time: Sample entered by: Bottle Prep by: 3 No: 236464 Time: Date: Time: Date: 5/22/1 Ø Ś Page: COFC.PRT age: 1 Ц u 0 122 z

15795

1-6251 15798 Date: Relinquished Sample No: Sample No: 04/17/14 3:47:34 PM Samplers: Customer: saf Address: Account: Phone: NH3-N, tkn, Alk, tds, tss, po4-p, toc, FC, EC, TC, (), ft ft NO2-N, NO3-N, d-po4-p, o-po4, BOD M NH3-N, tkn, Alk, tds, tss, po4-p, toc, NO2-N, NO3-N, d-po4-p, o-po4, BOD USACE, Philadelphia District Gregory Wacik Philadelphia PA 19107 215-656-6561 Ext: Environmental Resources Branch 100 Penn Square East ω 2295 Ъ, 4 WACik ž \mathcal{O} Desc: BZ-3 Surface Desc: 122/14 Time: 145 BZ-3 Mid-Depth Work Order Description: Beltzville Reservoir Work Order: Received by: 004036 Total Sampling Time (hours): M. J. REIDER ASSOCIATES, INC. Laboratory Receipt Temp: Remarks: Chain of Custody Project Leader: Approved By: Date: 5 -22.14 Received for laboratory by: 5 81≱ - -ຟ≱ ເ U ካቲ I Q Deg Wiff Temp Unacceptable, On Ice? 1 X 250mlMicro P w/ Sterile/Na2S2O3; 1 X L Bod p w/ Cool to 6 C; 1 X 16ozNO2NO3 p w/ Cool to 6 C; 1 X 500ml NH3 p w/ H2SO4 (pH<2); 1 X L Bod p w/ Cool to 6 C; 1 X 16ozNO2NO3 p w/ Cool to 6 C; 1 X 8oz Alk p w/ Cool to 6 C/Zero Headspace; Cool to 6 C/Zero Headspace; Matrix: Matrix: 0 X 2xambervoa g w/ H3PO4/zero headspace; X 8oz Alk p w/ X 500ml NH3 p w/ H2SO4 (pH<2); X 2xambervoa g w/ H3PO4/zero headspace; 0 Time: Sample entered by: Bottle × No: Time: Date: Prep by: 236464 Time: Date: 5/22 012014 Page: К COFC.PRT age: 2 뉰

12799 12800 Sample No: Date: Relinquished by Sample No: 04/17/14 3:47:34 PM ខ្លួត Samplers: Customer: Address: Account: Phone: FC, EC, TC, UN HC HC HC NO2-N, NO3-N, d-po4-p, o-po4, BOD, NO2-N, NO3-N, d-po4-p, o-po4, BOD MH3-N, tkn, Alk, tds, tss, po4-p, toc, NH3-N, tkn, Alk, tds, tss, po4-p, 5/22/ 100 Penn Square East Philadelphia PA 19107 215-656-6561 Ext: USACE, Philadelphia District Gregory Wacik Environmental Resources Branch 2295 თ σı NIOL S Desc: Desc: **BZ-4** Surface Time: 1145 BZ-3 Deep Work Order: 004036 Work Order Description: Beltzville Reservoir toc, Received by: M Laboratory Receipt Temp: Total Sampling Time (hours): Remarks: Chain of Custody J. REIDER ASSOCIATES, INC. Project Leader: Approved By: Date: 5.22.14 Received for laboratory by: L Deg CLIE Temp Unacceptable, On Ice? By: WW Ba≱ Ω Β ≱ U 因 1. U CMB 1 X 250mlMicro P w/ Sterile/Wa2S203; 1 X L Bod p w/ Cool to 6 C; 1 X 16ozNO2NO3 p w/ Cool to 6 C; 1 X L Bod p w/ Cool to 6 C; 1 X 16ozNO2NO3 p w/ Cool to 6 C; 1 X 2xambervoa g w/ H3P04/zero headspace; 1 X 8oz Alk p w/ Cool to 6 C/Zero Headspace; Cool Matrix: 0 Matrix: 0 X 500ml NH3 p w/ H2SO4 (pH<2); X 8oz Alk p w/ ool to 6 C/Zero Headspace; М X 500ml NH3 p w/ H2SO4 (pH<2); 2xambervoa g w/ H3PO4/zero headspace; Time: Sample entered by: Bottle Prep by: Se Contraction of the second s No: Date: Time: Time: Date: 236464 5/22/14 5/22/14 Page: COFC.PRT age: 3 К z

10851 5802 sample No: Date: Relinquished by Sample No: Customer: 04/17/14 3:47:34 PM Samplers: ad L Address: Account: Phone: FC, EC, TC, 0^{1d} NO2-N, NO3-N, d-p04-p, o-po4, BODN NH3-N, tkm, Alk, tds, tss, po4-p, toc, FC, EC, TC, U'Y U, NO2-N, NO3-N, d-pb4-p, M MH3-N, tkn, Alk, tds, tss, po4-p, toc, 5122 215-656-6561 Philadelphia PA 19107 USACE, Philadelphia District Gregory Wacik Environmental Resources Branch 100 Penn Square East 2295 7 ω WACik Desc: BZ-6 Surface Desc: BZ-5 Surface ol po4, BOD Time: 1145 EXT: Work Order: 004036 Work Order Description: Beltzville Reservoir Received by: M. J. REIDER ASSOCIATES, INC. Laboratory Receipt Temp: Total Sampling Time Remarks: Chain of Custody Project Leader: Approved By: Date: 5.22-14 Received for laboratory by: (hours) : 1 B B ⊅ ਅ ਸ । । н н В Р _Deg C II Temp Unacceptable, On Ice? দাম U Q Θ Ω CMB CMB 1 X 250mlMicro P w/ Sterile/Na2S203; 1 X 250mlMicro P w/ Sterile/Na2S2O3; 1 X L Bod p w/ Cool to 6 C; 1 X L Bod p w/ Cool to 6 C; 1 X 16ozNO2NO3 p w/ Cool to 6 C; Cool to 6 C/Zero Headspace; Cool to 6 C/Zero Headspace; Matrix: Matrix: 0 X 2xambervoa g w/ H3P04/zero headspace; X 8oz Alk p w/ X 500ml NH3 p w/ H2SO4 (pH<2); X 8oz Alk p w/ X 500ml NH3 p w/ X 16ozNO2NO3 p w/ Cool to 6 C; Μ 500ml NH3 p w/ H2SO4(pH<2); 2xambervoa g w/ H3PO4/zero headspace; 0 Time: Sample entered by: Bottle 1223 No: Date: 5/22/ Time: 0800 Prep by: $\frac{\text{Date: } 5/22/14}{\text{Time: } 7000}$ Time: 236464 Page: COFC.PRT К z

15803 hoss 1 اکلامکر Sample No: 11 Date: 5/22/14 Relinquished by/ Sample No: Sample No: Samplers: Customer: 04/17/14 3:47:34 PM sqf Address: Account: FC, EC, TC, (W HC HC NO2-N, NO3-N, d-po4-p, o-po4, BOD M NH3-N, tkm, Alk, tds, tss, po4-p, toc, Phone: NO2-N, NO3-N, d-po4-p, o-po4, вор, r، المالي، NH3-N, tkn, Alk, tds, tss, po4-p, toc, NO2-N, NO3-N, d-po4-р, NH3-N, tkn, Alk, tds, tss, po4-p, toc, USACE, Philadelphia District 215-656-6561 Philadelphia PA 19107 Environmental Resources Branch Gregory Wacik 10 100 Penn Square East 2295 ა WACIK R 200 Desc: Desc: Desc: , olpo4, BOD **BZ-7** Surface Time: 1145 BZ-6 Deep BZ-6 Mid-Depth Ext Work Order Description: Beltzville Reservoir Work Order: 004036 Received by: Laboratory Receipt Temp: Total Sampling Time (hours): M. J. REIDER ASSOCIATES, INC. Remarks: Chain of Custody Project Leader: Approved By: Date: 5.22.14 Received for laboratory by: 2 म्ब स्व 55/⊅ ≀ ≀ B ≱ - -щ Hع ۱ θ Ω 1 X L Bod p w/ Cool to 6 C; 1 X 16ozNO2NO3 p w/ Cool to 6 C; 1 X 500ml NH3 p w/ H2SO4 (pH<2); of If Temp Unacceptable, On Ice? 1 X L Bod p w/ Cool to 6 C; 1 X 16ozNO2NO3 p w/ Cool to 6 C; 1 X 500ml NH3 p w/ H2SO4 (pH<2); 1 X L Bod p w/ Cool to 6 C; 1 X 16ozNO2NO3 p w/ Cool to 6 C; 1 X 250mlMicro P w/ Sterile/Na2S2O3; 1 X 8oz Alk p w/ Cool to 6 C/Zero Headspace; Cool to 6 C/Zero Headspace; 1 X 8oz Alk p w/ Cool Matrix: 0 Matrix: 0 Matrix: 0 X 500ml NH3 p w/ H2SO4 (pH<2); X 8oz Alk p w/ X 2xambervoa g w/ H3PO4/zero headspace; X 2xambervoa g w/ H3PO4/zero headspace; X 2xambervoa g w/ H3PO4/zero headspace; to 6 C/Zero Headspace; Time: Sample entered by: Bottle Prep by: S No: Time: Date: Time: Date: Time: Date: 236464 5/22/14 5122/14 0936 5722/14 Page: COFC.PRT age: 5 Ц z

15806 15507 Date: Relinquished by Sample No: 13 Sample No: Samplers: Customer: 04/17/14 3:47:35 PM sqf Address: Account: Phone: NO2-N, NO3-N, d-po4-p, o-po4, BOD M NH3-N, tkn, Alk, tds, tss, po4-p, toc, NO2-N, NO3-N, d-po4-p, o po4, BOD M NH3-N, tkm, Alk, tds, tss, po4-p, toc, NO2-N, NO3-N, d-po4-p, Gregory Wacik 100 Penn Square East Philadelphia PA 19107 215-656-6561 Ext: Environmental Resources Branch USACE, Philadelphia District 12 2295 WACK Desc: Desc: BZ-7 Mid-Depth <u>rime: ||</u>45 BZ-7 Deep Work Order: 004036 Project Work Order Description: Beltzville Reservoir Received by: M. J. REIDER ASSOCIATES, INC. Laboratory Receipt Temp: Total Sampling Time (hours): Remarks: Chain of Custody Project Leader: Approved By: Date: 5-2-14 Received for laboratory by: N Deg ΒÞ - υ¤ъ Hتا ۱ H Θ U Q **C** 1 X L Bod p w/ Cool to 6 C; 1 X 16ozNO2NO3 p w/ Cool to 6 C; 1 X 500ml NH3 p w/ H2SO4 (pH<2); ţ, ш щ Cool to 6 C/Zero Headspace; 1 X 8oz Alk p w/ Cool to 6 C/Zero Headspace; 1 X 8oz Alk p w/ X L Bod p w/ Cool to 6 C; X 16ozNO2NO3 p w/ Cool to 6 C; X 500ml NH3 p w/ H2SO4 (pH<2); Matrix: 0 Matrix: 0 X 2xambervoa g w/ H3PO4/zero headspace; X 2xambervoa g w/ H3PO4/zero headspace; If Temp Unacceptable, On Ice? Time: Sample entered by: Bottle Prep by: 5 No: Date: Time: Date: Time: 236464 5/22/14 5/22/M Page: ы COFC.PRT z





Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	06/30 2295	/14 -14-0019457
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		06/19 Clien	/14 11:05 t
Sample Desc: BZ-1 Surface					Date Rece	ived:	06/19	/14 14:20
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Escherichia coli	2	mpn/100ml	1	1	SM 9223B	06/20	11:30	PLW
Fecal Coliform	10	/100mL	2	1	SM 9222D	06/19	16:00	PLW
Total Coliform	920	mpn/100ml	1	1	SM 9223B	06/20	11:30	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.04	mg/l	.01	1	SM 4500P-E	06/20	09:15	ALD
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/20	11:39	ALD
Phosphorus as P, Total	0.04	mg/l	.01	1	SM 4500P-E	06/20	10:30	ALD
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	d6919-03	06/19	21:42	JCL
Nitrogen, Nitrate	0.68	mg/l	.05	1	EPA 353.2	06/19	18:54	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	06/19	17:11	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	06/23	16:31	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	1.5	mg/L	1	1	SM5310 C	06/20	03:14	ALD
RESIDUES								
Solids, Total Dissolved	47	mg/l	5	1	SM 2540C	06/23	13:25	тмн
Solids, Total Suspended	14	mg/L	3	1	SM 2540D	06/23	13:25	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	06/23	11:00	HRG

Reviewed and Approved by:

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Christina Kistler Account Executive

Page 1 of 2

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Attention:	Gregory Wacik					Date of F	eport:	06/30)/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0019457
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	06/19	9/14 11:05
	Philadelphia PA 19107					Collected	l By:	Clier	nt
Sample Desc:	BZ-1 Surface					Date Rece	eived:	06/19	9/14 14:20
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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 duplicate analysis of this sample for total dissolved solids was outside the recommended limit of 5% of their average weight.
- O3 The total coliform sample was placed in the incubator on O6/19/14 at 17:15.

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Christina Kistler Account Executive

Page 2 of 2

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	06/30/14 2295-14-0019458	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		06/19 Clien	/14 10:50 t
Sample Desc: BZ-2 Surface					Date Rece	ived:	06/19	/14 14:20
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Escherichia coli	72	mpn/100ml	1	1	SM 9223B	06/20	11:30	PLW
Fecal Coliform	82	/100mL	2	1	SM 9222D	06/19	16:00	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	06/20	11:30	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.03	mg/l	.01	1	SM 4500P-E	06/20	09:15	ALD
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/20	11:39	ALD
Phosphorus as P, Total	0.04	mg/l	.01	1	SM 4500P-E	06/20	10:30	ALD
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/19	21:56	JCL
Nitrogen, Nitrate	0.19	mg/L	.05	1	EPA 353.2	06/19	18:55	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2		17:12	
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	06/23	16:32	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	<1	mg/l	1	1	SM5310 C	06/20	03:28	ALD
RESIDUES		_						
Solids, Total Dissolved	45	mg/L	5	1	SM 2540C		13:25	ТМН
Solids, Total Suspended	3	mg/l	3	1	SM 2540D	06/23	13:25	ТМН
TITRATIONS	_							
Alkalinity, Total to pH 4.5	6	mg/l	1	1	SM 2320 B	06/23	11:00	HRG

Reviewed and Approved by:

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Christina Kistler Account Executive

Page 1 of 2

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		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
PWSID: 31308	43			Rep	Dilutn		Test	Test	
Sample Desc:	BZ-2 Surface					Date Rece	ived:	06/19	9/14 14:20
	Philadelphia PA 19107					Collected	By:	Clier	it
	100 Penn Square East					Date Coll	ected:	06/19	/14 10:50
Nopol tod Tol	Environmental Resources Branch					Lab ID.		6673	14 0017450
	USACE, Philadelphia District					Lab ID:	-1	'	-14-0019458
Attention:	Gregory Wacik					Date of R	eport:	06/30	1/14

O1 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.

O2 The total coliform sample was placed in the incubator on 06/19/14 at 17:15.

Distribution of Reports:

Reviewed and Approved by: Wistike

Christina Kistler Account Executive

Page 2 of 2

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Attantions Changery Upaile



01170101

Attention: Gregory Wacik Reported To: USACE, Philadelphia District					Date of R Lab ID:	eport:	06/30 2295	/14 -14-0019459
Environmental Resources Branch								
100 Penn Square East					Date Coll	ected:	06/19	/14 08:40
Philadelphia PA 19107					Collected	Ву:	Clien	t
Sample Desc: BZ-3 Surface					Date Rece	ived:	06/19	/14 14:20
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI		Na ing ang ang ang ang ang ang ang ang ang a						
MICROBIOLOGY								
Escherichia coli	<1	mpn/100ml	1	1	SM 9223B	06/20	11:30	PLW
Fecal Coliform	<2	/100ml	2	1	SM 9222D	06/19	16:25	PLW
Total Coliform	69	mpn/100ml	1	1	SM 9223B	06/20	11:30	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.05	mg/l	.01	1	SM 4500P-E	06/20	09:15	ALD
Phosphorus as P, Dissolved	<.05	mg/l	. 05	1	SM 4500P-E	06/20	11:39	ALD
Phosphorus as P, Total	0.04	mg/l	.01	1	SM 4500P-E	06/20	10:30	ALD
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	. 05	1	D6919-03	06/19	22:11	JCL
Nitrogen, Nitrate	0.43	mg/l	. 05	1	EPA 353.2	06/19	18:56	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	06/19	17:13	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	06/23	16:33	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	1.6	mg/l	1	1	SM5310 C	06/20	03:43	ALD
RESIDUES								
Solids, Total Dissolved	41	mg/l	5	1	SM 2540C	06/23	13:25	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	06/23	13:25	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	06/23	11:00	HRG

Distribution of Reports:

Reviewed and Approved by:

Wistige 7 stle

Christina Kistler Account Executive

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Attention:	Gregory Wacik					Date of R	eport:	06/30	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0019459
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	06/19	/14 08:40
	Philadelphia PA 19107					Collected	By:	Clien	t
Sample Desc:	BZ-3 Surface					Date Rece	ived:	06/19	/14 14:20
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

O2 The total coliform sample was placed in the incubator on 06/19/14 at 17:15.

Distribution of Reports:

Reviewed and Approved by:

Wistine M. stle

Christina Kistler Account Executive

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		06/30/14 2295-14-0019460	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		06/19 Clien	/14 08:40 t
Sample Desc: BZ-3 Mid-Depth					Date Rece	ived:	06/19	/14 14:20
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								یم وا مر ها ها ها ها
COLORMETRIC								
Phosphate as P, Ortho	0.03	mg/L	.01	1	SM 4500P-E	06/20	09:15	ALD
Phosphorus as P, Dissolved	<.05	mg/l	. 05	1	SM 4500P-E	06/20	11:39	ALD
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	06/20	10:30	ALD
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/19	22:25	JCL
Nitrogen, Nitrate	0.75	mg/L	. 05	1	EPA 353.2	06/19	19:01	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	06/19	17:18	JCL.
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	06/23	16:36	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	1.2	mg/l	1	1	SM5310 C	06/20	03:57	ALD
RESIDUES								
Solids, Total Dissolved	65	mg/L	5	1	SM 2540C	06/23	13:25	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	06/23	13:25	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	06/23	11:30	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		06/30/14 2295-14-0019461	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		06/19 Clien	/14 08:40 t
Sample Desc: BZ-3 Deep					Date Rece	ived:	06/19	/14 14:20
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	06/20	09:22	ALD
Phosphorus as P, Dissolved	0.07	mg/l	.05	1	SM 4500P-E	06/20	11:39	ALD
Phosphorus as P, Total	0.12	mg/l	.01	1	SM 4500P-E	06/20	10:30	ALD
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/19	22:40	JCL
Nitrogen, Nitrate	0.70	mg/l	.05	1	EPA 353.2	06/19	19:02	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	06/19	17:19	JCL
Nitrogen, Total Kjeldahl	0.39	mg/l	.25	1	EPA 351.2	06/23	16:37	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	1.4	mg/l	1	1	SM5310 C	06/20	04:12	ALD
RESIDUES								
Solids, Total Dissolved	58	mg/l	5	1	SM 2540C	06/23	13:25	тмн
Solids, Total Suspended	87	mg/L	3	1	SM 2540D	06/23	13:25	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	06/23	11:30	HRG

O1 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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	06/30 2295	/14 -14-0019462
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		06/19 Clien	/14 10:40 t
Sample Desc: BZ-4 Surface					Date Rece	ived:	06/19	/14 14:20
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Escherichia coli	10	mpn/100ml	1	1	SM 9223B	06/20	11:30	PLW
Fecal Coliform	11	/100ml	2	1	SM 9222D	06/19	16:25	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	06/20	11:30	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/l	.01	1	SM 4500P-E	06/20	09:22	ALD
Phosphorus as P, Dissolved	<.05	mg/l	. 05	1	SM 4500P-E	06/20	11:39	ALD
Phosphorus as P, Total	0.01	mg/l	.01	1	SM 4500P-E	06/20	10:39	ALD
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/19	22:55	JCL
Nitrogen, Nitrate	0.66	mg/l	.05	1	EPA 353.2	06/19	19:03	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	06/19	17:20	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	06/23	16:38	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	<1	mg/l	1	1	SM5310 C	06/20	04:26	ALD
RESIDUES								
Solids, Total Dissolved	46	mg/l	5	1	SM 2540C	06/23	13:25	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	06/23	13:25	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/l	1	1	SM 2320 B	06/23	11:30	HRG

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Attention:	Gregory Wacik					Date of R	eport:	06/30)/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0019462
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	06/19	9/14 10:40
	Philadelphia PA 19107					Collected	By:	Clier	it
Sample Desc:	BZ-4 Surface					Date Received:		06/19	9/14 14:20
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

O1 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 06/19/14 at 17:15.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		07/01 2295	/14 -14-0019463
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		06/19 CLIEN	/14 10:30 T
Sample Desc: BZ-5 Surface					Date Rece	ived:	06/19	/14 14:20
PWSID: 3130843			Rep.	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI					یے نے کا کر کہ یہ یہ بہ جا جا جا ہے			
MICROBIOLOGY								
Escherichia coli	200	mpn/100ml	1	1	SM 9223B	06/20	11:30	PLW
Fecal Coliform	210	/100mL	2	1	SM 9222D	'	16:25	
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B		11:30	
CHEMISTRY		•••				•		
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/l	.01	1	SM 4500P-E	06/20	09:22	ALD
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/20	11:39	ALD
Phosphorus as P, Total	0.03	mg/l	.01	1	SM 4500P-E	06/20	10:39	ALD
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/19	23:53	JCL
Nitrogen, Nitrate	1.29	mg/l	.05	1	EPA 353.2	06/19	19:04	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	06/19	17:21	JCL
Nitrogen, Total Kjeldahl	0.30	mg/l	.25	1	EPA 351.2	06/23	16:41	JCL
OTHER								
Biochemical Oxygen Demand	2	mg/l	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	3.9	mg/l	1	1	SM5310 C	06/20	04:42	ALD
RESIDUES								
Solids, Total Dissolved	61	mg/l	5	1	SM 2540C	06/23	13:25	тмн
Solids, Total Suspended	36	mg/L	3	1	SM 2540D	06/23	13:25	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/l	1	1	SM 2320 B	06/23	11:30	HRG

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





Attention:	Gregory Wacik					Date of R	eport:	07/01	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0019463
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	06/19	/14 10:30
	Philadelphia PA 19107					Collected	By:	CLIEN	T
Sample Desc:	BZ-5 Surface					Date Rece	ived:	06/19	/14 14:20
PWSID: 31308	43			Rep.	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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 06/19/14 at 17:15.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:			-14-0019464
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		06/19 Clien	/14 07:50 t
Sample Desc: BZ-6 Surface					Date Rece	ived:	06/19	/14 14:20
PWSID: 3130843	514		Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI			یسا سے انسا اندا اسا انداز اللہ					
MICROBIOLOGY								
Escherichia coli	<1	mpn/100ml	1	1	SM 9223B	06/20	11:30	PLW
Fecal Coliform	<2	/100mL	2	1	SM 9222D	06/19	16:25	PLW
Total Coliform	42	mpn/100ml	1	1	SM 9223B		11:30	PLW
CHEMISTRY		-						
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	06/20	09:22	ALD
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/20	11:39	ALD
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	06/20	10:39	ALD
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/20	00:38	JCL
Nitrogen, Nitrate	0.45	mg/l	.05	1	EPA 353.2	06/19	19:05	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	06/19	17:22	JCL.
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	06/23	16:42	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	1.6	mg/l	1	1	SM5310 C	06/20	04:57	ALD
RESIDUES								
Solids, Total Dissolved	36	mg/l	5	1	SM 2540C	06/23	13:25	тмн
Solids, Total Suspended	4	mg/l	3	1	SM 2540D	06/23	13:25	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	06/23	11:45	HRG

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(Uristine M.

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Attention:	Gregory Wacik					Date of F	eport:	06/30	0/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	5-14-0019464
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	06/19	9/14 07:50
	Philadelphia PA 19107					Collected	By:	Clier	, nt
Sample Desc:	BZ-6 Surface					Date Rece	ived:	06/19	9/14 14:20
								-	
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

O1 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.

O2 The total coliform sample was placed in the incubator on 06/19/14 at 17:15.

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Attention: Charany Unsile



Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	06/30 2295)/14 140019465
100 Penn Square East					Date Coll	ected:	06/19	/14 07:50
Philadelphia PA 19107					Collected		Clien	•
Sample Desc: BZ-6 Mid-Depth					Date Rece	eived:	06/19	9/14 14:20
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	06/20	09:22	ALD
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/20	11:39	ALD
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/20	10:39	ALD
NITROGENS						,		
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/20	00:53	JCL
Nitrogen, Nitrate	0.72	mg/l	. 05	1	EPA 353.2	06/19	19:06	J-CL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	06/19	17:23	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	06/23	16:43	J C L
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	1.4	mg/L	1	1	SM5310 C	06/24	13:34	ALD
RESIDUES								
Solids, Total Dissolved	62	mg/l	5	1	SM 2540C	06/23	13:25	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	06/23	13:25	ТМН
TITRATIONS						•		
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	06/23	11:45	HRG

COMMENTS

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

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Attention: Gregory Wacik					Date of R	eport:	06/30	/14
Reported To: USACE, Philadelphia District					Lab ID:		2295	-14-0019466
Environmental Resources Branch								
100 Penn Square East					Date Coll	ected:	06/19	/14 07:50
Philadelphia PA 19107					Collected	By:	Clien	it
Sample Desc: BZ-6 Deep					Date Rece	ived:	06/19	/14 14:20
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY					****			
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	06/20	09:30	ALD
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	•		
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/20	10:44	ALD
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/20	01:08	JCL
Nitrogen, Nitrate	0.76	mg/l	.05	1	EPA 353.2	06/19	19:07	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	06/19	17:24	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	06/23	16:43	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	1.2	mg/l	1	1	SM5310 C	06/24	14:02	ALD
RESIDUES								
Solids, Total Dissolved	71	mg/l	5	1	SM 2540C	06/23	13:25	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	06/23	13:25	тмн
TITRATIONS						,		
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	06/23	11:45	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	06/30 2295	/14 -14-0019467
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		06/19 Clien	/14 09:15 t
Sample Desc: BZ-7 Surface					Date Rece	ived:	06/19	/14 14:20
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Escherichia coli	1	mpn/100ml	1	1	SM 9223B	06/20	11:30	PLW
Fecal Coliform	<2	/100mL	2	1	SM 9222D	•	16:25	
Total Coliform	250	mpn/100ml	1	1	SM 9223B	'	11:30	
CHEMISTRY						•		
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/l	.01	1	SM 4500P-E	06/20	09:30	ALD
Phosphorus as P, Dissolved	<.05	mg/L	. 05	1	SM 4500P-E	06/20	11:50	ALD
Phosphorus as P, Total	0.03	mg/l	.01	1	SM 4500P-E	06/20	10:44	ALD
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	. 05	1	D6919-03	06/20	01:23	J C L.
Nitrogen, Nitrate	0.41	mg/l	.05	1	EPA 353.2	06/19	19:08	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	06/19	17:25	JCL
Nitrogen, Total Kjeldahl	0.25	mg/l	.25	1	EPA 351.2	06/23	16:44	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	1.7	mg/l	1	1	SM5310 C	06/24	14:45	ALD
RESIDUES								
Solids, Total Dissolved	15	mg/l	5	1	SM 2540C	06/23	13:55	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	06/23	13:25	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	06/23	11:45	HRG

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Attention:	Gregory Wacik					Date of F	eport:	06/30	0/14
Reported To:	USACE, Philadelphia District					Lab ID:	•	2295	5-14-0019467
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	06/19	9/14 09:15
	Philadelphia PA 19107					Collected	By:	Clier	nt
Sample Desc:	BZ-7 Surface					Date Rece	eived:	06/19	9/14 14:20
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

O2 The total coliform sample was placed in the incubator on O6/19/14 at 17:15.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District					Date of R Lab ID:	leport:	06/30 2295	/14 -14-0019468
Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107					Date Coll Collected		06/19 Clien	/14 09:15 t
Sample Desc: BZ-7 Mid-Depth					Date Rece	ived:	06/19	/14 14:20
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	06/20	09:30	ALD
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/20	11:50	ALD
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	06/20	10:44	ALD
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/20	01:38	JCL
Nitrogen, Nitrate	0.88	mg/l	. 05	1	EPA 353.2	06/19	19:11	JCL
Nitrogen, Nitrite	<.05	mg/l	. 05	1	EPA 353.2	06/19	17:28	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	06/23	16:47	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	1.4	mg/l	1	1	SM5310 C	06/24	15:13	ALD
RESIDUES								
Solids, Total Dissolved	55	mg/l	5	1	SM 2540C	06/23	13:55	ТМН
Solids, Total Suspended	4	mg/l	3	1	SM 2540D	06/23	13:25	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	06/23	11:45	HRG

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:

Reviewed and Approved by:

Wistone 7 £ω

Christina Kistler Account Executive

Page 1 of 1

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107					Date of R Lab ID: Date Coll Collected	ected:		-14-0019469 /14 09:15
Sample Desc: BZ-7 Deep					Date Rece	ived:	06/19	/14 14:20
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY	inan pan pan inin inin nan ma ma ma ma ma ma ma	8 Mai 1498 - Mai 1499 -						
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/20	09:30	ALD
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/20	11:50	ALD
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	06/20	10:44	ALD
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	06/20	01:53	JCL
Nitrogen, Nitrate	0.72	mg/l	.05	1	EPA 353.2	06/19	19:14	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	06/19	17:31	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	06/23	16:48	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	06/20	13:15	EMW
Total Organic Carbon	1.2	mg/l	1	1	SM5310 C	06/24	15:40	ALD
RESIDUES								
Solids, Total Dissolved	54	mg/l	5	1	SM 2540C	06/23	13:55	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	06/23	13:25	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	06/23	11:45	HRG

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:

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Christina Kistler Account Executive

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	jbs 05/12/1∉	1:05:49 PM		M. J. REIDER ASSOCIATES, INC.	S, INC.	COFC.FRT Page: 1	
				Chain of Custody			
	Account: Customer:	2295 Gregory Wacik	Work Order: 004036 Work Order Description	004036 Project Description: Beltzville Reservoir	Project Leader: CMB ervoir	No: 237776	
		Cittering and		Remarks:			
	Address:	USACE, FRIIAGEIPRIA DISTRICT Environmental Resources Branch	UISUTICU Ces Branch				
	,	are PA 1	7	Total Sampling Time (hours):	: (sino	Bottle Prep by:	
	Phone: Samplers:	WA CIK	••	Laboratory Receipt Temp: Approve	6 Deg C.If Temp	Unacceptable, On Ice? Y N	
							п
13HO	Sample No:	: 1 Desc: BZ-1 Surface	Surface		Matrix: O	Date: 6/19/14	
	FC, EC, NO2-N, N	FC, EC, TC, QV HC NO2-N, NO3-N, G-P04-P, 0-P04.	4, BOD		- 1 X 250mlMicro - 1 X L Bod P w/	P w/ Sterile/Na25 Cool to 6 C;	
	N-EHN	ر NH3-N, tkm, Alk, tds, tss, po4-p,	po4-p, toc,				
	•		Ţ		[00]	o Headspace; b//9//4	
000	Sample No:	2 Desc:	BZ-2 Surrace		MACFIX: 0	5	
	FC, E NO2-N	FC, EC, TC, QU H6 H0 NO2-N, NO3-N, d-po4-p, o-po	~×~		- 1 X 250mlMicro - 1 X L Bod P W/ - 1 X 160ZN02N03	<pre>sterile/Na25 to 6 C; Cool to 6 C;</pre>	
	NH3-N	NH3-N, tkm, Alk, tas, tss, po4-p,	po4-p, roc,		 	р w/ насоч (риса); g w/ H3PO4/zero headspace;	
					соо] - т -	80Z ALK P W/ . to 6 C/Zero Headspace;	
		\int					
	Rolinmished hw	Men had had	Received by:	Rece	Received for laboratory by:	K	
	Date: 6	119/14	Time: 12.00	Date	Date: 619.14 Time:_	N/20	ı.
					San	Sample entered by:	

	Sample No: 4 Desc: BZ-3 Mid-Depth NO2-N, NO3-N, d-po4-p, o-po4, BOD N13-N, thm, Alk, tds, tss, po4-p, toc, E - 1 X C -	Sample No: 3 Desc: BZ-3 Surface Matrix: 0 FC, EC, TC, M, H, H, H, NO2-N, NO3-N, d-p04, BOD/ N02-N, N03-N, d-p04-p, o-p04, BOD/ NH3-N, tkn, Alk, tds, tss, p04-p, toc, D - 1 X 500ml NH3 p w/ H2	plers: $UACiK$	<pre>t Leader: CMB hours):</pre>	2295 Work Order: Gregory Wacik USACE, Philadelphia District Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107 215-656-6561 A Ext: AC, A.PO4-P, o-PO4, BOD thn, Alk, tds, tss, po4-P, toc, tkn, Alk, tds, tss, po4-P, toc,
NO2-N, NO3-N, d-po4-p, o-po4, BOP NH3-N, thm, Alk, tds, tss, po4-p, toc, E = 1 X Cool	Sample No: 4 Desc: BZ-3 Mid-Depth	- 1 X 2xambervoa	Sample No: 3 Desc: BZ-3 Surface Matrix: 0 FC, EC, TC, M, H, H, BOD, B - 1 X 250mlMicro NO2-N, NO3-N, d-p04-p, o-p04, BOD NH3-N, tkn, Alk, tds, tss, p04-p, toc, E - 1 X 250ml NH3 I F - 1 X 250ml NH3 I	- 1 X 802 Alk p v Cool to 6 C/Zer Matrix: 0	4 Desc:
Samplers: WACK Laboratory Receipt Temp: Upfy. 1 Sample No: 3 Desc: BZ-3 Surface Mat Sc. TC, N, M03-N, d-pb4-p, o-bd4, Boy NH3-N, tkn, Alk, tds, tss, po4-p, toc, Sample No: 4 Desc: BZ-3 Mid-Depth N02-N, N03-N, d-pb4-p, o-po4, Boy NH3-N, tkn, Alk, tds, tss, po4-p, toc, H13-N, tkn, th, tss, tss, po4-p, toc, H13-N, tkn, tsn, tss, tss, tss, tss, tss, tss, ts	Samplers: WACK Laboratory Receipt Temp: U Deg C. If Temp Una Sample No: 3 Desc: BZ-3 Surface A = 1 X 250mlMicro FC, EC, TC, N03-N, d-p04, B0p N02-N, N03-N, d-p04, B0p NH3-N, tkn, Alk, tds, tss, po4-p, toc, F = 1 X 250ml NH3 F F = 1 X 250ml H F F F F F F F F F F F F F F F F F F	WACIK Laboratory Receipt Temp: U Dég. If Approved By: Aff		Time (hours):	
Address: USACE, Philadelphia District Enone: Eventeal Resources Branch 100 Fern Germ Square East Total Sampling Time (hours); Phone: 215-656.6561 x Ext: Samplers: MAC. Sample No: 3 Desc: EZ-3 Surface FC, EC, TC, M, Dot, P, Orde, BOW BY NO2-N, NO3-N, d-P04-P, o-P04, BOW BY N02-N, NO3-N, d-P04-P, o-P04, BOW BY Sample No: 4 Desc: EZ-3 Mid-Depth NO2-N, NO3-N, d-P04-P, o-P04, BOW BY No2-N, NO3-N, d-P04-P, o-P04, BOW BY Sample No: 4 Desc: EZ-3 Mid-Depth Nu3-N, thn, Alk, tds, tss, po4-P, toc, BY N13-N, thn, Alk, tds, tss, po4-P, toc, BY N13-N, thn, Alk, tds, tss, po4-P, toc, <	Address: USACE, Philadelphia District Environmental Resources Branch Phone: 215-656-6561 NEXt: Phone: 215-656-6561 NEXt: Desc: Bamplers: Matrix: Samplers: Matrix: Samplers: Matrix: Samplers: Matrix: Matrix: Samplers: Matrix: Matrix: Samplers: Matrix: Matrix: Samplers: Matrix: Matrix: <t< td=""><td>USACE, Philadelphia District Environmental Resources Branch 100 Pemm Square East Philadelphia PA 19107 215-656-6561 % Ext: DAC C Receipt Temp: Deg C. If Temp UnacceApproved By: Macce</td><td>USACE, Philadelphia District Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107 Total Sampling Time (hours):</td><td>t Leader:</td><td>2295 Work Order Work Order Gregory Wacik</td></t<>	USACE, Philadelphia District Environmental Resources Branch 100 Pemm Square East Philadelphia PA 19107 215-656-6561 % Ext: DAC C Receipt Temp: Deg C. If Temp UnacceApproved By: Macce	USACE, Philadelphia District Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107 Total Sampling Time (hours):	t Leader:	2295 Work Order Work Order Gregory Wacik
Account: 235 Work Order: 004036 Project Leader: CHB Customer: Gregory Wacik Customer: Gregory Wacik Address: USACE, Philadelphia District Environmental Resources Branch Phone: J15-656-6561 NEXt: Phone: 215-656-561 NEXt: Sample No: 3 Desc: BZ-3 Surface FC, EC, TC, M, C, M, B, B, B, I, X, Manala, a-obt-p, o-bd, B, B, I, X, NB3-N, tch, Alk, tds, tss, pot-p, toc, NB3-N, tch, tds, tss, pot-p, toc, NB3-N, tch, tds, tss, pot-p, toc, NB3-N, tch, tch, tcs, tss, pot-p, toc, NB3-N, tch, tch, tcs, tss, pot-p, toc, NB3-N, tch, tch, tch, tch, tch, tch, tch, tch	Account: 295 Work Order: 004036 Project Leader: CMB Customer: Gregory Wacik Work Order Description: Beltzville Reservoir Customer: Gregory Wacik Address: USACE, Philadelphia District Nork Order Description: Beltzville Reservoir Remarks: Address: USACE, Philadelphia District Remarks: Remarks: Done: 100 Pean Square East Total Sampling Time (hours): Districtomere Phone: 215-6561 % Ext: Total Sampling Time (hours): Districtomere Samplers: 215-6561 % Ext: Total Sampling Time (hours): Districtomere Samplers: 215-6561 % Ext: Noortory Receipt Temp: Districtomere Samplers: 215-6561 % Ext: Adove, P. Districtomere Samplers: Adove, P. 0 Districtomere Samplers: Adove, P. 0 Districtomere Samplers: Macristomere Matrix: 0 0 Samplers: Matrix: Districtomere Matrix: 0 Samplers: Matrix: Adove, P. Districtomere Samplers: Matrix: Districtomere<	2295 Work Order: 004036 Project Leader: CMB Work Order Description: Beltzville Reservoir USACE, Philadelphia District Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107 215-656-6561 * Ext: CAR Total Sampling Time (hours): Degr. If Temp Unacce	2295 Work Order: 004036 Project Leader: CMB Work Order Description: Beltzville Reservoir Gregory Wacik USACE, Philadelphia District Remarks: USACE, Philadelphia District Remarks: Environmental Resources Branch 100 Penn Square East Philadelphia P 19107 Total Sampling Time (hours):	Chain of Custody	
2235 Work Order: 004036 Project Leader: CMB Gregory Wacik Remarks: Project Leader: CMB Gregory Wacik Remarks: Project Leader: CMB USACE, Niladelphia District Remarks: Project Leader: CMB District District Remarks: District Remarks: Project Famp: CMB District Remarks: Laboratory Receipt Temp: CMB District Remarks: Laboratory Receipt Temp: CMB District A-District A-District District Laboratory Receipt Temp: CMB B-District District Remarks B-District District Laboratory Receipt Temp: CMB CO No3-N, d-Po4-P, C, MB MA-	Account: 2295 Work Order: 004036 Project Leader: CMB Customer: Gregory Wacik Work Order Description: Beltzville Reservoir CMB Address: USACE, Philadelphia District Remarks: Indecession Project Leader: CMB Address: USACE, Philadelphia District Remarks: Indecession Indecession Indecession Address: USACE, Philadelphia District Remarks: Indecession Indecession Indecession Phone: 215-656-6561 Bauplor Total Sampling Time (hours); Indecesht Temp: Indecesht Temp: Indecesht Samplers: 215-656-6561 Bauplor Indocratory Receipt Temp:	2295 Work Order: 004036 Chain of Custody 2295 Work Order: 004036 Project Leader: CMB Gregory Wacik USACE, Philadelphia District Environmental Resources Branch 100 Pean Square East 100 Pean Square East Philadelphia PA 19107 215-656-6561 M Ext: Canal Sampling Time (hours): Cater of Custody Content of	2295 Chain of Custody 2295 Work Order: 004036 Project Leader: CMB Work Order Description: Beltzville Reservoir Gregory Wacik Benzik Remarks: USACE, Philadelphia District Remarks: District Benzik Remarks: Total Sampling Time (hours): Philadelphia P 19107 Total Sampling Time (hours):		

COFC.PRT Page: 3		No: 237776		Bottle Prep by:	If Temp Unacceptable, On Ice? Y N	Matrix: 0 Date: $\frac{\omega}{\delta f q}$ 1 X L Bod p w/ Cool to 6 C; 1 X 1602N03 p w/ Cool to 6 C; 1 X 500ml NH3 p w/ H3P04/zero headspace; 1 X 2xambervoa g w/ H3P04/zero headspace; 1 X 802 Alk p w/		pratory by: M ZO
M. J. REIDER ASSOCIATES, INC.	Chain of Custody	ion:	: Sy Teniay	Total Sampling Time (hours):	dalı) ⁴ 러러러러ガ ・・・・・ 4 2 2 2 2 1 1 1 1 1 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	by: Marine Received for laboratory by: Date: 645-14 Th
jbs 05/12/14 1:05:49 PM		Account: 2295 Work Order: 004036 Work Order Descript Customer: Gregory Wacik	Address: USACE, Philadelphia District Environmental Resources Branch	100 Penn Square East Philadelphia PA 19107 Phone: 215-656-6561 Ext:	Samplers: UACIK	Sample No: 5 Desc: BZ-3 Deep NO2-N, NO3-N, d-p04-p, o-p04, BOD NH3-N, tkm, Alk, tds, tss, po4-p, toc,	9467 Sample No: 6 Desc: BZ-4 Surface FC, EC, TC, NJ NO2-N, NO3-N, d-p04-p, o-p04, BOD NH3-N, tkn, Alk, tds, tss, po4-p, toc,	Relinquished by Received by: Date: <u>L/19/14</u> Time: <u>1200</u>
						19461	2965	

	jbs 05/12/14	1:05:49 PM		IATES, INC. Pa	COFC.PRT ge: 4
	Account: Customer:	: 2295 : Gregory Wacik	Work Order: 004036 Work Order Description:	Chain of Custody Project Leader: CMB n: Beltzville Reservoir	
	Address: Phone:	USACE, Philadelph Environmental Res 100 Penn Square F Philadelphia PA 1 215-656-6561 ,	lia District cources Branch ast .9107 Ext:	rs):Bottle Prep by:	
	Samplers:	Ø		Laboratory Receipt Temp: <u>O Deg Ct</u> If Temp Unacceptable, On Ice? Y N Approved By: W	R =
19463	samt Samt	T Desc: , TC, NU Ht NO3-N, d-p64-P	toc	ннннни « ФОРВЖ)//4 pace;
4464	Sample No: FC, EC NO2-N, NH3-N,	8 Desc: , TC, NV HI NO3-N, d-po4-p, tkm, Alk, tds, t	BZ-6 Surface M o-po4, BODV css, po4-p, toc,	Matrix: O Date: $b/19/1/9$ A - 1 X 250mlMicro P W/ Sterile/Ma2S203; B - 1 X 160ZN02N03 P W/ Cool to 6 C; C - 1 X 160ZN02N03 P W/ Cool to 6 C; D - 1 X 500ml NH3 P W/ H2S04 (pH<2); F - 1 X 80Z Alk P W/ Cool to 6 C/Zero Headspace; Cool to 6 C/Zero Headspace;	///9 0 pace;
	Relinquished by: Date: 6//9//4		Time: 1200	$ \begin{array}{c} \begin{array}{c} \end{array} $	5

M. J. REIDER ASSOCIATES, INC. Page: 5	Chain of Custody	004036 Project Leader: CMB Description: Beltzville Reservoir	Remarks:	Total Sampling Time (hours): Bottle Prep by:	Laboratory Receipt Temp: O Deg . If Temp Unacceptable, On Ice? Y N Approved By: WN	Matrix: 0 $\frac{b_{1}}{m_{mon}}$	1 X L Bod p W/ 1 X 16ozNO2NO3 1 X 500ml NH3 F	- 1 A zxampervoa g w/ hJrO¥/ZEFO J - 1 X 80z Alk p w/ Cool to 6 C/Zero Headspace;	Matrix: 0 Date: $\frac{b/19}{11}$	J Bod p w/ Cool to 6 C; 6ozNO2NO3 p w/ Cool to 6 C 600ml NH3 p w/ H2SO4(pH<2); 1xambervoa g w/ H3PO4/zero 80z Alk p w/	Cool to 6 C/Zero Headspace; Matrix: 0 Date: 6/19/)4	1 - 1 X 250mlMicro P w/ Steri - 1 X I Bod P w/ Cool to 6	 C - 1 X 16ozNO2NO3 p w/ Cool to 6 C; D - 1 X 500ml NH3 p w/ H2SO4 (pH<2) ; E - 1 X 2xambervoa g w/ H3PO4/zero headspace; F - 1 X 8oz Alk p w/ Cool to 6 C/Zero Headspace; 	Received for laboratory by: Received for laboratory by: Date: $b_{i}b_{i}c_{i}(l)$ Time: $b_{i}c_{i}c_{i}(l)$	Sample ent
jbs 05/12/14 1:05:50 PM		Account: 2295 Work Order: 004036 Work Order Description: Customer: Gregory Wacik	District ces Branch	100 Penn Square East Philadelphia PA 19107 215 56 5651 2010		oth	NO2-N, NO3-N, d-po4-p, o-po4, BOD NH3-N, tkn, Alk, tds, tss, po4-p, toc,		9466 Sample No: 10 Desc: BZ-6 Deep	NO2-N, NO3-N, d-PO4-P, o-PO4, BODV NH3-N, tkn, Alk, tds, tss, po4-P, toc,	//4467 Sample No: 11 \ Desc: BZ-7 Surface	, TC, (() N03-N, d-po4-p,	NH3-N, tkn, Alk, tds, tss, po4-p, toc,	Relinquished by The The Reserved by:	

.

COFC.FRT Page: 6	: CMB	Deg C. If Temp Unacceptable, On Ice? Y N		Cool to 6 C/Zero Headspace; Matrix: 0 Date: $6/lq/l4$ A - 1 X L Bod p w/ Cool to 6 C; B - 1 X 162N02N03 p w/ Cool to 6 C; C - 1 X 500ml NH3 p w/ H2SO4(pH<2); D - 1 X 2xambervoa g w/ H3PO4/zero headspace; E - 1 X 8oz Alk p w/ Cool to 6 C/Zero Headspace;	Received for laboratory by: $\frac{2}{142}$ Date: $\frac{6}{2}\sqrt{2}\sqrt{4}$ Time: $\frac{1422}{2}$
M. J. REIDER ASSOCIATES, INC.	Chain of Custody 004036 Project Leader: Description: Beltzville Reservoir Remarks:	Total Sampling Time (hours): Laboratory Receipt Temp: 6 D			eived by: Received f. Date: $6'l$
/14 1:05:50 PM	2295 Work Order: Work Order Gregory Wacik	usace Envir Phila 215-6	12 Desc: BZ-7 Mid-Depth NO3-N, d-p04-p, 0-p04, BODy tkm, Alk, tds, tss, p04-p, toc	ole No: 13 Desc: BZ-7 Deep NO2-N, NO3-N, d-po4-p, o ¹ p04, BODW NH3-N, thm, Alk, tds, tss, po4-p, toc,	Relinquished by: $(1 \frac{1}{9}) \frac{1}{14}$ Time: (200)
jbs 05/12/14	Account: Customer:	Address: Phone: Samplers:	GUS sample No: No2-W NH3-N,	9469 sample no: NO2-N _X NH3-N,	Relinq Date:





Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	07/31/14 2295-14-0023428	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		07/24 Clien	/14 11:30 t
Sample Desc: BZ-1 Surface					Date Rece	ived:	07/24	/14 13:30
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Escherichia coli	2	mpn/100ml	1	1	SM 9223B	07/25	09:35	DAD
Fecal Coliform	10	/100ml	2	1	SM 9222D	07/24	14:35	PLW
Total Coliform	550	mpn/100ml	1	1	SM 9223B	07/25	09:35	DAD
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	07/25	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/l	. 05	1	SM 4500P-E	07/25	14:10	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	07/25	14:40	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	- 05	1	D6919-03	07/24	19:29	JCL
Nitrogen, Nitrate	0.81	mg/l	.05	1	EPA 353.2	07/24	17:28	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	07/24	15:26	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	07/29	15:10	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/25	13:35	EMW
Total Organic Carbon	1.6	mg/l	1	1	SM5310 C	07/25	01:51	ALD
RESIDUES								
Solids, Total Dissolved	87	mg/l	5	1	SM 2540C	07/29	13:40	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	07/29	13:40	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	07/28	09:45	HRG

Reviewed and Approved by:

Wistore m. Estev

Christina Kistler Account Executive

Page 1 of 2

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Attention:	Gregory Wacik					Date of F	eport:	07/31	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0023428
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	07/24	/14 11:30
	Philadelphia PA 19107					Collected	By:	Clier	, nt
Sample Desc:	Sample Desc: BZ-1 Surface					Date Rece	eived:	07/24	/14 13:30
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

O1 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.

O2 The total coliform sample was placed in the incubator on O7/24/14 at 14:35.

Distribution of Reports:

Reviewed and Approved by:

Wistore 7

Christina Kistler Account Executive

Page 2 of 2

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



Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	07/31/14 2295-14-0023429	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		07/24 Clien	/14 11:20 t
Sample Desc: BZ-2 Surface					Date Rece	ived:	07/24	/14 13:30
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI					یہ ہے جر مر میں میں اور اس اس اس			
MICROBIOLOGY								
Escherichia coli	88	mpn/100ml	1	1	SM 9223B	07/25	09:35	DAD
Fecal Coliform	90	/100mL	2	1	SM 9222D	•	14:35	PLW
Total Coliform	2000	mpn/100ml	1	1	SM 9223B		09:35	DAD
CHEMISTRY						,		
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	07/25	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	07/25	14:10	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	07/25	14:40	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	07/24	19:44	JCL
Nitrogen, Nitrate	0.24	mg/l	.05	1	EPA 353.2	07/24	17:31	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	07/24	15:27	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	. 25	1	EPA 351.2	07/29	15:11	ALD
OTHER	1							
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/25	13:35	EMW
Total Organic Carbon	<1	mg/l	1	1	SM5310 C	07/25	02:05	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/l	5	1	SM 2540C	07/29	13:40	тмн
Solids, Total Suspended	3	mg/l	3	1	SM 2540D	07/29	13:40	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/l	1	1	SM 2320 B	07/28	09:45	HRG

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Attention:	Gregory Wacik					Date of F	eport:	07/31	1/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	5-14-0023429
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	07/24	4/14 11:20
	Philadelphia PA 19107					Collected	By:	Clier	nt
Sample Desc:	BZ-2 Surface					Date Rece	ived:	07/24	4/14 13:30
PWSID: 31308	43		1	Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

O2 The total coliform sample was placed in the incubator on O7/24/14 at 14:35.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch						eport:	07/31/14 2295-14-0023430	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		07/24/14 09:05 Client	
Sample Desc: BZ-3 Surface					Date Rece	ived:	07/24	/14 13:30
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI						<u> </u>		
MICROBIOLOGY								
Escherichia coli	<1	mpn/100ml	1	1	SM 9223B	07/25	09:35	DAD
Fecal Coliform	<2	/100ml	2	1	SM 9222D	'	14:35	PLW
Total Coliform	55	mpn/100ml	1	1	SM 9223B	•	09:35	DAD
CHEMISTRY		•						
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	07/25	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	07/25	14:13	HRG
Phosphorus as P, Total	0.01	mg/l	.01	1	SM 4500P-E	07/25	14:40	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	. 05	1	D6919-03	07/24	19:59	JCL
Nitrogen, Nitrate	0.37	mg/L	.05	1	EPA 353.2	07/24	17:32	JCL
Nitrogen, Nitrite	<.05	mg/l	. 05	1	EPA 353.2	07/24	15:28	JCL
Nitrogen, Total Kjeldahl	0.33	mg/l	. 25	1	EPA 351.2	07/29	15:12	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/25	13:35	EMW
Total Organic Carbon	1.5	mg/l	1	1	SM5310 C	07/25	02:50	ALD
RESIDUES								
Solids, Total Dissolved	68	mg/l	5	1	SM 2540C	07/29	13:40	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	07/29	13:40	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	07/28	09:45	HRG

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Attention:	Gregory Wacik					Date of R	eport:	07/31	1/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	5-14-0023430
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	07/24	4/14 09:05
	Philadelphia PA 19107					Collected	By:	Clier	nt
Sample Desc:	BZ-3 Surface					Date Rece	ived:	07/24	4/14 13:30
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

O2 The total coliform sample was placed in the incubator on O7/24/14 at 14:35.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		07/31/14 2295–14–0023431	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		07/24 Clien	/14 09:15 t
Sample Desc: BZ-3 Mid-Depth					Date Rece	eived:	07/24	/14 13:30
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	07/25	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	07/25	14:13	HRG
Phosphorus as P, Total	0.04	mg/l	.01	1	SM 4500P-E	07/25	14:44	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	. 05	1	D6919-03	07/24	20:14	JCL
Nitrogen, Nitrate	0.82	mg/l	.05	1	EPA 353.2	07/24	17:33	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	07/24	15:31	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	07/29	15:15	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/25	13:35	EMW
Total Organic Carbon	1.2	mg/l	1	1	SM5310 C	07/25	03:05	ALD
RESIDUES	1							
Solids, Total Dissolved	108	mg/l	5	1	SM 2540C	07/29	13:40	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	07/29	13:40	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	07/28	10:00	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	ate of Report: ab ID:		/14 -14-0023432
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		07/24 Clien	/14 09:05 t
Sample Desc: BZ-3 Deep					Date Rece	ived:	07/24	/14 13:30
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	07/25	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/l	. 05	1	SM 4500P-E	07/25	14:13	HRG
Phosphorus as P, Total	1.32	mg/l	.01	1	SM 4500P-E	07/25	14:44	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	07/24	20:29	JCL
Nitrogen, Nitrate	0.72	mg/L	.05	1	EPA 353.2	07/24	17:36	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	07/24	15:32	JCL
Nitrogen, Total Kjeldahl	1.93	mg/l	.25	1	EPA 351.2	07/29	15:16	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/25	13:35	EMW
Total Organic Carbon	1.9	mg/l	1	1	SM5310 C	07/25	03:20	ALD
RESIDUES								
Solids, Total Dissolved	87	mg/l	5	1	SM 2540C	07/29	13:40	ТМН
Solids, Total Suspended	95	mg/l	3	1	SM 2540D	07/29	13:40	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	07/28	10:00	HRG

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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100 Penn Square East Philadelphia PA 19107					Date Coll Collected		07/24 Clien	/14 11:10 t
Sample Desc: BZ-4 Surface					Date Rece	ived:	07/24	/14 13:30
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Escherichia coli	18	mpn/100ml		1	SM 9223B	•	09:35	DAD
Fecal Coliform	30	/100ml	2	1	SM 9222D	07/24		PLW
Total Coliform	2000	mpn/100ml	1	1	SM 9223B	07/25	09:35	DAD
COLORMETRIC	0.07							
Phosphate as P, Ortho	0.07	mg/l	.01	1	SM 4500P-E	•		HRG
Phosphorus as P, Dissolved Phosphorus as P, Total	<.05	mg/l	.05	1	SM 4500P-E		14:13	HRG
NITROGENS	0.08	mg/l	.01	1	SM 4500P-E	07/25	14:44	HRG
Nitrogen, Ammonia	<.05	m/1	05	4	N/040 07	07/0/	00 /7	
Nitrogen, Nitrate	0.45	mg/l	.05	1	D6919-03	,	20:43	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2		17:37	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.05 .25	1	EPA 353.2	•	15:33	JCL
OTHER	1.25	mg/l	.25	1	EPA 351.2	07/29	15:17	ALD
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/25	17.75	EMU
Total Organic Carbon	1.1	mg/t mg/t	1	1	SM 52106 SM5310 C	,	13:35 03:35	EMW ALD
RESIDUES		ing/ c	I	I	30510 0	01/25	03.35	ALD
Solids, Total Dissolved	55	mg/L	5	1	SM 2540C	07/29	13:40	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 25400 SM 2540D	07/29	13:40	ТМН
TITRATIONS	, j	mg/ c	5	I	511 2J400	01/29	13.40	1110
Alkalinity, Total to pH 4.5	6	mg/l	1	1	SM 2320 B	07/28	10:00	HRG

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Attention:	Gregory Wacik					Date of R	eport:	07/31	1/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	5-14 - 0023433
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	07/24	4/14 11:10
	Philadelphia PA 19107					Collected	By:	Clier	nt.
Sample Desc:	BZ-4 Surface					Date Rece	ived:	07/24	4/14 13:30
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

O1 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.

O2 The total coliform sample was placed in the incubator on O7/24/14 at 14:35.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	07/31 2295	/14 -14-0023434
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		07/24 Clien	/14 10:55 t
Sample Desc: BZ-5 Surface					Date Rece	ived:	07/24	/14 13:30
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Escherichia coli	120	mpn/100ml	1	1	SM 9223B	07/25	09:35	DAD
Fecal Coliform	270	/100ml	2	1	SM 9222D	'	14:35	PLW
Total Coliform	2400	mpn/100ml	1	1	SM 9223B		09:35	DAD
CHEMISTRY						•		
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	07/25	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	07/25	14:13	HRG
Phosphorus as P, Total	0.05	mg/l	.01	1	SM 4500P-E	07/25	14:44	HRG
NITROGENS								
Nitrogen, Ammonia	< 05	mg/l	.05	1	D6919-03	07/24	20:58	JCL
Nitrogen, Nitrate	1.28	mg/l	.05	1	EPA 353.2	07/24	17:38	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	07/24	15:34	JCL
Nitrogen, Total Kjeldahl	0.28	mg/l	.25	1	EPA 351.2	07/29	15:18	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/25	13:35	EMW
Total Organic Carbon	1.7	mg/l	1	1	SM5310 C	07/28	16:43	ALD
RESIDUES								
Solids, Total Dissolved	77	mg/l	5	1	SM 2540C	07/29	13:40	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	07/29	13:40	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	16	mg/l	1	1	SM 2320 B	07/28	10:00	HRG

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Attention:	Gregory Wacik					Date of R	leport:	07/31	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	, -14-0023434
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	07/24	/14 10:55
	Philadelphia PA 19107					Collected	By:	Clier	1
Sample Desc: BZ-5 Surface						Date Rece	ived:	07/24	/14 13:30
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

O1 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.

O2 The total coliform sample was placed in the incubator on O7/24/14 at 14:35.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	07/31 2295	/14 -14-0023435
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		07/24 Clien	/14 08:15 t
Sample Desc: BZ-6 Surface					Date Rece	ived:	07/24	/14 13:30
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Escherichia coli	<1	mpn/100ml	1	1	SM 9223B	07/25	09:35	DAD
Fecal Coliform	3	/100ml	2	1	SM 9222D	•	14:53	PLW
Total Coliform	310	, mpn/100ml	1	1	SM 9223B	•	09:35	
CHEMISTRY						,		
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	07/25	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	•	14:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/25	14:44	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	07/24	21:13	JCL
Nitrogen, Nitrate	0.37	mg/l	.05	1	EPA 353.2	07/24	17:39	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	07/24	15:37	JCL
Nitrogen, Total Kjeldahl	0.37	mg/l	.25	1	EPA 351.2	07/29	15:19	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/25	13:35	EMW
Total Organic Carbon	1.6	mg/l	1	1	SM5310 C	07/28	17:13	ALD
RESIDUES								
Solids, Total Dissolved	55	mg/l	5	1	SM 2540C	07/30	12:50	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	07/30	12:50	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	07/28	10:00	HRG

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Attention:	Gregory Wacik					Date of R	eport:	07/31	1/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	5–14–0023435
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	07/24	4/14 08:15
	Philadelphia PA 19107					Collected	By:	Clier	,
							-		
Sample Desc:	BZ-6 Surface					Date Rece	ived:	07/24	4/14 13:30
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

O2 The total coliform sample was placed in the incubator on 07/24/14 at 14:35.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		07/31/14 2295-14-0023436	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		07/24 Clien	/14 08:15 t
Sample Desc: BZ-6 Mid-Depth					Date Rece	ived:	07/24/14 13:30	
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY	بير پس جد عد حد ريد عد اين من من من من من من من							
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	07/25	10:13	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	07/25	14:15	HRG
Phosphorus as P, Total	0.02	mg/l	.01	1	SM 4500P-E	07/25	14:44	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	07/24	21:27	JCL
Nitrogen, Nitrate	0.81	mg/l	.05	1	EPA 353.2	07/24	17:40	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	07/24	15:38	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	07/29	15:22	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/25	13:35	EMW
Total Organic Carbon	1.3	mg/l	1	1	SM5310 C	07/28	17:57	ALD
RESIDUES								
Solids, Total Dissolved	68	mg/l	5	1	SM 2540C	07/30	12:50	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	07/30	12:50	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	07/28	10:15	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		07/31/14 2295-14-0023437	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		07/24 Clien	/14 08:15 t
Sample Desc: BZ-6 Deep					Date Rece	ived:	07/24/14 13:30	
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY					يبعد بعدر بعد بعد بعد نعد نعد نعد المت القة التل			
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	07/25	10:13	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	07/25	14:15	HRG
Phosphorus as P, Total	0.02	mg/l	.01	1	SM 4500P-E	07/25	14:44	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	. 05	1	D6919-03	07/24	21:42	JCL
Nitrogen, Nitrate	0.74	mg/l	.05	1	EPA 353.2	07/24	17:43	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	07/24	15:39	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	07/29	15:23	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/25	13:35	EMW
Total Organic Carbon	1.1	mg/l	1	1	SM5310 C	07/28	18:12	ALD
RESIDUES								
Solids, Total Dissolved	38	mg/l	5	1	SM 2540C	07/30	12:50	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	07/30	12:50	ТМН
TITRATIONS		-				•		
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	07/28	10:15	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District					Date of Report: Lab ID:		07/31/14 2295-14-0023438	
Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107					Date Coll Collected		07/24 Clien	/14 09:45 t
Sample Desc: BZ-7 Surface					Date Rece	ived:	07/24	/14 13:30
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								reny year disk bid had him him
MICROBIOLOGY								
Escherichia coli	2	mpn/100ml	1	1	SM 9223B	07/25	09:30	DAD
Fecal Coliform	3	/100ml	2	1	SM 9222D	07/24	14:53	PLW
Total Coliform	460	mpn/100ml	1	1	SM 9223B	07/25	09:35	DAD
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/l	.01	1	SM 4500P-E	07/25	10:13	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	07/25	14:15	HRG
Phosphorus as P, Total	0.02	mg/l	.01	1	SM 4500P-E	07/25	14:48	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	07/24	21:56	JCL
Nitrogen, Nitrate	0.33	mg/L	. 05	1	EPA 353.2	07/24	17:44	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	07/24	15:40	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	07/29	15:24	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/25	13:35	EMW
Total Organic Carbon	1.6	mg/l	1	1	SM5310 C	07/28	19:10	ALD
RESIDUES								
Solids, Total Dissolved	27	mg/l	5	1	SM 2540C		12:50	
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	07/30	12:50	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	07/28	10:15	HRG

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Attention:	Gregory Wacik					Date of H	Report:	07/31	1/14
Reported To:	USACE, Philadelphia District					Lab ID:	•	2295	5-14-0023438
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	.ected:	07/24	4/14 09:45
	Philadelphia PA 19107					Collected	By:	Clier	nt
Sample Desc:	BZ-7 Surface					Date Rece	eived:	07/24	4/14 13:30
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

O1 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.

O2 The total coliform sample was placed in the incubator on O7/24/14 at 14:35.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia Environmental Resou					Date of R Lab ID:	eport:	07/31 2295	/14 -14-0023439
100 Penn Square Eas Philadelphia PA 191					Date Coll Collected		07/24 Clien	/14 09:45 t
Sample Desc: BZ-7 Mid-Depth					Date Rece	ived:	07/24	/14 13:30
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY					, and the first state and state and state and the state of the state o			PER Bad bin hak last last any
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	07/25	10:13	HRG
Phosphorus as P, Dissolved	<.05	mg/l	. 05	1	SM 4500P-E	,		HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	,		HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	. 05	1	D6919-03	07/24	22:56	JCL
Nitrogen, Nitrate	0.91	mg/l	.05	1	EPA 353.2	07/24	17:45	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	07/24	15:41	JCL
Nitrogen, Total Kjeldahl	0.30	mg/l	.25	1	EPA 351.2	07/29	15:25	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/25	13:35	EMW
Total Organic Carbon	1.4	mg/l	1	1	SM5310 C	07/28	19:25	ALD
RESIDUES						•		
Solids, Total Dissolved	61	mg/l	5	1	SM 2540C	07/30	12:50	ТМН
Solids, Total Suspended	3	mg/l	3	1	SM 2540D	07/30	12:50	TMH
TITRATIONS						•		
Alkalinity, Total to pH 4.	5 12	mg/L	1	1	SM 2320 B	07/28	10:15	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	07/31 2295	/14 140023440
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		07/24 Clien	/14 09:45 t
Sample Desc: BZ-7 Deep					Date Rece	ived:	07/24	/14 13:30
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	07/25	10:13	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	•	14:15	HRG
Phosphorus as P, Total	0.09	mg/l	.01	1	SM 4500P-E	07/25	14:48	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	07/24	23:11	JCL
Nitrogen, Nitrate	0.75	mg/l	, 05	1	EPA 353.2	07/24	17:48	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	07/24	15:44	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	07/29	15:27	ALD
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	07/25	13:35	EMW
Total Organic Carbon	1.4	mg/l	1	1	SM5310 C	07/28	19:39	ALD
RESIDUES								
Solids, Total Dissolved	11	mg/l	5	1	SM 2540C	07/30	12:50	ТМН
Solids, Total Suspended	8	mg/l	3	1	SM 2540D	07/30	12:50	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/l	1	1	SM 2320 B	07/28	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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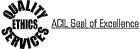
Musticke M. Butlew

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	jbs 06/05/14 1:30:25 PM	M. J. REIDER ASSOCIATES, INC. Page: 1
		Chain of Custody
	Work Order: Work Order	004036 Project Leader: CMB No: 239133 Description: Beltzville Reservoir
	Customer: Gregory Wacik	Remarks:
	Address: USACE, Philadelphia District Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107	Total Sampling Time (hours):Bottle Frep by:
		eceipt Temp: <u>S</u> Deg C. Approved By: <u></u>
82222	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1
	FC, EC, TC, VI) NO2-N, NO3-N, d-PO4-P, o-PO4, BOD	A - 1 X 250mlMicro P w/ Sterile/Na28203; B - 1 X L Bod P w/ Cool to 6 C; C - 1 X 160zN02N03 D w/ Cool to 6 C;
	W NH3-N _F thm, Alk, tds, tss, po4-p, toc,	11 NH3 P w/ H2S04 (pH<2) bbervoa g w/ H3P04/zerc Alk P w/
62h22	Sample No: \ 2 Desc: BZ-2 Surface	Cool to 6 C/Zero Headspace; Matrix: 0 Date: $\frac{7/24}{14}$
	FC, EC, TC, NO2-NA, NO3-N, d-po4-p, o-po4, BODN	- 1 X 250mlMicro P w/ Sterile/Na2S20 - 1 X L Bod p w/ Cool to 6 C; - 1 * 1.5.2.MOTMO2 = w/ Cool to 6 C;
	av NH3-N, tkm, Alk, tds, tss, po4-p, toc,	x 200ml MH2 p w/ H2S04 (pH X 2xambervoa g w/ H3P04/z X 8oz Alk p w/
		Cool to 6 C/Zero Headspace;
	Relinquished by Muth Marceived by:_	By Mrs Received for laboratory by: Boy Not
	Date: $\gamma/2q//q$ Time: 1145	Date: 7-24-14 Time: 1330
		Sample entered by: (N)

	jbs 06/05/14 1:30:26 PM	
	Account: 2295 Work Order: 004036	Chain of Custody Project Leader: CMB No: 239133
	Work Gregory Wacik	Order Description: Beltzville Reservoir Remarks:
	Address: USACE, Philadelphia District	
	ENVIRONMENTAL ACCOULCES PLANE 100 Penn Square East Philadelphia PA 19107	Total Sampling Time (hours): Bottle Prep by:
	56-6561, Ext: NACIK	0 1
22432	Sample No: 5 Desc: BZ-3 Deep NO2-N, NO3-N, d-po4-p, o-po4, BOD NH3-N, tkn, Alk, tds, tss, po4-p, toc,	Matrix: 0 A - 1 X L Bod p w/ Cool to B - 1 X 160ZN03 p w/ Coo C - 1 X 500M1 NH3 p w/ H2S0 C - 1 X 500M1 NH3 p w/ H2S0
		с 10 Нес С Нес
23433	Sample No: 6 Desc: BZ-4 Surface	Matrix: O - 1 X 250mlMicro P w/
	-N, R-N, R-N, R-N, R-N, R-N, R-N, R-N, R	
		No N
	Relinquished $\frac{1}{2}$ \frac	$\int_{DM} \left h \right h \int_{D} Received for laboratory by: \left \frac{\partial p_{1}}{\partial p_{1}} \right _{H} \int_{DM} \frac{\partial p_{2}}{\partial p_{2}} \int_{DM} \frac{\partial p_{2}}{$
		Sample entered by:

	jbs 06/05/14 1:30:26 PM	M. J. REIDER ASSOCIATES, INC. Page: 5
		Chain of Custody
	Work Order: Work Order	004036 Project Leader: CMB No: 239133 Description: Beltzville Reservoir
	Customer: Gregory Wacik	Remarks:
	Address: USACE, Philadelphia District Environmental Resources Branch	
	100 Penn Square East Philadelphia PA 19107	Total Sampling Time (hours): Bottle Prep by:
	Phone: 215-656-5561 Ext: Samplers: $UAGK$	ceipt Temp: <u>5</u> Deg Approved By:
95426	sample No: 9 Desc: BZ-6 Mid-Depth	I O III
	NO2-N, NO3-N, d-po4-p, o-po4, BODN NH3-N, tkn, Alk, tds, tss, po4-p, toc,	 A - 1 X L Bod p w/ Cool to 6 C; B - 1 X 16ozNO2NO3 p w/ Cool to 6 C; C - 1 X 500ml NH3 p w/ H3P04/perc); D - 1 X 2xambervoa g w/ H3P04/zero headspace; E - 1 X 802 Alk p w/ diametero
	10 1.05 2.02 2.02 2.02 2.02 2.02 2.02 2.02 2	Cool to 6 C/zero Headspace; $\frac{7/24/14}{1}$
LSh22	-N, d-Po4-P, , Alk, tds, t	Time: <u>CG/S</u> A - 1 X L Bod p w/ Cool to 6 C; B - 1 X 16ozNO2NO3 p w/ Cool to 6 C; C - 1 X 500ml NH3 p w/ H3P04/pH<2); D - 1 X 2xambervoa g w/ H3P04/zero headspace; E - 1 X 80z Alk p w/
	F	0
23438	FC, EC, TC, NO3-N, d-po4-p, o-po4, BOD, NO2-N, NO3-N, d-po4-p, o-po4, BOD, NH3-N, thm, Alk, tds, tss, po4-p, toc,	<pre>Time: 0945 A - 1 X 250mlMicro P w/ Sterile/Na2S203; B - 1 X 1 bod p w/ Cool to 6 C; C - 1 X 16ozN030 p w/ Cool to 6 C; D - 1 X 550ml NH3 p w/ H3P04/Zero headspace; F - 1 X 80z Alk p w/ Cool to 6 C/Zero Headspace;</pre>
		R. M. S.
	Relinquished by All Received by. Date: 7/24/14 Time: 1/45	Date: 724/ Time: 1330
		Sample entered by:

	jbs 06/05/14 1:30:27 PM	M. J. REIDER ASSOCIATES, INC. COFC. PRIS
		Chain of Custody
	Account: 2295 Work Order: 004036 Work Order Description	004036 Project Leader: CMB escription: Beltzville Reservoir
	Customer: Gregory Wacik	Remarks:
	Address: USACE, Philadelphia District The Partission Perchinces Branch	
	put product and the fast philadelphia PA 19107	Total Sampling Time (hours): Bottle Prep by:
	phone: 215-656-6561 Ext: samplers: $WACIX$	ceptable
25439	Sample No: 12 Desc: ^{BZ-7} Mi	======================================
	NO2-N, NO3-N, a-po4-p, o-po4, buy	 B - 1 X 16ozNO2NO3 p w/ Cool to 6 C; C - 1 X 500ml NH3 p w/ H2SO4(pH<2); D - 1 X 2xambervoa g w/ H3PO4/zero headspace; E - 1 X 80z Alk p w/ Cool to 6 C/Zero Headspace;
ohhsz	Sample No: 13 Desc: BZ-7Deep	rix: 0
	NO2-N, NO3-N, d-po4-p, o-po4, BODN MH3-N, thn, Alk, tds, tss, po4-p, toc,	 A - 1 X L Bod p w/ Cool to 6 C; B - 1 X 16ozNO2NO3 p w/ Cool to 6 C; C - 1 X 500ml NH3 p w/ H3P04/pH<2); D - 1 X 2xambervoa g w/ H3P04/zero headspace; T X 802 Alk p w/ Cool to 6 C/Zero Headspace;
	•	
	X	R. M. S.
	Relinquished by: (Lipp Received by:	$\int \frac{1}{\sqrt{1+1}} \frac$
		Sample entered by:





Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	08/21 2295	/14 -14-0030937
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		08/13 Clien	/14 11:25 t
Sample Desc: BZ-1 Surface					Date Rece	ived:	08/13	/14 14:30
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI	ی پر پر پر پر پر پر مرد رست معند است کا این دارد بی اور این		~~~~~		ورو چم پس بند این سا می این این این این			
MICROBIOLOGY								
Escherichia coli	17	mpn/100ml	1	1	SM 9223B	08/14	10:45	DAD
Fecal Coliform	42	/100mL	2	1	SM 9222D	•	15:00	PLW
Total Coliform	2400	mpn/100ml	1	1	SM 9223B	, 08/14		DAD
CHEMISTRY						,		
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/14	09:15	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	•	15:00	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	08/19	13:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/13	20:59	JCL
Nitrogen, Nitrate	0.78	mg/L	.05	1	EPA 353.2	08/13	18:16	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:16	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	08/15	16:51	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/14	14:25	EMW
Total Organic Carbon	1.3	mg/l	1	1	SM5310 C	08/18	12:11	ALD
RESIDUES								
Solids, Total Dissolved	128	mg/l	5	1	SM 2540C	08/17	09:20	ТМН
Solids, Total Suspended	11	mg/l	3	1	SM 2540D	08/17	09:20	тмн
TITRATIONS						,		
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	08/18	13:45	HRG

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Attention:	Gregory Wacik					Date of R	eport:	08/21	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0030937
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	08/13	/14 11:25
	Philadelphia PA 19107					Collected	By:	Clier	, it
Sample Desc:	BZ-1 Surface					Date Rece	ived:	08/13	5/14 14:30
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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 08/13/14 at 14:55.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	08/21 2295	/14 -14-0030938
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		08/13 Clien	/14 11:15 t
Sample Desc: BZ-2 Surface					Date Rece	ived:	08/13	/14 14:30
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI					والمراجع والمراجع المسار والمراجع المسار المسار والمراجع المراجع			·
MICROBIOLOGY								
Escherichia coli	140	mpn/100ml	1	1	SM 9223B	08/14	10:45	DAD
Fecal Coliform	200	/100ml	2	1	SM 9222D		15:00	PLW
Total Coliform	2400	mpn/100ml	1	1	SM 9223B	•	10:45	DAD
CHEMISTRY		-				•		
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/14	09:15	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	08/14	15:00	HRG
Phosphorus as P, Total	0.02	mg/l	.01	1	SM 4500P-E	08/19	13:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/13	21:14	JCL
Nitrogen, Nitrate	0.26	mg/l	.05	1	EPA 353.2	08/13	18:19	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:17	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	08/15	15:53	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/14	14:25	EMW
Total Organic Carbon	1.8	mg/l	1	1	SM5310 C	08/18	12:41	ALD
RESIDUES								
Solids, Total Dissolved	99	mg/l	5	1	SM 2540C	08/17	09:20	тмн
Solids, Total Suspended	6	mg/l	3	1	SM 2540D	08/17	09:20	тмн
TITRATIONS								-
Alkalinity, Total to pH 4.5	8	mg/l	1	1	SM 2320 B	08/18	13:45	HRG

Reviewed and Approved by:

stle Eltire ?

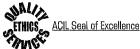
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Attention:	Gregory Wacik					Date of F	eport:	08/21	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0030938
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	.ected:	08/13	5/14 11:15
	Philadelphia PA 19107					Collected	By:	Clier	nt
Sample Desc:	BZ-2 Surface					Date Rece	eived:	08/13	5/14 14:30
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

O2 The total coliform sample was placed in the incubator on O8/13/14 at 14:55.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		08/21 2295	/14 -14-0030939
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		08/13 Clien	/14 09:00 t
Sample Desc: BZ-3 Surface					Date Rece	ived:	08/13	/14 14:30
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI				• •••••			·	
MICROBIOLOGY								
Escherichia coli	2	mpn/100ml	1	1	SM 9223B	08/1/	10:45	DAD
Fecal Coliform	2	/100ml	2	1	SM 9222D		15:30	PLW
Total Coliform	>2400	mpn/100ml		1	SM 9223B	'	10:45	DAD
CHEMISTRY			•	•		00/14	10.49	
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	. 01	1	SM 4500P-E	08/14	09:15	HRG
Phosphorus as P, Dissolved	<.05	mg/l	. 05	1	SM 4500P-E	•		HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	'		HRG
NITROGENS		,						
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/13	21:29	JCL
Nitrogen, Nitrate	0.33	mg/l	. 05	1	EPA 353.2	08/13	18:20	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:18	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	08/15	16:54	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/14	14:25	EMW
Total Organic Carbon	1.4	mg/l	1	1	SM5310 C	08/18	13:27	ALD
RESIDUES								
Solids, Total Dissolved	99	mg/l	5	1	SM 2540C	08/17	09:20	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	08/17	09:20	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	08/18	14:00	HRG

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Attention:	Gregory Wacik					Date of R	eport:	08/21	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0030939
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	08/13	6/14 09:00
	Philadelphia PA 19107					Collected	By:	Clier	nt
Sample Desc:	BZ-3 Surface					Date Rece	ived:	08/13	5/14 14:30
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
							A		

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.

O2 The total coliform sample was placed in the incubator on O8/13/14 at 14:55.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107					Date of Report: Lab ID: Date Collected: Collected By:			-14-0030940 /14 09:00
Sample Desc: BZ-3 Mid-Depth					Date Rece	eived:	08/13	/14 14:30
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY	مر سے بہت سے ایک ایک ایک ایک قائد ایک							
COLORMETRIC								
Phosphate as P, Ortho	0.07	mg/l	.01	1	SM 4500P-E	08/14	09:20	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	•		HRG
Phosphorus as P, Total	0.08	mg/l	.01	1	SM 4500P-E	08/19	13:30	HRG
NITROGENS						•		
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/13	21:43	JCL
Nitrogen, Nitrate	0.78	mg/l	. 05	1	EPA 353.2	08/13	18:21	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:21	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	08/15	16:55	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/14	14:25	EMW
Total Organic Carbon	1.1	mg/l	- 1	1	SM5310 C	08/18	13:41	ALD
RESIDUES						•		
Solids, Total Dissolved	129	mg/l	5	1	SM 2540C	08/17	09:20	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	08/17	09:20	тмн
TITRATIONS						,		
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	08/18	14:00	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		08/21 2295	/14 -14-0030941
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		08/13 Clien	/14 09:00 t
Sample Desc: BZ-3 Deep					Date Rece	ived:	08/13	/14 14:30
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/14	09:20	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	08/14	15:03	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	08/19	13:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/13	21:58	JCL
Nitrogen, Nitrate	0.68	mg/l	.05	1	EPA 353.2	08/13	18:23	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:24	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	08/15	16:56	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/14	14:25	EMW
Total Organic Carbon	1.1	mg/l	1	1	SM5310 C	08/18	13:56	ALD
RESIDUES								
Solids, Total Dissolved	129	mg/l	5	1	SM 2540C	08/17	09:20	тмн
Solids, Total Suspended	4	mg/l	3	1	SM 2540D	08/17	09:20	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	08/18	14:15	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		08/21/14 2295-14-0030942	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		08/13 Clien	/14 11:05 t
Sample Desc: BZ-4 Surface					Date Rece	ived:	08/13	/14 14:30
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI	یہ ہے جو سے سے لیے خین کی اور اور اور							
MICROBIOLOGY								
Escherichia coli	180	mpn/100ml	1	1	SM 9223B	08/14	10:45	DAD
Fecal Coliform	170	/100ml	2	1	SM 9222D	08/13		PLW
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B		10:45	
CHEMISTRY						,		
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/14	09:20	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	•	15:03	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	•		HRG
NITROGENS						•		
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/13	22:12	JCL
Nitrogen, Nitrate	0.38	mg/l	.05	1	EPA 353.2	•	18:24	
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:25	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	08/15	15:57	JCL
OTHER						•		
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/14	14:25	EMW
Total Organic Carbon	<1	mg/L	1	1	sm5310 c	08/18	14:11	ALD
RESIDUES						·		
Solids, Total Dissolved	95	mg/l	5	1	SM 2540C	08/17	09:20	тмн
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	09:20	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/l	1	1	SM 2320 B	08/18	14:15	HRG

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	Gregory Wacik USACE, Philadelphia District Environmental Resources Branch					Date of F Lab ID:	Report:	08/21 2295	1/14 5-14-0030942
	100 Penn Square East Philadelphia PA 19107					Date Coll Collected		08/13 Clier	3/14 11:05 ht
Sample Desc:	BZ-4 Surface					Date Rece	eived:	08/13	3/14 14:30
PWSID: 31308	43	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst

O1 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.

O2 The total coliform sample was placed in the incubator on O8/13/14 at 14:55.

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	n: Gregory Wacik o: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	08/21/14 2295-14-0030943	
	100 Penn Square East Philadelphia PA 19107					Date Collected: Collected By:		08/13 Clien	/14 10:50 t
Sample Desc	c: BZ-5 Surface					Date Rece	ived:	08/13	/14 14:30
PWSID: 3130	0843			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI						ورو هوا جو بدر بدر عد بدر بدر ان ان اس اس			
MICROBIO	OGY								
	erichia coli	650	mpn/100ml	1	1	SM 9223B	08/14	10:45	DAD
	L Coliform	760	/100mL	2	1	SM 9222D	08/13	15:30	PLW
Tota	l Coliform	2400	mpn/100mL		1	SM 9223B		10:45	
CHEMISTRY			. ,				,		0110
COLORMETI	RIC								
Phos	phate as P, Ortho	0.04	mg/l	.01	1	SM 4500P-E	08/14	09:20	HRG
Phos	phorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	•		HRG
Phos	phorus as P, Total	0.04	mg/l	.01	1	SM 4500P-E	08/19	13:35	HRG
NITROGEN	S								
Nitro	ogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/13	22:27	JCL
Nitro	ogen, Nitrate	1.03	mg/l	.05	1	EPA 353.2	08/13	18:25	JCL
	ogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:26	JCL
	ogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	08/15	16:58	JCL
OTHER									
	hemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	'	14:25	EMW
	l Organic Carbon	2.0	mg/l	1	1	SM5310 C	08/18	14:26	ALD
RESIDUES									
	ds, Total Dissolved	97	mg/l	5	1	SM 2540C	08/17	09:20	ТМН
	ds, Total Suspended	<3	mg/l	3	1	SM 2540D	08/17	09:20	ТМН
TITRATIO									
Alka	linity, Total to pH 4.5	13	mg/l	1	1	SM 2320 B	08/18	14:15	HRG

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Attention:	Gregory Wacik					Date of R	eport:	08/21	/14
Reported To:	USACE, Philadelphia District					Lab ID:	•	2295	-14-0030943
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	08/13	5/14 10:50
	Philadelphia PA 19107					Collected	By:	Clien	, it
0									
sample Desc:	BZ-5 Surface					Date Rece	ived:	08/13	5/14 14:30
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
		میں بین جام ہے۔ جام سے ایک ایک ایک کی ایک کی ا							

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.

O2 The total coliform sample was placed in the incubator on O8/13/14 at 14:55.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		08/21/14 2295-14-0030944	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		08/13 Clien	/14 08:10 t
Sample Desc: BZ-6 Surface					Date Rece	ived:	08/13	/14 14:30
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI							~~=	
MICROBIOLOGY								
Escherichia coli	<1	mpn/100mL	1	1	SM 9223B	08/14	10:45	DAD
Fecal Coliform	2	/100mL	2	1	SM 9222D	•	15:30	PLW
Total Coliform	2400	mpn/100ml	1	1	SM 9223B	•	10:45	DAD
CHEMISTRY						,		
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/14	09:20	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	08/14	15:03	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/19	13:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/13	22:42	JCL.
Nitrogen, Nitrate	0.33	mg/l	.05	1	EPA 353.2	08/13	18:26	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:26	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	08/15	16:59	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/14	14:25	EMW
Total Organic Carbon	1.6	mg/L	1	1	SM5310 C	08/18	14:42	ALD
RESIDUES								
Solids, Total Dissolved	71	mg/l	5	1	SM 2540C	08/17	09:20	ТМН
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	09:20	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	08/18	14:30	HRG

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Attention:	Gregory Wacik				×	Date of R	eport:	08/21	/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0030944
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	08/13	3/14 08:10
	Philadelphia PA 19107					Collected	By:	Clier	nt
Sample Desc:	BZ-6 Surface					Date Rece	ived:	08/13	3/14 14:30
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

O2 The total coliform sample was placed in the incubator on O8/13/14 at 14:55.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		08/21/14 2295-14-0030945	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		08/13 Clien	/14 08:10 t
Sample Desc: BZ-6 Mid-Depth					Date Rece	ived:	08/13	/14 14:30
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY					en en es es es es			
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/14	09:20	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	08/14	15:03	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	08/19	13:35	HRG
NITROGENS								
Nitrogen, Ammonía	<.05	mg/l	.05	1	D6919-03	08/13	22:57	JCL.
Nitrogen, Nitrate	0.77	mg/l	.05	1	EPA 353.2	08/13	18:27	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:27	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	08/15	17:02	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/14	14:25	EMW
Total Organic Carbon	1.1	mg/l	1	1	SM5310 C	08/18	14:56	ALD
RESIDUES								
Solids, Total Dissolved	96	mg/l	5	1	SM 2540C	08/17	09:20	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	08/17	09:20	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	08/18	14:30	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107					Date of R Lab ID: Date Coll Collected	ected:		-14-0030946 /14 08:10
Sample Desc: BZ-6 Deep					Date Rece	ived:	08/13	/14 14:30
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								State State Print Spine Land Land Land
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/l	.01	1	SM 4500P-E	08/14	09:20	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	08/14	15:03	HRG
Phosphorus as P, Total	0.29	mg/l	.01	1	SM 4500P-E	08/19	13:40	HRG
NITROGENS								
Nitrogen, Ammonia	0.06	mg/Լ	.05	1	D6919-03	08/13	23:57	JCL
Nitrogen, Nitrate	0.63	mg/l	.05	1	EPA 353.2	08/13	18:30	JCL.
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:28	JCL
Nitrogen, Total Kjeldahl	0.95	mg/l	.25	1	EPA 351.2	08/15	17:03	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/14	14:25	EMW
Total Organic Carbon	1.5	mg/l	1	1	SM5310 C	08/18	15:11	ALD
RESIDUES		-				•		
Solids, Total Dissolved	102	mg/l	5	1	SM 2540C	08/17	09:20	ТМН
Solids, Total Suspended	77	mg/L	3	1	SM 2540D	08/17	09:20	тмн
TITRATIONS		-,						
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	08/18	14:30	HRG

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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Christina Kistler Account Executive

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ENVIRONMENTAL TESTING LABORATORY 107 ANGELICA STREET, READING, PA 19611 PHONE: 610-374-5129 • FAX: 610-374-7234 • www.mjreider.com







Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	08/21/14 2295-14-0030947		
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		08/13 Clien	/14 09:30 t	
Sample Desc: BZ-7 Surface					Date Rece	ived:	08/13	/14 14:30	
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst	
BACTI					وغر وی وی وی وی وی این این این وی این این				
MICROBIOLOGY									
Escherichia coli	4	mpn/100mL	1	1	SM 9223B	08/14	10:45	DAD	
Fecal Coliform	5	/100mL	2	1	SM 9222D	08/13	15:30	PLW	
Total Coliform	1100	mpn/100ml	1	1	SM 9223B	•	10:45	DAD	
CHEMISTRY						,			
COLORMETRIC									
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/14	09:20	HRG	
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	08/14	15:03	HRG	
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/19	13:40	HRG	
NITROGENS									
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/14	00:12	JCL	
Nitrogen, Nitrate	0.26	mg/l	.05	1	EPA 353.2	08/13	18:31	JCL	
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:29	JCL	
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	08/15	17:04	JCL	
OTHER									
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/14	14:25	EMW	
Total Organic Carbon	1.4	mg/l	1	1	SM5310 C	08/18	21:31	ALD	
RESIDUES									
Solids, Total Dissolved	81	mg/l	5	1	SM 2540C	08/17	09:45	ТМН	
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	08/17	09:45	ТМН	
TITRATIONS									
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	08/18	14:30	HRG	

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Attention:	Gregory Wacik					Date of R	eport:	08/21	/14
Reported To:	USACE, Philadelphia District					Lab ID:	-	2295	-14-0030947
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	08/13	/14 09:30
	Philadelphia PA 19107					Collected	By:	Clien	t
Sample Desc:	BZ-7 Surface					Date Rece	ived:	08/13	/14 14:30
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

O2 The total coliform sample was placed in the incubator on O8/13/14 at 14:55.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District					Date of R Lab ID:	eport:	08/21 2295	/14 -14-0030948
Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107					Date Coll Collected		08/13 Clien	/14 09:30 t
Sample Desc: BZ-7 Mid-Depth					Date Rece	ived:	08/13	/14 14:30
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/14	09:25	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/14	15:06	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	08/19	13:40	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/14	00:27	JCL
Nitrogen, Nitrate	0.80	mg/l	.05	1	EPA 353.2	08/13	18:34	JCF
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:32	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	08/15	17:06	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/14	14:25	EMW
Total Organic Carbon	1.1	mg/l	1	1	SM5310 C	08/18	21:45	ALD
RESIDUES								
Solids, Total Dissolved	77	mg/l	5	1	SM 2540C	08/17	09:45	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	08/17	09:45	ТМН
TITRATIONS						-		
Alkalinity, Total to pH 4.5	12	mg/l	1	1	SM 2320 B	08/18	14:45	HRG

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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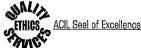
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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: 08/21/ Lab ID: 2295-			/14 -14-0030949
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		08/13 Clien	/14 09:30 t
Sample Desc: BZ-7 Deep					Date Rece	ived:	08/13	/14 14:30
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/l	.01	1	SM 4500P-E	08/14	09:25	HRG
Phosphorus as P, Dissolved	<.05	mg/l	. 05	1	SM 4500P-E	08/14	15:06	HRG
Phosphorus as P, Total	0.02	mg/l	.01	1	SM 4500P-E	08/19	13:40	HRG
NITROGENS						-		
Nitrogen, Ammonia	<.05	mg∕l	.05	1	D6919-03	08/14	01:12	JCL
Nitrogen, Nitrate	0.68	mg/l	. 05	1	EPA 353.2	08/13	18:35	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/13	16:35	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	08/15	17:07	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/14	14:25	EMW
Total Organic Carbon	1.4	mg/l	1	1	SM5310 C	08/18	22:00	ALD
RESIDUES								
Solids, Total Dissolved	80	mg/l	5	1	SM 2540C	08/17	09:45	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	08/17	09:45	тмн
TITRATIONS						-		
Alkalinity, Total to pH 4.5	14	mg/l	1	1	SM 2320 B	08/18	15:00	HRG

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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M. J. REIDER ASSOCIATES, INC. 26:53 PM	Chain of Custody	2295 Work Order: 004036 Project Leader: CMB No: 241686 Work Order Description: Beltzville Reservoir Gregory Wacik Description: Beltzville Reservoir	USACE, Philadelphia District Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107 215-656-6561 Ext: Laboratory Receipt Temp: 5 Deg C. If Temp Unacceptable, On Ice? Y N Approved By: 350	Sample No: 1 Desc: BZ-1 Surface Matrix: 0 Date: $\frac{\delta/13/14}{11000}$ Matrix: 0 Date: $\frac{\delta/13/14}{11000}$ FC, EC, TC, M A = 1 X 250mlMicro P W Sterile/Na2S203; FC, EC, TC, M A = 1 X 250mlMicro P W Sterile/Na2S203; NO2-N, NO2-N, NO3-N, d-po4-p, o ¹ po4, BOD, M = 1 X 160zNO2NO3 p W Cool to 6 C; C = 1 X 160zNO2NO3 p W H204 (pH<2); E = 1 X 200ml NH3 p W H204 (pH<2); E = 1 X 2xamberVoa g W H3P04/zero headspace; F = 1 X 80z Alk p W/	ample No:2Desc:BZ-2 SurfaceFC, EC, TC, No3-N, d-po4-p, olb64, BODMatrix:0Date:FC, BC, TC, No3-N, d-po4-p, olb64, BODMatrix:0Date:N3-N, tkm, Alk, tds, tss, po4-p, toc,1X 500ml NH3 p w/ Cool to 6 C;NH3-N, tkm, Alk, tds, tss, po4-p, toc,21X 2xambervoa g w/ H3P04/zero headspace;FC, BC, TC, No3-N, d-po4-p, olb64, BOD1X 500ml NH3 p w/ H3P04/zero headspace;FC, BC, TC, No3-N, d-po4-p, olb64, BOD1X 500ml NH3 p w/ H3P04/zero headspace;FC, BC, TC, No3-N, d-po4-p, toc,1X 500ml NH3 p w/ H3P04/zero headspace;FC, BC, TC, No3-N, tkm, Alk, tds, tss, po4-p, toc,1X 500ml NH3 p w/ H3P04/zero headspace;FC, EC, TC, C, EC, MEAD1X 600l to 6 C;FC, EC, TC, TC, TC, TC, TC, TC, TC, TC, TC, T	by Aching Received by: By MM Received for laboratory by: By MM
raq 07/16/14 4:26:53 PM		Account: 2295 Customer: Gregory	Address: USACE, P Envircomm 100 Penm Philadel Phone: 215-656- Samplers:	30437 sample No: 1 FC, EC, TC, N ^J NO2-N, NO3-N, d NH3-N, tkn, Alk	3093\$ sample No: 2 FC, EC, TC, 0 NO2-N, NO3-N, d NH3-N, tkn, Alk	Relinquished by:

M. J. REIDER ASSOCIATES, INC. Page: 2	Chain of Custody Work Order: 004036 Project Leader: CMB Work Order Description: Beltzville Reservoir	arks: al Sampling Time (hours): oratory Receipt Temp: 5	cix: 0 Date 250mlmicro P w/ Sterile/ 2 Bod p w/ Cool to 6 C; 16ozN02N03 p w/ Cool to 500ml NH3 p w/ H2SO4 (pH< 2 cambervoa g w/ H3PO4/ze 8 a Alk p w/	Cool to 6 C/Zero Headspace; Matrix: 0 Date: $\frac{\partial \gamma_0 \beta}{\partial \gamma_0}$ A - 1 X L Bod p w/ Cool to 6 C; B - 1 X 16ozNO2NO3 p w/ Cool to 6 C; C - 1 X 500ml NH3 p w/ H2SO4 (pH<2); C - 1 X 2zambervoa g w/ H3PO4/Zero headspace; E - 1 X 8za Alk p w/ Cool to 6 C/Zero Headspace;	$ \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array}\\ \end{array}\\ \end{array}\\ \end{array}\\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\$
raq 07/16/14 4:26:53 PM	Account: 2295 Work Order: 004036 Work Order Description Customer: Gredory Wacik		309395ample No: 3 Desc: BZ-3 Surface FC, EC, TC, No NO2-N, NO3-N, d-po4-p, o-po4, BOD NH3-N, thm, Alk, tds, tss, po4-p, toc,	Sopies No: 4 Desc: BZ-3 Mid-Depth No2-N, NO3-N, d-po4-p, o-po4, BOD, NM MM13-N, thu, alk, tds, tss, po4-p, toc,	Relinquished by: Received by: Date: 8/13/14 Time: 1200

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COFC.FRT Page: 3	No: 241686		Bottle Prep by:	On Ice? Y N	0 Date: 8//3//4 Time: 0900	່ ບໍ່ລິ	6 C/Zero Headspace; 0 Date:	P w/ Sterile/Na Cool to 6 C;	l6ozNU2NU3 p w/ COOL to o c; 500ml NH3 p w/ H2SO4(pH<2); 2xambervoa g w/ H3PO4/zero headspace; 8oz Alk p w/ . to 6 C/Zero Headspace;		Xin	r by: 154 / 4/10 . Time: 1430	Sample entered by:
M. J. REIDER ASSOCIATES, INC.	Chain of Custody 004036 Project Leader: CMB Description: Beltzville Reservoir	Remarks:	Total Sampling Time (hours):	Laboratory Receipt Temp: <u>S</u> Deg C. If Temp: <u>f</u> Sy		A - 1 X L B B - 1 X 160 C - 1 X 500 D - 1 X 2X F - 1 X 802	Cool Mat	и и н н и и	C - 1 X 160 D - 1 X 500 E - 1 X 2xar F - 1 X 2xar F - 1 X 802 , Cool to			by: D_{af} Mp N Received for laboratory by: Date: $g - \frac{3}{2} \frac{1}{2}$ Ti	
raq 07/16/14 4:26:53 PM	Account: 2295 Work Order: 004036 Work Order Descript		usade, Enviror 100 Per Philade	Phone: 215-656-6561, Ext: Samplers: OACIK	3094 sample No: 5 Desc: B_Z-3 Deep	NO2-N, NO3-N, d-po4-p, o-po4, BOD M NH3-N, tkm, Alk, tds, tss, po4-p, toc,	2 Λ G4 7 Sample No: 6 Desc: BZ-4 Surface	, TC, 0	NH3-N, tkm, Alk, tds, tss, po4-p, toc,			Relinquished by Cleft W Received by: Date: $\xi//3/4$ Time: 200	

M. J. REIDER ASSOCIATES, INC. COFC.PRT Page: 4	Chain of Custody	004036 Project Leader: CMB No: 241686 Description: Beltzville Reservoir Remarks:		Total Sampling Time (hours): Bottle Prep by: Laboratory Receipt Temp: S Deg C. If Temp Unacceptable, On Ice? Y N	Matrix: A - 1 X 250m B - 1 X 1 B0 C - 1 X 1 B0 C - 1 X 160z C - 1 X 2500m E - 1 X 2x00m F - 1 X 80z	Cool to 6 C/Zero Headspace; Matrix: 0 Date: $\frac{\partial^2 / i \beta}{\partial x / i \phi}$	 A - 1 X 250m1Micro P w/ Sterile/Na2S203; B - 1 X 16ozN02N03 p w/ Cool to 6 C; C - 1 X 16ozN02N03 p w/ Cool to 6 C; D - 1 X 500m1 NH3 p w/ H3P04/zero headspace; F - 1 X 80z Alk p w/ Cool to 6 C/Zero Headspace; 	$ \begin{array}{ccccc} $
raq 07/16/14 4:26:53 PM		Account: 2295 Work Order: 004036 Work Order Descriptio Customer: Gregory Wacik	E, Philadely ronmental Re	100 Pemn Square East Philadelphia PA 19107 Phone: 215-656-6561 Ext:	mple No: 7 Desc: BZ-5 Surface FC, EC, TC, 014 NO2-N, NO3-N, d-P04-P, o-P04, B0P NH3-N, tkn, Alk, tds, tss, p04-P, t	30944 Sample No: 8 Desc: BZ-6 Surface	FC, EC, TC, N ^d NO2-N, NO3-N, d-po4-p, of body BOD M NH3-N, tkn, Alk, tds, tss, po4-p, toc,	Relinquished by: Received by: Date: $\frac{1}{5/i4}$ Time: 200

rag 07/16/14 4:26:53 PM	M. J. REIDER ASSOCIATES, INC. Page: 5
	Chain of Custody
Account: 2295 Work Order: 004036 Work Order Descript Customer: Gregory Wacik	. 004036 Project Leader: CMB No: 241686 Description: Beltzville Reservoir Remarks.
Address: USACE, Philadelphia District Environmental Resources Branch	
100 Penn Square E Philadelphia PA 1	Total Sampling Time (hours): Bottle Prep by:
Samplers: WACIN	oratory Receipt Temp: <u>S</u> Deg C. If Temp Unacceptab Approved By: <u>り</u> が
30945 sample No: 9 Desc: BZ-6 Mid-Depth	Matrix: 0 Date: $g/(3/14)$
NO2-N, NO3-N, d-po4-p, o-po4, BOD	່ບິ
NH3-N, tkn, Alk, tds, tss, po4-p, toc,	 1 X 500ml NH3 p w/ H2SO4 (pH<2); 1 X 2xambervoa g w/ H3PO4/zero h 1 X 80z Alk p w/ Cool to 6 C/Zero Headspace;
ろしなりら Sample No: 10 Desc: BZ-6 Deep	Matrix: 0 $\frac{8/13/14}{100000000000000000000000000000000000$
NO2-N, NO3-N, d-po4-p, o-po4, BOD N N/ NH3-N, tkm, Alk, tds, tss, po4-p, toc,	<pre>d bod p w/ Cool to 6 C; foorNO2NO3 p w/ Cool to 6 C; foonl NH3 p w/ H2SO4(pH<2); itembervoa g w/ H3PO4/zero b itembervoa g w/ H3PO4/zero b</pre>
30947 gammle No: 11 Desc: BZ-7 Surface	
TC, N J-m2-m	Time: - 1 X 250mlMicro P w/ Sterile/N - 1 X L Bod p w/ Cool to 6 C;
NH3-N, thm, Alk, tds, tss, po4-p, toc,	<pre>C - 1 X 16ozNO2NO3 p w/ Cool to 6 C; D - 1 X 500ml NH3 p w/ H2SO4(pH<2); E - 1 X 2xambervoa g w/ H3PO4/zero headspace; F - 1 X 8oz Alk p w/ Cool to 6 C/Zero Headspace;</pre>
(
Relinquished by: Conformation Received by:	1: Da NP Received for laboratory by: De NN
Date: $\mathcal{E}/\ell + \mathcal{E}$ $//_{\text{Time:}}$ 200	Date: 8-13-14 Time: 1430
	Sample entered by:

M. J. REIDER ASSOCIATES, INC. Page: 6	Chain of Custody	004036 Project Leader: CMB No: 241686 Description: Beltzville Reservoir	Remarks:	Total Sampling Time (hours): Bottle Prep by: Laboratory Receipt Temp: Deg C. If Temp Unacceptable, On Ice? Y N Approved By: <u>M</u> SW	Matrix: 0 Date: \$//3//4 A - 1 X L Bod p w/ Cool to 6 C; B - 1 X 160x003 p w/ Cool to 6 C; 0930 B - 1 X 160x02N03 p w/ Cool to 6 C; C - 1 X 2xambervoa g w/ H3P04/zero headspace; 0 C - 1 X 80z Alk p w/ B - 1 X 12xambervoa g w/ H3P04/zero headspace; C - 1 X 2xambervoa g w/ H3P04/zero headspace;	Mat HHH KXX	D - 1 X 2xambervoa g W/ H5P04/Zero headspace; E - 1 X 802 Alk p W/ Cool to 6 C/Zero Headspace;	by: $\int_{eq} \int_{eq} \int_{$
raq 07/16/14 4:26:54 PM		2295 Work Order: Work Order	Customer: Gregory wacık	Address: USACE, Philadelphia District Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107 Phone: 215-656-6561 Ext: Samplers:	3094gSample No: 12 Desc: BZ-7 Mid-Depth No2-N, NO3-N, d-po4-p, o ¹ po4, BOD _M NH3-N, tkn, Alk, tds, tss, po4-p, toc,	SOG4G sample No: 13 Desc: BZ-7 Deep NO2-N, NO3-N, d-po4-p, d-po4, BOD, NH3-N, thn, Alk, tds, tss, po4-p, toc,		Relinquished by: Received by: Date: $\delta/3//4$ Time: 200

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: 09/18/14 Lab ID: 2295-14			14 14-0034291	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 11:30 t	
Sample Desc: BZ-1 Surface					Date Rece	ived:	09/11	/14 13:05	
PWSID: 3130843			Rep	Dilutn		Test	Test		
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst	
BACTI			یہ بے بے یہ نے لیا ہے					بسر بن الله الله الله الله الله	
MICROBIOLOGY									
Escherichia coli	10	mpn/100ml	1	1	SM 9223B	09/12	09:00	DAD	
Fecal Coliform	10	/100mL	2	1	SM 9222D		14:30		
Total Coliform	>2400	, mpn/100ml	1	1	SM 9223B	•	09:00		
CHEMISTRY		. ,						2112	
COLORMETRIC									
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	09/11	14:15	HRG	
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E			HRG	
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	09/12	12:30	HRG	
NITROGENS						•			
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/11	16:30	JCL	
Nitrogen, Nitrate	0.77	mg/l	.05	1	EPA 353.2	09/11	16:37	JCL	
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/11	15:12	JCL	
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	09/16	16:52	JCL	
OTHER									
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	09/11	14:10	ALD	
Total Organic Carbon	1.4	mg/l	1	1	SM5310 C	09/15	13:53	ALD	
- RESIDUES									
Solids, Total Dissolved	57	mg/l	5	1	SM 2540C	09/15	13:25	тмн	
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	09/15	13:25	ТМН	
TITRATIONS									
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	09/15	10:45	HRG	

Reviewed and Approved by:

Wistore m tleV

Christina Kistler Account Executive

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Attention:	Gregory Wacik					Date of I	Report:	09/18	3/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	, 5–14–0034291
	Environmental Resources Branch								
	100 Penn Square East					Date Col	lected:	09/11	/14 11:30
	Philadelphia PA 19107					Collected	d By:	Clier	, it
Sample Desc:	BZ-1 Surface					Date Rec	eived:	09/11	I/14 13:05
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

O2 The total coliform sample was placed in the incubator on 09/11/14 at 15:00.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		09/18/14 2295-14-0034292	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 11:00 t
Sample Desc: BZ-2 Surface					Date Rece	ived:	09/11	/14 13:05
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								FREE REEL REEL AND AND AND AND
MICROBIOLOGY								
Escherichia coli	18	mpn/100ml	1	1	SM 9223B	09/12	09:00	DAD
Fecal Coliform	21	/100ml	2	1	SM 9222D	09/11	14:30	PLW
Total Coliform	2400	mpn/100ml	1	1	SM 9223B	09/12	09:00	DAD
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	09/11	14:18	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	09/12	12:50	HRG
Phosphorus as P, Total	<.01	mg/l	. 01	1	SM 4500P-E	09/12	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/11	16:44	JCL
Nitrogen, Nitrate	0.24	mg/l	. 05	1	EPA 353.2	09/11	16:40	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/11	15:13	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	09/16	16:55	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	09/11	14:10	ALD
Total Organic Carbon	<1	mg/l	1	1	SM5310 C	09/15	14:08	ALD
RESIDUES								
Solids, Total Dissolved	62	mg/l	5	1	SM 2540C	09/15	13:25	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	09/15	13:25	тмн
TITRATIONS						•		
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	09/15	10:45	HRG

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Attention:	Gregory Wacik					Date of I	Report:	09/18	3/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	5-14-0034292
	Environmental Resources Branch								
	100 Penn Square East					Date Col	lected:	09/11	1/14 11:00
	Philadelphia PA 19107					Collecter	d By:	Clier	•
Sample Desc:	BZ-2 Surface					Date Rec	eived:	09/11	1/14 13:05
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

O2 The total coliform sample was placed in the incubator on O9/11/14 at 15:00.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	09/18 2295	/14 140034293
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 08:50 t
Sample Desc: BZ-3 Surface					Date Rece	ived:	09/11	/14 13:05
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI		• •••••••••••						
MICROBIOLOGY								
Escherichia coli	<1	mpn/100ml	1	1	SM 9223B	09/12	09:00	DAD
Fecal Coliform	<2	/100ml	2	1	SM 9222D	09/11	14:30	PLW
Total Coliform	>2400	, mpn/100ml	1	1	SM 9223B	'	09:00	
CHEMISTRY		. ,				.,		
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	09/11	14:18	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E			HRG
Phosphorus as P, Total	0.01	mg/l	.01	1	SM 4500P-E	09/12	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/11	16:59	JCL
Nitrogen, Nitrate	0.25	mg/l	.05	1	EPA 353.2	09/11	16:41	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/11	15:14	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	09/16	16:56	JCL
OTHER								
Biochemical Oxygen Demand	2	mg/l	2	1	SM 5210B	09/11	14:10	ALD
Total Organic Carbon	1.6	mg/l	1	1	SM5310 C	09/15	14:39	ALD
RESIDUES								
Solids, Total Dissolved	50	mg/l	5	1	SM 2540C	09/15	13:25	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	09/15	13:25	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	09/15	10:45	HRG

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Attention:	Gregory Wacik					Date of R	eport:	09/18	3/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	-14-0034293
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	09/11	/14 08:50
	Philadelphia PA 19107					Collected	By:	Clier	nt
Sample Desc:	BZ-3 Surface					Date Rece	ived:	09/11	/14 13:05
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

- 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.
- O2 The SM 5210B sample did not have a DO depletion of at least 2 mg/L.
- O3 The total coliform sample was placed in the incubator on O9/11/14 at 15:00.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		09/18/14 2295-14-0034294	
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 08:50 t
Sample Desc: BZ-3 Mid-Depth					Date Rece	ived;	09/11	/14 13:05
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY					یے <u>میں ہیں ہیں ہیں جم معا</u> معا نے لیے			
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	. 01	1	SM 4500P-E	09/11	14:18	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	•		HRG
Phosphorus as P, Total	0.01	mg/l	.01	1	SM 4500P-E			HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/11	17:14	JCL
Nitrogen, Nitrate	0.82	mg/l	.05	1	EPA 353.2	09/11	16:42	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/11	15:17	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	•	16:57	JCL
OTHER						,		
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	09/11	14:10	ALD
Total Organic Carbon	1.3	mg/l	1	1	SM5310 C	09/15	14:54	ALD
RESIDUES								
Solids, Total Dissolved	88	mg/l	5	1	SM 2540C	09/15	13:25	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	09/15	13:25	ТМН
TITRATIONS		-				,		
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	09/15	10:45	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of Report: Lab ID:		09/18 2295	/14 140034295
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 08:50 t
Sample Desc: BZ-3 Deep					Date Rece	ived:	09/11	/14 13:05
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY							``````````````````````````````````````	the two are and and has
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	09/11	14:18	HRG
Phosphorus as P, Dissolved	<.05	mg/t	. 05	1	SM 4500P-E	09/12	12:55	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	09/12	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/11	17:28	JCL
Nitrogen, Nitrate	0.62	mg/l	.05	1	EPA 353.2	09/11	16:45	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/11	15:20	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	09/16	16:58	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	09/11	14:10	ALD
Total Organic Carbon	1.2	mg/l	1	1	SM5310 C	09/15	15:10	ALD
RESIDUES								
Solids, Total Dissolved	70	mg/l	5	1	SM 2540C	09/15	13:25	тмн
Solids, Total Suspended	18	mg/l	3	1	SM 2540D	09/15	13:25	тмн
TITRATIONS						•		
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	09/15	11:00	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	09/18 2295	/14 -14-0034296
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 11:00 t
Sample Desc: BZ-4 Surface					Date Rece	ived:	09/11	/14 13:05
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								1999 1999 049 ika ka ka
MICROBIOLOGY								
Escherichia coli	5	mpn/100ml	1	1	SM 9223B	09/12	09:00	DAD
Fecal Coliform	11	/100ml	2	1	SM 9222D	09/11	14:30	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	09/12	09:00	DAD
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	09/11	14:18	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	09/12	12:55	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	09/12	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/11	17:43	JCL
Nitrogen, Nitrate	0.06	mg/l	.05	1	EPA 353.2	09/11	16:46	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/11	15:21	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	09/16	17:01	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	09/11	14:10	ALD
Total Organic Carbon	1.2	mg/l	1	1	SM5310 C	09/15	15:25	ALD
RESIDUES								
Solids, Total Dissolved	34	mg/l	5	1	SM 2540C	09/15	13:25	тмн
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	09/15	13:25	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/l	1	1	SM 2320 B	09/15	11:00	HRG

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Attention:	Gregory Wacik					Date of	Report:	09/18	8/14
Reported To:	USACE, Philadelphia District					Lab ID:		2295	5-14-0034296
	Environmental Resources Branch								
	100 Penn Square East					Date Col	lected:	09/1′	1/14 11:00
	Philadelphia PA 19107					Collecte	d By:	Clier	,
Sample Desc:	BZ-4 Surface					Date Rec	eived:	09/1′	1/14 13:05
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

O2 The total coliform sample was placed in the incubator on O9/11/14 at 15:00.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	09/18 2295	/14 -14-0034297
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 10:50 t
Sample Desc: BZ-5 Surface					Date Rece	ived:	09/11	/14 13:05
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI							CHAR MAN Long some	
MICROBIOLOGY								
Escherichia coli	110	mpn/100ml	1	1	SM 9223B	09/12	09:00	DAD
Fecal Coliform	150	/100mL	2	1	SM 9222D		14:30	PLW
Total Coliform	>2400	, mpn/100ml		1	SM 9223B		09:00	
CHEMISTRY		. ,				,		
COLORMETRIC								
Phosphate as P, Ortho	0.09	mg/l	.01	1	SM 4500P-E	09/11	14:18	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	•		HRG
Phosphorus as P, Total	0.09	mg/l	.01	1	SM 4500P-E	09/12	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/11	18:41	JCL
Nitrogen, Nitrate	1.12	mg/l	.05	1	EPA 353.2	09/11	16:46	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/11	15:22	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	09/16	17:02	JCL
OTHER								
Biochemical Oxygen Demand	2	mg/l	2	1	SM 5210B	09/11	14:10	ALD
Total Organic Carbon	1.1	mg/l	1	1	SM5310 C	09/15	20:55	ALD
RESIDUES								
Solids, Total Dissolved	80	mg/l	5	1	SM 2540C	09/15	13:25	тмн
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/15	13:25	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	15	mg/l	1	1	SM 2320 B	09/15	11:15	HRG

Reviewed and Approved by:

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		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
PWSID: 31308	43			Rep	Dilutn		Test	Test	
Sample Desc:	BZ-5 Surface					Date Rece	ived:	09/11	/14 13:05
	Philadelphia PA 19107					Collected	By:	Clier	, nt
	100 Penn Square East					Date Coll	ected:	09/11	/14 10:50
	Environmental Resources Branch								
Reported To:	USACE, Philadelphia District					Lab ID:	•	2295	, -14-0034297
Attention:	Gregory Wacik					Date of R	eport:	09/18	3/14

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 SM 5210B sample did not have a DO depletion of at least 2 $\ensuremath{\text{mg/L}}$.
- 03 The total coliform sample was placed in the incubator on 09/11/14 at 15:00.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	09/18 2295	/14 -14-0034298
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 08:00 t
Sample Desc: BZ-6 Surface					Date Rece	ived:	09/11	/14 13:05
PWSID: 3130843	Result	Unit [.]	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI		WH DESERT			ین چو پدر این این به به به می این کار این			
MICROBIOLOGY								
Escherichia coli	1	mpn/100ml	1	1	SM 9223B	09/12	09:00	DAD
Fecal Coliform	<2	/100ml	2	1	SM 9222D	09/11	14:30	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	09/12	09:00	DAD
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	09/11	14:18	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	09/12	12:55	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	09/12	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/11	18:56	JCL
Nitrogen, Nitrate	0.25	mg/l	.05	1	EPA 353.2	09/11	16:47	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2		15:23	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	09/16	17:03	JCL
OTHER								
Biochemical Oxygen Demand	2	mg/l	2	1	SM 5210B	'	14:10	ALD
Total Organic Carbon	1.5	mg/l	1	1	SM5310 C	09/15	21:10	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/l	5	1	SM 2540C	09/15	13:25	ТМН
Solids, Total Suspended	3	mg/l	3	1	SM 2540D	09/15	13:25	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	09/15	11:15	HRG

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Attention:	Gregory Wacik					Date of F	Report:	09/18	/14
Reported To:	USACE, Philadelphia District					Lab ID:	•	2295	, 140034298
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	.ected:	09/11	/14 08:00
	Philadelphia PA 19107					Collected	By:	Clien	t
Sample Desc:	BZ-6 Surface					Date Rece	eived:	09/11	/14 13:05
PWSID: 31308	343			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

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.

- O2 The SM 5210B sample did not have a DO depletion of at least 2 mg/L.
- O3 The total coliform sample was placed in the incubator on O9/11/14 at 15:00.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	09/18 2295	/14 -14-0034299
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 08:00 t
Sample Desc: BZ-6 Mid-Depth					Date Rece	ived:	09/11	/14 13:05
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY							Sand Street Street, Street	
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	09/11	14:20	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	09/12	12:55	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	09/12	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/11	19:10	JCL
Nitrogen, Nitrate	0.74	mg/l	.05	1	EPA 353.2	09/11	16:48	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/11	15:23	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	09/16	17:04	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	09/11	14:10	ALD
Total Organic Carbon	1.2	mg/l	1	1	SM5310 C	09/15	22:43	ALD
RESIDUES						•		
Solids, Total Dissolved	87	mg/l	5	1	SM 2540C	09/15	13:25	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	09/15	13:25	тмн
TITRATIONS		-				•		
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	09/15	11:15	HRG

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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Page 1 of 1

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District					Date of R Lab ID:	eport:	09/18 2295	/14 -14-0034300
Environmental Resources Branch 100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 08:00 t
Sample Desc: BZ-6 Deep					Date Rece	ived:	09/11	/14 13:05
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/l	.01	1	SM 4500P-E	09/11	14:20	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	09/12	12:55	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	09/12	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/11	19:25	JCL
Nitrogen, Nitrate	0.59	mg/l	.05	1	EPA 353.2	09/11	16:51	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/11	15:24	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	09/16	17:06	JCL
OTHER						•		
Biochemical Oxygen Demand	2	mg/l	2	1	SM 5210B	09/11	14:10	ALD
Total Organic Carbon	1.1	mg/l	1	1	SM5310 C	09/15	23:13	ALD
RESIDUES						•		
Solids, Total Dissolved	85	mg/l	.5	1	SM 2540C	09/15	13:25	тмн
Solids, Total Suspended	5	mg/L	3	1	SM 2540D		13:25	
TITRATIONS		-,				'		
Alkalinity, Total to pH 4.5	13	mg/l	1	1	SM 2320 B	09/15	11:45	HRG

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:	Gregory Wacik					Date of R	eport:	09/18	3/14
Reported To:	USACE, Philadelphia District					Lab ID:	,	2295	5-14-0034300
	Environmental Resources Branch								
	100 Penn Square East					Date Coll	ected:	09/11	1/14 08:00
	Philadelphia PA 19107					Collected	By:	Clier	nt
Sample Desc:	BZ-6 Deep					Date Rece	ived:	09/11	1/14 13:05
PWSID: 31308	43			Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
PWSID: 31308				•			Test	, Test	,

O2 The SM 5210B sample did not have a DO depletion of at least 2 mg/L.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	09/18 2295	/14 -14-0034301
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 09:30 t
Sample Desc: BZ-7 Surface					Date Rece	ived:	09/11	/14 13:05
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Escherichia coli	<1	mpn/100ml	1	1	SM 9223B	09/12	09:00	DAD
Fecal Coliform	<2	/100ml	2	1	SM 9222D	09/12	14:30	PLW
Total Coliform	2400	mpn/100mL		1	SM 9223B		09:00	DAD
CHEMISTRY			-					0110
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/l	.01	1	SM 4500P-E	09/11	14:20	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	•		HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	09/12	12:40	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	. 05	1	D6919-03	09/11	19:40	JCL
Nitrogen, Nitrate	0.24	mg/l	.05	1	EPA 353.2	09/11	16:52	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/11	15:25	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	09/16	17:07	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	09/11	14:10	ALD
Total Organic Carbon	1.3	mg/l	1	1	SM5310 C	09/15	23:43	ALD
RESIDUES								
Solids, Total Dissolved	79	mg/l	5	1	SM 2540C		13:50	ТМН
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	09/15	13:50	ТМН
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/l	1	1	SM 2320 B	09/15	11:45	HRG

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		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
PWSID: 31308	43			Rep	Dilutn		Test	Test	
Sample Desc:	BZ-7 Surface					Date Rece	ived:	09/11	/14 13:05
	Philadelphia PA 19107					Collected	By:	Clier	nt
	100 Penn Square East					Date Coll	ected:	09/11	/14 09:30
	Environmental Resources Branch								
Reported To:	USACE, Philadelphia District					Lab ID:	•	2295	, -14-0034301
Attention:	Gregory Wacik					Date of R	eport:	09/18	3/14

01 The duplicate analysis of this sample for total dissolved solids was outside the recommended limit of 5% of their average weight.

O2 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.

O3 The total coliform sample was placed in the incubator on 09/11/14 at 15:00.

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Attention: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	leport:	09/18 2295	/14 -14-0034302
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 09:30 t
Sample Desc: BZ-7 Mid-Depth					Date Rece	ived:	09/11	/14 13:05
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY					بندر اعد پیچ سے سے اعد اعد اعد اعد			
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	09/11	14:23	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	•		HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	,		HRG
NITROGENS						,		
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/11	19:54	JCL
Nitrogen, Nitrate	0.23	mg/l	.05	1	EPA 353.2	09/11	16:55	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/11	15:28	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	09/16	17:08	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	09/11	14:10	ALD
Total Organic Carbon	1.3	mg/l	1	1	SM5310 C	09/16	00:29	ALD
RESIDUES						,		
Solids, Total Dissolved	54	mg/l	5	1	SM 2540C	09/15	13:50	тмн
Solids, Total Suspended	3	mg/l	3	1	SM 2540D		13:50	
TITRATIONS		- •						
Alkalinity, Total to pH 4.5	10	mg/l	1	1	SM 2320 B	09/15	11:45	HRG

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: Gregory Wacik Reported To: USACE, Philadelphia District Environmental Resources Branch					Date of R Lab ID:	eport:	09/18 2295	/14 -14-0034303
100 Penn Square East Philadelphia PA 19107					Date Coll Collected		09/11 Clien	/14 09:30 t
Sample Desc: BZ-7 Deep					Date Rece	eived:	09/11	/14 13:05
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY					dikini kanini kanan pamay pamay pamay pamay pamay ayang ayang	<u> </u>		سر سے جب سے متر شر
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/l	.01	1	SM 4500P-E	09/11	14:23	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	09/12	13:00	HRG
Phosphorus as P, Total	0.04	mg/L	.01	1	SM 4500P-E	09/12	12:40	HRG
NITROGENS						,		
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/11	20:38	JCL
Nitrogen, Nitrate	0.67	mg/l	.05	1	EPA 353.2	09/11	16:56	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	09/11	15:31	JCL
Nitrogen, Total Kjeldahl	0.26	mg/l	.25	1	EPA 351.2	09/16	17:09	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	09/11	14:10	ALD
Total Organic Carbon	1.3	mg/l	1	1	SM5310 C	09/16	00:44	ALD
RESIDUES								
Solids, Total Dissolved	65	mg/l	5	1	SM 2540C	09/15	13:50	ТМН
Solids, Total Suspended	9	mg/l	3	1	SM 2540D	09/15	13:50	тмн
TITRATIONS								
Alkalinity, Total to pH 4.5	13	mg/l	1	1	SM 2320 B	09/15	11:45	HRG

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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COFC.PRT Page: 1	No: 242816	Bottle Prep by:N CIf Temp Unacceptable, On Ice? (YN	w/ St ol to w/ Co w/ H2S w/ H3 Heads	rrix: 0 Date: $\gamma/(/ /)$ 250mlMicro P w/ Sterile/Na2S203; L Bod p w/ Cool to 6 C; 160x2N02N03 p w/ Cool to 6 C; 500ml NH3 p w/ H2S04(pH<2); 2xambervoa g w/ H3P04/zero headspace; 80z Alk p w/ to 6 C/Zero Headspace;	ry by: Left Marine 1305
M. J. REIDER ASSOCIATES, INC. Chain of Custody	004036 Project Leader: CMB Description: Beltzville Reservoir Remarks:	Total Sampling Time (hours): Laboratory Receipt Temp: 7 Deg 2 If Approved By:	ма ма сокккк и сор	Matrix: A - 1 X 250m B - 1 X 16 B0 C - 1 X 16 B0 C - 1 X 500m F - 1 X 802 J F - 1 X 802 J	Date: 2001 Date: 2001 Till
jbs 08/06/14 12:22:12 PM	Account: 2295 Work Order: 004036 Work Order Description Customer: Gregory Wacik Address: USACE, Philadelphia District Rhvironmental Resources Branch	100 Penn Square East Philadelphia PA 19107 ne: 215-656-6561 Ext: $\mathcal{WPC}/\mathcal{K}$	34291 Sample No: 1 Desc: BZ-1 Surface FC, EC, TC, Q NO2-N, NO3-N, d-p64-p, o-p64, BOD, N NH3-N, thm, Alk, tds, tss, p04-p, toc,	34242 Sumple No: 2 Desc: BZ-2 Surface FC, EC, TC, W NO2-N, NO3-N, d-Po4-P, o-Po4, BOD, N NH3-N, tkn, Alk, tds, tss, po4-P, toc,	Relinquished by: Received by Received by Date: $9/11/14$ Time: 1.30

	 TC, North and State and Sta	Desc: BZ-3 Surface Matrix: 0 A - 1 X 250mlMicro P W/ P04-P, 0-P04, BOD, P0 , tds, tss, po4-P, toc, F 1 X 250ml NH3 P W/ F - 1 X 500ml NH3 P W/ F - 1 X 80z Alk P W/	Definition a set of the set of t	2295 Work Order: 004036 Project Leader: CMB No: Work Order Description: Beltzville Reservoir Gregory Wacik Greack: Remarks:	Chain of Custody	jbs 08/06/14 12:22:12 PM Page: 2	No: 242816 Bottle Prep by: Bottle Prep by: Bottle Prep by: Date: 0 Ince? Mincro P w/ Sterile/Na2522 d p w/ Cool to 6 C; INH3 p w/ H3P04/zero hes Alk p w/ Cool to 6 C; bervoa g w/ H3P04/zero hes d p w/ Cool to 6 C; INH3 p w/ H2S04(pH<2); bervoa g w/ H3P04/zero hes Alk p w/ Cool to 6 C; bervoa g w/ H3P04/zero hes Alk p w/ Cool to 6 C; bervoa g w/ H3P04/zero hes d p w/ Cool to 6 C; bervoa g w/ H3P04/zero hes d p w/ Cool to 6 C; INH3 p w/ H2S04(pH<2); bervoa g w/ H3P04/zero hes d p w/ Cool to 6 C; bervoa g w/ H3P04/zero hes d p w/ Cool to 6 C; bervoa g w/ H3P04/zero hes d p w/ Cool to 6 C; bervoa g w/ H3P04/zero hes d p w/ Cool to 6 C; bervoa g w/ H3P04/zero hes d p w/ Cool to 6 C; bervoa g w/ H3P04/zero hes d p w/ d b b d b d b d b d b d b d b d b d b d	Chain of Custody Chain of Custody Beltzville Reservoir temarks: Cotal Sampling Time (hours): Cotal Sampling Time (hours): Cotal Sampling Time (hours): Approved By: B - 1 X B - 1 X B - 1 X Cool Mat B - 1 X B - 1 X Cool	2:22:12 EM 2:295 Work Order: Gregory Wacik USACE, Philadelphia District Environmental Resources Branch 100 Penn Square East philadelphia PA 19107 215-656-6561 Ext: <i>WACI</i> 3 Desc: BZ-3 Surface 3 Desc: BZ-3 Mid-Depth NO3-N, d-p04-p, o-p04, BOD, M thn, Alk, tds, tss, po4-p, toc, thn, Alk, tds, tss, po4-p, toc,
--	--	--	---	---	------------------	--	---	--	---

	jbs 08/06/14 12:22:12 PM	M. J. REIDER ASSOCIATES, INC. COFC.PRT Page: 3
		Chain of Custody
	Account: 2295 Work Order: 004036 Work Order Description Customer: Gregory Wacik	004036 Project Leader: CMB No: 242816 Description: Beltzville Reservoir
	Address: USACE, Philadelphia District Environmental Resources Branch	kemarks:
	100 Penn Square East Philadelphia PA 19107 Phone: 215-6561 Ext:	Bottle Prep by:
	WACIK	Laboratory Receipt Temp: 7 Deg Approved By:
32295	Sample No: 5 Desc: BZ-3 Deep NO2-N, NO3-N, d-p64-p, o-p04, BOD, W NH3-N, tkn, Alk, tds, tss, p04-p, toc,	Matrix: 0 A - 1 X L Bod p w/ Cool to B - 1 X 160ZNO2NO3 p w/ Coo C - 1 X 500ml NH3 p w/ H2SO D - 1 X 2xambervoa g w/ H3P E - 1 X 802 Alk p w/
171296	Sam	Cool to b C/Zero Headspace;A/n/14Matrix: 0Date: 2/n/14A - 1 X 250mlMicro P w/ Sterile/Na2S203;B - 1 X 1 Bod P w/ Cool to 6 C;C - 1 X 16ozNO2N03 P w/ Cool to 6 C;D 1 Y 500ml MH3 D w/ Cool to 6 C;
	VH2-N' TKH' YTK' COS' F82' DGD' COS'	- 1 X 2000 a g w - 1 X 80z Alk p w/ - 1 X 80z Alk p w/ Cool to 6 C/Zero H
	Relinquished by: Received by: Received by: Date: 7/11/14 Time: 1/30	Date: 7/1114 Time: 1305

	jbs 08/06/14 12:22:12 PM	M. J. REIDER ASSOCIATES, INC. Page: 4
		Chain of Custody
	Account: 2295 Work Order: 004036 Work Order Description: Customer: Gregory Wacik	Project Leader: CWB : Beltzville Reservoir
	Address: USACE, Philadelphia District	Remarks:
		Total Sampling Time (hours): Bottle Prep by:
		Laboratory Receipt Temp: 7 Deg C. If Temp Unacceptable, On Ice? Y N Approved By: XXX
74297	Sample No: 7 NU Desc: BZ-5 Surface FC, EC, TC, MU NO3-N, d-p04-p, o-p04, BOD, NO NH3-N, thm, Alk, tds, tss, p04-p, toc,	Matrix: O Date: $\sqrt{//1}//4$ A - 1 X 250mlMicro P w/ Sterile/Na2S203; A - 1 X 150mlMicro P w/ Sterile/Na2S203; B - 1 X 16c2N02N03 P w/ Cool to 6 C; C - 1 X 16c2N02N03 P w/ Cool to 6 C; C D - 1 X 500ml NH3 P w/ H3204(PH<2);
36277	Sample No: 8 Desc: BZ-6 Surface FC, EC, TC, W d-pO4-p, o-pO4, BOD, W NO2-N, NO3-N, d-pO4-p, o-pO4, BOD, W NH3-N, tkh, Alk, tds, tss, po4-p, toc,	о, ы на парата и пара И парата и п И парата и п
	Relinquished by: $Apply Received by: Received by: Date: \frac{9}{11/14} Time: \frac{1130}{130}$	A. W. Received for laboratory by: A. 20 Date: 9/1/14 Time: 1305 Sample entered by: KJK

COFC.PRT Page: 5		No: 242816		Prep by:	Unacceptable, On Ice? (U M	Cool to 6 p w/ Cool w/ H2SO4 g w/ H3PO	<pre>L to 6 C/Zero Headspace; rrix: 0 Date: 1 Bod p w/ Cool to 6 C; 16ozNO2N03 p w/ Cool to 6 C; 500ml NH3 p w/ H2SO4(pH<2); 2xambervoa g w/ H3PO4/zero headspace; 8c2 Alk p w/ to 6 C/Zero Headspace; </pre>	rrix: 0 Date: $\gamma/n//\gamma$ 250mlMicro P w/ Sterile/Ma2S203; 33 L Bod p w/ Cool to 6 C; 16ozN02N03 P w/ Cool to 6 C; 500ml NH3 P w/ H2S04(pH<2); 2xambervoa g w/ H3P04/zero headspace; 80z Alk P w/ to 6 C/Zero Headspace;	v: Media Manager Time: 1205 Sample entered by: BTC
M. J. REIDER ASSOCIATES, INC.	Chain of Custody	Project Leader: CMB 1: Beltzville Reservoir Remarks:		rs): 6	Deg C. If Temp	XXXXX W VILLI	Cool to 6 C/Zero Hea Matrix: 0 A - 1 X L Bod p w/ Cool B - 1 X 16c2N02N03 p w/ C - 1 X 500ml NH3 p w/ E - 1 X 802 Alk p w/ E - 1 X 802 Alk p w/ Cool to 6 C/Zero Hea	<pre>Matrix: 0 A - 1 X 250mlMicro P w/ B - 1 X 1. Bod p w/ Cool C - 1 X 1. Bod p w/ Cool C - 1 X 500ml MH3 p w/ E - 1 X 802 Alk p w/ F - 1 X 802 Alk p w/ Cool to 6 C/Zero He</pre>	Date: 2///4 rin
jbs 08/06/14 12:22:12 PM		Account: 2295 Work Order: 004036 Work Order Description: Customer: Gregory Wacik	Address: USACE, Philadelphia District Environmental Resources Branch	100 Penn Square East Philadelphia PA 19107 Phone: 215-6561 Ext:	Samplers: WACIK	Sample No: 9 Desc: BZ-6 Mid-Depth NO2-N, NO3-N, d-p64-p, olpo4, BOD, W NH3-N, tkn, Alk, tds, tss, po4-p, toc,	Sample No: 10 Desc: BZ-6 Deep NO2-N, NO3-N, d-p04-p, o-p04, BOD, M. NH3-N, tkn, Alk, tds, tss, p04-p, toc,	Sample No: 11 Desc: BZ-7 Surface FC, EC, TC, M, d-po4-p, olpo4, BOD, NO2-N, NO3-N, d-po4-p, olpo4, BOD, NH3-N, tkm, Alk, tds, tss, po4-p, toc,	Relinquished by Received by Received by Bate: $\frac{9}{11}$
						24299	74300	192706	

	jbs 08/06/14 12:22:12 PM	M. J. REIDER ASSOCIATES, INC. COFC.PRT Page: 6
		Chain of Custody
	Account: 2295 Work Order: 004036 Work Order Description Customer: Gregory Wacik	Work Order: 004036 Project Leader: CMB No: 242816 Work Order Description: Beltzville Reservoir
	Address: USACE, Philadelphia District Environmental Resources Branch	Kemarks:
	100 Penn Square East Philadelphia PA 19107 Phone: 215-656-6561 Ext: Samplers: ///AC/K	Total Sampling Time (hours): Bottle Frep by: Laboratory Receipt Temp: Deg C. If Temp Unacceptable, On Ice? N Annound Br.
74302	Sample No: 12 Desc: BZ-7 Mid-Depth NO2-N, NO3-N, d-p04-p, o-p64, BOD, K M NH3-N, thn, Alk, tds, tss, po4-p, toc,	Matrix: 0 Date: $\gamma(n/n) \downarrow \downarrow$ A - 1 X L Bod p w/ Cool to 6 C; B - 1 X 16ozN02N03 p w/ Cool to 6 C; C - 1 X 500ml NH3 p w/ H2SO4 (pH<2); D - 1 X 2xambervoa g w/ H3PO4/zero headspace;
20272	3	Cool to 6 C/Zero Headspa
	Sample No: 13 Desc: BZ-7 Deep NO2-N, NO3-N, d-pol-p, o-pol, BOD, M NH3-N, tkn, Alk, tds, tss, po4-p, toc,	e: e: _ 6 C (<2); ero]
		- ບັ '
	Relinquished by M M Received by: M T mathematical probability M T mathematical probability M T mathematical probability M M T mathematical probability M	Date: 3/11/4 Time: 1305
		Sample entered by: RJC