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



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

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F.E. Walter Reservoir White Haven, Pennsylvania

TABLE OF CONTENTS

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

F.E. Walter Reservoir White Haven, Pennsylvania

TABLE OF CONTENTS

SECT	<u> ION</u>			PAGE NO.
		3.2.3	Total Kjeldahl Nitrogen	3-18
		3.2.4	Total Phosphorus	3-18
		3.2.5	Dissolved Phosphorus	3-19
		3.2.6	Dissolved Phosphate	3-19
		3.2.7	Total Dissolved Solids	3-19
		3.2.8	Total Suspended Solids	3-19
		3.2.9	Biochemical Oxygen Demand	3-20
		3.2.10	Alkalinity	3-20
		3.2.11	Total Organic Carbon	3-20
		3.2.12	Chlorophyll a	3-21
	3.3	TROF	PHIC STATE DETERMINATION	3-21
	3.4	RESE	RVOIR BACTERIA MONITORING	3-22
4.0	REF	EREN	CES	
APPE	ENDI	ΧA	Stratification Data Tables	A-1
APPF	NDL	ХВ	Laboratory Custody Sheets	B-1

F.E. Walter Reservoir White Haven, Pennsylvania

TABLE OF CONTENTS

SECTION PAGE NO. LIST OF TABLES 2-1 F.E. Walter Reservoir water quality sampling schedule for 2015 monitoring....... 2-2 2-2 Water quality test methods, detection limits, state regulatory criteria, and sample holding times for water quality parameters monitored at F.E. Walter 2-3 Water quality test methods, detection limits, PADEP water quality standards, and sample holding times for bacteria parameters monitored at F.E. Walter Reservoir in 2015 2-5 3-1 Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2015. 3-2 PADEP ammonium nitrogen criteria (Pennsylvania Code, Title 25 1984) Specific 3-3 EPA trophic classification criteria and average monthly measures for F.E. Walter Bacteria counts (colonies/100ml) at F.E. Walter Reservoir surface stations 3-4

F.E. Walter Reservoir White Haven, Pennsylvania

TABLE OF CONTENTS

SEC	<u>PAGE NO.</u>
	<u>LIST OF FIGURES</u>
2-1	Location map for F.E. Walter Reservoir and Lehigh River temperature probe monitoring stations in 2015
3-1	Temperatures measured in tributary surface waters of F.E. Walter Reservoir during 2015
3-2	Stratification of temperature measured in the water column of F.E. Walter Reservoir at station WA-2 during 2015
3-3	Dissolved oxygen measured in tributary surface waters of F.E. Walter Reservoir during 2015
3-4	Dissolved oxygen measured in the water column of F.E. Walter Reservoir at station WA-2 during 2015
3-5	Measures of pH in tributary surface waters of F.E. Walter Reservoir during 2015 3-8
3-6	Stratification of pH measured in the water column of F.E. Walter Reservoir at station WA-2 during 2015
3-7	Carlson Trophic state indices calculated from secchi disk depth, concentrations of chlorophyll a and Total Phosphorus measured in surface waters of F.E. Walter Reservoir at station WA-2 during 2015

1.0 INTRODUCTION

1.1 DESCRIPTION OF F.E. WALTER RESERVOIR

The U.S. Army Corps of Engineers (USACE) manages F.E. Walter Reservoir located in northeastern Pennsylvania within the Delaware River Basin. F.E. Walter Reservoir is an integral part of the Lehigh River Flood Control Program. The authorized purpose of this project is flood control. The reservoir project was authorized for recreation and specifically white water recreation as part of Public Law 100-676, Section 6, dated November 17, 1988. Located about 9 miles southeast of Wilkes-Barre, PA, the reservoir dams a drainage area of 288 square miles. The dam can impound up to 35.8 billion gallons of floodwater. The primary surface water input into the reservoir is the Lehigh River as it flows west between Luzerne and Carbon Counties. Bear Creek, a secondary surface water input, enters the reservoir from the north. Tobyhanna Creek drains an area to the southeast and joins the Lehigh River near the headwaters of the reservoir. The reservoir is approximately 3 miles long and approximately 50 feet deep when not operating for flood control or recreation. In an effort to maximize recreational potential in the reservoir and on the Lehigh River downstream, specifically recreational boating and fishing, the normal operating pool of 50 feet was raised an additional 70 feet in March/April of 2015. The additional storage was used to augment low flows in the Lehigh River downstream as a fishery management tool and increase the number of recreational boating releases throughout the summer recreation season.

1.2 PURPOSE OF THE MONITORING PROGRAM

Foremost, F.E. Walter Reservoir provides flood control to downstream communities on the Lehigh River. Additionally, the reservoir provides important habitat for fish, waterfowl, and other wildlife, and recreational opportunities through fishing and boating both within the lake and downstream. Drinking water intakes exist at various locations on the Lehigh River downstream of the dam. Due to the broad range of uses and demands F.E. Walter Reservoir serves, the USACE monitors water quality and other aspects related to reservoir health primarily to ensure public health safety and protection of the environment. Water quality monitoring results are compared to state water quality standards and used to diagnose problems that commonly effect reservoir health such as nutrient enrichment and toxic loadings. This report summarizes the results of water quality monitoring at F.E. Walter Reservoir and its tributaries from June through September 2015.

1.3 ELEMENTS OF THE STUDY

The USACE, Philadelphia District, has been monitoring the water quality of F.E. Walter Reservoir since 1975. Over this time, yearly monitoring program designs have evolved to address new areas of concern such as human health aspects of drinking water, sediment contaminants within the reservoir basin, and a 2002 investigation of a hydrogen sulfide smell near the tail water of the dam. The 2015 monitoring program was similar to those in recent

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

2.0 METHODS

2.1 PHYSICAL STRATIFICATION MONITORING

Physical stratification monitoring of the water column of F.E. Walter Reservoir was conducted five times between June and September 2015 at all stations (Table 2-1). Physical stratification parameters included temperature, dissolved oxygen (DO), pH, ORP, Chlorophyll a, depth, turbidity, and conductivity. Monitoring was conducted at seven fixed stations located throughout the reservoir watershed (Fig. 2-1). Surface water quality was monitored at stations downstream (outfall discharge) of the reservoir (WA-1S) and upstream tributary stations on Tobyhanna Creek (WA-3S), the Lehigh River (WA-4S), and Bear Creek (WA-5S). Stratification monitoring was conducted within the reservoir at a reservoir tower station (WA-2), Bear Creek arm of the lake (WA-6), and Lehigh River arm of the lake (WA-7) with water quality measured from the water surface to the bottom at 5-ft intervals. All of the water quality monitoring was conducted with a calibrated YSI 6600 V2-4 multi-parameter water quality sonde.

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

2.2 WATER COLUMN CHEMISTRY MONITORING

Water column chemistry monitoring was conducted five times at F.E. Walter Reservoir between June and September 2015 (Table 2-1). Water samples were collected at the seven fixed stations throughout the reservoir drainage area (Fig. 2-1). Surface water samples were collected at stations downstream of the reservoir (WA-1S) and upstream on Tobyhanna Creek (WA-3S), the Lehigh River (WA-4S), and Bear Creek (WA-5S). Surface, middle, and bottom water samples were collected at each of the reservoir-body stations WA-2, WA-6, and WA-7. Surface water samples were collected by opening the sample containers approximately 0.5-1 foot below the water's surface. Middle and bottom samples were collected with a Van Dorn design water bottle sampler. All samples were placed on ice in a cooler and shipped to a certified laboratory for testing. MJ Reider Associates in Reading, Pennsylvania conducted the laboratory water analysis for 2015.

Water samples collected from surface, middle, and bottom depths were analyzed for ammonia, nitrite, nitrate, total Kjeldahl nitrogen (TKN), total phosphorus, diss./ortho-phosphate, soluble phosphorus, total dissolved solids (TDS), total suspended solids (TSS), biochemical oxygen demand (BOD), alkalinity, and total organic carbon (TOC). Table 2-2 summarizes the water quality parameters; laboratory method detection limits, laboratory required reporting limits, state water quality standards, and allowable maximum hold times for each.

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Table 2-1. F.E	E. Walter Reser	voir water qual	ity schedule for 2	015 monitorin	ıg		
Date of Sample Collection	(3) Physical Stratification Monitoring (All Stations)	Water Column Chemistry Monitoring (All Stations)	Trophic State Determination (WA-2)	Coliform Bacteria Monitoring (All Stations)	(4) Sediment Priority Pollutant Monitoring (WA-2)	(2) Lehigh Temperature Probes	(1) Drinking Wate Monitoring
03 June	Х	X	Х	Х	NS	NS	NS
30 June	Х	X	Х	Х	NS	NS	NS
22 July	Х	X	X	X	NS	NS	NS
12 August	X	X	Х	X	NS	NS	NS
01 September	X	X	X	X	NS	NS	NS
(4) Drinking water			v porconnol at oach r				

⁽¹⁾ Drinking water samples are sampled quarterly by personnel at each reservoir.

⁽²⁾ Lehigh River temperature probes continuously monitor river temperatures throughout the sampling period. They are periodically downloaded.

 ⁽³⁾ Physical stratification monitoring is conducted at all stations during routine monthly sampling.
 (4) Sediment Sampling was not conducted in 2015 based on historic sampling results showing low probability of sediment contamination.

NS- Not Sampled

Methods

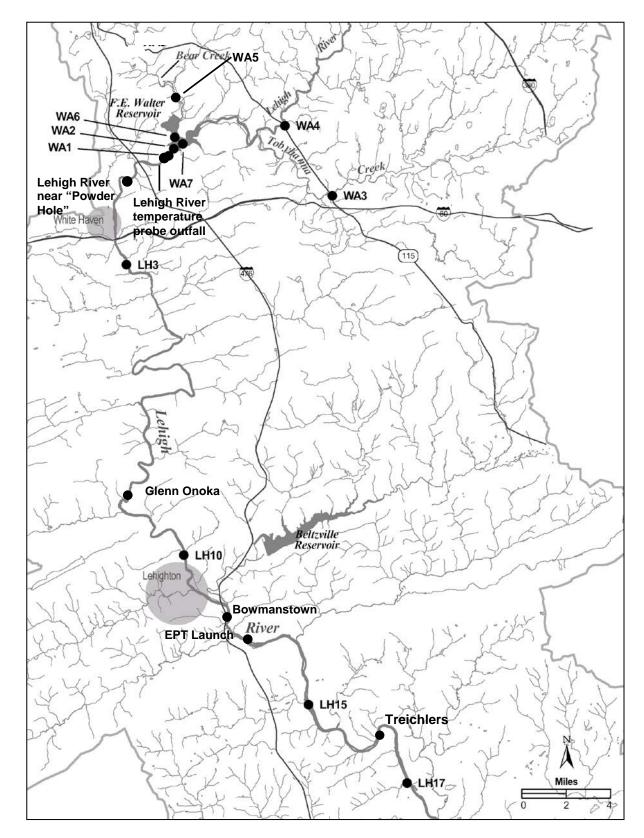


Figure 2-1. Location map for F.E. Walter Reservoir and Lehigh River temperature probe monitoring stations.

Table 2-2. Water quality test methods, detection limits, state regulatory criteria, and sample holding times for water quality parameters monitored at F.E. Walter Reservoir in 2015

Parameter	(2) Method	Reporting Limit	PADEP Surface Water Quality Criteria	Allowable Hold Times (Days)
Total Alkalinity	SM20 2320B	1.0 mg/L	Min. 20 mg/L CaCO₃	14
Biochemical Oxygen Demand (BOD)	SM20 5210B	2.0 mg/L	None	2
Total Phosphorus	SM20 4500P-E	0.01 mg/L	None	28
Diss./Ortho-Phosphate	SM20 4500P-E	0.01 mg/L	None	28
Soluble Phosphorus	SM-20 4500-PE	0.05 mg/L	None	28
Total Organic Carbon (TOC)	SM-20 5310C	1.0 mg/L	None	28
Total Inorganic Carbon (TIC)	SM-20 5310B	1.0 mg/L	None	28
Total Carbon (TOC + TIC)	SM-20 5310B	1.0 mg/L	None	28
(1) Chlorophyll a			None	
Total Kjeldahl Nitrogen	MCAWW 351.2	0.25 mg/L	None	28
Ammonia	D6919-03	0.05 mg/L	Temp. and pH dependent	28
Nitrate	MCAWW 353.2	0.05 mg/L	Maximum	28
Nitrite	MCAWW 353.2	0.05 mg/L	- 10 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 V2-4 with a chlorophyll sensor.

⁽²⁾ Laboratory Methods Reference:

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

SM-20- "Standard Methods for the Examination of Water and Wastewater", 22nd Edition, 2012. **SW846**- "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", 3rd. Edition, November 1986 and updates.

2.3 TROPHIC STATE DETERMINATION

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

2.4 RESERVOIR BACTERIA MONITORING

Monitoring for coliform bacteria contaminants was conducted five times between June and September 2015 at F.E. Walter Reservoir. Surface water samples were collected in the same manner as for chemical parameter samples, and analyzed for total and fecal coliform and e-coli bacteria contamination. Table 2-3 presents the test methods, detection limits, PADEP standards, and sample holding times for the bacteria parameters monitored at F.E. Walter Reservoir in 2015. The bacteria analytical method was based on a membrane filtration technique. All of the samples were analyzed within their maximum allowable hold times. MJ Reider Associates Laboratory in Reading, Pennsylvania conducted the bacteria analysis for 2015.

Monthly coliform bacteria counts were compared to the PADEP single sample and swimming beach water quality standard for bacteria. The multiple beach sample standards is defined as a maximum geometric mean of 200 colonies/100-ml based on five samples collected on different days within a 30-day period. Application of this standard is not necessary at F.E. Walter because swimming and other human/water contact recreation is prohibited in the reservoir. However, it is used in evaluating the bacteria results.

Table 2-3.	•		etection limits, PADEP water quality standards, and eria parameters monitored at F.E. Walter Reservoir
Param	neter	Total coliform	Fecal coliform
Test me	ethod	SM 9223B	SM9222D
Detectio	n limit	1 clns/100-mls	2 clns/100-ml
PADEP st	tandard	-	Geometric mean less than 200 clns/100-ml (application of this standard is conservative because swimming is not permitted in the reservoir)
Maximum a holding		30 hours	30 hours
Achieved ho	olding time	< 30 hours	< 30 hours

3.0 RESULTS AND DISCUSSION

3.1 STRATIFICATION MONITORING

The following sections describe temporal and spatial patterns for the water quality parameters of temperature, dissolved oxygen (DO) and pH measured throughout the F.E. Walter Reservoir and watershed during 2015. Additionally, patterns related to season and depths are described for station WA-2 which is located near the operations tower and maintains the greatest water depths in the reservoir. Maximum depths for WA-2, during five monthly sampling days, vary between approximately 105 to 121 feet due to 2015 reservoir operations at the time of sampling. All of the stratification data collected during the 2015 monitoring period is presented in Appendix A.

3.1.1 Temperature

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

Temperatures of the tributary surface waters (Stations WA-3S, -4S, and -5S) of the F.E. Walter Reservoir watershed generally followed a similar pattern throughout the monitoring period. Monthly sampling showed temperatures peaked during late July and fluctuated within a 2-3 degree temperature range through September (Fig. 3-1). Downstream release (Station WA-1S) surface water temperatures in August and September were warmer than tributary inflow temperatures. A maximum inflow temperature of 19.88 °C (WA-5S) was measured in July and maximum outflow temperature of 20.55 °C (WA-1S) was seen early September. Temperatures in surface waters of the reservoir-body (Station WA-2S, -6S, and -7S) were generally warmer than in tributaries and downstream of the dam as a result of warming from the sun. In-lake reservoir surface temperatures peaked in late July at approximately 25.00 °C (Station WA-7S). In 2015, tributary and release water temperatures, at times, exceeded the Pennsylvania state water quality criteria for cold water fisheries.

The water column of F.E. Walter Reservoir was temperature stratified during the 2015 sampling season (Fig. 3-2). Due to operations in 2015, specifically the raising of the base pool level and recreational release operations, the temperature stratification within the reservoir was likely affected by bottom flood gate releases on various occasions during the season. The reservoir operations tower was constructed with bottom flood control gates only and does not have the flexibility to withdrawal water from other locations in the water column. As a result, lower and typically cooler bottom waters are withdrawn first, likely causing a disruption in stratification and accelerated depletion of cooler bottom waters. Overall, 2015 in lake reservoir temperatures showed a more pronounced stratification than seen in 2014. Cooler deep water temperatures were available longer into the recreational season. In most years, recreational releases lower pool elevations and deplete cool bottom waters. Precipitation in the project

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

3.1.2 Dissolved Oxygen

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

In 2015, DO in the tributary surface waters (stations WA-3S, -4S, and -5S) of F.E. Walter Reservoir remained relatively constant from June through September sampling with recorded values ranging from 8.56 mg/L to 9.91 mg/L. These values can be attributed to typically well oxygenated stream and river systems and seasonal changes in water temperature. Station WA-1S located downstream of F.E. Walter Reservoir also maintained a similar seasonal pattern with recorded values ranging from 8.58 mg/L to 10.06 mg/L. This can be attributed, in part, to the aeration of reservoir bottom waters as it passes through the conduit system of the dam and is released downstream.

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

The health of aquatic ecosystems can be impaired by low DO concentrations in the water column. The lowest DO concentration (3.60 mg/L) was recorded at the bottom of the reservoir during the 22 July sampling event (Fig. 3-4). Hypoxia, or conditions of DO concentrations less than 2 mg/L, is generally accepted as the threshold at which the most severe effects on biota occur. F.E. Walter Reservoir did not experience hypoxic conditions during the 2015 sampling season. Low oxygen reservoir waters are re-aerated as they pass through the conduit system of the reservoir during release. As a result, water releases from the deeper portions of the reservoir containing lower DO concentration did not negatively impact the DO concentrations of the Lehigh River downstream. Dissolved oxygen concentrations downstream ranged from 8.58 mg/L to 10.06 mg/L throughout the sampling season.

3.1.3 pH

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

Measures of pH in tributary surface (WA-3S, -4S, and -5S) waters of F.E. Walter Reservoir generally followed a similar pattern during 2015 and remained relatively constant or within a narrow range of values (6.46-7.09) throughout the sampling season. The lowest pH level of 6.46 recorded during the sampling season occurred at station WA-5S during the late June sampling and the highest pH reading of 7.09 was recorded at Station WA-5S in July. Measures of pH at the downstream station WA-1S are directly influenced by bottom water column releases from the reservoir. Readings of pH at this station ranged from a high of 7.01 in July to a low of 6.58 in September (Fig. 3-5).

In 2015, measures of pH within the lake stayed within a tight range of values (6.16-7.88) from the surface to the bottom (Fig. 3-6). Slightly higher pH values were measured near the surface and bottom waters of the lake. Many factors can influence the pH of the reservoir water such as surrounding rock, acid rain, algal productivity, deep water biological productivity and others. Measures of pH throughout the water column in all months sampled remained in compliance with PADEP water quality standards. The water quality standard for pH is a range of acceptable measures between 6 and 9.

3.2 WATER COLUMN CHEMISTRY MONITORING

Table 3-1 provides a summary of water column chemistry sampling for all stations and dates sampled at F.E. Walter Reservoir in 2015. The following sections describe the temporal, spatial, and depth related patterns for these water quality measures.

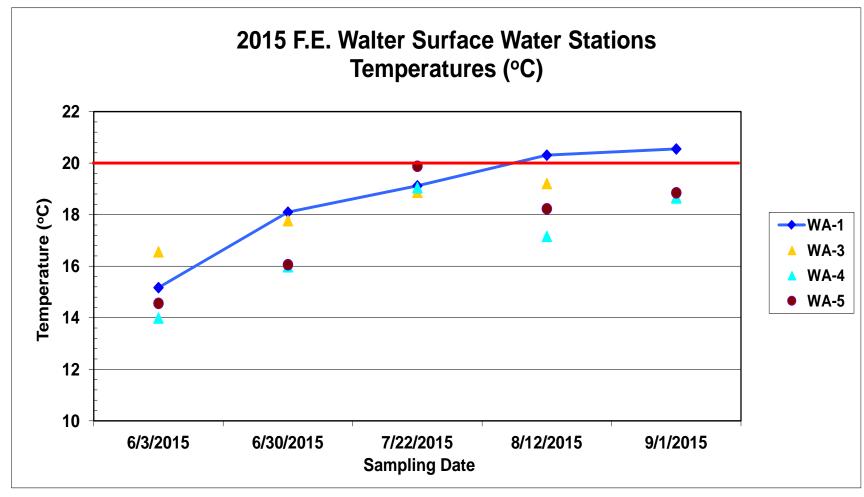


Figure 3-1. Temperature measured in tributary and release (WA-1) surface waters of F.E. Walter Reservoir during 2015. See Appendix A for a summary of the plotted values.

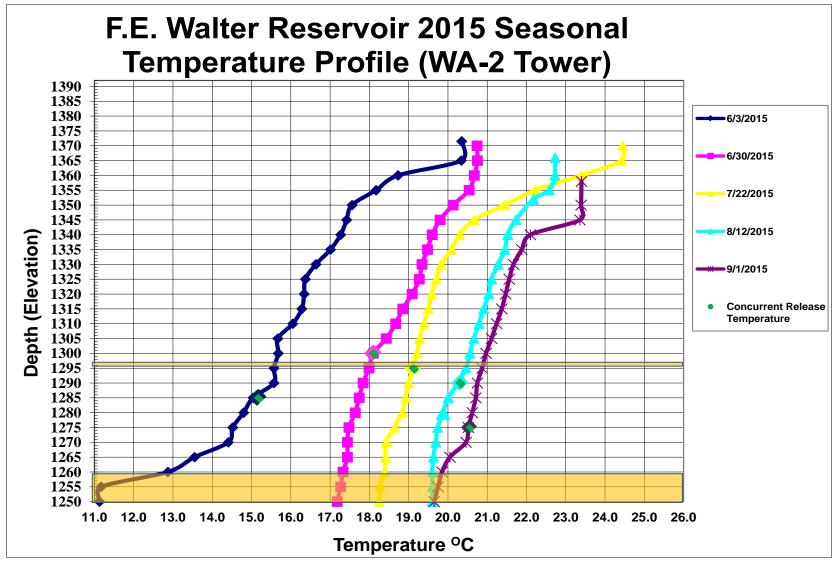


Figure 3-2. Stratification of temperature measured in the water column of F. E. Walter Reservoir at station WA-2 during 2015. See Appendix A for a summary of the plotted values.

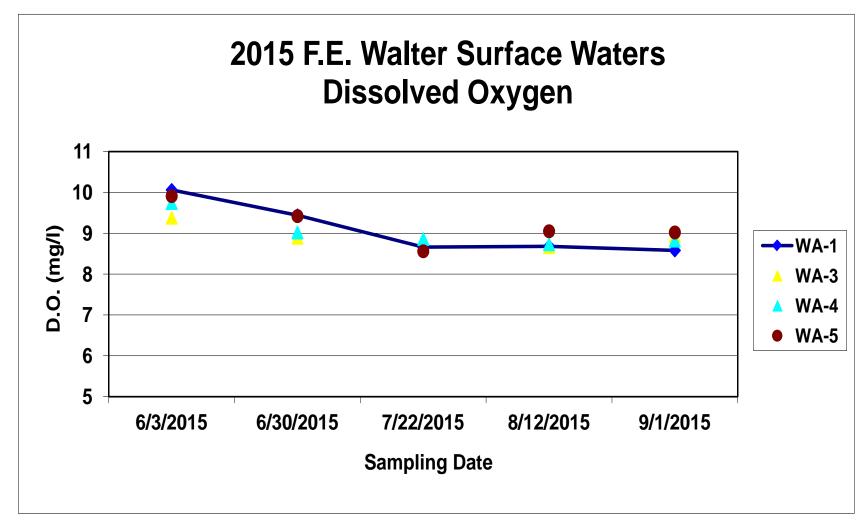


Figure 3-3. Dissolved oxygen measured in tributary and release (WA-1) surface waters of F. E. Walter Reservoir during 2015. See Appendix A for a summary of the plotted value.

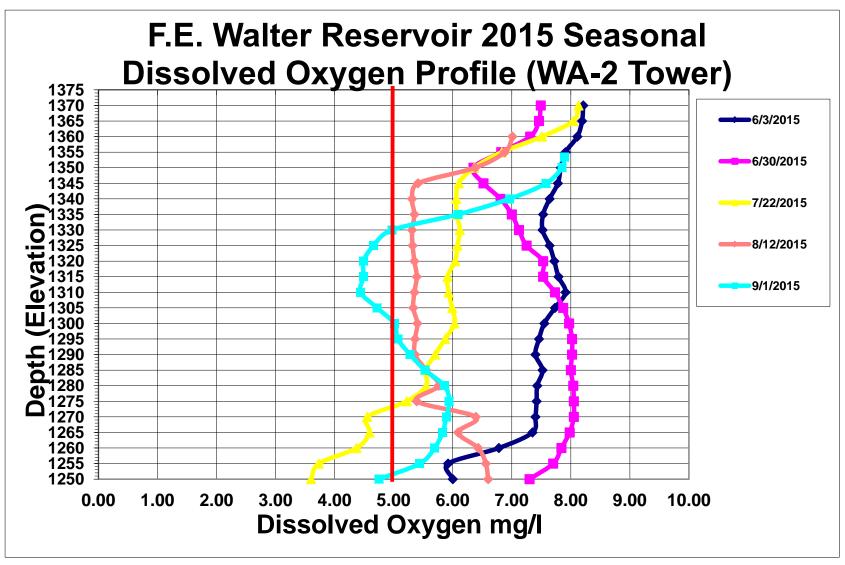


Figure 3-4. Dissolved oxygen measured in the water column of F.E. Walter Reservoir at station WA-2 during 2015. The PADEP WQ standard for DO is a epilimnion minimum concentration of 5 mg/L. See Appendix A for a summary of the plotted values.

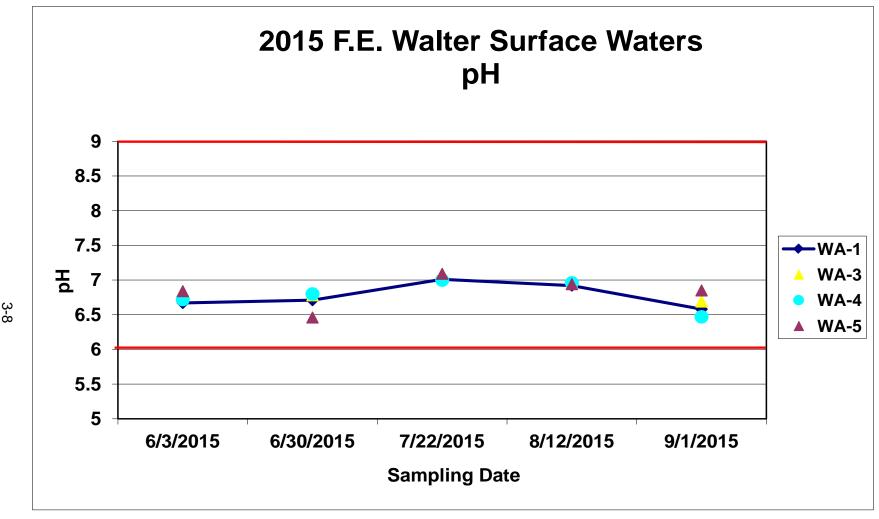


Figure 3-5. Measures of pH in tributary and release (WA-1) surface waters of F.E. Walter Reservoir during 2015. The PADEP WQ standard for pH is an acceptable range from 6 to 9. See Appendix A for a summary of the plotted values

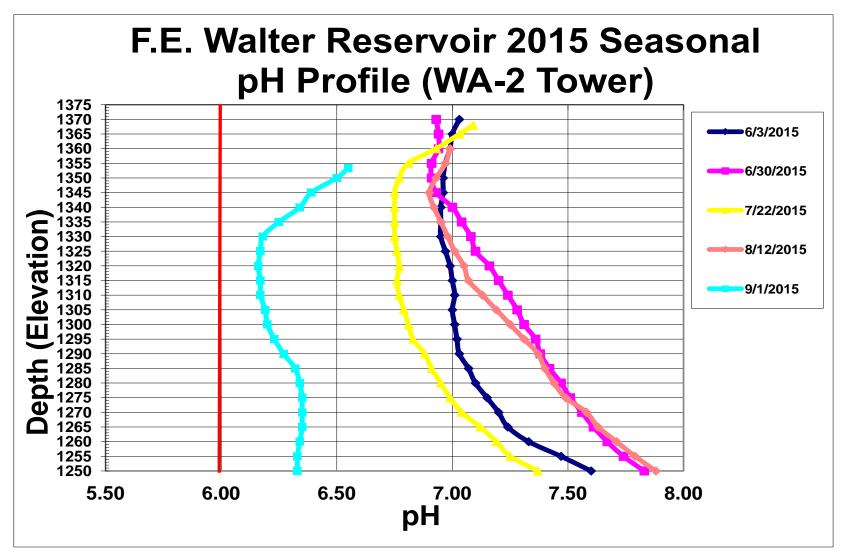


Figure 3-6. Stratification of pH measured in the water column of F.E. Walter Reservoir at station WA-2 during 2015. The PADEP water quality standard pH is an acceptable range from 6 to 9. See Appendix A for a summary of the plotted value.

Table 3-1. S	Summary of surfac	e, middle	, and bott	om water	quality mo	onitoring	data for F	.E. Walter	Reservoir	in 2015			
		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
	6/3/2015	6	<2	<.05	<.05	<.05	<.05	<.01	48	0.30	4.2	<.01	<3
	6/30/2015	5	<2	<.05	<.05	<.05	<.05	<.01	37	0.29	7.2	<.01	<3
	7/22/2015	5	<2	<.05	<.05	<.05	<.05	<.01	64	0.32	7.2	<.01	<3
	8/12/2015	6	<2	<.05	<.05	<.05	0.08	<.01	50	0.35	5.3	<.01	<3
WA-1S	9/1/2015	7	3	<.05	<.05	<.05	<.05	<.01	68	0.41	5.7	<.01	<3
WA-13	Mean	5.80	2.20	0.05	0.05	0.05	0.06	0.01	53.40	0.33	5.92	0.01	3.00
	Stdev	0.84	0.45	0.00	0.00	0.00	0.01	0.00	12.60	0.05	1.29	0.00	0.00
	Max	7.00	3.00	0.05	0.05	0.05	0.08	0.01	68.00	0.41	7.20	0.01	3.00
	Min	5.00	2.00	0.05	0.05	0.05	0.05	0.01	37.00	0.29	4.20	0.01	3.00
	No. of Detec.	5.00	1.00	0.00	0.00	0.00	1.00	0.00	5.00	5.00	5.00	0.00	0.00
	6/3/2015	5	<2	<.05	<.05	<.05	<.05	<.01	46	0.32	3.6	<.01	<3
	6/30/2015	5	<2	<.05	<.05	<.05	0.05	<.01	51	0.32	6.2	<.01	<3
	7/22/2015	5	3	<.05	<.05	<.05	<.05	<.01	57	0.68	7.4	<.01	6
	8/12/2015	5	<2	<.05	<.05	<.05	<.05	<.01	46	0.38	5.9	<.01	<3
WA-2S	9/1/2015	6	<2	<.05	<.05	<.05	<.05	<.01	50	0.37	5.4	<.01	3
W A-23	Mean	5.20	2.20	0.05	0.05	0.05	0.05	0.01	50.00	0.41	5.70	0.01	3.60
	Stdev	0.45	0.45	0.00	0.00	0.00	0.00	0.00	4.53	0.15	1.39	0.00	1.34
	Max	6.00	3.00	0.05	0.05	0.05	0.05	0.01	57.00	0.68	7.40	0.01	6.00
	Min	5.00	2.00	0.05	0.05	0.05	0.05	0.01	46.00	0.32	3.60	0.01	3.00
	No. of Detec.	5.00	1.00	0.00	0.00	0.00	1.00	0.00	5.00	5.00	5.00	0.00	2.00

Table 3-1 c	ontinued. Summar	y of surfa	ce, middl	e, and bot	tom wate	quality n	nonitoring	data for l	F.E. Walter	Reservoi	r in 2015		
		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
	6/3/2015	6	<2	<.05	<.05	<.05	<.05	0.02	61	0.31	4.8	0.02	<3
	6/30/2015	5	<2	<.05	<.05	<.05	0.05	<.01	44	0.35	6.2	0.01	<3
	7/22/2015	4	<2	<.05	<.05	<.05	<.05	<.01	60	0.27	6.7	<.01	<3
	8/12/2015	6	<2	<.05	<.05	<.05	<.05	<.01	52	0.27	6.0	<.01	<3
WA-2M	9/1/2015	5	<2	<.05	<.05	<.05	<.05	<.01	54	0.34	5.1	<.01	<3
W A-ZIVI	Mean	5.20	2.00	0.05	0.05	0.05	0.05	0.01	54.20	0.31	5.76	0.01	3.00
	Stdev	0.84	0.00	0.00	0.00	0.00	0.00	0.00	6.87	0.04	0.79	0.00	0.00
	Max	6.00	2.00	0.05	0.05	0.05	0.05	0.02	61.00	0.35	6.70	0.02	3.00
	Min	4.00	2.00	0.05	0.05	0.05	0.05	0.01	44.00	0.27	4.80	0.01	3.00
	No. of Detec.	5.00	0.00	0.00	0.00	0.00	1.00	1.00	5.00	5.00	5.00	2.00	0.00
	6/3/2015	5	<2	<.05	<.05	<.05	<.05	<.01	66	0.26	3.5	<.01	3
	6/30/2015	6	<2	<.05	<.05	<.05	0.05	0.02	48	0.37	7.9	0.03	6
	7/22/2015	7	<2	<.05	0.1	<.05	<.05	<.01	82	0.51	7.9	0.04	3
	8/12/2015	7	<2	<.05	<.05	<.05	0.11	<.01	52	0.41	5.1	<.01	22
WA-2B	9/1/2015	8	<2	<.05	<.05	<.05	<.05	0.02	62	0.51	5.6	0.03	12
WA-ZD	Mean	6.60	2.00	0.05	0.06	0.05	0.06	0.01	62.00	0.41	6.00	0.02	9.20
	Stdev	1.14	0.00	0.00	0.02	0.00	0.03	0.01	13.34	0.10	1.90	0.01	8.04
	Max	8.00	2.00	0.05	0.10	0.05	0.11	0.02	82.00	0.51	7.90	0.04	22.00
	Min	5.00	2.00	0.05	0.05	0.05	0.05	0.01	48.00	0.26	3.50	0.01	3.00
	No. of Detec.	5.00	0.00	0.00	1.00	0.00	2.00	2.00	5.00	5.00	5.00	3.00	5.00

Table 3-1 c	ontinued. Summar	y of surfa	ce, middl	e, and bot	tom water	quality n	nonitoring	data for l	F.E. Walter	Reservoir	in 2015		
		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
	6/3/2015	6	<2	<.05	<.05	<.05	<.05	<.01	83	0.42	8.2	<.01	3
	6/30/2015	7	<2	<.05	<.05	<.05	<.05	<.01	73	0.48	10.1	<.01	<3
	7/22/2015	8	<2	<.05	<.05	<.05	0.13	0.04	99	0.33	8.1	0.04	3
	8/12/2015	8	<2	<.05	<.05	<.05	0.05	<.01	68	0.46	7.7	<.01	6
WA-3S	9/1/2015	8	<2	<.05	<.05	<.05	0.08	<.01	91	0.37	5.4	<.01	<3
W A-33	Mean	7.40	2.00	0.05	0.05	0.05	0.07	0.02	82.80	0.41	7.90	0.02	3.60
	Stdev	0.89	0.00	0.00	0.00	0.00	0.03	0.01	12.70	0.06	1.68	0.01	1.34
	Max	8.00	2.00	0.05	0.05	0.05	0.13	0.04	99.00	0.48	10.10	0.04	6.00
	Min	6.00	2.00	0.05	0.05	0.05	0.05	0.01	68.00	0.33	5.40	0.01	3.00
	No. of Detec.	5.00	0.00	0.00	0.00	0.00	3.00	1.00	5.00	5.00	5.00	1.00	3.00
	6/3/2015	10	<2	<.05	<.05	<.05	<.05	<.01	68	0.36	7.8	<.01	<3
	6/30/2015	7	<2	<.05	<.05	<.05	0.05	0.07	53	0.62	6.9	0.08	<3
	7/22/2015	8	<2	<.05	<.05	<.05	0.06	<.01	87	0.34	5.9	0.01	15
	8/12/2015	7	<2	<.05	<.05	<.05	<.05	<.01	59	0.44	8	<.01	<3
WA-4S	9/1/2015	9	<2	<.05	<.05	<.05	0.08	<.01	77	0.32	3.1	<.01	<3
W A-43	Mean	8.20	2.00	0.05	0.05	0.05	0.06	0.02	68.80	0.42	6.34	0.02	5.40
	Stdev	1.30	0.00	0.00	0.00	0.00	0.01	0.03	13.65	0.12	1.99	0.03	5.37
	Max	10.00	2.00	0.05	0.05	0.05	0.08	0.07	87.00	0.62	8.00	0.08	15.00
	Min	7.00	2.00	0.05	0.05	0.05	0.05	0.01	53.00	0.32	3.10	0.01	3.00
	No. of Detec.	5.00	0.00	0.00	0.00	0.00	3.00	1.00	5.00	5.00	5.00	2.00	1.00

Table 3-1 c	ontinued. Summar	y of surfa	ce, middl	e, and bot	tom water	r quality m	nonitoring	data for l	F.E. Walter	Reservoir	in 2015		
		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
	6/3/2015	2	<2	<.05	<.05	<.05	<.05	<.01	72	0.38	5.0	0.05	3
	6/30/2015	2	<2	<.05	<.05	<.05	<.05	0.21	37	0.41	6.3	0.23	<3
	7/22/2015	3	<2	<.05	<.05	<.05	<.05	<.01	65	<.25	4.7	<.01	<3
	8/12/2015	3	<2	<.05	<.05	<.05	<.05	<.01	49	0.38	6.6	<.01	<3
WA-5S	9/1/2015	3	<2	<.05	<.05	<.05	<.05	<.01	66	0.28	3.2	0.01	<3
W A-33	Mean	2.60	2.00	0.05	0.05	0.05	0.05	0.05	57.80	0.34	5.16	0.06	3.00
	Stdev	0.55	0.00	0.00	0.00	0.00	0.00	0.09	14.41	0.07	1.36	0.10	0.00
	Max	3.00	2.00	0.05	0.05	0.05	0.05	0.21	72.00	0.41	6.60	0.23	3.00
	Min	2.00	2.00	0.05	0.05	0.05	0.05	0.01	37.00	0.25	3.20	0.01	3.00
	No. of Detec.	5.00	0.00	0.00	0.00	0.00	0.00	1.00	5.00	4.00	5.00	3.00	1.00
	6/3/2015	6	<2	<.05	<.05	<.05	<.05	<.01	57	0.27	3.3	<.01	<3
	6/30/2015	5	<2	<.05	<.05	<.05	<.05	<.01	44	0.39	5.6	<.01	<3
	7/22/2015	5	<2	<.05	<.05	<.05	<.05	<.01	62	0.52	7.3	0.02	3
	8/12/2015	5	<2	<.05	<.05	<.05	<.05	<.01	52	0.39	6.0	<.01	<3
WA-6S	9/1/2015	5	<2	<.05	<.05	<.05	<.05	0.02	74	0.41	5.2	0.02	3
W A-03	Mean	5.20	2.00	0.05	0.05	0.05	0.05	0.01	57.80	0.40	5.48	0.01	3.00
	Stdev	0.45	0.00	0.00	0.00	0.00	0.00	0.00	11.23	0.09	1.45	0.01	0.00
	Max	6.00	2.00	0.05	0.05	0.05	0.05	0.02	74.00	0.52	7.30	0.02	3.00
	Min	5.00	2.00	0.05	0.05	0.05	0.05	0.01	44.00	0.27	3.30	0.01	3.00
	No. of Detec.	5.00	0.00	0.00	0.00	0.00	0.00	1.00	5.00	5.00	5.00	2.00	2.00

Table 3-1 c	ontinued. Summar	y of surfa	ce, middl	e, and bot	tom water	quality n	nonitoring	data for l	F.E. Walter	Reservoir	in 2015		
		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
	6/3/2015	6	<2	<.05	<.05	<.05	<.05	<.01	59	<0.25	3.6	<.01	<3
	6/30/2015	4	<2	<.05	<.05	<.05	<.05	<.01	53	0.29	5.7	<.01	<3
	7/22/2015	4	<2	<.05	<.05	<.05	<.05	<.01	72	<.25	6.6	<.01	<3
	8/12/2015	5	<2	<.05	<.05	<.05	<.05	<.01	55	0.29	5.6	<.01	<3
WA-6M	9/1/2015	6	<2	<.05	<.05	<.05	<.05	<.01	60	0.38	5.3	<.01	<3
W A-OW	Mean	5.00	2.00	0.05	0.05	0.05	0.05	0.01	59.80	0.29	5.36	0.01	3.00
	Stdev	1.00	0.00	0.00	0.00	0.00	0.00	0.00	7.40	0.05	1.10	0.00	0.00
	Max	6.00	2.00	0.05	0.05	0.05	0.05	0.01	72.00	0.38	6.60	0.01	3.00
	Min	4.00	2.00	0.05	0.05	0.05	0.05	0.01	53.00	0.25	3.60	0.01	3.00
	No. of Detec.	5.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	3.00	5.00	0.00	0.00
	6/3/2015	5	<2	<.05	<.05	<.05	<.05	<.01	38	<0.25	3.5	<.01	<3
	6/30/2015	4	<2	<.05	<.05	<.05	<.05	<.01	60	0.27	6.4	0.02	<3
	7/22/2015	5	<2	<.05	<.05	<.05	<.05	0.01	56	0.28	7.7	0.01	<3
	8/12/2015	8	<2	<.05	<.05	<.05	0.1	0.02	57	0.54	5.2	0.09	41
WA-6B	9/1/2015	6	<2	<.05	<.05	<.05	<.05	<.01	81	0.46	5.3	<.01	7
WA-0D	Mean	5.60	2.00	0.05	0.05	0.05	0.06	0.01	58.40	0.36	5.62	0.03	11.40
	Stdev	1.52	0.00	0.00	0.00	0.00	0.02	0.00	15.31	0.13	1.56	0.03	16.64
	Max	8.00	2.00	0.05	0.05	0.05	0.10	0.02	81.00	0.54	7.70	0.09	41.00
	Min	4.00	2.00	0.05	0.05	0.05	0.05	0.01	38.00	0.25	3.50	0.01	3.00
	No. of Detec.	5.00	0.00	0.00	0.00	0.00	1.00	2.00	5.00	4.00	5.00	3.00	2.00

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

Table 3-1 c	Table 3-1 continued. Summary of surface, middle, and bottom water quality monitoring data for F.E. Walter Reservoir in 2015												
		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
	6/3/2015	8	<2	<.05	0.08	<.05	0.06	0.03	63	0.63	3.8	0.03	42
	6/30/2015	5	<2	<.05	<.05	<.05	<.05	0.02	51	0.39	7.9	0.02	5
	7/22/2015	6	<2	<.05	<.05	<.05	0.06	<.01	63	0.34	7.9	<.01	<3
	8/12/2015	7	<2	<.05	<.05	<.05	0.11	0.02	56	0.40	5.5	0.02	12
WA-7B	9/1/2015	8	<2	<.05	<.05	<.05	<.05	0.05	79	0.77	5.9	0.09	64
WA-/D	Mean	6.80	2.00	0.05	0.06	0.05	0.07	0.03	62.40	0.51	6.20	0.03	25.20
	Stdev	1.30	0.00	0.00	0.01	0.00	0.03	0.02	10.57	0.19	1.74	0.03	26.75
	Max	8.00	2.00	0.05	0.08	0.05	0.11	0.05	79.00	0.77	7.90	0.09	64.00
	Min	5.00	2.00	0.05	0.05	0.05	0.05	0.01	51.00	0.34	3.80	0.01	3.00
	No. of Detec.	5.00	0.00	0.00	1.00	0.00	3.00	4.00	5.00	5.00	5.00	4.00	4.00

3.2.1 Ammonia

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

Ammonia in the water column of F.E. Walter Reservoir was consistently low throughout the monitoring period with only one sample of sixty five total samples measuring greater than the laboratory reporting limit (<0.05 mg/L). One measure of 0.10 mg/L of ammonia was collected at station WA-2B on 22 July (Table 3-1). F.E. Walter Reservoir was in compliance with the PADEP water quality standard for ammonia during 2015. The water quality standard of ammonia is dependent on temperature and pH (Table 3-2). Throughout the monitoring period, all measures of ammonia were less than their respective criteria values.

Table 3-2.	PADEP ammonia nitrogen criteria (Pennsylvania Code, Title 25, Chapter 93 1984 and 1997). Specific ammonia criteria dependent on temperature and pH.											
PH	0 °C	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C					
6.50	25.5	25.5	25.5	17.4	12.0	8.4	5.9					
6.75	23.6	23.6	23.6	16.0	11.1	7.7	5.5					
7.00	20.6	20.6	20.6	14.0	9.7	6.8	4.8					
7.25	16.7	16.7	16.7	11.4	7.8	5.5	3.9					
7.50	12.4	12.4	12.4	8.5	5.9	4.1	2.9					
7.75	8.5	8.5	8.5	5.8	4.0	2.8	2.0					
8.00	5.5	5.5	5.5	5.8	4.0	2.8	2.0					
8.25	3.4	3.4	3.4	2.3	1.6	1.2	0.9					
8.50	2.0	2.0	2.0	1.4	1.0	0.7	0.6					
8.75	1.2	1.2	1.2	0.9	0.6	0.5	0.4					
9.00	0.8	0.8	0.8	0.5	0.4	0.3	0.3					

3.2.2 Nitrite and Nitrate

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

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

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

In 2015, F.E. Walter Reservoir was in compliance with the PADEP water quality standard for nitrogen. The water quality standard for nitrogen is a summed concentration of nitrite and nitrate of less than 10-mg/L. Throughout the monitoring period, the summed concentrations for each station were well below this standard. The maximum summed concentration for any one sampling station did not exceed 0.18 mg/L.

3.2.3 Total Kjeldahl Nitrogen

Total Kjeldahl nitrogen (TKN) is a measure of organic nitrogen that includes ammonia. Organic nitrogen is not immediately available for biological activity and is therefore not available for plant growth until decomposition to an inorganic form occurs. TKN in the water column of F.E. Walter Reservoir was low during 2015 (Table 3-1). Concentrations measured at all reservoir stations ranged from less than the reporting limit of 0.25 mg/L to a high of 0.77 mg/L at station WA-7B on 01 September. Slightly higher concentrations were most often observed in the bottom waters at all lake sampling stations.

3.2.4 Total Phosphorus

Total phosphorus (TP) is a measure of both organic and inorganic forms of phosphorus. It is an essential plant nutrient and is often the most limiting nutrient to plant growth in freshwater systems. Inputs of phosphorus are the prime contributing factors to eutrophication in most freshwater systems. Phosphorus bound to bottom sediments in lakes can be released when oxygen levels are depleted in bottom waters. This phosphorus then becomes available for plant growth.

EPA guidance for nutrient criteria in lakes and reservoirs suggests a maximum concentration for total phosphorus of 0.01-mg/L (EPA 2000). Lakes and reservoirs exceeding this concentration are more likely to experience algal bloom problems during the growing season. Concentrations of total phosphorus were occasionally elevated at many of the reservoir sampling stations throughout the sampling season (Table 3-1). For all stations and depths, concentrations ranged from less than the reporting limit of 0.01 mg/L to a high of 0.23 mg/L. Surface waters of the reservoir tributaries routinely had the higher concentrations. The maximum single sample concentration of 0.23 mg/L was measured on 30 June at station WA-3S. High seasonal mean concentrations of total phosphorus were seen in the deeper waters of the reservoir. Higher concentrations in the lake bottom waters are attributed to phosphorus sediment release under low oxygen conditions. F.E. Walter Reservoir occasionally experienced these conditions in 2015.

3.2.5 Dissolved Phosphorus

Dissolved or soluble phosphorus (DISS P) in the water column of F.E. Walter Reservoir remained consistently low during 2015. Concentrations at all stations and depths during the sampling season were below the reporting limit of 0.05 mg/L (Table 3-1). In freshwater environments, dissolved phosphorus is usually a limiting nutrient and is utilized by freshwater plants and algae during photosynthesis.

3.2.6 Dissolved Phosphate

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

3.2.7 Total Dissolved Solids

Total Dissolved Solids (TDS) is a measure of the amount of filterable dissolved material in the water. Dissolved salts such as sulfate, magnesium, chloride, and sodium contribute to elevated levels. TDS in the lake and tributary stations of F.E. Walter Reservoir remained relatively constant and low during 2015. Concentrations at all stations and depths over the monitoring period ranged from 37 to 99 mg/L (Table 3-1). The highest mean seasonal concentration of 82.8 mg/L was seen at the upstream surface tributary station WA-3S. F.E. Walter Reservoir and its tributaries were in compliance with the PADEP water quality standard for total dissolved solids during 2015. The water quality standard is a maximum concentration of 500-mg/L.

3.2.8 Total Suspended Solids

Total Suspended Solids (TSS) is a measure of the amount of non-filterable particulate matter that is suspended within the water column. High concentrations increase the turbidity of the water and can hinder photosynthetic activity, result in damage to fish gills, and cause impairment to spawning habitat (smothering). TSS measures in the water column of F.E. Walter Reservoir were low in 2015 with most sample results less than the reporting limit of 3.0 mg/L up to 64 mg/L (Table 3-1). Elevated results were most seen in the lake bottom water samples. This is likely a result of sampling error and resulting interference of suspended sediment in the sampling apparatus during lake bottom water sample collection. On occasion, bottom sediments are re-suspended during the process of collecting a sample from deeper waters. These elevated results do not accurately reflect conditions at those stations and depths.

3.2.9 Biochemical Oxygen Demand

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

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

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

3.2.10 Alkalinity

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

Alkalinity measurements in the waters of F.E. Walter Reservoir were routinely low during 2015. Concentrations measured at all stations and depths ranged from 2.0 mg/L to 10.0 mg/L CaCO₃ throughout the monitoring period (Table 3-1). The greatest mean seasonal concentration of 8.2 mg/L CaCO₃ was measured in the tributary surface waters at Station WA-4S. The natural alkalinity of water is largely dependent on the underlying geology and soils within the surrounding watershed. The low alkalinity measured at F.E. Walter Reservoir probably results from the regional geology, which is primarily sandstone and shale (Van Diver 1990).

3.2.11 Total Organic Carbon

Total Organic Carbon (TOC) is a measure of the dissolved and particulate organic carbon in water. The bulk of organic carbon in water is composed of humic substances and partly degraded animal and plant materials. High levels of organic carbon coincide with a lowering of dissolved oxygen concentrations. Carbon is a nutrient required for biological processes.

Total Organic Carbon (TOC) was measured in the water column and tributaries of F.E. Walter Reservoir (Table 3-1). Concentrations of TOC at all stations and depths ranged from 3.1 mg/L to 10.1 mg/L. The highest single measured concentration of 10.1 mg/L was in the surface waters at tributary station WA-3S on 30 June.

3.2.12 Chlorophyll a

Chlorophyll a is the measure of the plant chlorophyll "a" primary pigment which helps plants get energy from light. It is found in most plants, algae, and cyanobacteria. Chlorophyll a measures increase in relation to algal densities in a water body. For the most part, chlorophyll a was low in the surface waters of F.E. Walter Reservoir in all months sampled except July (Appendix A). Excluding the 22 July sampling, concentrations for all other sampling dates for tributary and lake stations at depths from 0-15 feet ranged from 0.1 ug/L to 8.8 ug/L. Sampling results from 22 July shown that the reservoir body was experiencing an algal bloom in the surface waters of the lake (0-10 feet of depth). Chlorophyll a concentrations at all lake sampling stations (WA-6S, 7S, and 2S) on this date were elevated and ranged from 9.8 ug/L to 30.8 ug/L.

3.3 TROPHIC STATE DETERMINATION

Carlson's (1977) trophic state index (TSI) is a method of expressing the extent of eutrophication of a lake, quantitatively. The trophic state analysis calculates separate indices for eutrophication based on measures of total phosphorus, chlorophyll *a*, and secchi disc depth. Index values for each parameter range on the same scale from 0 (least enriched) to 100 (most enriched). The resulting indices can also be compared to qualitative threshold values that correspond to levels of eutrophication. Classification of F.E. Walter Reservoir was based on a single sample each month during the sampling season. It is important to note that variability in measurements not captured between sampling events and the resulting classification can occur. Figure 3-7 graphically shows this potential variability between samples.

TSIs calculated for measures of total phosphorus classified F.E. Walter Reservoir as oligotrophic in early June (37.35), late June (37.35), July (37.35), August (37.35) and September (37.35). TSIs calculated for measures of secchi disk depth classified F.E. Walter Reservoir as mesotrophic in early June (46.18), late June (47.94), August (49.73) and September (49.31), and eutrophic in July (62.01). TSIs calculated for measures of chlorophyll *a* classified F.E. Walter Reservoir as eutrophic in July (60.98), mesotrophic in late June (43.43), August (45.57) and September (48.06), and oligotrophic in early June (36.20).

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

The EPA (1983) also provides criteria for classifying the trophic conditions of lakes of the North Temperate Zone based on concentrations of total phosphorus, chlorophyll *a*, and secchi disk depth (Table 3-3). Taking into account the general agreement between the EPA classifications with that of the Carlson TSIs, the trophic condition of F.E. Walter Reservoir was oligotrophic/mesotrophic throughout much of the 2015 sampling season.

Table 3-3. EPA trophic classification criteria and average monthly measures for F.E. Walter Reservoir in 2015												
Water Quality Variable Controphic Trophic Controphic Co												
Total Phosphorus (ppb)	<10	10-20	>20	<10	<10	<10	<10	<10				
Chlorophyll a (ppb)	<4	4-10	>10	1.77	3.70	22.13	4.60	5.93				
Secchi Depth (m)	>4	2-4	<2	2.61	2.31	0.87	2.04	2.10				

3.4 RESERVOIR BACTERIA MONITORING

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

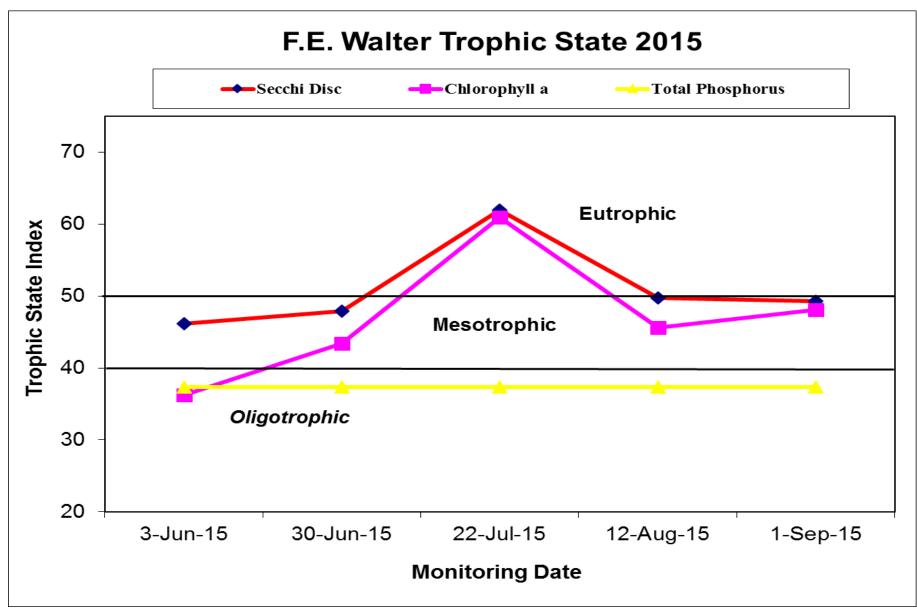


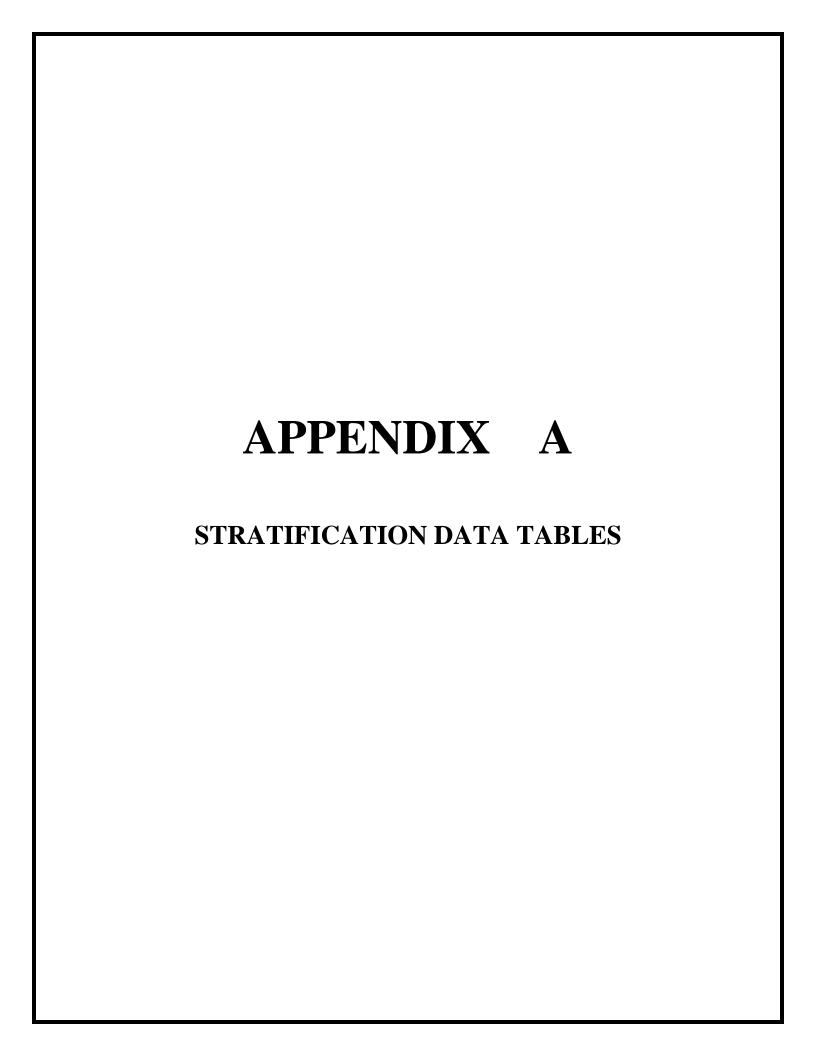
Figure 3-7.Carlson Trophic state indices calculated from secchi disk depth, concentrations of chlorophyll a and Total Phosphorus measured in surface waters of F.E. Walter Reservoir at Station WA-2 during 2015.

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

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

4.0 REFERENCES

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2015 F.E. Walter Water Quality Profiles

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

2015 F.E. Walter Water Quality Profiles

Station	Date	Time	Depth	Temp	DO	DO	pН	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	С	%	mg/L		mV	mV	NTU	ug/L	mS/cm
		7:01:22	0.5	20.74	83.6	7.49	6.93	-31.4	162.4	33.9	3.8	0.081
		7:00:58	5	20.75	83.3	7.46	6.94	-32.5	161.3	33.7	3.8	0.081
		7:00:10	10	20.67	81.5	7.31	6.94	-32	161.9	33.7	3.5	0.081
		6:58:47	15	20.54	75.8	6.82	6.91	-30.2	163.6	33.9	3.5	0.081
WA-2		6:57:53	20	20.13	70.0	6.35	6.91	-30.5	164.5	33.9	3.8	0.081
		6:56:52	25	19.80	71.4	6.52	6.93	-31.7	165.1	33.8	3.7	0.082
Lake		6:56:04	30	19.60	74.3	6.81	7.00	-35.6	164.0	34.0	2.7	0.079
Tower		6:55:18	35	19.48	76.2	7.00	7.04	-38.1	159.9	34.1	4.5	0.079
Secchi		6:54:14	40	19.34	77.3	7.12	7.08	-40.1	159.0	34.6	2.6	0.078
	- / / / -	6:53:27	45	19.27	78.6	7.25	7.10	-41.3	158.7	34.7	2.9	0.078
2.31 M	6/30/2015	6:52:43	50	19.09	81.3	7.53	7.16	-45.2	158.0	34.8	3.5	0.075
		6:51:58	55	18.85	81.0	7.53	7.20	-47.1	155.8	34.9	2.8	0.076
		6:50:42	60	18.67	82.8	7.73	7.24	-49.6	152.2	34.9	4.2	0.078
		6:49:58	65	18.43	83.9	7.87	7.28	-51.6	151.6	35.2	2.9	0.077
		6:49:18	70 75	18.10 17.99	84.4 84.7	7.97 8.02	7.31 7.36	-53.6 -56.3	151.2 149.1	35.2 35.3	3.4 3.9	0.075 0.075
		6:48:31 6:47:44	80	17.99	84.5	8.02	7.38	-57.8	149.1	35.3	4.1	0.075
		6:47:11	85	17.74	84.1	8.00	7.42	-59.9	144.7	35.6	4.1	0.078
		6:46:20	90	17.64	84.3	8.04	7.47	-62.7	142.2	35.8	4.4	0.079
		6:45:14	95	17.48	84.1	8.05	7.51	-65.2	139.9	36.3	4.4	0.08
		6:44:04	100	17.44	84.0	8.05	7.56	-67.9	137.4	36.4	4.3	0.08
		6:43:09	105	17.44	83.3	7.98	7.61	-70.9	135.0	36.6	4.3	0.08
		6:42:20	110	17.33	81.7	7.84	7.67	-74	132.7	37.2	3.7	0.08
		6:41:21	115	17.27	80.2	7.70	7.74	-77.9	129.1	38.2	4.3	0.08
L		6:40:15	120	17.18	75.9	7.30	7.83	-83	125.0	64.8	4.2	0.08
		8:06:38	0.5	24.45	97.4	8.13	7.09	-41	114.8	33.1	27.7	0.076
		8:05:56	5	24.42	96.3	8.04	7.03	-37.5	116.1	32.9	30.8	0.076
		8:05:01	10	23.40	88.2	7.51	6.93	-31.5	124.3	32.0	7.9	0.076
		8:03:30	15	22.22	78.5	6.83	6.81	-24.4	131.3	32.1	5.3	0.075
		8:02:35	20	21.44	71.9	6.36	6.77	-22.2	134.2	32.0	5.4	0.075
		8:01:36	25	20.67	68.0	6.10	6.75	-21	135.8	31.9	5.5	0.075
WA-2		8:00:54	30	20.30	67.1	6.06	6.75	-21.3	135.4	32.0	6.8	0.076
Lake		7:59:55	35	20.09	66.9	6.07	6.75	-21	135.9	32.0	5.5	0.076
Tower		7:59:10	40	19.83	67.0	6.12	6.75	-21.3	135.6	32.0	5.3	0.077
		7:58:20	45	19.70	66.5	6.08	6.76	-21.9	135.1	32.0	5.5	0.077
Secchi	7/22/2015	7:57:36	50	19.59	66.0	6.04	6.77	-22.5	134.3	32.0	5.9	0.077
		7:56:25	55	19.50	64.4	5.91	6.76	-21.7	135.1	31.9	5.7	0.077
0.87 M		7:55:42	60	19.39	64.5	5.93	6.77	-22.4	135.3	32.0	4.9	0.075
		7:55:05	65	19.28	64.9	5.99	6.79	-23.4	135.5	32.2	4.5	0.074
		7:54:30	70	19.21	65.3	6.03	6.81	-24.8	132.8	32.1	5.3	0.076
		7:53:16	75	19.12	63.5	5.87	6.83	-26.1	133.6	32.7	4.6	0.072
		7:52:02	80	19.00	61.4	5.70	6.88	-28.9	131.5	33.1	4.1	0.072
		7:50:55	85	18.93	59.7	5.54	6.91	-30.8	128.1	33.0	4.4	0.075
		7:49:46	90	18.84	59.6	5.55	6.95	-32.9	126.2	33.9	4.6	0.074
		7:48:41	95	18.64	55.9	5.22	6.99	-35.3	123.5	34.6	5.0	0.078
		7:47:07 7:45:27	100 105	18.43 18.41	48.5 48.9	4.55 4.59	7.04 7.12	-38.1 -42.7	121.4 115.8	392.0 41.9	5.9 4.5	0.079 0.079
		7:43:51	110	18.39	46.5	4.39	7.12	-42.7 -46.5	110.2	92.2	4.5	0.079
		7:43:31	115	18.27	39.6	3.73	7.19	-50	104.3	47.2	4.7	0.126
		7:42:46	120	18.25	38.2	3.60	7.37	-57.1	93	720.2	5.4	0.126
L — — — —	<u> </u>	7.70.00	120	10.20	JU.Z	5.00	, .5,	<u> </u>		120.2		0.100

2015 F.E. Walter Water Quality Profiles

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
		7:53:29	0.5	22.73	81.4	7.01	6.99	-35.2	145.3	34.90	3.8	0.099
		7:52:46	5	22.72	79.8	6.88	6.97	-33.7	146.3	34.80	5.2	0.099
		7:52:04	10	22.58	73.8	6.38	6.93	-31.3	149.0	34.80	4.8	0.099
		7:51:16	15	22.18	62.1	5.41	6.9	-30.1	153.1	34.70	4.2	0.097
		7:50:19	20	21.73	60.4	5.31	6.92	-30.8	153.5	34.70	3.6	0.097
		7:49:46	25	21.52	60.6	5.35	6.95	-32.8	151.8	34.60	4.0	0.097
		7:49:02	30	21.45	60.1	5.31	6.98	-34.6	150.3	34.50	4.5	0.099
		7:48:11	35	21.28	60.1	5.32	7.01	-36.5	148.8	34.60	3.7	0.100
		7:47:19	40	21.11	60.2	5.35	7.05	-38.7	147.8	34.60	3.5	0.100
WA-2		7:46:24	45	21.04	60.5	5.39	7.07	-39.8	145.1	34.80	4.1	0.104
Lake	8/12/2015	7:45:33	50	20.91	59.9	5.35	7.13	-43.0	146.1	34.90	3.2	0.098
Tower		7:44:21	55	20.79	59.5	5.33	7.19	-46.7	144.2	35.30	3.6	0.098
		7:43:30	60	20.66	60.2	5.40	7.25	-50.1	138.8	35.10	2.7	0.101
Secchi		7:42:31	65	20.56	59.6	5.36	7.31	-53.4	136.6	35.60	3.4	0.103
		7:41:33	70	20.46	59.5	5.36	7.37	-57.0	134.3	36.00	2.3	0.104
2.04		7:40:38	75	20.26	61.3	5.55	7.4	-58.8	131.1	36.90	2.4	0.110
		7:39:52	80	20.01	63.4	5.76	7.44	-60.8	129.4	38.50	3.2	0.112
		7:38:57	85	19.87	59.1	5.39	7.49	-63.8	128.5	40.00	3.0	0.113
		7:37:40	90	19.74	69.9	6.39	7.58	-69.4	122.1	41.10	2.4	0.112
		7:36:34	95	19.69	66.6	6.09	7.63	-72.2	121.5	70.10	3.6	0.113
		7:35:16	100	19.63	70.3	6.43	7.71	-76.7	117.9	71.40	5.5	0.112
		7:34:07	105	19.60	71.6	6.56	7.79	-81.3	114.3	103.90	5.1	0.112
		7:32:52	110	19.60	72.1	6.60	7.88	-86.3	110.0	52.60	3.6	0.113
								{— <i>—</i>			 	
		8:04:39	0.5	23.40	92.6	7.89	6.55	-9.4	110.7	38.00	5.5	0.087
		8:03:26	5	23.39	92.2	7.85	6.5	-6.7	110.7	37.90	6.6	0.087
WA-2		8:02:01	10	23.36	89	7.58	6.39	-0.3	112.9	38.10	5.7	0.087
117.2		8:01:25	15	22.10	79.7	6.96	6.34	3.0	117.6	37.80	6.9	0.086
Lake		8:00:08	20	21.88	69.5	6.09	6.25	8.0	121.2	37.30	5.1	0.085
Tower		7:58:51	25	21.67	56.5	4.97	6.18	12.1	124.9	37.30	3.8	0.085
		7:57:59	30	21.56	52.8	4.66	6.17	12.6	124.9	37.20	3.4	0.085
Secchi		7:56:50	35	21.47	50.9	4.49	6.16	12.8	124.6	37.20	4.5	0.086
	9/1/2015	7:56:16	40	21.37	50.7	4.49	6.17	12.7	124.1	37.20	3.7	0.087
2.10 m		7:55:34	45	21.24	50	4.44	6.17	12.5	124.6	37.20	3.5	0.086
		7:54:37	50	21.11	53.1	4.72	6.19	11.1	122.7	37.60	3.0	0.087
		7:53:26	55	20.97	56.2	5.01	6.2	10.5	123.0	38.00	2.0	0.085
		7:52:41	60	20.87	56.7	5.07	6.23	9.0	121.9	38.10	2.4	0.085
		7:51:25	65	20.75	58.9	5.28	6.27	6.4	118.8	38.30	2.1	0.088
		7:50:22	70	20.71	61.7	5.53	6.32	3.9	115.0	38.30	2.8	0.091
		7:49:18	75	20.62	65.2	5.86	6.34	2.8	112.9	38.90	2.5	0.093
		7:47:22	80	20.52	66.1	5.94	6.35	2.2	109.3	39.40	2.9	0.094
		7:46:09	85	20.46	65.3	5.89	6.35	1.9	107.4	40.10	1.8	0.094
		7:44:11	90	20.05	64.2	5.83	6.35	1.7	102.9	41.90	2.8	0.098
		7:42:47	95	19.85	62.4	5.69	6.34	2.4	99.6	43.10	2.7	0.099
		7:41:45	100	19.75	59.6	5.44	6.33	2.8	95.2	45.20	3.1	0.100
		7:39:37	105	19.65	51.9	4.75	6.33	3.0	86.1	54.50	5.3	0.101

2015 F.E. Walter Water Quality Profiles

WA-65 GRO2015 10-86 19	Station	Data	Tima	Donth	Toms	DO	DΩ	ьЦ	nHm\/	ODD	Turkidit	Chlore	SpCand
WA-36	Station	Date M/D/Y	Time	Depth	Temp	DO %	DO mg/l	pН	pHmV mV	ORP mV	Turbidity	Chloro.	SpCond mS/cm
Tobyhanab G30/2015 8.45/36 0.5 17.77 93.5 8.89 6.78 23 151.9 35.7 6.9 0.094 Creek Upstream			1111.111111.33	11	C	70	IIIg/L		111.4	111 V	NIO	ug/L	III3/CIII
Tobyhanab G30/2015 8.45/36 0.5 17.77 93.5 8.89 6.78 23 151.9 35.7 6.9 0.094 Creek Upstream	WA 2C	6/2/2015	0:45:57	0.5	16 56	06.2	0.29	6 77	22.2	170.6	24.0	6.2	0 177
Creek 7/22/2015 9.55:11 0.5 18.87 93.3 8.67 7.04 38.2 11.66 35.6 5.4 0.035 Upstream 47/2015 19.02 0.5 18.68 95.6 8.93 6.69 -17.9 108.6 39.4 2.8 0.110 WA-4S 6/3/2015 10:38:17 0.5 13.99 94.5 9.74 6.72 -19.9 192.8 36.5 6.6 0.146 Lehigh 6/30/2015 18.57:24 0.5 15.98 91.3 9.02 6.80 20.4 12.10 39.3 4.7 0.073 Upstream 8/12/2015 95:010 0.5 17.16 90.7 8.73 6.96 33.6 129.1 40.0 7.7 0.106 WA-SS 500/2015 10:18:45 0.5 14.56 94.2 6.46 -51.1 17.5 4.00 7.7 0.102 WA-SS 18.20 10:11:3 0.5 14.56 94.2 9.42													
Upstream 8/12/2015 9.40/02 0.5 19.21 93.8 8.66 6.96 33.4 107.2 42.4 5.8 0.120	-												
WA-68 G/3/2015 10:38-17 0.5 18:68 95:6 8:93 6:69 -17.9 108:6 39.4 2.8 0.111													
WA-48 6/3/2015 10/38:17 0.5 13/99 94.5 9.74 6.72 -19.9 192.8 36.5 6.6 0.146	Opstream												
Lehigh River 7/22/2015 0.05611 0.5 15.98 91.3 9.02 6.80 2.44 12.10 39.3 4.7 0.073		0/ 1/2010	10.21.01	0.0	10.00	00.0	0.00	0.00	17.0	100.0	00.1	2.0	0.111
Lehigh River 7/22/2015 0.05611 0.5 15.98 91.3 9.02 6.80 2.44 12.10 39.3 4.7 0.073	WA-4S	6/3/2015	10.38.17	0.5	13 00	94.5	9.74	6.72	-10 Q	102.8	36.5	6.6	0 1/16
Name													
Upstream 8/12/2015 9:50:10 0.5 17:16 90.7 8:73 6:96 3:30.8 129.1 40:0 7.7 0.106													
WA-SS 06/03/15 10:18:45 0.5 18:65 94.4 8:82 6:47 -5 127.8 42.5 2.5 0.160													
WA-SS 6/30/2015 5/21.09 0.5 14.56 97.4 9.91 6.84 -26.8 186.6 35.0 3.7 0.182	opon oum												
WA-SB Bear Creek 6/30/2015 9:21:09 0.5 16:06 95.6 9.42 6.46 -5.1 175.8 34.0 4.6 0.061 Upstream 7/2/2015 10:26:42 0.5 19.88 93.9 8.56 7.09 -40.6 139.3 35.7 3.1 0.088 Upstream 8/12/2015 10:52:59 0.5 18.23 96.0 9.05 6.94 -32.0 143.5 39.4 4.3 0.097 WA-6 8.09:42 0.5 20.38 90.7 8.18 6.88 -28.5 227.2 34.2 1.1 0.164 8:09:73 1.0 20.40 90.2 8.13 6.79 -23.6 230.8 34.4 1.7 0.164 8:09:73 1.0 20.38 89.2 80.5 6.76 -21.7 232.0 34.5 1.8 1.6 1.6 1.7 230.3 34.4 1.1 0.164 1.6 1.6 1.7 232.0 33.3 </th <th></th> <th>5, 1, 2 5</th> <th>7,010</th> <th></th>		5, 1, 2 5	7,010										
WA-SB Bear Creek 6/30/2015 9:21:09 0.5 16:06 95.6 9.42 6.46 -5.1 175.8 34.0 4.6 0.061 Upstream 7/2/2015 10:26:42 0.5 19.88 93.9 8.56 7.09 -40.6 139.3 35.7 3.1 0.088 Upstream 8/12/2015 10:52:59 0.5 18.23 96.0 9.05 6.94 -32.0 143.5 39.4 4.3 0.097 WA-6 8.09:42 0.5 20.38 90.7 8.18 6.88 -28.5 227.2 34.2 1.1 0.164 8:09:73 1.0 20.40 90.2 8.13 6.79 -23.6 230.8 34.4 1.7 0.164 8:09:73 1.0 20.38 89.2 80.5 6.76 -21.7 232.0 34.5 1.8 1.6 1.6 1.7 230.3 34.4 1.1 0.164 1.6 1.6 1.7 232.0 33.3 </th <th></th> <th>06/03/15</th> <th>10:18:45</th> <th>0.5</th> <th>14 56</th> <th>97 4</th> <th>9 91</th> <th>6.84</th> <th>-26.8</th> <th>186 6</th> <th>35 N</th> <th>3 7</th> <th>0 182</th>		06/03/15	10:18:45	0.5	14 56	97 4	9 91	6.84	-26.8	186 6	35 N	3 7	0 182
MA-6 Bear Creek Mystram Myst	WA-5S												
MA-6 Bar Creek Lake Arm B/3/2015 10:10:19 0.5 18:23 96.0 9.05 6.94 -32.0 143.5 39.4 4.3 0.097	I -												
WA-6 Baar Creek Lake Arm													
WA-6 8:08:07 5 20:40 90:2 8:13 6:79 -23:6 23:08 34:4 1.7 0.164 WA-6 8:07:31 10 20:38 89:2 8:05 6:76 -21.7 23:0 34:5 1.8 0.164 8:06:52 15 19:06 85:0 7.88 6:74 -20:9 23:53 34:4 2.1 0.168 Bear Creek 8:05:54 20 18:22 81.8 7.70 6:72 -19.7 237.0 35:0 3.0 0.170 Bear Creek Lake Arm 8:06:10 35 17.17 79:3 7.69 6:71 19.4 23:79 34.5 2.4 0.172 8:00:158 45 16:67 76.8 75.9 6:68 -17.5 240:1 34.7 2.8 0.173 8:00:49 50 16:39 77:3 7.56 6:67 -16:9 241:5 35.4 2.8 0.178 8:00:49 50 <th< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th<>													
WA-6 8:08:07 5 20:40 90:2 8:13 6:79 -23:6 23:08 34:4 1.7 0.164 WA-6 8:07:31 10 20:38 89:2 8:05 6:76 -21.7 23:0 34:5 1.8 0.164 8:06:52 15 19:06 85:0 7.88 6:74 -20:9 23:53 34:4 2.1 0.168 Bear Creek 8:05:54 20 18:22 81.8 7.70 6:72 -19.7 237.0 35:0 3.0 0.170 Bear Creek Lake Arm 8:06:10 35 17.17 79:3 7.69 6:71 19.4 23:79 34.5 2.4 0.172 8:00:158 45 16:67 76.8 75.9 6:68 -17.5 240:1 34.7 2.8 0.173 8:00:49 50 16:39 77:3 7.56 6:67 -16:9 241:5 35.4 2.8 0.178 8:00:49 50 <th< th=""><th></th><th></th><th>8:09:42</th><th>0.5</th><th>20.38</th><th>90.7</th><th>8.18</th><th>6.88</th><th>-28.5</th><th>227.2</th><th>34.2</th><th>1.1</th><th>0.164</th></th<>			8:09:42	0.5	20.38	90.7	8.18	6.88	-28.5	227.2	34.2	1.1	0.164
WA-6 Bear Creek Lake Arm 8:07:31 10 20.38 89.2 8.05 6.76 -21.7 232.0 34.5 1.8 0.164 WA-6 Bear Creek Lake Arm 8:06:52 15 19.06 85.0 7.88 6.74 -20.9 235.3 34.4 2.1 0.168 Bear Creek Lake Arm 18:05:00 25 17.71 82.1 7.82 6.73 -20.0 237.0 35.2 3.7 0.170 8:04:07 30 17.39 80.3 7.69 6.68 -17.5 24.01 34.7 2.3 0.172 8:03:44 35 17.17 79.3 7.63 6.68 -17.3 240.1 34.7 2.8 0.172 8:02:38 40 16.91 78.5 7.59 6.68 -17.3 240.1 34.7 2.8 0.175 8:00:12 55 16.26 77.6 7.59 6.68 -17.3 240.1 34.7 2.8 0.175 8:00:12 55 1													
WA-6 Bear Creek Lake Arm 8:06:52 15 19.06 85.0 7.88 6.74 -20.9 235.3 34.4 2.1 0.168 Bear Creek Lake Arm Bear Creek Bear Creek Lake Arm 8:06:00 25 17.71 82.1 7.73 -20.0 237.0 35.0 3.0 0.172 8:04:07 30 17.39 80.3 7.69 6.71 -19.4 237.9 34.5 2.4 0.172 8:03:14 35 17.17 79.3 7.63 6.68 -17.5 240.1 34.7 2.3 0.173 8:00:158 45 16.67 76.8 7.47 6.69 -18.0 240.5 34.7 2.8 0.175 8:00:19 55 16.67 76.8 7.47 6.69 -18.0 240.5 34.7 2.8 0.175 8:00:49 50 16.39 77.3 7.56 6.67 -16.9 241.5 35.4 2.8 0.175 8:00:19 70.17 7.52													
WA-6 Bear Creek Lake Arm 8:05:54 20 18:22 81.8 7.70 6.72 -19.7 237.0 35.2 3.7 0.170 Bear Creek Lake Arm Bear Creek Lake Arm Bear Creek Bear Creek Lake Arm Bear Creek Lake Arm Bear Creek Bear Creek Lake Arm Bear Creek Lake Arm													
WA-6 Bear Creek Lake Arm 8:05:00 25 17.71 82.1 7.82 6.73 -20.0 237.0 35.0 3.0 0.171 Bear Creek Lake Arm 6/3/2015 8:04:07 30 17.39 80.3 7.69 6.68 -17.5 24.01 34.7 2.3 0.173 8.03:14 35 17.17 79.3 7.69 6.68 -17.3 240.1 34.7 2.8 0.175 8.01:58 45 16.67 76.8 7.47 6.69 -18.0 240.5 34.7 2.8 0.175 8.00:49 50 16.39 77.3 7.56 6.67 -16.9 241.5 35.4 2.8 0.178 8.00:12 55 16.26 77.6 7.62 6.70 -16.9 241.5 35.4 2.8 0.178 8.00:12 55 16.26 77.6 7.62 6.70 -16.9 241.2 35.5 2.9 0.178 7.56:09 70 75.58<													
Reactive Arm	WA-6		8:05:00	25	17.71	82.1	7.82	6.73	-20.0	237.0		3.0	0.171
MA-6 Bear Creek Lake Arm G/3/2015	Bear Creek		8:04:07		17.39	80.3	7.69	6.71	-19.4	237.9	34.5	2.4	0.172
Round Roun	Lake Arm									240.1			0.173
Red		6/3/2015											
Name													
## Page 18													
WA-6 Bear Creek Lake Arm Archange Creek Lake Arm													
WA-6 Bear Creek Lake Arm Lake Arm Fig. 17 15.69 70.0 15.69 73.4 7.29 6.68 -17.3 243.1 34.8 2.2 0.176 7:55:17 75 15.50 73.8 7.36 6.71 -19.2 242.1 34.6 1.9 0.178 7:52:48 80 15.06 73.6 7.41 6.74 -21.1 242.8 34.8 2.6 0.181 7:55:151 85 14.50 72.5 7.39 6.77 -22.9 243.1 34.8 2.1 0.185 7:50:22 90 14.01 73.5 7.57 6.82 -25.8 242.3 35.9 2.4 0.185 7:23:49 5 20.86 84.6 7.56 6.62 -13.5 153.7 33.5 2.8 0.08 7:23:09 10 20.69 81.0 7.27 6.59 -12.1 154.6 33.7 3.0 0.08 7:21:43 20 19.95													
WA-6 Bear Creek Lake Arm G/30/2015 73.8 73.6 6.71 -19.2 242.1 34.6 1.9 0.178 6/30/2015 755:148 80 15.06 73.6 7.41 6.74 -21.1 242.8 34.8 2.6 0.181 7:51:51 85 14.50 72.5 7.39 6.77 -22.9 243.1 34.8 2.1 0.185 7:50:22 90 14.01 73.5 7.57 6.82 -25.8 242.3 35.9 2.4 0.188 WA-6 7:23:49 5 20.87 86.0 7.69 6.63 -14.1 154.4 33.7 4.1 0.08 7:23:49 5 20.86 84.6 7.56 6.62 -13.5 153.7 33.5 2.8 0.08 7:22:17 15 20.12 72.9 6.62 6.54 -9.2 157.8 33.8 3.0 0.082 7:21:43 20 19.95 72.7 6.62													
WA-6 Bear Creek Lake Arm MA-6 F:21:12 85 19.95 76.7 76.90 6.62 -10.3 15.48 33.9 2.43 34.8 2.6 0.181 6/30/2015 75:51:51 85 14.50 72.5 7.39 6.77 -22.9 243.1 34.8 2.1 0.185 7:50:22 90 14.01 73.5 7.57 6.82 -25.8 242.3 35.9 2.4 0.188 WA-6 7:24:24 0.5 20.86 84.6 7.56 6.62 -13.5 153.7 33.5 2.8 0.08 7:23:49 5 20.86 84.6 7.56 6.62 -13.5 153.7 33.5 2.8 0.08 7:23:49 5 20.86 84.6 7.56 6.62 -13.5 154.6 33.7 3.0 0.08 7:21:43 20 19.95 72.7 6.62 6.54 -9.2 157.8 33.8 3.0 0.082 7:19:47 30 <th></th>													
T:51:51 85 14.50 72.5 7.39 6.77 -22.9 243.1 34.8 2.1 0.185 WA-6 7:50:22 90 14.01 73.5 7.57 6.82 -25.8 242.3 35.9 2.4 0.188 WA-6 7:24:24 0.5 20.87 86.0 7.69 6.63 -14.1 154.4 33.7 4.1 0.08 7:23:49 5 20.86 84.6 7.56 6.62 -13.5 153.7 33.5 2.8 0.08 7:23:49 5 20.86 84.6 7.56 6.62 -13.5 153.7 33.5 2.8 0.08 7:22:17 15 20.12 72.9 6.62 6.54 -92. 157.8 33.8 3.0 0.082 7:21:43 20 19.95 72.7 6.62 6.56 -10.3 154.8 33.8 4.7 0.082 8 cake Arm 6/30/2015 7:19:47 30													
WA-6 Bear Creek Lake Arm 6/30/2015 7:17:26 40 19.56 7.7.7 6.82 -25.8 242.3 35.9 2.4 0.188 6/30/2015 7:24:24 0.5 20.87 86.0 7.69 6.63 -14.1 154.4 33.7 4.1 0.08 7:23:49 5 20.86 84.6 7.56 6.62 -13.5 153.7 33.5 2.8 0.08 7:23:09 10 20.69 81.0 7.27 6.59 -12.1 154.6 33.7 3.0 0.08 7:22:17 15 20.12 72.9 6.62 6.54 -9.2 157.8 33.8 3.0 0.082 7:21:43 20 19.95 72.7 6.62 6.56 -10.3 154.8 33.8 4.7 0.082 7:19:47 30 19.59 76.7 7.03 6.61 -13.2 149.9 34.3 3.0 0.078 7:18:34 35 19.48 77.4													
Tilisid Tili													
WA-6 Bear Creek Arm Arm <th< th=""><th></th><th></th><th>1.50.22</th><th>90</th><th>14.01</th><th>13.5</th><th>1.51</th><th>0.82</th><th>-20.6</th><th>242.3</th><th>33.9</th><th>∠.4</th><th>0.100</th></th<>			1.50.22	90	14.01	13.5	1.51	0.82	-20.6	242.3	33.9	∠.4	0.100
WA-6 Bear Creek Arm Arm <th< th=""><th>┡╼╼╼┥</th><th></th><th>7.24.24</th><th>0.5</th><th>20.87</th><th>86.0</th><th>7.60</th><th>6 63</th><th>_1/1 1</th><th>15/1 /</th><th>33.7</th><th>/ 1</th><th>0.08</th></th<>	┡╼╼╼┥		7.24.24	0.5	20.87	86.0	7.60	6 63	_1/1 1	15/1 /	33.7	/ 1	0.08
WA-6 Bear Creek Lake Arm 6/30/2015 10 20.69 81.0 7.27 6.59 -12.1 154.6 33.7 3.0 0.08 6/30/2015 7:22:17 15 20.12 72.9 6.62 6.54 -9.2 157.8 33.8 3.0 0.082 7:21:43 20 19.95 72.7 6.62 6.56 -10.3 154.8 33.8 4.7 0.082 7:20:52 25 19.79 74.9 6.84 6.57 -11.1 153.4 33.9 4.3 0.08 7:19:47 30 19.59 76.7 7.03 6.61 -13.2 149.9 34.3 3.0 0.078 7:18:34 35 19.48 77.4 7.11 6.60 -12.6 146.2 34.4 4.4 0.079 7:17:56 40 19.36 80.2 7.38 6.63 -14.1 146.3 34.5 3.2 0.075 7:16:30 50 19.11 82.8 7.66													
WA-6 Bear Creek Lake Arm 7:22:17 15 20.12 72.9 6.62 6.54 -9.2 157.8 33.8 3.0 0.082 6/30/2015 7:21:43 20 19.95 72.7 6.62 6.56 -10.3 154.8 33.8 4.7 0.082 7:20:52 25 19.79 74.9 6.84 6.57 -11.1 153.4 33.9 4.3 0.08 7:19:47 30 19.59 76.7 7.03 6.61 -13.2 149.9 34.3 3.0 0.078 7:18:34 35 19.48 77.4 7.11 6.60 -12.6 146.2 34.4 4.4 0.079 7:17:56 40 19.36 80.2 7.38 6.63 -14.1 146.2 34.4 4.4 0.079 7:17:21 45 19.25 79.5 7.34 6.64 -14.7 142.5 34.6 3.5 0.076 7:15:15 55 18.77 84.0 7.83													
WA-6 Bear Creek Lake Arm 7:21:43 20 19.95 72.7 6.62 6.56 -10.3 154.8 33.8 4.7 0.082 Bear Creek Lake Arm 6/30/2015 7:20:52 25 19.79 74.9 6.84 6.57 -11.1 153.4 33.9 4.3 0.08 6/30/2015 7:19:47 30 19.59 76.7 7.03 6.61 -13.2 149.9 34.3 3.0 0.078 7:18:34 35 19.48 77.4 7.11 6.60 -12.6 146.2 34.4 4.4 0.079 7:17:21 45 19.25 79.5 7.34 6.63 -14.1 146.3 34.5 3.2 0.075 7:17:21 45 19.25 79.5 7.34 6.64 -14.7 142.5 34.6 3.5 0.076 7:15:15 55 18.77 84.0 7.83 6.68 -17.2 132.4 34.6 3.2 0.074 7:14:36 60													
WA-6 Bear Creek Lake Arm 7:20:52 25 19.79 74.9 6.84 6.57 -11.1 153.4 33.9 4.3 0.08 6/30/2015 7:19:47 30 19.59 76.7 7.03 6.61 -13.2 149.9 34.3 3.0 0.078 7:18:34 35 19.48 77.4 7.11 6.60 -12.6 146.2 34.4 4.4 0.079 7:17:21 45 19.36 80.2 7.38 6.63 -14.1 146.3 34.5 3.2 0.075 7:17:21 45 19.25 79.5 7.34 6.64 -14.7 142.5 34.6 3.5 0.076 7:16:30 50 19.11 82.8 7.66 6.67 -16.8 138.3 34.5 2.8 0.074 7:15:15 55 18.77 84.0 7.83 6.68 -17.2 132.4 34.6 3.2 0.074 7:14:36 60 18.71 84.8 7.91													
Bear Creek Lake Arm 6/30/2015 7:19:47 30 19.59 76.7 7.03 6.61 -13.2 149.9 34.3 3.0 0.078 7:18:34 35 19.48 77.4 7.11 6.60 -12.6 146.2 34.4 4.4 0.079 7:17:56 40 19.36 80.2 7.38 6.63 -14.1 146.3 34.5 3.2 0.075 7:17:21 45 19.25 79.5 7.34 6.64 -14.7 142.5 34.6 3.5 0.076 7:16:30 50 19.11 82.8 7.66 6.67 -16.8 138.3 34.5 2.8 0.074 7:15:15 55 18.77 84.0 7.83 6.68 -17.2 132.4 34.6 3.2 0.074 7:14:36 60 18.71 84.8 7.91 6.71 -19.2 127.1 34.7 3.7 0.073 7:13:48 65 18.46 85.6<	WA-6												
Lake Arm 7:18:34 35 19.48 77.4 7.11 6.60 -12.6 146.2 34.4 4.4 0.079 7:17:56 40 19.36 80.2 7.38 6.63 -14.1 146.3 34.5 3.2 0.075 7:17:21 45 19.25 79.5 7.34 6.64 -14.7 142.5 34.6 3.5 0.076 7:16:30 50 19.11 82.8 7.66 6.67 -16.8 138.3 34.5 2.8 0.074 7:15:15 55 18.77 84.0 7.83 6.68 -17.2 132.4 34.6 3.2 0.074 7:14:36 60 18.71 84.8 7.91 6.71 -19.2 127.1 34.7 3.7 0.073 7:13:48 65 18.46 85.6 8.03 6.74 -20.8 120.7 34.7 3.5 0.072 7:11:59 75 17.82 82.9 7.87 6.79 -23.6 <th></th>													
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7:17:21 45 19.25 79.5 7.34 6.64 -14.7 142.5 34.6 3.5 0.076 7:16:30 50 19.11 82.8 7.66 6.67 -16.8 138.3 34.5 2.8 0.074 7:15:15 55 18.77 84.0 7.83 6.68 -17.2 132.4 34.6 3.2 0.074 7:14:36 60 18.71 84.8 7.91 6.71 -19.2 127.1 34.7 3.7 0.073 7:13:48 65 18.46 85.6 8.03 6.74 -20.8 120.7 34.7 3.5 0.072 7:12:51 70 18.06 84.3 7.97 6.77 -22.6 109.7 34.9 3.9 0.072 7:11:59 75 17.82 82.9 7.87 6.79 -23.6 94.7 35.5 3.5 0.074 7:11:09 80 17.70 77.5 7.38 6.84 -26.6 70.4 36.4 2.9 0.072	•	6/30/2015											
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7:12:51 70 18.06 84.3 7.97 6.77 -22.6 109.7 34.9 3.9 0.072 7:11:59 75 17.82 82.9 7.87 6.79 -23.6 94.7 35.5 3.5 0.074 7:11:09 80 17.70 77.5 7.38 6.84 -26.6 70.4 36.4 2.9 0.072			7:14:36	60	18.71	84.8	7.91	6.71	-19.2	127.1	34.7	3.7	0.073
7:11:59 75 17.82 82.9 7.87 6.79 -23.6 94.7 35.5 3.5 0.074 7:11:09 80 17.70 77.5 7.38 6.84 -26.6 70.4 36.4 2.9 0.072					18.46			6.74		120.7		3.5	0.072
7:11:09 80 17.70 77.5 7.38 6.84 -26.6 70.4 36.4 2.9 0.072				70	18.06	84.3	7.97	6.77	-22.6	109.7	34.9	3.9	0.072
7:09:55 85 17.60 47.0 4.49 6.68 -17.6 -50.9 44.3 3.8 0.075													
			7:09:55	85	17.60	47.0	4.49	6.68	-17.6	-50.9	44.3	3.8	0.075

2015 F.E. Walter Water Quality Profiles

Station	Date	Time	Depth	Temp	DO	DO	рΗ	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	С	%	mg/L		mV	m۷	NTU	ug/L	mS/cm
		8:30:47	0.5	24.71	97.6	8.10	6.83	-26.0	135.3	33.0	19.2	0.076
		8:30:12	5	24.68	96.7	8.04	6.77	-22.4	137.2	33.1	24.4	0.076
		8:29:03	10	23.87	89.0	7.51	6.60	-12.1	145.9	32.4	6.7	0.076
		8:28:21	15	22.14	77.9	6.80	6.52	-8.0	151.7	32.4	5.9	0.076
		8:27:21	20	21.22	71.6	6.36	6.49	-6.0	153.9	32.2	5.2	0.075
		8:26:28	25	20.82	69.8	6.25	6.46	-4.6	155.2	32.2	5.4	0.074
WA-6		8:25:44	30	20.46	68.5	6.17	6.45	-3.9	155.3	32.1	5.3	0.074
Bear Creek		8:24:27	35	20.21	67.2	6.09	6.42	-2.4	156.4	32.3	5.8	0.074
Lake Arm	7/22/2015	8:23:05	40	19.89	65.9	6.00	6.41	-1.6	156.5	32.5	5.3	0.072
		8:21:58	45	19.70	65.2	5.96	6.40	-0.8	157.8	33.1	4.7	0.070
		8:21:00	50	19.59	64.1	5.88	6.40	-1.0	157.4	33.4	4.5	0.070
		8:20:19	55	19.39	63.1	5.81	6.41	-1.8	156.4	33.6	4.7	0.070
		8:19:43	60	19.23	62.5	5.77	6.45	-3.9	155.0	34.2	4.0	0.070
		8:18:50	65	19.16	63.4	5.86	6.47	-5.4	153.1	33.4	4.9	0.072
		8:17:39	70	19.08	64.6	5.98	6.51	-7.5	150.0	32.7	5.0	0.074
		8:16:46	75	19.01	63.5	5.89	6.53	-8.4	148.9	32.7	6.0	0.076
		8:15:36	80	18.87	62.0	5.76	6.61	-13.5	143.3	33.2	5.0	0.077
		8:14:21	85	18.82	60.6	5.64	6.64	-15.3	140.7	33.8	5.3	0.077
		8:16:34	0.5	22.62	81.6	7.05	6.72	-19.3	155.4	35.4	4.3	0.099
		8:15:53	5	22.64	81.0	6.99	6.72	-19.6	154.9	34.6	5.1	0.099
		8:14:53	10	22.63	79.3	6.85	6.68	-16.9	156.6	34.6	4.3	0.099
		8:13:25	15	22.28	62.7	5.45	6.55	-9.5	163.7	34.6	4.2	0.098
		8:12:37	20	21.84	60.1	5.27	6.55	-9.7	164.3	34.6	3.7	0.097
WA-6		8:11:14	25	21.53	60.7	5.35	6.57	-10.8	162.8	34.6	3.7	0.099
Bear Creek		8:10:46	30	21.42	60.8	5.38	6.59	-11.8	161.4	34.7	3.7	0.099
Lake Arm	8/12/2015	8:09:58	35	21.30	62.6	5.55	6.60	-12.5	161.8	35.0	3.3	0.096
		8:09:05	40	21.20	66.1	5.87	6.63	-14.1	159.9	35.6	2.9	0.095
		8:08:05	45	21.02	66.6	5.93	6.65	-15.7	158.3	36.3	3.2	0.095
		8:07:25	50	20.89	68.6	6.12	6.70	-18.5	154.9	36.6	3.1	0.094
		8:06:37	55	20.73	65.1	5.84	6.72	-19.6	153.0	36.9	3.5	0.096
		8:05:53	60	20.57	61.5	5.53	6.75	-21.2	150.9	37.5	2.6	0.098
		8:04:44	65	20.46	63.2	5.70	6.78	-22.9	143.5	36.5	3.5	0.108
		8:03:25	70	20.36	57.7	5.21	6.81	-24.6	142.3	38.6	2.6	0.103
		8:02:24	75	20.24	68.7	6.21	6.85	-27.2	130.4	37.2	2.5	0.113
		8:01:15	80	20.21	68.7	6.22	6.85	-27.0	121.3	37.5	3.6	0.112
		8:00:38	83	20.19	68.7	6.22	6.84	-26.7	112.1	38.2	3.2	0.113

2015 F.E. Walter Water Quality Profiles

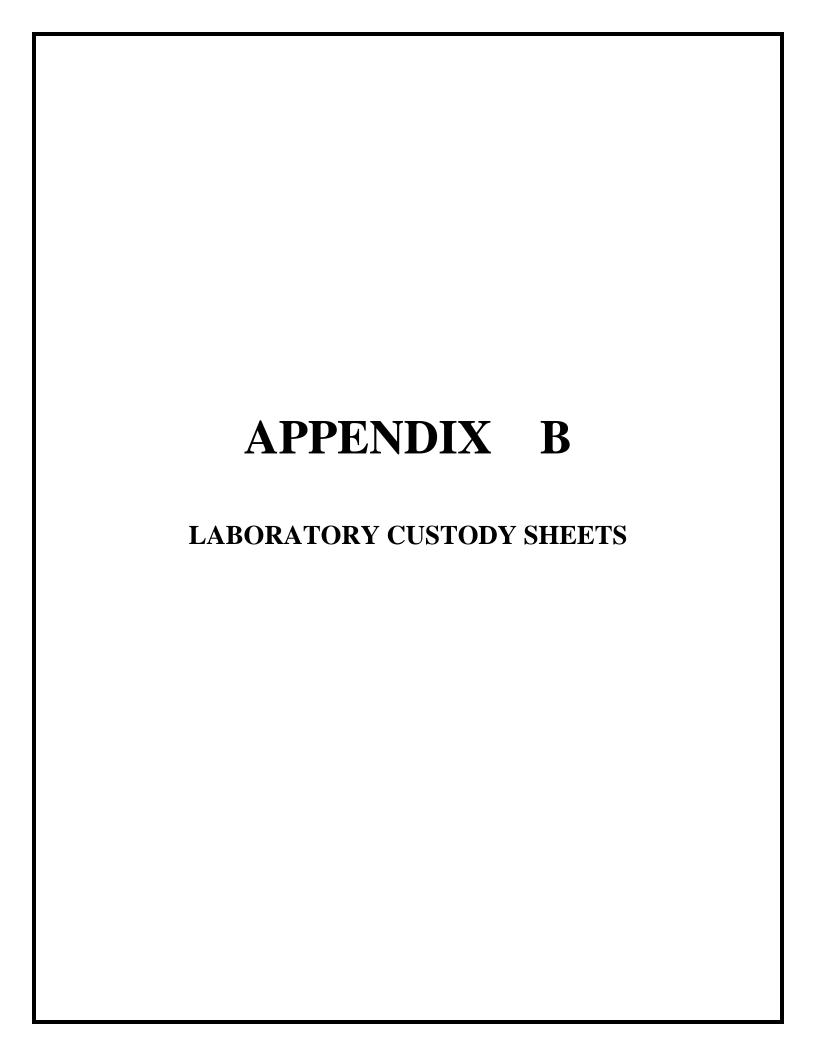
Station	Date	Time	Depth	Temp	DO	DO	рН	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L	•	mV	mV	NTU	ug/L	mS/cm
		8:34:06	0.5	23.33	93.2	7.94	6.53	-8.1	120.8	37.9	5.2	0.085
WA-6		8:33:11	5	23.32	92.4	7.88	6.47	-4.9	121.7	38.0	5.8	0.085
Bear Creek		8:32:24	10	22.79	87.4	7.53	6.41	-1.2	124.1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

2015 F.E. Walter Water Quality Profiles

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
		7:47:47	0.5	20.91	85.1	7.60	6.61	-12.9	177.6	33.6	3.6	0.081
		7:46:45	5	20.83	81.4	7.28	6.54	-9.3	181.5	33.5	3.7	0.081
		7:46:09	10	20.59	78.0	7.01	6.54	-8.9	182.1	33.5	4.0	0.081
		7:44:55	15	20.18	72.5	6.57	6.48	-5.7	186.0	33.7	4.7	0.082
		7:44:22	20	20.03	72.8	6.61	6.52	-7.8	184.0	33.7	4.5	0.082
WA-7		7:43:23	25	19.87	73.8	6.73	6.55	-9.9	182.1	33.9	5.8	0.081
Lehigh		7:41:35	30	19.76	76.2	6.96	6.58	-11.3	181.3	34.2	4.7	0.080
Lake Arm		7:40:21	35	19.58	78.8	7.22	6.61	-13.4	179.4	34.4	4.2	0.080
	6/30/2015	7:39:25	40	19.39	80.8	7.44	6.63	-14.2	179.0	34.6	4.4	0.079
		7:38:48	45	19.11	82.1	7.60	6.66	-16.2	177.2	34.5	3.9	0.079
		7:37:55	50	18.94	83.6	7.76	6.66	-16.0	177.2	34.6	4.7	0.080
1		7:37:03	55	18.77	84.8	7.90	6.68	-17.1	175.9	34.7	4.8	0.080
1		7:36:00	60	18.66	85.2	7.96	6.68	-17.2	175.5	34.9	4.8	0.080
		7:34:54	65	18.34	86.6	8.14	6.67	-16.9	175.6	35.2	5.6	0.080
		7:34:01	70	18.14	87.3	8.24	6.67	-17.0	175.1	35.6	5.2	0.080
		7:33:14	75	18.00	87.4	8.27	6.68	-17.3	174.7	35.7	5.2	0.081
		7:32:13	80	17.87	87.1	8.26	6.68	-17.4	174.5	35.5	5.9	0.081
		7:31:10	85	17.73	86.9	8.27	6.69	-18.0	173.7	35.6	5.8	0.081
<u> </u>										<u>L</u>		
		8:51:24	0.5	25.00	96.0	7.93	6.73	-20.0	145.3	32.6	9.8	0.078
		8:50:56	5	24.94	94.6	7.83	6.68	-17.0	147.0	32.8	10.3	0.078
		8:50:14	10	23.76	85.7	7.25	6.58	-11.2	153.5	32.6	6.0	0.079
		8:49:30	15	22.07	77.0	6.73	6.50	-6.5	159.0	32.6	5.3	0.079
		8:48:46	20	21.32	72.0	6.38	6.47	-4.9	161.4	32.2	5.4	0.076
WA-7		8:48:03	25	20.78	69.3	6.2	6.45	-3.9	162.8	32.4	5.8	0.076
Lehigh		8:47:27	30	20.43	68.9	6.21	6.45	-4.1	162.7	32.4	6.1	0.077
Lake Arm	7/22/2015	8:46:49	35	20.07	68.6	6.23	6.47	-4.8	161.9	32.4	6.2	0.078
		8:46:00	40	19.91	68.2	6.22	6.44	-3.6	163.2	32.4	6.1	0.077
		8:45:02	45	19.75	68.0	6.22	6.45	-4.0	162.6	32.5	5.9	0.078
		8:44:22	50	19.63	68.1	6.24	6.47	-4.9	161.4	32.6	6.4	0.078
		8:43:40	55	19.51	68.1	6.25	6.48	-5.4	160.3	32.6	6.3	0.078
		8:42:34	60	19.38	67.0	6.17	6.46	-4.9	160.4	32.5	6.2	0.078
1		8:41:31	65	19.29	66.6	6.14	6.47	-5.4	159.6	32.5	6.3	0.079
1		8:40:40	70	19.27	66.4	6.12	6.50	-6.9	157.6	32.7	5.8	0.079
		8:39:38	75	19.26	66.4	6.13	6.53	-8.6	155.0	32.6	6.4	0.079
		8:38:27	80	19.15	65.1	6.02	6.54	-9.4	153.6	32.8	6.2	0.079
1		8:37:14	85	18.99	62.7	5.82	6.59	-12.2	150.8	33.9	5.8	0.081
ą J												

2015 F.E. Walter Water Quality Profiles

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





M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020176

Date Collected: 06/03/15 09:40

Collected By: Client

Sample Desc: WA-1 Surface

Date Received:

06/03/15 17:00

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI							CT 100	
MICROBIOLOGY								
Fecal Coliform	110	/100mL	2	1	SM 9222D	06/03	18:00	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	06/04	12:45	RES
CHEMISTRY		4.5.000			111 11110		1,000	1177
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:20	HRG
NITROGENS						1000		
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	02:16	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:13	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:34	JCL
Nitrogen, Total Kjeldahl	0.30	mg/L	.25	1	EPA 351.2	06/05	13:08	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	4.2	mg/L	1	1	SM5310 C	06/04	11:14	ALD
RESIDUES								
Solids, Total Dissolved	48	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	09:45	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam) Reviewed and Approved by:

Page 1 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-1 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020176

Date Collected:

06/03/15 09:40

Collected By:

Client

Date Received:

06/03/15 17:00

PWSID: 3130843

Result Unit Dilutn Factor

Rep

Limit

Procedure Date

Test

Time Analyst

COMMENTS

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

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

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam) Reviewed and Approved by:

Richard Wheeler

Page 2 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-2 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020177

Date Collected: 06/03/15 07:30

Collected By: Client

Date Received:

06/03/15 17:00

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI	100000000000000000000000000000000000000		7					~=====
MICROBIOLOGY								
Fecal Coliform	6	/100ml	2	1	SM 9222D	06/03	18:00	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	1 1 2 2	12:45	RES
CHEMISTRY		-Carate						
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E		12:20	HRG
NITROGENS						and the same		
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	02:31	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:14	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04		
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	06/05	13:10	JCL
OTHER		79				100		
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	3.6	mg/L	1	1	SM5310 C	100 March 1985	11:52	
RESIDUES								
Solids, Total Dissolved	46	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS		3.0						
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	06/09	09:45	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2









Attention: David Wertz

Sample Desc: WA-2 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020177

Date Collected:

06/03/15 07:30

Collected By:

Client

Date Received:

06/03/15 17:00

PWSID: 3130843

Result Unit

Dilutn Limit

Rep

Factor Procedure Test Test

Date Time Analyst

COMMENTS

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

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

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam) Reviewed and Approved by:

Richard Wheeler

Page 2 of 2











Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020178

Date Collected:

06/03/15 07:30

Collected By: Client

Sample Desc: WA-2 Mid-Depth

Date Received:

06/03/15 17:00

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY	Sec. Sec. and case Sec. (sec. sec. sec. sec. sec. sec. sec. sec.							
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	06/04	14:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:20	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS						37.5		
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	02:46	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:15	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:38	JCL
Nitrogen, Total Kjeldahl	0.31	mg/L	.25	1	EPA 351.2	06/05	13:11	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	4.8	mg/L	1	1	SM5310 C	06/04	13:02	ALD
RESIDUES								
Solids, Total Dissolved	61	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	10:00	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID: 3157

3157-15-0020179

Date Collected: 06/03/15 07:30

Collected By: Client

Sample Desc: WA-2 Deep Date Received: 06/03/15 17:00

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY			-	1,000				
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	03:01	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:16	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:39	JCL
Nitrogen, Total Kjeldahl	0.26	mg/L	.25	1	EPA 351.2	06/05	13:12	JCL
OTHER		-						
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	3.5	mg/L	1	1	SM5310 C	06/04	13:20	ALD
RESIDUES						7		
Solids, Total Dissolved	66	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS		- 44						
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	06/09	10:00	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-3 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Date Collected:

Lab ID: 3157-15-0020180

06/03/15 09:55

Collected By: Client

Date Received: 06/03/15 17:00

PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
	NASA 4.2.25							
BACTI								
MICROBIOLOGY								
Fecal Coliform	70	/100mL	2	1	SM 9222D	06/03	18:00	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	06/04	12:45	RES
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	03:16	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:19	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:40	JCL
Nitrogen, Total Kjeldahl	0.42	mg/L	.25	1	EPA 351.2	06/05	13:13	JCL
OTHER		100						
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	8.2	mg/L	1	1	sm5310 c	06/04	13:40	ALD
RESIDUES								
Solids, Total Dissolved	83	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS						7.75		
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	10:00	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-3 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020180

Date Collected:

06/03/15 09:55

Collected By:

Client

Date Received:

06/03/15 17:00

PWSID: 3130843

Unit Result

Rep Dilutn Limit

Factor Procedure

Date

Time Analyst

COMMENTS

02

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.

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

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam) Reviewed and Approved by:

Page 2 of 2

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ACIL Seal of Excellence



M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-4 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020181

Date Collected:

06/03/15 11:00

Collected By: Client

Date Received:

06/03/15 17:00

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								7555
MICROBIOLOGY								
Fecal Coliform	410	/100mL	2	1	SM 9222D	06/03	18:00	PLW
Total Coliform	1000	mpn/100ml	1	1	SM 9223B	06/04		RES
CHEMISTRY		0 E 0 E 1207			37. 18-75			1100
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/04	12:25	HRG
NITROGENS		2512						
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	03:31	JCL
Nitrogen, Nitrate	<.05	mg/L	. 05	1	EPA 353.2	06/04		JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:41	JCL
Nitrogen, Total Kjeldahl	0.36	mg/L	.25	1	EPA 351.2	06/05	13:14	JCL
OTHER						15.53		
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	7.8	mg/L	1	1	SM5310 C	06/04	14:00	ALD
RESIDUES								
Solids, Total Dissolved	68	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	06/09	10:00	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2







M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Sample Desc: WA-4 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020181

Date Collected:

06/03/15 11:00

Collected By:

Client

Date Received:

06/03/15 17:00

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure Date

Test Test

Time Analyst

COMMENTS

01

02

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.

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

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam) Reviewed and Approved by:

Page 2 of 2









M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-5 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020182

Date Collected:

06/03/15 10:40

Collected By: Client

Date Received:

06/03/15 17:00

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI			4000	1000000				
MICROBIOLOGY								
Fecal Coliform	86	/100mL	2	1	SM 9222D	06/03	18:00	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	06/04		RES
CHEMISTRY						-34.50		1,40
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:20	HRG
Phosphorus as P, Total	0.05	mg/L	.01	1	SM 4500P-E		12:25	HRG
NITROGENS						G.		
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	04:16	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04		JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04		JCL
Nitrogen, Total Kjeldahl	0.38	mg/L	.25	1	EPA 351.2	06/05	13:15	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	5.0	mg/L	1	1	SM5310 C		14:20	ALD
RESIDUES						4.34		
Solids, Total Dissolved	72	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS		200				244 550		
Alkalinity, Total to pH 4.5	2	mg/L	1	1	SM 2320 B	06/09	10:15	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2









Attention: David Wertz

Sample Desc: WA-5 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020182

Date Collected:

06/03/15 10:40

Collected By:

Client

Date Received:

Procedure

06/03/15 17:00

PWSID: 3130843

Result Unit

Dilutn Factor

Rep

Limit

Test

Date

est Test

Time Analyst

COMMENTS

02

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.

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

Distribution of Reports: Gregory Wacik - USACE

USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 2 of 2









M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-6 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020183

Date Collected:

06/03/15 08:15

Collected By:

Client

Date Received:

06/03/15 17:00

		Rep	Dilutn		Test	Test	
Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
ACTEREDA .							
3	/100mL	2	1	SM 9222D	06/03	18:15	PLW
>2400	mpn/100ml	1	1	SM 9223B	06/04	12:45	RES
	200.000						
<.01	mg/L	.01	1	SM 4500P-E	06/04	14:05	HRG
<.05		.05	1	SM 4500P-E	06/05	12:25	HRG
<.01		.01	1	SM 4500P-E	06/04	12:25	HRG
<.05	mg/L	.05	1	D6919-03	06/04	04:31	JCL
<.05	mg/L	.05	1	EPA 353.2		18:21	JCL
<.05		.05	1	EPA 353.2		16:42	JCL
0.27		.25	1	EPA 351.2		13:16	JCL
					5-51-5-5		
<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
3.3		1	1	SM5310 C	06/04	14:53	ALD
57	mg/L	5	1	SM 2540C	06/05	13:15	TMH
<3		3	1	SM 2540D	100000000000000000000000000000000000000	13:15	TMH
	23.14				-73/035	72/2012	
6	mg/L	1	1	SM 2320 B	06/09	10:15	HRG
	3 >2400 <.01 <.05 <.01 <.05 <.05 <.05 <.35 0.27 <2 3.3 57 <3	3 /100mL mpn/100mL <.01 mg/L <.05 mg/L <.05 mg/L <.05 mg/L <.05 mg/L <.05 mg/L <3.mg/L <2 mg/L 3.3 mg/L 57 mg/L 43 mg/L	Result Unit Limit	Result Unit Limit Factor	Result	Result	Result Unit Limit Factor Procedure Date Time

Distribution of Reports:

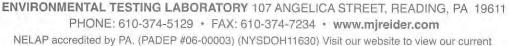
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

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Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020183

Date Collected:

06/03/15 08:15

Collected By: Client

Sample Desc: WA-6 Surface

Date Received:

06/03/15 17:00

PWSID: 3130843

Result Unit

Dilutn Limit Factor

Rep

Procedure Date

Test Test

Time Analyst

COMMENTS

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

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

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam) Reviewed and Approved by:

Richard Wheeler

Page 2 of 2







Attention: David Wertz

Sample Desc: WA-6 Mid-Depth

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID: 3157-15

3157-15-0020184

Date Collected: 06/03/15 08:15

Collected By: Client

Date Received: 06/03/15 17:00

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	06/04	14:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E		12:25	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E			HRG
NITROGENS		-						
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	04:46	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:24	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04		JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	. 25	1	EPA 351.2	06/05	13:19	JCL
OTHER						6.66		
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	3.6	mg/L	1	1	SM5310 C	06/04	15:10	ALD
RESIDUES								
Solids, Total Dissolved	59	mg/L	5	1	SM 2540C	06/05	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	10:15	HRG

COMMENTS

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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Reviewed and Approved by

Richard Wheeler

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Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

06/15/15

Lab ID:

3157-15-0020185

Date Collected:

06/03/15 08:15

Collected By: Client

Sample Desc: WA-6 Deep

Date Received:

06/03/15 17:00

Date	Time	Accelous
		Analyst
06/04	14:05	HRG
06/05		
06/04		
06/04	05:01	JCL
06/04	18:25	JCL
06/04		
06/05	13:20	JCL
06/04	11:05	EMW
06/04	15:29	ALD
2.2		
06/05	13:15	TMH
06/05	13:15	TMH
06/09	10:15	HRG
(06/05 06/05	06/05 13:15

COMMENTS

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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Reviewed and Approved by:

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Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020186

Date Collected: (

06/03/15 08:40

Collected By: Client

Sample Desc: WA-7 Surface

Date Received:

06/03/15 17:00

PWSID: 3130843	12.141	21.5%	Rep	Dilutn	A. marinina	Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI						,=====		
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	06/03	18:15	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	06/04		RES
CHEMISTRY		3340						
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/04	14:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/05	12:25	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	(0) 30000	12:25	HRG
NITROGENS		1,000						
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	05:16	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:26	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:47	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	06/05	13:21	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	3.4	mg/L	1	1	SM5310 C	06/04	16:34	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	06/05	13:45	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	10:30	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020186

Date Collected:

06/03/15 08:40

Collected By:

Client

Sample Desc: WA-7 Surface

Date Received:

06/03/15 17:00

PWSID: 3130843

Result Unit

Dilutn Limit Factor

Rep

Test Procedure Date

Test

Time Analyst

COMMENTS

02

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.

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

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam) Reviewed and Approved by:

Page 2 of 2





M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-7 Mid-Depth

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020187

Date Collected:

06/03/15 08:40

Collected By: Client

Date Received:

06/03/15 17:00

							1. 4.	A POLICE
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	06/04	14:10	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E		12:25	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	The state of the state of		HRG
NITROGENS						congra		
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/04	05:31	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	06/04	18:27	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	06/04	16:50	JCL
Nitrogen, Total Kjeldahl	0.40	mg/L	.25	1	EPA 351.2	06/05	13:24	JCL
OTHER						130		
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	6.4	mg/L	1	1	SM5310 C	06/04	17:12	ALD
RESIDUES								
Solids, Total Dissolved	46	mg/L	5	1	SM 2540C	06/05	13:45	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/05	13:45	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	06/09	10:30	HRG

COMMENTS

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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Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 06/15/15

Lab ID:

3157-15-0020188

Date Collected:

06/03/15 08:40

Collected By: Client

Sample Desc: WA-7 Deep

Date Received:

06/03/15 17:00

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.03	mg/L	.01	1	SM 4500P-E	06/04	14:10	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	06/05	12:25	HRG
Phosphorus as P, Total	0.03	mg/l	.01	1	SM 4500P-E		12:25	HRG
NITROGENS		7-7-				1	19195	33010
Nitrogen, Ammonia	0.08	mg/L	.05	1	D6919-03	06/04	05:46	JCL
Nitrogen, Nitrate	0.06	mg/L	.05	1	EPA 353.2	06/04	18:30	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/04	16:51	JCL
Nitrogen, Total Kjeldahl	0.63	mg/L	.25	1	EPA 351.2	06/05	13:25	JCL
OTHER		27.33						
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/04	11:05	EMW
Total Organic Carbon	3.8	mg/L	1	1	SM5310 C	06/04		ALD
RESIDUES		2.50				10.54		
Solids, Total Dissolved	63	mg/L	5	1	SM 2540C	06/05	13:45	TMH
Solids, Total Suspended	42	mg/L	3	1	SM 2540D	06/05	13:45	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	06/09	10:30	HRG
								4.4.

COMMENTS

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

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam) Reviewed and Approved by:

Page 1 of 1





20178 sample No: fc, tc. Sample No: Date: Customer: Relinquished by, Samplers: Account: Address: Phone: no2-n, no3-n, d-po4-p, o-po4, no2-n, no3-n, d-po4-p, o-po4, bod nh3-n, tkn, alk, tds, tss, po4-p, toc, nh3-n, tkn, alk, tds, tss, po4-p, toc, no2-n, no3-n, d-po4-p, o-po4, nh3-n, 1/2 tkn, alk, tds, tss, po4-p, toc, Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 703-387-5516 David Wertz Arlington VA 22201 3157 H w N NACIK Desc: Desc: WA-2 Surface Desc: WA-1 Surface WA-2 Mid-Depth Time: 330 Ext: Work Order: 006224 P: Work Order Description: Walter Resevior Received by: 600 Total Sampling Time (hours): Remarks: Laboratory Receipt Temp: Chain of Custody Project Leader: Approved By: Date: Received for laboratory by: Deg C. If Temp Unacceptable, On Ice? A OMP U MXH 1 X Pt nh3 p w/ H2SO4(pH<2);
1 X 8oz Alk p w/ Cool to 6 C;
1 X 2xambervoa g w/ H3PO4/zero heads;
1 X L bod p w/ Cool to 6 C;
1 X Pt no3no2 p w/ Cool to 6 C;
1 X 250mlMicro p w/ Sterile/Na2S2O3; 1 X Pt nh3 p w/ H2SO4(pH<2);
1 X 8oz Alk p w/ Cool to 6 C;
1 X 2xambervoa g w/ H3PO4/zero
1 X L bod p w/ Cool to 6 C; 1 X Pt nh3 p w/ H2SO4(pH<2);
1 X 8oz Alk p w/ Cool to 6 C;
1 X 2xambervoa g w/ H3PO4/zero headspace;
1 X L bod p w/ Cool to 6 C;
1 X Pt no3no2 p w/ Cool to 6 C;</pre> Matrix: o Matrix: o Matrix: o X Pt no3no2 p w/ coo1 co co, X 250mlMicro p w/ Sterile/Na2S2O3; Time: Bottle Prep by: No: Date: Time: Date: 257588 headspace; headspace; 6/3/15 6/3/15 0730 6/3/15 01260 K Z

Chain of Custody

David Werty	Work Order Description: Walter Resevior
Customer: David Wertz	Remarks:
Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201	
Phone: 703-387-5516 Ext:	Total Sampling Time (hours): Bottle Prep by:
Samplers: WACIK	Laboratory Receipt Temp: Deg C. If Temp Unacceptable, On Ice? Y N Approved By: B5V
	Waterier: 0 Parts: V (3/15
nh3-n, tkn, alk, tds, tss, po4-p, toc,	$A - I \times PC \text{ nn3 } p \text{ w/ } H2SO4(pH<2);$ $B - 1 \times 8oz \text{ Alk } p \text{ w/ } Cool \text{ to } 6 \text{ C};$
no3-n. d-po4-p. o-po4. bod.	C - 1 X 2xambervoa g w/ $H3P04/zero$ headspace; D - 1 X L bod p w/ $Cool$ to 6 C;
To the second	1 2 X
20180 Sample No: 5 Desc: WA-3 Surface	Matrix: o Date: 0/3/3
nh3-n, tkn, alk, tds, tss, po4-p, toc,	- 1 x Pt nh3 p w/ H2SO4 (pH<2);
h ta	$C = 1 \times 2x$ ambervoa $g = w/H3P04/z$ ero headspace;
no2-n, no3-n, d-po4-p, o-po4, bod,	- 1 X L bod p w/ Cool to 6 C
fc, tc,	F - 1 x 250mlMicro p w/ Sterile/Na2S2O3;
30 8 Sample No: 6 Desc: WA-4 Surface	_
nh3-n, tkn, alk, tds, tss, po4-p, toc,	A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
h. M	B - 1 X 8oz Alk p w/ Cool to 6 C; $C - 1 X 2xambervoa q w/ H3P04/zero headspace;$
no2-n, no3-n, d-po4-p, o-po4, body	- 1 X L bod p w/ Cool to 6 C;
fc, te,	F - 1 x Pt no3noz p w/ Coo1 to 6 C; F - 1 x 250mlMicro p w/ Sterile/Na2S2O3;
DIT	
Reclinquished by: / Py Received by:	Received for laboratory by: / J/WW V
Date: 6/3/15 Time: 576	Date: 6-3-16 Time: 1700

Chain of Custody

	Account:	3157 Work Order: 006224 Work Order Descripti	Work Order: 006224 Work Order Description: Walter Resevior	No: 257588
0	Customer:	David Wertz	Remarks:	
	Address:	Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201	ACCINICAL PLUS	
	Phone:	703-387-5516 Ext:	Total Sampling Time (hours):	Bottle Prep by:
Ţņ.	Samplers:	2	Laboratory Receipt Temp: S Deg C. If Temp	Temp Unacceptable, On Ice? Y N
20182 =	sample No:	Sample No: 7 Desc: WA-5 Surface	Matrix: o Date: $(1/3)!S$	o Date: 6/3)(S
	nh3-n, tkn,	tkn, alk, tds, tss, po4-p, toc,	- 1 - X	Pt nh3 p w/ H2SO4 (pH<2);
	S. Carrier		××	8oz Alk p w/ Cool to 6 C; 2xambervoa g w/ H3PO4/zero headspace;
	fc, tc	no2-n, no3-n, d-po4-p, o-po4, bod,	* * * * * * * * * * * * * * * * * * *	L bod p w/ Cool to 6 C; Pt no3no2 p w/ Cool to 6 C; 250mlMicro p w/ Sterile/Na2S2O3;
10/83 sample No:	ample No:	8 Desc: WA-6 Surface	Matrix: o	Date: 6/3/15
	nh3-n,	tkn, alk, tds, tss, po4-p, toc.	A - 1 X Pt nh3 B - 1 X 8oz Al	Pt nh3 p w/ H2SO4 (pH<2); 8oz Alk p w/ Cool to 6 C;
	no2-n,	no3-n, d-po4-p, o-po4, bod	1 H H	1 to 6 C
1.7	fc, tc,		F - 1 X 250mlMicro	250mlMicro p w/ Sterile/Na2S2O3;
2018 Sample No:	ample No:	9 Desc: WA-6 Mid-Depth	Matrix: o	Date: 6/3/13
	nh3-n,	tkn, alk, tds, tss, po4-p, toc,	Å - 1 x Pt nh3 B - 1 x 8oz Al	Pt nh3 p w/ H2SO4(pH<2); 8oz Alk p w/ Cool to 6 C;
	no2-n,	no3-n, d-po4-p, o-po4, bod,	 1 1 1 X X X	<pre>2xambervoa g w/ H3PO4/zero headspace; L bod p w/ Cool to 6 C; Pt no3no2 p w/ Cool to 6 C;</pre>
		116	19	
			n nA	
	· · · · · · · · · · · · · · · · · · ·	managed by	TECETAER FOR TENTERCOTT BY:	
ы	Date: 6/	/3/15 / Time: 330	Date: 6/3-16	Time: 1700

COFC.PRT Page: 4

	Chain of Custody
Account: 3157 Work Order: 006224 P. Work Order Description: Walter Reservior	Project Leader: rxw No: 257588
Customer: David Wertz	Remarks:
Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201	
Phone: 703-387-5516 Ext:	rs): Bottle Prep by:
WACK	Laboratory Receipt Temp: Deg C. If femp Unacceptable, On Ice? Y N Approved By: If I
20185 Sample No: 10 Desc: WA-6 Deep	
nh3-n, tkn, alk, tds, tss, po4-p, toc,	- 1 X Pt nh3 p w/ 1
M	B - 1 X 80z Alk p w/ Cool to 6 C; C - 1 X 2xambervoa g w/ H3P04/zero headspace;
noz-n, noz-n, a-pos-p, o-pos, woa,	1 1
JO/8 To Sample No: 11 Desc: WA-7 Surface	1
nh3-n, tkn, alk, tds, tss, po4-p, toc,	A - 1 X Pt nh3 p w/ H2S04 (pH<2);
modern dence of bod	- 1 x 2xambervoa g w/ H3PO4/:
6	Pt no3no2 p w/ Cool 250mlMicro p w/ Ster
AOIX Sample No: 12 Desc: WA-7 Mid-Depth	La
nh3-n, tkm, alk, tds, tss, po4-p, toc,	- 1 ×
μ ης no3-n, no3-n, d-no4-n, o-no4, bod.	$B - 1 \times 802 \text{ ALK } D \text{ W} / \text{COO1 } \text{ to } 6 \text{ C};$ $C - 1 \times \text{Z xambervoa } \text{g w} / \text{H3PO4/zero headspace};$ $D - 1 \times \text{L bod } \text{b w} / \text{Coo1 } \text{to } 6 \text{ C};$
A C	- 1 x
Date: 6/5/15 Time: 330	1700 mate: 6-3-16 mine: 1700

M. J. REIDER ASSOCIATES, INC.

COFC.PRT Page: 5

Chain of Custody

Relinquished by:	Account: 3157 Customer: David Wertz Address: Tetra Tech (1 1320 North Co Arlington VA Phone: 703-387-5516 Samplers: WAC ===================================
Time: 330	omer: David Wertz work Order: 00522 mozer: David Wertz ress: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201 hone: 703-387-5516 Ext: Lers: Arlington VA CJK lers: Desc: WA-7 Deep nh3-n, tkn, alk, tds, tss, po4-p, toc, no2-n, no3-n, d-po4-p, o-po4, body The Mark Courthouse Rd., body Arlington VA 22201 Ext: Arrington VA 22201 Ext:
My MAD Received for laboratory b Date: 6.3-15	Account: 3157 Work Order: Un224 Work Order Description: Walter Resevior Customer: David Wertz Remarks: Address: Tetra Tech (Seltzville Dam) 1320 North Courthouse Rd., Ste. 600 Ariington va 22201 Phone: 703-387-516 Ext: Desc: WA-7 Deep nh3-n, tkn, alk, tds, tss, poi-p, toc, nn2-n, no3-n, d-poi-p, o-poi-s Rocciption: Walter Resevior Remarks: Remarks: Total Sampling Time (hours): Deg C. If Temp Unacceptable, On Ice? Y N Approved By: Approved By: A - 1x Pt nh3 p w/ E201 to 6 C; C - 1x Zeambervoa g w/ H3Poi-zero headspace; E - 1x Pt no3no2 p w/ cool to 6 C; E - 1x Pt no3no2 p w/ cool to 6 C;
y: ByMA	Bottle Prep by: If Temp Unacceptable, On Ice? Y N Strix: O Time: Exambervoa g w/ H2SO4 (pH<2); Exambervoa g w/ H3PO4/zero headspace; L bod p w/ Cool to 6 C; Exambervoa p w/ Cool to 6 C; Exambervoa p w/ Cool to 6 C;



M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022988

Date Collected:

06/30/15 09:50

Collected By:

Client

Sample Desc: WA-1 Surface

Date Received:

06/30/15 16:20

PWSID: 3130843	SV.	UE.O.	Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	100	/100mL	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:07	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:50	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/01	12:30	HRG
NITROGENS						- Proces		
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	04:12	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:11	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:23	JCL
Nitrogen, Total Kjeldahl	0.29	mg/L	.25	1	EPA 351.2	07/01	13:41	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	7.2	mg/L	1	1	sm5310 c	07/01	14:13	ALD
RESIDUES		3.						
Solids, Total Dissolved	37	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS		2.78						
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/02	12:30	HRG

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Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 07/13/15

Lab ID: 3157-15-0022988

Collected By: Client

Sample Desc: WA-1 Surface

Date Received:

Date Collected:

06/30/15 16:20

06/30/15 09:50

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test Date

Time Analyst

COMMENTS

02

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.

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

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Richard Wheeler

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Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022989

Date Collected:

06/30/15 07:05

Collected By:

Client

Sample Desc: WA-2 Surface

Date Received:

06/30/15 16:20

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI			-2333555			-	2555	
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY		37,577-03				2		
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:07	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	21:50	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/01	12:30	HRG
NITROGENS						1000		
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	04:27	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	07/01	17:12	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:26	JCL
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	07/01	13:42	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.2	mg/L	1	1	SM5310 C	07/01	14:47	ALD
RESIDUES								
Solids, Total Dissolved	51	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/02	12:30	HRG

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Richard Wheeler

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Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022989

Date Collected:

06/30/15 07:05

Collected By:

Client

Sample Desc: WA-2 Surface

Date Received:

06/30/15 16:20

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test Test

Date

Time Analyst

COMMENTS

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 06/30/15 at 17:25.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 2 of 2





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Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022990

Date Collected:

06/30/15 07:05

Collected By:

Client

Sample Desc: WA-2 Mid-Depth

Date Received:

06/30/15 16:20

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY	Control							
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:07	HRG
Phosphorus as P, Dissolved	<.05	mg/l	. 05	1	SM 4500P-E	07/01	12:50	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	07/01	12:30	HRG
NITROGENS						7		
Nitrogen, Ammonia	<.05	mg/L	. 05	1	D6919-03	07/01	04:42	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	07/01	17:13	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:27	JCL
Nitrogen, Total Kjeldahl	0.35	mg/L	.25	1	EPA 351.2	07/01	13:43	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.2	mg/L	1	1	SM5310 C	07/01	15:51	ALD
RESIDUES								
Solids, Total Dissolved	44	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS		100						
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/02	12:30	HRG

COMMENTS

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.

Distribution of Reports:

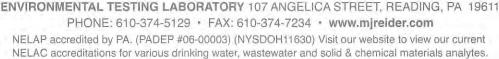
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022991

Date Collected:

06/30/15 07:05

Collected By:

Client

Sample Desc: WA-2 Deep

Date Received:

06/30/15 16:20

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	07/01	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:50	HRG
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	07/01	12:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	04:57	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	07/01	17:14	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:28	JCL
Nitrogen, Total Kjeldahl	0.37	mg/L	.25	1	EPA 351.2	07/01	13:44	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	7.9	mg/L	1	1	SM5310 C	07/01	16:23	ALD
RESIDUES								
Solids, Total Dissolved	48	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	6	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	07/02	12:45	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022992

Date Collected:

06/30/15 09:10

Collected By:

Client

06/30/15 16:20

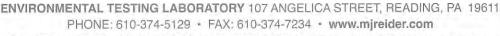
Sample Desc: WA-3 Surface					Date Rece	eived:	06/30	/15 16:20
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	40	/100mL	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:50	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/01	12:30	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	05:12	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:17	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:29	JCL
Nitrogen, Total Kjeldahl	0.48	mg/L	.25	1	EPA 351.2	07/02	16:44	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	10.1	mg/L	1	1	SM5310 C	07/01	17:44	ALD
RESIDUES								
Solids, Total Dissolved	73	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS						Card-a		
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	07/02	12:45	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam) Reviewed and Approved by:

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Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022992

Date Collected:

06/30/15 09:10

Collected By:

Date Received:

Client

Procedure

06/30/15 16:20

PWSID: 3130843

Sample Desc: WA-3 Surface

Rep

Limit

Dilutn Factor Test

est Test

Time Analyst

COMMENTS

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.

Result

O2 The total coliform sample was placed in the incubator on 06/30/15 at 17:25.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022993

Date Collected:

06/30/15 09:30

Collected By:

Client

Sample Desc: WA-4 Surface

Date Received:

06/30/15 16:20

PWSID: 3130843	200	100	Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI						- Carried		,
MICROBIOLOGY								
Fecal Coliform	850	/100mL	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY		200						
COLORMETRIC								
Phosphate as P, Ortho	0.07	mg/L	.01	1	SM 4500P-E	07/01	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	0.08	mg/L	.01	1	SM 4500P-E	07/01	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	05:27	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	07/01	17:18	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:30	JCL
Nitrogen, Total Kjeldahl	0.62	mg/L	.25	1	EPA 351.2	07/02	16:45	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.9	mg/L	1	1	SM5310 C	07/01	18:37	ALD
RESIDUES								
Solids, Total Dissolved	53	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	07/02	12:45	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022993

Date Collected:

06/30/15 09:30

Collected By:

Client

Sample Desc: WA-4 Surface

Date Received:

06/30/15 16:20

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Test Procedure Date

Test

Analyst

COMMENTS

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

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

Distribution of Reports:

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Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022994

Date Collected:

06/30/15 09:40

Collected By:

Client

Sample Desc: WA-5 Surface

Date Received:

06/30/15 16:20

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	62	/100mL	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.21	mg/L	.01	1	SM 4500P-E	07/01	10:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	0.23	mg/L	.01	1	SM 4500P-E	07/02	12:45	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	05:42	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:19	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:31	JCL
Nitrogen, Total Kjeldahl	0.41	mg/L	.25	1	EPA 351.2	07/02	16:46	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.3	mg/L	1	1	SM5310 C	07/01	19:12	ALD
RESIDUES								
Solids, Total Dissolved	37	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	2	mg/L	1	1	SM 2320 B	07/02	13:00	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2







M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022994

Date Collected:

06/30/15 09:40

Collected By:

Client

Sample Desc: WA-5 Surface

Date Received:

06/30/15 16:20

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Test Procedure Date

est Test

Time Analyst

COMMENTS

02

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.

The total coliform sample was placed in the incubator on 06/30/15

at 17:25.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 2 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-6 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022995

Date Collected:

06/30/15 07:30

Collected By:

Client

Date Received:

06/30/15 16:20

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
6.132								
BACTI								
MICROBIOLOGY	1,023	0.2214		1.20	Kar abada			245
Fecal Coliform	<2	/100mL	2	1	SM 9222D		17:30	
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:12	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/01	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	12:14	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:20	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:31	JCL
Nitrogen, Total Kjeldahl	0.39	mg/L	.25	1	EPA 351.2	07/02	16:47	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	5.6	mg/L	1	1	SM5310 C	07/01	19:28	ALD
RESIDUES								
Solids, Total Dissolved	44	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/02	13:00	HRG

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M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022995

Date Collected:

06/30/15 07:30

Collected By:

Client

20000000000000

ctient

Date Received:

06/30/15 16:20

PWSID: 3130843

Sample Desc: WA-6 Surface

Result

Unit

Rep

Limit

Dilutn Factor

Procedure

Test Test

Date

Time Analyst

COMMENTS

02

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.

The total coliform sample was placed in the incubator on 06/30/15

at 17:25.

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Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022996

Date Collected:

06/30/15 07:30

Collected By:

Client

Sample Desc: WA-6 Mid-Depth

Date Received:

06/30/15 16:20

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY								-000000
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:12	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/01	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	12:29	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:23	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:34	JCL
Nitrogen, Total Kjeldahl	0.29	mg/L	.25	1	EPA 351.2	07/01	13:39	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	5.7	mg/l	1	1	SM5310 C	07/01	19:44	ALD
RESIDUES		34						
Solids, Total Dissolved	53	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	4	mg/L	1	1	SM 2320 B	07/02	13:00	HRG

COMMENTS

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.

Distribution of Reports:

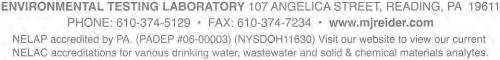
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 07/13/15

Lab ID:

3157-15-0022997

Date Collected:

06/30/15 07:30

Collected By:

Client

Sample Desc: WA-6 Deep

Date Received:

06/30/15 16:20

PWSID: 3130843			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	07/01	10:12	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	07/01	12:35	HRG
NITROGENS		1,000						
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	12:43	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:23	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:35	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	07/01	13:40	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.4	mg/L	1	1	SM5310 C	07/01	20:17	ALD
RESIDUES								
Solids, Total Dissolved	60	mg/L	5	1	SM 2540C	07/01	12:55	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS						,		
Alkalinity, Total to pH 4.5	4	mg/L	1	1	SM 2320 B	07/02	13:15	HRG
	4		1	1	SM 2320 B	07/02	13:15	HRG

COMMENTS

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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Richard Wheeler

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Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0022998

Date Collected:

06/30/15 07:55

Collected By:

Client

Sample Desc: WA-7 Surface

Date Received:

06/30/15 16:20

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	06/30	17:30	RES
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/01	11:25	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:15	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	1 Table 1 Table 1	12:55	HRG
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	07/01	12:35	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	12:58	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:24	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:36	JCL
Nitrogen, Total Kjeldahl	0.40	mg/L	.25	1	EPA 351.2	07/02	16:50	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.1	mg/L	1	1	SM5310 C	07/01	20:34	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	07/01	13:25	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/02	13:15	HRG

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Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

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M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 07/13/15

Lab ID:

3157-15-0022998

Date Collected:

06/30/15 07:55

Collected By:

Client

Sample Desc: WA-7 Surface

Date Received:

06/30/15 16:20

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test Tes

Time A

Analyst

COMMENTS

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 06/30/15 at 17:25.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-7 Mid-Depth

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 07/13/15

Lab ID:

3157-15-0022999

Date Collected:

06/30/15 07:55

Collected By:

Client

Date Received:

06/30/15 16:20

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY	A							
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/01	10:15	HRG
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/01	12:35	HRG
NITROGENS		177.2						
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	13:12	JCL
Nitrogen, Nitrate	0.06	mg/L	.05	1	EPA 353.2	07/01	17:25	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:39	JCL
Nitrogen, Total Kjeldahl	0.34	mg/L	.25	1	EPA 351.2	07/02	16:51	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	6.8	mg/L	1	1	SM5310 C	07/01	20:51	ALD
RESIDUES								
Solids, Total Dissolved	52	mg/L	5	1	SM 2540C	07/01	13:25	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS		-50						
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	07/02	13:30	HRG

COMMENTS

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.

Distribution of Reports:

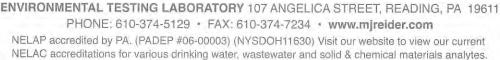
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1









M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-7 Deep

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/13/15

Lab ID:

3157-15-0023000

Date Collected:

06/30/15 07:55

Collected By:

Client

Date Received:

06/30/15 16:20

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY				7				
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	07/01	10:15	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/01	12:55	HRG
Phosphorus as P, Total	0.02	mg/l	.01	1	SM 4500P-E		12:40	HRG
NITROGENS		***						0.0010
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/01	13:27	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/01	17:28	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/01	15:40	JCL
Nitrogen, Total Kjeldahl	0.39	mg/L	.25	1	EPA 351.2	07/02	16:52	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/01	12:00	EMW
Total Organic Carbon	7.9	mg/L	1	1	SM5310 C	07/01	21:24	ALD
RESIDUES								
Solids, Total Dissolved	51	mg/L	5	1	SM 2540C	07/01	13:25	TMH
Solids, Total Suspended	5	mg/L	3	1	SM 2540D	07/01	12:55	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/02	13:30	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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COFC.PRT Page: 1

Chain of Custody

Account:	3157 Work Order:	006224	Project Leader: rxw	No: 258469
Customer:	David Wertz	Order Resertheron: Marcer Vesevior		
Address:	Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Arlington VA 22201	Ste. 600		
Phone:	703-387-5516 Ext:	Total Sampling Time	me (hours):	Bottle Prep by:
Samplers:	X	Laboratory Receipt Temp: Approve	Deg C.	If Temp Unacceptable, On Ice? (y) N
	Desc: WA-1 Surf		Matrix:	Matrix: o Date: 6/30/15
nh3-n,	tkn, alk, tds, tss, po4-p, toc,	00,	X X X	Pt nh3 p w/ H2SO4 (pH<2); 8oz Alk p w/ Cool to 6 C;
fc, tc	no3-n, d-po4-p, o-po4, bod,		D - 1 X L bod E - 1 X Pt no3 F - 1 X 250mlm	<pre>L bod p w/ Cool to 6 C; Pt no3no2 p w/ Cool to 6 C; 250mlMicro p w/ Sterile/Na2S2O3;</pre>
Sample No:	2 Desc: WA-2 Surface		Matrix: o	o Date: 6/50/15
nh3-n,	tkn, alk, tds, tss, po4-p, toc,	00,	 	Pt nh3 p w/ H2SO4(pH<2); 8oz Alk p w/ Cool to 6 C; 2vamberros c w/ H3DO4/zero headsnace:
fc, to	no3-n, d-po4-p, o-po4, bod,		**	L bod p w/ Cool to 6 C; Pt no3no2 p w/ Cool to 6 C; 250mlMicro p w/ Sterile/Na2S2O3;
Sample No:	3 Desc: WA-2 Mid-Depth	th	Matrix:	o Date: 6/30/15
nh3-n,	tkn, alk, tds, tss, po4-p,	toc	 - 1 - 1 X X	X Pt nh3 p w/ H2SO4(pH<2); X 8oz Alk p w/ Cool to 6 C;
no2-n,	no3-n, d-po4-p, o-po4, bod,		C - 1 X 2xambe D - 1 X L bod] E - 1 X Pt no3	2xambervoa g w/ H3PO4/zero headspace; L bod p w/ Cool to 6 C; Pt no3no2 p w/ Cool to 6 C;
				7
Relinquished by:	ned by: Norm	Received by: Ba, RM	Received for laboratory by:	South And South
Date:	30 15 Time: 1500		Date: 6-30-18	Time: 1620

Sample entered by:

Chain of Custody

Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201	Remarks:	
Phone: 703-387-5516 Ext: Samplers: WACK	Total Sampling Time (hours): Laboratory Receipt Temp: Deg C. If Te Approved By: 35/1	If Temp Unacceptable, On Ice? (y N
Sample No: 4 Desc: WA-2 Deep		-
nh3-n, tkn, alk, tds, tss, po4-p, toc,	1 1 1 1 X X	Pt nh3 p w/ H2SO4 (pH<2); 8oz Alk p w/ Cool to 6 C;
no2-n, no3-n, d-po4-p, o-po4, bod,	C - 1 X 2xam D - 1 X L bo E - 1 X Pt n	<pre>2xambervoa g w/ H3PO4/zero headspace; L bod p w/ Cool to 6 C; Pt no3no2 p w/ Cool to 6 C;</pre>
Sample No: 5 Desc: WA-3 Surface	Matrix:	o Date: 1/30/15
nh3-n, tkn, alk, tds, tss, po4-p, toc,	1 1 X	Pt nh3 p w/ H2SO4 (pH<2);
W 7	B - 1 X 2xam	X 8oz Alk p w/ Cool to 6 C; X 2xambervog g w/ H3PO4/zero headspace; Y 1 bod p w/ Cool to 6 C;
	1 1 1 1	X Pt no3no2 p w/ Cool to 6 C; X 250mlMicro p w/ Sterile/Na2S2O3;
Sample No: 6 Desc: WA-4 Surface	Matrix:	o Date: 6/30/18
nh3-n, tkn, alk, tds, tss, po4-p, toc,	1 1 1 1	Pt nh3 p w/ H2SO4 (pH<2);
W.		8oz Alk p w/ Cool to 6 C; 2xambervoa g w/ H3PO4/zero headspace;
fo, to,	E - 1 X Pt n F - 1 X 250m	Pt no3no2 p w/ Cool to 6 C; 250mlMicro p w/ Sterile/Na2S2O3;
2		
Received by:	Received for laboratory by:	
0/2/2	1	

Sample entered by:

COFC.PRT
Page: 3

Chain of Custody

Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201	Remarks:	
Phone: 703-387-5516 Ext: Samplers: UACIK	Total Sampling Time (hours): Laboratory Receipt Temp: 8 Deg C. If Temp Unach Approved By: 356	If Temp Unacceptable, On Ice? (y) N
Sample No: 7 Desc: WA-5 Surface		Matrix: o Date: 6/36/15
nh3-n, tkn, alk, tds, tss, po4-p, toc,	< X X	Pt nh3 p w/ H2SO4 (pH<2); 8oz Alk p w/ Cool to 6 0;
no2-n, no3-n, d-po4-p, o-po4, bod	D - 1 x 2xambervoa D - 1 x L bod p w/ E - 1 x Pt no3no2 I F - 1 x 250mlMicro	x the pw/cool to 6 C; X I be pw/cool to 6 C; X Pt no3no2 pw/cool to 6 C; X 250mlMicro pw/sterile/Na2s203;
Sample No: 8 Desc: WA-6 Surface	Matrix: o	Date: 6/30/) Time: 0730
nh3-n, tkn, alk, tds, tss, po4-p, toc, N no2-n, no3-n, d-po4-p, o-po4, bod, fc, ta	A - 1 X Pt nh3 p w B - 1 X 8oz Alk p v C - 1 X 2xambervoa D - 1 X L bod p w/ E - 1 X Pt no3no2 p F - 1 X 250mlMicro	X Pt nh3 p w/ H2SO4(pH<2); X 8oz Alk p w/ Cool to 6 C; X 2xambervoa g w/ H3PO4/zero headspace; X L bod p w/ Cool to 6 C; X Pt no3no2 p w/ Cool to 6 C; X 250mlMicro p w/ Sterile/Na2S2O3;
Sample No: 9 Desc: WA-6 Mid-Depth nh3-n, tkn, alk, tds, tss, po4-p, toc,	1 2	Date: 6/30/) Time: 6730/
mo3-n, d-po4-p	B - 1 X PC nn3 p W, B - 1 X 80z Alk p v C - 1 X 2xambervoa D - 1 X L bod p w/ E - 1 X Pt no3no2 p	X Pt nn3 p W/ H2SO4(pH<2); X Soz Alk p w/ Cool to 6 C; X 2xambervoa g w/ H3PO4/zero headspace; X L bod p w/ Cool to 6 C; X Pt no3no2 p w/ Cool to 6 C;

Sample entered by:

3157	Work Order Description: Walter Resevior	NO: 200469
Customer: David Wertz	Romarka.	
Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 6 Arlington VA 22201	600	
1000	Total Sampling Time (hours):	Bottle Prep by:
Samplers: WAC/K	Laboratory Receipt Temp: Deg C If Tem Approved By: 350	Temp Unacceptable, On Ice? (Y) N
Sample No: 10 Desc: WA-6 Deep	Matrix:	Matrix: o Date: 6/30/15
tkn, alk, tds, t) 	X Pt nh3 p w/ H2SO4(pH<2);
	ا نم د	lk p w/ Cool to 6 C;
no2-n, no3-n, d-po4-p, b-po4, bod	$D - 1 \times L \text{ bod}$ $E - 1 \times Pt \text{ no}$	x L bod p w/ Cool to 6 C; X L bod p w/ Cool to 6 C; X Pt no3no2 p w/ Cool to 6 C;
Sample No: 11 Desc: WA-7 Surface	Matrix:	o Date: 6/30/15
nh3-n, tkn, alk, tds, tss, po4-p, toc,	ı P X	Pt nh3 p w/ H2SO4 (pH<2);
an in	$B - 1 \times 8oz A$ $C - 1 \times 2xamb$	8oz Alk p w/ Cool to 6 C; 2xambervoa g w/ H3PO4/zero headspace;
no2-n, no3-n, d-po4-p, o-po4, bod	 	I bod p w/ Cool to 6 C; Pt no3no2 p w/ Cool to 6 C;
fc, to	1 1 1	250mlMicro p w/ Sterile/Na2S203;
Sample No: 12 Desc: WA-7 Mid-Depth	Matrix: o	
nh3-n, tkn, alk, tds, tss, po4-p, toc,	- 1 X	Pt nh3 p w/ H2SO4(pH<2);
	1 1 2 12 8 18	8oz Alk p w/ Cool to 6 C;
no2-n, no3-n, d-po4-p, o-po4, bod	H H	L bod p w/ Cool to 6 C;
T	į H	X Pt no3no2 p w/ Cool to 6 C;
Relinquished by Rece	Received by: By Man Received for laboratory by:	by: My My
Date: 6 30 15 Time: 500	Date: 6.30-10	Time: 1620

Sample entered by:

LABALY

COFC.PRT Page: 5

Chain of Custody

Account: 3157 Work Order: 006224 Work Order Descript Customer: David Wertz	ion:	No: 258469
Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201	Remarks:	d) + + + + 1) d d d d d d d d d d d d d d d d d d
703-387-5516 Ext: WACK	Labo	le, On Ice? (x) N
Sample No: 13 Desc: WA-7 Deep nh3-n, tkn, alk, tds, tss, po4-p, toc, M no2-n, no3-n, d-po4-p, o-po4, body	Matrix: o A - 1 X Pt nh3 p w/ H2SO4 B - 1 X 8oz Alk p w/ Cool t D - 1 X L bod p w/ Cool t E - 1 X Pt no3no2 p w/ Co	Matrix: o Date: 6/30/15 Time: 0/755 X Pt nh3 p w/ H2SO4 (pH<2); X 8oz Alk p w/ Cool to 6 C; X 2xambervoa g w/ H3PO4/zero headspace; X L bod p w/ Cool to 6 C; X Pt no3no2 p w/ Cool to 6 C;
Relinquished by: Time: 1500 Received by:	By Mad Received for laboratory b	Time: 1000
		Sample entered by:



M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-1 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 07/31/15

Lab ID: 3157-15-0028764

3131 13 0020104

Date Collected: 0 Collected By: C

07/22/15 09:25 Client

Date Received:

07/22/15 17:40

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	6	/100mL	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	2000	mpn/100ml	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	06:20	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:18	JCL
Nitrogen, Nitrite	<.05	mg/L	. 05	1	EPA 353.2	07/23	15:34	JCL
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	07/27	15:32	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.2	mg/L	1	1	SM5310 C	07/27	10:24	ALD
RESIDUES								
Solids, Total Dissolved	64	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/27	12:00	HRG

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Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2









M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028764

Date Collected:

07/22/15 09:25

Collected By:

Client

Sample Desc: WA-1 Surface

Date Received:

07/22/15 17:40

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test Test

Analyst

COMMENTS

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

received at the laboratory.

02 The total coliform sample was placed in the incubator on 07/22/15

at 18:50.

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Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028765

Date Collected:

07/22/15 07:55

Collected By:

Client

Sample Desc: WA-2 Surface

Date Received:

07/22/15 17:40

PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	06:35	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:19	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:37	JCL
Nitrogen, Total Kjeldahl	0.68	mg/L	.25	1	EPA 351.2	07/27	15:35	JCL
OTHER								
Biochemical Oxygen Demand	3	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.4	mg/L	1	1	SM5310 C	07/27	10:43	ALD
RESIDUES								
Solids, Total Dissolved	57	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	6	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/27	12:00	HRG

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Reviewed and Approved by:

Dichard Uhaalar

Page 1 of 2









M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Sample Desc: WA-2 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028765

Date Collected:

07/22/15 07:55

Collected By:

Client

Date Received:

07/22/15 17:40

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure I

Test Test

ne Analyst

COMMENTS

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 07/22/15 at 18:50.

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Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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





M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 07/

07/31/15

Lab ID:

3157-15-0028766

Date Collected:

07/22/15 07:35

Collected By:

Client

Sample Desc: WA-2 Mid-Depth

Date Received:

07/22/15 17:40

PWSID: 3130843			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	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:15	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	06:49	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:22	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:38	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	07/27	15:36	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	6.7	mg/L	1	1	SM5310 C	07/27	11:14	ALD
RESIDUES		77						
Solids, Total Dissolved	60	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	4	mg/L	1	1	SM 2320 B	07/27	12:15	HRG

COMMENTS

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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Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028767

Date Collected:

07/22/15 07:35

Collected By:

Client

Sample Desc: WA-2 Deep

Date Received:

07/22/15 17:40

PWSID: 3130843			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	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:15	HRG
Phosphorus as P, Total	0.04	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS		2:37						
Nitrogen, Ammonia	0.10	mg/L	.05	1	D6919-03	07/23	11:56	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:23	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:39	JCL
Nitrogen, Total Kjeldahl	0.51	mg/L	.25	1	EPA 351.2	07/27	15:37	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.9	mg/l	1	1	SM5310 C	07/27	11:32	ALD
RESIDUES								
Solids, Total Dissolved	82	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	07/27	12:15	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-3 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028768

Date Collected:

07/22/15 09:40

Collected By:

Client

Date Received:

07/22/15 17:40

24700/7				621		-		
PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	11	/100ml	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.04	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	. 05	1	SM 4500P-E	07/28	11:15	HRG
Phosphorus as P, Total	0.04	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	. 05	1	D6919-03	07/23	12:11	JCL
Nitrogen, Nitrate	0.13	mg/L	.05	1	EPA 353.2	07/23	17:24	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:40	JCL
Nitrogen, Total Kjeldahl	0.33	mg/L	.25	1	EPA 351.2	07/27	15:38	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	8.1	mg/L	1	1	SM5310 C	07/27	11:50	ALD
RESIDUES								
Solids, Total Dissolved	99	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	07/27	12:15	HRG

Distribution of Reports:

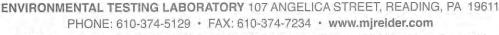
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028768

Date Collected:

07/22/15 09:40

Collected By:

Client

Sample Desc: WA-3 Surface

Date Received:

07/22/15 17:40

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test Test

Date

Time Analyst

COMMENTS

02

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.

The total coliform sample was placed in the incubator on 07/22/15

at 18:50.

Distribution of Reports:

Gregory Wacik - USACE

(Beltzville Dam)

Reviewed and Approved by:

Dichard Uhaala

Page 2 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-4 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028769

Date Collected:

07/22/15 10:00

Collected By:

Client

Date Received:

07/22/15 17:40

12-14-		Rep	Dilutn		Test	Test	E it.
Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
130	/100mL	2	1	SM 9222D	07/22	19:00	TNS
>2400	mpn/100mL	1	1	SM 9223B	07/23	13:00	PLW
<.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
<.05	mg/L	.05	1	SM 4500P-E	07/28	11:15	HRG
0.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
<.05	mg/L	.05	1	D6919-03	07/23	12:25	JCL
0.06	mg/L	.05	1	EPA 353.2	07/23	17:25	JCL
<.05	mg/L	. 05	1	EPA 353.2	07/23	15:41	JCL
0.34	mg/L	.25	1	EPA 351.2	07/27	15:39	JCL
<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
5.9	mg/L	1	1	SM5310 C	07/27	12:07	ALD
87	mg/L	5	1	SM 2540C	07/28	14:05	TMH
15	mg/L	3	1	SM 2540D	07/28	14:05	TMH
8	mg/L	1	1	SM 2320 B	07/27	12:30	HRG
	>2400 <.01 <.05 0.01 <.05 0.06 <.05 0.34 <2 5.9 87 15	130 /100ml >2400 mpn/100ml <.01 mg/l <.05 mg/l 0.01 mg/l <.05 mg/l 0.06 mg/l <.05 mg/l 0.34 mg/l <2 mg/l 5.9 mg/l mg/l mg/l mg/l	Result Unit Limit	Result	Result	Result Unit Limit Factor Procedure Date	Result Unit Limit Factor Procedure Date Time

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2







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

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028769

Date Collected:

07/22/15 10:00

Collected By:

Client

Sample Desc: WA-4 Surface

Date Received:

07/22/15 17:40

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure Date

Test Test

Time Analyst

COMMENTS

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

The total coliform sample was placed in the incubator on 07/22/15 02

at 18:50.

Distribution of Reports:

Gregory Wacik - USACE

(Beltzville Dam)

Reviewed and Approved by:

Page 2 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 07/31/15

Lab ID:

3157-15-0028770

Date Collected:

07/22/15 10:15

Collected By:

Client

Sample Desc: WA-5 Surface

Date Received:

07/22/15 17:40

PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
	7							
BACTI								
MICROBIOLOGY								
Fecal Coliform	8	/100mL	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	2400	mpn/100ml	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:20	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	12:40	JCL
Nitrogen, Nitrate	<.05	mg/l	.05	1	EPA 353.2	07/23	17:26	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:42	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	07/27	15:40	JCL
OTHER						2.40		
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	4.7	mg/L	1	1	sm5310 c	07/27	12:24	ALD
RESIDUES		24						
Solids, Total Dissolved	65	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS		4,						
Alkalinity, Total to pH 4.5	3	mg/l	1	1	SM 2320 B	07/27	12:30	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Page 1 of 2







M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028770

Date Collected:

07/22/15 10:15

Collected By:

Client

Sample Desc: WA-5 Surface

Date Received:

07/22/15 17:40

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test Test

COMMENTS

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

02 The total coliform sample was placed in the incubator on 07/22/15

at 18:50.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 2 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028771

Date Collected:

07/22/15 08:15

Collected By:

Client

Sample Desc: WA-6 Surface

Date Received:

07/22/15 17:40

PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
	Resuct	Unit	Limit					Anatyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	11:20	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	12:54	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:27	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:43	JCL
Nitrogen, Total Kjeldahl	0.52	mg/L	.25	1	EPA 351.2	07/27	15:41	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.3	mg/L	1	1	SM5310 C	07/27	12:42	ALD
RESIDUES						1.77		
Solids, Total Dissolved	62	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/27	12:45	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2







M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Sample Desc: WA-6 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028771

Date Collected:

07/22/15 08:15

Collected By:

Client

Date Received:

07/22/15 17:40

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test Test

Date

Time Analyst

COMMENTS

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 07/22/15

at 18:50.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Tichand Ilhaalas

Page 2 of 2





M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028772

Date Collected:

07/22/15 08:15

Collected By:

Client

Sample Desc: WA-6 Mid-Depth

Date Received:

07/22/15 17:40

PWSID: 3130843			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	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:00	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	13:09	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:29	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:46	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/27	15:44	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	6.6	mg/L	1	1	SM5310 C	07/27	12:59	ALD
RESIDUES								
Solids, Total Dissolved	72	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	4	mg/L	1	1	SM 2320 B	07/27	12:45	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-6 Deep

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028773

Date Collected:

07/22/15 08:15

Collected By:

Client

Date Received:

07/22/15 17:40

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	07/23	14:37	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:05	HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	07/27	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	13:24	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:30	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:47	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	.25	1	EPA 351.2	07/27	15:45	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.7	mg/L	1	1	SM5310 C	07/27	13:34	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	07/28	14:05	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:05	TMH
TITRATIONS		26,40						
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/27	12:45	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028774

Date Collected:

07/22/15 08:30

Collected By:

Client

Sample Desc: WA-7 Surface

Date Received:

07/22/15 17:40

PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	07/22	19:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	07/23	13:00	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:46	ALD
Phosphorus as P, Dissolved	<.05	mg/L	. 05	1	SM 4500P-E			HRG
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	07/27	14:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	13:38	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	07/23	17:31	JCL
Nitrogen, Nitrite	<.05	mg/L	. 05	1	EPA 353.2	07/23	15:48	JCL
Nitrogen, Total Kjeldahl	0.39	mg/L	.25	1	EPA 351.2	07/27	15:46	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.0	mg/L	1	1	SM5310 C	07/27	15:12	ALD
RESIDUES								
Solids, Total Dissolved	76	mg/L	5	1	SM 2540C	07/28	14:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/27	13:00	HRG

Distribution of Reports:

Gregory Wacik - USACE

(Beltzville Dam)

Reviewed and Approved by:

Dichard Uheel or

Page 1 of 2







M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028774

Date Collected:

07/22/15 08:30

Collected By:

Client

Sample Desc: WA-7 Surface

Date Received:

07/22/15 17:40

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test Test

Time Analyst

COMMENTS

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 07/22/15 at 18:50.

Distribution of Reports: Gregory Wacik - USACE

(Beltzville Dam)

Reviewed and Approved by:

Diales and Illes at law

Page 2 of 2

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

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M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028775

Date Collected:

07/22/15 08:30

Collected By:

Client

Sample Desc: WA-7 Mid-Depth

Date Received:

07/22/15 17:40

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY	7000000000							
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/23	14:46	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:05	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/27	14:10	HRG
NITROGENS		-,						
Nitrogen, Ammonia	<.05	mg/L	. 05	1	D6919-03	07/23	13:53	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	07/23	17:32	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:51	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	07/27	15:48	JCL
OTHER		451.5						
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	8.0	mg/L	1	1	sm5310 c	07/27	16:04	ALD
RESIDUES								
Solids, Total Dissolved	62	mg/L	5	1	SM 2540C	07/28	14:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:35	TMH
TITRATIONS						200		
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	07/27	13:00	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

07/31/15

Lab ID:

3157-15-0028776

Date Collected:

07/22/15 08:50

Collected By:

Date Received:

Client

corrected by

07/22/15 17:40

Sample Desc: WA-7 Deep

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	07/23	14:46	ALD
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/28	12:05	HRG
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	07/27	14:10	HRG
NITROGENS							171745	
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/23	14:37	JCL
Nitrogen, Nitrate	0.06	mg/L	.05	1	EPA 353.2	07/23	17:35	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/23	15:51	JCL
Nitrogen, Total Kjeldahl	0.34	mg/L	.25	1	EPA 351.2	07/27	15:49	JCL
OTHER		28.3				7.7-		15.55
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/23	12:05	EMW
Total Organic Carbon	7.9	mg/L	1	1	SM5310 C	07/27	16:38	ALD
RESIDUES					2300010.0	3.7-	19,00	(188
Solids, Total Dissolved	63	mg/L	5	1	SM 2540C	07/28	14:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/28	14:35	TMH
TITRATIONS		0,			200 50.055	-,/		
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	07/27	13:15	HRG
						Co. They		

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheele

Page 1 of 1





M. J. REIDER ASSOCIATES, INC.

Chain of Custody

Project Leader: rxw Work Order: 006224 Work Order Description: Walter Resevior

Remarks:

260279 No:

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

Arlington VA 22201

703-387-5516 Phone:

Samplers:

AC

Total Sampling Time (hours):

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

Bottle Prep by:

Desc: WA-1 Surface Н Sample No:

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

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

Sample No:

Desc: WA-2 Surface

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

Desc: WA-2 Mid-Depth Sample No:

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

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

Date: Matrix: o

Time:

5260 54

7/22/15

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

Date:

Time: Matrix: o

オーカー ランド

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

Date:

Time:

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

Received for laboratory by: how Received by: Mune

Sample entered by:

7876k

Relinquished by:

Date: 7/22/19

Time: 1530

Chain of Custody

LXW Project Leader: Work Order Description: Walter Resevior Remarks: Work Order: 006224 David Wertz 3157 Customer: Account:

No: 260279

Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201 703-387-5516 Phone: Samplers: Address:

Bottle Prep by: Total Sampling Time (hours):

Approved By: Laboratory Receipt Temp:

Z Deg C. If Temp Unacceptable, On Ice? (Y N Pro:

Desc: WA-2 Deep 4 Sample No:

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

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

Desc: WA-3 Surface 2 Sample No:

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

nh3-n, tkn, alk, tds, tss, po4-p, toc, Desc: WA-4 Surface 9 Sample No:

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

NAP

A - 1 X Pt nh3 p w/ H2SO4(pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C; A - 1 X Pt nh3 p w/ H2SO4(pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3; A - 1 X Pt nh3 p w/ H2SO4(pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3; 7/25/15 7/22/15 1000 Time: Time: Date: Date: Date: Time: 0 0 Matrix: o Matrix: Matrix:

Received for laboratory by:

Received by:

Date: 7

Time: 1530 Date: 7/22/1

Relinquished by:

Sample entered by:

M. J. REIDER ASSOCIATES, INC.

Chain of Custody

COFC. PRT

Page:

Work Order: 006224 Work Order Description: Walter Resevior

LXM Project Leader:

260279 No:

Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201 50AC 703-387-5516 David Wertz

L Deg C. If Temp Unacceptable, on Ice? (y N Bottle Prep by: Approved By: Total Sampling Time (hours): Laboratory Receipt Temp: Remarks:

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

Sample No:

nh3-n, tkn, alk, tds, tss, po4-p, toc, Desc: WA-6 Surface œ

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

fo, tc, Sample No:

Desc: WA-6 Mid-Depth

0

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

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

A - 1 X Pt nh3 p w/ H2SO4 (pH-2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3; A - 1 X Pt nh3 p w/ H2SO4(pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3; 51/22/4 21/22/2 A - 1 X Pt nh3 p w/ H2SO4(pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C; 7/22/15 2180 Time: Time: Time: Date: Date: Date: 0 Matrix: o Matrix: o

> Received by: Relinquished by:

Date:

Received for laboratory by:

Sample entered by:

Date: 7/22 //S

06/24/15 4:28:05 PM

Chain of Custody

Project Leader: rxw

David Wertz 3157

> Customer: Address:

Account:

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

Tetra Tech (Beltzville Dam)

Work Order: 006224 P: Work Order Description: Walter Resevior

Remarks:

No: 260279

703-387-5516 Phone: Samplers:

WACI

Total Sampling Time (hours):

Approved By: Laboratory Receipt Temp:

Bottle Prep by:

Desc: WA-6 Deep 78/17 Sample No: 10

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

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

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

no2-n, no3-n, d-po4-p, 0-po4, fc, tc, Desc: WA-7 Mid-Depth Sample No: 12 nh3-n, tkn, alk, tds, tss, po4-p, toc,

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

Time: Date: Matrix:

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

7/122/15 0830 Date: 0 Matrix:

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

0830 Time: Date: Matrix: o

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

- 1 X 8oz Alk p w/ Cool to 6 C; - 1 X 2xambervoa g w/ H3PO4/zero headspace; - 1 X L bod p w/ Cool to 6 C; - 1 X Pt no3no2 p w/ Cool to 6 C; MMUDH

Received for laboratory by:

Sample entered by:

21/22/1

Date:

Time: /53 0

Received by://

Relinquished by:

Time: 1530

Date: 7/22/18

Sample entered by:



M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-1 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

08/28/15

Lab ID:

3157-15-0032784

Date Collected:

08/12/15 09:05

Collected By:

Client

Date Received:

08/12/15 16:30

Service delivery in the service of the service between							/	,
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI	-7-1-1-1-1							
MICROBIOLOGY								
Fecal Coliform	16	/100mL	2	1	SM 9222D	08/12	16:05	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY		0.00						
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:30	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18		HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E		13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	02:36	JCL
Nitrogen, Nitrate	0.08	mg/L	.05	1	EPA 353.2	08/13	16:54	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:39	JCL
Nitrogen, Total Kjeldahl	0.35	mg/L	.25	1	EPA 351.2	08/20	13:55	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	5.3	mg/L	1	1	SM5310 C	08/17	11:39	ALD
RESIDUES						200		
Solids, Total Dissolved	50	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	08/17	10:15	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2







M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Sample Desc: WA-1 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

08/28/15

Lab ID:

3157-15-0032784

Date Collected:

08/12/15 09:05

Collected By:

0/12/15

Client

Date Received:

08/12/15 16:30

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test Tes

ime Analyst

COMMENTS

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 placed in the incubator on 08/12/15 at

17:20

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

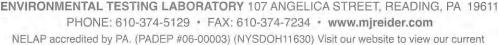
Reviewed and Approved by:

Richard Wheeler

Page 2 of 2

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M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-2 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

08/28/15

Lab ID:

3157-15-0032785

Date Collected:

08/12/15 07:30

Collected By:

Client

Date Received:

08/12/15 16:30

					100000000000000000000000000000000000000	2.2.7.192.752	/	7
PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI		TC1 TC TC TC TC TC						
MICROBIOLOGY								
Fecal Coliform	11	/100mL	2	1	SM 9222D	08/12	17:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	08/13		PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:30	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	100		HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	The Control	13:10	HRG
NITROGENS						***		
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	02:51	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	08/13		
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13		JCL
Nitrogen, Total Kjeldahl	0.38	mg/L	.25	1	EPA 351.2		13:58	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	5.9	mg/L	1	1	SM5310 C	10 to 3 to 4 to	12:28	
RESIDUES								
Solids, Total Dissolved	46	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS						220.76		
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	08/17	10:15	HRG

Distribution of Reports:

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Reviewed and Approved by:

Richard Wheeler

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Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

08/28/15

Lab ID:

3157-15-0032785

Date Collected:

08/12/15 07:30

Collected By:

Client

Sample Desc: WA-2 Surface

Date Received:

08/12/15 16:30

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test Test

Time

Analyst

COMMENTS

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

received at the laboratory.

02 The total coliform sample placed in the incubator on 08/12/15 at

17:20

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M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-2 Mid-Depth

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032786

Date Collected:

08/12/15 07:30

Collected By: Client

Date Received:

08/12/15 16:30

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
All the state of t								
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/13	14:30	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	03:05	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	08/13	16:58	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:42	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	. 25	1	EPA 351.2	08/20	13:59	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	6.0	mg/L	1	1	SM5310 C	08/17	12:44	ALD
RESIDUES								
Solids, Total Dissolved	52	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	08/17	10:15	HRG

COMMENTS

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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Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032787

Date Collected:

08/12/15 07:30

Collected By: Client

Sample Desc: WA-2 Deep

Date Received:

08/12/15 16:30

PWSID: 3130843			Rep	Dilutn		Test	Test	
TW315. 5150045	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:35	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	03:20	JCL
Nitrogen, Nitrate	0.11	mg/L	.05	1	EPA 353.2	08/13	16:59	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:43	JCL
Nitrogen, Total Kjeldahl	0.41	mg/L	.25	1	EPA 351.2	08/20	14:00	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	5.1	mg/l	1	1	SM5310 C	08/17	13:01	ALD
RESIDUES								
Solids, Total Dissolved	52	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	22	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/l	1	1	SM 2320 B	08/17	10:15	HRG

COMMENTS

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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Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032788

Date Collected:

08/12/15 09:30

Collected By:

Client

Sample Desc: WA-3 Surface

Date	Received:	

08/12/15 16:30

PWSID: 3130843	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
	A12-12-12-12-12-12-12-12-12-12-12-12-12-1			122222				
BACTI								
MICROBIOLOGY								
Fecal Coliform	94	/100mL	2	1	SM 9222D	08/12	17:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:35	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	03:34	JCL
Nitrogen, Nitrate	0.05	mg/L	.05	1	EPA 353.2	08/13	17:00	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:44	JCL
Nitrogen, Total Kjeldahl	0.46	mg/L	.25	1	EPA 351.2	08/20	14:01	JCL
OTHER		3.1						
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	7.7	mg/L	1	1	SM5310 C	08/17	13:18	ALD
RESIDUES								
Solids, Total Dissolved	68	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	6	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS		1.6						
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	08/17	10:15	HRG

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Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheele

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M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-3 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

--/--/

Lab ID:

3157-15-0032788

Date Collected:

08/12/15 09:30

Collected By:

Client

Result

Date Received:

08/12/15 16:30

PWSID: 3130843

Unit

Rep

Limit

Dilutn Factor

Procedure

Test Test

me Analyst

COMMENTS

02

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.

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

Distribution of Reports:

Gregory Wacik - USACE

(Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032789

Date Collected:

08/12/15 09:45

Collected By:

Client

Sample Desc: WA-4 Surface

Date Received:

08/12/15 16:30

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	1100	/100mL	2	1	SM 9222D	08/12	17:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:35	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	. 05	1	D6919-03	08/13	03:49	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	08/13	17:01	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:44	JCL
Nitrogen, Total Kjeldahl	0.44	mg/L	.25	1	EPA 351.2	08/20	14:03	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	8.0	mg/L	1	1	SM5310 C	08/17	13:52	ALD
RESIDUES								
Solids, Total Dissolved	59	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	08/17	10:30	HRG

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Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032789

Date Collected:

08/12/15 09:45

Collected By:

Client

Date Received:

08/12/15 16:30

PWSID: 3130843

Sample Desc: WA-4 Surface

Rep Limit

Dilutn Factor Test

Procedure

est Tes

Date

Time Analyst

COMMENTS

O1 The Ortho-phosphate was filtered and the dissolved phosphorous

was filtered and preserved w/ H2SO4 to pH <2 after the sample was

Result

received at the laboratory.

O2 The total coliform sample placed in the incubator on 08/12/15 at

17:20

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-5 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032790

Date Collected:

08/12/15 09:55

Collected By: Client

Date Received:

08/12/15 16:30

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI		717						
MICROBIOLOGY								
Fecal Coliform	1300	/100ml	2	1	SM 9222D	08/12	17:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:35	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS		3.				10		
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	04:33	JCL
Nitrogen, Nitrate	<.05	mg/L	. 05	1	EPA 353.2	08/13	17:02	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:45	JCL
Nitrogen, Total Kjeldahl	0.38	mg/L	.25	1	EPA 351.2	08/20	14:04	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	EMW
Total Organic Carbon	6.6	mg/L	1	1	SM5310 C	08/17	14:10	ALD
RESIDUES						-		
Solids, Total Dissolved	49	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	3	mg/L	1	1	SM 2320 B	08/17	10:30	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

....

3157-15-0032790

Date Collected:

Lab ID:

08/12/15 09:55

Collected By: Cl

Client

Sample Desc: WA-5 Surface

Date Received:

08/12/15 16:30

PWSID: 3130843

Result

Rep Limit Dilutn Factor Test

Procedure

Test Te

Time Analyst

COMMENTS

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 placed in the incubator on 08/12/15 at 17:20

Distribution of Reports: Gregory Wacik - USACE

(Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 2 of 2

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M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-6 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032791

Date Collected:

08/12/15 05:00 Client

Collected By:

Date Received:

08/12/15 16:30

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100ml	2	1	SM 9222D	08/12	17:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:35	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	04:47	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	08/13	17:03	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:46	JCL
Nitrogen, Total Kjeldahl	0.39	mg/L	.25	1	EPA 351.2	08/20	14:05	JCL
OTHER						14.6		
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	6.0	mg/L	2	1	SM5310 C	08/17	14:42	ALD
RESIDUES								
Solids, Total Dissolved	52	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS		-						
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	08/17	10:30	HRG
		91				20-1 27	10000	and c

Distribution of Reports:

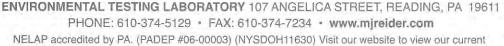
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by

Richard Wheeler

Page 1 of 2









M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032791

Date Collected:

08/12/15 05:00

Collected By:

Client

Date Received:

08/12/15 16:30

PWSID: 3130843

Sample Desc: WA-6 Surface

Result

Rep Unit Limit Dilutn Factor

Procedure

Test Te Date Ti

Time Ana

Analyst

COMMENTS

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 placed in the incubator on 08/12/15 at 17:20

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 2 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032792

Date Collected:

Date Received:

08/12/15 08:00

08/12/15 16:30

Collected By: Client

Sample Desc: WA-6 Mid-Depth

Result	Unit 	Limit	Factor	Procedure	Date	Time	Analyst
T. contamen			777777				
					The state of		
<.01	mg/L	.01	1	SM 4500P-E	08/13	14:35	HRG
<.05	mg/L	. 05	1	SM 4500P-E	08/18	13:45	HRG
<.01	mg/l	.01	1	SM 4500P-E	08/13	13:10	HRG
<.05	mg/L	. 05	1	D6919-03	08/13	05:02	JCL
<.05	mg/L	.05	1	EPA 353.2	08/13	17:06	JCL
<.05	mg/l	.05	1	EPA 353.2	08/13	15:49	JCL
0.29	mg/L	.25	1	EPA 351.2	08/20	14:06	JCL
<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
5.6	mg/L	1	1	SM5310 C	08/17	14:58	ALD
55	mg/L	5	1	SM 2540C	08/17	13:35	TMH
<3	mg/L	3	1	SM 2540D	08/17	13:35	TMH
5	mg/L	1	1	SM 2320 B	08/17	10:30	HRG
	<.05 <.01 <.05 <.05 <.05 <.05 0.29 <2 5.6 55 <3	<.05 mg/l <.01 mg/l <.05 mg/l <.05 mg/l <.05 mg/l <.05 mg/l 0.29 mg/l <2 mg/l 5.6 mg/l 55 mg/l <3 mg/l	<.05 mg/l .05 <.01 mg/l .01 <.05 mg/l .05 <.05 mg/l .05 <.05 mg/l .05 <.05 mg/l .05 0.29 mg/l .25 <2 mg/l .25 <2 mg/l .25 <3 mg/l .3	<.05 mg/L .05 1 <.01 mg/L .01 1 <.05 mg/L .05 1 <.05 mg/L .05 1 <.05 mg/L .05 1 <.05 mg/L .05 1 <.05 mg/L .25 1 <2 mg/L .25 1 <2 mg/L 2 1 5.6 mg/L 1 1 55 mg/L 5 1 <3 mg/L 3 1	<pre><.05</pre>	<pre><.05</pre>	<pre><.05 mg/L .05 1</pre>

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by

Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-6 Deep

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032793

Date Collected:

08/12/15 08:00

Collected By:

Client

Date Received:

08/12/15 16:30

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	08/13	14:40	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:50	HRG
Phosphorus as P, Total	0.09	mg/L	.01	1	SM 4500P-E	08/13	13:15	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	05:16	JCL
Nitrogen, Nitrate	0.10	mg/L	. 05	1	EPA 353.2	08/13	17:07	JCL
Nitrogen, Nitrite	<.05	mg/L	. 05	1	EPA 353.2	08/13	15:50	JCL
Nitrogen, Total Kjeldahl	0.54	mg/L	.25	1	EPA 351.2	08/20	14:07	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	5.2	mg/L	1	1	sm5310 c	08/17	16:17	ALD
RESIDUES								
Solids, Total Dissolved	57	mg/L	5	1	SM 2540C	08/17	13:35	TMH
Solids, Total Suspended	41	mg/L	3	1	SM 2540D	08/17	13:35	TMH
TITRATIONS		197						
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	08/17	10:30	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

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M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032794

Date Collected: 08/12/15 08:20

Collected By:

Client

Sample Desc: WA-7 Surface

Date Received:

08/12/15 16:30

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI		112 Y (2)23 (3)45			(
MICROBIOLOGY								
Fecal Coliform	2	/100ml	2	1	SM 9222D	08/12	17:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	08/13	11:50	PLW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/13	14:40	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:50	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	08/13	13:15	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/13	05:31	JCL
Nitrogen, Nitrate	<.05	mg/L	. 05	1	EPA 353.2	08/13	17:08	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:51	JCL
Nitrogen, Total Kjeldahl	0.45	mg/l	.25	1	EPA 351.2	08/24	16:03	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	6.0	mg/L	1	1	SM5310 C	08/17	16:49	ALD
RESIDUES								
Solids, Total Dissolved	54	mg/L	5	1	SM 2540C	08/17	14:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/17	14:00	TMH
TITRATIONS		957						
Alkalinity, Total to pH 4.5	5	mg/l	1	1	SM 2320 B	08/17	10:45	HRG

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M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032794

Date Collected:

08/12/15 08:20

Collected By:

Client

Sample Desc: WA-7 Surface

Date Received:

Procedure

08/12/15 16:30

PWSID: 3130843

Result

Dil

Rep

Limit

Dilutn Factor Test

Date

Test

Time Analyst

COMMENTS

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 placed in the incubator on 08/12/15 at 17:20

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Reviewed and Approved by:

Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-7 Mid-Depth

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032795

Date Collected:

08/12/15 08:20

Collected By:

Client

Date Received:

08/12/15 16:30

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

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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





M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-7 Mid-Depth

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032795

Date Collected:

08/12/15 08:20

Collected By:

Date Received:

Client

08/12/15 16:30

PWSID: 3130843

Result

Rep Limit

Unit

Dilutn Factor

Procedure

Test Test

Analyst

02

The Nitrate matrix spike was low indicating possible sample matrix interference.

Distribution of Reports:

Gregory Wacik - USACE

(Beltzville Dam)

Reviewed and Approved by:

Page 2 of 2

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M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 08/28/15

Lab ID:

3157-15-0032796

Date Collected:

08/12/15 08:20

Collected By:

Client

Sample Desc: WA-7 Deep

Date Received:

08/12/15 16:30

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	08/13	14:40	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	08/18	13:50	HRG
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	08/13	13:15	HRG
NITROGENS		3.50						
Nitrogen, Ammonia	<.05	mg/L	. 05	1	D6919-03	08/13	06:00	JCL
Nitrogen, Nitrate	0.11	mg/L	.05	1	EPA 353.2	08/13	17:11	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/13	15:55	JCL
Nitrogen, Total Kjeldahl	0.40	mg/L	.25	1	EPA 351.2	08/24	16:07	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/13	11:15	ALD
Total Organic Carbon	5.5	mg/L	1	1	sM5310 c	08/17	17:54	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	08/17	14:00	TMH
Solids, Total Suspended	12	mg/L	3	1	SM 2540D	08/17	14:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	08/17	10:45	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

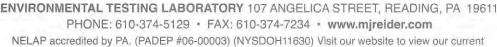
Reviewed and Approved by:

Richard Wheeler

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Chain of Custody

2	Account:	3157	Work Order: 006224 Work Order Descript	Work Order: 006224 Project Leader: Work Order Description: Walter Resevior	ect Leader: rxw	No: 261503
				Remarks:		
	Address:	Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201	(Beltzville Dam) Courthouse Rd., Ste. 600 7A 22201			
	Phone:	703-387-5516 E	Ext:	TOCAT Sampering True	Circuita).	DOCUME THE WAY
ζ.	Samplers:	X		Laboratory Receipt Temp: Approve	d By:	Temp Unacceptable, On Ice? (Y) N
A S	Sample No:	1 Desc:	WA-1 Surface		Matrix: o	1
ړ	nh3-n,	nh3-n, tkn, alk, tds, tss	tss, po4-p, toc,		- 1 : X	- !
		It was			B - 1 X 8oz C - 1 X 2xar	8oz Alk p w/ Cool to 6 C; 2xambervoa g w/ H3PO4/zero headspace;
	no2-n,	o3-n, d-po4-p,	o-po4, bod, A		4 K	L bod p w/ Cool to 6 C;
c I	fc, tc,	OFIS	VAN		1 1 1	250mlMicro p w/ Sterile/Na2S2O3;
S. S.	Sample No:	2 Desc:	WA-2 Surface		Matrix:	: o Date: 8/12/15
ل	nh3-n,	nh3-n, tkn, alk, tds, tss	tss, po4-p, toc,			Pt nh3 p w/ H2SO4 (pH<2); 8oz Alk p w/ Cool to 6 C;
	no2-n,	no2-n, no3-n, d-po4/p, o-	o-po4, bod, NA		, H	L to 6 C;
	fc, tc,	N N			1 1 1 1 1 1 1	250mlMicro p w/ Sterile/Na2S2O3;
Sample No:	ample No:	3 Desc:	WA-2 Mid-Depth		Matrix:	: o Date: 8/12/15
Ž	nh3-n,	tkn, alk, tds,	tss, po4-p, toc,		A - 1 X Pt 1 B - 1 X 80z	Pt nh3 p w/ H2SO4 (pH<2); 8oz Alk p w/ Cool to 6 C;
	no2-n	102-m 103-m 12-m04-m 10-m04-m	bod hod		- 1 X X	2xambervoa g w/ H3PO4/zero headspace;
		to the state of	ZXX		E - 1 X Pt 1	Pt no3no2 p w/ Cool to 6 C;
a	Relinquished by	ed by Tan	Received by:	Mandello	Benefited for Jahoratory by.	Thurse Stern
3	× ×	8/12/15	Time: (500)		Date: 9/12/15	1600 /
	Date: 01		me: Luc		Date: 0/0/-	Time:

Sample entered by: W

Chain of Custody

	CHATH OF CHECONY
Account: 3157 Work Order: 006224 P. Work Order Description: Walter Resevior	Project Leader: rxw No: 261503
Customer: David Wertz	Remarks:
Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201	
Phone: 703-387-5516 Ext:	cs): Bottle Prep by:
	Laboratory Receipt Temp: L Deg C. If Temp Unacceptable, On Ice? Approved By: PF
Sample No: 4 Desc: WA-2 Deep	
nh3-n, tkn, alk, tds, tss, po4-p, toc,	- 1 X
T. T.	××
no2-n, no3-n, d-po4-p, 6-po4, bod,	1 1 1 1
766 Sample No: 5 Desc: WA-3 Surface	Matrix: o Date: 8/12/15
nh3-n, tkn, alk, tds, tss, po4-p, toc,	- 1 X Pt nh3 p w/ H2SO4 (pH<2);
no2-n, no3-n, d-po4-p, o-po4, bod, A)	
fo, to, OES	1 1 X X
Sample No: 6 Desc: WA-4 Surface	Matrix: ο Date: 8/12/15 Time: 094Γ
nh3-n, tkn, alk, tds, tss, po4-p, toc,	
no2-n, no3-n, d-po4-p, o-po4, bod,	1 1 1
to, to, DES	<pre># - 1 x Pt no3noz p w/ coor to b C; F - 1 x 250mlMicro p w/ Sterile/Na2S2O3;</pre>
3	
Date: 8/12/15 / Time: 1500	Date: 8/12/15 Time: 1630

Sample entered by: NTC

COFC.PRT /S

Chain of Custody

		or the program of the state of	
Account:	3157 Work Order: 006224 Work Order Descript	: 006224 Project Leader: rxw Description: Walter Resevior	No: 261503
Customer:	David Wertz	Remarks:	
Address:	Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201		
phone.	703-387-5516 Evt.	Total Sampling Time (hours):	Bottle Prep by:
Samplers:	×	Laboratory Receipt Temp: L Deg C. If Temp Approved By: Deg C. If Temp	Temp Unacceptable, On Ice? (Y) N
Sample No:	7 Desc: WA-5 Surface	Matrix:	
nh3-n, tkn,	tkn, alk, tds, tss, po4-p, toc,	- - - -	Pt nh3 p w/ H2SO4 (pH<2);
53	A A	, , 11 XX	8oz Alk p w/ Cool to 6 C; 2xambervoa g w/ H3PO4/zero headspace;
no2-n,	no2-n, no3-n, d-po4'p, o-po4, bod,	D - 1 X L bod E - 1 X Pt no:	I bod p w/ Cool to 6 C; Pt no3no2 p w/ Cool to 6 C; 250mlWicro n w/ Sterile/Na25203:
	8 Desc: WA-6 Surface	Matrix: o	Date:
nh3-n, tkn,	tkn, alk, tds, tss, po4-p, toc,	- 1 X	X Pt nh3 p w/ H2SO4 (pH<2);
	Ta	1 1	2xambervoa q w/ H3PO4/zero headspace;
no2-n,	no3-n, d-po4-p, o-po4, bod,		X I bod p w/ Cool to 6 C; X Pt no3no2 p w/ Cool to 6 C;
fc, tc, OF	CO	- 1 X	250mlMicro p w/ Sterile/Na2S2O3;
Sample No:	9 Desc: WA-6 Mid-Depth	Matrix:	O Date: 8/12/15 Time: 0800
nh3-n, tkn,	tkn, alk, tds, tss, po4-p, toc,	A - 1 X Pt nh. B - 1 X 80z A	
no2-n,	no2-n, no3-n, d-po4-p, o-po4, bod,	1 1 1 1 X X	L bod p w/ Cool to 6 C;
	The Real Property of the Prope	1 	X Pt no3no2 p w/ Cool to 6 C;
Relinquished by C	ed by My Received by:	Muhal Stup Receive	ov: Muliel Storms
Date: 8	8/12/15 / Time: 1500	Date: 8/12/15	Time: 1630

Sample entered by:

Chain of Custody

	3157 Work Order: 006224 Work Order Descripti	Work Order: 006224 Project Leader: rxw Work Order Description: Walter Resevior	No: 261503
		Remarks:	
Address:	Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201	3	Rottle Bren hv.
Phone:	703-387-5516 Ext:	2 Deg C	Unacceptable, On Ice? /Y N
Samplers:	WACIK	Approved By:	α
3,743sample No:	ample No: 10 Desc: WA-6 Deep	Matrix: o Date:	1 - 1
1 1 1 1 1	2) k	- 1 X	w/ H2SO4 (pH<2);
nns-n, ckn,	ckii, aik, cds, css, pot-p, coc,	1 1	
no2-n,	no2-n, no3-n, d-p64-p, o-p64, bod, MA	$C - 1 \times 2x$ ambeı $D - 1 \times L$ bod L	2xambervoa g w/ $H3PO4/zero$ headspace; L bod p w/ Cool to 6 C;
		- 1 X	
27794 Sample No: 11	11 Desc: WA-7 Surface	Matrix: o	Date: 8/12/15
nh3-n, tkn,	tkn, alk, tds, tss, po4-p, toc,	- 1 X	Ĭ
35	F	$B - I \times 8oz Al$ $C - I \times 2xambe$	<pre>2xambervoa g w/ H3PO4/zero headspace;</pre>
no2-n, 1	no2-n, no3-n, d-po4-p, o-po4, bod, NA	4 K	w/ Cool to 6 C;
fc, tc, 005		F - 1 x 250mlM	250mlMicro p w/ Sterile/Na2S2O3;
27795 Sample No:	12 Desc: WA-7 Mid-Depth	Matrix: o	Date:
nh3-n	nh3-n tkn alk tds tss no4-n toc	1 1 ×	Time: 0820
and desired	Committee of the state of the s		8oz Alk p w/ Cool to 6 C;
no2-n	no3-n, d-po4-pc o-po4, bod,	 	L bod p w/ Cool to 6 C;
	V 1)	E - 1 X Pt no3i	Pt no3no2 p w/ Cool to 6 C;
Relinquished by:	ed by: Received by:	Muchel Shar	Muld Stronge
Date: 8/	8/12/15 Time: 1500	Date: 8/12/15	Time: /630

Sample entered by: WTC

M. J. REIDER ASSOCIATES, INC.

cofc.pri /5

Chain of Custody

Account:	3157 Work Order: 006224 P. Work Order Description: Walter Resevior David Wertz	Project Leader: rxw No: 261503
Address:	Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201	Total Sampling Time (hours): Bottle Prep by:
Phone: Samplers:	703-387-5516 Ext:	Laboratory Receipt Temp: Deg C. If Temp Unacceptable, On Ice? Y N Approved By:
======================================	: 13 Desc: WA-7 Deep	Sample No: 13 Desc: WA-7 Deep Matrix: o Date: $\frac{\delta/12/\sqrt{S}}{ASSO}$
nh3-n	nh3-n, tkn, alk, tds, tss, po4-p, toc,	1 1 H H K K
no2-n	no2-n, no3-n, d-po4-p, o-po4, bod,	××
1		, H
Relinquished by: Date: \$ //2//	shed by: Received by: \$ /12/15 Time: 500	Mull Att Received for laboratory by: Mill Atty

Sample entered by:



M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036157

Date Collected:

09/01/15 09:30

Collected By:

Client

Sample Desc: WA-1 Surface

Date Received:

09/01/15 17:50

PWSID: 3130843	25.00	49.42	Rep	Dilutn	E 19 (C. 14)	Test	Test	7.4
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI			777777					
MICROBIOLOGY	35.	4.22.5	121	45	Carl Sections	0.0,455	155	
Fecal Coliform	<2	/100mL	2	1	SM 9222D	09/01	18:30	PLW
Total Coliform	920	mpn/100ml	1	1	SM 9223B	09/02	12:55	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:35	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	14:50	JCL
Nitrogen, Nitrate	<.05	mg/L	. 05	1	EPA 353.2	09/02	14:53	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:40	JCL
Nitrogen, Total Kjeldahl	0.41	mg/L	. 25	1	EPA 351.2	09/03	13:58	JCL
OTHER								
Biochemical Oxygen Demand	3	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.7	mg/L	1	1	SM5310 C	09/03	12:27	ALD
RESIDUES								
Solids, Total Dissolved	68	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS		30.00						
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	09/08	14:30	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2







M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036157

Date Collected:

09/01/15 09:30

Collected By:

Client

Sample Desc: WA-1 Surface

Date Received:

09/01/15 17:50

PWSID: 3130843

Result

Rep Limit Dilutn

Procedure

Test Test
Date Til

Time Analyst

COMMENTS

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.

The total coliform sample was placed in the incubator on 09/01/15

at 18:30.

Distribution of Reports:

Gregory Wacik - USACE

(Beltzville Dam)

Reviewed and Approved by:

Dinband Uhaalan

Page 2 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036158

Date Collected:

09/01/15 07:15

Collected By:

Client

Sample Desc: WA-2 Surface

Date Received:

09/01/15 17:50

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	5	/100mL	2	1	SM 9222D	09/01	18:30	PLW
Total Coliform	1400	mpn/100ml	1	1	SM 9223B	09/02	12:55	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:00	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:35	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	15:04	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	14:53	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:42	JCL
Nitrogen, Total Kjeldahl	0.37	mg/L	.25	1	EPA 351.2	09/03	14:01	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.4	mg/L	1	1	SM5310 C	09/03	12:44	ALD
RESIDUES		3.3						
Solids, Total Dissolved	50	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	09/08	14:30	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2







M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036158

Date Collected:

09/01/15 07:15

Collected By:

Client

Sample Desc: WA-2 Surface

Date Received:

09/01/15 17:50

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure Date

Test Test

Time

Analyst

COMMENTS

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 09/01/15 at 18:30.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 2 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-2 Mid-Depth

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036159

Date Collected:

09/01/15 07:15

Collected By:

Client

Date Received:

09/01/15 17:50

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY	the last feet feet feet state and and and and							
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:35	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:00	HRG
NITROGENS		-,						
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	15:19	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	14:56	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:43	JCL
Nitrogen, Total Kjeldahl	0.34	mg/L	.25	1	EPA 351.2	09/03	14:02	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.1	mg/L	1	1	SM5310 C	09/03	13:00	ALD
RESIDUES								
Solids, Total Dissolved	54	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	09/08	14:30	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036160

Date Collected:

09/01/15 07:15

Collected By:

Client

Sample Desc: WA-2 Deep

Date Received:

09/01/15 17:50

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY					Y			
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	09/02	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:35	HRG
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	09/02	14:00	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	15:34	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	14:57	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:44	JCL
Nitrogen, Total Kjeldahl	0.51	mg/L	.25	1	EPA 351.2	09/03	14:03	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.6	mg/L	1	1	SM5310 C	09/03	14:04	ALD
RESIDUES								
Solids, Total Dissolved	62	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	12	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mq/L	1	1	SM 2320 B	09/08	14:45	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036161

Date Collected:

09/01/15 09:50

Collected By:

Client

Sample Desc: WA-3 Surface

Date Received:

09/01/15 17:50

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI	F 30 30 0F 20 0							
MICROBIOLOGY								
Fecal Coliform	28	/100ml	2	1	SM 9222D	09/01	18:30	PLW
Total Coliform	2000	mpn/100ml	1	1	SM 9223B	20.4000	12:55	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:35	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E		14:05	
NITROGENS		7						
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	15:48	JCL
Nitrogen, Nitrate	0.08	mg/L	.05	1	EPA 353.2	09/02	14:58	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	A . 60 . 1 . 1 . 1	09:45	
Nitrogen, Total Kjeldahl	0.37	mg/L	.25	1	EPA 351.2	09/03	14:04	JCL
OTHER		2.0						
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.4	mg/L	1	1	SM5310 C		14:38	
RESIDUES								
Solids, Total Dissolved	91	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS		17.0						
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	09/08	15:00	HRG

Distribution of Reports:

Gregory Wacik - USACE

(Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-3 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036161

Date Collected:

09/01/15 09:50

Collected By:

Client

Date Received:

09/01/15 17:50

PWSID: 3130843

Result

Rep Limit

Unit

Dilutn Factor

Procedure

Test Test

ime Analyst

COMMENTS

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 09/01/15

at 18:30.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 2 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036162

Date Collected:

09/01/15 10:30

Collected By:

Client

Sample Desc: WA-4 Surface

Date Received:

09/01/15 17:50

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	42	/100mL	2	1	SM 9222D	09/01	18:30	PLW
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	09/02	12:55	TNS
CHEMISTRY		2.0						
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:40	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E		14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	. 05	1	D6919-03	09/02	16:03	JCL
Nitrogen, Nitrate	0.08	mg/L	.05	1	EPA 353.2	10.00	14:59	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:46	JCL
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	09/03	14:05	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	3.1	mg/L	1	1	SM5310 C	09/03	14:53	ALD
RESIDUES								
Solids, Total Dissolved	77	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04		
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/L	1	1	SM 2320 B	09/08	15:00	HRG

Distribution of Reports:

Gregory Wacik - USACE

(Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2







M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036162

Date Collected:

09/01/15 10:30

Collected By:

Client

Sample Desc: WA-4 Surface

Date Received:

09/01/15 17:50

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test Test

Analyst

COMMENTS

02

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.

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

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 2 of 2









M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-5 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036163

Date Collected:

09/01/15 10:45

Collected By:

Client

Date Received:

09/01/15 17:50

PWSID: 3130843	D- sul t	115.54	Rep	Dilutn	Danielous	Test	Test	inaliza.
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	24	/100mL	2	1	SM 9222D	09/01	18:30	PLW
Total Coliform	1600	mpn/100ml	1	1	SM 9223B	09/02	12:55	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	09/02	15:05	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:40	HRG
Phosphorus as P, Total	0.01	mg/l	.01	1	SM 4500P-E	09/02	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	16:18	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	15:00	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:47	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	. 25	1	EPA 351.2	09/03	14:06	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	3.2	mg/L	1	1	SM5310 C	09/03	15:23	ALD
RESIDUES								
Solids, Total Dissolved	66	mg/L	5	1	SM 2540C	09/02	09:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	3	mg/L	1	1	SM 2320 B	09/08	15:00	HRG
i a difference	3	mg/L	1	1	SM 2320 B	09/08	15:00	HRG

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2









M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036163

Date Collected:

09/01/15 10:45

Collected By:

Client

Sample Desc: WA-5 Surface

Date Received:

09/01/15 17:50

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test

Analyst

COMMENTS

02

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.

The total coliform sample was placed in the incubator on 09/01/15

at 18:30.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam) Reviewed and Approved by:

Page 2 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036164

Date Collected:

09/01/15 08:00

Collected By:

Client

Sample Desc: WA-6 Surface

Date Received:

09/01/15 17:50

2		Rep	Dilutn	200.00	Test	Test	
Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
2	/100mL	2	1	SM 9222D	09/01	18:55	PLW
2400	mpn/100ml	1	1	SM 9223B	09/02	12:55	TNS
0.02	mg/L	.01	1	SM 4500P-E	09/02	15:10	HRG
<.05	mg/L	.05	1	SM 4500P-E	09/02	14:40	HRG
0.02	mg/L	.01	1	SM 4500P-E	09/02	14:05	HRG
	-						
<.05	mg/L	.05	1	D6919-03	09/02	16:32	JCL
<.05	mg/L	.05	1	EPA 353.2	09/02	15:01	JCL
<.05	mg/L	.05	1	EPA 353.2	09/02	09:48	JCL
0.41		.25	1	EPA 351.2	09/03	14:07	JCL
<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
5.2	20.	1	1	SM5310 C	09/03	16:10	ALD
	30						
74	mg/L	5	1	SM 2540C	09/02	10:30	ALD
3		3	1	SM 2540D	09/04	11:30	ALD
5	mg/L	1	1	SM 2320 B	09/08	15:00	HRG
	2400 0.02 <.05 0.02 <.05 <.05 <.05 0.41 <2 5.2 74 3	2 /100ml mpn/100ml 0.02 mg/l <.05 mg/l 0.02 mg/l <.05 mg/l <.05 mg/l <.05 mg/l <.105 mg/l <.105 mg/l <.205 mg/l 0.41 mg/l 74 mg/l 3 mg/l	Result Unit Limit 2 /100ml 2 / mpn/100ml 1 0.02 / mg/l .01 / .05	Result Unit Limit Factor 2	Result	Result Unit Limit Factor Procedure Date	Result Unit Limit Factor Procedure Date Time

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheele

Page 1 of 2







M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036164

Date Collected:

09/01/15 08:00

Collected By:

Client

Sample Desc: WA-6 Surface

Date Received:

09/01/15 17:50

PWSID: 3130843

Result

Rep Limit Dilutn Factor

Procedure

Test Test

ime Analyst

COMMENTS

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 09/01/15

at 18:30.

Distribution of Reports: Gregory Wacik - USACE

CE (Beltzville Dam)

Reviewed and Approved by:

Dishand Uhaalan

Page 2 of 2





M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036165

Date Collected:

09/01/15 08:00

Collected By:

Client

Sample Desc: WA-6 Mid-Depth

Date Received: 09/01/15 17:50

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	09/02	15:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:40	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:05	HRG
NITROGENS		3,						
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	16:47	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	15:04	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:51	JCL
Nitrogen, Total Kjeldahl	0.38	mg/L	.25	1	EPA 351.2	09/03	14:10	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.3	mg/L	1	1	SM5310 C	09/03	16:40	ALD
RESIDUES								
Solids, Total Dissolved	60	mg/L	5	1	SM 2540C	09/02	10:30	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	09/08	15:15	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Sample Desc: WA-6 Deep

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036166

Date Collected:

09/01/15 08:00

Collected By:

Client

Date Received:

09/01/15 17:50

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
1.000100		70						
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:40	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:05	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	17:01	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	15:05	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:52	JCL
Nitrogen, Total Kjeldahl	0.46	mg/L	.25	1	EPA 351.2	09/03	14:11	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.3	mg/L	1	1	SM5310 C	09/03	16:57	ALD
RESIDUES								
Solids, Total Dissolved	81	mg/L	5	1	SM 2540C	09/02	10:30	ALD
Solids, Total Suspended	7	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	09/08	15:15	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036167

Date Collected:

09/01/15 08:30

Collected By:

Client

Sample Desc: WA-7 Surface

Date Received:

09/01/15 17:50

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
	7							
BACTI								
MICROBIOLOGY								
Fecal Coliform	2	/100ml	2	1	SM 9222D	09/01	18:55	PLW
Total Coliform	1400	mpn/100ml	1	1	SM 9223B	09/02	12:55	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02	15:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:05	HRG
NITROGENS						-		
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	09/02	17:45	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	15:06	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:53	JCL
Nitrogen, Total Kjeldahl	0.46	mg/L	.25	1	EPA 351.2	09/03	14:12	JCL
OTHER		1.32.54						
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.5	mg/L	1	1	sM5310 c	09/03	17:13	ALD
RESIDUES								
Solids, Total Dissolved	69	mg/L	5	1	SM 2540C	09/02	10:30	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS		200						
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	09/08	15:15	HRG

Distribution of Reports:

Gregory Wacik - USACE

(Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 2







M.J. Reider Associates, Inc.

Unit



Attention: David Wertz

Sample Desc: WA-7 Surface

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report: 09/11/15

Lab ID:

3157-15-0036167

Date Collected:

09/01/15 08:30

09/01/15 17:50

Collected By:

Date Received:

Client

Procedure

PWSID: 3130843

Dilutn

Factor

Test

Date

Analyst

Limit

Rep

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.

Result

02 The total coliform sample was placed in the incubator on 09/01/15

at 18:30.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam) Reviewed and Approved by:

Page 2 of 2







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036168

Date Collected:

09/01/15 08:30

Collected By:

Client

Sample Desc: WA-7 Mid-Depth

Date Received:

09/01/15 17:50

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY			-					
COLORMETRIC								
	4.04	× × 1/1	04	4	ou /5005 5	00 /00	45.40	
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/02		HRG
Phosphorus as P, Dissolved	<.05	mg/L	. 05	1	SM 4500P-E	09/02	14:45	HRG
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/02	14:10	HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	18:00	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	15:07	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:56	JCL
Nitrogen, Total Kjeldahl	0.37	mg/L	.25	1	EPA 351.2	09/03	14:15	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.7	mg/L	1	1	SM5310 C	09/03	17:30	ALD
RESIDUES								
Solids, Total Dissolved	72	mg/L	5	1	SM 2540C	09/02	10:30	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	5	mg/L	1	1	SM 2320 B	09/08	15:30	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1







M.J. Reider Associates, Inc.



Attention: David Wertz

Reported To: Tetra Tech (Beltzville Dam)

1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Date of Report:

09/11/15

Lab ID:

3157-15-0036169

Date Collected:

09/01/15 09:55

Collected By:

Client

Sample Desc: WA-7 Deep

Date Received:

09/01/15 17:50

PWSID: 3130843			Rep	Dilutn		Test	Test	
	Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY	~~~~		72. 72.					-
COLORMETRIC								
Phosphate as P, Ortho	0.05	mg/L	.01	1	SM 4500P-E	09/02	15:10	HRG
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/02	14:45	HRG
Phosphorus as P, Total	0.09	mg/L	.01	1	SM 4500P-E	09/02		HRG
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/02	18:14	JCL
Nitrogen, Nitrate	<.05	mg/L	.05	1	EPA 353.2	09/02	15:10	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/02	09:57	JCL
Nitrogen, Total Kjeldahl	0.77	mg/L	.25	1	EPA 351.2	09/03	14:16	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/02	13:45	EMW
Total Organic Carbon	5.9	mg/L	1	1	SM5310 C	09/03	18:02	ALD
RESIDUES								
Solids, Total Dissolved	79	mg/L	5	1	SM 2540C	09/02	10:30	ALD
Solids, Total Suspended	64	mg/l	3	1	SM 2540D	09/04	11:30	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/l	1	1	SM 2320 B	09/08	15:30	HRG

COMMENTS

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.

Distribution of Reports:

Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

Page 1 of 1





Chain of Custody

Deg C. If Temp Unacceptable, On Ice () N Bottle Prep by: 262654 No: LXM Project Leader: Approved By: Total Sampling Time (hours): Laboratory Receipt Temp: Work Order: 006224 Work Order Description: Walter Resevior Remarks: 1320 North Courthouse Rd., Ste. 600 Tetra Tech (Beltzville Dam) Arlington VA 22201 703-387-5516 David Wertz Customer: Account: Phone: Address: Samplers:

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3; - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- 1 X 8oz Alk p w/ Cool to 6 C;
- 1 X 2xambervoa g w/ H3PO4/zero headspace;
- 1 X L bod p w/ Cool to 6 C;
- 1 X Pt no3no2 p w/ Cool to 6 C; A - 1 X Pt nh3 p w/ H2SO4(pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3; Time: Date: Time: Date: Time: Date: 0 Matrix: o Matrix: KAUDH NAP nh3-n, tkn, alk, tds, tss, po4-p, toc, nh3-n, tkn, alk, tds, tss, po4-p, toc, nh3-n, tkn, alk, tds, tss, po4-p, toc, Desc: WA-2 Mid-Depth NAP Desc: WA-1 Surface Desc: WA-2 Surface bod, MAN bod, no2-n, no3-n, d-po4-p, o-po4, no2-n, no3-n, d-po4-p, o-po4, d-po4-p,

no2-n, no3-n,

36158 Sample No:

NAN

Н

36/57 Sample No:

Received by Time: 345 Relinquished by:

NAP

Sample No:

Apm a-1-15 1630

Date:

Received for laboratory by (

Time:

Date: 9 . (- (5

Sample entered by:

3157

Account:

COFC.PRT Page:

Chain of Custody

Work Order Description: Walter Resevior Work Order: 006224

Project Leader: rxw

No: 262654

1320 North Courthouse Rd., Ste. 600 Tetra Tech (Beltzville Dam) Arlington VA 22201 703-387-5516 David Wertz Customer: Address: Phone:

Samplers:

CA If Temp Unacceptable, On Ice? Bottle Prep by: Deg Approved By: Total Sampling Time (hours): Laboratory Receipt Temp: Remarks:

Date: Time:

Matrix:

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

Date:

0

Matrix:

Time:

nh3-n, tkn, alk, tds, tss, po4-p, toc, Desc: WA-2 Deep 4 36/60 Sample No:

ARD poq' no2-n, no3-n, d-po4-p, o-po4,

WA-3 Surface Desc: MAR 36/6/ Sample No:

nh3-n, tkn, alk, tds, tss, po4-p, toc, d-po4-p, no3-n, to, MAY no2-n,

nh3-n, tkn, alk, tds, tss, po4-p, toc, NAP Desc: WA-4 Surface 9 36/63 sample No: fc,

N 2. d-po4-p, no2-n, no3-n, fc, tc,

Apm-9-1-15

your Lesies

Contoiner

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

Date: Time:

Matrix: o

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

Received for laboratory by: Whan

Received by:

Relinquished by:

Date:

Time: (750

Apm 9/1/15 1630

9-1-15

Date:

Sample entered by:

345

M. J. REIDER ASSOCIATES, INC.

Chain of Custody

Project Leader: rxw

No: 262654

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

Arlington VA 22201 703-387-5516 Phone:

Samplers:

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

Desc: WA-5 Surface 7

nh3-n, tkn, alk, tds, tss, po4-p, toc, 36/63 Sample No:

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

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

Date: Time:

Matrix:

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

A M U O M M

Date: Time:

X 2xambervoa g w/ H3PO4/zero headspace; X L bod p w/ Cool to 6 C;

MACOM

- 1 X Pt nh3 p w/ H2SO4 (pH<2); - 1 X 8oz Alk p w/ Cool to 6 C;

Matrix: o

Time: Date:

- 1 X 2xamber... - 1 X L bod p w/ Gool to b c, - 1 X Pt no3no2 p w/ Gool to 6 C;

Desc: WA-6 Surface œ Sample No:

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

Desc: WA-6 Mid-Depth no2-n, no3-n, d-po4-p, o-po4, bod Sample No: fc, tc

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

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

Received for laboratory by

Time:

Received by:

Relinquished by:,

Date:

Hour 9/1/12 1630

94-15

Sample entered by:

262654

No:

Account:

Chain of Custody

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Project Leader: rxw Work Order: 006224 Work Order Description: Walter Resevior

Remarks: 3157

1320 North Courthouse Rd., Ste. 600 Tetra Tech (Beltzville Dam) Arlington VA 22201 703-387-5516 David Wertz Customer: Address: Phone:

of if Temp Unacceptable, on Ice? Bottle Prep by: Deg C Approved By: Total Sampling Time (hours): Laboratory Receipt Temp:

いからい Date: Time: Matrix:

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

nh3-n, tkn, alk, tds, tss, po4-p, tog, no3-n, d-po4-p, o-po4, bod Desc: WA-6 Deep 36/66 Sample No: 10 no2-n,

Samplers:

WA-7 Surface Desc: 36/67 sample No: nh3-n, tkn, alk, tds, tss, po4-p, toc,

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

Desc: WA-7 Mid-Depth 36/68 Sample No: 12 nh3-n, tkn, alk, tds, tss, po4-p, toc,

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

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

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

Date: Time:

0830

Date: Time:

Matrix:

Received for laboratory by

Received by:

Relinquished by:/

Date:

Jan 1110 120 120以 Time: 348

Date:

Sample entered by:

COFC.PRT Page:

Chain of Custody

3157

Account: Customer:

Work Order: 006224 Work Order Description: Walter Resevior

Remarks:

Project Leader: rxw

No: 262654

Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201 703-387-5516 David Wertz

Address:

Phone: Samplers:

Deg CALF Temp Unacceptable, on Ice Bottle Prep by: Approved By: Total Sampling Time (hours): Laboratory Receipt Temp:

Matrix:

Date: Time:

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

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

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

Desc: WA-7 Deep

Date:

Received for laboratory by: 9-1-15

Time: (750

Sample entered by:

For a/10 (840 Time: 345

Received by:

Relinquished by: ~

Date:

36/69 sample No: 13