2008

Swift Creek Reservoir & Watershed Hydrologic and Water Quality Data

Addison-Evans Water Production & Laboratory Facility
Department of Utilities
&
Department of Environmental Engineering
Chesterfield, Virginia
&
KCI Technologies, Inc.

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BY

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EXECUTIVE SUMMARY

This report presents the water quality data collected by the Addison-Evans Laboratory Staff for the period of January through December 2008 and represents the sixteenth consecutive year of monitoring the Swift Creek Reservoir and its watershed. The report provides general water quality data, quantifies the phosphorus load and determines the water budget for the reservoir.

Water Quality Monitoring

Results of the 2008 monitoring indicate that overall water quality in the reservoir was very good with applicable parameters below state standards. The growing season median total phosphorus concentration for the mainbody reservoir stations was 0.034 mg/L as P, below the Virginia Department of Environmental Quality (DEQ) freshwater nutrient standard (0.04 mg/L as P), and the county's 0.05 mg/L as P in-lake goal. The growing season 90th percentile chlorophyll *a* concentration for the mainbody reservoir stations (*i.e.* Stations 4, 5, 6, and 8) was 6.5 µg/L, well below the DEQ freshwater standard of 35 µg/L. During the summer, all mainbody reservoir stations had dissolved oxygen levels near the surface (epilimnion) above the DEQ standard of 4.0 mg/L.

The tributary water quality monitoring indicated a wide range of conditions among the watersheds. All but one tributary experienced an annual median baseflow total phosphorus concentration below 0.04 mg/L as P. During storm flows, median concentrations ranged from 0.024 to 0.122 mg/L. Individual storm event results from all seasons indicated numerous elevated TP levels (>0.05 mg/L as P), and occasionally concentrations >0.200 mg/L.

The 2008 results for nitrogen monitoring in the tributaries are very similar to those observed from 2004 to 2007. As in previous years, monitoring Stations 13 and 14 had consistently elevated nitrogen concentrations recorded with over 75 percent of storm samples exceeding 1.0 mg/L as N in 2008. The most likely source of the elevated nitrogen observed at these sites is lawn fertilizers applied in the spring and fall.

Phosphorus Loadings

The 2008 estimate of phosphorus loading (8,810 pounds) is comparable to the long-term median of 7,393 pounds. This annual loading reflects above average annual rainfall, and is consistent with trends observed over the last 15 years (1992-2007).

Water Budget

The average rainfall over the watershed totaled 45.98 inches during 2008, which was above the average rate (42.8 inches) observed over the last 20 years. This increase resulted in more rainfall directly onto the reservoir and increased runoff from the surrounding watersheds from the previous year. Total hydrologic input to the reservoir was 3,134 Mft^3 and total output was 2,855 Mft^3. The water budget indicated a surplus of 252 Mft^3 of water entering the reservoir, which was not accounted for in the estimate of water outputs from the reservoir.

Overview

Phosphorus and chlorophyll *a* concentrations in the reservoir are acceptable and below state standards and the county goal. Some of the tributaries that have developed watersheds are exhibiting high concentrations of nutrients, which, over time, may have a detrimental effect on the reservoir. Year 2008 had moderately high rainfall resulting in increased runoff and phosphorus loadings from the watershed. The phosphorus loading (8,810 pounds) was on par with the long-term median observed over the course of the monitoring program.

Chapter 1: Introduction

INTRODUCTION

The Swift Creek Reservoir is a public water supply for Chesterfield County, located approximately 20 miles southeast of Richmond, Virginia. The reservoir is a 1700-acre impoundment containing approximately 5.2 billion gallons of water. The Swift Creek Reservoir Watershed is located in the northwest part of the county and encompasses 61.9 square miles.

This report presents the water quality data collected by the Addison-Evans Laboratory Staff for the period of January through December 2008 and represents the sixteenth consecutive year of monitoring of the Swift Creek Reservoir and its watershed. The objective of this report is to present both past and present water quality conditions. Specifically, this report:

1) provides general water quality and biological data,
2) quantifies the phosphorus load, and
3) determines the water budget for Swift Creek Reservoir.

Details regarding specific physical characteristics of the watershed and other attributes such as soil types have been outlined in previous reports (Hoehn et al., 1998; SCWTP, 1999). Although residential development is common in the reservoir's drainage area, the most recent land use data (Table 1-1) indicates 53.8% of the watershed is comprised of undeveloped forests and pastures.

During 2008, pool elevations measured at the dam ranged from 174.5 to 178.4 feet above mean sea level, corresponding to approximate reservoir volumes of 3.12 and 6.16 billion gallons respectively. As in prior years, the reservoir exhibited thermal and dissolved oxygen stratification at its deeper areas beginning in late April to early May and lasting through October. Water quality samples were obtained at the established eight sites throughout the reservoir (Figure 1-1). Analyses performed are described in Tables 1-2 and 1-3.

Monthly baseflow and periodic stormflow water quality samples were collected at nine tributary stations and at two permanent direct runoff sites within the watershed (Figure 1-1). Sites and identification numbers remained the same as in previous years, as outlined below:

Site 1 = Dry Creek	Site 4 = Otterdale Branch	Site 8 = Ashbrook Dam
Site 2 = Westbranch	Site 5 = Swift Creek	Site 13= Chimney House (Brandermill)
Site 3-I = Horsepen Creek	Site 6 = Tomahawk Creek	Site 14 = Chestnut Bluff (Woodlake)
Site 3-II = Blackman Creek	Site 7 = Little Tomahawk Creek	

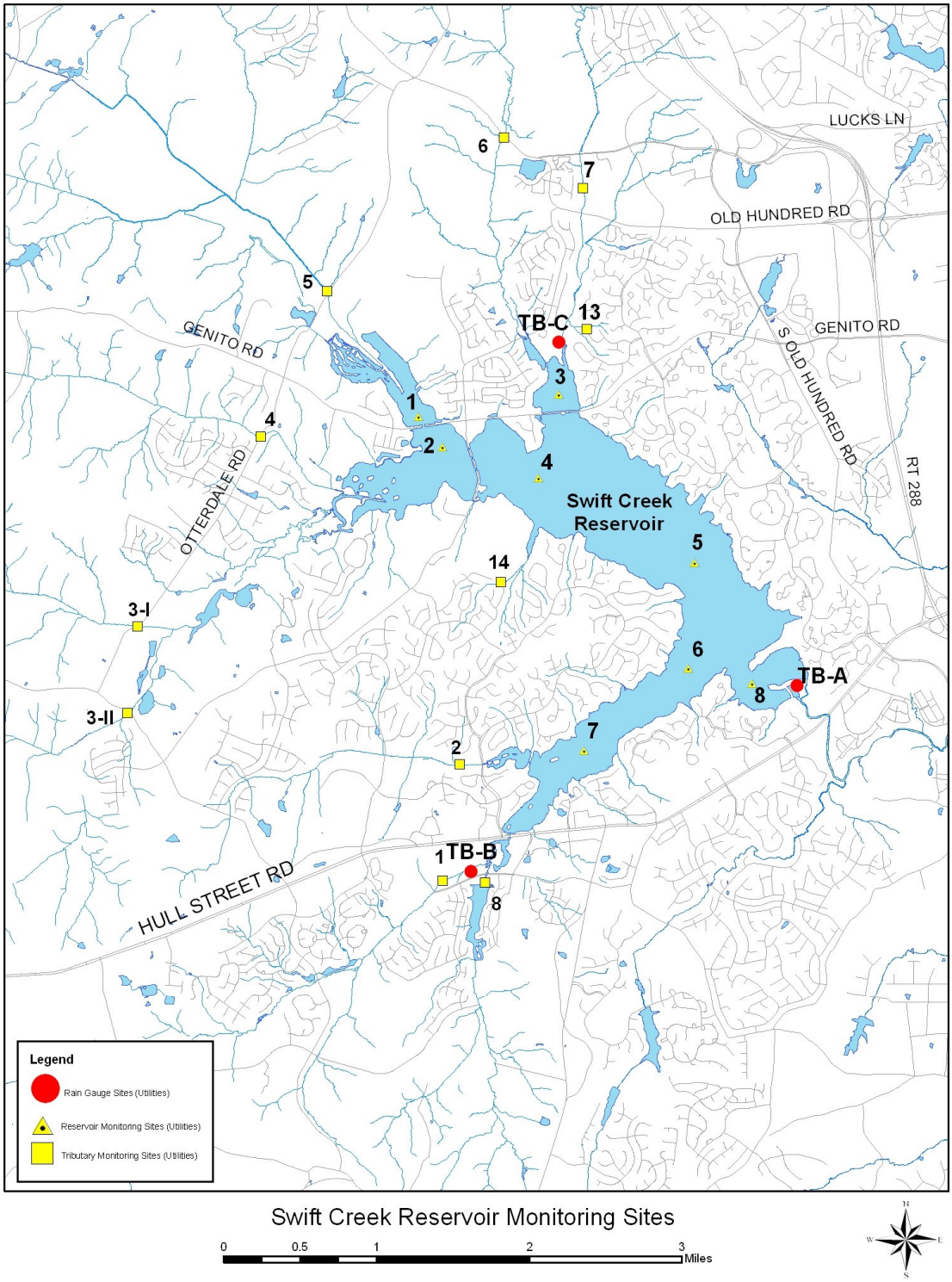


Figure 1-1. Map of Swift Creek Reservoir and Immediate Vicinity

Table 1-1.
Land Use Characteristics of the Swift Creek Watershed 2005

Land Use Type	Area (acres)	Area (sq. miles)	Percent of Watershed
Single Family Residential - Rural	9,155	14.3	23.09
Single Family Residential - Semi-Rural	1,331	2.1	3.36
Single Family Residential - Suburban Low Density	1,183	1.8	2.98
Single Family Residential - Suburban Medium Density	1,177	1.8	2.97
Single Family Residential - Suburban High Density	693	1.1	1.75
Multi-Family Residential	201	0.3	0.51
Community Mixed Use	1,528	2.4	3.85
Regional Mixed Use	15	0.0	0.04
Transportation Right of Way	1,512	2.4	3.81
Industrial	256	0.4	0.65
Cropland	798	1.2	2.01
Pastureland	626	1.0	1.58
Forest	20,683	32.3	52.17
Grass	306	0.5	0.77
Water	177	0.3	0.45
Conservation, Passive Recreation	0	0.00	0.00
Total	39,641	61.9	100.00

Reservoir sampling occurred once a month throughout the year at eight stations with additional samples obtained every other week at the lacustrine zone stations 5 and 8. At these deeper water sites, discrete epilimnion, metalimnion, and hypolimnion samples were taken for nutrient analysis. All other stations in the reservoir (sites 1, 2, 3, 4, 6 and 7) were sampled at the surface only. Water quality parameters (Table 1-2) were chosen to provide information on basic water quality and the ecological health of the reservoir and its tributaries. Analysis procedures are listed in Table 1-3.

Rainfall was measured at three automated rain gages within the watershed. The average rainfall over the watershed totaled 45.98 inches during 2008 (Figure 1-2). Rainfall was just above the long-term average observed over the last 23 years (42.84 inches).

Quality Assurance and Quality Control:

All analytical methods used were EPA approved, in accordance with *Standard Methods for the Examination of Water and Wastewater* (Standard Methods) with the exception of the free ammonia analysis which was conducted following the Hach Chemical Company's test kit procedure (Table 1-3).

For each parameter analyzed, Method Detection Limits (MDL) were calculated following the EPA procedure as detailed in the *Code of Federal Regulations (CFR), Volume 46, Part 136 Appendix B (EPA, 1984).* Stock and standard solutions were prepared from American Chemical Society reagent grade materials for preparation of calibration standards. Correlation coefficients were evaluated for each calibration curve and had to be greater than or equal to 0.995 to be used for analysis. To ensure calibration validity throughout an analysis, Continuing Calibration Verifications (CCV) standards were tested after every 10 samples analyzed. Similarly, Continuing Calibration Blanks (CCB) were evaluated after every 10 samples to detect any baseline drift errors. With each analysis, field blanks and digestion/analytical blanks were evaluated to ensure detection of contamination during sampling or sample preparation. Independent source Standard Reference Materials (SRM) were purchased and used to verify the accuracy of each analysis calibration. When any standard (or SRM) was not within 10 percent (per EPA guidelines) of the true value, or CCB showed baseline drift, corrective actions were implemented and samples were reanalyzed.

Table 1-2. Sampling Regime for Swift Creek Reservoir and its Watershed (2008)

PARAMETERS	STORM EVENT	TRIBUTARY BASE FLOW	RESERVOIR SITES 1,2,3,4,5,6,7,8	RESERVOIR SITES 5,8	WETFALL DRYFALL
DEPTH			X1	X1	
FLOW	X	X			
SECCHI DISC			X	X	
WATER TEMPERATURE	X	X	X1	X1	
DISSOLVED OXYGEN (Given as mg/L & % saturation)	X	X	X1	X1	
CONDUCTIVITY	X	X	X1	X1	
pH	X	X	X1	X1	X
OXIDATION REDUCTION POTENTIAL			X1	X1	
TOTAL PHOSPHORUS	X	X	X2	X3	X
ORTHO PHOSPHATE PHOSPHORUS	X	X	X2	X3	X
TOTAL KJELDAHL NITROGEN	X	X	X2	X3	X
OXIDIZED NITROGEN	X	X	X2	X3	X
AMMONIA NITROGEN			X2	X4	
TOTAL ORGANIC CARBON	1/QTR	1/QTR	X2, 1/QTR	X2, 1/QTR	
LEAD	1/QTR	1/QTR	X2, 1/QTR	X2, 1/QTR	
ZINC	1/QTR	1/QTR	X2, 1/QTR	X2, 1/QTR	
SUSPENDED SOLIDS/TURBIDITY	X	X	X2	X2	
CHLOROPHYLL a			X5	X5	
PHEOPHYTIN a			X5	X5	
ALGAE COUNTS			X5	X5	
FECAL COLIFORMS	X	X	X2	X2	

X1 - ONE METER INTERVALS

X2 - SURFACE SAMPLING ONLY

X3 - DISCRETE SAMPLES OF EPILIMNION, METALIMNION, AND HYPOLIMNION WHEN STRATIFICATION EXISTS OR SURFACE, MID-DEPTH, AND NEAR BOTTOM WHEN NO STRATIFICATION PRESENT

X4 - DISCRETE SURFACE AND NEAR BOTTOM SAMPLES

X5 - A COMPOSITE OF BENEATH SURFACE, 1/2 SECCHI DEPTH, SECCHI DEPTH AND 1-1/2 SECCHI DEPTH SAMPLES

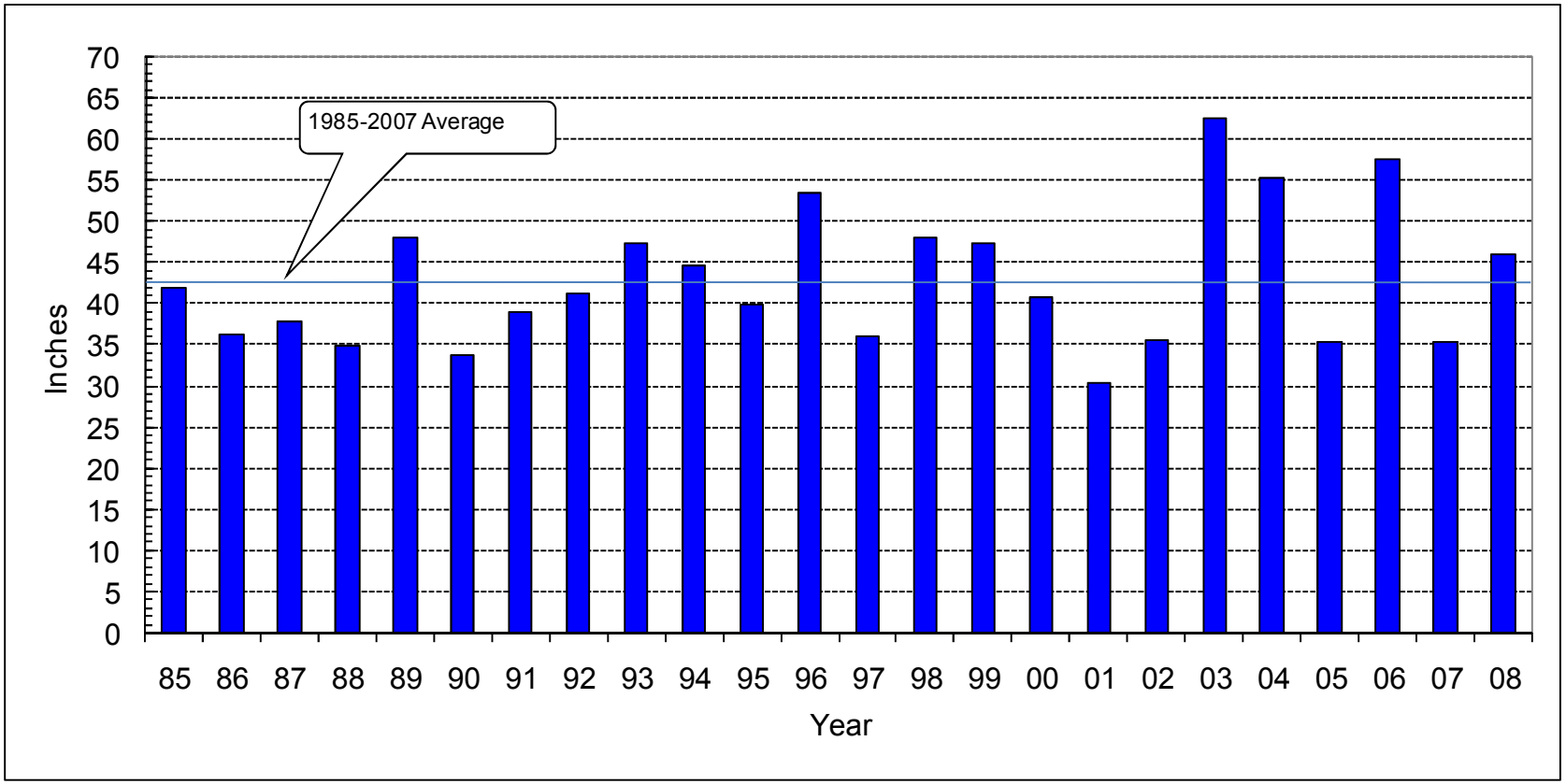
Table 1-3. Parameters and Analytical Methods

Parameter	Analytical Method	Detection Limit[1]
Depth	Probe: Hydrolab MiniSonde	± 0.08 m*
Dissolved Oxygen	Probe: Hydrolab MiniSonde	± 0.2 mg/L*
Oxidation Reduction Potential	Probe: Hydrolab MiniSonde	± 20mV*
Water Temperature	Probe: Hydrolab MiniSonde	± 0.1 ^{o}C*
Conductivity	Probe: Hydrolab MiniSonde	± 0.001 µmhos/cm*
pH	Probe: Hydrolab MiniSonde	± 0.2 units*
	Probe: Hydrolab MiniSonde	
Stage	USGS Staff Gauge	± 0.01 ft*
Flow	Flowmeter: ISCO, Bubble-line	± 0.001m^3/s*
Secchi Depth	20 cm Standard Secchi Disk	± 0.1 ft*
Total Phosphorus	Skalar:EPA Approved, Autom.	0.005 mg/L as P
Orthophosphate	Skalar:EPA Approved, Autom.	0.005 mg/L as P
Total Kjeldahl Nitrogen	Skalar:EPA Approved, Autom.	0.05 mg/L as N
Oxidized Nitrogen	Skalar:EPA Approved, Autom.	0.01 mg/L as N
Ammonia-N	Hach, Salicylate Method 2460	0.03 mg/L as N
Total Organic Carbon	Standard Methods, 5310C	0.5 mg/L
Lead	EPA 200.9, Platform Furnace	2.5 µg/L
Zinc	EPA 289.1, Flame	50 µg/L
Total Suspended Solids	Standard Methods, 2540D	1.0 mg/L
Chlorophyll *a*	Standard Methods, 10200H-3, Fluorom.	1.0 µg/L
Pheophytin	Standard Methods, 10200H-3, Fluorom.	1.0 µg/L
Algae Counts	Standard Methods, 10200F	1 cell/mL
Fecal Coliform Density	Standard Methods, 9222B	100col/mL
Stream Gauging	USGS methodology	0.01 cfs*

NOTE: Standard Methods for the Examination of Water and Wastewater, 19th Edition.

* When Reporting Limit based upon detection is not an applicable measurement for a parameter, it has been replaced by an estimation of accuracy (e.g. pH measurement has an estimated accuracy of 0.2 units).

Figure 1-2. Total Annual Estimated Rainfall Recorded for Swift Creek Reservoir Watershed from 1985-2008 (Average 1985-2007)



An EPA performance evaluation of blind nutrient samples in a split sampling study is performed annually. Reported concentrations for orthophosphate and total phosphorus, ammonia, oxidized nitrogen, and total Kjeldahl nitrogen continue to be within the limits of the EPA's acceptable analytical values. The nutrient concentrations of the blind samples are of a higher concentration than normally found in our survey program samples. However, as of yet we are not aware of any SRM manufacturer who provides blind samples of lower concentration. Manufacturers' recommended preventive maintenance procedures were followed for all instruments.

EVALUATION OF 2008 WATER QUALITY DATA

KCI Technologies, Inc. provided an assessment of the 2008 water quality data with limited comparisons to historical data collected under this program. All water quality data can be found in Appendices A and B. Algal data can be found in Appendix C.

Reservoir Water Quality Data Assessment

All eight stations in the reservoir were sampled monthly except for Stations 1 and 2, which were not sampled during the summer months (July through September) due to the inaccessibility of the sites. Additionally, stations 5 and 8 were sampled twice per month throughout the year. Sampling at all stations included surface water quality grab samples as well as a profile of physical parameters. Supplemental bottom water quality samples were obtained at the mainbody sites 5 and 8.

The county's current water quality goal for annual median concentration of total phosphorus (TP) in surface waters is 0.05 mg/L as P or less. This goal was based on a Nutrient Controls Standards Workshop held in 1987 by the Department of Environmental Quality (formerly the State Water Control Board). In June, 2006, DEQ adopted freshwater nutrient standards for 116 lakes and reservoirs in Virginia, including Swift Creek Reservoir. The regulations were approved by EPA in July 2007, and the amended water quality standards [9 VAC 25 - 260] became effective August 14, 2007. These regulations set growing season (April through October) chlorophyll *a* and TP criteria for Swift Reservoir at 35 µg/L (0.035 mg/L) and 40 µg/L (0.040 mg/L as P), respectively. Specifically, DEQ would consider the reservoir nutrient enriched if the 90th percentile of the chlorophyll *a* data in surface waters of the main body of the reservoir (Stations 4, 5, 6, and 8) during the growing season exceeded the criteria for two consecutive years. If algicides were being used, thus making the chlorophyll *a* measurements unreliable, then both chlorophyll a and TP criteria would be applicable. DEQ would consider the reservoir nutrient enriched if the growing season median concentration of TP in surface waters of the main body of the reservoir exceeded the criteria for two consecutive years.

In the Swift Creek Reservoir, algicides such as copper sulfate are used occasionally to spot treat algal blooms, therefore chlorophyll *a* measurements could be depressed. Algicide use is variable over the reservoir between months and between years. Because of the algicide treatments,

analysis of the reservoir data should include both the TP and chlorophyll *a* criteria.

During 2008, approximately 200 pounds of copper sulfate were applied on a single occasion to treat algae blooms in the reservoir. The bay adjacent to the water intake tower (in the vicinity of station 8) was treated on June 3. The amount of copper sulfate applied in 2008 was half of the amount applied in 2007 (400 lbs.), marking a substantial reduction in copper sulfate applications from recent years (*i.e.* 2,050 lbs. in 2006 and 3,000 lbs. in 2005).

Chlorophyll a

DEQ has identified chlorophyll *a* as the most important parameter that can be measured to determine the nutrient enrichment status of a reservoir. Chlorophyll *a*, a green plant pigment found in algae, is a direct measure of biological response to nutrient loadings. DEQ considers the threshold value for nutrient enrichment at Swift Creek Reservoir to be the 90th percentile concentration that exceeds 35 µg/L, measured between April and October (*i.e.* the growing season) within the mainbody for two consecutive years.

The growing season 90th percentile concentration for the mainstem reservoir stations (*i.e.* Stations 4, 5, 6 and 8) was 6.5 µg/L, well below the 35 µg/L threshold. In 2008, all of the stations combined had a 90th percentile concentration during the growing season of 6.6 µg/L, which was a decrease from 2007 (9.8 µg/l). There were no individual measurements that exceeded the criteria. As a whole during 2008, the reservoir exhibited conditions well below the state standard based on measurements of chlorophyll *a* concentrations. Station 3, a near shore station, had the highest 90th percentile concentration (11.4 µg/L) observed in 2008.

In 2008, chlorophyll *a* concentrations showed no clear seasonal patterns. With exception to the samples collected on July 8, summer concentrations were relatively low. The highest daily median value (12.0 µg/L) was observed on July 8, however, values dropped back down to less than 4.0 µg/L by July 23 and remained below 4.5 µg/L until September 29, when a slight increase was observed (5.8 µg/L).

Table 1-4. Growing Season Chlorophyll *a* Concentrations (µg/L)
2008 Reservoir Sampling

STATION	4/23	4/30	5/7	5/20	6/9*	6/23	7/8	7/23	8/5	8/19	9/4	9/29	10/14	10/28	90th Percentile	Maximum
1	0.3		0.7		0.7								5.2		3.9	5.2
2	0.4		3.2		0.5								5.4		4.7	5.4
3	1.3		6.0		1.0		19.6		0.7		1.6		3.9		11.4	19.6
4	1.1		2.1		1.6		10.8		0.8		3.6		2.3		6.5	10.8
5	1.5	1.2	1.9	4.0	1.5	2.3	6.5	0.0	0.6	4.5	2.9	3.8	3.3	3.4	4.4	6.5
6	1.0		2.0		1.7		21.1		0.9		2.9		3.9		10.8	21.1
7	0.8		2.9		1.8		13.1		1.3		6.7		2.9		9.3	13.1
8	0.7	1.0	2.9	3.2	2.2	2.2	7.0	6.4	1.8	3.6	3.8	7.8	2.9	3.3	6.8	7.8
Date MEDIAN	**0.9**	**1.1**	**2.5**	**3.6**	**1.6**	**2.3**	**12.0**	**3.2**	**0.9**	**4.1**	**3.3**	**5.8**	**1.8**	**3.4**		
Date 90th Percentile	**1.4**	**1.2**	**4.0**	**3.9**	**1.9**	**2.3**	**20.4**	**5.8**	**1.6**	**4.4**	**5.3**	**7.4**	**5.3**	**3.4**		

* Denotes date where all samples exceeded analytical holding times.

Total Phosphorus (TP in mg/L as P)

Total phosphorus is often measured as an indicator of nutrient enrichment. The county has a median in-lake phosphorus concentration goal of 0.05 mg/L as P in order to maintain water quality. In 2007, DEQ adopted a freshwater nutrient criterion for the reservoir's mainbody of 40 µg/L (*i.e.* 0.040 mg/L as P) for the growing season. Both of these criteria are useful in assessing the nutrient enrichment status of the reservoir. The growing season (April – October) median total phosphorus (TP) concentrations for each reservoir station are provided in the following table:

Table 1-5. Growing Season Median Total Phosphorus Concentrations 2008 Reservoir Sampling

STATION	GROWING SEASON MEDIAN TOTAL PHOSPHORUS (mg/L as P)
1	0.048
2	0.042
3	0.041
4	0.032
5	0.037
6	0.025
7	0.036
8	0.035
Mainbody Stations (4, 5, 6, 8)	**0.034**
Shallow Stations (1, 2, 3, 7)	**0.040**
All Stations	**0.036**

In 2008, the reservoir was below the county goal and DEQ freshwater nutrient criterion, indicating acceptable water quality. All mainbody stations (*i.e*. Stations 4, 5, 6 and 8) and the reservoir as a whole had median growing season TP concentrations that were below the standards. However, three of the four shallow stations (*i.e*. Stations 1, 2, and 3) had median growing season TP concentrations that slightly exceeded DEQ's freshwater nutrient criteria of 0.04 mg/L as P, but were below the county's goal of 0.05 mg/L as P. There were few individual measurements of TP that exceeded both the county's TP goal and the DEQ standard. While individual measurements that exceed the TP goal or DEQ standard are to be expected, the location and pattern of these higher concentrations may highlight pollutant sources or processes. During the 2008 growing season, 15 individual measurements (23.4%) exceeded the DEQ standard, which is a sizeable increase from 2007 (2.6%), but the majority of these measurements (60%) were recorded in the shallow waters at Stations 1, 2, and 3 indicating possible hotspots in these areas. Overall, the 2008 growing season median TP concentration for the mainbody stations (0.034 mg/L as P) increased from 2007 (0.023 mg/L as P) but remained below the DEQ freshwater nutrient criterion, indicating that the reservoir is not exhibiting nutrient enrichment at this time.

A significant increase in TP in anoxic (oxygen depleted) bottom waters indicates active phosphorus release from the sediments. The potential sediment release of phosphorus would result in an additional loading to the reservoir, as this phosphorus is mixed with the upper water layers during de-stratification. The deepest stations (5 and 8) showed minor signs of a benthic release of phosphorus, but it was infrequent and TP concentrations were only slightly elevated from surface concentrations. Only one substantial difference (*i.e.* ≥50%) between bottom and surface concentrations was observed at each deep station during 2008. A 65% increase in TP was measured at Station 5 on July 7, and a 100% increase in TP was measured at Station 8 on September 4. These isolated events suggest additional phosphorus loadings from benthic releases were insignificant during 2008.

Dissolved Oxygen

In July 2007, EPA approved the VA DEQ's proposed dissolved oxygen standard (5.0 mg/L daily average, 4.0 mg/L minimum), which had been modified to account for naturally occurring decreases in dissolved oxygen due to thermal stratification in reservoirs. These new standards apply to the entire water column when the reservoir is well mixed and only to the surface waters (epilimnion) when the water column is vertically stratified. Since 2002, Swift Creek Reservoir has been listed on the EPA 303(d) listing of impaired water bodies for not meeting the dissolved oxygen standard due to naturally occurring conditions. With the revised Water Quality Standards, the Swift Creek Reservoir should be removed from the pending EPA 303(d) listing of impaired waterbodies.

Hypoxic conditions (low oxygen levels) occur when dissolved oxygen drops below 5.0 mg/L, resulting in stress on fish and other aquatic life. An anoxic condition (a lack of oxygen) occurs below 1.0 mg/L, which can result in fish kills and the release of phosphorus, iron, manganese, and other elements from the sediments. These elements, in turn, can result in increased algal blooms and treatment problems (undesirable tastes and odors) for the production of drinking water.

Thermal stratification is a natural process in many lakes and reservoirs that occurs when summer conditions warm the upper water column while the lower water column remains cooler. The surface waters become lighter than the colder and denser bottom waters, resulting in two layers of water separated by a zone of sharply changing temperature (*i.e.* thermocline) that inhibits vertical mixing. The thermal stratification typically continues until falling temperatures cool the surface water sufficiently to break up the thermocline. Often a large fall storm event will result in a rapid de-stratification of the lake.

Thermal stratification of Swift Creek Reservoir was first observed in late April at Station 8 and early May at Station 5. These sites exhibited both a thermocline and a significant drop in dissolved oxygen concentrations at this time. Stratification at the remaining stations was observed in early May. Stratification continued into mid-October, when the lake turned over and became thoroughly mixed. During the stratification period, dissolved oxygen concentrations within the epilimnion were above the DEQ standard of 4.0 mg/L for all stations. Stations 5 and 8 regularly

experienced anoxic conditions, or a nearly total lack of oxygen, below the thermocline. In addition, there were a few instances after mixing had occurred in the fall where DO was measured below the DEQ minimum (4.0 mg/L) at the bottom of the water column. These measurements were recorded on October 28 at Station 5, November 7 at Stations 6 and 8, December 3 at Stations 5, 6, and 8 and ranged from 0.52 to 3.53 mg/L. All measurements were confined to the bottom one (1) to three (3) feet of the water column and were only observed at the deepest reservoir stations.

During periods of low dissolved oxygen, organic material in the sediment can breakdown and release ammonia, which can be toxic to aquatic life at high concentrations. On several occasions at Stations 5 and 8, there were slightly elevated ammonia concentrations (>0.10 mg/L) measured near the bottom of the water column; however, these concentrations were insignificant in regards to toxicity.

Secchi Depth, Total Suspended Solids, Turbidity, and Total Nitrogen

Secchi depth is a measurement of water transparency, using a weighted black and white disk that is lowered into the water until it is no longer visible. The depth at which the disk is unreadable is then recorded as “Secchi disk transparency”. Secchi disk transparency is basically a function of the reflection of light from the surface of the disk, and therefore is affected by the absorption characteristics of the water and of dissolved and particulate matter contained in the water (Wetzel and Likens 1991). It provides a decent estimate of water clarity and is closely related to turbidity.

All stations had median growing season Secchi disk readings ranging from 2.0 to 3.5 feet (Table 1-6), a slight decrease from those observed in 2007 (3.0 to 4.25 feet). No trends were noted between decreased transparency and elevated Chlorophyll *a* concentrations. In 2008, the range of the growing season medians for turbidity (4.83 to 10.10 NTUs) and total suspended solids (1.7 to 4.2 mg/L) were slightly elevated compared to those observed in 2007 (2.96 to 5.48 NTUs and 1.00 to 2.40 mg/L, respectively). The growing season Chlorophyll *a* median values for 2008 (0.70 to 3.05) were slightly lower than those observed in 2007 (0.90 to 3.20). Total nitrogen was fairly consistent throughout the reservoir, with median concentrations between 0.42 and 0.53 mg/L as N. The highest median concentrations were measured at Stations 8 (0.53 mg/L as N), 5, and 7(both 0.51 mg/L as N) while the lowest were observed at Stations 1 (0.43 mg/L as N) and 2 (0.42 mg/L as N).

TABLE 1-6. 2008 Growing Season Median Values for Select Parameters

STATION	SECCHI DEPTH (Feet)	TOTAL SUSPENDED SOLIDS* (mg/L)	TURBIDITY (NTUs)	CHLOROPHYLL a (µg/L)	TOTAL NITROGEN (mg/L as N)
1	2.0	3.0	10.10	0.70	0.43
2	2.5	1.7	11.04	1.85	0.42
3	2.5	4.2	7.48	1.60	0.49
4	3.5	2.8	7.05	2.10	0.48
5	3.1	2.7	5.97	2.60	0.51
6	3.5	2.0	4.95	2.00	0.48
7	3.0	3.0	7.14	2.90	0.51
8	3.5	2.8	4.83	3.05	0.53

*non-detects assigned a value of one-half method detection limit (1 mg/L)

Tributary Water Quality Data Assessment

DEQ is in the process of developing freshwater nutrient criteria for streams and rivers, which is scheduled to be finalized in 2009. While there are currently no nutrient standards or criteria specific to streams in Virginia, the TP criteria used for reservoirs provides a guideline against which to compare the tributary data.

Total Phosphorus (TP in mg/L as P)

The county has a total phosphorus reservoir concentration goal of 0.05 mg/L as P in order to maintain acceptable water quality. To achieve this goal, the phosphorus concentrations in the tributaries, which are the primary sources of phosphorus to the reservoir, are monitored over time to identify increasing trends in concentrations and loadings. Not all phosphorus is biologically available; some of it is bound to sediment particles. Orthophosphate is the dissolved phosphorus component available in the water column to support biological activity, which includes algae blooms.

In 2008, the annual median baseflow TP concentration observed in all of the tributary stations combined was 0.029 mg/L as P, slightly higher than the median observed in 2007 (0.022 mg/L as P). Annual median baseflow concentrations at individual sites in 2008 ranged from 0.013 to 0.053 mg/L as P (Table 1-7), as compared to 0.010 to 0.035 mg/L in 2007. Conversely, the median stormflow concentration observed in all of the tributary stations combined (0.038 mg/L as P) dropped slightly from the previous year (0.039 mg/L as P). Orthophosphate concentrations for baseflow (0.007 mg/L as P) showed no change from the previous year, while stormflow (0.011 mg/L as P) decreased slightly from 2007 (0.013 mg/L as P). While TP concentrations in the baseflow increased compared to the previous year, the amount of bioavailable phosphorus did not change.

Table 1-7. Annual Median Phosphorus Concentrations 2008 Tributary Sampling

STATION	WATERSHED	TOTAL P (mg/L as P)		ORTHOPHOSPHATE (mg/L as P)	
		Baseflow	Stormflow	Baseflow	Stormflow
1	Dry Creek	0.026	0.031	0.008	0.009
2	Westbranch	0.032	0.043	0.007	0.016
3-I	Horsepen Creek	0.013	0.024	0.005	0.010
3-II	Blackman Creek	0.038	0.122	0.008	0.020
4	Otterdale Branch	0.033	0.055	0.006	0.008
5	Swift Creek	0.053	0.042	0.018	0.014
6	Tomahawk Creek	0.019	0.026	0.005	0.019
7	Little. Tomahawk Creek	0.015	0.033	0.005	0.007
8	Ashbrook Dam	0.039	0.038	0.007	0.007
13	Brandermill	n/a	0.041	n/a	0.011
14	Woodlake	0.014	0.031	0.007	0.013
Median		**0.029**	**0.038**	**0.007**	**0.011**

n/a = not applicable

Elevated phosphorus concentrations were recorded from several watersheds during storm events that occurred on May 22, June 5, September 2, September 8 and September 30, 2008, (Table 1-8). The majority of stations (with exception to Station 7) had consistently high concentrations (>0.05 mg/L as P) during all, or most, of these storm events. However, it should be noted that several stations did not have sufficient data available, or had data that was rejected due to quality control failures, which made it difficult to detect meaningful differences. In several cases during these storm events, the stations with the highest Total Suspended Solids (TSS) concentrations also had the highest TP concentrations, indicating that a sizeable amount of the phosphorus was likely attached to sediment particles in the storm flows. This sediment, and potentially fertilizers, may be significant sources of phosphorus in the more developed watersheds of the reservoir.

Table 1-8. Storm Events with Elevated Phosphorus Concentrations

STATION	WATERSHED	TOTAL PHOSPHORUS (mg/L as P)				
		02/15/07	06/05/07	10/29/07	12/17/07	12/27/07
1	Dry Creek	0.020	n/a	**0.173**	**0.094**	0.038
2	Westbranch	**0.087**	n/a	**0.185**	**0.162**	0.035
3-I	Horsepen	0.014	n/a	**0.123**	0.037	**0.058**
3-II	Blackman	**0.132**	n/a	**0.275**	**0.187**	**0.128**
4	Otterdale	**0.057**	n/a	**0.153**	**0.167**	**0.101**
5	Swift Creek	0.036	**0.055**	**0.172**	**0.065**	**0.070**
6	Tomahawk	0.020	**0.098**	**0.143**	**0.059**	QC
7	Little Tomahawk	0.018	**0.166**	0.039	0.033	0.038
8	Ashbrook Dam	**0.053**	n/a	**0.125**	**0.118**	**0.055**
13	Brandermill	**0.080**	n/a	n/a	0.030	**0.052**
14	Woodlake	**0.069**	n/a	**0.080**	0.031	**0.134**

Bold values indicate elevated concentrations > 0.05 mg/L as P

n/a = Data not available

QC = Data rejected due to quality control failure

Nitrogen (in mg/L as N)

While phosphorus tends to be the primary nutrient of concern in freshwater monitoring programs, increased levels of nitrogen can also indicate degraded water quality. Oxidized nitrogen, primarily nitrate, if elevated, may indicate inputs of fertilizers. Nitrate can be carried by both surface runoff and groundwater. Total Kjeldahl nitrogen includes organic nitrogen and ammonia (NH_4), which may be high if there are loadings of organic pollutants or ammonia based fertilizers. Total Nitrogen (TN) is the combined concentrations of oxidized nitrogen and total Kjeldahl nitrogen.

The majority of the stations had baseflow median TN concentrations of less than 0.35 mg/L as N (Table 1-9). However, Station 14 (Woodlake) had a baseflow median of 1.03 mg/L as N, nearly three times the average concentration of most other stations. Station 13 (Brandermill), which has also had elevated baseflow TN concentrations observed in the past, did not have data available for 2008 due to lack of constant baseflow.

During storm events, the median TN concentration at the majority of the tributary stations increased as much as 75% over baseflow concentrations, with some stations (Stations 2, 7, and 8) increasing more than 100%. Median TN concentrations during storms at Stations 13 and 14 were 1.00 and 1.28 mg/L as N, respectively, which is well above the other tributary stations. Furthermore, stations 13 and 14 consistently had the highest TN concentrations during most storm events.

Stations 13 and 14 had substantially higher oxidized nitrogen concentrations consistently throughout the year during both baseflow and stormflows. Compared to stations such as 3-I

(Horsepen Creek) or 3-II (Blackman Creek), which are relatively undeveloped, Stations 13 and 14 had oxidized nitrogen concentrations that were 40 to 50 times greater for both baseflow (Station 14) and stormflow. Station 8 had slightly higher stormflow oxidized nitrogen concentrations compared to the other watersheds, but levels were substantially lower than those of Stations 13 and 14.

The 2008 results of nitrogen monitoring in the tributaries are very similar to those observed from 2004 to 2007, with consistently recorded elevated nitrogen concentrations observed at Stations 13 and 14. Over 75 percent of storm samples that exceeded 1.0 mg/L in 2008 were collected from these two stations.

Major sources of nitrogen include fertilizers used in agriculture, residential, and commercial landscaping. Fertilizer applied to residential lawns appears to be the primary source of nitrogen at Stations 13 (Brandermill) and 14 (Woodlake), resulting from the high percentage of residential landuse in their watersheds.

Table 1-9. Annual Median Nitrogen Concentrations
2008 Tributary Sampling

STATION	TOTAL NITROGEN (mg/L as N)		TOTAL KJELDAHL NITROGEN (mg/L as N)		OXIDIZED NITROGEN (mg/L as N)	
	Baseflow	Stormflow	Baseflow	Stormflow	Baseflow	Stormflow
1	0.31	0.52	0.28	0.46	0.05	0.08
2	0.37	0.73	0.31	0.62	0.04	0.09
3-I	0.29	0.51	0.28	0.49	0.01	0.01
3-II	0.33	0.54	0.32	0.53	0.02	0.01
4	0.31	0.55	0.28	0.52	0.03	0.05
5	0.32	0.56	0.31	0.50	0.02	0.03
6	0.34	0.61	0.29	0.55	0.05	0.06
7	0.27	0.57	0.24	0.56	0.04	0.02
8	0.26	0.70	0.20	0.52	0.01	0.13
13	n/a	1.00	n/a	0.49	n/a	0.45
14	1.03	1.28	0.39	0.61	0.64	0.76
Median	**0.32**	**0.57**	**0.29**	**0.52**	**0.04**	**0.06**

n/a = not applicable

Chapter 2: Phosphorus Load Estimation

PHOSPHORUS LOAD ESTIMATION

REGRESSION METHOD

Phosphorus loadings to the Swift Creek Reservoir were approximated using the regression method described by Leitch (1998). This regression method utilizes the relationship between the logarithms of tributary total stormflow/baseflow volumes (cubic feet) and stormflow/baseflow total phosphorus loads (pounds) to derive the annual total phosphorus load from each individual tributary (See Figures 2-1a through 2-1c). This relationship has been determined by Leitch (1998) to most accurately represent the annual total phosphorus loading to Swift Creek Reservoir due to the pairing of actual baseflow and stormflow concentrations with their associated discharges. A modified version of the Leitch (1998) method (SCWTP 2000) was used for tributary and direct run-off phosphorus load estimations with scaling factors determined by Smock (1993) and USGS (1998) (Table 2-1).

Table 2-1. Sub-Basin Areas and Scaling Factors of Swift Creek Reservoir Watershed as Determined from Data by Smock (1993) and USGS (1998)

Station Name	Station Number	Gauged Area USGS (sq. miles)	Total Adjusted Area (sq. miles)	Scaling Factor
Tributaries				
Dry Creek	1	2.96	3.85	1.30
Westbranch	2	2.75	2.75	1.00
Horsepen Creek	3-I	3.72	4.39	1.18
Blackman Creek	3-II	5.80	6.61	1.14
Otterdale Branch	4	3.59	4.63	1.29
Swift Creek	5	21.40	23.27	1.09
Tomahawk Creek	6	4.20	5.94	1.41
Little Tomahawk Creek	7	2.31	3.21	1.39
Ashbrook Creek	8	2.37	2.56	1.08
Direct Runoff Sites				
Chimney House Place	13	0.05	2.54	50.80
Chestnut Bluff Terrace	14	0.19	2.12	11.16

Baseflow total phosphorus loads were determined from grab sample concentrations and corresponding instantaneous discharges scaled to a 24 hour period (daily load). Storm event phosphorus concentrations were acquired by flow-weighted composite sampling of stormflows at each tributary and direct runoff site. The total flow volume was then applied to the event mean concentration (mg/L) of the storm to determine the event phosphorus load. Storms that were not sampled representatively were omitted to avoid the error of over- or underestimating loads by applying phosphorus values that did not accurately characterize overall storm concentrations.

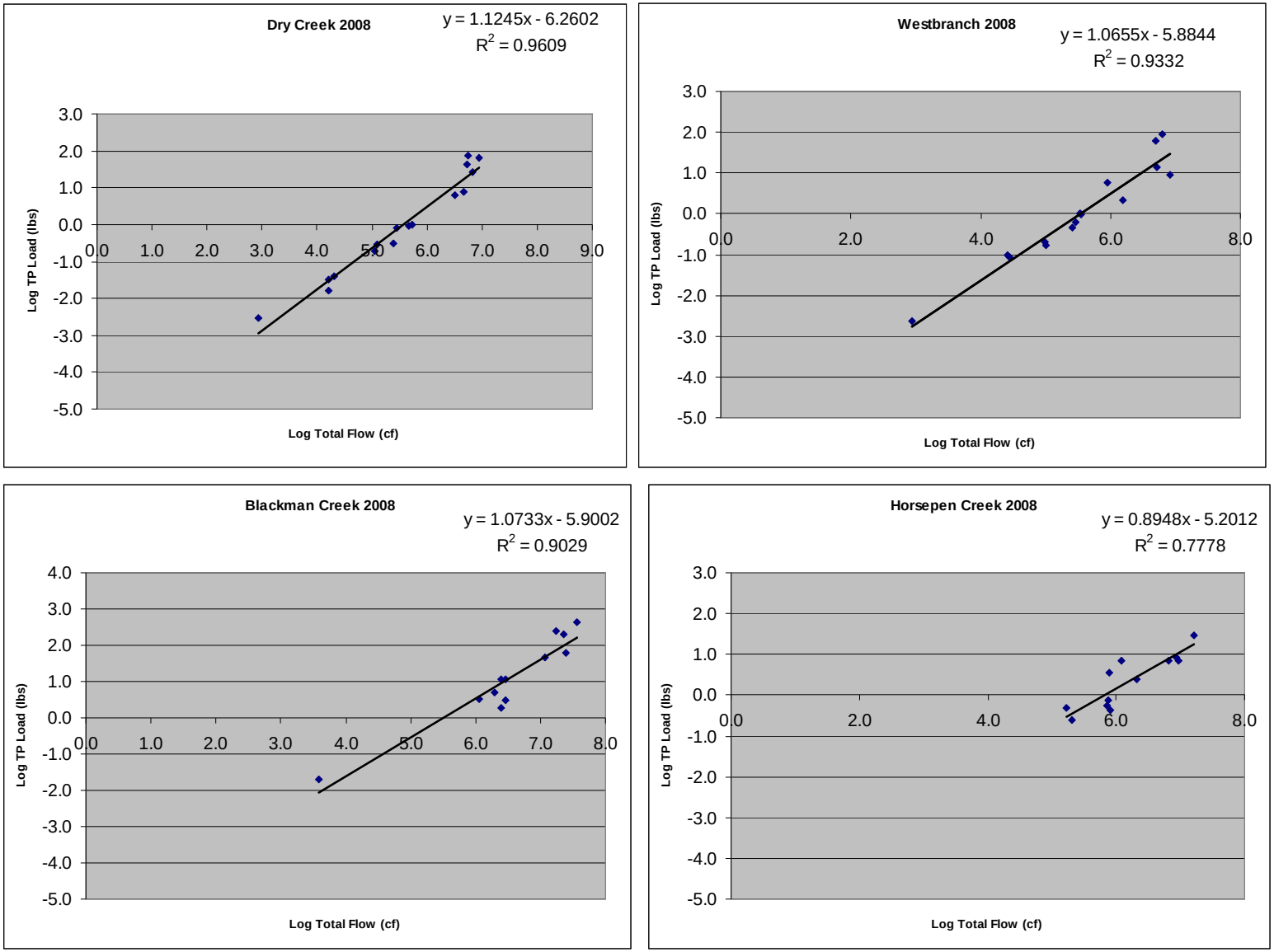


Figure 2-1a. Relationships of Total Flow versus Total Phosphorus Load in the Tributaries of Swift Creek Reservoir

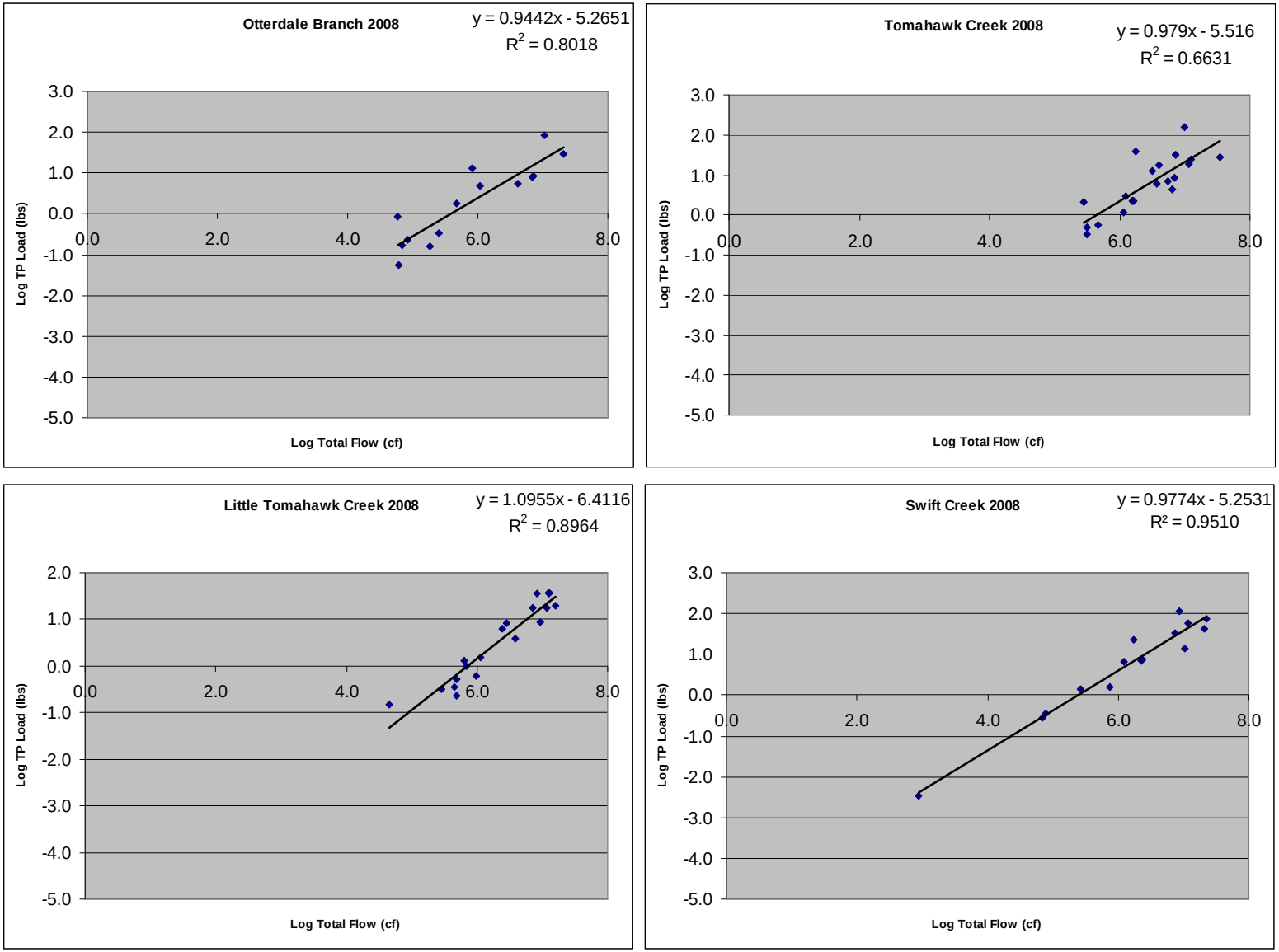


Figure 2-1b. Relationships of Total Flow versus Total Phosphorus Load in the Tributaries of Swift Creek Reservoir

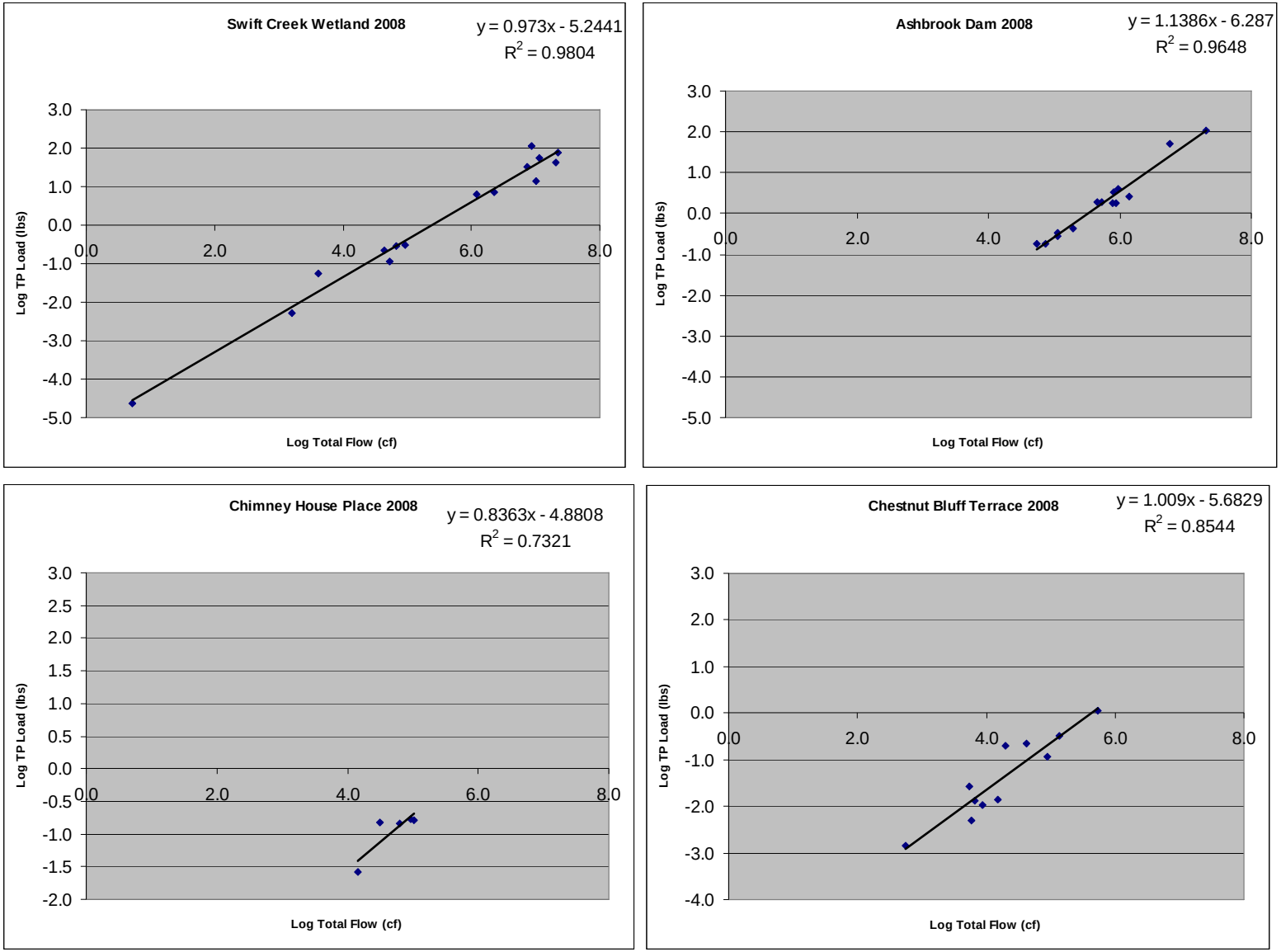


Figure 2-1c. Relationships of Total Flow versus Total Phosphorus Load in the Tributaries of Swift Creek Reservoir

Atmospheric phosphorus inputs were measured from wetfall/dryfall sampling. The average concentration and average daily loadings for the wetfall and dryfall are summarized in Table 2-2. A test for outliers conducted on the results indicated that three loadings and two concentrations were outliers (>2.5 standard deviations from the mean) and were therefore removed from further analysis (Table 2-2). The seasonal loadings for wetfall and dryfall were combined to determine a total annual phosphorus loading to the reservoir from atmospheric sources (Table 2-3).

Table 2-2. Results of the Wetfall – Dryfall Total Phosphorus Monitoring (2008)

Parameter	Median	Mean	SD	n
Wetfall Concentration (mg/L as P)	0.02	0.05	0.07	18
Wetfall Loading (mg/m²/L)	0.39	0.81	1.03	18
Dryfall Concentration (mg/L as P)	0.08	0.24	0.35	30
Dryfall Loading (mg/m²/day)	0.07	0.20	0.27	30

Outliers: Wetfall Concentration - July 11 = 0.47 mg/L as P
Dryfall Concentration - June 9 = 2.95 mg/L as P
Wetfall Loadings - July 11 = 5.40 mg/m^2/L; July 8 = 5.39 mg/m^2/L
Dryfall Loadings - June 9 = 4.56 mg/m^2/day

Table 2-3. Seasonal Atmospheric Total Phosphorus Inputs to Swift Creek Reservoir (2008)

	Wetfall Total			Dryfall Total		
	Phosphorus Load	Rainfall		Phosphorus Load	Dryfall Period	
Season	(lbs)	(inches)	n	(lbs)	(Days)	n
Winter	12	3.44	3	2	80	9
Spring	64	12.22	6	49	72	9
Summer	65	4.99	4	26	77	7
Autumn	62	6.63	5	7	57	5
Annual	**204**	**27.28**	**18**	**85**	**286**	**30**

Note: Some samples were excluded from loading calculations (*i.e.*, outliers, contamination). Rainfall and dryfall days are less than actual annual totals.

Annual total phosphorus load to the reservoir was then calculated by adding the tributary and atmospheric inputs (Table 2-4). The procedure described above yielded an annual total phosphorus load of 8,810 pounds. Annual total phosphorus loads for 1992 through 2008 are provided in Table 2-5 and a comparison is shown in Figure 2-2. The 2008 estimate of phosphorus loading is comparable to the long-term (1992-2008) median of 7,393 pounds. The 2008 annual total phosphorus loading reflects the above average annual rainfall, and is fairly consistent with loadings observed during years with high to moderate precipitation. This is also consistent with trends observed over the past 15 years (1992-2007) between annual rainfall and annual phosphorus loading, which display a strong correlation (R^2 = 0.7239). The relationship

between annual rainfall and annual phosphorus loading using data from 1992 through 2008 is shown in Figure 2-3.

The contribution of phosphorus loadings from each station remained fairly consistent from previous years with exception to Blackman Creek, which increased considerably from 15.5% in 2007 to 40.2% in 2008. Substantial land use changes occurred in the Blackman Creek watershed during 2007 and 2008 as a result of clearing for the new Magnolia Green Subdivision (*i.e.* roads, lots, infrastructure). In addition, the monitoring station itself had disturbances in the immediate vicinity to install new sewer and water lines to support the subdivision. Collectively, these changes may have contributed to the increased percentage of phosphorus loading observed at this location.

Table 2-4. Annual 2008 sub-basin phosphorus loads for Swift Creek Reservoir watershed as determined by the Regression Method (Leitch, 1998)

	Station	Raw Total Phosphorus Load	Scaled Total Phosphorus Load	Percent Contribution
Tributary	**Number**	**(Pounds)**	**(Pounds)**	
Dry Creek	1	239	311	3.5
West Branch	2	208	208	2.4
Horsepen	3-I	103	121	1.4
Blackman	3-II	3,107	3,539	40.2
Otterdale	4	301	387	4.4
Swift Creek	5	1,252	1,361	15.5
Tomahawk	6	726	1,027	11.7
Little Tomahawk	7	475	660	7.5
Ashbrook	8	533	576	6.5
Chimney House Place (Brandermill)	13	2.10	107	1.2
Chestnut Bluff Terrace (Woodlake)	14	8.60	96	1.1
Swift Creek Wetland	-	117	127	1.4
Watershed Subtotal		**7,072**	**8,521**	**96.7**
Atmospheric Inputs	Wetfall/Dryfall	289	289	3.3
Total Watershed Load 2008:		**7,361**	**8,810**	**100.0**

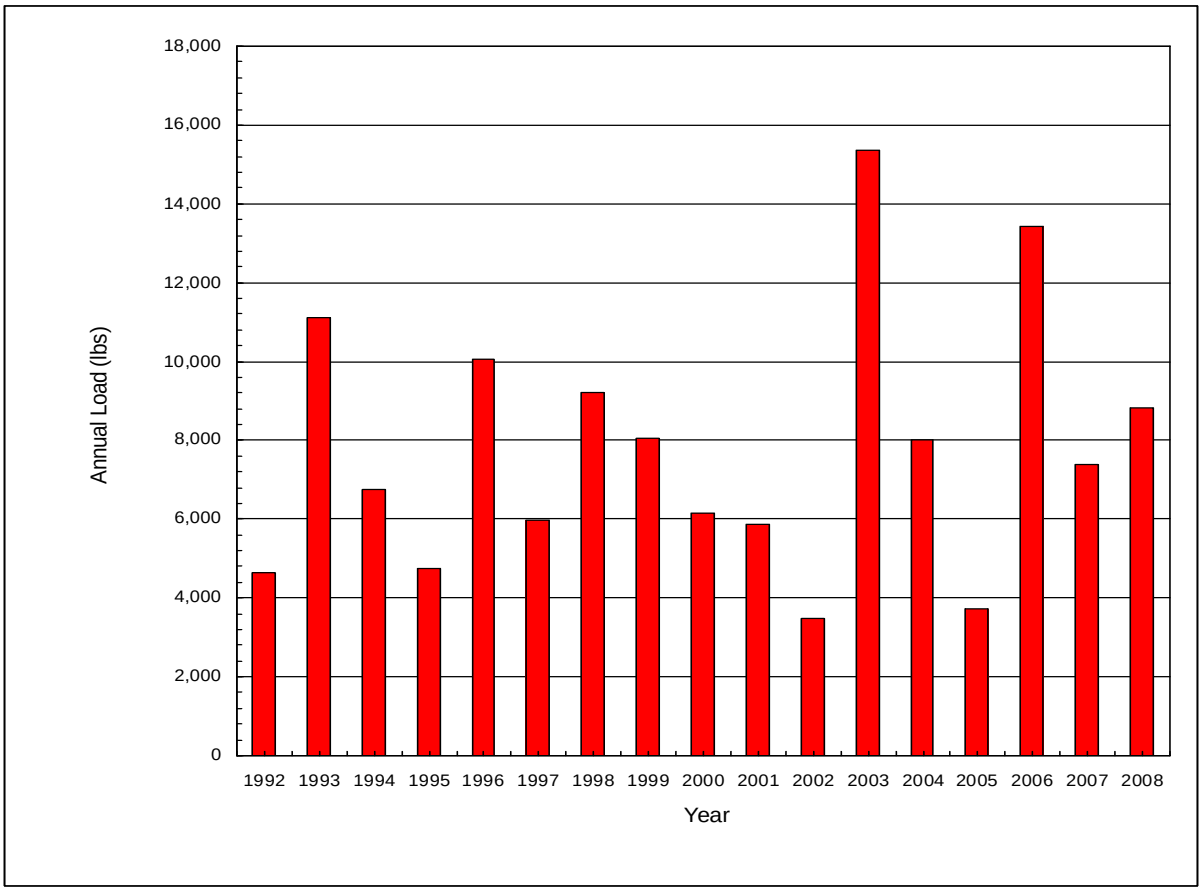


Figure 2-2. Annual Phosphorus Loadings to Swift Creek Reservoir
1992 & 1993 Data From Smock, 1994 – 1995 Values From OWML, 1996 Value From Hoehn Et Al., 1997 Value From SCWTP. The 1998 – 2004 Values Are Derived From The Regression Method Detailed By Leitch (1998).

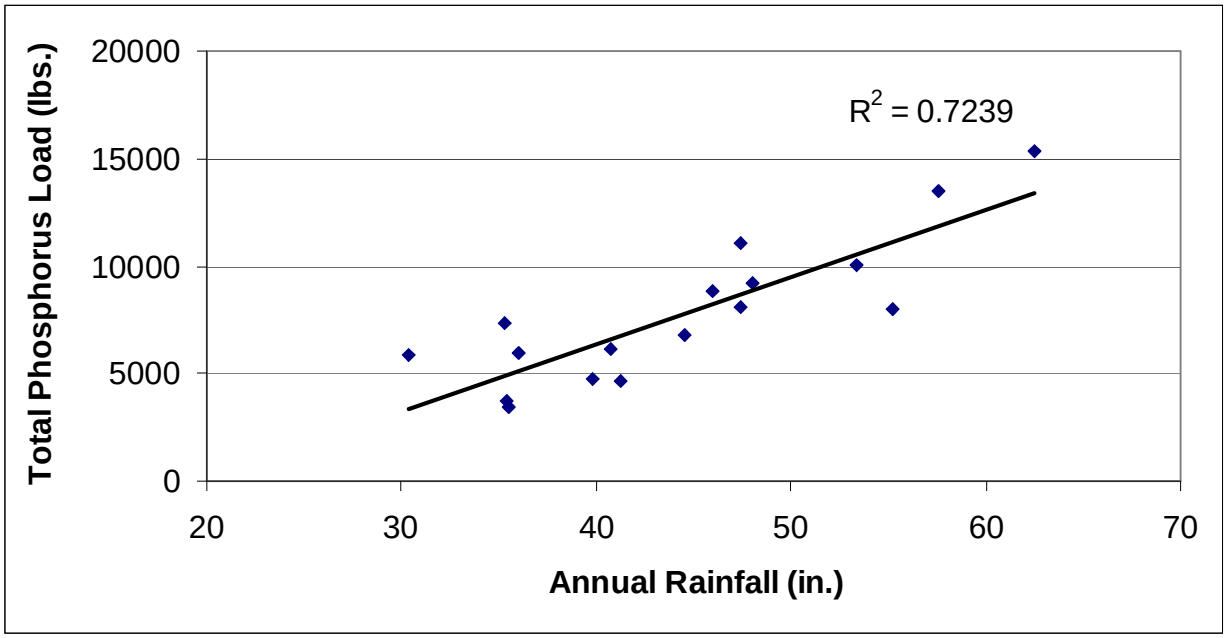


Figure 2-3. Relationship Between Annual Rainfall and Annual Phosphorus Loadings to Swift Creek Reservoir (1992 – 2008)

Table 2-5. Summary of Annual Phosphorus Loadings and Annual Rainfall 1992 - 2008

Year	Annual Estimated Phosphorus Loading (pounds)	Annual Rainfall (inches)
1992	4,653	41.25
1993	11,100	47.44
1994	6,755	44.57
1995	4,750	39.8
1996	10,060	53.36
1997	5,976	35.97
1998	9,221	48.08
1999	8,048	47.37
2000	6,168	40.78
2001	5,859	30.34
2002	3,477	35.52
2003	15,376	62.46
2004	8,019	55.23
2005	3,715	35.36
2006	13,445	57.53
2007	7,391	35.32
2008	8,810	45.98

Chapter 3: Hydrology & Water Budget

HYDROLOGIC CHARACTERISTICS AND WATER BUDGET

Total hydrologic inputs and outputs were characterized to determine the 2008 water budget for Swift Creek Reservoir (Table 3-1). A detailed description of water budget procedures can be found in the 1998 Swift Creek Reservoir Survey Report (SCWTP, 2000). The 2008 water budget for Swift Creek Reservoir was determined from the following simplified water budget equation used in previous USGS reports (Skrobialowski, 1998):

Inflows - Outflows = Change in Storage + Residual

Where:

Inflows = Surface water inflows + total precipitation volume

Outflows = Evaporation + withdrawals + overflow + seepage

Change in Storage = Measured change in reservoir storage during the year

Residual = the sum of errors associated with assumed, estimated, and measured hydrologic characteristics + unaccounted for variables (*i.e.* groundwater flux and transpiration).

Hydrologic Inflows

Gauged inflow sites were categorized as main tributaries and residential catchments (Table 3-2). In total, there are nine tributaries that drain mostly undeveloped or developing land in the watershed and two residential catchments that drain mostly developed land adjacent to the reservoir (Figure 3-1). Annual tributary inflows for 2008 were measured at 2,355 Mft^3 (Table 3-1). Drainage from a large wetland adjacent to the Swift Creek monitoring station was approximated based on monitoring of the velocities and water levels through the culverts, and resulted in an annual discharge of 29 Mft^3 (Table 3-1). Annual hydrographs (Figures 3-2a through 3-2d) and mean daily discharge values and summary statistics are presented for each site in Tables 3-3a through 3-3k. Discharges from ungaged direct runoff areas adjacent to the reservoir were estimated as in previous USGS reports and totaled 462Mft^3 (Skrobialowski, 1998; Table 3-4). Direct Runoff Area 1 was calculated based on annual runoff from the Brandermill residential catchment and Direct Runoff Area 2 from the Woodlake residential catchment. Area 3 was calculated based upon the annual runoff from Stations 7 and 8 and Area 4 from Stations 1 through 6 (see Figure 3-1).

Annual mean precipitation was calculated from an average of three tipping bucket rain gauges located within the watershed, resulting in 45.98 inches (Table 3-5). The precipitation total for 2008 was slightly above the monitoring period average (42.84 inches), surpassing it by

just over three inches. The total direct precipitation on to the surface of the reservoir was approximately 271.3 Mft^3 (Table 3-5).

Hydrologic Outputs

The total annual discharge over the dam in 2008 was measured at 2,188 Mft^3 (Table 3-1). Leakage under the dam was estimated at 1.2 Mft^3 based on an existing stage/discharge relationship for the reservoir (Table 3-1). The annual overflow hydrograph (Figure 3-2c) and mean daily discharge values and summary statistics for overflow and leakage are presented in Tables 3-6a and 3-6b.

The total volume of water withdrawn for the public water supply by Addison-Evans Water Production & Laboratory Facility plant was 423 Mft^3 (Table 3-1). Brandermill Country Club reportedly withdrew an estimated 2.9 Mft^3 for golf course irrigation in 2008 (Table 3-1). Both of these volumes were within historical norms.

Evaporation rates from the reservoir were determined based on evaporation pan data. In 2008, annual pan evaporation was measured at 58.1 inches, which represented approximately 240 Mft^3 evaporating from the reservoir (Table 3-7). The evaporation rates were highest during the months of May, June, July, and August.

Change in Reservoir Storage

The USGS developed elevation-storage rating curve, derived from the 1995 reservoir bathymetric survey, was used to determine the annual change in water storage for Swift Creek Reservoir. Change in storage was calculated as the difference between the volume of water in the reservoir on January 1, 2008 and December 31, 2008. Since the reservoir was at an elevation of 176.74 feet at the start of the year (corresponding volume of 581.3 Mft^3) and an elevation of 177.10 ft at the end (corresponding volume of 607.8 Mft^3), a change in storage (*i.e.* increase) of 27 Mft^3 occurred during the year (Table 3-1).

The Residual and Explanation of Errors

The calculated residual was -252 Mft^3 (Table 3-1), which is the amount of flow over the spillway in excess of the measured inputs minus the measured outputs. In other words, more water entered the reservoir than exited *(i.e.* unaccounted for volume) according to measured and estimated values. The residual represents the sum of errors associated with assumed, estimated, and measured hydrologic characteristics, as well as unaccounted for variables. A detailed explanation of errors associated with measurements and estimations regarding the calculation of water budgets are presented in the 1997 USGS report of hydrologic characteristics (Skrobialowski, 1998).

Table 3-1. 2008 Water Budget for Swift Creek Reservoir

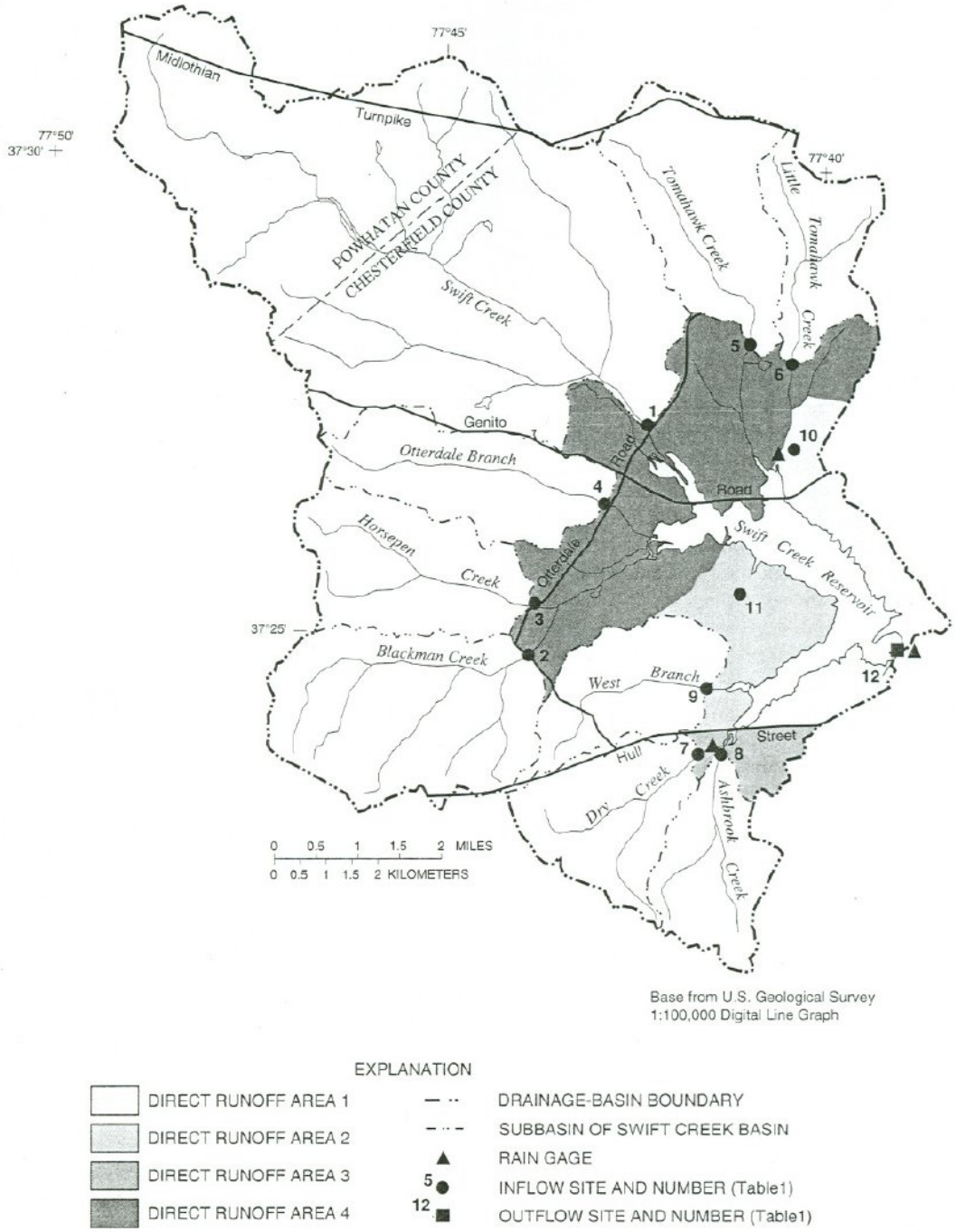
Inputs	Mft³	Source
Monitored Tributaries	2,355	Stream Gauges (Table 3-2 & 3-3)
Direct Runoff Areas	479	Calculated as per USGS (Table 3-4)
Swift Creek Wetland Discharge	29	Estimated based on Swift Creek tributary data (Table 3-3i)
Precipitation	271	Scaled using mean rainfall and lake surface area (Table 3-5)
Total	**3,134**	
Outputs	**Mft³**	**Source**
Evaporation	240	Calculated on monthly basis using pan data and stage/s.a. curve from OWML
Plant Withdrawals	423	Determined from operator's log
Golf Course Irrigation	3	Acquired from Brandermill Country Club
Overflow	2,188	Determined from USGS rating tables and daily average reservoir elevations from automated gage.
Leakage	1	Determined from stage/discharge rating table
Total	**2,855**	
Change in Storage	27	Calculated using intake gauge and USGS storage data regressed
Residual	**-252**	Unaccounted for flow over spillway

Note: All inputs and outputs rounded to the nearest whole number

Table 3-2. Drainage Area, Discharge, and Runoff Data for Tributaries and Residential Catchments

	Station Number	Drainage Area	Average Daily Mean Discharge	Max Daily Mean Discharge	Min Daily Mean Discharge	Gauged Annual Flow	Annual Runoff
Tributary		(sq. miles)	(ft^3/s)	(ft^3/s)	(ft^3/s)	(Mft^3)	Mft^3/mi^2)
Dry Creek	1	2.96	2.60	43.7	0.0	82.1	27.7
Westbranch	2	2.75	2.1	44.3	0.0	66.0	24.0
Horsepen	3-I	3.72	5.1	83.9	0.0	160.1	43.0
Blackman	3-II	5.80	25.8	206.1	0.0	816.0	140.7
Otterdale	4	3.59	3.8	77.7	0.0	119.2	33.2
Swift Creek	5	21.40	10.3	132.0	0.0	324.4	15.2
Tomahawk	6	4.20	10.2	131.6	0.0	322.6	76.8
Little Tomahawk	7	2.31	10.1	88.3	0.0	318.6	137.9
Ashbrook	8	2.37	4.6	65.2	0.0	145.9	61.6
Total		**49.10**				**2354.9**	
Residential Catchments:							
Brandermill	13	0.05	0.02	0.7	0.0	0.7	14.0
Woodlake	14	0.19	0.12	2.3	0	3.8	19.9
Total		**0.24**				**4.5**	
Swift Creek Dam	Spillway	64.40	69.2	3326.0	0.0	2187.9	34.0

Figure 3-1 Sub-basins and Data Collection Sites in the Swift Creek Drainage Basin (From Skrobialowski, 1998)



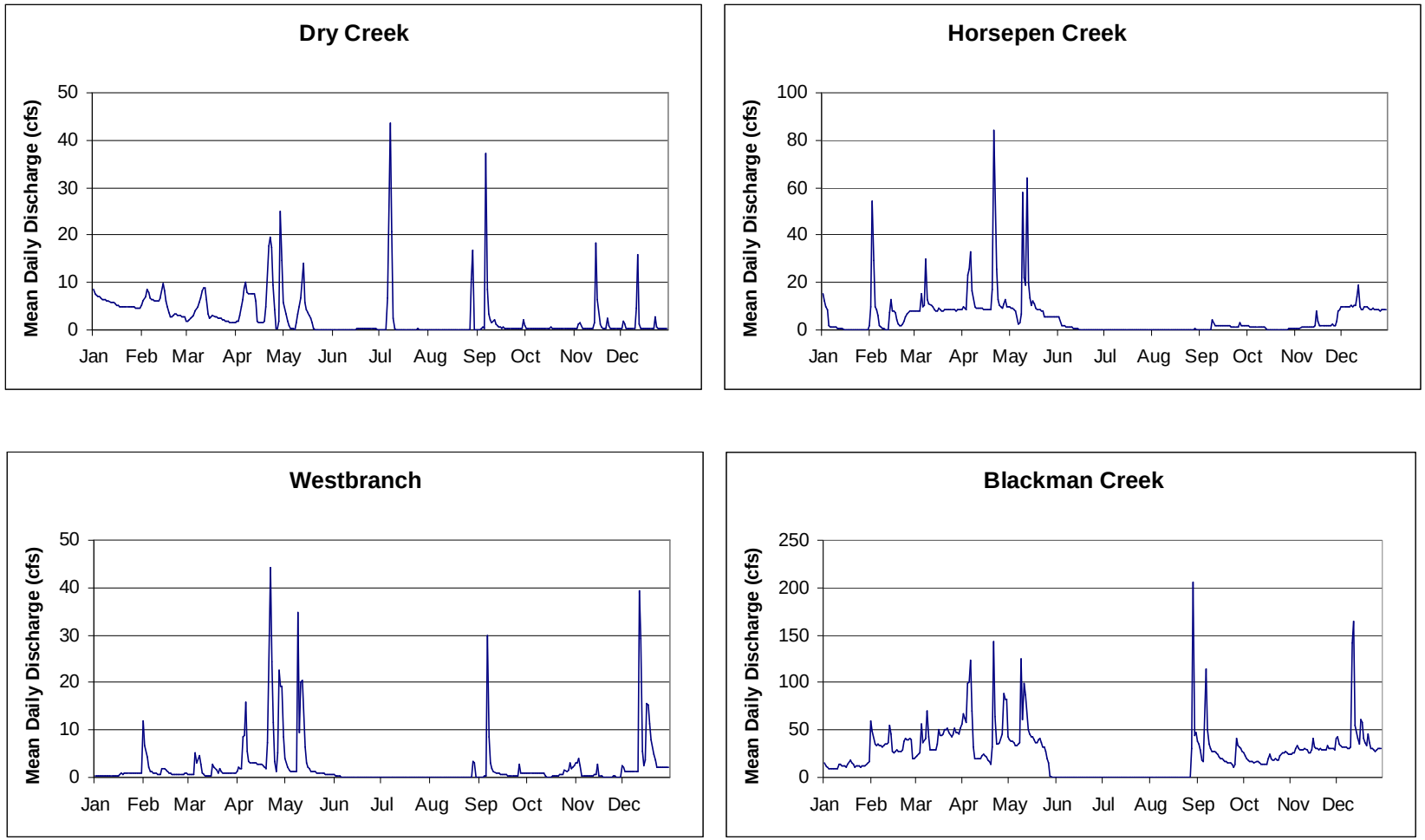


Figure 3-2a. 2008 Discharge Hydrographs for the Western Tributaries of Swift Creek Reservoir Watershed

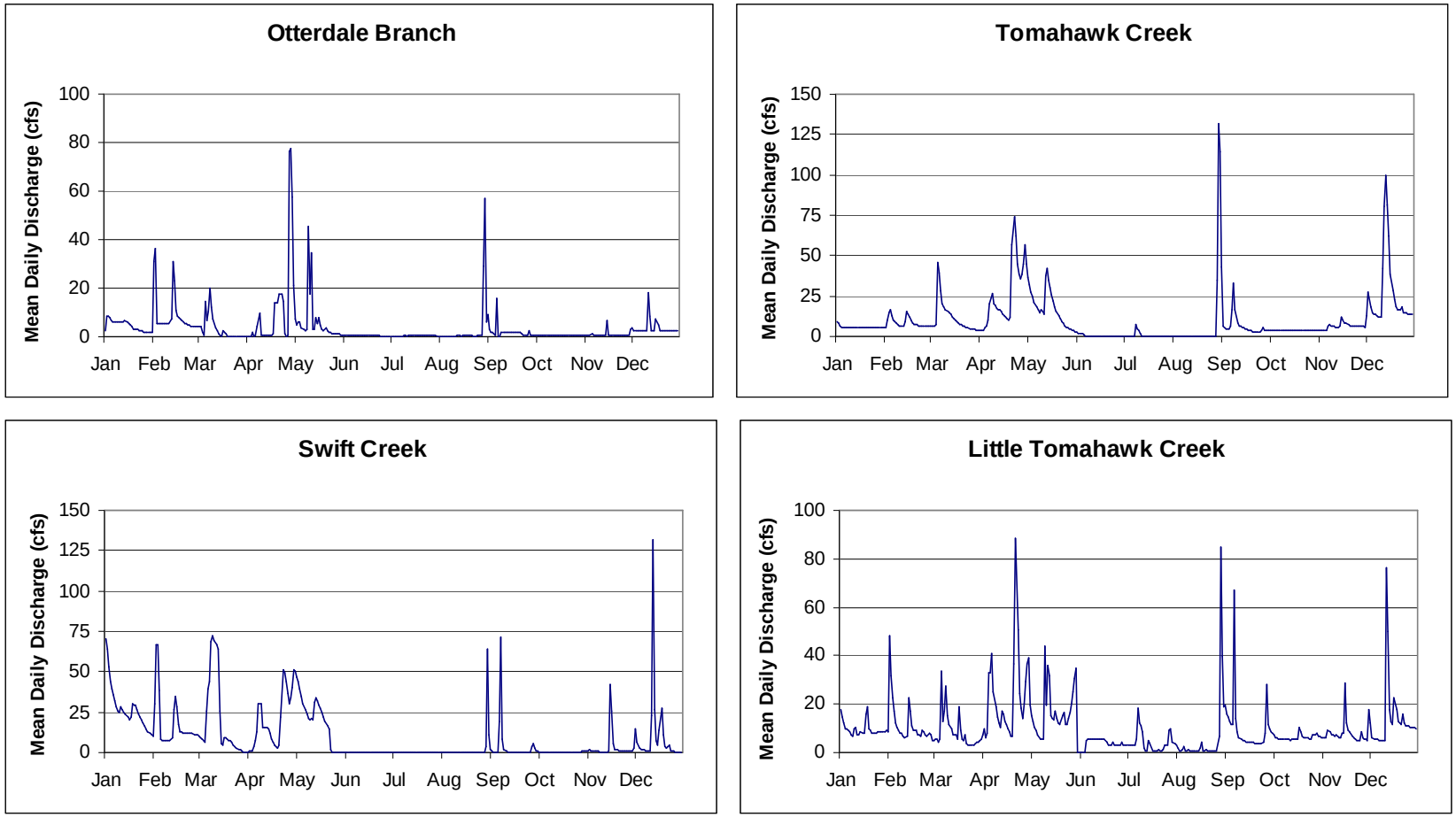


Figure 3-2b. 2008 Discharge Hydrographs for the Northern Tributaries of Swift Creek Reservoir Watershed

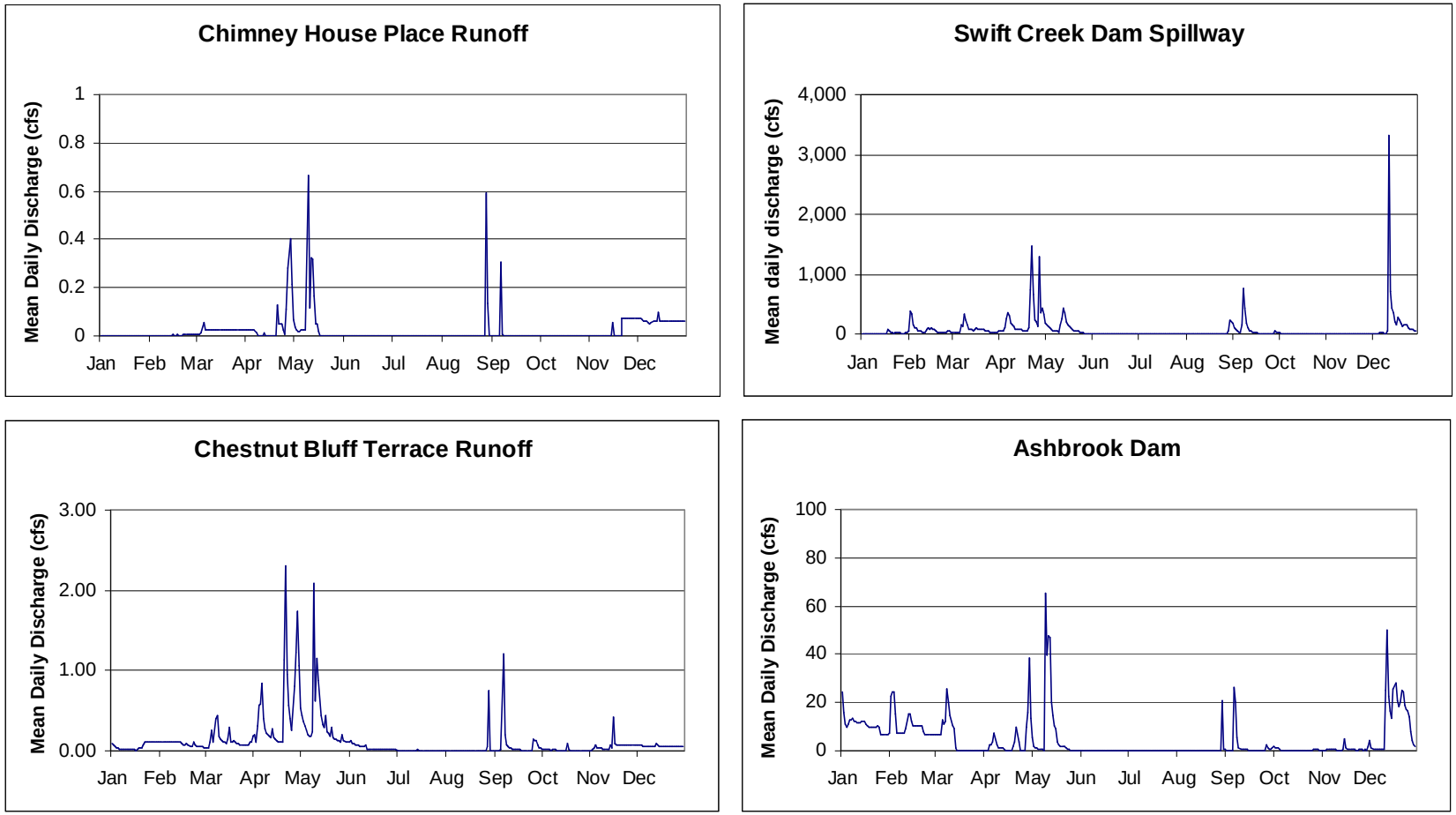


Figure 3-2c. 2008 Discharge Hydrographs for the Direct Runoff Sites and Impounded Waters of Swift Creek Reservoir Watershed

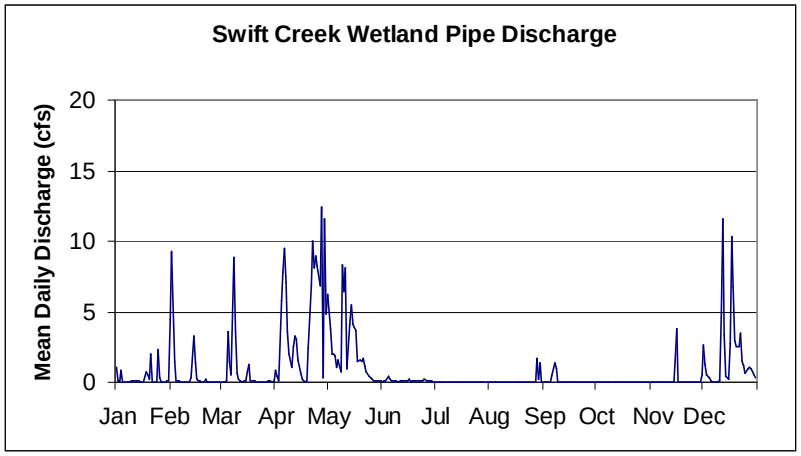


Figure 3-2d. 2008 Discharge Hydrographs for the Direct Runoff Sites and Impounded Waters of Swift Creek Reservoir Watershed

Table 3-3a. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Dry Creek

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	8.54	5.08	1.92	1.70	5.94	0.00	0.00	0.00	0.00	0.94	0.19	0.19
2	7.49	6.13	2.19	1.98	3.35	0.00	0.00	0.00	0.00	0.21	0.19	1.89
3	7.38	7.12	2.47	3.19	1.95	0.00	0.00	0.00	0.23	0.19	0.19	1.31
4	7.15	8.67	2.76	4.74	0.78	0.00	0.00	0.00	0.51	0.19	1.23	0.31
5	6.97	8.03	3.12	6.51	0.27	0.00	0.00	0.00	0.42	0.19	1.63	0.21
6	6.76	6.83	3.87	8.83	0.18	0.00	6.69	0.00	37.22	0.19	0.34	0.19
7	6.55	6.48	4.75	10.02	0.19	0.00	43.67	0.00	8.51	0.19	0.22	0.19
8	6.36	6.36	5.69	8.00	0.01	0.00	20.75	0.00	3.36	0.19	0.19	0.19
9	6.25	6.24	6.80	7.71	1.42	0.00	2.35	0.00	2.27	0.19	0.19	0.19
10	6.17	6.18	8.09	7.71	3.36	0.00	0.19	0.00	1.55	0.19	0.19	20.78
11	6.06	6.14	8.93	7.71	4.91	0.00	0.12	0.00	2.05	0.19	0.19	16.01
12	5.91	6.09	8.70	7.71	6.66	0.00	0.00	0.00	1.30	0.19	0.19	1.12
13	5.80	6.77	6.29	6.20	14.02	0.00	0.00	0.00	0.90	0.19	0.27	8.10
14	5.66	9.61	3.24	1.76	5.68	0.00	0.00	0.00	0.58	0.19	1.67	0.19
15	5.48	8.15	2.34	1.40	4.20	0.09	0.00	0.00	0.51	0.19	18.26	0.19
16	5.29	6.21	2.64	1.40	3.53	0.15	0.00	0.00	0.38	0.20	6.40	0.19
17	5.08	4.77	2.92	1.40	2.91	0.15	0.00	0.00	0.48	0.68	1.14	0.19
18	5.03	3.55	2.88	1.46	2.33	0.15	0.00	0.00	0.26	0.19	0.63	0.19
19	5.03	2.80	2.68	1.70	1.57	0.15	0.00	0.00	0.21	0.19	0.43	0.19
20	5.03	2.88	2.56	4.78	0.38	0.15	0.00	0.00	0.20	0.19	0.43	0.19
21	5.03	2.96	2.45	17.83	0.11	0.15	0.00	0.00	0.19	0.19	0.43	0.21
22	5.03	3.45	2.33	19.44	0.00	0.15	0.00	0.00	0.19	0.19	2.53	2.72
23	5.03	3.30	2.24	17.27	0.00	0.15	0.00	0.00	0.19	0.19	0.77	0.56
24	5.03	3.17	2.11	9.53	0.00	0.15	0.00	0.00	0.19	0.19	0.26	0.24
25	5.01	2.96	1.96	4.21	0.00	0.15	0.15	0.00	0.19	0.19	0.20	0.20
26	4.87	2.76	1.83	0.16	0.00	0.15	0.09	0.00	0.19	0.19	0.19	0.19
27	4.77	2.76	1.74	0.20	0.00	0.15	0.03	0.00	0.19	0.19	0.19	0.19
28	4.71	2.61	1.64	1.85	0.00	0.15	0.01	10.70	0.19	0.19	0.19	0.19
29	4.66	1.90	1.54	24.96	0.00	0.04	0.00	16.73	0.19	0.19	0.19	0.19
30	4.59		1.50	14.53	0.00	0.01	0.00	0.00	2.15	0.19	0.19	0.19
31	4.57		1.57		0.00		0.00	0.06		0.19		0.19
Mean	5.72	5.17	3.41	6.86	2.06	0.07	2.39	0.89	2.16	0.23	1.31	1.84
Max	8.54	9.61	8.93	24.96	14.02	0.15	43.67	16.73	37.22	0.94	18.26	20.78
Min	4.57	1.90	1.50	0.16	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.19

Table 3-3b. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Westbranch

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	0.41	12.04	0.61	2.16	3.98	0.57	0.00	0.00	0.00	0.82	3.14	2.00
2	0.28	6.83	0.55	1.95	2.08	0.41	0.00	0.00	0.00	0.82	3.18	1.20
3	0.21	4.16	0.56	1.89	1.57	0.30	0.00	0.00	0.00	0.82	3.87	1.15
4	0.18	2.23	0.58	8.47	1.32	0.21	0.00	0.00	0.44	0.82	2.33	1.15
5	0.17	1.28	5.04	8.76	1.26	0.12	0.00	0.00	0.41	0.82	0.32	1.15
6	0.17	1.07	3.09	15.72	1.19	0.09	0.00	0.00	29.77	0.82	0.32	1.15
7	0.26	0.90	4.46	5.43	1.15	0.07	0.00	0.00	8.52	0.82	0.32	1.15
8	0.29	0.83	2.76	3.29	1.25	0.04	0.00	0.00	3.12	0.82	0.32	1.15
9	0.28	0.78	0.87	3.19	34.71	0.00	0.00	0.00	1.70	0.82	0.32	1.15
10	0.25	0.72	0.47	3.10	9.50	0.00	0.00	0.00	1.17	0.82	0.32	1.30
11	0.19	0.67	0.36	3.02	20.14	0.00	0.00	0.00	0.91	0.82	0.32	39.45
12	0.19	0.74	0.33	2.94	20.28	0.00	0.00	0.00	0.91	0.82	0.32	29.23
13	0.19	1.92	0.33	2.89	6.26	0.00	0.00	0.00	0.84	0.22	0.49	5.51
14	0.19	1.91	0.32	2.89	3.00	0.00	0.00	0.00	0.74	0.00	0.73	2.50
15	0.21	1.43	0.31	2.87	2.23	0.00	0.00	0.00	0.71	0.01	2.76	3.60
16	0.26	1.22	2.88	2.64	1.92	0.00	0.00	0.00	0.65	0.01	0.30	15.42
17	0.51	1.03	2.13	2.35	1.30	0.00	0.00	0.00	0.56	0.19	0.16	15.36
18	0.84	0.86	1.43	2.08	1.13	0.00	0.00	0.00	0.47	0.25	0.11	11.28
19	0.68	0.71	0.99	1.83	1.13	0.00	0.00	0.00	0.40	0.26	0.08	7.83
20	0.80	0.63	1.76	7.18	1.21	0.00	0.00	0.00	0.33	0.32	0.09	5.02
21	0.80	0.63	1.15	44.33	0.98	0.00	0.00	0.00	0.29	0.36	0.08	3.56
22	0.80	0.64	1.02	24.54	0.94	0.00	0.00	0.00	0.26	0.46	0.08	2.08
23	0.80	0.66	1.02	11.55	0.93	0.00	0.00	0.00	0.26	0.56	0.10	2.08
24	0.80	0.68	1.02	3.32	0.92	0.00	0.00	0.00	0.19	0.67	0.13	2.08
25	0.80	0.71	1.02	1.27	0.85	0.00	0.00	0.00	0.22	1.46	0.36	2.08
26	0.80	0.75	1.02	5.16	0.72	0.00	0.00	0.00	2.65	1.16	0.18	2.08
27	0.80	0.81	1.02	22.65	0.73	0.00	0.00	0.00	0.85	1.63	0.13	2.08
28	0.80	0.79	1.02	19.17	0.73	0.00	0.02	3.46	0.82	2.98	0.13	2.08
29	0.80	0.70	1.02	19.20	0.69	0.00	0.00	3.08	0.82	1.96	0.12	2.08
30	0.80		1.02	8.65	0.65	0.00	0.00	0.00	0.82	2.04	2.38	2.08
31	0.80		1.21		0.62		0.00	0.00		2.35		2.08
Mean	0.49	1.67	1.33	8.15	4.04	0.06	0.00	0.21	1.96	0.86	0.78	5.55
Max	0.84	12.04	5.04	44.33	34.71	0.57	0.02	3.46	29.77	2.98	3.87	39.45
Min	0.17	0.63	0.31	1.27	0.62	0.00	0.00	0.00	0.00	0.00	0.08	1.15

Table 3-3c. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Horsepen Creek

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	15.30	10.00	7.83	9.53	9.62	5.36	0.00	0.00	0.00	1.61	0.59	9.62
2	12.18	54.23	7.83	8.89	9.45	5.28	0.00	0.00	0.00	1.54	0.48	9.63
3	9.91	29.48	7.83	8.59	9.26	1.97	0.00	0.00	0.00	1.51	0.48	9.60
4	8.28	9.73	7.84	23.45	8.61	1.94	0.00	0.00	0.20	1.48	0.57	9.84
5	1.96	8.32	15.08	25.53	7.84	1.56	0.00	0.00	0.00	1.40	1.00	9.90
6	1.20	6.01	10.06	32.66	2.36	1.38	0.00	0.00	0.00	1.25	1.22	10.03
7	1.20	1.60	10.50	16.27	2.97	1.24	0.00	0.00	0.00	1.14	1.39	10.14
8	1.20	1.02	29.67	10.05	6.42	1.12	0.00	0.00	0.00	1.14	1.36	9.99
9	1.19	0.63	12.83	9.20	58.05	1.03	0.00	0.00	4.25	1.14	1.35	10.07
10	0.99	0.38	10.93	9.20	22.09	0.94	0.00	0.00	1.94	1.14	1.34	10.23
11	0.79	0.21	10.26	9.20	18.85	0.82	0.00	0.00	1.93	1.14	1.31	14.27
12	0.66	0.12	9.94	9.20	63.76	0.70	0.00	0.00	1.97	1.14	1.29	19.20
13	0.54	7.32	8.73	8.97	19.50	0.58	0.00	0.00	1.91	0.64	1.33	9.56
14	0.43	12.51	7.92	8.54	13.51	0.45	0.00	0.00	1.75	0.04	1.53	8.73
15	0.30	8.02	7.67	8.41	10.37	0.26	0.00	0.00	1.67	0.04	7.77	8.44
16	0.22	7.79	9.17	8.39	12.11	0.10	0.00	0.00	1.64	0.04	3.63	9.70
17	0.14	7.03	8.33	8.41	10.74	0.00	0.00	0.00	1.64	0.04	1.91	9.99
18	0.02	4.46	8.00	8.49	8.98	0.00	0.00	0.00	1.61	0.10	1.93	8.90
19	0.00	2.29	8.22	8.30	8.57	0.00	0.00	0.00	1.57	0.24	1.82	8.63
20	0.00	2.10	8.55	16.82	8.30	0.00	0.00	0.00	1.53	0.20	1.84	8.32
21	0.00	2.10	8.42	353.65	8.01	0.00	0.00	0.00	1.52	0.11	1.78	8.85
22	0.00	2.36	8.40	214.02	7.67	0.00	0.00	0.00	1.49	0.04	1.66	8.70
23	0.00	3.42	8.35	115.19	5.60	0.00	0.00	0.00	1.41	0.04	1.71	8.47
24	0.00	5.37	8.37	25.32	5.36	0.00	0.00	0.00	1.30	0.04	1.81	8.40
25	0.00	6.84	8.33	9.65	5.36	0.00	0.00	0.00	1.22	0.04	2.26	8.27
26	0.00	7.88	8.25	9.32	5.36	0.00	0.00	0.00	3.17	0.04	2.05	8.06
27	0.00	8.18	8.23	10.94	5.36	0.00	0.00	0.00	1.93	0.21	1.99	8.39
28	0.00	7.94	8.25	12.67	5.36	0.00	0.00	0.70	1.71	0.66	3.87	8.42
29	0.00	7.83	8.33	10.01	5.36	0.00	0.00	0.00	1.61	0.77	7.64	8.49
30	0.18		8.38	9.80	5.36	0.00	0.00	0.00	1.57	0.72	8.59	8.45
31	1.75		8.58		5.36		0.00	0.00		0.66		8.44
Mean	1.89	7.76	9.65	33.95	12.11	0.82	0.00	0.02	1.35	0.66	2.25	9.60
Max	15.30	54.23	29.67	353.65	63.76	5.36	0.00	0.70	4.25	1.61	8.59	19.20
Min	0.00	0.12	7.67	8.30	2.36	0.00	0.00	0.00	0.00	0.04	0.48	8.06

Table 3-3d. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Blackman Creek

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	15.06	58.79	21.41	66.54	39.94	0.06	0.00	0.00	37.51	25.50	24.69	42.54
2	12.14	49.37	22.95	62.08	38.80	0.05	0.00	0.00	35.66	22.51	25.25	35.33
3	10.30	34.72	23.88	57.61	37.42	0.04	0.00	0.00	28.55	19.98	25.59	33.22
4	9.64	32.78	25.91	99.78	36.69	0.00	0.00	0.00	18.55	18.43	29.86	32.52
5	9.67	34.40	56.86	100.23	34.18	0.00	0.00	0.00	16.44	17.41	33.91	32.21
6	9.53	34.18	36.53	124.10	34.08	0.00	0.00	0.00	114.74	16.55	30.51	31.72
7	9.45	33.38	40.46	69.93	35.62	0.00	0.00	0.00	50.14	16.42	29.29	31.52
8	9.56	31.87	69.77	31.92	35.89	0.00	0.00	0.00	34.36	15.77	29.38	30.45
9	9.29	33.41	42.83	19.26	125.41	0.00	0.00	0.00	30.42	16.94	29.70	30.49
10	9.57	35.03	28.47	19.26	61.41	0.00	0.00	0.00	28.20	17.11	30.09	31.65
11	12.99	35.25	28.35	19.26	99.30	0.00	0.00	0.00	27.63	15.47	29.26	141.20
12	13.40	36.90	28.22	19.26	86.41	0.00	0.00	0.00	27.33	13.69	26.31	164.04
13	12.43	55.58	29.03	23.40	50.22	0.00	0.00	0.00	26.10	13.05	26.17	54.38
14	12.44	45.12	29.16	24.61	46.07	0.00	0.00	0.00	23.83	13.33	28.45	41.06
15	11.56	27.01	34.66	22.24	43.44	0.00	0.00	0.00	21.76	13.59	41.90	35.70
16	10.86	25.20	50.04	20.59	42.93	0.00	0.00	0.00	20.55	14.18	32.47	61.03
17	13.09	26.85	44.89	18.71	39.39	0.00	0.00	0.00	20.35	19.07	30.38	58.12
18	17.70	28.25	43.93	17.28	36.24	0.00	0.00	0.00	18.71	24.20	30.23	41.57
19	14.97	27.05	46.32	14.37	37.04	0.00	0.00	0.00	17.10	20.46	29.62	36.70
20	13.60	26.91	50.88	32.40	39.44	0.00	0.00	0.00	16.31	18.66	29.99	34.21
21	11.05	28.53	50.19	143.47	40.69	0.00	0.00	0.00	15.72	18.52	29.54	45.81
22	11.85	37.41	52.55	64.10	36.05	0.00	0.00	0.00	14.98	19.42	28.42	37.15
23	12.43	40.76	47.81	34.65	32.24	0.00	0.00	0.00	13.42	18.80	28.44	30.12
24	12.00	39.17	42.36	35.69	31.41	0.00	0.00	0.00	11.05	18.94	28.85	30.02
25	11.19	38.94	45.22	36.77	26.76	0.00	0.00	0.00	13.23	22.18	32.88	29.64
26	11.97	41.76	51.51	45.94	19.68	0.00	0.00	0.00	40.55	25.26	30.99	27.60
27	12.71	38.99	47.32	87.78	15.66	0.00	0.00	0.00	33.61	25.27	30.14	29.24
28	12.68	20.19	47.43	82.17	2.08	0.00	0.00	30.43	31.49	27.86	30.04	30.72
29	13.59	19.36	45.23	82.06	0.18	0.00	0.00	206.12	30.29	25.70	29.64	29.81
30	15.48		52.26	43.22	0.14	0.00	0.00	43.98	27.12	24.89	41.77	30.07
31	16.46		56.72		0.10		0.00	47.10		24.56		31.70
Mean	12.22	35.07	41.71	50.62	38.87	0.00	0.00	10.57	28.19	19.47	30.13	43.60
Max	17.70	58.79	69.77	143.47	125.41	0.06	0.00	206.12	114.74	27.86	41.90	164.04
Min	9.29	19.36	21.41	14.37	0.10	0.00	0.00	0.00	11.05	13.05	24.69	27.60

Table 3-3e. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Otterdale Branch

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	2.13	30.78	3.98	0.00	7.28	0.82	0.00	0.12	2.92	0.82	0.67	3.75
2	8.25	36.52	3.98	0.00	4.87	0.84	0.00	0.22	1.75	0.82	0.67	2.23
3	8.25	5.54	1.92	0.00	5.78	0.79	0.03	0.18	1.54	0.82	0.67	2.15
4	7.97	5.54	0.89	1.55	5.82	0.82	0.10	0.10	1.24	0.82	0.79	2.15
5	6.61	5.54	14.79	0.00	3.93	0.78	0.12	0.08	0.58	0.82	1.09	2.15
6	5.93	5.54	6.58	0.75	2.88	0.79	0.09	0.05	15.82	0.82	0.80	2.15
7	5.93	5.54	10.35	4.38	2.34	0.79	0.18	0.11	0.00	0.82	0.80	2.15
8	5.93	5.54	20.01	9.61	2.75	0.79	0.29	0.08	0.00	0.82	0.80	2.15
9	5.93	5.54	12.40	0.58	45.21	0.80	0.36	0.11	2.00	0.82	0.80	2.15
10	5.93	5.54	7.14	0.51	17.75	0.80	0.46	0.08	1.69	0.82	0.80	2.15
11	5.93	5.75	3.50	0.53	34.52	0.78	0.29	0.14	1.69	0.82	0.80	18.07
12	6.00	7.10	2.19	0.47	2.79	0.78	0.32	0.54	1.69	0.82	0.80	8.25
13	6.24	31.03	0.95	0.51	2.82	0.78	0.32	0.51	1.69	0.80	0.80	2.36
14	6.49	22.91	0.44	0.68	8.18	0.79	0.32	0.28	1.69	0.67	0.80	2.15
15	6.16	11.00	0.00	0.72	5.44	0.79	0.32	0.44	1.69	0.67	6.81	2.15
16	5.58	8.55	2.28	0.65	8.03	0.79	0.32	0.51	1.69	0.67	0.78	7.47
17	4.85	7.72	1.53	1.15	4.58	0.77	0.32	0.45	1.69	0.67	0.80	4.62
18	3.97	7.03	1.38	13.96	3.19	0.62	0.32	0.35	1.69	0.67	0.80	2.15
19	3.17	6.57	0.27	13.98	2.55	0.63	0.32	0.43	1.69	0.67	0.80	2.15
20	2.80	6.12	0.00	14.22	3.36	0.64	0.32	0.34	1.69	0.67	0.80	2.15
21	2.80	5.69	0.15	17.41	2.65	0.65	0.32	0.33	1.69	0.67	0.80	2.26
22	2.79	5.27	0.00	17.84	2.05	0.68	0.32	0.30	1.19	0.67	0.80	2.15
23	2.43	4.91	0.00	14.38	1.69	0.68	0.32	0.23	0.82	0.67	0.80	2.15
24	2.35	4.70	0.00	1.09	1.48	0.00	0.32	0.27	0.82	0.67	0.80	2.15
25	2.17	4.50	0.00	0.01	1.26	0.00	0.33	0.38	0.88	0.67	0.80	2.15
26	1.83	4.31	0.00	0.79	1.12	0.00	0.33	0.45	2.52	0.67	0.80	2.15
27	1.67	4.12	0.00	76.29	1.21	0.00	0.38	0.54	0.82	0.67	0.80	2.15
28	1.67	3.99	0.00	77.74	1.16	0.00	0.33	29.39	0.82	0.67	0.80	2.15
29	1.67	3.98	0.00	57.27	0.91	0.00	0.37	56.71	0.82	0.67	0.80	2.15
30	1.67		0.00	21.35	0.86	0.00	0.20	6.05	0.82	0.67	3.19	2.15
31	1.67		0.00		0.82		0.12	9.07		0.67		2.15
Mean	4.41	9.20	3.06	11.61	6.11	0.58	0.26	3.51	1.86	0.73	1.08	3.18
Max	8.25	36.52	20.01	77.74	45.21	0.84	0.46	56.71	15.82	0.82	6.81	18.07
Min	1.67	3.98	0.00	0.00	0.82	0.00	0.00	0.05	0.00	0.67	0.67	2.15

Table 3-3f. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Swift Creek

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	70.46	30.17	9.21	0.66	47.10	0.00	0.00	0.00	0.48	0.28	1.11	15.07
2	64.20	66.95	8.50	0.61	43.45	0.00	0.00	0.00	0.00	0.15	1.45	5.96
3	53.47	66.49	7.52	0.51	39.07	0.00	0.00	0.00	0.00	0.00	0.91	3.09
4	44.33	37.98	6.78	3.90	34.32	0.00	0.00	0.00	0.00	0.00	1.06	2.15
5	39.65	8.19	25.37	7.29	30.22	0.00	0.00	0.00	0.00	0.00	0.64	1.67
6	35.57	7.17	39.29	13.16	26.84	0.00	0.00	0.00	19.50	0.00	0.60	1.41
7	32.10	7.17	43.60	30.06	23.94	0.00	0.00	0.00	71.34	0.00	0.53	1.26
8	28.71	7.17	69.00	30.13	21.37	0.00	0.24	0.00	8.64	0.00	0.40	0.88
9	25.77	7.17	72.13	15.30	20.29	0.00	0.00	0.00	1.84	0.00	0.28	0.74
10	25.01	7.17	69.18	15.30	20.84	0.00	0.28	0.00	0.49	0.00	0.12	0.65
11	28.07	7.17	66.39	15.30	19.87	0.00	0.00	0.00	0.04	0.00	0.00	22.71
12	26.43	9.60	63.66	15.30	31.44	0.00	0.00	0.00	0.00	0.00	0.02	131.98
13	24.85	26.78	25.67	14.58	33.74	0.00	0.00	0.00	0.00	0.00	0.24	26.24
14	23.90	35.10	5.56	11.60	31.98	0.00	0.00	0.00	0.00	0.00	0.57	7.51
15	21.96	28.32	4.99	8.56	29.61	0.00	0.00	0.00	0.00	0.00	42.19	4.35
16	19.85	17.09	8.76	6.37	27.25	0.00	0.00	0.00	0.00	0.00	25.18	13.66
17	22.19	12.43	8.73	4.87	24.52	0.00	0.00	0.00	0.00	0.00	5.37	27.63
18	30.02	12.35	8.01	3.65	21.71	0.00	0.00	0.00	0.00	0.35	2.14	11.34
19	29.68	12.28	7.19	2.75	19.28	0.00	0.00	0.00	0.00	0.34	1.49	3.80
20	29.35	12.19	6.99	4.97	16.82	0.00	0.00	0.00	0.00	0.37	1.24	2.67
21	26.47	12.05	6.08	22.37	14.69	0.00	0.00	0.00	0.00	0.27	0.85	3.51
22	24.23	11.91	4.67	51.15	2.26	0.00	0.00	0.00	0.00	0.12	0.69	4.25
23	21.98	11.77	3.50	49.72	0.00	0.00	0.00	0.00	0.00	0.06	0.65	1.04
24	19.97	11.64	2.81	43.98	0.00	0.00	0.00	0.00	0.00	0.04	0.55	0.72
25	18.08	11.50	2.01	36.99	0.00	0.00	0.00	0.00	0.00	0.11	1.16	0.73
26	16.14	11.37	1.42	29.74	0.00	0.00	0.00	0.00	4.07	0.33	1.14	0.35
27	14.43	11.25	0.90	33.45	0.00	0.00	0.00	0.00	5.89	0.34	1.13	0.13
28	12.96	11.11	0.44	40.52	0.00	0.00	0.00	4.00	2.83	1.04	0.84	0.03
29	11.63	10.19	0.15	51.14	0.00	0.00	0.00	64.33	1.17	1.03	0.62	0.00
30	11.03		0.00	50.07	0.00	0.00	0.00	10.58	0.60	0.97	2.89	0.00
31	10.14		0.00		0.00		0.00	2.05		1.24		0.00
Mean	27.83	17.99	18.66	20.47	18.73	0.00	0.02	2.61	3.90	0.23	3.20	9.53
Max	70.46	66.95	72.13	51.15	47.10	0.00	0.28	64.33	71.34	1.24	42.19	131.98
Min	10.14	7.17	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 3-3g. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Tomahawk Creek

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	9.55	5.81	6.38	3.49	36.24	2.54	0.00	0.00	6.85	3.81	3.63	12.57
2	7.83	10.08	6.38	3.49	31.91	1.89	0.00	0.00	5.13	3.79	3.63	27.10
3	6.45	15.02	6.38	3.49	27.89	1.83	0.00	0.00	4.26	3.75	3.63	18.51
4	5.47	16.78	7.44	5.42	24.31	1.91	0.00	0.00	4.25	3.72	3.63	14.62
5	5.35	12.42	45.64	6.61	21.14	0.90	0.00	0.00	4.33	3.68	3.63	14.02
6	5.35	10.46	39.46	10.19	18.55	0.29	0.00	0.00	6.39	3.67	5.96	13.47
7	5.35	9.36	28.32	20.47	16.30	0.00	0.00	0.00	16.79	3.67	7.49	12.96
8	5.35	8.38	20.49	26.59	14.24	0.00	7.21	0.00	33.20	3.67	6.84	12.34
9	5.35	7.52	18.16	20.39	16.79	0.00	4.98	0.00	16.62	3.67	6.29	11.87
10	5.35	6.57	16.83	18.97	15.32	0.00	3.31	0.00	7.83	3.67	5.96	12.29
11	5.35	6.00	15.60	17.60	13.96	0.00	1.47	0.00	6.78	3.67	5.69	41.86
12	5.35	6.11	14.46	16.83	37.07	0.00	0.00	0.00	6.24	3.67	5.43	80.55
13	5.35	8.88	13.39	16.28	42.15	0.00	0.00	0.00	5.74	3.67	5.31	100.10
14	5.39	15.13	12.12	15.23	34.46	0.00	0.00	0.00	5.28	3.66	5.96	81.17
15	5.43	13.38	10.91	14.16	30.50	0.00	0.00	0.00	4.85	3.66	12.13	62.39
16	5.48	11.53	9.83	13.16	25.88	0.00	0.00	0.00	4.46	3.65	10.04	38.10
17	5.53	9.95	8.88	12.20	21.75	0.00	0.00	0.00	4.08	3.65	8.66	28.30
18	5.58	8.61	8.06	11.31	18.21	0.00	0.00	0.00	3.72	3.65	7.84	22.61
19	5.63	7.62	7.51	10.49	15.21	0.00	0.00	0.00	3.35	3.64	7.11	17.95
20	5.68	7.31	7.01	11.82	12.98	0.00	0.00	0.00	3.08	3.63	6.78	16.09
21	5.73	7.07	6.55	57.02	11.11	0.00	0.00	0.00	3.06	3.63	6.78	16.09
22	5.78	6.83	6.12	74.09	9.40	0.00	0.00	0.00	3.06	3.63	6.78	16.63
23	5.81	6.60	5.72	62.11	7.98	0.00	0.00	0.00	3.06	3.63	6.71	18.07
24	5.81	6.41	5.35	45.01	6.80	0.00	0.00	0.00	3.06	3.63	6.57	14.96
25	5.81	6.38	5.00	38.82	5.85	0.00	0.00	0.00	3.80	3.63	6.43	14.59
26	5.81	6.38	4.67	35.51	5.29	0.00	0.00	0.00	5.33	3.63	6.30	14.21
27	5.81	6.38	4.41	38.03	4.83	0.00	0.00	0.00	3.94	3.63	6.20	13.82
28	5.81	6.38	4.19	45.00	4.48	0.00	0.00	34.90	3.90	3.63	6.11	13.51
29	5.81	6.38	3.96	57.13	3.99	0.00	0.00	131.64	3.87	3.63	6.02	13.49
30	5.81		3.75	44.94	3.55	0.00	0.00	114.26	3.83	3.63	5.94	13.49
31	5.81		3.54		3.09		0.00	42.84		3.63		13.49
Mean	5.80	8.82	11.50	25.19	17.46	0.31	0.55	10.44	6.34	3.67	6.32	25.85
Max	9.55	16.78	45.64	74.09	42.15	2.54	7.21	131.64	33.20	3.81	12.13	100.10
Min	5.35	5.81	3.54	3.49	3.09	0.00	0.00	0.00	3.06	3.63	3.63	11.87

Table 3-3h. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Little Tomahawk Creek

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	17.93	48.41	5.67	9.76	15.23	0.00	3.33	1.81	16.01	7.55	6.26	12.18
2	14.47	31.43	5.19	6.32	12.51	0.00	3.31	0.57	14.70	6.34	6.28	5.91
3	12.08	22.73	4.46	7.63	10.66	0.00	3.29	0.52	12.96	5.90	6.34	5.69
4	10.00	17.25	5.54	32.78	9.12	4.79	3.33	1.00	11.32	5.75	9.15	5.71
5	9.68	12.08	33.73	33.16	7.35	5.21	3.29	2.55	11.72	5.62	8.64	5.34
6	9.23	10.49	12.85	40.90	5.70	5.20	5.30	0.52	66.81	5.50	7.37	5.10
7	8.59	9.37	17.05	25.30	5.32	5.20	18.53	0.52	13.99	5.33	7.02	5.02
8	7.10	8.13	27.62	18.62	5.44	5.20	11.90	1.29	8.34	5.38	6.89	4.69
9	6.68	7.93	15.28	14.88	43.68	5.20	10.92	0.52	6.38	5.49	7.01	4.64
10	9.97	6.92	11.68	12.16	19.42	5.20	8.31	0.52	5.30	5.49	6.62	4.84
11	10.52	6.06	9.62	10.52	36.17	5.20	1.77	0.52	4.99	5.18	6.40	76.02
12	7.55	6.85	7.58	17.21	31.59	5.20	0.75	0.52	4.69	5.19	6.40	49.81
13	7.61	22.71	7.47	15.78	15.03	5.20	0.75	0.52	4.53	5.27	7.70	17.77
14	8.64	17.34	7.05	12.67	14.04	5.20	5.10	0.52	4.33	5.32	8.08	13.04
15	7.79	11.05	5.63	11.32	13.28	5.20	3.64	1.85	4.16	5.36	28.77	11.84
16	7.91	9.03	19.05	9.67	16.93	5.20	0.75	4.36	4.39	5.46	12.05	22.49
17	15.68	9.21	9.02	8.43	13.84	4.29	0.75	0.62	4.28	10.59	9.42	17.43
18	18.83	9.25	5.28	6.87	12.18	3.29	0.74	0.51	4.04	8.57	8.43	12.98
19	9.65	7.21	5.10	6.78	11.84	3.29	0.87	1.41	3.85	6.80	6.99	12.35
20	9.36	7.13	7.36	36.45	15.45	3.29	1.26	0.52	3.80	6.34	5.93	11.68
21	8.17	6.92	3.38	88.30	16.31	3.99	0.77	0.51	3.82	6.21	5.47	15.71
22	8.01	9.09	3.21	50.66	11.66	3.29	0.77	0.51	3.75	5.90	5.17	12.07
23	7.97	8.47	3.03	24.61	11.47	3.29	1.51	0.51	3.63	5.68	5.09	11.02
24	8.01	7.10	3.25	18.19	13.77	3.29	2.79	0.51	4.32	5.72	5.05	10.85
25	8.71	6.92	3.32	14.22	16.32	3.29	3.32	0.51	7.98	7.27	8.30	11.10
26	8.74	8.19	3.68	19.85	19.84	3.31	3.32	0.52	27.84	7.27	5.97	10.41
27	8.69	7.50	4.08	29.17	25.04	4.28	9.16	6.75	11.43	7.26	5.40	10.29
28	8.73	5.10	4.22	36.63	30.32	3.30	9.93	84.87	9.58	8.19	5.23	10.20
29	8.80	4.97	4.88	39.13	34.48	3.29	4.55	39.46	8.28	6.75	5.05	10.08
30	8.88		5.33	19.66	0.14	3.30	3.65	19.04	7.69	6.54	17.46	9.91
31	8.83		7.23		0.00		2.94	19.55		6.28		9.89
Mean	9.77	11.89	8.64	22.59	15.94	3.86	4.21	6.26	9.96	6.31	8.00	13.74
Max	18.83	48.41	33.73	88.30	43.68	5.21	18.53	84.87	66.81	10.59	28.77	76.02
Min	6.68	4.97	3.03	6.32	0.00	0.00	0.74	0.51	3.63	5.18	5.05	4.64

Table 3-3i. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Swift Creek Wetland Discharge

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	1.06	4.42	0.03	0.87	6.25	0.05	0.00	0.00	0.00	0.00	0.00	2.61
2	0.07	9.26	0.03	0.38	3.78	0.09	0.00	0.00	0.00	0.00	0.00	1.29
3	0.00	1.50	0.05	0.08	1.98	0.15	0.00	0.00	0.00	0.00	0.00	0.51
4	0.82	0.08	0.07	5.82	2.02	0.37	0.00	0.00	0.00	0.00	0.00	0.29
5	0.02	0.06	3.55	7.76	1.86	0.17	0.00	0.00	0.00	0.00	0.00	0.10
6	0.03	0.06	1.44	9.51	1.06	0.09	0.00	0.00	0.53	0.00	0.01	0.03
7	0.03	0.04	0.52	7.06	1.53	0.07	0.00	0.00	1.40	0.00	0.00	0.05
8	0.03	0.02	8.89	3.60	0.69	0.07	0.00	0.00	0.92	0.00	0.00	0.02
9	0.04	0.02	3.58	2.01	8.36	0.06	0.00	0.00	0.00	0.00	0.00	0.01
10	0.06	0.02	0.64	1.08	6.42	0.00	0.00	0.00	0.00	0.00	0.00	0.15
11	0.09	0.03	0.20	2.49	8.15	0.08	0.00	0.00	0.00	0.00	0.00	4.60
12	0.07	0.05	0.09	3.29	0.92	0.11	0.00	0.00	0.00	0.00	0.00	11.61
13	0.07	0.27	0.02	3.07	4.07	0.10	0.00	0.00	0.00	0.00	0.00	3.38
14	0.06	3.29	0.06	1.55	5.47	0.12	0.00	0.00	0.00	0.00	0.00	0.46
15	0.05	1.40	0.05	0.62	4.08	0.13	0.00	0.00	0.00	0.00	1.54	0.16
16	0.05	0.18	0.78	0.22	3.85	0.16	0.00	0.00	0.00	0.00	3.79	2.71
17	0.05	0.07	1.31	0.08	3.65	0.05	0.00	0.00	0.00	0.00	0.00	10.33
18	0.78	0.06	0.08	0.05	1.48	0.08	0.00	0.00	0.00	0.00	0.00	6.79
19	0.48	0.03	0.05	0.06	1.53	0.07	0.00	0.00	0.00	0.00	0.00	2.91
20	0.21	0.01	0.09	2.46	1.52	0.07	0.00	0.00	0.00	0.00	0.00	2.54
21	2.03	0.17	0.02	6.85	1.65	0.07	0.00	0.00	0.00	0.00	0.00	2.52
22	0.02	0.03	0.02	9.96	1.15	0.09	0.00	0.00	0.00	0.00	0.00	3.43
23	0.03	0.04	0.01	8.06	0.74	0.08	0.00	0.00	0.00	0.00	0.00	1.51
24	0.02	0.02	0.01	8.92	0.45	0.06	0.00	0.00	0.00	0.00	0.00	1.16
25	2.31	0.03	0.00	8.19	0.36	0.20	0.00	0.00	0.00	0.00	0.00	0.62
26	0.29	0.05	0.00	6.87	0.19	0.09	0.00	0.00	0.00	0.00	0.00	0.98
27	0.03	0.03	0.03	12.47	0.13	0.12	0.00	0.00	0.00	0.00	0.00	1.01
28	0.03	0.01	0.06	0.35	0.08	0.12	0.00	1.67	0.00	0.00	0.00	0.96
29	0.03	0.02	0.05	11.61	0.08	0.10	0.00	0.18	0.00	0.00	0.00	0.70
30	0.08		0.05	4.86	0.11	0.01	0.00	1.39	0.00	0.00	0.58	0.48
31	0.07		0.12		0.06		0.00	0.00		0.00		0.28
Mean	0.29	0.73	0.71	4.34	2.38	0.10	0.00	0.10	0.10	0.00	0.20	2.07
Max	2.31	9.26	8.89	12.47	8.36	0.37	0.00	1.67	1.40	0.00	3.79	11.61
Min	0.00	0.01	0.00	0.05	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.01

Table 3-3j. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Chimney House Place Direct Runoff Site (Brandermill)

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	0.00	0.00	0.01	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**
2	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**
3	0.00	0.00	0.01	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**
4	0.00	0.00	0.01	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
5	0.00	0.00	0.05	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
6	0.00	0.00	0.03	0.03	0.03	0.00	0.00	0.00	0.31	0.00	0.00	**0.06**
7	0.00	0.00	0.03	0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.00	**0.05**
8	0.00	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	**0.05**
9	0.00	0.00	0.03	0.00	0.66	0.00	0.00	0.00	0.00	0.00	0.00	**0.05**
10	0.00	0.00	0.03	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
11	0.00	0.00	0.03	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
12	0.00	0.00	0.03	0.01	0.32	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
13	0.00	0.00	0.03	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	**0.09**
14	0.00	0.00	0.03	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
15	0.00	0.00	0.03	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	**0.06**
16	0.00	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
17	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
18	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
19	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
20	0.00	0.00	0.03	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
21	0.00	0.00	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**	**0.06**
22	0.00	0.01	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**	**0.06**
23	0.00	0.00	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**	**0.06**
24	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**	**0.06**
25	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**	**0.06**
26	0.00	0.01	0.03	0.11	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**	**0.06**
27	0.00	0.01	0.03	0.28	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**	**0.06**
28	0.00	0.01	0.03	0.40	0.00	0.00	0.00	0.59	0.00	0.00	**0.07**	**0.06**
29	0.00	0.00	0.03	0.22	0.00	0.00	0.00	0.13	0.00	0.00	**0.07**	**0.06**
30	0.00		0.03	0.06	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**	**0.06**
31	0.00		0.03		0.00		0.00	0.00		0.00	**0.07**	**0.06**
Mean	0.00	0.00	0.03	0.05	0.06	0.00	0.00	0.02	0.01	0.00	0.03	0.06
Max	0.00	0.01	0.05	0.40	0.66	0.00	0.00	0.59	0.31	0.00	0.07	0.09
Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05

Bold values indicate estimated flow

Table 3-3k. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Chestnut Bluff Terrace Direct Runoff Site (Woodlake)

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	0.09	0.11	0.04	0.20	0.43	0.13	0.00	0.00	0.00	0.03	0.01	0.07
2	0.07	0.11	0.04	0.11	0.37	0.08	0.00	0.00	0.00	0.02	0.01	0.07
3	0.05	0.11	0.04	0.31	0.31	0.10	0.00	0.00	0.00	0.01	0.03	0.07
4	0.03	0.11	0.12	0.57	0.25	0.08	0.00	0.00	0.00	0.01	0.07	0.06
5	0.03	0.11	0.26	0.59	0.20	0.07	0.00	0.00	0.02	0.01	0.04	0.06
6	0.03	0.11	0.10	0.83	0.18	0.07	0.00	0.00	1.21	0.01	0.03	0.06
7	0.03	0.11	0.41	0.40	0.18	0.06	0.00	0.00	0.20	0.01	0.03	0.05
8	0.02	0.11	0.43	0.28	0.25	0.06	0.00	0.00	0.08	0.01	0.03	0.05
9	0.02	0.11	0.19	0.22	2.09	0.05	0.00	0.00	0.05	0.01	0.02	0.05
10	0.02	0.11	0.15	0.18	0.62	0.05	0.00	0.00	0.04	0.01	0.02	0.06
11	0.02	0.11	0.13	0.17	1.15	0.07	0.00	0.00	0.04	0.01	0.02	0.06
12	0.02	0.11	0.11	0.28	0.87	0.02	0.00	0.00	0.02	0.01	0.02	0.06
13	0.01	0.11	0.10	0.16	0.44	0.01	0.00	0.00	0.02	0.01	0.08	0.09
14	0.01	0.11	0.10	0.14	0.34	0.01	0.01	0.00	0.01	0.01	0.04	0.06
15	0.01	0.09	0.15	0.12	0.30	0.01	0.00	0.00	0.01	0.01	0.42	0.06
16	0.01	0.08	0.30	0.11	0.44	0.01	0.00	0.00	0.02	0.01	0.09	0.06
17	0.01	0.08	0.12	0.10	0.24	0.01	0.00	0.00	0.01	0.08	0.07	0.06
18	0.03	0.08	0.11	0.10	0.22	0.01	0.00	0.00	0.01	0.01	0.07	0.06
19	0.04	0.07	0.13	0.10	0.19	0.01	0.00	0.00	0.01	0.01	0.07	0.06
20	0.03	0.06	0.11	1.13	0.29	0.01	0.00	0.00	0.01	0.01	0.07	0.06
21	0.06	0.06	0.09	2.31	0.17	0.01	0.00	0.00	0.01	0.01	0.07	0.06
22	0.11	0.12	0.09	0.95	0.15	0.01	0.00	0.00	0.01	0.01	0.07	0.06
23	0.11	0.07	0.08	0.57	0.14	0.01	0.00	0.00	0.01	0.01	0.07	0.06
24	0.11	0.06	0.08	0.39	0.13	0.01	0.00	0.00	0.01	0.01	0.07	0.06
25	0.11	0.06	0.07	0.26	0.12	0.01	0.00	0.00	0.15	0.01	0.07	0.06
26	0.11	0.06	0.07	0.80	0.11	0.01	0.00	0.00	0.14	0.01	0.07	0.06
27	0.11	0.06	0.07	1.22	0.19	0.02	0.01	0.06	0.14	0.01	0.07	0.06
28	0.11	0.05	0.07	1.74	0.13	0.01	0.00	0.76	0.07	0.01	0.07	0.06
29	0.11	0.04	0.11	1.05	0.12	0.02	0.00	0.00	0.04	0.01	0.07	0.06
30	0.11		0.11	0.52	0.11	0.01	0.00	0.00	0.03	0.01	0.07	0.06
31	0.11		0.18		0.11		0.00	0.00		0.01		0.06
Mean	0.06	0.09	0.13	0.53	0.35	0.04	0.00	0.03	0.08	0.01	0.07	0.06
Max	0.11	0.12	0.43	2.31	2.09	0.13	0.01	0.76	1.21	0.08	0.42	0.09
Min	0.01	0.04	0.04	0.10	0.11	0.01	0.00	0.00	0.00	0.01	0.01	0.05

Table 3-3l. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Ashbrook Dam Spillway

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	24.64	24.77	6.06	0.08	5.60	0.06	0.00	0.00	0.01	2.10	0.22	4.12
2	16.14	38.77	5.86	0.08	1.89	0.03	0.00	0.00	0.11	1.21	0.25	1.14
3	11.07	27.52	5.86	0.09	1.06	0.00	0.00	0.00	0.15	0.97	0.29	0.87
4	10.03	22.07	5.86	2.47	0.95	0.00	0.00	0.00	0.00	0.92	0.65	0.67
5	10.76	17.75	12.60	2.47	0.80	0.00	0.00	0.00	0.00	0.84	0.88	0.54
6	12.53	12.70	10.98	3.87	0.64	0.00	0.00	0.00	26.21	0.23	0.62	0.43
7	12.87	11.22	12.49	7.51	0.36	0.00	0.00	0.00	20.19	0.00	0.39	0.41
8	13.41	10.26	25.60	9.40	0.14	0.00	0.00	0.00	5.22	0.00	0.47	0.38
9	12.38	9.30	20.01	9.01	65.25	0.00	0.00	0.00	1.09	0.00	0.31	0.36
10	11.67	8.37	14.89	9.01	39.71	0.00	0.00	0.00	0.84	0.00	0.26	0.43
11	14.33	7.50	10.41	9.01	47.61	0.00	0.00	0.00	0.69	0.00	0.18	24.99
12	11.05	8.21	9.30	9.01	47.18	0.00	0.00	0.00	0.61	0.00	0.16	50.28
13	11.65	11.85	1.80	1.68	19.89	0.00	0.00	0.00	0.58	0.00	0.30	22.84
14	12.31	15.08	0.53	0.62	14.78	0.00	0.00	0.00	0.44	0.00	0.37	16.32
15	12.30	13.52	0.53	0.38	10.49	0.00	0.00	0.00	0.22	0.00	4.61	13.71
16	10.98	11.17	0.53	0.20	9.39	0.00	0.00	0.00	0.18	0.00	1.38	25.90
17	12.26	9.04	0.53	0.17	3.58	0.00	0.00	0.00	0.17	0.00	0.65	28.08
18	17.73	8.29	0.48	0.15	2.25	0.00	0.00	0.00	0.11	0.21	0.37	20.48
19	15.57	8.29	0.27	0.05	1.89	0.00	0.00	0.00	0.07	0.18	0.34	18.60
20	14.63	8.30	0.24	0.32	1.79	0.00	0.00	0.00	0.03	0.10	0.35	20.29
21	12.70	9.19	0.24	8.40	1.53	0.00	0.00	0.00	0.02	0.10	0.33	25.25
22	10.97	10.60	0.23	3.66	1.00	0.00	0.00	0.00	0.01	0.08	0.26	24.42
23	10.04	10.45	0.20	0.11	0.72	0.00	0.00	0.00	0.00	0.07	0.25	18.66
24	10.17	9.77	0.17	59.00	0.42	0.00	0.00	0.00	0.00	0.07	0.32	17.31
25	11.85	9.10	0.14	0.00	0.23	0.00	0.00	0.00	0.00	0.22	0.53	16.19
26	11.71	8.45	0.12	0.00	0.16	0.00	0.00	0.00	2.28	0.53	0.36	13.99
27	11.36	7.90	0.10	9.85	0.14	0.00	0.00	0.00	1.16	0.54	0.30	7.73
28	11.01	7.83	0.08	15.98	0.29	0.00	0.00	0.15	0.86	0.54	0.32	4.08
29	10.56	7.69	0.08	38.31	0.20	0.00	0.00	21.00	0.57	0.41	0.28	2.51
30	8.41		0.08	13.33	0.10	0.00	0.00	0.68	0.97	0.26	1.90	2.02
31	7.35		0.08		0.09		0.00	0.69		0.23		1.58
Mean	12.40	12.58	4.72	7.14	9.04	0.00	0.00	0.73	2.09	0.32	0.60	12.41
Max	24.64	38.77	25.60	59.00	65.25	0.06	0.00	21.00	26.21	2.10	4.61	50.28
Min	7.35	7.50	0.08	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.16	0.36

Table 3-4. Drainage Area, Discharge, and Runoff Data for Direct Runoff Areas 2008

	Drainage Area	Total Annual	Runoff
Direct Runoff Area	(sq. miles)	Discharge (Mft^3)	(Mft^3/mi^2)
1	2.54	35.6	14.0
2	2.12	42.2	19.9
3	0.76	32.5	42.8
4	7.34	368.8	50.2
Total	**12.76**	**479.1**	**37.5**

Table 3-5. 2008 Rainfall Gain to Swift Creek Reservoir

Annual Mean Rainfall (inches)	45.98
Total Gain (feet)	3.83
Reservoir Area (2.54 sq. mi. = sq. feet)	70,811,136
Lake Gain (cubic feet/year)	271,324,669
Lake Gain (million cubic feet/year)	271.3

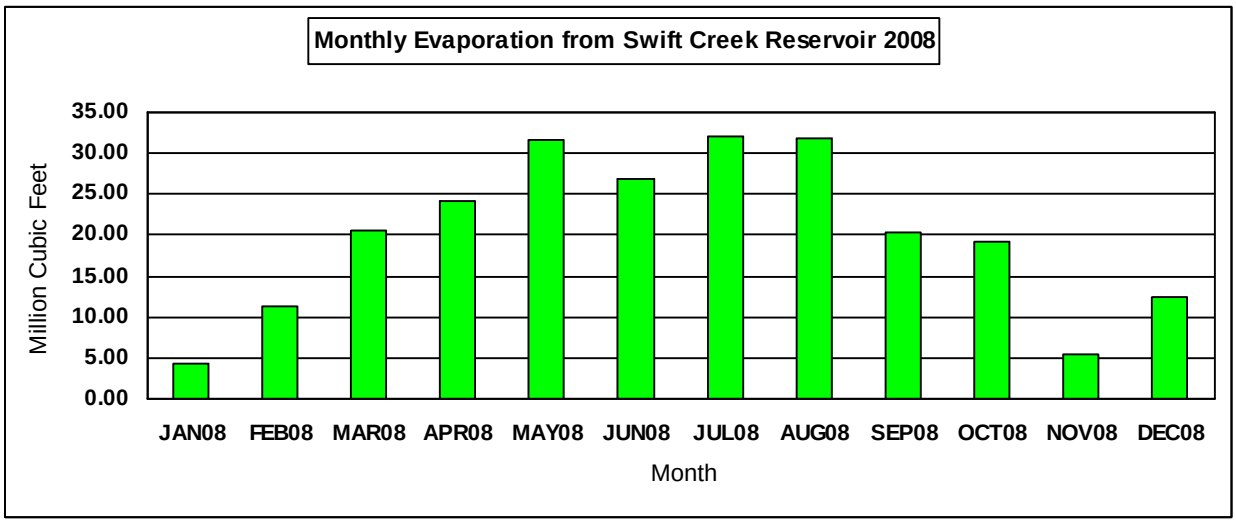


Figure 3-3. 2008 Monthly Evaporation from Swift Creek Reservoir

Table 3-6a. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Swift Creek Dam Spillway

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	0.00	38.37	22.87	50.00	169.20	0.00	0.00	0.00	96.02	15.12	0.00	0.00
2	0.00	391.30	22.87	50.00	133.80	0.00	0.00	0.00	65.26	3.49	0.00	0.00
3	0.00	319.00	15.12	38.37	96.02	0.00	0.00	0.00	38.37	3.49	0.00	0.00
4	0.00	150.90	26.74	96.02	70.87	0.00	0.00	0.00	30.62	0.00	0.00	0.00
5	0.00	110.30	30.62	255.00	59.91	0.00	0.00	0.00	22.87	0.00	0.00	11.24
6	0.00	96.02	150.90	361.40	50.00	0.00	0.00	0.00	150.90	0.00	0.00	22.87
7	0.00	59.91	133.80	305.50	42.25	0.00	0.00	0.00	769.50	0.00	0.00	22.87
8	0.00	50.00	319.00	188.80	38.37	0.00	0.00	0.00	438.90	0.00	0.00	15.12
9	0.00	38.37	231.60	159.90	30.62	0.00	0.00	0.00	188.80	0.00	0.00	11.24
10	0.00	30.62	150.90	133.80	150.90	0.00	0.00	0.00	96.02	0.00	0.00	0.00
11	0.00	22.87	76.75	76.75	243.10	0.00	0.00	0.00	50.00	0.00	0.00	42.25
12	0.00	30.62	65.26	76.75	438.90	0.00	0.00	0.00	38.37	0.00	0.00	3326.00
13	0.00	65.26	65.26	70.87	361.40	0.00	0.00	0.00	30.62	0.00	0.00	703.30
14	0.00	89.32	50.00	65.26	209.60	0.00	0.00	0.00	30.62	0.00	0.00	422.70
15	0.00	76.75	65.26	65.26	150.90	0.00	0.00	0.00	22.87	0.00	0.00	346.90
16	0.00	89.32	89.32	50.00	125.60	0.00	0.00	0.00	15.12	0.00	0.00	209.60
17	0.00	70.87	76.75	46.12	96.02	0.00	0.00	0.00	3.49	0.00	0.00	150.90
18	65.26	65.26	76.75	38.37	82.90	0.00	0.00	0.00	0.00	0.00	0.00	279.60
19	54.83	38.37	76.75	38.37	54.83	0.00	0.00	0.00	0.00	0.00	0.00	231.60
20	30.62	30.62	76.75	89.32	59.91	0.00	0.00	0.00	0.00	0.00	0.00	178.90
21	22.87	30.62	65.26	725.00	38.37	0.00	0.00	0.00	0.00	0.00	0.00	133.80
22	11.24	30.62	50.00	1458.00	38.37	0.00	0.00	0.00	0.00	0.00	0.00	142.20
23	15.12	30.62	50.00	661.20	30.62	0.00	0.00	0.00	0.00	0.00	0.00	159.90
24	15.12	30.62	42.25	231.60	30.62	0.00	0.00	0.00	0.00	0.00	0.00	142.20
25	15.12	30.62	30.62	199.00	18.99	0.00	0.00	0.00	0.00	0.00	0.00	103.00
26	15.12	30.62	22.87	117.80	11.24	0.00	0.00	0.00	0.00	0.00	0.00	76.75
27	11.24	50.00	22.87	1300.00	3.49	0.00	0.00	0.00	11.24	0.00	0.00	76.75
28	11.24	42.25	30.62	361.40	0.00	0.00	0.00	0.00	54.83	0.00	0.00	65.26
29	11.24	30.62	30.62	422.70	0.00	0.00	0.00	50.00	22.87	0.00	0.00	50.00
30	30.62		22.87	332.80	0.00	0.00	0.00	231.60	15.12	0.00	0.00	38.37
31	30.62		50.00		0.00		0.00	178.90		0.00		30.62
Mean	10.98	74.85	72.30	268.85	91.51	0.00	0.00	14.85	73.08	0.71	0.00	225.61
Max	65.26	391.30	319.00	1458.00	438.90	0.00	0.00	231.60	769.50	15.12	0.00	3326.00
Min	0.00	22.87	15.12	38.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 3-6b. 2008 daily mean discharges (cubic feet/second) for sites within the Swift Creek Reservoir Watershed. Bold values indicate estimated flow.

Swift Creek Dam Seepage

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	0.066	0.000	0.000	0.000	0.000	0.075	0.035	0.003	0.089	0.080	0.057	0.071
2	0.071	0.000	0.000	0.000	0.000	0.075	0.030	0.003	0.084	0.080	0.057	0.075
3	0.071	0.000	0.000	0.000	0.000	0.071	0.030	0.003	0.084	0.080	0.053	0.075
4	0.066	0.000	0.000	0.000	0.000	0.075	0.026	0.000	0.084	0.080	0.053	0.080
5	0.066	0.000	0.000	0.000	0.000	0.075	0.030	0.000	0.080	0.075	0.057	0.080
6	0.071	0.000	0.000	0.000	0.000	0.075	0.026	0.000	0.093	0.075	0.057	0.080
7	0.071	0.000	0.000	0.000	0.000	0.071	0.026	0.000	0.112	0.075	0.057	0.080
8	0.071	0.000	0.000	0.000	0.000	0.071	0.026	0.000	0.103	0.075	0.057	0.080
9	0.071	0.000	0.000	0.000	0.000	0.071	0.026	0.000	0.093	0.071	0.057	0.080
10	0.071	0.000	0.000	0.000	0.000	0.071	0.030	0.000	0.089	0.071	0.053	0.080
11	0.071	0.000	0.000	0.000	0.000	0.071	0.026	0.000	0.084	0.071	0.053	0.084
12	0.071	0.000	0.000	0.000	0.000	0.066	0.026	0.000	0.084	0.071	0.053	0.139
13	0.075	0.000	0.000	0.000	0.000	0.062	0.026	0.000	0.084	0.066	0.053	0.107
14	0.075	0.000	0.000	0.000	0.000	0.062	0.026	0.000	0.084	0.066	0.048	0.103
15	0.075	0.000	0.000	0.000	0.000	0.062	0.030	0.000	0.080	0.066	0.057	0.098
16	0.071	0.000	0.000	0.000	0.000	0.057	0.021	0.000	0.080	0.066	0.066	0.093
17	0.075	0.000	0.000	0.000	0.000	0.057	0.017	0.000	0.080	0.066	0.071	0.093
18	0.000	0.000	0.000	0.000	0.000	0.057	0.017	0.000	0.080	0.066	0.071	0.098
19	0.000	0.000	0.000	0.000	0.000	0.053	0.012	0.000	0.080	0.066	0.071	0.093
20	0.000	0.000	0.000	0.000	0.000	0.053	0.012	0.000	0.075	0.066	0.071	0.093
21	0.000	0.000	0.000	0.000	0.000	0.048	0.012	0.000	0.075	0.066	0.066	0.089
22	0.000	0.000	0.000	0.000	0.000	0.048	0.012	0.000	0.075	0.062	0.066	0.089
23	0.000	0.000	0.000	0.000	0.000	0.044	0.012	0.000	0.071	0.062	0.066	0.093
24	0.000	0.000	0.000	0.000	0.000	0.044	0.012	0.000	0.071	0.062	0.066	0.089
25	0.000	0.000	0.000	0.000	0.000	0.044	0.008	0.000	0.071	0.062	0.066	0.089
26	0.000	0.000	0.000	0.000	0.000	0.044	0.008	0.000	0.075	0.062	0.066	0.089
27	0.000	0.000	0.000	0.000	0.080	0.039	0.008	0.000	0.080	0.062	0.066	0.089
28	0.000	0.000	0.000	0.000	0.080	0.039	0.008	0.030	0.084	0.062	0.066	0.084
29	0.000	0.000	0.000	0.000	0.080	0.039	0.008	0.084	0.080	0.057	0.066	0.084
30	0.000		0.000	0.000	0.075	0.035	0.008	0.093	0.080	0.057	0.071	0.084
31	0.000		0.000		0.075		0.003	0.093		0.057		0.084
Mean	0.04	0.00	0.00	0.00	0.01	0.06	0.02	0.01	0.08	0.07	0.06	0.09
Max	0.08	0.00	0.00	0.00	0.08	0.08	0.03	0.09	0.11	0.08	0.07	0.14
Min	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.07	0.06	0.05	0.07

Table 3-7. Monthly and Annual Evaporation Totals Determined at Swift Creek Reservoir as Measured by Hook Gage and Class A Evaporation Pan.

Month	Average Reservoir Elevation	Reservoir Surface Area	Reservoir Surface Area	Pan Area	Monthly Total Evaporation	Monthly Total Evaporation	Monthly Total Evaporation	Monthly Total Evaporation (Adjusted by 0.74 coeff)
	Level Feet MSL	acres	square feet	square feet	inches	feet	million cubic feet	million cubic feet
JAN08	176.9	1574	68,550,696	12.57	-1.006	-0.08	-5.75	-4.25
FEB08	177.2	1596	69,517,834	12.57	-2.634	-0.22	-15.26	-11.29
MAR08	177.2	1596	69,521,675	12.57	-4.810	-0.40	-27.87	-20.62
APR08	177.3	1613	70,242,483	12.57	-5.557	-0.46	-32.53	-24.07
MAY08	177.2	1597	69,561,560	12.57	-7.352	-0.61	-42.62	-31.54
JUN08	176.6	1538	67,003,455	12.57	-6.507	-0.54	-36.33	-26.89
JUL08	175.7	1453	63,272,199	12.57	-8.222	-0.69	-43.35	-32.08
AUG08	175.2	1398	60,916,267	12.57	-8.477	-0.71	-43.03	-31.84
SEP08	177.1	1590	69,246,610	12.57	-4.740	-0.40	-27.35	-20.24
OCT08	176.8	1556	67,794,267	12.57	-4.582	-0.38	-25.89	-19.16
NOV08	176.6	1543	67,194,075	12.57	-1.289	-0.11	-7.22	-5.34
DEC08	177.2	1603	69,814,620	12.57	-2.899	-0.24	-16.87	-12.48

Evaluation of the 2008 Water Budget

With a relatively high rainfall in 2008 (45.98 in.), the inputs to the reservoir were also correspondingly high (Table 3-8). Rainfall for 2008 was slightly above the average amount recorded since 1985, with a deviation of 3.14 inches above the average (42.84 in.) for the study time span. This was also a significant increase in rainfall from the previous year, which encountered near record low precipitation of 35.32 inches. The increase in precipitation results in increased rainfall directly into the reservoir as well as increased runoff from the surrounding watersheds. The input of runoff from direct drainage areas and direct precipitation was well above the median range (383 Mft^3) since the program began (Table 3-8).

Discharge from the wetlands adjacent to Swift Creek was estimated at 29 Mft^3. Direct gauging equipment functioned properly throughout the year resulting in a reliable estimation of actual discharge from the wetland. Monitoring of flow through the wetland pipes over the past few years substantially improves the accuracy of the discharge volume compared with past methods that merely estimated wetland discharge without continuous flow data.

Evaporation volume (240 Mft^3) was the highest on record since the study began. Plant withdrawals were comparable to the historical median (400 Mft^3), as were withdrawals for golf

course irrigation (3 Mft^3). The discharge over the spillway dam was within the range of historical data and the slightly above the long term median of 1598 Mft^3.

The water budget indicates a surplus of 253 Mft^3 entering the reservoir, which is not accounted for in the estimate of water outputs from the reservoir. This discrepancy is consistent with what was observed last year, but contrary to what has been observed from 2003 to 2006, where there was a surplus of unaccounted for outputs. This discrepancy is likely the result of the following cumulative errors:

- Over estimation of storm flows at tributary stations
- Over estimation of flows from Direct Runoff Areas
- Over estimation of wetland seepage
- Errors associated with changes in the stage-discharge curves of the tributaries, especially those that are sand bed streams.

Table 3-8. A Comparison of Water Budget Characteristics over the Past Ten Years

	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Inputs	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3
Monitored Tributaries	1581	844	931	809	564	2654	1689	984	2415	1992	2355
Direct Runoff Areas	483	274	279	244	148	557	418	207	509	462	479
Precipitation	284	280	241	179	210	369	326	209	358	208	271
Wetland Seepage	*	*	29	58	32	32	284	86	125	98	29
Groundwater Seepage	16	3	3	*	*	*	*	*	*	*	*
Total	**2364**	**1400**	**1481**	**1289**	**954**	**3612**	**2717**	**1485**	**3407**	**2760**	**3134**
Outputs	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3	Mft^3
Evaporation	149	97	102	98	102	102	152	155	206	204	240
Plant Withdrawals	392	398	492	417	270	393	401	445	400	415	423
Golf Course Irrigation	3	2	2	3	2	2	1	2	4	3	3
Overflow	2460	1075	1308	1053	234	5706	5980	1598	3030	1475	2188
Leakage	1	1	1	1	0	0	0	0	1	1	1
Flood Control Release	51	*	30	*	*	*	*	*	*	*	*
Total	**3056**	**1573**	**1934**	**1572**	**608**	**6203**	**6534**	**2197**	**3641**	**2098**	**2855**
Change in Storage	-205	306	-95	-191	291	0	0	0	-27	-89	27
Residual	**487**	**478**	**359**	**91**	**-54**	**2592**	**3817**	**716**	**207**	**-751**	**-252**

*Missing data points (Wetland Seepage not measured prior to 2000, Groundwater Seepage discontinued after 2000 and no Flood Control Releases occurred that year)

The discrepancy between the discharge at the spillway and what is estimated to enter the reservoir from the tributaries results in an overestimation of the phosphorous loading to the reservoir. If the tributary flows are over estimated, then the associated loadings of phosphorous have consequently been over estimated.

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Appendix A: Tributary, Wetfall, & Dryfall Data by Date

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION AND LABORATORY FACILITY

SWIFT CREEK RESERVOIR WATERSHED ATMOSPHERIC NUTRIENT INPUTS (WETFALL)
PERIOD: January - December 2008
AREA OF BUCKET OPENING (m2) 0.0647

DATE	EVENT RAINFALL (Inches)	RAIN pH	RAINFALL VOLUME (LITERS)	TOTAL * NITROGEN (mg/L as N)	TOTAL * NITROGEN (mg/m2)	TOTAL KJELDAHL NITROGEN (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/m2)	TOTAL OXIDIZED NITROGEN (mg/L as N)	TOTAL OXIDIZED NITROGEN (mg/m2)	TOTAL PHOSPHORUS (mg/L as P)	TOTAL PHOSPHORUS (mg/m2)	ORTHO PHOSPHATE PHOSPHORUS (mg/L as P)	ORTHO PHOSPHATE PHOSPHORUS (mg/m2)
01/03/08	1.21	4.68	0.98	0.24	3.54	0.19	2.86	0.05	0.68	0.024	0.36	0.0225	0.34
01/23/08	0.69	4.72	0.30	0.87	4.01	0.20	0.93	0.67	3.08	0.019	0.09	0.01	0.05
02/04/08	1.54	4.63	2.28	0.48	16.81	0.24	8.44	0.24	8.37	0.012	0.42	0.009	0.32
02/14/08	0.64	4.59	1.05	0.67	10.82	0.23	3.73	0.44	7.09	**	**	**	**
03/10/08	0.79	5.3	1.10	0.43	7.38	0.22	3.74	0.21	3.64	**	**	0.003	0.05
04/08/08	2.58	4.9	3.10	0.55	26.35	0.43	20.60	0.12	5.75	0.00	0.12	0.0225	1.08
04/24/08	3.48	4.8	4.10	0.42	26.43	0.30	19.01	0.12	7.41	0.00	0.16	0.0225	1.43
05/01/08	1.22	4.5	1.50	0.60	13.97	0.60	13.91	0.00	0.06	0.081	1.88	0.071	1.65
05/14/08	4.15	4.63	1.25	0.69	13.25	0.53	10.24	0.16	3.01	0.0025	0.05	0.008	0.15
05/22/08	0.71	4.57	0.75	0.95	10.97	0.44	5.10	0.51	5.87	0.16	1.80	0.12	1.43
06/05/08	0.08	4.67	0.23	0.48	1.67	0.40	1.39	0.08	0.27	0.139	0.48	0.02	0.07
07/08/08	1	4.4	1.25	1.01	19.57	0.58	11.21	0.43	8.37	0.279	5.39	0.235	4.54
07/11/08	0.56	4.5	0.75	0.97	11.22	0.54	6.26	0.43	4.96	0.466	5.40	0.231	2.68
07/23/08	0.1	4.6	0.23	0.45	1.55	0.43	1.50	0.02	0.05	**	**	**	**
08/05/08	0.43	5.18	0.50	0.85	6.58	0.50	3.86	0.35	2.71	0.059	0.46	0.005	0.04
09/03/08	0.88	5.6	1.20	0.73	13.58	0.63	11.68	0.10	1.89	0.013	0.24	0.01	0.19
09/08/08	3.1	4.63	5.50	0.83	70.64	0.79	67.16	0.04	3.49	0.008	0.68	0.008	0.68
09/29/08	1.46	5.1	1.85	1.75	50.01	1.65	47.18	0.10	2.83	**	**	**	**
10/28/08	0.58	4.4	0.85	1.15	15.16	0.79	10.38	0.36	4.78	0.254	3.34	0.22	2.89
11/07/08	0.41	4.8	0.70	0.76	8.21	0.48	5.19	0.28	3.02	0.078	0.84	0.038	0.41
11/19/08	1.43	4.9	1.80	0.76	21.00	0.48	13.35	0.28	7.65	0.112	3.12	0.029	0.81
12/01/08	1	5.2	1.25	0.64	12.40	0.42	8.11	0.22	4.29	0.014	0.27	0.007	0.14
12/15/08	3.4	5.2	3.80	0.40	23.38	0.37	21.73	0.03	1.64	0.00	0.15	0.0225	1.32
12/29/08	0.39	4.6	1.25	0.92	17.68	0.38	7.34	0.54	10.34	0.01	0.12	0.002	0.04

* TOTAL NITROGEN IS CALCULATED AS THE SUM OF TOTAL KJELDAHL NITROGEN AND TOTAL OXIDIZED NITROGEN

** DATA MISSING OR OMITTED DUE TO CONTAMINATION

Results less than Detection limit were included as 1/2 D.L.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION AND LABORATORY FACILITY

SWIFT CREEK RESERVOIR WATERSHED ATMOSPHERIC NUTRIENT INPUTS (DRYFALL)
PERIOD: January 2007 - December 2008
AREA OF BUCKET OPENING (m2): 0.0647

PERIOD OF DRYFALL (start)	(finish)	DAYS (-1 wet day)	BUCKET RINSE VOLUME (L)	TOTAL * NITROGEN (mg/L as N)	(mg/m2/day)	TOTAL KJELDAHL NITROGEN (mg/L as N)	(mg/m2/day)	TOTAL OXIDIZED NITROGEN (mg/L as N)	(mg/m2/day)	TOTAL PHOSPHORUS (mg/L as P)	(mg/m2/day)	ORTHO PHOSPHATE PHOSPHORUS (mg/L as P)	(mg/m2/day)
12/27/07	01/03/08	5	0.500	0.20	0.31	0.15	0.23	0.05	0.08	0.028	0.043	0.0225	0.03
01/03/08	01/08/08	4	0.500	0.77	1.49	0.34	0.66	0.43	0.83	0.01	0.019	0.001	0.00
01/08/08	01/16/08	7	0.500	0.60	0.66	0.32	0.35	0.28	0.30	0.015	0.017	0.009	0.01
01/16/08	01/23/08	6	0.500	1.29	1.67	1.27	1.64	0.02	0.03	0.005	0.006	0.002	0.00
01/23/08	02/04/08	10	0.500	0.55	0.43	0.33	0.26	0.22	0.17	0.005	0.004	0.002	0.00
02/04/08	02/14/08	9	0.500	0.25	0.22	0.20	0.17	0.05	0.05	0.042	0.036	0.003	0.00
02/14/08	02/20/08	5	0.500	0.33	0.51	0.24	0.37	0.09	0.14	0.005	0.008	0.009	0.01
02/20/08	03/10/08	19	0.500	0.33	0.13	0.29	0.12	0.04	0.02	0.021	0.009	0.003	0.00
03/10/08	03/26/08	15	0.500	0.52	0.27	0.36	0.19	0.16	0.08	0.056	0.029	**	0.00
03/26/08	04/08/08	11	0.500	4.32	3.04	4.30	3.02	0.02	0.02	0.416	0.292	0.0225	0.02
04/08/08	04/15/08	6	0.500	0.30	0.39	0.30	0.39	**	**	0.368	0.474	0.269	0.35
04/15/08	04/24/08	8	0.500	0.33	0.32	0.33	0.32	0.0025	0.00	0.256	0.247	0.13	0.13
04/24/08	05/01/08	6	0.500	0.72	0.92	0.60	0.77	0.12	0.15	0.03	0.037	0.02	0.02
05/01/08	05/06/08	4	0.500	0.69	1.34	0.58	1.12	0.11	0.21	0.018	0.035	0.021	0.04
05/06/08	05/14/08	7	0.500	0.80	0.88	0.66	0.73	0.14	0.15	0.262	0.289	0.238	0.26
05/14/08	05/22/08	7	0.500	0.83	0.92	0.74	0.82	0.09	0.10	0.54	0.596	0.483	0.53
05/22/08	06/03/08	10	0.500	0.63	0.49	0.45	0.35	0.18	0.14	1.45	1.122	1.20	0.93
06/03/08	06/09/08	5	0.500	1.35	2.08	0.97	1.50	0.38	0.58	2.949	4.558	0.014	0.02
06/09/08	06/23/08	13	0.500	1.02	0.61	0.88	0.52	0.14	0.09	0.697	0.414	0.264	0.16
06/23/08	07/02/08	8	0.500	1.19	1.14	0.79	0.76	0.40	0.38	0.08	0.079	0.01	0.01
07/02/08	07/08/08	5	0.500	1.15	1.78	0.93	1.44	0.22	0.34	0.437	0.675	0.311	0.48
07/08/08	07/23/08	14	0.500	0.87	0.48	0.87	0.48	**	**	1.178	0.650	0.02	0.01
07/23/08	08/05/08	11	0.500	1.00	0.70	0.89	0.63	0.11	0.08	**	**	**	**
08/05/08	08/19/08	13	0.500	0.72	0.43	0.66	0.39	0.06	0.03	0.182	0.108	0.149	0.09
08/19/08	09/03/08	13	0.500	0.95	0.57	0.79	0.47	0.16	0.10	0.026	0.015	0.014	0.01
09/03/08	09/08/08	4	0.500	1.18	2.28	1.03	1.99	0.15	0.29	0.204	0.394	0.187	0.36
09/08/08	09/29/08	20	0.500	1.34	0.52	1.00	0.39	0.34	0.13	0.063	0.024	0.043	0.02
09/29/08	10/13/08	13	0.500	0.95	0.57	0.87	0.52	0.08	0.05	0.158	0.094	0.07	0.04
10/13/08	10/28/08	14	0.500	1.08	0.60	1.04	0.57	0.04	0.02	0.15	0.083	0.123	0.07
10/28/08	11/07/08	8	0.500	1.09	1.05	0.82	0.79	0.27	0.26	0.072	0.070	0.057	0.06
11/07/08	11/19/08	11	0.500	1.41	0.99	0.61	0.43	0.80	0.56	0.39	0.274	0.027	0.02
11/19/08	12/01/08	11	0.500	0.65	0.46	0.42	0.30	0.23	0.16	0.0025	0.002	0.004	0.00
12/01/08	12/15/08	13	0.500	0.65	0.39	0.43	0.26	0.22	0.13	**	**	**	**

* TOTAL NITROGEN IS CALCULATED AS THE SUM OF TOTAL KJELDAHL NITROGEN AND TOTAL OXIDIZED NITROGEN

** DATA MISSING OR OMITTED DUE TO CONTAMINATION

Results less than Detection limit were included as 1/2 D.L.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION AND LABORATORY FACILITY

ATMOSPHERIC NUTRIENT INPUTS OUTLIER ANALYSIS
PERIOD: January - December 2008

WETFALL
Concentrations

Event Date(s)	Total Phosphorus (mg/L as P)	T-Stat High	T-Stat Low	
04/08/08	0.00	-0.600	0.600	
04/24/08	0.00	-0.600	0.600	
05/14/08	0.0025	-0.600	0.600	
12/15/08	0.00	-0.600	0.600	
12/29/08	0.01	-0.570	0.570	
09/08/08	0.008	-0.553	0.553	
02/04/08	0.012	-0.518	0.518	
09/03/08	0.01	-0.510	0.510	
12/01/08	0.01	-0.501	0.501	
01/23/08	0.019	-0.458	0.458	
01/03/08	0.024	-0.415	0.415	
08/05/08	0.06	-0.113	0.113	
11/07/08	0.078	0.051	-0.051	
05/01/08	0.08	0.077	-0.077	
11/19/08	0.11	0.345	-0.345	
06/05/08	0.14	0.578	-0.578	
05/22/08	0.16	0.716	-0.716	
10/28/08	0.25	1.571	-1.571	
07/08/08	0.279	0.716	-0.716	
07/11/08	0.47	3.401	-3.401	**Outlier**
02/14/08	**	-0.622	0.622	
03/10/08	**	-0.622	0.622	
07/23/08	**	-0.622	0.622	
09/29/08	**	-0.622	0.622	
MEAN	0.07			
DEVIATION	0.116			
n	20			
Oultier	0.36			

WETFALL
Loads

Event Date(s)	Total Phosphorus (mg/m2/day)	T-Stat High	T-Stat Low	
05/14/08	0.05	-0.618	0.618	
01/23/08	0.09	-0.594	0.594	
12/29/08	0.12	-0.577	0.577	
04/08/08	0.12	-0.574	0.574	
12/15/08	0.15	-0.558	0.558	
04/24/08	0.16	-0.551	0.551	
09/03/08	0.24	-0.500	0.500	
12/01/08	0.27	-0.482	0.482	
01/03/08	0.36	-0.426	0.426	
02/04/08	0.42	-0.389	0.389	
08/05/08	0.46	-0.368	0.368	
06/05/08	0.48	-0.351	0.351	
09/08/08	0.68	-0.231	0.231	
11/07/08	0.84	-0.130	0.130	
05/22/08	1.80	0.454	-0.454	
05/01/08	1.88	0.504	-0.504	
11/19/08	3.12	1.263	-1.263	
10/28/08	3.34	1.398	-1.398	
07/08/08	5.39	2.657	-2.657	**Outlier**
07/11/08	5.40	2.664	-2.664	**Outlier**
02/14/08	**	-0.648	0.648	
03/10/08	**	-0.648	0.648	
07/23/08	**	-0.648	0.648	
09/29/08	**	-0.648	0.648	
MEAN	1.06			
DEVIATION	1.631			
n	20			
Oultier	5.13			

DRYFALL
Concentrations

Event Date(s)	Total Phosphorus (mg/L as P)	T-Stat High	T-Stat Low	
12/01/08	0.00	-0.524	0.524	
01/23/08	0.01	-0.519	0.519	
02/04/08	0.01	-0.519	0.519	
02/20/08	0.01	-0.519	0.519	
01/08/08	0.01	-0.511	0.511	
01/16/08	0.02	-0.502	0.502	
05/06/08	0.02	-0.497	0.497	
03/10/08	0.02	-0.492	0.492	
09/03/08	0.03	-0.483	0.483	
01/03/08	0.03	-0.480	0.480	
05/01/08	0.03	-0.478	0.478	
02/14/08	0.04	-0.456	0.456	
03/26/08	0.06	-0.431	0.431	
09/29/08	0.06	-0.419	0.419	
11/07/08	0.07	-0.404	0.404	
07/02/08	0.08	-0.387	0.387	
10/28/08	0.15	-0.270	0.270	
10/13/08	0.16	-0.256	0.256	
08/19/08	0.18	-0.215	0.215	
09/08/08	0.20	-0.177	0.177	
04/24/08	0.26	-0.087	0.087	
05/14/08	0.26	-0.077	0.077	
04/15/08	0.37	0.106	-0.106	
11/19/08	0.39	0.144	-0.144	
04/08/08	0.42	0.188	-0.188	
07/08/08	0.44	0.224	-0.224	
05/22/08	0.54	0.402	-0.402	
06/23/08	0.70	0.672	-0.672	
07/23/08	1.18	1.500	-1.500	
06/03/08	1.45	1.972	-1.972	
06/09/08	2.95	4.548	-4.548	**Outlier**
08/05/08	**	-0.528	0.528	
12/15/08	**	-0.528	0.528	
MEAN	0.31			
STANDARD DEVIATION	0.581			
n	31			
Outlier	1.76			

DRYFALL
Loads

Event Date(s)	Total Phosphorus (mg/m2/day)	T-Stat High	T-Stat Low	
12/01/08	0.002	-0.401	0.401	
02/04/08	0.004	-0.399	0.399	
01/23/08	0.01	-0.395	0.395	
02/20/08	0.008	-0.394	0.394	
03/10/08	0.009	-0.393	0.393	
09/03/08	0.015	-0.384	0.384	
01/16/08	0.017	-0.383	0.383	
01/08/08	0.019	-0.379	0.379	
09/29/08	0.024	-0.373	0.373	
03/26/08	0.029	-0.367	0.367	
05/06/08	0.035	-0.360	0.360	
02/14/08	0.036	-0.359	0.359	
05/01/08	0.037	-0.357	0.357	
01/03/08	0.043	-0.350	0.350	
11/07/08	0.070	-0.317	0.317	
07/02/08	0.079	-0.305	0.305	
10/28/08	0.083	-0.300	0.300	
10/13/08	0.094	-0.287	0.287	
08/19/08	0.108	-0.269	0.269	
04/24/08	0.247	-0.096	0.096	
11/19/08	0.274	-0.063	0.063	
05/14/08	0.289	-0.044	0.044	
04/08/08	0.292	-0.040	0.040	
09/08/08	0.394	0.087	-0.087	
06/23/08	0.414	0.112	-0.112	
04/15/08	0.474	0.186	-0.186	
05/22/08	0.60	0.338	-0.338	
07/23/08	0.650	0.405	-0.405	
07/08/08	0.675	0.436	-0.436	
06/03/08	1.122	0.992	-0.992	
06/09/08	4.558	5.264	-5.264	**Outlier**
08/05/08	**	-0.403	0.403	
12/15/08	**	-0.403	0.403	
MEAN	0.32			
STANDARD DEVIATION	0.804			
n	31			
Outlier	2.34			

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
SWIFT CREEK WATER TREATMENT PLANT LABORATORY
PERIOD: JANUARY - DECEMBER 2008

WETFALL Events Date(s)	TOTAL PHOSPHORUS (mg/L as P)	(mg/m2 as P)	LEVEL Ft. M.S.L.	RESERVOIR SURFACE AREA Acres	m2	TOTAL PHOSPHORUS LOAD (mg as P)	(LBS)
01/03/08	0.02	0.36	176.80	1560	6,311,454	2,282,659	5.03
01/23/08	0.02	0.09	177.06	1585	6,414,438	565,105	1.25
02/04/08	0.01	0.42	177.30	1609	6,509,500	2,746,667	6.06
04/08/08	0.00	0.12	177.34	1612	6,525,344	781,629	1.72
04/24/08	0.00	0.16	177.38	1616	6,541,188	1,036,278	2.28
05/01/08	0.08	1.88	177.32	1610	6,517,422	12,239,054	26.99
05/14/08	0.00	0.05	177.36	1614	6,533,266	315,556	0.70
05/22/08	0.16	1.80	177.12	1591	6,438,204	11,567,870	25.51
06/05/08	0.14	0.48	176.95	1574	6,370,868	3,079,581	6.79
08/05/08	0.06	0.46	175.20	1403	5,677,706	2,588,753	5.71
09/03/08	0.01	0.24	177.12	1591	6,438,204	1,552,334	3.42
09/08/08	0.01	0.68	177.53	1631	6,600,602	4,488,817	9.90
10/28/08	0.25	3.34	176.61	1541	6,236,196	20,809,811	45.89
11/07/08	0.08	0.84	176.53	1533	6,204,509	5,235,953	11.55
11/19/08	0.11	3.12	176.80	1560	6,311,454	19,665,983	43.36
12/01/08	0.014	0.27	176.88	1567	6,343,141	1,715,687	3.78
12/15/08	0.0025	0.15	177.47	1625	6,576,836	965,687	2.13
12/29/08	0.006	0.12	177.15	1594	6,450,087	747,692	1.65
TOTAL							**203.71**

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
SWIFT CREEK WATER TREATMENT PLANT LABORATORY
PERIOD: JANUARY - DECEMBER 2008

DRYFALL Events Date(s)	TOTAL PHOSPHORUS (mg/L as P)	ng/m2/day as l	LEVEL Ft. M.S.L.	RESERVOIR SURFACE AREA Acres	m2	TOTAL PHOSPHORUS LOAD (mg as P)	(LBS)
01/03/08	0.03	0.043	176.80	1560	6,311,454	273,139	0.60
01/08/08	0.01	0.019	176.80	1560	6,311,454	121,937	0.27
01/16/08	0.02	0.017	176.85	1564	6,331,259	104,845	0.23
01/23/08	0.01	0.006	177.06	1585	6,414,438	41,309	0.09
02/04/08	0.01	0.004	177.30	1609	6,509,500	25,153	0.06
02/14/08	0.04	0.036	177.22	1601	6,477,813	233,615	0.52
02/20/08	0.01	0.008	177.10	1589	6,430,282	49,693	0.11
03/10/08	0.02	0.009	177.30	1609	6,509,500	55,601	0.12
03/26/08	0.06	0.029	177.08	1587	6,422,360	185,292	0.41
04/08/08	0.42	0.292	177.34	1612	6,525,344	1,907,084	4.21
04/15/08	0.37	0.474	177.18	1597	6,461,969	3,062,860	6.75
04/24/08	0.26	0.247	177.38	1616	6,541,188	1,617,604	3.57
05/01/08	0.03	0.037	177.32	1610	6,517,422	243,438	0.54
05/06/08	0.02	0.035	177.15	1594	6,450,087	224,307	0.49
05/14/08	0.26	0.289	177.36	1614	6,533,266	1,889,728	4.17
05/22/08	0.54	0.596	177.12	1591	6,438,204	3,838,187	8.46
06/03/08	1.45	1.122	176.89	1568	6,347,102	7,122,096	15.70
06/23/08	0.70	0.414	176.28	1509	6,105,486	2,529,737	5.58
07/02/08	0.08	0.079	175.98	1479	5,986,658	474,214	1.05
07/08/08	0.44	0.675	175.88	1470	5,947,049	4,016,786	8.86
07/23/08	1.18	0.650	175.55	1437	5,816,338	3,782,097	8.34
08/19/08	0.18	0.108	174.72	1356	5,487,581	593,710	1.31
09/03/08	0.03	0.015	177.12	1591	6,438,204	99,509	0.22
09/08/08	0.20	0.39	177.53	1631	6,600,602	2,601,474	5.74
09/29/08	0.06	0.02	177.08	1587	6,422,360	156,340	0.34
10/13/08	0.16	0.09	176.78	1558	6,303,532	592,057	1.31
10/28/08	0.15	0.08	176.61	1541	6,236,196	516,355	1.14
11/07/08	0.07	0.07	176.53	1533	6,204,509	431,535	0.95
11/19/08	0.39	0.27	176.80	1560	6,311,454	1,729,287	3.81
12/01/08	0.00	0.00	176.88	1567	6,343,141	11,141	0.02
TOTAL							**84.96**

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
SWIFT CREEK WATER TREATMENT PLANT LABORATORY
PERIOD: JANUARY - DECEMBER 2008

EVENT DATE(s)	TOTAL PHOSPHORUS LOAD (LBS)	Rain (inches)	n
WETFALL			
01/03/08	5.03	1.21	
01/23/08	1.25	0.69	
02/04/08	6.06	1.54	
Winter	**12.34**	**3.44**	**3**
04/08/08	1.72	2.58	
04/24/08	2.28	3.48	
05/01/08	26.99	1.22	
05/14/08	0.70	4.15	
05/22/08	25.51	0.71	
06/05/08	6.79	0.08	
Spring	**63.99**	**12.22**	**6**
08/05/08	5.71	0.43	
09/03/08	3.42	0.88	
09/08/08	9.90	3.10	
10/28/08	45.89	0.58	
Summer	**64.91**	**4.99**	**4**
11/07/08	11.55	0.41	
11/19/08	43.36	1.43	
12/01/08	3.78	1.00	
12/15/08	2.13	3.40	
12/29/08	1.65	0.39	
Fall	**62.47**	**6.63**	**5**

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
SWIFT CREEK WATER TREATMENT PLANT LABORATORY
PERIOD: JANUARY - DECEMBER 2008

PERIOD OF DRYFALL (start)	(finish)	TOTAL PHOSPHORUS LOAD (LBS)	Dry Days	n
DRYFALL				
12/27/07	01/03/08	0.60	5	
01/03/08	01/08/08	0.27	4	
01/08/08	01/16/08	0.23	7	
01/16/08	01/23/08	0.09	6	
01/23/08	02/04/08	0.06	10	
02/04/08	02/14/08	0.52	9	
02/14/08	02/20/08	0.11	5	
02/20/08	03/10/08	0.12	19	
03/10/08	03/26/08	0.41	15	
	Winter	**2.40**	**80**	**9**
03/26/08	04/08/08	4.21	11	
04/08/08	04/15/08	6.75	6	
04/15/08	04/24/08	3.57	8	
04/24/08	05/01/08	0.54	6	
05/01/08	05/06/08	0.49	4	
05/06/08	05/14/08	4.17	7	
05/14/08	05/22/08	8.46	7	
05/22/08	06/03/08	15.70	10	
06/09/08	06/23/08	5.58	13	
	Spring	**49.47**	**72**	**9**
06/23/08	07/02/08	1.05	8	
07/02/08	07/08/08	8.86	5	
07/08/08	07/23/08	8.34	14	
08/05/08	08/19/08	1.31	13	
08/19/08	09/03/08	0.22	13	
09/03/08	09/08/08	5.74	4	
09/08/08	09/29/08	0.34	20	
	Summer	**25.85**	**77**	**7**
09/29/08	10/13/08	1.31	13	
10/13/08	10/28/08	1.14	14	
10/28/08	11/07/08	0.95	8	
11/07/08	11/19/08	3.81	11	
11/19/08	12/01/08	0.02	11	
	Fall	**7.23**	**57**	**5**

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 BASEFLOW & STORMFLOW SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	SURVEY TYPE	STORM#	TEMPERATURE	DISSOLVED OXYGEN % SATURATION	DISSOLVED OXYGEN (mg/L)	pH	CONDUCTIVITY (micro-mhos/cm)	FECAL COLIFORM (Colonies / 100 mL)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)	REMARKS
14 Chestnut Bluff	03/13/08	10:45	Baseflow		3.9	103.4	9.80	6.23	95.2	178.9	0.90	0.20	0.700	0.016	0.008	2.31		1.81	<0.0025	0.09	
1 Drycreek	01/03/08	10:40	Storm Event	1	2.3	98.4	12.8	7.08	103.1	200	0.52	0.43	0.086	0.016	<0.045		12.2	16.5			1.01
3-1 Horsepen	01/03/08	11:00	Storm Event	1	1.0	104.8	13.0	6.76	48.4	<100	0.34	0.15	0.188	0.029	<0.045		27.0	5.43			1.01
4 Otterdale	01/03/08	11:12	Storm Event	1	2.8	95.5	12.5	6.53	68.0	<100	0.12	0.12	< 0.005	0.033 Er	0.069 Er		4.40	5.02			1.01
5 Swift Creek	01/03/08	11:26	Storm Event	1	1.3	97.4	13.2	7.22	63.4	<100	0.13	0.07	0.055	0.036 Er	0.053 Er		19.0	9.96			1.01
6 Tomahawk	01/03/08	11:40	Storm Event	1	1.5	102.7	13.8	7.2	75.1	<100	0.09	0.07	0.016	0.024	<0.045		< 2.00	9.96			1.01
8 Ashbrook	01/03/08	10:30	Storm Event	1	4.7	98.5	12.6	7.25	44.5	100	0.32	0.18	0.137	0.045	<0.045		8.80	13.3			1.01
7 Little Tomahawk	01/03/08	11:58	Storm Event	1	2.2	101.7	13.6	7.11	131.4	<100	0.18	0.06	0.118	0.030 Er	0.064 Er		12.0	33.2			1.01
1 Drycreek	01/16/08	10:35	Baseflow		2.6	93.2	11.3	7.23	129.4	11.0	0.31	0.29	0.024	0.026	0.007		3.60 J2	8.05			
4 Otterdale	01/16/08	11:00	Baseflow		4.6	89.8	10.9	6.27	81.2	12.2	0.30	0.26	0.044	0.048	0.007		7.20	4.20			
5 Swift Creek	01/16/08	11:20	Baseflow		2.6	93.7	11.9	6.31	69.7	115.3	0.23	0.22	0.006	0.179	0.015		126	18.8			
6 Tomahawk	01/16/08	11:40	Baseflow		2.2	97.2	12.6	6.52	73.2	18.3	0.25	0.22	0.030	0.016	0.005		< 2.00	3.59			
7 Little Tomahawk	01/16/08	11:50	Baseflow		2.7	97.9	12.8	6.74	143.1	4.1	0.25	0.21	0.044	0.019	0.006		< 2.00	4.24			
8 Ashbrook	01/16/08	10:20	Baseflow		6.2	93.9	11.5	6.86	48.8	58.8	0.22	0.19	0.034	0.057	0.018		5.60	5.23			
1 Drycreek	02/04/08	12:45	Storm Event	2	8.4	96.3	10.3	6.18	112.1	100.0	0.36	0.30	0.063	0.021	0.008		3.80	23.45			1.68
2 Westbranch	02/04/08	13:00	Storm Event	2	8.5	95.4	10.2	6.08	68.8	100.0	0.46	0.37	0.087	0.018	0.013		16.6	15.6			1.68
3-1 Horsepen	02/04/08	13:45	Storm Event	2	8.6	91.9	9.71	6.14	46.2	<100	0.41	0.41	< 0.005	0.013	0.004		< 2.00	4.48			1.68
3-2 Blackman	02/04/08	13:30	Storm Event	2	8.6	42.9	4.60	5.80	127.1	<100	0.46	0.40	0.055	0.163 Er	0.28 Er		< 2.00	19.92			1.68
4 Otterdale	02/04/08	14:00	Storm Event	2	8.7	92.2	9.82	6.41	57.1	<100	0.39	0.34	0.045	0.015	0.006		3.00	5.62			1.68
5 Swift Creek	02/04/08	14:15	Storm Event	2	8.8	88.5	9.29	6.51	68.8	100.0	0.43	0.40	0.030	0.023	0.01		3.00	10.18			1.68
6 Tomahawk	02/04/08	14:30	Storm Event	2	8.6	45.1	4.45	6.17	146.8	<100	0.55	0.52	0.032	0.016	0.013		72.0	38.15			1.68
8 Ashbrook	02/04/08	12:30	Storm Event	2	8.5	90.1	9.01	6.80	50.4	<100	0.56	0.55	0.006	0.015	0.006		4.80	10.04			1.68
13 Chimney House	02/04/08	15:00	Storm Event	2	8.4	82.4	8.64	6.91	113.2	310.0	1.90	0.45	1.45	0.012	0.010		14.8	11.36			1.68
14 Chestnut Bluff	02/04/08	13:15	Storm Event	2	8.2	97.4	9.59	7.03	114.4	<100	1.43	0.35	1.08	0.006 J2	0.006		< 2.00	2.53			1.68
7 Little Tomahawk	02/04/08	14:45	Storm Event	2	8.6	93.1	9.63	6.70	136.7	<100	0.58	0.44	0.136	0.012	0.008		5.40	21.3			1.68
1 Drycreek	02/14/08	9:30	Storm Event	3	7.9	96.8	11.2	6.86	124.1	300	0.49	0.37	0.119	0.027	0.012		5.40	20.4			0.94
2 Westbranch	02/14/08	9:50	Storm Event	3	7.3	98.4	11.8	6.64	92.6	410	0.85	0.71	0.140	0.028	0.025		14.2	22.3			0.94
3-1 Horsepen	02/14/08	10:50	Storm Event	3	7.0	103.7	12.6	6.73	50.8	<100	0.44	0.44	0.007 J2	0.016	0.003 J2		< 2.00	3.49			0.94
3-2 Blackman	02/14/08	11:10	Storm Event	3	7.3	47.2	5.64	5.97	214.7	<100	0.47	0.46	0.012	0.180 Er	0.549 Er		< 2.00	12.5			0.94
4 Otterdale	02/14/08	11:30	Storm Event	3	7.2	98.7	11.9	6.10	59.7	<100	0.31	0.28	0.028	0.017	0.008		< 2.00	6.00			0.94
5 Swift Creek	02/14/08	12:00	Storm Event	3	6.5	97.3	11.9	6.14	74.3	630	0.39	0.34	0.046	0.018	0.011		7.60	12.0			0.94
6 Tomahawk	02/14/08	12:20	Storm Event	3	6.6	101.9	12.2	6.13	97.5	100	1.02	0.86	0.155	0.009	0.008		< 2.00	11.9			0.94
8 Ashbrook	02/14/08	9:00	Storm Event	3	8.1	86.6	10.2	6.38	58.4	<100	0.49	0.47	0.023	0.016	0.007		4.00	11.9			0.94
13 Chimney House	02/14/08	13:00	Storm Event	3	7.0	91.8	11.1	6.22	108.1	100	1.14	0.38	0.758	0.013	0.012		51.0	16.3			0.94
14 Chestnut Bluff	02/14/08	10:10	Storm Event	3	7.9	102.4	12.1	6.16	106.2	410	1.20	0.40	0.795	0.005***	0.006***		4.40	5.40			0.94
7 Little Tomahawk	02/14/08	12:40	Storm Event	3	8.0	102.1	12.2	6.23	197.9	<100	0.95	0.74	0.209	0.013	0.008		< 2.00	14.6			0.94
1 Drycreek	03/10/08	6:55	Storm Event	4	3.3	98.6	10.2	6.75	238.4	100	0.40	0.34	0.058	0.106	0.010	8.67	43.6 J2	30.0	<0.0025	0.10	1.92
2 Westbranch	03/10/08	7:05	Storm Event	4	3.1	98.3	10.7	6.39	79.6	100	0.46	0.40	0.057	0.087	0.031	8.88	14.2	25.8	0.0026	0.06	1.92
3-1 Horsepen	03/10/08	7:35	Storm Event	4	2.6	102.6	11.1	6.13	40.2	<100	0.45	0.44	0.007	0.014	0.005	9.56	< 2.00	4.64	<0.0025	0.14	1.92
3-2 Blackman	03/10/08	7:25	Storm Event	4	2.6	102.7	10.8	6.65	50.2	200	0.42	0.42	< 0.005	0.017	0.006	8.37	4.00	9.43	<0.0025	< 0.05	1.92
4 Otterdale	03/10/08	7:45	Storm Event	4	**	**	**	**	**	<100	0.36	0.31	0.045	0.015	0.005	8.13	< 2.00	5.60	0.0038	0.11	1.92
5 Swift Creek	03/10/08	10:15	Storm Event	4	3.1	99.0	10.8	6.14	65.3	100	0.35	0.33	0.024	0.039	0.008	7.47	6.00	12.0	0.0028	0.17	1.92
6 Tomahawk	03/10/08	10:00	Storm Event	4	2.7	100.1	11.0	6.02	66.7	<100	0.60	0.47	0.131	0.022	0.006	4.59	4.60	13.0	<0.0025	0.08	1.92
8 Ashbrook	03/10/08	6:45	Storm Event	4	2.3	94.7	10.1	6.35	54.1	310	0.58	0.56	0.015	0.050	0.005	5.99	4.80	8.54	<0.0025	0.13	1.92
13 Chimney House	03/10/08	9:30	Storm Event	4	3.7	108.4	11.2	6.78	96.8	100	1.58	0.36	1.22	0.024	0.008	5.01	3.40	8.10	<0.0025	0.15	1.92
14 Chestnut Bluff	03/10/08	7:15	Storm Event	4	3.6	100.0	9.46	6.98	77.3	200	1.38	0.43	0.953	0.016	0.002	3.24	<2.00	3.09	<0.0025	0.15	1.92
7 Little Tomahawk	03/10/08	9:50	Storm Event	4	2.8	101.8	11.2	6.37	104.3	100	0.61	0.47	0.135	0.058	0.013	3.30	66.4	72.0	0.0035	0.13	1.92
1 Drycreek	03/13/08	10:15	Baseflow		2.6	102.9	9.73	6.14	68.6	29.9	0.20	0.18	0.018	0.024	0.012	5.55		12.8	<0.0025	0.14	
2 Westbranch	03/13/08	10:30	Baseflow		3.1	106.4	10.0	6.32	36.6	43.7	0.26	0.23	0.025	0.039	0.011	5.85		9.56	<0.0025	0.13	
3-1 Horsepen	03/13/08	11:15	Baseflow		3.5	107.9	10.2	6.46	40.9	67.0	0.27	0.26	0.007	0.013	0.010	6.85		3.64	0.0037	0/09	
3-2 Blackman	03/13/08	11:00	Baseflow		3.6	106.4	10.0	6.16	44.9	43.5	0.31	0.26	0.049	0.010	0.008	5.68		4.56	<0.0025	0.15	
4 Otterdale	03/13/08	11:30	Baseflow		4.6	103.0	9.74	6.42	56.4	137.6	0.23	0.22	0.007	0.036	0.008	6.17		11.8	0.0105	0.06	
5 Swift Creek	03/13/08	11:45	Baseflow		2.6	106.6	10.2	6.14	61.0	35.9	0.27	0.25	0.015	0.042	0.009	6.36		9.63	<0.0025	0.07	
6 Tomahawk	03/13/08	12:00	Baseflow		2.2	106.4	10.1	6.03	109.4	30.5	0.43	0.30	0.132	0.013	0.008	3.59		9.60	<0.0025	0.11	
7 Little Tomahawk	03/13/08	12:15	Baseflow		2.7	102.9	9.79	9.54	47.4	31.3	0.24	0.20	0.036	0.026	0.007	2.32		17.8	0.0039	0.06	
8 Ashbrook	03/13/08	10:00	Baseflow		6.2	99.8	9.45	6.14	97.7	10.8	0.21	0.20	0.010	0.039	0.009	6.44		13.7	0.0031	0.05	
1 Drycreek	04/08/08	9:30	Storm Event	5	10.4	80.0	9.60	6.90	147	100	0.77	0.77	< 0.005	0.031	<0.045		20.6 J	23.8			1.82
2 Westbranch	04/08/08	14:00	Storm Event	5	10.6	64.0	7.80	6.79	128	100	0.93	0.92	0.005	0.050	<0.045		20.6 J	30.9			1.82
3-1 Horsepen	04/08/08	12:30	Storm Event	5	10.2	76.0	9.20	5.93	65.5	<100	0.43	0.43	< 0.005	0.010	<0.045		< 2.00 J	6.28			1.82
3-2 Blackman	04/08/08	13:00	Storm Event	5	10.3	78.0	9.20	6.29	74.5	100	2.14	2.13	0.005	0.260	<0.045		77.0 J	92.1			1.82
4 Otterdale	04/08/08	12:00	Storm Event	5	10.2	73.0	8.80	5.92	77.3	<100	0.53	0.52	0.005	0.022	<0.045		2.60 J	7.91			1.82
5 Swift Creek	04/08/08	11:30	Storm Event	5	10.6	67.0	8.00	6.02	107	<100	0.51	0.50	0.005	0.031	<0.045		< 2.00 J	59.1			1.82
6 Tomahawk	04/08/08	11:00	Storm Event	5	10.5	85.0	10.0	6.27	97.8	<100	0.84	0.83	0.007	0.052	<0.045		4.60 J	12.0			1.82
8 Ashbrook	04/08/08	9:00	Storm Event	5	10.4	87.0	10.4	7.59	142	850	0.51	0.50	0.005	0.027	<0.045		< 2.00 J	20.2			1.82
13 Chimney House	04/08/08	10:00	Storm Event	5	10.2	74.0	8.80	6.02	202	310	1.03	0.55	0.477	0.055	<0.045		7.20 J	5.43			1.82
14 Chestnut Bluff	04/08/08	13:30	Storm Event	5	10.4	84.0	10.2	6.07	195	100	0.36	0.36	< 0.005	0.017	<0.045		2.00 J	5.30			1.82
7 Little Tomahawk	04/08/08	10:30	Storm Event	5	11.1	84.0	9.80	7.02	193	100	0.54	0.53	0.006	0.032	<0.045		12.4 J	52.6			1.82
1 Drycreek	04/15/08	10:00	Baseflow		12.4	100.0	9.46	6.28	77.3	60.1	0.23	0.18	0.045	0.032	0.008		3.60 J2	19.6			
2 Westbranch	04/15/08	10:13	Baseflow		15.2	102.9	9.73	6.14	68.6	16.1	0.26	0.22	0.044	0.023	0.006		7.40	4.75			
3-1 Horsepen	04/15/08	10:40	Baseflow		13.5	106.4	10.0	6.32	36.6	13.4	0.04	<0.03	0.041	0.010	0.005		< 2.00	4.00			

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 BASEFLOW & STORMFLOW SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	SURVEY TYPE	STORM#	TEMPERATURE	DISSOLVED OXYGEN % SATURATION	DISSOLVED OXYGEN (mg/L)	pH	CONDUCTIVITY (micro-mhos/cm)	FECAL COLIFORM (Colonies / 100 mL)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)	REMARKS
3-2 Blackman	04/15/08	10:28	Baseflow		14.5	107.9	10.2	6.46	40.9	10.2	0.31	0.26	0.047	0.035	0.011		17.4	40.8			
4 Otterdale	04/15/08	10:58	Baseflow		14.7	106.4	10.0	6.16	44.9	12.6	0.31	0.22	0.085	0.012	0.004		< 2.00	4.86			
5 Swift Creek	04/15/08	11:10	Baseflow		14.3	103.0	9.74	6.42	56.4	35.9	0.27	0.27	0.012 J2	0.029	0.012		3.00	6.52			
6 Tomahawk	04/15/08	11:28	Baseflow		14.2	106.6	10.2	6.14	61.0	14.8	0.33	0.26	0.071	0.032	0.004		< 2.00	19.2			
3-2 Blackman	04/15/08	10:28	Baseflow		14.5	107.9	10.2	6.46	40.9	10.2	0.31	0.26	0.047	0.035	0.011		17.4	40.8			
4 Otterdale	04/15/08	10:58	Baseflow		14.7	106.4	10.0	6.16	44.9	12.6	0.31	0.22	0.085	0.012	0.004		< 2.00	4.86			
5 Swift Creek	04/15/08	11:10	Baseflow		14.3	103.0	9.74	6.42	56.4	35.9	0.27	0.27	0.012 J2	0.029	0.012		3.00	6.52			
6 Tomahawk	04/15/08	11:28	Baseflow		14.2	106.6	10.2	6.14	61.0	14.8	0.33	0.26	0.071	0.032	0.004		< 2.00	19.2			
7 Little Tomahawk	04/15/08	11:50	Baseflow		14.5	106.4	10.1	6.33	109.4	20.1	0.30	0.22	0.075	0.008	0.005		< 2.00	4.50			
8 Ashbrook	04/15/08	9:46	Baseflow		12.3	102.9	9.79	6.54	47.4	22.2	0.26	0.20	0.055	0.033	0.005		4.80	9.78			
1 Drycreek	04/24/08	9:50	Storm Event	6	12.1	82.7	7.33	6.80	67.2	1690	0.71	0.53	0.182	0.036	0.009		17.8 J2	22.8			1.85
2 Westbranch	04/24/08	10:10	Storm Event	6	14.9	92.7	8.20	6.88	77.0	<100	0.39	0.39	< 0.005	0.015	0.007		18.6	7.20			1.85
3-1 Horsepen	04/24/08	11:10	Storm Event	6	13.1	84.4	7.47	5.96	30.7	410	0.62	0.62	< 0.005	0.024	<0.005		8.40	12.7			1.85
3-2 Blackman	04/24/08	10:50		6	14.1	17.0	1.50	5.93	93.1	<100	0.56	0.56	< 0.005	0.116	0.103		5.00	7.77			1.85
4 Otterdale	04/24/08	11:30	Storm Event	6	14.2	32.2	2.85	6.14	172.1	<100	0.65	0.62	0.025	< 0.005 ***	0.005 ***		124	119			1.85
5 Swift Creek	04/24/08	11:50	Storm Event	6	13.9	71.5	6.35	6.41	52.7	740	0.56	0.43	0.128	0.027	0.010		4.80	9.54			1.85
6 Tomahawk	04/24/08	12:10	Storm Event	6	13.8	73.7	6.53	6.16	49.1	730	0.61	0.45	0.156	0.033	0.007		28.2	24.7			1.85
8 Ashbrook	04/24/08	9:30	Storm Event	6	12.3	68.9	6.09	6.32	69.5	740	0.57	0.47	0.102	0.025	0.006		6.00	13.5			1.85
13 Chimney House	04/24/08	12:50	Storm Event	6	14.8	76.5	6.78	6.37	89.9	13340	1.33	0.43	0.898	0.063	0.010		14.4	11.6			1.85
14 Chestnut Bluff	04/24/08	10:30	Storm Event	6	13.2	77.7	6.89	6.37	89.6	10540	1.36	0.55	0.813	0.015	0.009		38.0	5.78			1.85
7 Little Tomahawk	04/24/08	12:30	Storm Event	6	14.2	79.2	7.01	6.40	86.7	1090	0.75	0.46	0.285	0.016	0.005		4.40	12.9			1.85
1 Drycreek	05/01/08	10:15	Storm Event	7	15.6	82.8	8.29	6.52	65.6	970	0.53	0.42	0.111	0.030	0.008		54.9 J	17.1			1.76
2 Westbranch	05/01/08	10:30	Storm Event	7	15.5	86.2	8.65	6.38	118.4	520	0.73	0.62	0.113	0.033	0.017		15.0 J	14.4			1.76
3-1 Horsepen	05/01/08	11:15	Storm Event	7	15.3	86.9	8.77	5.92	30.9	<100	0.55	0.52	0.032	0.015	0.006		8.40 J	8.34			1.76
3-2 Blackman	05/01/08	11:00	Storm Event	7	15.6	19.5	1.96	5.65	99.0	<100	0.59	0.54	0.045	0.034	0.025		17.2 J	7.92			1.76
4 Otterdale	05/01/08	11:30	Storm Event	7	15.2	82.9	8.37	5.89	35.8	200	0.60	0.52	0.080	0.019	0.006		8.40 J	12.2			1.76
5 Swift Creek	05/01/08	11:45	Storm Event	7	18.1	84.4	8.02	6.17	53.4	100	0.63	0.55	0.083	0.027	0.012		16.8 J	11.8			1.76
6 Tomahawk	05/01/08	12:00	Storm Event	7	15.5	85.1	8.54	6.21	46.7	100	0.73	0.65	0.081	0.026	0.019		34.9 J	30.2			1.76
8 Ashbrook	05/01/08	10:00	Storm Event	7	17.3	91.2	8.80	6.42	93.6	520	0.73	0.62	0.108	0.025	0.007		5.00 J	10.8			1.76
13 Chimney House	05/01/08	12:30	Storm Event	7	15.7	83.4	8.33	6.39	50.9	410	0.80	0.71	0.094	0.021	0.008		6.40 J	12.6			1.76
14 Chestnut Bluff	05/01/08	10:45	Storm Event	7	15.4	83.4	8.39	5.70	0.9	5120	0.86	0.73	0.133	0.028	0.013		2.75 J	8.70			1.76
7 Little Tomahawk	05/01/08	12:15	Storm Event	7	15.5	85.0	8.54	6.20	46.7	520	0.71	0.52	0.189	0.020	0.007		14.4 J	11.4			1.76
14 Chestnut Bluff	05/06/08	12:20	Baseflow		15.6	101.1	9.47	6.64	109.5	1299.7	1.16	0.58	0.575	0.012	0.006		2.60 J	1.25			
1 Drycreek	05/06/08	11:40	Baseflow		11.9	85.2	8.19	6.49	105.1	69.7	0.31	0.26	0.046	0.027	0.009		9.25 J	9.65			
2 Westbranch	05/06/08	12:00	Baseflow		12.7	92.1	8.80	6.57	83.4	325.5	0.43	0.39	0.038	0.022	0.007		3.00 J	5.56			
3-1 Horsepen	05/06/08	13:00	Baseflow		13.0	99.7	9.48	6.36	44.7	39.3	0.31	0.31	< 0.005	0.016	0.005		3.40 J	5.35			
3-2 Blackman	05/06/08	12:40	Baseflow		13.9	96.1	9.09	6.41	55.6	128.1	0.32	0.32	< 0.005	0.051	0.008		12.4 J	20.4			
4 Otterdale	05/06/08	13:20	Baseflow		15.6	86.5	8.50	6.00	60.2	95.9	0.32	0.28	0.038	0.018	0.006		3.40 J	7.24			
5 Swift Creek	05/06/08	13:40	Baseflow		14.3	92.9	8.87	6.74	79.5	47.1	0.35	0.34	0.010	0.043	0.021		5.20 J	9.25			
6 Tomahawk	05/06/08	14:00	Baseflow		14.9	99.4	9.60	6.70	58.2	29.2	0.47	0.41	0.060	0.019	0.006		2.40 J	9.10			
7 Little Tomahawk	05/06/08	14:20	Baseflow		14.6	102.3	9.66	6.97	106.5	68.3	0.47	0.40	0.068	0.014	0.002		2.00 J	4.48			
8 Ashbrook	05/06/08	11:20	Baseflow		13.1	102.4	9.66	6.97	106.8	69.1	0.49	0.49	< 0.005	0.042	0.007		4.80 J	11.0			
1 Drycreek	05/14/08	9:33	Storm Event	8	12.1	95.0	9.38	6.91	56.8	740	0.47	0.42	0.047	0.093	0.009		16.2 J	28.2			2.82
2 Westbranch	05/14/08	9:50	Storm Event	8	13.8	96.1	9.61	6.67	61.5	520	0.47	0.39	0.079	0.035	0.008		8.40 J	10.7			2.82
3-1 Horsepen	05/14/08	10:15	Storm Event	8	13.4	93.9	9.39	6.41	31.7	100	0.62	0.61	0.007	0.022	0.005		< 2.00 J	7.69			2.82
3-2 Blackman	05/14/08	10:08	Storm Event	8	14.3	96.6	9.70	6.31	36.8	<100	0.27	0.27	< 0.005	0.157	0.042		129 J	96.6			2.82
4 Otterdale	05/14/08	10:22	Storm Event	8	16.0	96.5	9.61	6.18	40.4	310	0.68	0.66	0.021	0.103	0.007		50.3 J	38.2			2.82
5 Swift Creek	05/14/08	10:29	Storm Event	8	14.9	88.8	8.85	6.43	56.2	200	0.45	0.43	0.022	0.044	0.011		11.0 J	11.2			2.82
6 Tomahawk	05/14/08	10:38	Storm Event	8	15.3	97.1	9.34	6.46	46.8	310	0.50	0.46	0.043	0.211	0.010		45.6 J	37.0			2.82
8 Ashbrook	05/14/08	9:20	Storm Event	8	13.3	84.6	8.26	6.48	38.1	1100	0.51	0.48	0.033	0.067	0.013		58.0 J	47.3			2.82
13 Chimney House	05/14/08	11:00	Storm Event	8	15.8	87.3	8.33	6.29	117.8	100	1.45	0.52	0.928	0.024	0.008		6.00 J	13.4			2.82
14 Chestnut Bluff	05/14/08	10:00	Storm Event	8	15.9	93.5	9.10	6.46	113.5	100	1.71	0.75	0.961	0.019	0.008		< 2.00 J	4.24			2.82
7 Little Tomahawk	05/14/08	10:50	Storm Event	8	14.9	101	9.59	6.53	92.4	1100	0.70	0.52	0.177	0.038	0.006		7.00 J	20.6			2.82
1 Drycreek	05/22/08	8:50	Storm Event	9	20.7	96.2	9.18	7.26	77.4	<100	0.47	0.42	0.051	0.020	0.015		3.80	7.75			0.28
2 Westbranch	05/22/08	8:35	Storm Event	9	20.7	92.0	8.34	7.25	59.1	<100	0.79	0.62	0.173	0.087	0.005		107	12.3			0.28
3-1 Horsepen	05/22/08	8:00	Storm Event	9	19.4	111.0	11.1	7.30	32.8	<100	0.31	0.29	0.016	0.014	0.011		8.40	4.82			0.28
3-2 Blackman	05/22/08	8:10	Storm Event	9	20.7	86.0	8.19	6.90	52.9	620	0.54	0.53	0.005	0.132	<0.005		9.80	16.6			0.28
4 Otterdale	05/22/08	7:50	Storm Event	9	18.6	92.9	8.71	6.76	73.9	300	0.62	0.54	0.083	0.057	0.005		61.2	6.31			0.28
5 Swift Creek	05/22/08	7:35	Storm Event	9	19.5	87.4	8.39	7.07	74.6	310	0.65	0.60	0.046	0.036	0.006		6.40	7.67			0.28
6 Tomahawk	05/22/08	7:25	Storm Event	9	20.0	22.1	2.14	6.48	356.0	<100	0.67	0.65	0.019	0.020	<0.005		141	20.8			0.28
8 Ashbrook	05/22/08	9:00	Storm Event	9	18.9	88.2	8.22	7.14	46.4	1090	0.87	0.85	0.016	0.053	0.005		13.0	18.7			0.28
13 Chimney House	05/22/08	7:00	Storm Event	9	21.9	78.1	7.46	6.65	109.1	3730	0.97	0.55	0.416	0.080	<0.005		272	26.2			0.28
14 Chestnut Bluff	05/22/08	8:20	Storm Event	9	19.8	92.6	8.62	6.95	83.5	7170	1.19	0.71	0.477	0.069	0.013		14.4	14.9			0.28
7 Little Tomahawk	05/22/08	7:15	Storm Event	9	20.1	92.9	8.83	7.09	110.8	410	0.77	0.52	0.251	0.018	0.006 J2		11.6	5.48			0.28
1 Drycreek	06/03/08	10:15	Baseflow		18.9	86.4	7.89	7.23	231.9	127.4	0.29	0.23	0.055	0.044	0.005	5.82	< 2.00	5.91	0.0043	0.11	
2 Westbranch	06/03/08	10:30	Baseflow		19.0	77.9	7.15	7.10	98.6	119.8	0.34	0.30	0.043	0.050	0.007	8.04	2.20	6.72	0.0051	0.12	
3-1 Horsepen	06/03/08	10:45	Baseflow		18.9	74.4	6.86	6.65	53.1	59.4	0.29	0.28	0.008	0.037	0.006	7.81	2.00	6.22	0.0048	0.15	
3-2 Blackman	06/03/08	11:00	Baseflow		20.6	69.6	6.34	6.52	62.1	49.6	0.33	0.32	0.005	0.068	0.008	8.75	3.00	22.5	0.0048	0.11	
5 Swift Creek	06/03/08	11:20	Baseflow		19.8	82.1	7.49	6.84	101.1	137.6	0.44	0.39	0.053	**	0.022	15.4	2.60	9.90	0.0048	0.12	
5 Swift Creek	06/05/08	6:15	Storm Event	10	19.6	95.9	8.61	5.83	132.5	1970	0.65	0.52	0.133	0.055	0.028	8.01	29.2 J2	31.7	0.0038	0.18	0.46

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 BASEFLOW & STORMFLOW SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	SURVEY TYPE	STORM#	TEMPERATURE	DISSOLVED OXYGEN % SATURATION	DISSOLVED OXYGEN (mg/L)	pH	CONDUCTIVITY (micro-mhos/cm)	FECAL COLIFORM (Colonies / 100 mL)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)	REMARKS
6 Tomahawk	06/05/08	6:25	Storm Event	10	20.7	90.4	8.21	6.42	62.2	5730	0.91	0.58	0.329	0.098	0.024	6.97	48.8	126.4	0.0096	0.26	0.46
7 Little Tomahawk	06/05/08	6:40	Storm Event	10	19.4	91.9	8.32	6.49	116.7	2750	0.77	0.49	0.275	0.166	0.009	6.28	27.0	41.2	0.0051	0.12	0.46
7 Little Tomahawk	07/02/08	10:20	Baseflow		21.3	90.2	8.21	7.25	237.8	410.6	0.28	0.28	**	0.015	0.005		< 2.00	6.35			
1 Drycreek	07/10/08	13:30	Storm Event	11	23.6	92.7	8.03	6.88	123.3	1413.6	0.85	0.77	0.075	0.054	0.008						1.02
6 Tomahawk	07/10/08	14:30	Storm Event	11	22.1	95.9	8.40	7.0	63.3	>2419.2	1.07	0.83	0.242	0.296	0.020						1.02
14 Chestnut Bluff	07/10/08	13:45	Storm Event	11	22.2	91.9	7.95	7.05	65.1	1732.9	0.87	0.67	0.203	0.064	0.020						1.02
7 Little Tomahawk	07/10/08	14:40	Storm Event	11	22.0	92.9	8.03	6.79	138.4	>2419.2	0.80	0.69	0.109	0.035	0.011						1.02
7 Little Tomahawk	08/06/08	10:30	Baseflow		21.7	93.1	8.44	7.14	257	172.2	0.26	0.23	0.028	0.044	0.011	4.57	4.00	11.2	< 0.0025	< 0.05	
13 Chimney House	08/28/08	13:15	Storm Event	12	22.4	88.3	7.68	6.12	85.0	51720											
1 Drycreek	09/02/08	11:30	Storm Event	12	22.9	47.9	6.62	6.78	47.9	6010	0.90	0.66	0.238	0.173	0.024		< 2.00	33.8			0.80
2 Westbranch	09/02/08	11:45	Storm Event	12	24.6	79	6.64	6.59	60.7	410	1.10	0.81	0.292	0.185	0.060		4.80	9.26			0.80
3-1 Horsepen	09/02/08	12:30	Storm Event	12	24.8	79.6	6.67	6.25	65.0	9060	0.66	0.61	0.050	0.123	0.018		< 2.00	37.4			0.80
3-2 Blackman	09/02/08	12:12	Storm Event	12	24.5	75.0	6.31	5.87	81.2	310	0.75	0.58	0.172	0.275	0.099		19.6	57.0			0.80
4 Otterdale	09/02/08	12:43	Storm Event	12	23.9	78.7	6.71	6.47	90.5	20980	0.76	0.63	0.128	0.153	0.024		13.2	9.31			0.80
5 Swift Creek	09/02/08	12:58	Storm Event	12	24.2	79.3	6.71	6.49	80.1	510	1.00	0.77	0.231	0.172	0.016		3.60	73.6			0.80
6 Tomahawk	09/02/08	13:09	Storm Event	12	24.2	79.3	6.71	6.51	80.1	8160	0.98	0.71	0.271	0.143	0.044		22.0	73.6			0.80
8 Ashbrook	09/02/08	11:13	Storm Event	12	22.8	87.7	7.62	6.67	77.8	5280	0.69	0.68	0.010	0.125	0.005		14.0	19.2			0.80
14 Chestnut Bluff	09/02/08	12:00	Storm Event	12	20.9	91.6	8.26	6.59	74.3	1340	1.85	0.76	1.09	0.080	0.045		2.80	2.09			0.80
7 Little Tomahawk	09/02/08	13:20	Storm Event	12	22.6	88.0	7.68	6.62	277	410	0.75	0.70	0.051	0.039	0.004		4.00	17.6			0.80
1 Drycreek	09/03/08	11:50	Baseflow		22.8	76.3	6.62	6.78	218.7	461.1	0.43	0.35	0.079	0.026	0.006		< 2.00	91.7			
2 Westbranch	09/03/08	12:10	Baseflow		24.6	79.0	6.64	6.59	60.7	488.4	0.44	0.41	0.030	0.036	0.007		< 2.00	8.31			
3-2 Blackman	09/03/08	12:50	Baseflow		24.8	79.6	6.67	6.25	65.0	186.0	0.55	0.38	0.172	0.061	0.011		6.80	41.2			
5 Swift Creek	09/03/08	13:50	Baseflow		24.5	75.0	6.31	5.87	81.2	209.8	0.41	0.38	0.032	0.053	0.021		< 2.00	8.69			
6 Tomahawk	09/03/08	14:10	Baseflow		23.9	78.7	6.71	6.47	90.5	**	0.35	0.34	0.005	0.041 Er	0.053 Er		9.20	11.4			
7 Little Tomahawk	09/03/08	14:30	Baseflow		22.6	88.0	7.68	6.62	175.9	248.1	0.46	0.39	0.074	0.018	0.004		< 2.00	13.6			
1 Drycreek	09/08/08	11:30	Storm Event	13	20.8	95.4	8.56	6.36	191.6	10670	0.86	0.72	0.137	0.094	0.023		7.40	32.2			3.05
2 Westbranch	09/08/08	11:50	Storm Event	13	20.4	84.8	7.66	6.45	52.7	310	1.07	0.76	0.309	0.162	0.037		4.60	17.7			3.05
3-1 Horsepen	09/08/08	12:50	Storm Event	13	20.4	85.8	7.78	5.94	44.7	300	0.78	0.78	< 0.005	0.037	0.006		2.40	11.7			3.05
3-2 Blackman	09/08/08	12:30	Storm Event	13	20.5	90.2	8.15	5.65	34.1	4710	0.79	0.79	< 0.005	0.187	0.006		166	48.5			3.05
4 Otterdale	09/08/08	13:10	Storm Event	13	20.6	95.6	8.63	5.74	52.2	520	0.83	0.67	0.156	0.167	0.012		19.0	80.8			3.05
5 Swift Creek	09/08/08	13:30	Storm Event	13	20.5	81.3	7.33	6.17	61.1	200	0.66	0.65	0.014	0.065	0.014		6.40	18.2			3.05
6 Tomahawk	09/08/08	13:45	Storm Event	13	20.5	44.6	4.05	6.01	147.9	630	0.85	0.84	0.013	0.059	0.028		20.4	35.4			3.05
8 Ashbrook	09/08/08	11:10	Storm Event	13	20.4	94.8	8.58	6.81	47.7	2130	0.77	0.75	0.016	0.118	0.007		6.40	15.6			3.05
13 Chimney House	09/08/08	14:15	Storm Event	13	20.6	78.1	7.04	6.19	121.4	630	1.37	0.83	0.543	0.030	0.007		2.20	11.3			3.05
14 Chestnut Bluff	09/08/08	12:10	Storm Event	13	20.8	94.5	8.46	6.49	122.7	860	1.98	0.88	1.10	0.031	0.012		< 2.00	2.46			3.05
7 Little Tomahawk	09/08/08	14:00	Storm Event	13	20.4	84.7	7.70	6.49	136.5	630	0.82	0.73	0.094	0.033	0.005		< 2.00	12.7			3.05
1 Drycreek	09/30/08	0:00	Storm Event	14	15.1	92.1	9.29	6.77	117	920.8	0.82	0.68	0.139	0.038	0.020		2.60	9.85			1.71
2 Westbranch	09/30/08	0:00	Storm Event	14	19.1	13.1	1.22	6.23	132	517.2	0.95	0.91	0.043	0.035	0.017		3.00	11.0			1.71
3-1 Horsepen	09/30/08	0:00	Storm Event	14	19.0	33.4	3.11	6.22	357	686.7	0.67	0.67	< 0.005	0.058	0.016		14.8	9.41			1.71
3-2 Blackman	09/30/08	0:00	Storm Event	14	19.5	90.6	8.35	7.03	159	307.6	0.70	0.65	0.049	0.128	0.042		28.2	78.0			1.71
4 Otterdale	09/30/08	0:00	Storm Event	14	19.7	77.4	7.10	6.81	86.6	980.4	0.84	0.54	0.303	0.101	0.038		6.20	33.9			1.71
5 Swift Creek	09/30/08	0:00	Storm Event	14	14.4	80.2	8.22	6.59	78.0	272.3	0.68	0.65	0.025	0.070	0.034		< 2.00	11.0			1.71
6 Tomahawk	09/30/08	0:00	Storm Event	14	18.8	60.2	5.63	6.13	53.6	26.9	0.62	0.60	0.017	0.033 Er	0.068 Er		21.3	12.8			1.71
8 Ashbrook	09/30/08	0:00	Storm Event	14	20.8	95.3	8.56	6.93	53.2	52.0	0.68	0.67	0.010	0.055	0.019		4.20	6.45			1.71
13 Chimney House	09/30/08	0:00	Storm Event	14	19.5	84.5	7.78	6.82	98.2	410.6	0.76	0.75	0.007	0.052	0.016		17.6	20.4			1.71
14 Chestnut Bluff	09/30/08	0:00	Storm Event	14	19.5	89.5	8.26	6.90	159	1299.7	1.44	0.72	0.716	0.134	0.017		17.6	13.9			1.71
7 Little Tomahawk	09/30/08	0:00	Storm Event	14	18.2	28.3	2.68	6.28	332	517.2	0.68	0.60	0.076	0.038	0.008		2.60	20.6			1.71
14 Chestnut Bluff	10/13/08	11:15	Baseflow		16.2	89.9	7.89	6.54	120	139.6	0.62	0.33	0.294	0.034	0.011		2.40	1.25			
1 Drycreek	10/13/08	13:30	Baseflow		17.4	74.7	6.55	6.67	212	160.7	0.56	0.32	0.239	0.013	0.011		< 2.00	4.35			
3-2 Blackman	10/13/08	13:15	Baseflow		18.1	72.7	6.38	6.19	64.2	42.2	0.33	0.32	0.012	0.038	0.006		17.6	19.0			
4 Otterdale	10/13/08	12:45	Baseflow		17.3	81.7	7.17	6.43	55.5	101.2	0.30	0.28	0.020	0.033	0.006		5.20	14.4			
6 Tomahawk	10/13/08	12:15	Baseflow		16.5	79.1	6.93	6.47	89.3	59.4	0.28	0.27	0.007	0.014	0.004		4.40	5.50			
7 Little Tomahawk	10/13/08	11:45	Baseflow		15.9	88.6	7.77	6.73	179	248.1	0.26	0.25	0.006	0.010	0.003		3.60	2.20			
4 Otterdale	11/03/08	12:40	Baseflow		8.7	69.9	6.31	6.36	126	72.3	0.34	0.32	0.024	0.189	0.114	7.75	33.6	14.0	< 0.0025	< 0.05	
5 Swift Creek	11/03/08	12:55	Baseflow		8.4	96.8	8.75	6.70	153	95.7	0.29	0.26	0.034	0.060	0.027	10.21	< 2.00	8.40	< 0.0025	0.159	
6 Tomahawk	11/03/08	13:10	Baseflow		8.9	89.6	8.10	6.76	49.4	42.6	0.32	0.28	0.035	0.020	0.011	6.23	12.4	3.55	< 0.0025	< 0.05	
7 Little Tomahawk	11/03/08	13:20	Baseflow		8.3	101	9.07	6.74	115	290.9	0.23	0.21	0.018	0.014 Er	0.026 Er	3.21	< 2.00	1.85	< 0.0025	< 0.05	
1 Drycreek	11/06/08	9:45	Storm Event	15	6.8	87.7	7.98	7.30	125	131.3	0.50	0.49	0.008	0.016	0.007	5.91	2.00	7.35	< 0.0025	< 0.05	0.44
2 Westbranch	11/06/08	9:25	Storm Event	15	7.0	82.0	7.47	7.05	154	648.8	0.67	0.62	0.049	0.064	0.014	6.26	2.00	8.35	< 0.0025	< 0.05	0.44
3-1 Horsepen	11/06/08	8:35	Storm Event	15	7.0	65.5	5.91	6.84	70.3	14.6	0.64	0.64	< 0.005	0.026	0.012	14.19	7.20	42.5	< 0.0025	< 0.05	0.44
3-2 Blackman	11/06/08	8:55	Storm Event	15	7.1	73.5	6.64	6.60	130	60.1	0.27	0.26	0.005	0.064	0.018	8.85	4.40	37.5	< 0.0025	< 0.05	0.44
4 Otterdale	11/06/08	8:25	Storm Event	15	6.8	57.8	5.22	6.32	47.2	435.2	0.51	0.49	0.023	0.085	0.007	8.09	3.60	33.5	< 0.0025	< 0.05	0.44
5 Swift Creek	11/06/08	8:15	Storm Event	15	6.5	88.3	7.95	6.74	93.3	>2419.2	0.56	0.55	0.006	0.055	0.020	10.45	< 2.00	8.15	< 0.0025	< 0.05	0.44
6 Tomahawk	11/06/08	8:05	Storm Event	15	7.5	68.1	6.15	6.42	124	613.1	0.53	0.52	0.005	0.058	0.015	8.07	7.00	16.7	< 0.0025	< 0.05	0.44
8 Ashbrook	11/06/08	10:05	Storm Event	15	6.9	87.8	7.94	6.82	46.7	45.9	0.69	0.64	0.049	0.029	0.007	8.78	4.20	14.2	< 0.0025	< 0.05	0.44
13 Chimney House	11/06/08	7:35	Storm Event	15	6.6	99.7	8.99	6.77	109	>2419.2	0.72	0.71	0.005	0.026	0.019	11.16	10.4	52.5	< 0.0025	< 0.05	0.44
14 Chestnut Bluff	11/06/08	9:10	Storm Event	15	6.4	98.8	8.91	6.80	112	1986.3	1.03	0.70	0.328	0.027	0.023	5.70	< 2.00	9.00	< 0.0025	< 0.05	0.44
7 Little Tomahawk	11/06/08	7:50	Storm Event	15	7.0	95.0	8.59	6.76	151	>2419.2	0.70	0.63	0.074	0.044	0.006	3.92	< 2.00	4.60	< 0.0025	< 0.05	0.44
1 Drycreek	11/13/08	10:20	Storm Event	16	6.7	89.5	8.14	7.24	127	133.3	0.70	0.69	0.006	0.012	0.005		< 2.00	1.08			1.21
2 Westbranch	11/13/08	10:30	Storm Event	16	6.9	83.8	7.63	6.99	157	101.2	0.89	0.85	0.037	0.046	0.011		10.4	6.20			1.21

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 BASEFLOW & STORMFLOW SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	SURVEY TYPE	STORM#	TEMPERATURE	DISSOLVED OXYGEN % SATURATION	DISSOLVED OXYGEN (mg/L)	pH	CONDUCTIVITY (micro-mhos/cm)	FECAL COLIFORM (Colonies / 100 mL)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)	REMARKS
3-1 Horsepen	11/13/08	11:00	Storm Event	16	6.9	67.3	6.07	6.78	73.0	5.2	0.71	0.70	0.005	0.077	0.024		11.6	15.3			1.21
3-2 Blackman	11/13/08	10:50	Storm Event	16	7.0	75.3	6.80	6.54	133	9.7	0.81	0.81	< 0.005	0.062	0.012		14.0	23.8			1.21
4 Otterdale	11/13/08	11:10	Storm Event	16	6.7	59.6	5.38	6.26	49.9	35.0	0.57	0.52	0.054	0.217	0.014		164	45.4			1.21
5 Swift Creek	11/13/08	11:20	Storm Event	16	6.4	90.1	8.11	6.68	96.0	75.2	0.62	0.60	0.020	0.058	0.017		65.6	14.2			1.21
6 Tomahawk	11/13/08	11:30	Storm Event	16	7.4	69.9	6.31	6.36	126	20.3	0.46	0.45	0.007	0.021 ***	0.026 ***		14.4	20.8			1.21
8 Ashbrook	11/13/08	10:10	Storm Event	16	6.8	89.6	8.10	6.76	49.4	14.8	0.76	0.75	0.007	0.047	0.005		6.00	5.06			1.21
13 Chimney House	11/13/08	11:50	Storm Event	16	6.5	102	9.15	6.71	111	74.9	0.43	0.42	0.006	0.069	0.018		30.0	20.0			1.21
14 Chestnut Bluff	11/13/08	10:40	Storm Event	16	6.3	101	9.07	6.74	115	387.3	1.05	0.53	0.515	0.072	0.008		164	17.7			1.21
7 Little Tomahawk	11/13/08	11:40	Storm Event	16	6.9	96.8	8.75	6.70	153	108.1	0.56	0.54	0.020	0.018	0.007		214	12.0			1.21
1 Drycreek	12/01/08	10:40	Storm Event	17	6.2	72.2	8.89	6.15	112	<1	0.49	0.46	0.028	0.015	0.008		2.80	3.03			1.02
2 Westbranch	12/01/08	11:00	Storm Event	17	6.4	20.0	2.45	6.05	123	461.1	0.60	0.48	0.118	0.039	0.015		< 2.00	13.2			1.02
3-1 Horsepen	12/01/08	12:00	Storm Event	17	6.7	30.4	3.69	6.11	328	178.5	0.40	0.39	0.007	0.027	0.010		5.20	3.55			1.02
3-2 Blackman	12/01/08	11:40	Storm Event	17	6.7	67.2	8.17	6.57	147	290.9	0.49	0.38	0.112	0.052	0.011		13.2	45.4			1.02
4 Otterdale	12/01/08	12:20	Storm Event	17	6.5	57.0	6.97	6.36	76.8	1299.7	0.51	0.43	0.077	0.052	0.028		22.4	23.8			1.02
5 Swift Creek	12/01/08	12:40	Storm Event	17	5.9	62.3	7.73	6.48	82.1	261.3	0.45	0.42	0.032	0.042	0.021		43.6	13.0			1.02
6 Tomahawk	12/01/08	13:00	Storm Event	17	7.3	44.5	5.33	5.97	54.4	387.3	0.55	0.45	0.096	0.017	0.008		17.2	20.7			1.02
8 Ashbrook	12/01/08	10:30	Storm Event	17	6.7	64.4	7.82	6.31	49.8	60.1	0.50	0.50	< 0.005	0.030	0.004		4.00	5.52			1.02
13 Chimney House	12/01/08	13:40	Storm Event	17	6.2	59.6	7.33	5.96	92.7	770.1	0.42	0.40	0.023	0.096	0.023		14.8	44.8			1.02
14 Chestnut Bluff	12/01/08	11:20	Storm Event	17	6.1	64.8	7.99	5.93	167	686.7	1.54	0.39	1.15	0.054	0.027		< 2.00	4.51			1.02
7 Little Tomahawk	12/01/08	13:20	Storm Event	17	6.6	26.1	3.18	6.11	318	410.6	0.68	0.49	0.193	0.035	0.006		5.60	14.9			1.02
14 Chestnut Bluff	12/03/08	10:15	Baseflow		5.9	102	9.14	6.94	108	107.6	1.30	0.44	0.861	0.011	0.005		2.00	1.26			
1 Drycreek	12/03/08	9:45	Baseflow		6.4	106	9.62	7.51	123	99.0	0.35	0.30	0.053	0.023	0.003		6.00	12.9			
2 Westbranch	12/03/08	10:00	Baseflow		6.7	101	9.15	7.41	93.3	42.6	0.39	0.31	0.084	0.028	0.005		4.80	6.08			
3-1 Horsepen	12/03/08	11:35	Baseflow		6.5	98.2	8.86	7.20	46.0	235.9	0.36	0.35	0.007	0.007	0.003		< 2.00	4.64			
3-2 Blackman	12/03/08	11:50	Baseflow		6.5	98.6	8.85	6.98	55.5	68.3	0.38	0.36	0.015	0.014	0.004		4.80	11.7			
4 Otterdale	12/03/08	11:20	Baseflow		6.2	96.5	8.67	6.75	77.5	36.9	0.41	0.38	0.032	0.011	0.006		< 2.00	5.70			
5 Swift Creek	12/03/08	11:05	Baseflow		6.1	100	9.03	6.82	62.6	156.5	0.41	0.39	0.018	0.068	0.013		4.80	13.4			
6 Tomahawk	12/03/08	10:50	Baseflow		6.7	103	9.23	6.89	63.7	135.4	0.46	0.39	0.072	0.019	0.004		2.00	10.7			
7 Little Tomahawk	12/03/08	10:35	Baseflow		6.7	102	9.12	6.82	128	59.1	0.33	0.25	0.078	0.006	0.006		2.00	5.02			
8 Ashbrook	12/03/08	9:30	Baseflow		6.9	103	9.23	7.13	48.0	33.1	0.41	0.40	0.007	0.032	0.003		6.80	8.88			
1 Drycreek	12/15/08	8:45	Storm Event	18	12.6	94.5	94.5	7.15	198	574.8	0.37	0.28	0.091	0.061	**		2.40	19.6			3.81
2 Westbranch	12/15/08	9:00	Storm Event	18	13.1	84.2	8.62	6.87	75.7	547.5	0.51	0.42	0.085	0.015 Er	0.053 Er		< 2.00	9.25			3.81
3-1 Horsepen	12/15/08	9:12	Storm Event	18	12.6	102	10.7	6.86	60.8	34.5	0.47	0.45	0.018	0.019 Er	0.048 Er		10.0	25.0			3.81
3-2 Blackman	12/15/08	9:33	Storm Event	18	13.0	98.1	10.2	6.71	47.2	435.2	0.46	0.37	0.089	0.102 Er	0.112 Er		55.2	122			3.81
4 Otterdale	12/15/08	9:45	Storm Event	18	12.3	95.1	10.0	6.54	67.6	547.5	0.45	0.36	0.089	0.034 Er	0.067 Er		3.20	20.6			3.81
5 Swift Creek	12/15/08	10:00	Storm Event	18	12.4	94.7	9.87	6.57	59.3	816.4	0.44	0.40	0.037	0.034 Er	0.057 Er		10.4	24.4			3.81
6 Tomahawk	12/15/08	10:18	Storm Event	18	12.7	44.8	4.89	6.11	337	**	0.51	0.43	0.078	0.011	0.049		26.4	55.8			3.81
8 Ashbrook	12/15/08	8:30	Storm Event	18	12.9	94.6	9.68	6.61	48.3	62.0	0.45	0.45	< 0.005	0.018	<0.045		5.20	6.82			3.81
13 Chimney House	12/15/08	10:46	Storm Event	18	12.1	96.2	10.0	6.47	39.4	2419.6	0.54	0.46	0.082	0.066	<0.045		< 2.00	7.64			3.81
14 Chestnut Bluff	12/15/08	11:05	Storm Event	18	12.3	95.5	9.74	6.41	53.3	>2419.6	0.45	0.37	0.082	0.053	0.049		34.8	16.8			3.81
7 Little Tomahawk	12/15/08	10:30	Storm Event	18	13.2	83.8	8.65	6.37	107	**	0.51	0.42	0.092	< 0.005	<0.045		3.60	10.7			3.81

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

Appendix B: Reservoir Water Quality Data by Date

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
1	01/08/08	14:36	Bottom	8.0	7.8	102.5	12.3	6.33	0.521	61.5															
1	01/08/08	14:32	Mid Depth	2.0	8.1	101.3	12.1	6.36	0.519	59.8															
1	01/08/08	14:34	Mid Depth	5.0	7.9	102.0	12.2	6.33	0.520	61.7															
1	01/08/08	14:30	Surface	0.1	8.5	97.4	11.5	6.42	0.517	59.5	2.0	9.7	1.7 Q	1.1 Q	**	**	< 0.005	< 0.03	0.041	0.012		3.00 J2	11.2		
2	01/08/08	14:24	Bottom	6.0	7.6	92.7	11.2	6.27	0.519	57.3															
2	01/08/08	14:22	Mid-Depth	3.0	7.6	97.7	11.8	6.32	0.515	57.5															
2	01/08/08	14:20	Surface	0.1	7.6	97.9	11.8	6.45	0.513	57.5	2.5	7.4	2.3 Q	1.4 Q	**	**	< 0.005	< 0.03	0.045	0.005		5.80	11.5		
3	01/08/08	14:14	Bottom	11.0	8.0	97.0	11.6	6.41	0.538	78.6															
3	01/08/08	14:08	Mid-Depth	2.0	8.2	96.1	11.4	6.53	0.534	83.2															
3	01/08/08	14:11	Mid-Depth	5.0	8.0	96.1	11.5	6.46	0.536	82.7															
3	01/08/08	14:12	Mid-Depth	8.0	7.9	96.0	11.5	6.43	0.537	78.4															
3	01/08/08	14:06	Surface	0.1	8.2	93.9	11.2	6.67	0.533	73.6	2.5	19.9	3.7 Q	2.1 Q	**	**	0.070	0.04	0.041	0.004		6.40	17.2		
4	01/08/08	14:01	Bottom	8.0	6.1	99.9	12.5	6.53	0.537	52.9															
4	01/08/08	13:57	Mid-Depth	2.0	6.1	100.0	12.5	6.56	0.536	53.1															
4	01/08/08	13:59	Mid-Depth	5.0	6.1	100.3	12.5	6.55	0.536	52.9															
4	01/08/08	13:55	Surface	0.1	6.2	95.9	12.0	6.62	0.535	52.9	4.0	201.4	3.7 Q	1.7 Q	**	**	< 0.005	< 0.03	0.032	0.007		2.20	3.99		
5	01/08/08	13:50	Bottom	15.0	5.2	91.0	11.7	6.41	0.538	52.4					0.25	0.25	< 0.005	< 0.03	0.031	< 0.002					
5	01/08/08	13:34	Middle	7.0	6.2	97.5	12.2	6.38	0.541	52.4					0.26	0.26	< 0.005	< 0.03	0.029	< 0.002					
5	01/08/08	13:20	Surface	0.1	6.7	101.4	12.5	6.48	0.538	52.7	4.0	20.3	2.9 Q	1.3 Q	0.21	0.21	< 0.005	< 0.03	0.031	0.002		2.80	4.73		
5	01/08/08	13:22	Mid-Depth	1.0	6.7	101.0	12.4	6.50	0.539	52.2															
5	01/08/08	13:24	Mid-Depth	2.0	6.5	100.9	12.5	6.48	0.539	52.4															
5	01/08/08	13:26	Mid-Depth	3.0	6.5	100.4	12.5	6.47	0.539	52.6															
5	01/08/08	13:28	Mid-Depth	4.0	6.4	99.2	12.3	6.42	0.541	52.4															
5	01/08/08	13:30	Mid-Depth	5.0	6.2	98.8	12.3	6.41	0.541	52.5															
5	01/08/08	13:32	Mid-Depth	6.0	6.2	95.9	12.0	6.35	0.543	52.4															
5	01/08/08	13:36	Mid-Depth	8.0	6.0	94.6	11.9	6.30	0.544	52.6															
5	01/08/08	13:38	Mid-Depth	9.0	5.8	92.1	11.6	6.29	0.544	52.6															
5	01/08/08	13:40	Mid-Depth	10.0	5.4	91.5	11.6	6.30	0.543	52.4															
5	01/08/08	13:42	Mid-Depth	11.0	5.3	91.6	11.7	6.31	0.543	52.5															
5	01/08/08	13:44	Mid-Depth	12.0	5.3	91.7	11.7	6.31	0.543	52.4															
5	01/08/08	13:46	Mid-Depth	13.0	5.3	92.1	11.8	6.33	0.541	52.6															
5	01/08/08	13:48	Mid-Depth	14.0	5.2	91.0	11.7	6.35	0.540	52.6															
6	01/08/08	13:14	Bottom	15.0	6.1	96.6	12.1	6.36	0.541	53.0															
6	01/08/08	12:46	Mid-Depth	1.0	6.2	97.7	12.2	6.40	0.541	53.1															
6	01/08/08	12:48	Mid-Depth	2.0	6.2	97.7	12.2	6.40	0.541	53.0															
6	01/08/08	12:50	Mid-Depth	3.0	6.2	97.5	12.2	6.38	0.541	53.3															
6	01/08/08	12:52	Mid-Depth	4.0	6.2	97.5	12.2	6.39	0.541	53.0															
6	01/08/08	12:54	Mid-Depth	5.0	6.3	97.5	12.2	6.38	0.542	53.0															
6	01/08/08	12:56	Mid-Depth	6.0	6.3	97.3	12.1	6.37	0.542	53.1															
6	01/08/08	12:58	Mid-Depth	7.0	6.2	97.4	12.2	6.37	0.541	53.3															
6	01/08/08	13:00	Mid-Depth	8.0	6.3	97.3	12.1	6.37	0.542	53.1															
6	01/08/08	13:02	Mid-Depth	9.0	6.2	97.1	12.1	6.37	0.541	53.2															
6	01/08/08	13:04	Mid-Depth	10.0	6.2	97.0	12.1	6.37	0.541	52.9															
6	01/08/08	13:06	Mid-Depth	11.0	6.2	96.9	12.1	6.36	0.542	52.8															
6	01/08/08	13:08	Mid-Depth	12.0	6.1	96.4	12.0	6.42	0.539	52.8															
6	01/08/08	13:10	Mid-Depth	13.0	6.1	96.3	12.0	6.37	0.541	52.8															
6	01/08/08	13:12	Mid-Depth	14.0	6.1	96.4	12.1	6.37	0.540	53.0															
6	01/08/08	12:44	Surface	0.1	6.2	97.7	12.2	6.40	0.541	53.1	3.0	7.4	2.5 Q	2.2 Q	0.22	0.22	< 0.005	< 0.03	0.030	0.005		2.40	6.52		
7	01/08/08	12:38	Bottom	10.0	6.4	98.7	12.3	6.40	0.537	53.3															
7	01/08/08	12:32	Mid-Depth	1.0	6.4	99.0	12.3	6.35	0.534	53.2															
7	01/08/08	12:34	Mid-Depth	4.0	6.4	99.0	12.3	6.38	0.536	53.3															
7	01/08/08	12:36	Mid-Depth	7.0	6.4	98.9	12.3	6.39	0.536	53.6															
7	01/08/08	12:30	Surface	0.1	6.5	99.0	12.3	6.54	0.537	52.8	3.5	6.3	5.1 Q	1.5 Q	0.25	0.25	< 0.005	< 0.03	0.026	< 0.002		4.20	7.24		
8	01/08/08	12:21	Bottom	23.0	5.4	89.0	11.3	6.04	0.577	51.8					0.33	0.32	0.007	< 0.03	0.028	0.003					
8	01/08/08	11:57	Mid-Depth	11.0	5.8	93.6	11.8	6.16	0.580	51.6					0.32	0.31	0.011	< 0.03	0.031	< 0.002					
8	01/08/08	11:35	Surface	0.1	6.2	95.6	11.9	6.22	0.576	51.8	3.0	10.8	4.4 Q	2.2 Q	0.28	0.28	< 0.005	< 0.03	0.025	< 0.002		< 2.00	3.86		
8	01/08/08	11:37	Mid-Depth	1.0	6.2	95.9	12.0	6.25	0.578	51.9															
8	01/08/08	11:39	Mid-Depth	2.0	6.1	95.9	12.0	6.25	0.578	52.0															
8	01/08/08	11:41	Mid-Depth	3.0	6.2	95.7	12.0	6.27	0.577	52.1															
8	01/08/08	11:43	Mid-Depth	4.0	6.2	95.5	11.9	6.25	0.578	51.9															
8	01/08/08	11:45	Mid-Depth	5.0	6.2	94.7	11.8	6.24	0.578	52.0															
8	01/08/08	11:47	Mid-Depth	6.0	6.0	94.3	11.8	6.23	0.578	52.0															
8	01/08/08	11:49	Mid-Depth	7.0	6.0	93.9	11.8	6.21	0.578	51.9															
8	01/08/08	11:51	Mid-Depth	8.0	5.9	92.7	11.7	6.19	0.579	51.8															
8	01/08/08	11:53	Mid-Depth	9.0	6.0	93.8	11.8	6.20	0.579	51.9															
8	01/08/08	11:55	Mid-Depth	10.0	5.8	92.9	11.7	6.16	0.580	52.0															
8	01/08/08	11:59	Mid-Depth	12.0	5.8	92.6	11.7	6.14	0.581	51.8															
8	01/08/08	12:01	Mid-Depth	13.0	5.8	92.2	11.6	6.14	0.580	52.0															
8	01/08/08	12:03	Mid-Depth	14.0	5.8	91.0	11.5	6.11	0.581	52.2															
8	01/08/08	12:05	Mid-Depth	15.0	5.6	90.9	11.5	6.08	0.583	51.8															
8	01/08/08	12:07	Mid-Depth	16.0	5.8	90.8	11.5	6.05	0.583	51.5															
8	01/08/08	12:09	Mid-Depth	17.0	5.7	89.8	11.4	6.05	0.583	51.8															
8	01/08/08	12:11	Mid-Depth	18.0	5.6	89.6	11.4	6.06	0.583	52.2															
8	01/08/08	12:13	Mid-Depth	19.0	5.5	90.4	11.5	6.03	0.584	52.0															
8	01/08/08	12:15	Mid-Depth	20.0	5.4	88.4	11.3	6.01	0.584	52.1															
8	01/08/08	12:17	Mid-Depth	21.0	5.7	90.7	11.5	6.05	0.583	51.9															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
8	01/08/08	12:19	Mid-Depth	22.0	5.4	89.7	11.4	6.00	0.584	51.9															
5	01/23/08	12:55	Bottom	15.0	2.2	90.5	12.5	6.21	0.572	58.9					0.30	0.29	0.013		0.018	0.002					
5	01/23/08	12:39	Middle	7.0	3.3	93.7	12.6	6.47	0.571	56.9					0.27	0.26	0.010		0.025	0.002					
5	01/23/08	12:25	Surface	0.1	4.3	95.7	12.5	6.54	0.570	57.0	3.0	28.8	1.1	0.6	0.28	0.28	< 0.005		0.020	< 0.002		3.20	3.68		
5	01/23/08	12:27	Mid-Depth	1.0	4.1	95.6	12.6	6.53	0.571	56.7															
5	01/23/08	12:29	Mid-Depth	2.0	3.8	95.7	12.7	6.53	0.571	56.9															
5	01/23/08	12:31	Mid-Depth	3.0	3.5	95.1	12.7	6.51	0.571	56.7															
5	01/23/08	12:33	Mid-Depth	4.0	3.4	94.6	12.7	6.51	0.571	56.8															
5	01/23/08	12:35	Mid-Depth	5.0	3.4	94.1	12.6	6.49	0.572	56.7															
5	01/23/08	12:37	Mid-Depth	6.0	3.3	93.8	12.6	6.48	0.571	56.9															
5	01/23/08	12:41	Mid-Depth	8.0	3.2	93.2	12.5	6.44	0.572	56.9															
5	01/23/08	12:43	Mid-Depth	9.0	3.2	92.5	12.5	6.42	0.572	57.0															
5	01/23/08	12:45	Mid-Depth	10.0	3.1	92.4	12.5	6.40	0.572	57.0															
5	01/23/08	12:47	Mid-Depth	11.0	3.1	92.2	12.5	6.37	0.572	57.1															
5	01/23/08	12:49	Mid-Depth	12.0	2.9	91.8	12.5	6.34	0.572	57.5															
5	01/23/08	12:51	Mid-Depth	13.0	2.9	91.2	12.4	6.32	0.572	57.5															
5	01/23/08	12:53	Mid-Depth	14.0	2.5	91.0	12.5	6.27	0.572	58.2															
8	01/23/08	12:16	Bottom	23.0	5.0	74.1	9.50	6.48	0.586	54.0					0.35	0.33	0.018		0.026	0.002					
8	01/23/08	11:52	Mid-Depth	11.0	4.9	88.0	11.3	6.91	0.583	54.6					0.33	0.32	0.013		0.017	0.002					
8	01/23/08	11:30	Surface	0.1	5.5	90.8	11.5	7.09	0.580	54.8	3.0	2.0	0.9	0.7	0.36	0.35	0.013		0.015	< 0.002		5.00	2.86		
8	01/23/08	11:32	Mid-Depth	1.0	5.4	90.8	11.5	7.08	0.581	54.9															
8	01/23/08	11:34	Mid-Depth	2.0	5.4	91.0	11.6	7.08	0.582	54.7															
8	01/23/08	11:36	Mid-Depth	3.0	5.4	92.5	11.8	7.04	0.582	54.6															
8	01/23/08	11:38	Mid-Depth	4.0	5.3	92.7	11.8	7.04	0.582	54.6															
8	01/23/08	11:40	Mid-Depth	5.0	5.1	92.3	11.8	7.04	0.581	54.7															
8	01/23/08	11:42	Mid-Depth	6.0	5.1	92.2	11.8	6.97	0.582	54.5															
8	01/23/08	11:44	Mid-Depth	7.0	5.0	89.3	11.5	7.00	0.582	54.6															
8	01/23/08	11:46	Mid-Depth	8.0	5.0	89.3	11.5	6.98	0.582	54.6															
8	01/23/08	11:48	Mid-Depth	9.0	5.0	88.8	11.4	6.95	0.582	54.6															
8	01/23/08	11:50	Mid-Depth	10.0	5.0	88.5	11.4	6.94	0.583	54.5															
8	01/23/08	11:54	Mid-Depth	12.0	4.9	87.3	11.2	6.88	0.584	54.9															
8	01/23/08	11:56	Mid-Depth	13.0	4.9	87.4	11.2	6.86	0.583	54.8															
8	01/23/08	11:58	Mid-Depth	14.0	4.9	87.3	11.2	6.83	0.583	54.8															
8	01/23/08	12:00	Mid-Depth	15.0	4.9	87.2	11.2	6.80	0.584	54.8															
8	01/23/08	12:02	Mid-Depth	16.0	4.9	86.9	11.2	6.77	0.584	54.6															
8	01/23/08	12:04	Mid-Depth	17.0	5.0	86.9	11.2	6.72	0.583	54.6															
8	01/23/08	12:06	Mid-Depth	18.0	5.0	86.4	11.1	6.69	0.583	54.6															
8	01/23/08	12:08	Mid-Depth	19.0	5.0	85.6	11.0	6.62	0.584	54.7															
8	01/23/08	12:10	Mid-Depth	20.0	5.0	82.5	10.6	6.57	0.584	54.2															
8	01/23/08	12:12	Mid-Depth	21.0	5.0	78.8	10.1	6.45	0.585	54.1															
8	01/23/08	12:14	Mid-Depth	22.0	5.0	74.9	9.60	6.46	0.586	54.1															
1	02/07/08	9:51	Bottom	8.0	11.8	92.8	9.98	6.27	0.553	59.3															
1	02/07/08	9:47	Mid Depth	2.0	12.2	93.6	9.95	6.24	0.553	60.5															
1	02/07/08	9:49	Mid Depth	5.0	11.9	93.1	9.98	6.20	0.555	59.6															
1	02/07/08	9:45	Surface	0.1	12.3	94.2	9.99	6.21	0.555	62.0	2.5	12.2	0.5	0.9	0.27	0.27	< 0.005	< 0.03	0.041	0.010		8.80 J2	**		
2	02/07/08	10:01	Bottom	6.0	11.4	90.0	9.75	6.43	0.532	59.6															
2	02/07/08	9:59	Mid-Depth	3.0	11.6	93.2	10.1	6.59	0.536	59.4															
2	02/07/08	9:57	Surface	0.1	11.7	93.8	10.1	6.84	0.533	59.3	1.5	21.6	0.4	1.2	0.24	0.23	0.011	< 0.03	0.035	0.010		7.80	**		
3	02/07/08	10:18	Bottom	11.0	11.4	90.7	9.82	6.58	0.528	97.7															
3	02/07/08	10:12	Mid-Depth	2.0	11.7	91.5	9.86	6.78	0.522	101															
3	02/07/08	10:14	Mid-Depth	5.0	11.4	91.2	9.88	6.60	0.527	96.9															
3	02/07/08	10:16	Mid-Depth	8.0	11.5	90.9	9.84	6.60	0.528	98.2															
3	02/07/08	10:10	Surface	0.1	11.6	92.2	9.95	6.72	0.520	100	1.0	37.4	0.5	1.0	0.33	0.23	0.103	0.06	0.043	0.011		9.00	**		
4	02/07/08	10:30	Bottom	9.0	9.1	97.8	11.2	6.63	0.527	62.1															
4	02/07/08	10:26	Mid-Depth	3.0	9.3	98.5	11.2	6.65	0.524	62.3															
4	02/07/08	10:28	Mid-Depth	6.0	9.2	98.4	11.2	6.63	0.527	62.1															
4	02/07/08	10:24	Surface	0.1	9.4	99.0	11.3	6.76	0.520	62.6	3.5	139.6	0.4	0.4	0.32	0.29	0.033	0.03	0.027	0.003		< 2.00	**		
5	02/07/08	11:08	Bottom	16.0	8.6	96.1	11.1	6.67	0.516	61.5					0.37	0.33	0.037	< 0.03	0.039	0.003					
5	02/07/08	10:52	Middle	8.0	9.1	98.1	11.2	6.72	0.530	61.9					0.36	0.32	0.035	< 0.03	0.023	0.005					
5	02/07/08	10:36	Surface	0.1	9.2	98.5	11.2	6.77	0.534	62.0	3.0	44.1	0.9	0.5	0.32	0.29	0.034	0.04	0.023	0.003		2.80	**		
5	02/07/08	10:38	Mid-Depth	1.0	9.2	98.6	11.2	6.73	0.535	62.1															
5	02/07/08	10:40	Mid-Depth	2.0	9.2	98.6	11.2	6.76	0.534	62.0															
5	02/07/08	10:42	Mid-Depth	3.0	9.3	98.5	11.2	6.78	0.532	62.0															
5	02/07/08	10:44	Mid-Depth	4.0	9.2	98.5	11.2	6.75	0.533	61.8															
5	02/07/08	10:46	Mid-Depth	5.0	9.2	98.5	11.2	6.77	0.531	61.8															
5	02/07/08	10:48	Mid-Depth	6.0	9.2	98.4	11.2	6.76	0.530	61.7															
5	02/07/08	10:50	Mid-Depth	7.0	9.2	98.2	11.2	6.75	0.529	62.0															
5	02/07/08	10:54	Mid-Depth	9.0	9.2	98.0	11.2	6.76	0.527	61.7															
5	02/07/08	10:56	Mid-Depth	10.0	9.1	98.0	11.2	6.73	0.527	61.7															
5	02/07/08	10:58	Mid-Depth	11.0	9.1	98.0	11.2	6.72	0.527	61.7															
5	02/07/08	11:00	Mid-Depth	12.0	9.2	97.9	11.2	6.72	0.525	61.7															
5	02/07/08	11:02	Mid-Depth	13.0	9.1	97.9	11.2	6.69	0.525	61.7															
5	02/07/08	11:04	Mid-Depth	14.0	9.1	97.6	11.2	6.69	0.522	61.9															
5	02/07/08	11:06	Mid-Depth	15.0	8.7	96.3	11.1	6.66	0.519	61.3															
6	02/07/08	11:45	Bottom	15.0	8.4	95.2	11.1	6.75	0.536	61.2															
6	02/07/08	11:17	Mid-Depth	1.0	8.9	97.8	11.2	6.79	0.518	61.7															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
6	02/07/08	11:19	Mid-Depth	2.0	8.9	97.5	11.2	6.75	0.522	61.9															
6	02/07/08	11:21	Mid-Depth	3.0	8.9	97.4	11.2	6.76	0.522	62.1															
6	02/07/08	11:23	Mid-Depth	4.0	8.9	97.2	11.2	6.77	0.524	61.9															
6	02/07/08	11:25	Mid-Depth	5.0	8.9	96.9	11.1	6.75	0.527	61.9															
6	02/07/08	11:27	Mid-Depth	6.0	8.8	96.9	11.2	6.78	0.528	61.7															
6	02/07/08	11:29	Mid-Depth	7.0	8.8	96.6	11.1	6.79	0.529	61.7															
6	02/07/08	11:31	Mid-Depth	8.0	8.8	96.5	11.1	6.79	0.530	61.7															
6	02/07/08	11:33	Mid-Depth	9.0	8.8	96.6	11.1	6.78	0.531	62.0															
6	02/07/08	11:35	Mid-Depth	10.0	8.7	96.5	11.2	6.78	0.532	61.6															
6	02/07/08	11:37	Mid-Depth	11.0	8.7	96.4	11.1	6.70	0.535	61.7															
6	02/07/08	11:39	Mid-Depth	12.0	8.6	96.4	11.2	6.73	0.534	61.5															
6	02/07/08	11:41	Mid-Depth	13.0	8.4	96.0	11.2	6.76	0.535	61.3															
6	02/07/08	11:43	Mid-Depth	14.0	8.3	95.2	11.1	6.73	0.537	61.3															
6	02/07/08	11:15	Surface	0.1	8.9	98.1	11.3	6.84	0.517	61.7	3.5	16.0	1.2	1.4	0.63	0.59	0.040	0.03	0.026	0.004		3.40	**		
7	02/07/08	12:00	Bottom	10.0	9.3	97.4	11.0	6.82	0.524	62.6															
7	02/07/08	11:54	Mid-Depth	1.0	9.4	97.8	11.1	6.84	0.522	62.7															
7	02/07/08	11:56	Mid-Depth	4.0	9.4	97.5	11.1	6.80	0.525	62.9															
7	02/07/08	11:58	Mid-Depth	7.0	9.4	97.5	11.1	6.79	0.525	62.7															
7	02/07/08	11:52	Surface	0.1	9.4	98.8	11.2	6.84	0.521	62.0	3.5	7.4	0.7	1.4	0.63	0.59	0.043	0.03	0.028	0.004		4.80	**		
8	02/07/08	12:56	Bottom	24.0	6.1	91.5	11.3	6.67	0.541	60.1					0.44	0.40	0.038	0.04	0.024	0.002					
8	02/07/08	12:32	Mid-Depth	12.0	8.2	96.6	11.3	6.76	0.530	60.4					0.43	0.40	0.034	0.10	0.019	0.003					
8	02/07/08	12:08	Surface	0.1	8.5	98.1	11.4	6.87	0.510	60.8	3.5	27.8	1.0	1.4	0.30	0.27	0.034	0.05	0.022	0.003		2.80	**		
8	02/07/08	12:10	Mid-Depth	1.0	8.5	97.5	11.3	6.79	0.513	61.1															
8	02/07/08	12:12	Mid-Depth	2.0	8.5	97.4	11.3	6.79	0.515	60.9															
8	02/07/08	12:14	Mid-Depth	3.0	8.5	97.4	11.3	6.76	0.518	60.9															
8	02/07/08	12:16	Mid-Depth	4.0	8.4	97.3	11.3	6.77	0.519	60.9															
8	02/07/08	12:18	Mid-Depth	5.0	8.3	97.0	11.3	6.77	0.521	60.9															
8	02/07/08	12:20	Mid-Depth	6.0	8.4	97.0	11.3	6.77	0.522	61.0															
8	02/07/08	12:22	Mid-Depth	7.0	8.3	97.0	11.3	6.74	0.525	60.8															
8	02/07/08	12:24	Mid-Depth	8.0	8.3	96.5	11.3	6.80	0.523	60.8															
8	02/07/08	12:26	Mid-Depth	9.0	8.3	96.8	11.3	6.80	0.525	60.8															
8	02/07/08	12:28	Mid-Depth	10.0	8.2	96.5	11.3	6.77	0.527	60.8															
8	02/07/08	12:30	Mid-Depth	11.0	8.3	96.3	11.2	6.73	0.530	60.9															
8	02/07/08	12:34	Mid-Depth	13.0	8.2	96.3	11.3	6.74	0.532	60.7															
8	02/07/08	12:36	Mid-Depth	14.0	8.2	96.0	11.2	6.72	0.533	60.7															
8	02/07/08	12:38	Mid-Depth	15.0	8.1	95.7	11.2	6.74	0.533	60.7															
8	02/07/08	12:40	Mid-Depth	16.0	8.0	95.6	11.2	6.71	0.535	60.5															
8	02/07/08	12:42	Mid-Depth	17.0	7.9	95.5	11.2	6.71	0.535	60.5															
8	02/07/08	12:44	Mid-Depth	18.0	7.6	93.3	11.1	6.69	0.537	60.4															
8	02/07/08	12:46	Mid-Depth	19.0	7.4	92.2	11.0	6.68	0.539	60.4															
8	02/07/08	12:48	Mid-Depth	20.0	6.9	91.2	11.0	6.68	0.539	60.2															
8	02/07/08	12:50	Mid-Depth	21.0	6.3	86.2	10.6	6.60	0.540	60.2															
8	02/07/08	12:52	Mid-Depth	22.0	6.1	84.2	10.4	6.55	0.541	60.0															
8	02/07/08	12:54	Mid-Depth	23.0	6.1	91.5	11.3	6.69	0.541	60.1															
5	02/20/08	12:17	Bottom	16.0	8.1	95.4	11.3	6.49	0.501	41.0					0.48	0.42	0.059	0.04 Q	0.040	0.005					
5	02/20/08	12:01	Middle	8.0	8.2	97.6	11.6	6.73	0.486	41.0					0.44	0.38	0.061	0.05 Q	0.042	0.005					
5	02/20/08	11:45	Surface	0.1	9.0	101	11.8	6.82	0.457	40.8	2.5	198.9	0.4	1.9	0.37	0.31	0.062	0.05 Q	0.020	0.006		< 2.00	7.73		
5	02/20/08	11:47	Mid-Depth	1.0	8.7	101	11.8	6.78	0.461	41.1															
5	02/20/08	11:49	Mid-Depth	2.0	8.4	100	11.8	6.71	0.468	41.0															
5	02/20/08	11:51	Mid-Depth	3.0	8.4	98.6	11.6	6.75	0.471	41.1															
5	02/20/08	11:53	Mid-Depth	4.0	8.3	98.0	11.6	6.73	0.473	40.8															
5	02/20/08	11:55	Mid-Depth	5.0	8.3	97.7	11.6	6.72	0.478	40.8															
5	02/20/08	11:57	Mid-Depth	6.0	8.3	97.8	11.6	6.74	0.481	40.7															
5	02/20/08	11:59	Mid-Depth	7.0	8.2	97.7	11.6	6.74	0.484	40.8															
5	02/20/08	12:03	Mid-Depth	9.0	8.2	97.1	11.5	6.75	0.488	40.9															
5	02/20/08	12:05	Mid-Depth	10.0	8.2	96.3	11.4	6.55	0.490	41.0															
5	02/20/08	12:07	Mid-Depth	11.0	8.2	96.0	11.4	6.52	0.494	40.9															
5	02/20/08	12:09	Mid-Depth	12.0	8.1	96.0	11.4	6.56	0.494	40.9															
5	02/20/08	12:11	Mid-Depth	13.0	8.1	95.8	11.4	6.53	0.496	40.9															
5	02/20/08	12:13	Mid-Depth	14.0	8.1	95.8	11.4	6.52	0.498	40.9															
5	02/20/08	12:15	Mid-Depth	15.0	8.2	95.5	11.3	6.57	0.498	40.9															
8	02/20/08	13:18	Bottom	24.0	8.2	92.7	11.0	6.35	0.526	40.8					0.51	0.45	0.057	0.07 Q	0.036	0.005					
8	02/20/08	12:54	Mid-Depth	12.0	8.2	94.8	11.2	6.60	0.514	40.5					0.49	0.43	0.055	0.07 Q	0.034	0.006					
8	02/20/08	12:30	Surface	0.1	8.6	99.2	11.6	6.75	0.501	40.7	3.0	34.5	1.3	2.9	0.46	0.41	0.054	0.05 Q	0.021	0.005		2.60	6.68		
8	02/20/08	12:32	Mid-Depth	1.0	8.6	99.0	11.6	6.75	0.501	40.6															
8	02/20/08	12:34	Mid-Depth	2.0	8.6	98.2	11.5	6.73	0.503	40.7															
8	02/20/08	12:36	Mid-Depth	3.0	8.6	97.9	11.5	6.71	0.503	40.9															
8	02/20/08	12:38	Mid-Depth	4.0	8.5	97.9	11.5	6.71	0.502	40.7															
8	02/20/08	12:40	Mid-Depth	5.0	8.5	97.6	11.5	6.68	0.503	40.6															
8	02/20/08	12:42	Mid-Depth	6.0	8.4	97.1	11.4	6.67	0.503	40.7															
8	02/20/08	12:44	Mid-Depth	7.0	8.4	96.6	11.4	6.65	0.505	40.5															
8	02/20/08	12:46	Mid-Depth	8.0	8.3	96.2	11.4	6.61	0.508	40.7															
8	02/20/08	12:48	Mid-Depth	9.0	8.3	95.4	11.3	6.58	0.510	40.6															
8	02/20/08	12:50	Mid-Depth	10.0	8.2	94.8	11.2	6.56	0.512	40.5															
8	02/20/08	12:52	Mid-Depth	11.0	8.2	94.9	11.2	6.56	0.513	40.5															
8	02/20/08	12:56	Mid-Depth	13.0	8.2	94.7	11.2	6.62	0.516	40.8															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
8	02/20/08	12:58	Mid-Depth	14.0	8.2	94.6	11.2	6.59	0.517	40.6															
8	02/20/08	13:00	Mid-Depth	15.0	8.2	94.6	11.2	6.57	0.518	40.8															
8	02/20/08	13:02	Mid-Depth	16.0	8.2	94.2	11.2	6.59	0.519	40.6															
8	02/20/08	13:04	Mid-Depth	17.0	8.2	93.9	11.1	6.52	0.519	40.7															
8	02/20/08	13:06	Mid-Depth	18.0	8.2	93.5	11.1	6.48	0.521	40.6															
8	02/20/08	13:08	Mid-Depth	19.0	8.2	93.7	11.1	6.47	0.523	40.8															
8	02/20/08	13:10	Mid-Depth	20.0	8.2	93.4	11.1	6.42	0.524	40.6															
8	02/20/08	13:12	Mid-Depth	21.0	8.2	93.5	11.1	6.43	0.525	40.4															
8	02/20/08	13:14	Mid-Depth	22.0	8.2	93.2	11.0	6.40	0.526	40.7															
8	02/20/08	13:16	Mid-Depth	23.0	8.2	92.9	11.0	6.38	0.526	40.8															
1	03/12/08	11:21	Bottom	8.0	11.1	105	11.5	6.32	0.584	52.4															
1	03/12/08	11:17	Mid Depth	2.0	11.3	105	11.4	6.24	0.585	51.4															
1	03/12/08	11:19	Mid Depth	5.0	11.3	89.8	9.76	6.25	0.582	49.7															
1	03/12/08	11:15	Surface	0.1	11.4	91.0	9.87	6.43	0.580	49.7	3.0	4.1	0.7	0.5	0.31	0.30	0.007	0.03	0.030	0.007	7.62	4.60 J2	10.8	<0.0025	0.32
2	03/12/08	11:30	Bottom	6.0	11.3	96.7	10.5	6.22	0.560	51.8															
2	03/12/08	11:28	Mid-Depth	3.0	11.4	96.5	10.5	6.36	0.561	52.4															
2	03/12/08	11:26	Surface	0.1	11.5	96.8	10.5	6.38	0.556	51.8	2.5	14.8	0.5	0.5	0.26	0.25	0.008	< 0.03	0.035	0.007	8.26	6.60 J2	13.9	0.0025	0.08
3	03/12/08	11:43	Bottom	11.0	11.5	94.1	10.2	6.06	0.549	67.3															
3	03/12/08	11:37	Mid-Depth	2.0	11.5	94.6	10.2	6.28	0.549	67.6															
3	03/12/08	11:39	Mid-Depth	5.0	11.5	93.7	10.1	6.16	0.551	71.5															
3	03/12/08	11:41	Mid-Depth	8.0	11.5	93.8	10.2	6.12	0.550	68.1															
3	03/12/08	11:35	Surface	0.1	11.5	94.7	10.2	6.31	0.546	69.7	2.5	19.9	0.9	0.9	0.34	0.28	0.063	0.04	0.033	0.009	6.10	6.80 J2	17.5	<0.0025	0.09
4	03/12/08	11:53	Bottom	9.0	11.5	93.8	10.2	6.27	0.552	68.1															
4	03/12/08	11:49	Mid-Depth	3.0	11.5	94.6	10.2	6.38	0.551	67.6															
4	03/12/08	11:51	Mid-Depth	6.0	11.5	93.7	10.1	6.36	0.552	71.5															
4	03/12/08	11:47	Surface	0.1	11.5	94.7	10.2	6.51	0.548	69.7	3.5	8.5	1.6	0.5	0.33	0.31	0.018	< 0.03	0.026	0.005	6.37	6.00 J2	8.21	<0.0025	0.26
5	03/12/08	12:29	Bottom	16.0	10.6	95.8	10.6	6.19	0.548	52.3					0.30	0.27	0.025	0.04	0.026	0.002					
5	03/12/08	12:13	Middle	8.0	10.8	100	11.0	6.16	0.546	52.2					0.31	0.28	0.025	< 0.03	0.022	0.003					
5	03/12/08	11:57	Surface	0.1	10.9	100	11.0	6.34	0.530	52.0	4.0	46.4	1.4	1.9	0.31	0.28	0.025	< 0.03	0.024	0.003	5.50	3.80 J2	5.28	<0.0025	0.06
5	03/12/08	11:59	Mid-Depth	1.0	10.9	100	11.0	6.37	0.534	52.2															
5	03/12/08	12:01	Mid-Depth	2.0	10.9	100	11.0	6.34	0.541	52.0															
5	03/12/08	12:03	Mid-Depth	3.0	10.9	100	11.0	6.27	0.542	52.2															
5	03/12/08	12:05	Mid-Depth	4.0	10.9	100	11.0	6.17	0.544	52.1															
5	03/12/08	12:07	Mid-Depth	5.0	10.9	100	11.0	6.15	0.543	52.0															
5	03/12/08	12:09	Mid-Depth	6.0	10.9	100	11.0	6.17	0.546	52.2															
5	03/12/08	12:11	Mid-Depth	7.0	10.8	100	11.0	6.15	0.548	52.3															
5	03/12/08	12:15	Mid-Depth	9.0	10.8	99.8	11.0	6.14	0.548	52.4															
5	03/12/08	12:17	Mid-Depth	10.0	10.8	99.7	11.0	6.17	0.547	52.2															
5	03/12/08	12:19	Mid-Depth	11.0	10.8	99.4	10.9	6.14	0.549	52.5															
5	03/12/08	12:21	Mid-Depth	12.0	10.8	99.3	10.9	6.16	0.549	52.3															
5	03/12/08	12:23	Mid-Depth	13.0	10.7	98.8	10.9	6.17	0.548	52.2															
5	03/12/08	12:25	Mid-Depth	14.0	10.7	97.9	10.8	6.18	0.548	52.3															
5	03/12/08	12:27	Mid-Depth	15.0	10.7	97.8	10.8	6.17	0.550	52.2															
6	03/12/08	13:04	Bottom	15.0	10.5	98.8	10.8	6.20	0.533	51.9															
6	03/12/08	12:36	Mid-Depth	1.0	11.1	101	11.0	6.50	0.527	52.0															
6	03/12/08	12:38	Mid-Depth	2.0	10.9	102	11.1	6.48	0.529	52.0															
6	03/12/08	12:40	Mid-Depth	3.0	10.8	101	11.0	6.42	0.532	51.9															
6	03/12/08	12:42	Mid-Depth	4.0	10.7	100	11.0	6.43	0.531	51.9															
6	03/12/08	12:44	Mid-Depth	5.0	10.7	99.8	10.9	6.44	0.530	51.9															
6	03/12/08	12:46	Mid-Depth	6.0	10.7	98.8	10.8	6.39	0.533	52.0															
6	03/12/08	12:48	Mid-Depth	7.0	10.6	99.3	10.8	6.37	0.532	51.9															
6	03/12/08	12:50	Mid-Depth	8.0	10.7	98.4	10.8	6.33	0.531	52.1															
6	03/12/08	12:52	Mid-Depth	9.0	10.7	98.8	10.8	6.30	0.532	51.9															
6	03/12/08	12:54	Mid-Depth	10.0	10.7	99.3	10.8	6.25	0.532	51.8															
6	03/12/08	12:56	Mid-Depth	11.0	10.7	99.3	10.8	6.26	0.532	51.8															
6	03/12/08	12:58	Mid-Depth	12.0	10.7	99.3	10.8	6.29	0.534	51.7															
6	03/12/08	13:00	Mid-Depth	13.0	10.6	99.1	10.8	6.30	0.532	51.8															
6	03/12/08	13:02	Mid-Depth	14.0	10.5	98.9	10.8	6.23	0.533	51.8															
6	03/12/08	12:34	Surface	0.1	11.1	101	11.0	6.47	0.526	51.7	4.0	26.2	1.6	1.0	0.29	0.26	0.026	< 0.03	0.027	0.002	5.55	4.20 J2	5.32	<0.0025	< 0.05
7	03/12/08	13:16	Bottom	10.0	10.7	101	11.1	6.26	0.537	52.4															
7	03/12/08	13:10	Mid-Depth	1.0	10.8	101	11.1	6.35	0.533	52.6															
7	03/12/08	13:12	Mid-Depth	4.0	10.8	101	11.1	6.34	0.536	52.4															
7	03/12/08	13:14	Mid-Depth	7.0	10.8	101	11.1	6.30	0.536	52.4															
7	03/12/08	13:08	Surface	0.1	10.8	101	11.1	6.33	0.531	52.6	3.5	5.2	1.7	1.0	**	**	0.020	< 0.03	0.029	0.002	5.33	5.00 J2	6.16	<0.0025	0.13
8	03/12/08	14:09	Bottom	24.0	10.4	89.5	9.96	6.13	0.542	52.4					0.33	0.30	0.027	0.05	0.029	0.002					
8	03/12/08	13:45	Mid-Depth	12.0	10.7	101	11.1	6.21	0.537	51.7					0.28	0.26	0.024	0.03	0.029	0.002					
8	03/12/08	13:21	Surface	0.1	11.1	103	11.3	6.39	0.529	51.7	4.0	3.1	2.1	1.0	0.28	0.26	0.023	< 0.03	0.024	0.002	5.39	3.20 J2	4.48	<0.0025	0.09
8	03/12/08	13:23	Mid-Depth	1.0	11.1	103	11.3	6.42	0.530	52.0															
8	03/12/08	13:25	Mid-Depth	2.0	10.9	103	11.3	6.40	0.532	52.0															
8	03/12/08	13:27	Mid-Depth	3.0	10.8	102	11.2	6.34	0.535	51.9															
8	03/12/08	13:29	Mid-Depth	4.0	10.7	102	11.2	6.35	0.534	51.9															
8	03/12/08	13:31	Mid-Depth	5.0	10.7	101	11.2	6.36	0.533	51.9															
8	03/12/08	13:33	Mid-Depth	6.0	10.7	100	11.0	6.31	0.536	52.0															
8	03/12/08	13:35	Mid-Depth	7.0	10.6	100	11.1	6.29	0.535	51.9															
8	03/12/08	13:37	Mid-Depth	8.0	10.7	99.8	11.0	6.25	0.534	52.1															
8	03/12/08	13:39	Mid-Depth	9.0	10.7	100	11.0	6.22	0.535	51.9															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
8	03/12/08	13:41	Mid-Depth	10.0	10.7	101	11.1	6.17	0.535	51.8															
8	03/12/08	13:43	Mid-Depth	11.0	10.7	101	11.1	6.18	0.535	51.8															
8	03/12/08	13:47	Mid-Depth	13.0	10.6	100	11.1	6.22	0.535	51.8															
8	03/12/08	13:49	Mid-Depth	14.0	10.5	100	11.0	6.15	0.536	51.8															
8	03/12/08	13:51	Mid-Depth	15.0	10.5	99.8	11.0	6.12	0.536	51.9															
8	03/12/08	13:53	Mid-Depth	16.0	10.3	99.5	11.0	6.06	0.538	51.8															
8	03/12/08	13:55	Mid-Depth	17.0	10.3	98.9	11.0	6.07	0.538	51.7															
8	03/12/08	13:57	Mid-Depth	18.0	10.2	96.4	10.8	6.06	0.538	51.7															
8	03/12/08	13:59	Mid-Depth	19.0	10.3	91.5	10.2	6.05	0.538	51.9															
8	03/12/08	14:01	Mid-Depth	20.0	10.3	91.4	10.2	6.01	0.540	52.0															
8	03/12/08	14:03	Mid-Depth	21.0	10.3	90.8	10.1	6.08	0.541	52.1															
8	03/12/08	14:05	Mid-Depth	22.0	10.4	90.3	10.0	6.11	0.541	52.2															
8	03/12/08	14:07	Mid-Depth	23.0	10.4	89.7	9.98	6.12	0.542	52.2															
5	03/26/08	12:28	Bottom	16.0	10.4	93.2	10.46	6.38	0.517	54.3					0.33	0.29	0.043	0.08	0.026	0.010					
5	03/26/08	12:12	Middle	8.0	10.6	96.0	10.72	6.28	0.517	54.4					0.30	0.29	0.007	0.08	0.031	0.007					
5	03/26/08	11:56	Surface	0.1	11.2	100.2	11.03	6.38	0.506	54.3	4.5	127.4	1.3	1.1	0.32	0.27	0.051	0.08	0.024	0.008		< 2.00	4.05		
5	03/26/08	11:58	Mid-Depth	1.0	11.1	98.9	10.91	6.08	0.511	54.3															
5	03/26/08	12:00	Mid-Depth	2.0	11.1	98.5	10.89	6.15	0.513	54.1															
5	03/26/08	12:02	Mid-Depth	3.0	11.0	98.2	10.86	6.17	0.515	54.5															
5	03/26/08	12:04	Mid-Depth	4.0	10.8	97.7	10.86	6.23	0.516	54.4															
5	03/26/08	12:06	Mid-Depth	5.0	10.8	97.2	10.81	6.28	0.516	54.4															
5	03/26/08	12:08	Mid-Depth	6.0	10.7	96.9	10.80	6.28	0.516	54.5															
5	03/26/08	12:10	Mid-Depth	7.0	10.7	96.7	10.78	6.29	0.516	54.3															
5	03/26/08	12:14	Mid-Depth	9.0	10.5	95.1	10.65	6.30	0.518	54.6															
5	03/26/08	12:16	Mid-Depth	10.0	10.5	94.5	10.58	6.34	0.516	54.5															
5	03/26/08	12:18	Mid-Depth	11.0	10.5	94.1	10.54	6.32	0.517	54.4															
5	03/26/08	12:20	Mid-Depth	12.0	10.5	94.3	10.57	6.34	0.517	54.5															
5	03/26/08	12:22	Mid-Depth	13.0	10.4	94.1	10.56	6.31	0.518	54.5															
5	03/26/08	12:24	Mid-Depth	14.0	10.4	93.8	10.53	6.37	0.515	54.5															
5	03/26/08	12:26	Mid-Depth	15.0	10.4	93.8	10.53	6.35	0.516	54.3															
8	03/26/08	11:48	Bottom	24.0	**	**	**	**	**	**					0.37	0.31	0.055	0.08	0.021	0.010					
8	03/26/08	11:24	Mid-Depth	12.0	11.3	89.7	9.85	6.74	0.551	54.0					0.33	0.28	0.045	0.06	0.023	0.008					
8	03/26/08	11:00	Surface	0.1	11.7	93.6	10.19	6.77	0.519	54.0	5.0	35.9	1.7	1.5	0.33	0.28	0.048	0.07	0.020	0.008		< 2.00	4.60		
8	03/26/08	11:02	Mid-Depth	1.0	11.7	93.5	10.18	6.78	0.530	53.9															
8	03/26/08	11:04	Mid-Depth	2.0	11.7	93.6	10.20	6.73	0.535	53.5															
8	03/26/08	11:06	Mid-Depth	3.0	11.6	93.5	10.22	6.73	0.543	54.2															
8	03/26/08	11:08	Mid-Depth	4.0	11.6	93.5	10.22	6.70	0.543	54.0															
8	03/26/08	11:10	Mid-Depth	5.0	11.5	93.6	10.23	6.63	0.547	54.1															
8	03/26/08	11:12	Mid-Depth	6.0	11.6	93.2	10.19	6.59	0.546	53.9															
8	03/26/08	11:14	Mid-Depth	7.0	11.6	93.2	10.19	6.56	0.548	54.0															
8	03/26/08	11:16	Mid-Depth	8.0	11.5	92.3	10.10	6.43	0.549	54.0															
8	03/26/08	11:18	Mid-Depth	9.0	11.5	91.2	9.98	6.41	0.549	53.9															
8	03/26/08	11:20	Mid-Depth	10.0	11.5	91.6	10.02	6.57	0.550	54.0															
8	03/26/08	11:22	Mid-Depth	11.0	11.5	91.1	9.97	6.56	0.550	54.1															
8	03/26/08	11:26	Mid-Depth	13.0	11.2	88.6	9.76	6.83	0.549	54.2															
8	03/26/08	11:28	Mid-Depth	14.0	11.1	88.9	9.82	6.87	0.552	54.1															
8	03/26/08	11:30	Mid-Depth	15.0	10.9	89.3	9.92	6.88	0.551	54.1															
8	03/26/08	11:32	Mid-Depth	16.0	10.9	89.7	9.96	6.96	0.548	54.2															
8	03/26/08	11:34	Mid-Depth	17.0	10.8	89.7	9.98	6.96	0.550	54.1															
8	03/26/08	11:36	Mid-Depth	18.0	10.8	89.8	9.99	6.94	0.551	54.3															
8	03/26/08	11:38	Mid-Depth	19.0	10.8	86.4	9.62	6.98	0.550	54.4															
8	03/26/08	11:40	Mid-Depth	20.0	10.8	88.2	9.81	6.31	0.525	54.3															
8	03/26/08	11:42	Mid-Depth	21.0	10.7	88.1	9.80	6.33	0.520	54.7															
8	03/26/08	11:44	Mid-Depth	22.0	10.7	88.8	9.78	6.35	0.518	54.6															
8	03/26/08	11:46	Mid-Depth	23.0	10.7	88.6	9.76	6.37	0.517	54.6															
1	04/23/08	12:02	Bottom	8.0	16.4	64.4	6.34	6.87	0.714	49.2															
1	04/23/08	11:58	Mid Depth	2.0	17.5	69.1	6.64	6.27	0.745	47.8															
1	04/23/08	12:00	Mid Depth	5.0	16.4	64.8	6.37	6.76	0.720	49.1															
1	04/23/08	11:56	Surface	0.1	19.2	81.8	7.60	6.25	0.792	52.0	2.0	47.1	0.3	0.2	0.31	0.30	0.008	0.08	0.038	0.010		3.40 J2	13.0		
2	04/23/08	12:10	Bottom	6.0	15.8	40.6	4.05	6.88	0.703	42.0															
2	04/23/08	12:08	Mid-Depth	3.0	16.4	63.0	6.19	6.61	0.724	47.1															
2	04/23/08	12:06	Surface	0.1	19.3	78.5	7.28	6.26	0.752	0.00	2.5	122.3	0.4	0.3	0.26	0.25	0.007	0.08	0.042	0.011		5.60	21.0		
3	04/23/08	12:25	Bottom	11.0	15.6	72.6	7.27	7.11	0.648	53.0															
3	04/23/08	12:19	Mid-Depth	2.0	15.9	79.2	7.88	6.82	0.696	50.8															
3	04/23/08	12:21	Mid-Depth	5.0	15.6	72.1	7.23	7.03	0.678	54.1															
3	04/23/08	12:23	Mid-Depth	8.0	15.8	75.5	7.53	7.17	0.646	52.5															
3	04/23/08	12:17	Surface	0.1	19.1	89.8	8.36	6.55	0.718	54.8	2.0	214.3	1.3	0.6	0.33	0.28	0.053	0.10	0.045	0.009		9.60	26.2		
4	04/23/08	12:35	Bottom	9.0	16.1	72.5	7.18	7.29	0.591	45.6															
4	04/23/08	12:31	Mid-Depth	3.0	18.2	93.1	8.82	6.78	0.622	56.4															
4	04/23/08	12:33	Mid-Depth	6.0	17.4	87.3	8.42	7.08	0.608	55.9															
4	04/23/08	12:29	Surface	0.1	18.7	95.5	8.95	6.55	0.632	57.5	3.0	87.8	1.1	0.6	0.32	0.31	0.012	0.03	0.033	0.005		4.60	11.9		
5	04/23/08	13:12	Bottom	16.0	15.4	49.7	5.00	6.94	0.591	63.2					0.30	0.28	0.023	0.09	0.027	0.005					
5	04/23/08	12:56	Middle	8.0	16.8	81.9	8.00	7.27	0.611	57.1					0.29	0.27	0.018	0.09	0.039	0.008					
5	04/23/08	12:40	Surface	0.1	19.3	97.5	9.03	6.65	0.652	62.3	4.0	13.5	1.5	0.7	0.27	0.26	0.014	0.10	0.022	<0.005		2.60	4.30		
5	04/23/08	12:42	Mid-Depth	1.0	18.6	96.8	9.10	6.80	0.642	61.7															
5	04/23/08	12:44	Mid-Depth	2.0	18.0	91.3	8.69	6.72	0.607	61.1															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
5	04/23/08	12:46	Mid-Depth	3.0	17.4	88.7	8.55	6.75	0.604	60.9															
5	04/23/08	12:48	Mid-Depth	4.0	17.3	88.5	8.55	7.04	0.626	60.8															
5	04/23/08	12:50	Mid-Depth	5.0	17.2	86.7	8.39	6.76	0.603	60.5															
5	04/23/08	12:52	Mid-Depth	6.0	17.0	81.4	7.92	6.78	0.599	59.2															
5	04/23/08	12:54	Mid-Depth	7.0	16.9	84.1	8.19	7.31	0.608	59.1															
5	04/23/08	12:58	Mid-Depth	9.0	16.5	70.0	6.87	6.93	0.586	50.4															
5	04/23/08	13:00	Mid-Depth	10.0	16.4	69.0	6.80	6.97	0.584	49.7															
5	04/23/08	13:02	Mid-Depth	11.0	16.3	66.0	6.52	7.00	0.582	48.9															
5	04/23/08	13:04	Mid-Depth	12.0	16.2	65.4	6.47	6.91	0.587	52.6															
5	04/23/08	13:06	Mid-Depth	13.0	16.1	61.3	6.07	7.12	0.575	56.1															
5	04/23/08	13:08	Mid-Depth	14.0	16.0	54.8	5.44	7.10	0.581	57.8															
5	04/23/08	13:10	Mid-Depth	15.0	15.5	47.2	4.74	7.00	0.587	63.2															
6	04/23/08	13:47	Bottom	15.0	16.7	83.9	8.21	6.79	0.592	61.4															
6	04/23/08	13:19	Mid-Depth	1.0	19.7	95.6	8.81	6.92	0.585	61.7															
6	04/23/08	13:21	Mid-Depth	2.0	18.8	96.4	9.03	6.90	0.587	61.5															
6	04/23/08	13:23	Mid-Depth	3.0	18.2	95.4	9.05	6.95	0.584	61.4															
6	04/23/08	13:25	Mid-Depth	4.0	17.5	94.8	9.12	6.91	0.586	61.3															
6	04/23/08	13:27	Mid-Depth	5.0	17.4	95.3	9.19	6.91	0.586	61.5															
6	04/23/08	13:29	Mid-Depth	6.0	17.4	94.7	9.14	6.92	0.586	61.8															
6	04/23/08	13:31	Mid-Depth	7.0	17.3	94.5	9.12	6.93	0.585	61.4															
6	04/23/08	13:33	Mid-Depth	8.0	17.3	94.2	9.10	6.93	0.584	61.4															
6	04/23/08	13:35	Mid-Depth	9.0	17.3	93.4	9.04	6.92	0.585	61.5															
6	04/23/08	13:37	Mid-Depth	10.0	17.1	92.3	8.95	6.90	0.586	61.2															
6	04/23/08	13:39	Mid-Depth	11.0	17.1	89.7	8.69	6.88	0.586	61.4															
6	04/23/08	13:41	Mid-Depth	12.0	17.1	87.9	8.53	6.85	0.588	61.4															
6	04/23/08	13:43	Mid-Depth	13.0	16.8	81.8	7.98	6.81	0.590	61.6															
6	04/23/08	13:45	Mid-Depth	14.0	16.7	81.5	7.98	6.80	0.591	61.4															
6	04/23/08	13:17	Surface	0.1	19.7	97.2	8.95	6.92	0.584	61.9	4.0	13.4	1.0	0.3	0.30	0.29	0.013	0.09	0.020	<0.005		2.00	3.77		
7	04/23/08	14:00	Bottom	10.0	17.0	91.0	8.86	7.10	0.571	60.5															
7	04/23/08	13:54	Mid-Depth	1.0	19.3	100	9.28	6.82	0.582	61.8															
7	04/23/08	13:56	Mid-Depth	4.0	18.6	99.2	9.32	6.87	0.578	61.2															
7	04/23/08	13:58	Mid-Depth	7.0	17.2	96.1	9.30	6.80	0.582	60.9															
7	04/23/08	13:52	Surface	0.1	16.7	83.9	8.21	6.79	0.592	61.2	3.5	57.3	0.8	0.3	0.30	0.29	0.011	0.09	0.040	<0.005		3.00	7.14		
8	04/23/08	14:55	Bottom	24.0	14.5	35.0	3.85	6.76	0.544	67.0					0.54	0.52	0.015	0.14	0.036	<0.005					
8	04/23/08	14:31	Mid-Depth	12.0	16.1	78.4	7.77	6.98	0.551	62.8					0.30	0.29	0.006	0.12	0.027	<0.005					
8	04/23/08	14:07	Surface	0.1	16.4	82.4	8.11	6.80	0.576	59.2	4.5	23.3	0.7	0.3	0.30	0.29	0.010	0.12	0.035	0.006		2.40	4.33		
8	04/23/08	14:09	Mid-Depth	1.0	18.8	99.7	9.34	6.80	0.565	61.6															
8	04/23/08	14:11	Mid-Depth	2.0	18.6	100	9.44	6.82	0.563	61.7															
8	04/23/08	14:13	Mid-Depth	3.0	17.8	101	9.62	6.97	0.556	61.8															
8	04/23/08	14:15	Mid-Depth	4.0	17.7	100	9.62	7.01	0.553	61.8															
8	04/23/08	14:17	Mid-Depth	5.0	17.6	100	9.63	7.00	0.554	61.7															
8	04/23/08	14:19	Mid-Depth	6.0	17.4	98.9	9.53	7.05	0.552	61.6															
8	04/23/08	14:21	Mid-Depth	7.0	17.2	97.6	9.45	7.07	0.551	61.6															
8	04/23/08	14:23	Mid-Depth	8.0	17.2	96.0	9.29	7.07	0.550	61.6															
8	04/23/08	14:25	Mid-Depth	9.0	17.2	94.1	9.11	7.07	0.549	61.6															
8	04/23/08	14:27	Mid-Depth	10.0	17.1	93.1	9.03	7.05	0.549	61.5															
8	04/23/08	14:29	Mid-Depth	11.0	17.1	90.3	8.76	7.04	0.549	61.6															
8	04/23/08	14:33	Mid-Depth	13.0	15.6	69.8	7.01	6.91	0.553	63.3															
8	04/23/08	14:35	Mid-Depth	14.0	15.1	75.6	7.65	6.93	0.552	63.6															
8	04/23/08	14:37	Mid-Depth	15.0	15.0	58.5	5.94	6.84	0.553	64.7															
8	04/23/08	14:39	Mid-Depth	16.0	14.9	53.4	5.43	6.80	0.553	64.8															
8	04/23/08	14:41	Mid-Depth	17.0	14.8	52.8	5.38	6.79	0.553	64.7															
8	04/23/08	14:43	Mid-Depth	18.0	14.8	51.7	5.26	6.78	0.553	64.7															
8	04/23/08	14:45	Mid-Depth	19.0	14.8	50.8	5.18	6.78	0.547	65.2															
8	04/23/08	14:47	Mid-Depth	20.0	14.7	46.4	5.11	6.77	0.547	65.3															
8	04/23/08	14:49	Mid-Depth	21.0	14.7	45.7	5.03	6.75	0.547	65.5															
8	04/23/08	14:51	Mid-Depth	22.0	14.6	37.0	4.07	6.73	0.545	65.5															
8	04/23/08	14:53	Mid-Depth	23.0	14.5	35.3	3.89	6.75	0.545	67.0															
5	04/30/08	11:46	Bottom	16.0	16.3	32.0	3.15	6.44	0.437	67.1					0.51	0.49	0.023	0.07	0.029	0.008					
5	04/30/08	11:30	Middle	8.0	17.6	67.2	6.43	6.87	0.414	57.3					0.45	0.43	0.022	< 0.03	0.030	0.007 J2					
5	04/30/08	11:14	Surface	0.1	18.6	72.7	6.82	5.94	0.444	58.8	2.25	51.2	1.2	0.5	0.45	0.43	0.023	< 0.03	0.024	0.008		4.60 J	8.70		
5	04/30/08	11:16	Mid-Depth	1.0	18.5	72.3	6.80	6.06	0.445	59.4															
5	04/30/08	11:18	Mid-Depth	2.0	18.2	72.6	6.87	6.42	0.444	60.1															
5	04/30/08	11:20	Mid-Depth	3.0	18.0	72.6	6.89	6.42	0.439	60.1															
5	04/30/08	11:22	Mid-Depth	4.0	17.9	71.8	6.83	6.33	0.440	59.9															
5	04/30/08	11:24	Mid-Depth	5.0	17.8	71.1	6.78	6.45	0.437	59.5															
5	04/30/08	11:26	Mid-Depth	6.0	17.7	69.7	6.65	6.73	0.422	58.8															
5	04/30/08	11:28	Mid-Depth	7.0	17.7	69.4	6.63	6.83	0.417	58.0															
5	04/30/08	11:32	Mid-Depth	9.0	17.6	66.3	6.36	6.67	0.425	57.2															
5	04/30/08	11:34	Mid-Depth	10.0	17.5	65.9	6.32	6.46	0.437	56.9															
5	04/30/08	11:36	Mid-Depth	11.0	17.5	65.1	6.25	6.51	0.435	57.2															
5	04/30/08	11:38	Mid-Depth	12.0	17.2	60.6	5.85	6.66	0.427	58.1															
5	04/30/08	11:40	Mid-Depth	13.0	17.1	56.1	5.43	6.55	0.432	59.2															
5	04/30/08	11:42	Mid-Depth	14.0	16.9	44.9	4.37	6.50	0.435	61.3															
5	04/30/08	11:44	Mid-Depth	15.0	16.6	40.1	3.92	6.47	0.436	65.1															
8	04/30/08	12:45	Bottom	24.0	14.9	15.0	1.52	6.67	0.480	76.2					0.44	0.42	0.018	< 0.03	0.023	0.006					

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

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STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
8	04/30/08	12:21	Mid-Depth	12.0	17.6	71.1	6.81	7.16	0.462	61.4					0.46	0.44	0.018	0.05	0.026	0.005					
8	04/30/08	11:57	Surface	0.1	19.3	87.3	8.08	6.68	0.503	62.9	3.0	27.2	1.0	0.7	0.45	0.44	0.014	< 0.03	0.026	0.005		2.60 J	6.26		
8	04/30/08	11:59	Mid-Depth	1.0	18.7	83.4	7.80	6.59	0.504	62.2															
8	04/30/08	12:01	Mid-Depth	2.0	18.4	82.3	7.76	6.40	0.515	61.8															
8	04/30/08	12:03	Mid-Depth	3.0	18.2	81.5	7.71	6.38	0.519	62.0															
8	04/30/08	12:05	Mid-Depth	4.0	17.9	79.8	7.59	6.28	0.522	62.0															
8	04/30/08	12:07	Mid-Depth	5.0	17.8	76.9	7.33	6.64	0.499	61.6															
8	04/30/08	12:09	Mid-Depth	6.0	17.8	75.4	7.20	6.65	0.497	61.6															
8	04/30/08	12:11	Mid-Depth	7.0	17.7	73.6	7.03	6.72	0.492	61.7															
8	04/30/08	12:13	Mid-Depth	8.0	17.7	73.0	6.98	6.81	0.486	61.4															
8	04/30/08	12:15	Mid-Depth	9.0	17.7	72.4	6.93	6.57	0.498	61.5															
8	04/30/08	12:17	Mid-Depth	10.0	17.6	72.2	6.90	6.61	0.495	61.4															
8	04/30/08	12:19	Mid-Depth	11.0	17.6	71.5	6.84	6.77	0.485	61.3															
8	04/30/08	12:23	Mid-Depth	13.0	17.6	71.3	6.83	7.20	0.460	61.3															
8	04/30/08	12:25	Mid-Depth	14.0	17.6	71.3	6.83	7.00	0.472	61.0															
8	04/30/08	12:27	Mid-Depth	15.0	17.5	70.6	6.77	6.94	0.475	61.1															
8	04/30/08	12:29	Mid-Depth	16.0	17.5	69.7	6.69	7.07	0.467	61.3															
8	04/30/08	12:31	Mid-Depth	17.0	17.2	62.0	5.98	6.86	0.478	63.9															
8	04/30/08	12:33	Mid-Depth	18.0	15.7	35.2	3.51	6.74	0.484	70.8															
8	04/30/08	12:35	Mid-Depth	19.0	15.0	24.3	2.46	6.45	0.501	75.0															
8	04/30/08	12:37	Mid-Depth	20.0	15.0	22.5	2.27	6.94	0.470	75.3															
8	04/30/08	12:39	Mid-Depth	21.0	14.9	18.5	1.88	6.80	0.478	76.4															
8	04/30/08	12:41	Mid-Depth	22.0	14.9	16.6	1.68	6.45	0.497	76.1															
8	04/30/08	12:43	Mid-Depth	23.0	14.9	17.0	1.72	6.62	0.486	76.8															
1	05/07/08	8:55	Bottom	8.0	20.2	23.2	2.10	6.78	0.485	67.8															
1	05/07/08	8:51	Mid Depth	2.0	22.1	94.2	8.22	6.89	0.489	63.7															
1	05/07/08	8:53	Mid Depth	5.0	20.3	33.8	3.05	6.87	0.484	66.6															
1	05/07/08	8:49	Surface	0.1	22.5	95.4	8.27	7.22	0.469	64.8	2.5	<1	0.7	0.3	0.43	0.43	< 0.005	0.09	0.031	0.010		4.00	13.0		
2	05/07/08	9:03	Bottom	6.0	18.4	11.3	1.06	6.61	0.404	117															
2	05/07/08	9:01	Mid-Depth	3.0	21.4	70.3	6.22	6.66	0.490	51.7															
2	05/07/08	8:59	Surface	0.1	23.0	95.5	8.20	6.83	0.486	52.6	3.0	<1	3.2	1.0	0.37	0.37	< 0.005	0.08	0.032	0.010		2.40	7.48		
3	05/07/08	9:16	Bottom	11.0	19.6	72.9	6.67	7.17	0.359	60.7															
3	05/07/08	9:10	Mid-Depth	2.0	21.0	93.8	8.36	6.72	0.384	64.7															
3	05/07/08	9:12	Mid-Depth	5.0	19.8	80.0	7.30	6.86	0.375	59.3															
3	05/07/08	9:14	Mid-Depth	8.0	19.7	74.7	6.83	7.02	0.366	60.3															
3	05/07/08	9:08	Surface	0.1	22.0	104	9.06	6.83	0.379	68.2	3.0	1.0	6.0	2.2	0.40	0.40	< 0.005	0.09	0.037	0.005		3.60	4.68		
4	05/07/08	9:27	Bottom	9.0	18.9	46.8	4.35	6.90	0.386	61.9															
4	05/07/08	9:23	Mid-Depth	3.0	20.8	86.8	7.77	6.63	0.405	58.9															
4	05/07/08	9:25	Mid-Depth	6.0	19.5	66.0	6.07	6.89	0.389	60.5															
4	05/07/08	9:21	Surface	0.1	22.3	101	8.77	6.80	0.394	58.4	4.0	<1	2.1	0.6	0.39	0.38	0.014	0.07	0.029	0.005		< 2.00	7.82		
5	05/07/08	10:04	Bottom	16.0	18.3	38.8	3.65	6.93	0.397	63.5					0.52	0.49	0.027	0.07	0.027	0.008					
5	05/07/08	9:48	Middle	8.0	19.8	75.4	6.88	6.92	0.406	59.5					0.45	0.43	0.021	0.06	0.035	0.005					
5	05/07/08	9:32	Surface	0.1	22.8	99.6	8.57	6.74	0.415	58.5	4.5	<1	1.9	0.7	0.39	0.38	0.012	0.06	0.024	0.005		2.20	8.22		
5	05/07/08	9:34	Mid-Depth	1.0	21.9	99.7	8.73	6.72	0.415	58.2															
5	05/07/08	9:36	Mid-Depth	2.0	21.7	96.3	8.48	6.60	0.425	58.3															
5	05/07/08	9:38	Mid-Depth	3.0	21.4	94.1	8.31	6.72	0.418	58.1															
5	05/07/08	9:40	Mid-Depth	4.0	21.4	93.4	8.26	6.79	0.415	58.2															
5	05/07/08	9:42	Mid-Depth	5.0	21.3	92.0	8.15	6.89	0.410	58.3															
5	05/07/08	9:44	Mid-Depth	6.0	21.2	89.8	7.97	6.90	0.410	58.5															
5	05/07/08	9:46	Mid-Depth	7.0	20.2	79.7	7.21	6.90	0.408	59.3															
5	05/07/08	9:50	Mid-Depth	9.0	19.5	72.0	6.61	6.97	0.403	59.7															
5	05/07/08	9:52	Mid-Depth	10.0	19.3	68.5	6.31	6.92	0.404	59.6															
5	05/07/08	9:54	Mid-Depth	11.0	19.1	63.3	5.85	6.93	0.401	60.2															
5	05/07/08	9:56	Mid-Depth	12.0	19.0	60.0	5.57	6.98	0.399	60.4															
5	05/07/08	9:58	Mid-Depth	13.0	18.8	55.0	5.12	6.97	0.398	61.0															
5	05/07/08	10:00	Mid-Depth	14.0	18.6	47.7	4.46	6.98	0.398	61.4															
5	05/07/08	10:02	Mid-Depth	15.0	18.5	45.0	4.22	6.99	0.397	61.7															
6	05/07/08	10:42	Bottom	16.0	18.1	43.9	4.17	6.95	0.413	61.8															
6	05/07/08	10:12	Mid-Depth	1.0	23.0	102	8.74	6.65	0.440	60.6															
6	05/07/08	10:14	Mid-Depth	2.0	22.1	97.9	8.54	6.71	0.432	60.0															
6	05/07/08	10:16	Mid-Depth	3.0	21.9	94.0	8.23	6.67	0.432	59.8															
6	05/07/08	10:18	Mid-Depth	4.0	21.8	95.2	8.36	6.85	0.429	59.9															
6	05/07/08	10:20	Mid-Depth	5.0	21.5	88.5	7.81	6.62	0.434	59.6															
6	05/07/08	10:22	Mid-Depth	6.0	21.0	76.5	6.82	6.52	0.437	60.5															
6	05/07/08	10:24	Mid-Depth	7.0	19.7	70.8	6.47	6.92	0.420	59.9															
6	05/07/08	10:26	Mid-Depth	8.0	19.0	61.0	5.65	6.89	0.420	60.1															
6	05/07/08	10:28	Mid-Depth	9.0	18.6	57.8	5.40	6.86	0.419	60.9															
6	05/07/08	10:30	Mid-Depth	10.0	18.6	56.2	5.25	6.85	0.419	61.1															
6	05/07/08	10:32	Mid-Depth	11.0	18.6	55.6	5.20	6.86	0.417	60.9															
6	05/07/08	10:34	Mid-Depth	12.0	18.5	52.7	4.94	6.90	0.415	60.9															
6	05/07/08	10:36	Mid-Depth	13.0	18.3	48.8	4.59	6.91	0.414	61.8															
6	05/07/08	10:38	Mid-Depth	14.0	18.1	41.6	3.92	6.91	0.412	62.0															
6	05/07/08	10:40	Mid-Depth	15.0	18.1	43.8	4.14	6.92	0.412	61.7															
6	05/07/08	10:10	Surface	0.1	23.0	104	8.91	6.72	0.435	60.6	4.5	4.0	2.0	0.7	0.45	0.44	0.013	0.05	0.021	0.005		2.80	7.54		
7	05/07/08	10:55	Bottom	10.0	18.2	38.7	3.65	6.77	0.434	63.5															
7	05/07/08	10:49	Mid-Depth	1.0	23.6	104	8.83	6.73	0.445	61.2															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
7	05/07/08	10:51	Mid-Depth	4.0	22.6	98.2	8.49	6.81	0.443	60.5															
7	05/07/08	10:53	Mid-Depth	7.0	18.7	46.6	4.35	6.64	0.444	62.5															
7	05/07/08	10:47	Surface	0.1	24.0	105	8.88	6.75	0.445	60.9	4.0	4.0	2.9	1.3	0.55	0.50	0.052	0.07	0.041	0.005		3.60	7.96		
8	05/07/08	11:50	Bottom	24.0	15.2	11.2	1.11	6.72	0.409	91.9					0.56	0.51	0.049	0.05	0.033	**					
8	05/07/08	11:26	Mid-Depth	12.0	18.6	56.5	5.28	6.67	0.399	60.9					0.56	0.51	0.048	0.04	0.025	0.005					
8	05/07/08	11:02	Surface	0.1	23.4	100	8.51	6.78	0.411	60.5	5.0	6.0	2.9	1.0	0.54	0.49	0.045	0.05	0.036	0.005		3.00	6.63		
8	05/07/08	11:04	Mid-Depth	1.0	22.2	100	8.72	6.80	0.409	59.7															
8	05/07/08	11:06	Mid-Depth	2.0	22.0	97.0	8.49	6.77	0.409	60.1															
8	05/07/08	11:08	Mid-Depth	3.0	21.9	95.3	8.35	6.74	0.410	60.0															
8	05/07/08	11:10	Mid-Depth	4.0	21.8	92.8	8.15	6.69	0.410	60.1															
8	05/07/08	11:12	Mid-Depth	5.0	21.8	93.9	8.24	6.70	0.411	60.0															
8	05/07/08	11:14	Mid-Depth	6.0	21.8	91.2	8.01	6.71	0.408	60.3															
8	05/07/08	11:16	Mid-Depth	7.0	21.5	89.5	7.91	6.56	0.414	59.9															
8	05/07/08	11:18	Mid-Depth	8.0	21.2	86.4	7.68	6.54	0.413	60.1															
8	05/07/08	11:20	Mid-Depth	9.0	20.7	75.9	6.81	6.50	0.412	59.8															
8	05/07/08	11:22	Mid-Depth	10.0	19.0	60.2	5.59	6.54	0.407	60.7															
8	05/07/08	11:24	Mid-Depth	11.0	18.8	58.4	5.45	6.59	0.400	60.9															
8	05/07/08	11:28	Mid-Depth	13.0	18.3	53.1	4.99	6.68	0.397	61.0															
8	05/07/08	11:30	Mid-Depth	14.0	18.0	49.6	4.69	6.76	0.393	61.9															
8	05/07/08	11:32	Mid-Depth	15.0	17.8	41.7	3.96	6.78	0.391	61.8															
8	05/07/08	11:34	Mid-Depth	16.0	17.5	34.6	3.31	6.76	0.393	64.2															
8	05/07/08	11:36	Mid-Depth	17.0	17.2	29.6	2.84	6.76	0.394	66.5															
8	05/07/08	11:38	Mid-Depth	18.0	16.8	28.1	2.73	6.90	0.386	68.9															
8	05/07/08	11:40	Mid-Depth	19.0	16.6	22.1	2.15	6.94	0.386	70.8															
8	05/07/08	11:42	Mid-Depth	20.0	16.3	15.5	1.52	6.97	0.387	73.1															
8	05/07/08	11:44	Mid-Depth	21.0	16.2	14.4	1.42	6.98	0.385	74.4															
8	05/07/08	11:46	Mid-Depth	22.0	15.8	6.80	0.68	7.08	0.388	82.0															
8	05/07/08	11:48	Mid-Depth	23.0	15.4	11.8	1.18	6.96	0.408	91.8															
5	05/20/08	12:17	Bottom	16.0	19.3	84.5	7.63	6.77	0.637	54.4					0.53	0.49	0.042	< 0.03	0.047	0.006					
5	05/20/08	12:01	Middle	8.0	19.4	86.6	7.80	6.88	0.661	54.4					0.47	0.43	0.039	< 0.03	0.038	0.006					
5	05/20/08	11:45	Surface	0.1	20.0	93.9	8.36	7.03	0.665	54.7	2.0	5.2	4.0	1.3	0.42	0.38	0.042	< 0.03	0.045	0.005		4.40	12.0		
5	05/20/08	11:47	Mid-Depth	1.0	19.9	93.5	8.34	7.02	0.664	54.3															
5	05/20/08	11:49	Mid-Depth	2.0	19.8	89.9	8.05	7.02	0.664	54.9															
5	05/20/08	11:51	Mid-Depth	3.0	19.6	89.5	8.05	7.00	0.664	54.6															
5	05/20/08	11:53	Mid-Depth	4.0	19.5	87.6	7.89	6.94	0.664	54.6															
5	05/20/08	11:55	Mid-Depth	5.0	19.5	87.1	7.85	6.92	0.663	54.6															
5	05/20/08	11:57	Mid-Depth	6.0	19.4	86.8	7.82	6.90	0.662	54.7															
5	05/20/08	11:59	Mid-Depth	7.0	19.4	86.7	7.81	6.88	0.662	54.3															
5	05/20/08	12:03	Mid-Depth	9.0	19.4	86.7	7.82	6.85	0.661	54.4															
5	05/20/08	12:05	Mid-Depth	10.0	19.4	86.1	7.77	6.83	0.660	54.3															
5	05/20/08	12:07	Mid-Depth	11.0	19.4	86.2	7.78	6.82	0.659	54.3															
5	05/20/08	12:09	Mid-Depth	12.0	19.3	86.9	7.85	6.82	0.658	54.1															
5	05/20/08	12:11	Mid-Depth	13.0	19.3	86.5	7.81	6.81	0.657	54.4															
5	05/20/08	12:13	Mid-Depth	14.0	19.3	86.4	7.80	6.82	0.656	54.4															
5	05/20/08	12:15	Mid-Depth	15.0	19.3	86.0	7.77	6.80	0.655	54.3															
8	05/20/08	13:11	Bottom	23.0	16.5	16.2	1.55	6.45	0.536	67.5					0.48	0.44	0.041	0.05	0.046	0.005					
8	05/20/08	12:47	Mid-Depth	11.0	19.5	82.4	7.42	6.67	0.534	55.5					0.53	0.49	0.036	0.04	0.041	<0.005					
8	05/20/08	12:25	Surface	0.1	20.6	98.2	8.64	6.87	0.531	55.5	2.5	8.4	3.2	1.0	0.50	0.47	0.034	0.04	0.046	0.005		4.20	10.2		
8	05/20/08	12:27	Mid-Depth	1.0	20.6	97.6	8.59	6.85	0.532	55.3															
8	05/20/08	12:29	Mid-Depth	2.0	20.5	96.8	8.54	6.85	0.532	55.4															
8	05/20/08	12:31	Mid-Depth	3.0	20.4	95.7	8.46	6.84	0.531	55.4															
8	05/20/08	12:33	Mid-Depth	4.0	20.3	94.4	8.36	6.79	0.532	55.1															
8	05/20/08	12:35	Mid-Depth	5.0	19.6	87.6	7.86	6.72	0.535	55.1															
8	05/20/08	12:37	Mid-Depth	6.0	19.6	85.6	7.69	6.70	0.535	55.0															
8	05/20/08	12:39	Mid-Depth	7.0	19.5	84.6	7.61	6.71	0.534	55.2															
8	05/20/08	12:41	Mid-Depth	8.0	19.5	82.8	7.45	6.68	0.535	55.5															
8	05/20/08	12:43	Mid-Depth	9.0	19.5	82.3	7.40	6.69	0.534	55.4															
8	05/20/08	12:45	Mid-Depth	10.0	19.5	81.9	7.37	6.68	0.534	55.5															
8	05/20/08	12:49	Mid-Depth	12.0	19.5	80.9	7.28	6.66	0.534	55.5															
8	05/20/08	12:51	Mid-Depth	13.0	19.5	80.1	7.22	6.62	0.534	55.5															
8	05/20/08	12:53	Mid-Depth	14.0	19.3	73.0	6.60	6.57	0.535	55.6															
8	05/20/08	12:55	Mid-Depth	15.0	19.2	71.6	6.49	6.54	0.535	55.8															
8	05/20/08	12:57	Mid-Depth	16.0	19.1	67.1	6.09	6.50	0.535	55.5															
8	05/20/08	12:59	Mid-Depth	17.0	18.5	65.4	6.01	6.47	0.537	57.0															
8	05/20/08	13:01	Mid-Depth	18.0	18.1	41.0	3.80	6.39	0.538	58.3															
8	05/20/08	13:03	Mid-Depth	19.0	17.2	31.3	2.96	6.39	0.538	60.6															
8	05/20/08	13:05	Mid-Depth	20.0	17.1	22.9	2.17	6.38	0.538	61.2															
8	05/20/08	13:07	Mid-Depth	21.0	16.7	18.8	1.79	6.38	0.538	63.8															
8	05/20/08	13:09	Mid-Depth	22.0	16.6	19.5	1.86	6.39	0.537	67.5															
1	06/09/08	8:57	Bottom	7.0	25.9	12.9	1.05	6.61	0.527	74.1															
1	06/09/08	8:53	Mid Depth	1.0	31.5	78.6	5.78	6.98	0.573	55.3															
1	06/09/08	8:55	Mid Depth	4.0	29.4	44.7	3.41	6.77	0.576	50.4															
1	06/09/08	8:51	Surface	0.1	**	84.2	6.16	7.07	0.576	54.9	1.8	3.1	0.7 Q	0.5 Q	0.43	0.43	< 0.005	0.15	0.075	0.014	9.77	< 2.00	6.95	0.0035	0.09
2	06/09/08	9:05	Bottom	6.0	27.7	21.4	1.68	6.52	0.468	52.1															
2	06/09/08	9:03	Mid-Depth	3.0	30.2	86.2	6.48	6.80	0.463	48.2															
2	06/09/08	9:01	Surface	0.1	31.5	102.4	7.53	6.77	0.466	49.2	2.5	4.1	0.5 Q	0.5 Q	0.46	0.46	< 0.005	0.14	0.060	0.015	9.12	< 2.00	4.15	<0.0025	0.17

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
3	06/09/08	9:18	Bottom	11.0	27.1	32.7	2.60	6.60	0.441	54.6															
3	06/09/08	9:12	Mid-Depth	2.0	31.1	108.1	8.00	7.15	0.426	56.4															
3	06/09/08	9:14	Mid-Depth	5.0	29.1	62.6	4.80	6.86	0.434	51.2															
3	06/09/08	9:16	Mid-Depth	8.0	27.4	46.0	3.63	6.66	0.439	55.0															
3	06/09/08	9:10	Surface	0.1	31.4	108.1	7.96	7.02	0.431	59.2	3.5	6.3	1.0 Q	0.8 Q	0.51	0.51	< 0.005	0.16	0.049	<0.10	7.69	< 2.00	5.30	0.0146	0.07
4	06/09/08	9:29	Bottom	8.0	25.9	43.2	3.50	6.68	0.439	49.4															
4	06/09/08	9:25	Mid-Depth	2.0	30.7	116.8	8.70	7.24	0.420	46.7															
4	06/09/08	9:27	Mid-Depth	5.0	30.0	113.7	8.57	7.07	0.424	46.4															
4	06/09/08	9:23	Surface	0.1	30.8	114.7	8.53	6.95	0.429	46.8	3.8	1.0	1.6 Q	0.5 Q	0.48	0.48	< 0.005	0.15	0.038	<0.10	8.47	< 2.00	2.25	0.0035	0.09
5	06/09/08	10:06	Bottom	16.0	21.7	3.00	0.26	6.52	0.444	60.8					0.57	0.57	< 0.005	0.15	0.039	0.013					
5	06/09/08	9:50	Middle	8.0	26.5	91.2	7.32	7.23	0.419	46.5					0.55	0.55	< 0.005	0.14	0.042	<0.10					
5	06/09/08	9:34	Surface	0.1	31.7	116.1	8.51	7.10	0.413	46.8	4.5	<1	1.5 Q	1.7 Q	0.50	0.50	< 0.005	0.14	0.038	<0.10	8.28	< 2.00	2.10	0.0040	0.09
5	06/09/08	9:36	Mid-Depth	1.0	31.7	117.4	8.59	7.58	0.411	46.9															
5	06/09/08	9:38	Mid-Depth	2.0	31.6	118.4	8.68	7.51	0.409	46.9															
5	06/09/08	9:40	Mid-Depth	3.0	31.1	119.1	8.79	7.53	0.398	46.8															
5	06/09/08	9:42	Mid-Depth	4.0	30.7	121.3	9.05	7.62	0.394	46.6															
5	06/09/08	9:44	Mid-Depth	5.0	31.3	116.9	8.62	7.63	0.406	46.6															
5	06/09/08	9:46	Mid-Depth	6.0	28.3	119.6	9.15	7.55	0.400	46.2															
5	06/09/08	9:48	Mid-Depth	7.0	27.5	112.5	8.92	7.51	0.401	46.3															
5	06/09/08	9:52	Mid-Depth	9.0	25.8	74.6	6.08	7.12	0.413	46.4															
5	06/09/08	9:54	Mid-Depth	10.0	25.1	59.6	4.91	6.83	0.427	46.8															
5	06/09/08	9:56	Mid-Depth	11.0	24.8	35.8	2.97	6.70	0.435	47.6															
5	06/09/08	9:58	Mid-Depth	12.0	24.1	34.4	2.88	6.46	0.434	47.9															
5	06/09/08	10:00	Mid-Depth	13.0	23.6	19.4	1.65	6.41	0.436	49.5															
5	06/09/08	10:02	Mid-Depth	14.0	22.0	6.30	0.55	6.56	0.443	58.9															
5	06/09/08	10:04	Mid-Depth	15.0	22.7	6.90	0.61	6.47	0.440	54.2															
6	06/09/08	10:42	Bottom	15.0	22.7	6.90	0.60	6.39	0.439	54.2															
6	06/09/08	10:14	Mid-Depth	1.0	31.7	117.1	8.57	7.61	0.411	46.9															
6	06/09/08	10:16	Mid-Depth	2.0	31.7	119.2	8.74	7.64	0.395	47.0															
6	06/09/08	10:18	Mid-Depth	3.0	31.1	119.4	8.84	7.53	0.398	46.8															
6	06/09/08	10:20	Mid-Depth	4.0	30.7	121.1	9.03	7.70	0.394	46.6															
6	06/09/08	10:22	Mid-Depth	5.0	29.2	119.5	9.14	7.62	0.396	46.3															
6	06/09/08	10:24	Mid-Depth	6.0	28.3	118.3	9.19	7.53	0.399	46.2															
6	06/09/08	10:26	Mid-Depth	7.0	27.5	112.2	8.89	7.45	0.401	46.3															
6	06/09/08	10:28	Mid-Depth	8.0	26.5	106.5	8.47	7.32	0.405	46.2															
6	06/09/08	10:30	Mid-Depth	9.0	25.8	87.1	7.07	7.05	0.413	46.4															
6	06/09/08	10:32	Mid-Depth	10.0	25.1	59.6	4.90	6.67	0.425	46.8															
6	06/09/08	10:34	Mid-Depth	11.0	24.4	46.0	3.83	6.54	0.429	47.2															
6	06/09/08	10:36	Mid-Depth	12.0	24.1	34.4	2.88	6.44	0.434	47.9															
6	06/09/08	10:38	Mid-Depth	13.0	23.6	18.9	1.60	6.39	0.436	49.5															
6	06/09/08	10:40	Mid-Depth	14.0	22.8	8.20	0.70	6.38	0.439	53.7															
6	06/09/08	10:12	Surface	0.1	32.3	119.2	8.64	7.68	0.413	46.6	5.5	8.5	1.7 Q	0.9 Q	0.47	0.47	< 0.005	0.15	0.035	<0.10	8.36	< 2.00	2.25	0.0035	0.07
7	06/09/08	10:57	Bottom	10.0	25.1	59.6	4.90	6.67	0.425	46.8															
7	06/09/08	10:51	Mid-Depth	1.0	31.7	117.1	8.57	7.61	0.411	46.9															
7	06/09/08	10:53	Mid-Depth	4.0	30.7	121.1	9.03	7.70	0.394	46.6															
7	06/09/08	10:55	Mid-Depth	7.0	27.5	112.2	8.89	7.45	0.401	46.3															
7	06/09/08	10:49	Surface	0.1	32.3	119.2	8.64	7.68	0.413	46.6	5.0	8.6	1.8 Q	0.9 Q	0.48	0.48	< 0.005	0.16	0.039	0.011	8.37	< 2.00	2.25	0.0032	0.12
8	06/09/08	11:52	Bottom	24.0	17.8	2.50	0.23	6.59	0.233	108					0.63	0.63	< 0.005	0.16	0.042	0.018					
8	06/09/08	11:22	Mid-Depth	9.0	25.9	74.5	6.05	6.56	0.268	46.3					0.55	0.55	< 0.005	0.15	0.036	<0.10					
8	06/09/08	11:04	Surface	0.1	32.3	119.2	8.64	7.68	0.285	46.6	5.8	5.2	2.2 Q	0.9 Q	0.50	0.50	< 0.005	0.15	0.037	<0.10	8.18	< 2.00	2.15	0.0050	0.18
8	06/09/08	11:06	Mid-Depth	1.0	32.2	119.4	8.67	7.68	0.282	46.7															
8	06/09/08	11:08	Mid-Depth	2.0	32.2	119.4	8.67	7.66	0.280	46.7															
8	06/09/08	11:10	Mid-Depth	3.0	32.1	118.1	8.60	7.54	0.274	47.0															
8	06/09/08	11:12	Mid-Depth	4.0	32.0	115.3	8.41	7.47	0.270	46.7															
8	06/09/08	11:14	Mid-Depth	5.0	31.6	114.9	8.43	7.47	0.264	46.4															
8	06/09/08	11:16	Mid-Depth	6.0	30.7	125.7	9.37	7.62	0.253	46.1															
8	06/09/08	11:18	Mid-Depth	7.0	27.4	106.8	8.39	6.95	0.272	46.1															
8	06/09/08	11:20	Mid-Depth	8.0	25.9	88.6	7.18	6.73	0.272	46.5															
8	06/09/08	11:24	Mid-Depth	10.0	25.0	57.0	4.70	6.42	0.264	46.5															
8	06/09/08	11:26	Mid-Depth	11.0	24.5	46.6	3.88	6.38	0.257	46.9															
8	06/09/08	11:28	Mid-Depth	12.0	24.0	30.1	2.53	6.31	0.252	47.1															
8	06/09/08	11:30	Mid-Depth	13.0	23.5	20.1	1.71	6.29	0.245	47.6															
8	06/09/08	11:32	Mid-Depth	14.0	23.0	12.1	1.04	6.30	0.237	48.7															
8	06/09/08	11:34	Mid-Depth	15.0	22.5	7.80	0.67	6.31	0.229	48.8															
8	06/09/08	11:36	Mid-Depth	16.0	21.8	1.90	< 0.10	6.37	0.217	49.6															
8	06/09/08	11:38	Mid-Depth	17.0	21.5	1.30	< 0.10	6.44	0.209	50.5															
8	06/09/08	11:40	Mid-Depth	18.0	20.3	1.50	< 0.10	6.48	0.203	58.9															
8	06/09/08	11:42	Mid-Depth	19.0	19.9	1.50	< 0.10	6.70	0.183	62.8															
8	06/09/08	11:44	Mid-Depth	20.0	19.0	1.90	< 0.10	6.78	0.186	76.7															
8	06/09/08	11:46	Mid-Depth	21.0	18.7	1.60	< 0.10	6.69	0.185	85.4															
8	06/09/08	11:48	Mid-Depth	22.0	18.4	2.00	< 0.10	6.79	0.187	88.4															
8	06/09/08	11:50	Mid-Depth	23.0	18.0	2.10	< 0.10	6.76	0.203	99.1															
5	06/23/08	10:30	Bottom	15.0	23.7	2.4	0.21	6.57	0.305	66.4					0.58	0.57	0.009	0.31	0.040	0.004					
5	06/23/08	10:16	Middle	8.0	26.8	86.1	6.86	6.84	0.419	49.6					0.53	0.53	< 0.005	0.15	0.043	0.004					
5	06/23/08	10:00	Surface	0.1	27.9	99.7	7.80	6.70	0.415	49.6	4.5	8.4	2.3 Q	2.4 Q	0.49	0.49	< 0.005	0.14	0.044	0.004		3.20	4.25		
5	06/23/08	10:02	Mid-Depth	1.0	27.7	98.4	7.72	6.77	0.413	49.4															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

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ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
5	06/23/08	10:04	Mid-Depth	2.0	27.6	97.5	7.69	6.80	0.413	49.5															
5	06/23/08	10:06	Mid-Depth	3.0	27.4	97.4	7.68	6.82	0.413	49.5															
5	06/23/08	10:08	Mid-Depth	4.0	27.3	96.1	7.59	6.84	0.414	49.5															
5	06/23/08	10:10	Mid-Depth	5.0	27.2	92.4	7.31	6.84	0.416	49.3															
5	06/23/08	10:12	Mid-Depth	6.0	27.0	89.9	7.14	6.85	0.417	49.4															
5	06/23/08	10:14	Mid-Depth	7.0	26.9	86.9	6.92	6.84	0.418	49.3															
5	06/23/08	10:18	Mid-Depth	9.0	26.8	83.6	6.66	6.84	0.422	49.5															
5	06/23/08	10:20	Mid-Depth	10.0	26.7	80.6	6.43	6.82	0.424	49.4															
5	06/23/08	10:22	Mid-Depth	11.0	26.4	55.9	4.49	6.71	0.429	49.7															
5	06/23/08	10:24	Mid-Depth	12.0	25.6	42.0	3.42	6.61	0.434	51.9															
5	06/23/08	10:26	Mid-Depth	13.0	24.3	5.7	0.47	6.52	0.378	60.0															
5	06/23/08	10:28	Mid-Depth	14.0	23.8	2.9	0.25	6.60	0.332	65.7															
8	06/23/08	11:26	Bottom	23.0	19.2	1.2	0.12	6.65	0.142	94.2					0.63	0.62	0.007	0.74 Er	0.051	0.034					
8	06/23/08	11:02	Mid-Depth	11.0	26.2	45.1	3.63	6.55	0.464	49.3					0.58	0.58	< 0.005	0.14	0.043	0.004					
8	06/23/08	10:40	Surface	0.1	28.4	98.7	7.65	6.86	0.419	49.3	6.0	7.4	2.2 Q	3.1 Q	0.52	0.52	< 0.005	0.14	0.045	0.003		3.00	4.10		
8	06/23/08	10:42	Mid-Depth	1.0	27.8	97.7	7.69	6.90	0.423	49.4															
8	06/23/08	10:44	Mid-Depth	2.0	27.6	93.8	7.37	6.90	0.430	49.0															
8	06/23/08	10:46	Mid-Depth	3.0	27.2	90.9	7.20	6.92	0.437	49.2															
8	06/23/08	10:48	Mid-Depth	4.0	27.0	83.9	6.67	6.86	0.454	49.1															
8	06/23/08	10:50	Mid-Depth	5.0	26.8	78.4	6.26	6.84	0.455	49.5															
8	06/23/08	10:52	Mid-Depth	6.0	26.7	75.8	6.05	6.81	0.457	49.4															
8	06/23/08	10:54	Mid-Depth	7.0	26.6	72.5	5.80	6.75	0.459	49.5															
8	06/23/08	10:56	Mid-Depth	8.0	26.5	64.8	5.20	6.70	0.460	49.3															
8	06/23/08	10:58	Mid-Depth	9.0	26.4	61.6	4.95	6.67	0.461	49.2															
8	06/23/08	11:00	Mid-Depth	10.0	26.4	52.9	4.25	6.62	0.463	49.2															
8	06/23/08	11:04	Mid-Depth	12.0	25.9	14.5	1.17	6.46	0.468	50.0															
8	06/23/08	11:06	Mid-Depth	13.0	24.8	5.1	0.42	6.42	0.464	58.0															
8	06/23/08	11:08	Mid-Depth	14.0	23.8	2.4	0.20	6.47	0.430	62.7															
8	06/23/08	11:10	Mid-Depth	15.0	22.8	2.1	0.18	6.50	0.353	65.2															
8	06/23/08	11:12	Mid-Depth	16.0	21.5	1.9	0.17	6.51	0.205	69.7															
8	06/23/08	11:14	Mid-Depth	17.0	20.8	1.7	0.15	6.54	0.161	72.9															
8	06/23/08	11:16	Mid-Depth	18.0	20.1	1.7	0.16	6.55	0.147	79.1															
8	06/23/08	11:18	Mid-Depth	19.0	19.6	1.6	0.15	6.60	0.145	87.6															
8	06/23/08	11:20	Mid-Depth	20.0	19.3	1.6	0.15	6.70	0.144	92.5															
8	06/23/08	11:22	Mid-Depth	21.0	19.3	1.5	0.14	6.72	0.142	94.4															
8	06/23/08	11:24	Mid-Depth	22.0	19.3	1.2	0.12	6.67	0.142	94.3															
3	07/08/08	9:04	Bottom	11.0	26.5	73.6	5.93	6.93	0.735	66.4															
3	07/08/08	8:58	Mid-Depth	2.0	26.8	85.3	6.83	6.91	0.759	64.0															
3	07/08/08	9:00	Mid-Depth	5.0	26.7	81.9	6.57	6.94	0.749	65.2															
3	07/08/08	9:02	Mid-Depth	8.0	26.5	75.0	6.04	6.93	0.740	66.4															
3	07/08/08	8:56	Surface	0.1	26.9	86.8	6.95	6.90	0.769	63.7	1.5	83.6	19.6 Q	14.3 Q	0.49	0.49	< 0.005	<0.03	0.058	0.003		9.20	16.0		
4	07/08/08	9:15	Bottom	7.0	26.9	74.3	5.94	7.04	0.605	57.6															
4	07/08/08	9:11	Mid-Depth	1.0	27.2	93.8	7.45	7.17	0.638	57.0															
4	07/08/08	9:13	Mid-Depth	4.0	27.1	91.8	7.31	7.16	0.638	57.2															
4	07/08/08	9:09	Surface	0.1	27.3	93.8	7.45	7.17	0.638	57.1	2.5	6.3	10.8 Q	5.9 Q	0.51	0.51	< 0.005	< 0.03	0.037	0.003		4.00	7.05		
5	07/08/08	9:50	Bottom	15.0	25.3	3.10	0.26	6.84	0.307	83.6					0.59	0.59	< 0.005	0.31	0.061	0.003					
5	07/08/08	9:34	Middle	7.0	27.1	84.0	6.70	7.04	0.591	57.0					0.57	0.57	< 0.005	0.22	0.050	0.003					
5	07/08/08	9:20	Surface	0.1	27.7	97.2	7.66	7.14	0.589	56.8	3.2	2.0	6.5 Q	4.8 Q	0.53	0.53	< 0.005	<0.03	0.037	0.003		2.40	4.90		
5	07/08/08	9:22	Mid-Depth	1.0	27.6	96.2	7.59	7.16	0.589	56.4															
5	07/08/08	9:24	Mid-Depth	2.0	27.5	94.3	7.46	7.16	0.589	56.6															
5	07/08/08	9:26	Mid-Depth	3.0	27.3	89.4	7.10	7.11	0.591	56.8															
5	07/08/08	9:28	Mid-Depth	4.0	27.2	87.2	6.93	7.07	0.592	56.6															
5	07/08/08	9:30	Mid-Depth	5.0	27.1	86.4	6.88	7.04	0.592	56.8															
5	07/08/08	9:32	Mid-Depth	6.0	27.1	86.1	6.85	7.05	0.591	56.7															
5	07/08/08	9:36	Mid-Depth	8.0	27.0	82.0	6.53	6.98	0.594	57.0															
5	07/08/08	9:38	Mid-Depth	9.0	27.0	79.5	6.34	6.94	0.595	57.0															
5	07/08/08	9:40	Mid-Depth	10.0	26.8	64.5	5.17	6.83	0.599	57.8															
5	07/08/08	9:42	Mid-Depth	11.0	26.7	53.5	4.29	6.75	0.601	58.3															
5	07/08/08	9:44	Mid-Depth	12.0	26.5	43.8	3.53	6.69	0.602	60.2															
5	07/08/08	9:46	Mid-Depth	13.0	26.4	31.5	2.54	6.64	0.605	62.7															
5	07/08/08	9:48	Mid-Depth	14.0	25.7	3.50	0.29	6.67	0.389	74.1															
6	07/08/08	10:25	Bottom	15.0	24.4	2.80	0.23	7.18	0.230	92.6															
6	07/08/08	9:57	Mid-Depth	1.0	26.9	79.0	6.31	7.05	0.446	57.2															
6	07/08/08	9:59	Mid-Depth	2.0	26.9	76.8	6.14	6.95	0.456	57.3															
6	07/08/08	10:01	Mid-Depth	3.0	26.9	76.1	6.08	6.93	0.461	57.2															
6	07/08/08	10:03	Mid-Depth	4.0	26.9	76.0	6.08	6.90	0.466	57.5															
6	07/08/08	10:05	Mid-Depth	5.0	26.9	75.8	6.07	6.87	0.471	57.1															
6	07/08/08	10:07	Mid-Depth	6.0	26.8	74.5	5.96	6.86	0.474	57.3															
6	07/08/08	10:09	Mid-Depth	7.0	26.8	74.7	5.98	6.88	0.476	57.3															
6	07/08/08	10:11	Mid-Depth	8.0	26.8	74.9	6.00	6.85	0.479	56.9															
6	07/08/08	10:13	Mid-Depth	9.0	26.8	74.2	5.94	6.84	0.483	57.3															
6	07/08/08	10:15	Mid-Depth	10.0	26.8	74.1	5.94	6.84	0.484	57.2															
6	07/08/08	10:17	Mid-Depth	11.0	26.7	64.7	5.19	6.78	0.490	59.3															
6	07/08/08	10:19	Mid-Depth	12.0	26.1	40.2	3.26	6.99	0.311	62.5															
6	07/08/08	10:21	Mid-Depth	13.0	25.9	19.0	1.54	7.05	0.270	65.4															
6	07/08/08	10:23	Mid-Depth	14.0	24.6	1.90	< 0.10	7.09	0.228	92.1															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
6	07/08/08	9:55	Surface	0.1	26.9	80.4	6.43	7.06	0.445	57.1	2.5	11.0	21.1 Q	5.9 Q	0.51	0.51	< 0.005	< 0.03	0.031	0.003		< 2.00	5.95		
7	07/08/08	10:36	Bottom	9.0	26.1	4.30	0.35	6.93	0.167	63.6															
7	07/08/08	10:32	Mid-Depth	3.0	26.7	69.0	5.53	6.92	0.411	57.9															
7	07/08/08	10:34	Mid-Depth	6.0	26.7	67.4	5.41	6.88	0.417	58.1															
7	07/08/08	10:30	Surface	0.1	26.7	69.0	5.53	6.94	0.408	58.3	2.5	25.9	13.1 Q	5.8 Q	0.48	0.48	< 0.005	< 0.03	0.036	0.003		3.20	7.55		
8	07/08/08	11:32	Bottom	23.0	18.8	2.50	0.23	7.02	0.151	426					0.61	0.61	< 0.005	0.23	0.025	0.003					
8	07/08/08	11:08	Mid-Depth	11.0	26.7	32.6	2.62	6.67	0.253	57.7					0.59	0.58	0.005	< 0.03	0.026	0.002					
8	07/08/08	10:46	Surface	0.1	27.6	89.7	7.09	6.99	0.360	56.9	3.5	18.9	7.0 Q	5.9 Q	0.54	0.54	< 0.005	< 0.03	0.034	0.003		2.20	4.75		
8	07/08/08	10:48	Mid-Depth	1.0	27.6	89.7	7.08	6.99	0.362	56.7															
8	07/08/08	10:50	Mid-Depth	2.0	27.5	89.4	7.06	7.00	0.359	56.6															
8	07/08/08	10:52	Mid-Depth	3.0	27.5	88.3	6.98	6.99	0.355	56.7															
8	07/08/08	10:54	Mid-Depth	4.0	27.4	85.2	6.76	6.94	0.353	56.8															
8	07/08/08	10:56	Mid-Depth	5.0	27.2	83.9	6.67	6.95	0.350	56.9															
8	07/08/08	10:58	Mid-Depth	6.0	27.2	78.0	6.20	6.83	0.329	56.6															
8	07/08/08	11:00	Mid-Depth	7.0	27.1	74.7	5.94	6.78	0.320	56.7															
8	07/08/08	11:02	Mid-Depth	8.0	27.0	62.6	5.00	6.73	0.311	57.2															
8	07/08/08	11:04	Mid-Depth	9.0	26.9	45.2	3.61	6.67	0.303	57.2															
8	07/08/08	11:06	Mid-Depth	10.0	26.8	50.2	4.02	6.74	0.291	57.4															
8	07/08/08	11:10	Mid-Depth	12.0	26.6	34.5	2.77	6.72	0.228	58.3															
8	07/08/08	11:12	Mid-Depth	13.0	26.1	16.1	1.31	6.77	0.198	59.3															
8	07/08/08	11:14	Mid-Depth	14.0	25.8	4.60	0.38	6.90	0.168	59.8															
8	07/08/08	11:16	Mid-Depth	15.0	24.3	1.20	< 0.10	6.98	0.148	80.7															
8	07/08/08	11:18	Mid-Depth	16.0	23.5	1.20	< 0.10	7.00	0.135	88.6															
8	07/08/08	11:20	Mid-Depth	17.0	21.8	1.40	< 0.10	6.99	0.127	104															
8	07/08/08	11:22	Mid-Depth	18.0	20.5	1.60	< 0.10	7.01	0.125	123															
8	07/08/08	11:24	Mid-Depth	19.0	19.9	1.60	< 0.10	7.03	0.130	317															
8	07/08/08	11:26	Mid-Depth	20.0	19.5	1.70	< 0.10	7.01	0.135	375															
8	07/08/08	11:28	Mid-Depth	21.0	19.2	2.10	< 0.10	7.03	0.143	420															
8	07/08/08	11:30	Mid-Depth	22.0	18.9	2.50	0.24	7.03	0.147	422															
5	07/23/08	9:00	Bottom	15.0	26.0	4.80	0.39	7.32	0.343	83.3					0.58	0.58	< 0.005	0.07	0.031	< 0.002					
5	07/23/08	8:46	Middle	8.0	29.5	56.9	4.35	6.87	0.456	59.5					0.53	0.53	< 0.005	0.08	0.035	< 0.002					
5	07/23/08	8:30	Surface	0.1	29.9	90.0	6.82	7.18	0.460	58.3	2.2	<1	0	0	0.51	0.51	< 0.005	< 0.03	0.038	0.003		2.80	5.90		
5	07/23/08	8:32	Mid-Depth	1.0	29.9	89.7	6.80	7.17	0.461	58.6															
5	07/23/08	8:34	Mid-Depth	2.0	29.8	89.2	6.77	7.16	0.462	58.5															
5	07/23/08	8:36	Mid-Depth	3.0	29.8	89.0	6.76	7.14	0.461	58.6															
5	07/23/08	8:38	Mid-Depth	4.0	29.7	86.8	6.60	7.12	0.459	58.5															
5	07/23/08	8:40	Mid-Depth	5.0	29.7	82.0	6.24	7.05	0.461	58.7															
5	07/23/08	8:42	Mid-Depth	6.0	29.6	76.7	5.85	7.01	0.460	58.5															
5	07/23/08	8:44	Mid-Depth	7.0	29.6	72.8	5.55	6.96	0.457	58.9															
5	07/23/08	8:48	Mid-Depth	9.0	28.8	30.3	2.34	6.78	0.446	61.6															
5	07/23/08	8:50	Mid-Depth	10.0	28.7	28.6	2.21	6.80	0.442	61.1															
5	07/23/08	8:52	Mid-Depth	11.0	28.6	25.4	1.97	6.83	0.428	61.0															
5	07/23/08	8:54	Mid-Depth	12.0	27.8	8.60	0.67	6.84	0.412	62.4															
5	07/23/08	8:56	Mid-Depth	13.0	26.9	2.00	< 0.10	7.04	0.359	70.3															
5	07/23/08	8:58	Mid-Depth	14.0	26.3	2.20	< 0.10	7.18	0.350	80.3															
8	07/23/08	9:56	Bottom	23.0	19.5	2.80	0.25	7.14	0.151	183					0.64	0.64	< 0.005	0.18	**	< 0.002					
8	07/23/08	9:32	Mid-Depth	11.0	27.4	3.40	0.27	6.78	0.159	59.8					0.56	0.56	< 0.005	0.10	**	< 0.002					
8	07/23/08	9:10	Surface	0.1	30.2	104	7.85	7.49	0.313	58.2	2.2	5.2	6.4	3.8	0.55	0.55	< 0.005	0.06	0.027	< 0.002		5.20	3.85		
8	07/23/08	9:12	Mid-Depth	1.0	30.2	104	7.84	7.49	0.311	58.1															
8	07/23/08	9:14	Mid-Depth	2.0	30.2	103	7.78	7.47	0.309	58.1															
8	07/23/08	9:16	Mid-Depth	3.0	30.1	103	7.75	7.43	0.306	57.9															
8	07/23/08	9:18	Mid-Depth	4.0	30.1	102	7.74	7.40	0.302	57.9															
8	07/23/08	9:20	Mid-Depth	5.0	30.1	101	7.57	7.35	0.295	57.8															
8	07/23/08	9:22	Mid-Depth	6.0	30.0	99.5	7.53	7.27	0.290	58.1															
8	07/23/08	9:24	Mid-Depth	7.0	29.9	95.8	7.26	7.16	0.276	57.8															
8	07/23/08	9:26	Mid-Depth	8.0	29.5	70.3	5.37	6.88	0.252	57.9															
8	07/23/08	9:28	Mid-Depth	9.0	28.8	43.7	3.37	6.75	0.223	58.0															
8	07/23/08	9:30	Mid-Depth	10.0	27.8	19.5	1.53	6.71	0.194	58.8															
8	07/23/08	9:34	Mid-Depth	12.0	26.5	2.40	< 0.10	6.85	0.147	68.4															
8	07/23/08	9:36	Mid-Depth	13.0	26.5	1.10	< 0.10	6.99	0.121	68.8															
8	07/23/08	9:38	Mid-Depth	14.0	26.1	1.10	< 0.10	7.08	0.108	72.4															
8	07/23/08	9:40	Mid-Depth	15.0	25.3	1.10	< 0.10	7.18	0.089	82.7															
8	07/23/08	9:42	Mid-Depth	16.0	24.1	1.30	< 0.10	7.19	0.082	94.6															
8	07/23/08	9:44	Mid-Depth	17.0	23.4	1.20	< 0.10	7.21	0.082	108															
8	07/23/08	9:46	Mid-Depth	18.0	23.0	1.30	< 0.10	7.26	0.083	115															
8	07/23/08	9:48	Mid-Depth	19.0	21.5	1.40	< 0.10	7.28	0.094	142															
8	07/23/08	9:50	Mid-Depth	20.0	21.4	1.60	< 0.10	7.30	0.101	142															
8	07/23/08	9:52	Mid-Depth	21.0	20.5	1.70	< 0.10	7.27	0.111	162															
8	07/23/08	9:54	Mid-Depth	22.0	19.8	2.10	< 0.10	7.23	0.124	182															
3	08/05/08	8:23	Bottom	10.0	28.4	79.4	6.19	8.00	0.487	64.5															
3	08/05/08	8:17	Mid-Depth	1.0	28.5	81.6	6.34	7.48	0.503	65.0															
3	08/05/08	8:19	Mid-Depth	4.0	28.4	82.7	6.44	7.59	0.499	63.9															
3	08/05/08	8:21	Mid-Depth	7.0	28.4	79.3	6.17	7.71	0.495	63.5															
3	08/05/08	8:15	Surface	0.1	28.5	81.9	6.36	7.46	0.503	64.3	1.2	90.6	.7 Q	1.8 Q	0.54	0.53	0.008	< 0.03	0.041	0.006	8.53	5.40	8.80	< 0.0025	< 0.05
4	08/05/08	8:34	Bottom	7.0	28.4	34.2	2.66	7.36	0.213	61.9															
4	08/05/08	8:30	Mid-Depth	1.0	29.3	97.1	7.44	7.50	0.369	60.4															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

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ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
4	08/05/08	8:32	Mid-Depth	4.0	29.0	95.0	7.32	7.50	0.321	60.1															
4	08/05/08	8:28	Surface	0.1	29.3	97.0	7.43	7.50	0.380	60.1	1.5	1.0	.8 Q	1.2 Q	0.48	0.47	0.007	< 0.03	0.032	0.006	9.09	2.80	4.70	< 0.0025	< 0.05
5	08/05/08	9:09	Bottom	15.0	27.1	5.70	0.46	7.17	0.232	66.1					0.61	0.60	0.008	0.34	0.036	0.006					
5	08/05/08	8:55	Middle	8.0	28.8	89.2	6.88	7.09	0.405	59.8					0.57	0.56	0.008	0.25	0.038	0.005					
5	08/05/08	8:39	Surface	0.1	29.1	96.0	7.38	7.34	0.446	59.7	2.0	1.0	.6 Q	.6 Q	0.54	0.53	0.007	< 0.03	0.035	0.006	8.73	2.20	4.28	< 0.0025	< 0.05
5	08/05/08	10:00	Mid-Depth	1.0	29.1	95.8	7.37	7.33	0.449	59.5															
5	08/05/08	8:43	Mid-Depth	2.0	29.1	95.9	7.38	7.34	0.446	59.5															
5	08/05/08	8:45	Mid-Depth	3.0	29.0	94.4	7.27	7.34	0.442	59.5															
5	08/05/08	8:47	Mid-Depth	4.0	28.9	88.0	6.79	7.33	0.437	59.7															
5	08/05/08	8:49	Mid-Depth	5.0	28.9	80.9	6.24	7.27	0.430	59.4															
5	08/05/08	8:51	Mid-Depth	6.0	28.9	86.5	6.68	7.22	0.422	59.4															
5	08/05/08	8:53	Mid-Depth	7.0	28.8	90.5	6.99	7.18	0.415	59.4															
5	08/05/08	8:57	Mid-Depth	9.0	28.4	73.6	5.72	6.97	0.383	60.0															
5	08/05/08	8:59	Mid-Depth	10.0	28.2	62.3	4.86	6.93	0.361	60.2															
5	08/05/08	9:01	Mid-Depth	11.0	28.0	40.6	3.18	6.92	0.354	60.5															
5	08/05/08	9:03	Mid-Depth	12.0	27.9	25.8	2.02	7.05	0.292	60.7															
5	08/05/08	9:05	Mid-Depth	13.0	27.8	23.9	1.88	7.09	0.275	61.6															
5	08/05/08	9:07	Mid-Depth	14.0	27.6	13.1	1.04	7.23	0.255	65.5															
6	08/05/08	9:45	Bottom	15.0	27.1	6.20	0.46	7.07	0.221	63.2															
6	08/05/08	9:17	Mid-Depth	1.0	30.3	110	8.25	7.81	0.387	59.7															
6	08/05/08	9:19	Mid-Depth	2.0	30.0	110	8.36	7.93	0.394	59.3															
6	08/05/08	9:21	Mid-Depth	3.0	29.8	101	7.64	7.73	0.408	59.4															
6	08/05/08	9:23	Mid-Depth	4.0	29.5	93.1	7.10	7.60	0.418	59.6															
6	08/05/08	9:25	Mid-Depth	5.0	29.2	87.3	6.69	7.35	0.433	59.6															
6	08/05/08	9:27	Mid-Depth	6.0	28.6	72.6	5.63	7.19	0.440	59.9															
6	08/05/08	9:29	Mid-Depth	7.0	28.6	62.0	4.81	7.08	0.440	59.8															
6	08/05/08	9:31	Mid-Depth	8.0	28.8	87.2	6.88	7.09	0.405	59.8															
6	08/05/08	9:33	Mid-Depth	9.0	28.4	72.7	5.72	6.88	0.383	59.9															
6	08/05/08	9:35	Mid-Depth	10.0	28.2	60.6	4.86	6.83	0.361	59.9															
6	08/05/08	9:37	Mid-Depth	11.0	28.0	40.4	3.18	6.82	0.354	60.1															
6	08/05/08	9:39	Mid-Depth	12.0	27.9	25.6	2.02	6.95	0.292	60.3															
6	08/05/08	9:41	Mid-Depth	13.0	27.8	23.7	1.88	6.99	0.275	60.9															
6	08/05/08	9:43	Mid-Depth	14.0	27.6	13.5	1.04	7.03	0.225	62.2															
6	08/05/08	9:15	Surface	0.1	30.3	109	8.22	7.73	0.381	59.4	2.2	3.1	.9 Q	2.1 Q	0.52	0.51	0.006	< 0.03	0.018	0.005	8.54	2.00	4.12	< 0.0025	< 0.05
7	08/05/08	9:56	Bottom	9.0	28.3	23.4	1.83	7.24	0.254	77.8															
7	08/05/08	9:52	Mid-Depth	3.0	30.5	107	8.03	7.72	0.407	59.6															
7	08/05/08	9:54	Mid-Depth	6.0	29.1	49.3	3.79	7.18	0.287	60.2															
7	08/05/08	9:50	Surface	0.1	30.9	108	8.05	7.74	0.390	59.7	1.5	1.0	1.3 Q	2.4 Q	0.53	0.52	0.007	0.05	0.034	0.005	8.59	2.80	6.46	< 0.0025	< 0.05
8	08/05/08	10:49	Bottom	22.0	19.6	4.60	0.42	7.21	0.136	216					0.62	0.61	0.006	0.26	0.030	0.007					
8	08/05/08	10:23	Mid-Depth	9.0	28.5	26.0	2.02	6.92	0.197	61.1					0.59	0.58	0.009	0.03	0.030	0.005					
8	08/05/08	10:05	Surface	0.1	29.7	103	7.84	7.47	0.317	59.0	2.8	3.0	1.8 Q	2.4 Q	0.53	0.53	< 0.005	< 0.03	0.038	0.005	8.32	2.80	3.89	< 0.0025	< 0.05
8	08/05/08	10:07	Mid-Depth	1.0	29.7	103	7.81	7.40	0.314	58.8															
8	08/05/08	10:09	Mid-Depth	2.0	29.6	101	7.67	7.35	0.306	59.0															
8	08/05/08	10:11	Mid-Depth	3.0	29.4	94.1	7.19	7.26	0.299	59.1															
8	08/05/08	10:13	Mid-Depth	4.0	29.3	87.7	6.72	7.13	0.289	59.0															
8	08/05/08	10:15	Mid-Depth	5.0	29.2	77.8	5.97	7.04	0.270	59.1															
8	08/05/08	10:17	Mid-Depth	6.0	29.1	62.7	4.81	6.94	0.250	59.4															
8	08/05/08	10:19	Mid-Depth	7.0	28.9	49.2	3.78	6.92	0.241	59.5															
8	08/05/08	10:21	Mid-Depth	8.0	28.8	43.8	3.39	6.90	0.230	59.5															
8	08/05/08	10:25	Mid-Depth	10.0	28.3	25.0	1.95	6.96	0.182	61.0															
8	08/05/08	10:27	Mid-Depth	11.0	28.0	16.9	1.33	6.99	0.161	61.9															
8	08/05/08	10:29	Mid-Depth	12.0	27.9	1.70	< 0.10	7.08	0.139	62.9															
8	08/05/08	10:31	Mid-Depth	13.0	27.9	1.60	< 0.10	7.19	0.120	63.5															
8	08/05/08	10:33	Mid-Depth	14.0	27.0	1.50	< 0.10	7.29	0.106	75.5															
8	08/05/08	10:35	Mid-Depth	15.0	25.5	1.40	< 0.10	7.31	0.099	89.3															
8	08/05/08	10:37	Mid-Depth	16.0	24.3	1.40	< 0.10	7.31	0.092	112															
8	08/05/08	10:39	Mid-Depth	17.0	22.7	1.50	< 0.10	7.32	0.091	134															
8	08/05/08	10:41	Mid-Depth	18.0	22.1	1.50	< 0.10	7.34	0.090	148															
8	08/05/08	10:43	Mid-Depth	19.0	21.2	1.70	< 0.10	7.31	0.092	168															
8	08/05/08	10:45	Mid-Depth	20.0	20.5	2.00	< 0.10	7.31	0.095	188															
8	08/05/08	10:47	Mid-Depth	21.0	20.1	2.60	0.24	7.28	0.108	202															
5	08/19/08	10:12	Bottom	14.0	25.6	21.5	1.77	6.65	0.460	66.0					0.59	0.59	< 0.005	< 0.03	0.041	0.002					
5	08/19/08	9:51	Middle	7.0	26.4	69.5	5.61	6.86	0.495	60.6					0.56	0.56	< 0.005	< 0.03	0.038	0.002					
5	08/19/08	9:30	Surface	0.1	27.4	95.8	7.60	6.48	0.418	60.9	2.0	3.1	4.5 Q	5.8 Q	0.54	0.54	< 0.005	0.04	0.044	0.002		4.20	6.04		
5	08/19/08	9:33	Mid-Depth	1.0	27.3	95.5	7.59	6.62	0.427	60.5															
5	08/19/08	9:36	Mid-Depth	2.0	27.1	95.5	7.62	6.82	0.448	60.4															
5	08/19/08	9:39	Mid-Depth	3.0	26.9	94.1	7.53	6.92	0.464	60.8															
5	08/19/08	9:42	Mid-Depth	4.0	26.8	92.3	7.40	6.98	0.477	60.3															
5	08/19/08	9:45	Mid-Depth	5.0	26.5	85.1	6.86	6.96	0.484	60.6															
5	08/19/08	9:48	Mid-Depth	6.0	26.4	80.3	6.49	6.95	0.489	60.6															
5	08/19/08	9:54	Mid-Depth	8.0	26.4	64.7	5.23	6.80	0.500	60.6															
5	08/19/08	9:57	Mid-Depth	9.0	26.3	61.5	4.98	6.77	0.504	60.7															
5	08/19/08	10:00	Mid-Depth	10.0	26.0	60.6	4.94	6.74	0.506	62.6															
5	08/19/08	10:03	Mid-Depth	11.0	25.8	40.2	3.28	6.66	0.508	62.8															
5	08/19/08	10:06	Mid-Depth	12.0	25.6	34.5	2.82	6.65	0.509	63.6															
5	08/19/08	10:09	Mid-Depth	13.0	25.6	28.6	2.35	6.63	0.509	64.7															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
8	08/19/08	11:28	Bottom	21.0	20.3	5.20	0.47	6.92	0.142	249					0.63	0.63	< 0.005	0.09	0.031	< 0.002					
8	08/19/08	10:58	Mid-Depth	11.0	25.8	54.4	4.44	6.78	0.300	61.6					0.57	0.57	< 0.005	< 0.03	0.028	0.002					
8	08/19/08	10:25	Surface	0.1	27.1	88.8	7.08	6.97	0.396	61.1	2.5	2.0	3.6 Q	5.4 Q	0.52	0.52	< 0.005	0.04	0.033	< 0.002		< 2.00	4.27		
8	08/19/08	10:28	Mid-Depth	1.0	27.3	89.4	7.11	6.99	0.392	61.2															
8	08/19/08	10:31	Mid-Depth	2.0	26.2	78.3	6.34	6.87	0.388	60.8															
8	08/19/08	10:34	Mid-Depth	3.0	26.0	69.3	5.64	6.80	0.381	61.2															
8	08/19/08	10:37	Mid-Depth	4.0	25.9	66.4	5.41	6.78	0.375	61.3															
8	08/19/08	10:40	Mid-Depth	5.0	25.9	63.7	5.20	6.77	0.363	61.3															
8	08/19/08	10:43	Mid-Depth	6.0	25.8	62.6	5.11	6.77	0.357	61.0															
8	08/19/08	10:46	Mid-Depth	7.0	25.8	62.1	5.06	6.77	0.350	61.0															
8	08/19/08	10:49	Mid-Depth	8.0	25.8	61.5	5.02	6.77	0.340	61.1															
8	08/19/08	10:52	Mid-Depth	9.0	25.8	61.1	4.99	6.77	0.329	61.4															
8	08/19/08	10:55	Mid-Depth	10.0	25.8	59.7	4.88	6.77	0.317	61.2															
8	08/19/08	11:01	Mid-Depth	12.0	25.8	63.8	5.21	6.84	0.285	61.3															
8	08/19/08	11:04	Mid-Depth	13.0	25.8	69.1	5.64	6.94	0.259	61.1															
8	08/19/08	11:07	Mid-Depth	14.0	25.7	61.2	5.00	6.95	0.226	60.8															
8	08/19/08	11:10	Mid-Depth	15.0	25.4	19.0	1.56	6.96	0.182	68.7															
8	08/19/08	11:13	Mid-Depth	16.0	25.1	2.40	< 0.10	7.13	0.175	75.5															
8	08/19/08	11:16	Mid-Depth	17.0	23.8	2.20	< 0.10	7.19	0.169	121															
8	08/19/08	11:19	Mid-Depth	18.0	22.8	2.20	< 0.10	7.20	0.165	165															
8	08/19/08	11:22	Mid-Depth	19.0	21.4	2.60	0.23	7.09	0.156	206															
8	08/19/08	11:25	Mid-Depth	20.0	20.9	3.20	0.29	7.02	0.147	221															
3	09/04/08	9:38	Bottom	11.0	19.7	72.9	6.67	7.17	0.359	60.7															
3	09/04/08	9:32	Mid-Depth	2.0	21.0	93.8	8.36	6.72	0.384	64.7															
3	09/04/08	9:34	Mid-Depth	5.0	19.8	80.0	7.30	6.86	0.375	59.3															
3	09/04/08	9:36	Mid-Depth	8.0	19.7	74.7	6.83	7.02	0.366	60.3															
3	09/04/08	9:30	Surface	0.1	22.0	103.7	9.06	6.83	0.379	68.2	2.5	3.1	1.6	.7	0.49	0.48	0.006	**	0.025	0.003		4.20	7.48		
4	09/04/08	9:51	Bottom	8.0	18.9	46.8	4.35	6.90	0.386	61.9															
4	09/04/08	9:47	Mid-Depth	2.0	20.8	86.8	7.77	6.63	0.405	58.9															
4	09/04/08	9:49	Mid-Depth	5.0	19.5	66.0	6.07	6.89	0.389	60.5															
4	09/04/08	9:45	Surface	0.1	22.3	101.0	8.77	6.80	0.394	58.4	3.5	5.1	3.6	1.4	0.65	0.65	< 0.005	**	0.030	0.004		4.60	9.38		
5	09/04/08	10:32	Bottom	16.0	18.3	38.8	3.65	6.93	0.397	63.5					0.61	0.58	0.025	**	0.027	0.004					
5	09/04/08	10:16	Middle	8.0	19.8	75.4	6.88	6.92	0.406	59.5					0.54	0.54	0.005	**	0.029	0.002					
5	09/04/08	10:00	Surface	0.1	22.9	99.6	8.57	6.74	0.415	58.5	3.5	2.0	2.9	1.2	0.57	0.57	< 0.005	**	0.024	0.002		2.80	9.22		
5	09/04/08	10:02	Mid-Depth	1.0	21.9	99.7	8.73	6.72	0.415	58.2															
5	09/04/08	10:04	Mid-Depth	2.0	21.7	96.3	8.48	6.60	0.425	58.3															
5	09/04/08	10:06	Mid-Depth	3.0	21.4	94.1	8.31	6.72	0.418	58.1															
5	09/04/08	10:08	Mid-Depth	4.0	21.4	93.4	8.26	6.79	0.415	58.2															
5	09/04/08	10:10	Mid-Depth	5.0	21.3	92.0	8.15	6.89	0.410	58.3															
5	09/04/08	10:12	Mid-Depth	6.0	21.2	89.8	7.97	6.90	0.410	58.5															
5	09/04/08	10:14	Mid-Depth	7.0	20.3	79.7	7.21	6.90	0.408	59.3															
5	09/04/08	10:18	Mid-Depth	9.0	19.5	72.0	6.61	6.97	0.403	59.7															
5	09/04/08	10:20	Mid-Depth	10.0	19.3	68.5	6.31	6.92	0.404	59.6															
5	09/04/08	10:22	Mid-Depth	11.0	19.1	63.3	5.85	6.93	0.401	60.2															
5	09/04/08	10:24	Mid-Depth	12.0	19.0	60.0	5.57	6.98	0.399	60.4															
5	09/04/08	10:26	Mid-Depth	13.0	18.8	55.0	5.12	6.97	0.398	61.0															
5	09/04/08	10:28	Mid-Depth	14.0	18.6	47.7	4.46	6.98	0.398	61.4															
5	09/04/08	10:30	Mid-Depth	15.0	18.5	45.0	4.22	6.99	0.397	61.7															
6	09/04/08	11:12	Bottom	16.0	18.1	43.9	4.17	6.95	0.413	61.8															
6	09/04/08	10:42	Mid-Depth	1.0	23.1	102.0	8.74	6.65	0.440	60.6															
6	09/04/08	10:44	Mid-Depth	2.0	22.1	97.9	8.54	6.71	0.432	60.0															
6	09/04/08	10:46	Mid-Depth	3.0	21.9	94.0	8.23	6.67	0.432	59.8															
6	09/04/08	10:48	Mid-Depth	4.0	21.8	95.2	8.36	6.85	0.429	59.9															
6	09/04/08	10:50	Mid-Depth	5.0	21.5	88.5	7.81	6.62	0.434	59.6															
6	09/04/08	10:52	Mid-Depth	6.0	21.0	76.5	6.82	6.52	0.437	60.5															
6	09/04/08	10:54	Mid-Depth	7.0	19.7	70.8	6.47	6.92	0.420	59.9															
6	09/04/08	10:56	Mid-Depth	8.0	19.0	61.0	5.65	6.89	0.420	60.1															
6	09/04/08	10:58	Mid-Depth	9.0	18.6	57.8	5.40	6.86	0.419	60.9															
6	09/04/08	11:00	Mid-Depth	10.0	18.6	56.2	5.25	6.85	0.419	61.1															
6	09/04/08	11:02	Mid-Depth	11.0	18.6	55.6	5.20	6.86	0.417	60.9															
6	09/04/08	11:04	Mid-Depth	12.0	18.5	52.7	4.94	6.90	0.415	60.9															
6	09/04/08	11:06	Mid-Depth	13.0	18.3	48.8	4.59	6.91	0.414	61.8															
6	09/04/08	11:08	Mid-Depth	14.0	18.1	41.6	3.92	6.91	0.412	62.0															
6	09/04/08	11:10	Mid-Depth	15.0	18.1	43.8	4.14	6.92	0.412	61.7															
6	09/04/08	10:40	Surface	0.1	23.1	103.9	8.91	6.72	0.435	60.6	3.5	11.0	2.9	1.2	0.51	0.50	0.009	**	0.026	0.003		2.60	8.32		
7	09/04/08	11:28	Bottom	10.0	18.3	38.7	3.65	6.77	0.434	63.5															
7	09/04/08	11:22	Mid-Depth	1.0	23.6	104.1	8.83	6.73	0.445	61.2															
7	09/04/08	11:24	Mid-Depth	4.0	22.6	98.2	8.49	6.81	0.443	60.5															
7	09/04/08	11:26	Mid-Depth	7.0	18.7	46.6	4.35	6.64	0.444	62.5															
7	09/04/08	11:20	Surface	0.1	24.0	105.4	8.88	6.75	0.445	60.9	3.0	10.9	6.7	1.2	0.52	0.51	0.006	**	0.032	0.003		6.80	10.6		
8	09/04/08	12:23	Bottom	24.0	15.2	11.2	1.11	6.72	0.409	91.9					0.65	0.57	0.077	**	0.042	0.006					
8	09/04/08	11:59	Mid-Depth	12.0	18.6	56.5	5.28	6.67	0.399	60.9					0.60	0.59	0.014	**	0.028	0.003					
8	09/04/08	11:35	Surface	0.1	23.4	100.0	8.51	6.78	0.411	60.5	3.5	9.8	3.8	1.2	0.55	0.55	< 0.005	**	0.021	0.003		2.80	5.32		
8	09/04/08	11:37	Mid-Depth	1.0	22.2	100.2	8.72	6.80	0.409	59.7															
8	09/04/08	11:39	Mid-Depth	2.0	22.0	97.0	8.49	6.77	0.409	60.1															
8	09/04/08	11:41	Mid-Depth	3.0	21.9	95.3	8.35	6.74	0.410	60.0															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

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STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
8	09/04/08	11:43	Mid-Depth	4.0	21.8	92.8	8.15	6.69	0.410	60.1															
8	09/04/08	11:45	Mid-Depth	5.0	21.8	93.9	8.24	6.70	0.411	60.0															
8	09/04/08	11:47	Mid-Depth	6.0	21.8	91.2	8.01	6.71	0.408	60.3															
8	09/04/08	11:49	Mid-Depth	7.0	21.5	89.5	7.91	6.56	0.414	59.9															
8	09/04/08	11:51	Mid-Depth	8.0	21.2	86.4	7.68	6.54	0.413	60.1															
8	09/04/08	11:53	Mid-Depth	9.0	20.7	75.9	6.81	6.50	0.412	59.8															
8	09/04/08	11:55	Mid-Depth	10.0	19.0	60.2	5.59	6.54	0.407	60.7															
8	09/04/08	11:57	Mid-Depth	11.0	18.8	58.4	5.45	6.59	0.400	60.9															
8	09/04/08	12:01	Mid-Depth	13.0	18.3	53.1	4.99	6.68	0.397	61.0															
8	09/04/08	12:03	Mid-Depth	14.0	18.0	49.6	4.69	6.76	0.393	61.9															
8	09/04/08	12:05	Mid-Depth	15.0	17.8	41.7	3.96	6.78	0.391	61.8															
8	09/04/08	12:07	Mid-Depth	16.0	17.5	34.6	3.31	6.76	0.393	64.2															
8	09/04/08	12:09	Mid-Depth	17.0	17.3	29.6	2.84	6.76	0.394	66.5															
8	09/04/08	12:11	Mid-Depth	18.0	16.8	28.1	2.73	6.90	0.386	68.9															
8	09/04/08	12:13	Mid-Depth	19.0	16.6	22.1	2.15	6.94	0.386	70.8															
8	09/04/08	12:15	Mid-Depth	20.0	16.3	15.5	1.52	6.97	0.387	73.1															
8	09/04/08	12:17	Mid-Depth	21.0	16.2	14.4	1.42	6.98	0.385	74.4															
8	09/04/08	12:19	Mid-Depth	22.0	15.8	6.80	0.68	7.08	0.388	82.0															
8	09/04/08	12:21	Mid-Depth	23.0	15.4	11.8	1.18	6.96	0.408	91.8															
5	09/29/08	10:02	Bottom	16.0	18.0	41.0	3.61	6.89	0.394	62.8					0.58	0.55	0.035	**	0.030	0.008					
5	09/29/08	9:46	Middle	8.0	19.5	79.5	6.84	6.89	0.403	58.8					0.53	0.50	0.034	**	0.029	0.009					
5	09/29/08	9:30	Surface	0.1	22.6	99.2	8.53	6.71	0.412	57.8	3.0	3.1	3.8	1.6	0.58	0.54	0.038	**	0.037	0.009		3.80	6.86		
5	09/29/08	9:32	Mid-Depth	1.0	21.7	101	8.69	6.69	0.412	57.5															
5	09/29/08	9:34	Mid-Depth	2.0	21.4	98.1	8.44	6.57	0.422	57.6															
5	09/29/08	9:36	Mid-Depth	3.0	21.2	96.1	8.27	6.69	0.415	57.4															
5	09/29/08	9:38	Mid-Depth	4.0	21.1	95.6	8.22	6.76	0.412	57.5															
5	09/29/08	9:40	Mid-Depth	5.0	21.1	94.3	8.11	6.86	0.407	57.6															
5	09/29/08	9:42	Mid-Depth	6.0	21.0	92.2	7.93	6.87	0.407	57.8															
5	09/29/08	9:44	Mid-Depth	7.0	20.0	83.4	7.17	6.87	0.405	58.6															
5	09/29/08	9:48	Mid-Depth	9.0	19.2	74.5	6.57	6.93	0.400	59.0															
5	09/29/08	9:50	Mid-Depth	10.0	19.1	71.1	6.27	6.88	0.401	58.9															
5	09/29/08	9:52	Mid-Depth	11.0	18.9	65.9	5.81	6.89	0.398	59.5															
5	09/29/08	9:54	Mid-Depth	12.0	18.7	62.7	5.53	6.94	0.396	59.7															
5	09/29/08	9:56	Mid-Depth	13.0	18.6	57.6	5.08	6.93	0.395	60.3															
5	09/29/08	9:58	Mid-Depth	14.0	18.4	50.2	4.42	6.94	0.395	60.7															
5	09/29/08	10:00	Mid-Depth	15.0	18.3	47.4	4.18	6.95	0.394	61.0															
8	09/29/08	11:08	Bottom	24.0	14.9	12.3	1.06	6.65	0.398	87.1					0.61	0.58	0.028		0.040	0.015					
8	09/29/08	10:44	Mid-Depth	12.0	18.3	58.3	5.04	6.60	0.388	57.7					0.54	0.51	0.032	**	0.034	0.010					
8	09/29/08	10:20	Surface	0.1	23.1	93.9	8.13	6.71	0.400	57.4	3.5	4.1	7.8	3.6	0.53	0.50	0.033	**	0.036	0.011		3.20	5.98		
8	09/29/08	10:22	Mid-Depth	1.0	21.9	96.3	8.33	6.73	0.398	56.6															
8	09/29/08	10:24	Mid-Depth	2.0	21.7	93.7	8.11	6.70	0.398	57.0															
8	09/29/08	10:26	Mid-Depth	3.0	21.6	92.2	7.97	6.67	0.399	56.9															
8	09/29/08	10:28	Mid-Depth	4.0	21.5	90.0	7.78	6.62	0.399	57.0															
8	09/29/08	10:30	Mid-Depth	5.0	21.5	91.0	7.87	6.63	0.400	56.9															
8	09/29/08	10:32	Mid-Depth	6.0	21.5	88.4	7.65	6.64	0.397	57.2															
8	09/29/08	10:34	Mid-Depth	7.0	21.2	87.3	7.55	6.49	0.403	56.8															
8	09/29/08	10:36	Mid-Depth	8.0	20.9	84.8	7.33	6.47	0.402	57.0															
8	09/29/08	10:38	Mid-Depth	9.0	20.4	75.2	6.50	6.43	0.401	56.7															
8	09/29/08	10:40	Mid-Depth	10.0	18.7	61.7	5.34	6.47	0.396	57.5															
8	09/29/08	10:42	Mid-Depth	11.0	18.5	60.2	5.20	6.52	0.389	57.7															
8	09/29/08	10:46	Mid-Depth	13.0	18.0	55.1	4.77	6.61	0.386	57.8															
8	09/29/08	10:48	Mid-Depth	14.0	17.7	51.8	4.48	6.69	0.382	58.7															
8	09/29/08	10:50	Mid-Depth	15.0	17.5	43.7	3.78	6.71	0.380	58.6															
8	09/29/08	10:52	Mid-Depth	16.0	17.2	36.5	3.16	6.69	0.382	60.9															
8	09/29/08	10:54	Mid-Depth	17.0	17.0	31.4	2.71	6.69	0.383	63.0															
8	09/29/08	10:56	Mid-Depth	18.0	16.5	30.1	2.61	6.83	0.376	65.3															
8	09/29/08	10:58	Mid-Depth	19.0	16.3	23.7	2.05	6.87	0.376	67.1															
8	09/29/08	11:00	Mid-Depth	20.0	16.0	16.8	1.45	6.90	0.377	69.3															
8	09/29/08	11:02	Mid-Depth	21.0	15.9	15.7	1.36	6.91	0.375	70.5															
8	09/29/08	11:04	Mid-Depth	22.0	15.5	7.50	0.65	7.01	0.378	77.7															
8	09/29/08	11:06	Mid-Depth	23.0	15.1	13.0	1.13	6.89	0.397	87.0															
1	10/14/08	11:06	Bottom	7.0	19.5	81.9	7.62	6.40	0.309	59.4															
1	10/14/08	11:02	Mid Depth	1.0	20.4	88.2	8.06	6.19	0.398	56.3															
1	10/14/08	11:04	Mid Depth	4.0	19.5	86.9	8.07	6.30	0.400	58.2															
1	10/14/08	11:00	Surface	0.1	21.0	90.1	8.13	6.12	0.400	56.4	2.0	<1	5.2	3.2	0.45	0.45	< 0.005	< 0.03	0.057	0.004		2.60	7.20		
2	10/14/08	11:15	Bottom	6.0	19.9	77.0	7.10	6.45	0.310	55.1															
2	10/14/08	11:13	Mid-Depth	3.0	20.0	83.8	7.72	6.37	0.376	55.1															
2	10/14/08	11:11	Surface	0.1	21.1	92.4	8.32	6.28	0.369	55.1	2.0	<1	5.4	2.7	0.47	0.47	< 0.005	0.03	0.042	0.004		< 2.00	14.6		
3	10/14/08	11:33	Bottom	11.0	19.6	93.7	8.70	6.74	0.375	73.2															
3	10/14/08	11:27	Mid-Depth	2.0	20.2	97.1	8.90	6.48	0.361	69.1															
3	10/14/08	11:29	Mid-Depth	5.0	19.7	97.8	9.05	6.59	0.363	73.5															
3	10/14/08	11:31	Mid-Depth	8.0	19.6	96.6	8.95	6.65	0.367	73.0															
3	10/14/08	11:25	Surface	0.1	20.4	97.3	8.88	6.40	0.360	66.6	2.5	2.0	3.9	2.7	0.50	0.50	< 0.005	0.03	0.034	0.004		2.40	5.65		
4	10/14/08	11:46	Bottom	7.0	19.9	18.8	1.73	6.65	0.380	53.8															
4	10/14/08	11:42	Mid-Depth	1.0	20.6	93.0	8.46	6.76	0.374	53.0															
4	10/14/08	11:44	Mid-Depth	4.0	20.0	89.6	8.23	6.75	0.379	52.9															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
4	10/14/08	11:40	Surface	0.1	21.4	93.6	8.38	6.74	0.372	53.2	3.5	1.0	2.3	1.9	0.49	0.48	0.008	0.05	0.028	0.003		< 2.00	3.70		
5	10/14/08	12:24	Bottom	15.0	20.2	47.5	4.36	6.40	0.343	53.4					0.52	0.50	0.024	0.08	0.029	0.004					
5	10/14/08	12:08	Middle	8.0	20.4	90.5	8.26	6.66	0.390	52.5					0.49	0.48	0.009	0.04	0.030	0.002					
5	10/14/08	11:52	Surface	0.1	22.0	104	9.22	6.79	0.400	52.9	3.5	<1	3.3	2.6	0.45	0.45	< 0.005	< 0.03	0.038	0.003		< 2.00	4.40		
5	10/14/08	11:54	Mid-Depth	1.0	21.9	95.8	8.50	6.74	0.402	52.5															
5	10/14/08	11:56	Mid-Depth	2.0	20.8	93.5	8.46	6.76	0.400	52.2															
5	10/14/08	11:58	Mid-Depth	3.0	20.7	94.2	8.55	6.74	0.400	52.6															
5	10/14/08	12:00	Mid-Depth	4.0	20.6	95.4	8.68	6.74	0.398	52.5															
5	10/14/08	12:02	Mid-Depth	5.0	20.5	92.9	8.46	6.72	0.396	52.3															
5	10/14/08	12:04	Mid-Depth	6.0	20.5	91.5	8.35	6.70	0.393	52.5															
5	10/14/08	12:06	Mid-Depth	7.0	20.4	91.3	8.34	6.69	0.391	52.5															
5	10/14/08	12:10	Mid-Depth	9.0	20.4	88.9	8.12	6.62	0.385	52.5															
5	10/14/08	12:12	Mid-Depth	9.0	20.4	89.4	8.16	6.65	0.387	52.5															
5	10/14/08	12:14	Mid-Depth	10.0	20.3	85.7	7.83	6.59	0.382	52.5															
5	10/14/08	12:16	Mid-Depth	11.0	20.3	82.0	7.49	6.57	0.376	52.7															
5	10/14/08	12:18	Mid-Depth	12.0	20.3	78.1	7.14	6.52	0.373	52.7															
5	10/14/08	12:20	Mid-Depth	13.0	20.2	69.5	6.36	6.48	0.369	52.6															
5	10/14/08	12:22	Mid-Depth	14.0	20.2	66.7	6.11	6.46	0.361	52.9															
6	10/14/08	13:02	Bottom	15.0	20.3	11.1	1.01	6.79	0.210	85.6															
6	10/14/08	12:32	Mid-Depth	0.1	22.4	106	9.27	6.87	0.343	52.8															
6	10/14/08	12:34	Mid-Depth	1.0	22.1	104	9.22	6.88	0.342	52.4															
6	10/14/08	12:36	Mid-Depth	2.0	21.3	104	9.31	6.82	0.344	52.3															
6	10/14/08	12:38	Mid-Depth	3.0	21.0	101	9.14	6.80	0.341	52.5															
6	10/14/08	12:40	Mid-Depth	4.0	20.9	93.8	8.48	6.73	0.337	52.5															
6	10/14/08	12:42	Mid-Depth	5.0	20.9	98.5	8.90	6.75	0.339	52.5															
6	10/14/08	12:44	Mid-Depth	6.0	20.8	88.4	8.01	6.67	0.334	52.4															
6	10/14/08	12:46	Mid-Depth	7.0	20.8	89.6	8.11	6.67	0.336	52.6															
6	10/14/08	12:48	Mid-Depth	8.0	20.7	83.5	7.54	6.63	0.322	52.7															
6	10/14/08	12:50	Mid-Depth	9.0	20.6	60.1	5.46	6.63	0.316	52.4															
6	10/14/08	12:52	Mid-Depth	10.0	20.3	21.8	2.00	6.58	0.313	52.9															
6	10/14/08	12:54	Mid-Depth	11.0	20.2	13.1	1.20	6.70	0.229	58.4															
6	10/14/08	12:56	Mid-Depth	12.0	20.2	12.7	1.16	6.74	0.223	68.4															
6	10/14/08	12:58	Mid-Depth	13.0	20.2	12.6	1.15	6.75	0.220	68.3															
6	10/14/08	13:00	Mid-Depth	14.0	20.2	12.3	1.13	6.74	0.217	71.6															
6	10/14/08	12:30	Surface	16.0	20.2	31.4	2.88	6.41	0.338	54.5	3.5	<1	3.9	1.9	0.48	0.47	0.011	< 0.03	0.025	0.003		< 2.00	4.95		
7	10/14/08	13:18	Bottom	7.0	20.0	85.9	7.91	6.80	0.385	53.1															
7	10/14/08	13:12	Mid-Depth	0.1	21.4	97.5	8.73	6.88	0.374	53.1															
7	10/14/08	13:14	Mid-Depth	1.0	21.3	96.8	8.68	6.85	0.376	53.2															
7	10/14/08	13:16	Mid-Depth	4.0	20.4	93.6	8.54	6.86	0.379	53.2															
7	10/14/08	13:10	Surface	16.0	20.3	13.8	1.26	6.69	0.199	96.3	3.0	6.3	2.9	2.0	0.51	0.50	0.014	0.04	0.034	0.002		< 2.00	5.25		
8	10/14/08	10:33	Bottom	22.0	20.0	38.5	3.54	6.51	0.262	58.4					0.64	0.62	0.022	0.09	0.052	0.006					
8	10/14/08	10:09	Mid-Depth	11.0	20.3	76.0	6.97	6.54	0.362	53.3					0.68	0.66	0.022	0.05	0.037	< 0.002					
8	10/14/08	9:45	Surface	10.0	19.9	79.4	7.33	6.71	0.383	53.6	3.5	6.3	2.9	1.9	0.63	0.61	0.021	0.03	0.032	0.004		< 2.00	4.90		
8	10/14/08	9:47	Mid-Depth	0.1	21.2	108	7.94	6.75	0.392	52.7															
8	10/14/08	9:49	Mid-Depth	1.0	21.1	95.6	8.61	6.71	0.389	52.8															
8	10/14/08	9:51	Mid-Depth	2.0	20.9	88.1	7.97	6.69	0.388	52.7															
8	10/14/08	9:53	Mid-Depth	3.0	20.8	90.8	8.23	6.67	0.388	52.7															
8	10/14/08	9:55	Mid-Depth	4.0	20.7	85.4	7.74	6.65	0.384	52.8															
8	10/14/08	9:57	Mid-Depth	5.0	20.7	87.8	7.96	6.63	0.382	52.9															
8	10/14/08	9:59	Mid-Depth	6.0	20.7	82.4	7.47	6.63	0.380	52.7															
8	10/14/08	10:01	Mid-Depth	7.0	20.7	83.0	7.53	6.62	0.379	52.7															
8	10/14/08	10:03	Mid-Depth	8.0	20.6	81.2	7.37	6.54	0.372	53.1															
8	10/14/08	10:05	Mid-Depth	9.0	20.3	79.6	7.22	6.54	0.370	53.3															
8	10/14/08	10:07	Mid-Depth	10.0	20.3	77.5	7.10	6.53	0.367	53.7															
8	10/14/08	10:11	Mid-Depth	12.0	20.2	73.5	6.74	6.56	0.353	53.2															
8	10/14/08	10:13	Mid-Depth	13.0	20.2	72.9	6.70	6.56	0.350	53.3															
8	10/14/08	10:15	Mid-Depth	14.0	20.2	69.5	6.37	6.56	0.343	53.5															
8	10/14/08	10:17	Mid-Depth	15.0	20.2	68.5	6.28	6.55	0.329	54.3															
8	10/14/08	10:19	Mid-Depth	16.0	20.1	64.2	5.89	6.57	0.314	54.5															
8	10/14/08	10:21	Mid-Depth	17.0	20.1	57.7	5.30	6.59	0.297	54.8															
8	10/14/08	10:23	Mid-Depth	18.0	20.1	53.8	4.94	6.65	0.265	55.4															
8	10/14/08	10:25	Mid-Depth	19.0	20.0	26.6	2.44	6.73	0.183	64.1															
8	10/14/08	10:27	Mid-Depth	19.0	20.1	49.2	4.50	6.73	0.241	55.3															
8	10/14/08	10:29	Mid-Depth	20.0	20.1	22.1	2.03	6.53	0.308	57.2															
8	10/14/08	10:31	Mid-Depth	21.0	20.1	46.5	4.27	6.52	0.291	56.9															
5	10/28/08	9:53	Bottom	15.0	15.1	7.40	0.76	7.01	0.292	52.1					0.53	0.50	0.026	0.06	0.035	0.004					
5	10/28/08	9:39	Middle	8.0	15.1	83.5	8.50	6.89	0.360	52.1					0.46	0.43	0.025	0.40	0.034	0.004					
5	10/28/08	9:23	Surface	0.1	15.1	84.3	8.58	6.86	0.397	52.4	2.5	8.4	3.4	2.4	0.51	0.49	0.024	0.06	0.037	0.004		< 2.00	8.50		
5	10/28/08	9:25	Mid-Depth	1.0	15.1	84.0	8.55	6.87	0.394	52.1															
5	10/28/08	9:27	Mid-Depth	2.0	15.1	84.1	8.56	6.85	0.392	52.2															
5	10/28/08	9:29	Mid-Depth	3.0	15.1	84.0	8.55	6.85	0.388	52.4															
5	10/28/08	9:31	Mid-Depth	4.0	15.1	84.0	8.55	6.87	0.383	52.1															
5	10/28/08	9:33	Mid-Depth	5.0	15.1	84.0	8.55	6.87	0.378	52.1															
5	10/28/08	9:35	Mid-Depth	6.0	15.1	83.8	8.53	6.88	0.372	52.2															
5	10/28/08	9:37	Mid-Depth	7.0	15.1	83.5	8.50	6.88	0.368	52.1															
5	10/28/08	9:41	Mid-Depth	9.0	15.1	83.4	8.49	6.91	0.352	52.2															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

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RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
5	10/28/08	9:43	Mid-Depth	10.0	15.1	83.0	8.46	6.92	0.346	52.1															
5	10/28/08	9:45	Mid-Depth	11.0	15.1	82.9	8.44	6.90	0.338	52.1															
5	10/28/08	9:47	Mid-Depth	12.0	15.1	81.2	8.27	6.94	0.326	52.2															
5	10/28/08	9:49	Mid-Depth	13.0	15.1	73.6	7.49	6.93	0.317	52.0															
5	10/28/08	9:51	Mid-Depth	14.0	15.1	49.9	5.08	6.97	0.297	52.1															
8	10/28/08	9:16	Bottom	23.0	15.2	46.5	4.72	7.47	0.190	52.9					0.59	0.56	0.026	0.07	0.032	0.004					
8	10/28/08	8:48	Mid-Depth	9.0	15.4	79.8	8.08	6.98	0.398	52.5					0.51	0.48	0.025	0.06	0.033	0.004					
8	10/28/08	8:30	Surface	0.1	15.4	81.0	8.20	6.90	0.421	52.5	3.0	10.9	3.3	1.7	0.50	0.47	0.025	0.05	0.033	0.004		4.00	6.85		
8	10/28/08	8:32	Mid-Depth	1.0	15.3	80.2	8.12	6.88	0.422	52.4															
8	10/28/08	8:34	Mid-Depth	2.0	15.4	80.7	8.18	6.91	0.418	52.4															
8	10/28/08	8:36	Mid-Depth	3.0	15.4	80.5	8.15	6.90	0.417	52.5															
8	10/28/08	8:38	Mid-Depth	4.0	15.4	80.9	8.19	6.91	0.415	52.4															
8	10/28/08	8:40	Mid-Depth	5.0	15.4	80.4	8.14	6.92	0.413	52.6															
8	10/28/08	8:42	Mid-Depth	6.0	15.4	80.1	8.11	6.92	0.408	52.5															
8	10/28/08	8:44	Mid-Depth	7.0	15.4	80.7	8.18	6.94	0.405	52.4															
8	10/28/08	8:46	Mid-Depth	8.0	15.4	80.1	8.11	6.95	0.403	52.5															
8	10/28/08	8:50	Mid-Depth	10.0	15.4	80.1	8.11	6.97	0.396	52.4															
8	10/28/08	8:52	Mid-Depth	11.0	15.3	80.0	8.11	6.97	0.392	52.1															
8	10/28/08	8:54	Mid-Depth	12.0	15.3	80.1	8.11	6.98	0.389	52.5															
8	10/28/08	8:56	Mid-Depth	13.0	15.3	80.0	8.11	6.98	0.384	52.2															
8	10/28/08	8:58	Mid-Depth	14.0	15.3	79.9	8.10	7.00	0.380	52.4															
8	10/28/08	9:00	Mid-Depth	15.0	15.3	80.1	8.12	7.02	0.375	52.2															
8	10/28/08	9:02	Mid-Depth	16.0	15.3	78.9	7.99	7.06	0.353	52.4															
8	10/28/08	9:04	Mid-Depth	17.0	15.3	79.4	8.05	7.11	0.337	52.2															
8	10/28/08	9:06	Mid-Depth	18.0	15.3	79.6	8.07	7.16	0.324	52.5															
8	10/28/08	9:08	Mid-Depth	19.0	15.2	79.7	8.08	7.18	0.316	52.5															
8	10/28/08	9:10	Mid-Depth	20.0	15.3	77.1	7.84	7.17	0.307	52.5															
8	10/28/08	9:12	Mid-Depth	21.0	15.2	74.5	7.57	7.21	0.289	52.4															
8	10/28/08	9:14	Mid-Depth	22.0	15.2	71.2	7.23	7.37	0.259	52.4															
1	11/07/08	10:32	Bottom	7.0	14.8	93.7	9.51	6.49	0.429	144															
1	11/07/08	10:28	Mid Depth	1.0	15.3	106	10.6	6.44	0.426	145															
1	11/07/08	10:30	Mid Depth	4.0	14.9	97.9	9.90	6.49	0.427	145															
1	11/07/08	10:26	Surface	0.1	15.5	109	10.9	6.38	0.424	140	2.0	6.3	.8 Q	.5 Q	0.47	0.45	0.016	0.04	0.031	0.007	8.01	3.20	6.45	< 0.0025	< 0.05
2	11/07/08	10:42	Bottom	6.0	14.7	95.6	9.67	6.62	0.354	52.5															
2	11/07/08	10:40	Mid-Depth	3.0	14.8	98.4	9.96	6.61	0.359	52.8															
2	11/07/08	10:38	Surface	0.1	16.5	109	10.7	6.59	0.355	52.9	**	1.0	.3 Q	1.1 Q	0.49	0.47	0.018	< 0.03	0.032	0.006	7.41	< 2.00	5.75	< 0.0025	< 0.05
3	11/07/08	10:58	Bottom	11.0	14.5	53.7	5.49	6.80	0.383	52.8															
3	11/07/08	10:52	Mid-Depth	2.0	14.7	108	11.0	6.86	0.423	52.8															
3	11/07/08	10:54	Mid-Depth	5.0	14.5	106	10.8	6.83	0.425	52.8															
3	11/07/08	10:56	Mid-Depth	8.0	14.5	73.9	7.55	6.79	0.373	52.9															
3	11/07/08	10:50	Surface	0.1	16.0	112	11.1	6.88	0.421	52.5	2.0	4.1	.9 Q	1.1 Q	0.53	0.51	0.018	0.03	0.017	0.005	6.46	2.20	5.55	< 0.0025	< 0.05
4	11/07/08	11:09	Bottom	8.0	14.5	97.6	9.65	6.76	0.373	52.9															
4	11/07/08	11:05	Mid-Depth	2.0	14.7	110	10.9	6.85	0.423	52.8															
4	11/07/08	11:07	Mid-Depth	5.0	14.5	109	10.8	6.83	0.425	52.8															
4	11/07/08	11:03	Surface	0.1	15.8	111	11.0	6.97	0.421	52.5	2.5	1.0	1.4 Q	1.5 Q	0.49	0.48	0.014	< 0.03	0.021	0.005	6.84	6.00	3.95	< 0.0025	< 0.05
5	11/07/08	11:45	Bottom	15.0	14.3	69.1	7.09	6.80	0.303	52.4					0.49	0.47	0.015	0.03	0.025	0.005					
5	11/07/08	11:31	Middle	8.0	14.3	107	11.0	6.77	0.336	52.0					0.51	0.49	0.016	< 0.03	0.021	0.005					
5	11/07/08	11:15	Surface	0.1	15.2	113	11.3	6.84	0.362	51.8	3.5	2.0	.8 Q	1.1 Q	0.47	0.45	0.020	< 0.03	0.020	0.005	6.67	< 2.00	4.35	< 0.0025	< 0.05
5	11/07/08	11:17	Mid-Depth	1.0	15.2	113	11.4	6.82	0.364	52.1															
5	11/07/08	11:19	Mid-Depth	2.0	14.7	111	11.3	6.82	0.359	52.0															
5	11/07/08	11:21	Mid-Depth	3.0	14.6	110	11.2	6.81	0.357	51.9															
5	11/07/08	11:23	Mid-Depth	4.0	14.5	109	11.1	6.79	0.353	52.0															
5	11/07/08	11:25	Mid-Depth	5.0	14.4	108	11.1	6.78	0.350	52.0															
5	11/07/08	11:27	Mid-Depth	6.0	14.4	108	11.0	6.77	0.346	52.1															
5	11/07/08	11:29	Mid-Depth	7.0	14.4	108	11.0	6.78	0.342	52.1															
5	11/07/08	11:33	Mid-Depth	9.0	14.3	106	10.9	6.75	0.335	51.9															
5	11/07/08	11:35	Mid-Depth	10.0	14.3	105	10.8	6.75	0.328	51.8															
5	11/07/08	11:37	Mid-Depth	11.0	14.3	104	10.7	6.75	0.324	51.8															
5	11/07/08	11:39	Mid-Depth	12.0	14.3	104	10.6	6.77	0.314	52.0															
5	11/07/08	11:41	Mid-Depth	13.0	14.3	101	10.4	6.74	0.305	52.0															
5	11/07/08	11:43	Mid-Depth	14.0	14.3	86.7	8.89	6.74	0.298	51.8															
6	11/07/08	12:22	Bottom	15.0	14.3	6.20	0.63	6.84	0.203	53.4															
6	11/07/08	11:54	Mid-Depth	1.0	14.9	113	11.4	6.96	0.283	52.1															
6	11/07/08	11:56	Mid-Depth	2.0	14.8	112	11.4	6.96	0.279	52.1															
6	11/07/08	11:58	Mid-Depth	3.0	14.7	111	11.3	6.94	0.276	52.4															
6	11/07/08	12:00	Mid-Depth	4.0	14.6	110	11.2	6.94	0.274	52.0															
6	11/07/08	12:02	Mid-Depth	5.0	14.4	107	11.0	6.93	0.268	52.1															
6	11/07/08	12:04	Mid-Depth	6.0	14.4	106	10.8	6.93	0.263	52.0															
6	11/07/08	12:06	Mid-Depth	7.0	14.3	105	10.8	6.93	0.259	52.1															
6	11/07/08	12:08	Mid-Depth	8.0	14.3	104	10.6	6.93	0.251	51.9															
6	11/07/08	12:10	Mid-Depth	9.0	14.3	103	10.6	6.94	0.244	52.1															
6	11/07/08	12:12	Mid-Depth	10.0	14.3	101	10.4	6.95	0.230	52.0															
6	11/07/08	12:14	Mid-Depth	11.0	14.3	98.3	10.1	6.97	0.221	52.0															
6	11/07/08	12:16	Mid-Depth	12.0	14.3	91.6	9.39	6.96	0.212	52.2															
6	11/07/08	12:18	Mid-Depth	13.0	14.3	45.2	4.64	7.00	0.208	52.7															
6	11/07/08	12:20	Mid-Depth	14.0	14.3	11.5	1.18	6.83	0.206	52.9															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
6	11/07/08	11:52	Surface	0.1	16.1	114	11.2	6.95	0.301	52.3	3.5	3.0	1.2 Q	3.4 Q	0.39	0.38	0.012	< 0.03	0.022	0.005	6.63	< 2.00	3.55	< 0.0025	< 0.05
7	11/07/08	12:36	Bottom	10.0	14.5	99.0	10.1	6.89	0.360	52.6															
7	11/07/08	12:30	Mid-Depth	1.0	15.2	116	11.7	6.98	0.340	52.9															
7	11/07/08	12:32	Mid-Depth	4.0	14.7	112	11.4	6.99	0.346	52.6															
7	11/07/08	12:34	Mid-Depth	7.0	14.6	111	11.3	6.97	0.353	52.7															
7	11/07/08	12:28	Surface	0.1	16.2	116	11.4	6.96	0.339	53.1	3.0	2.0	0.7 Q	3.5 Q	0.43	0.41	0.017	< 0.03	0.022	0.005	6.83	< 2.00	3.75	< 0.0025	< 0.05
8	11/07/08	10:16	Bottom	23.0	13.9	34.2	3.53	5.88	0.384	148					0.60	0.57	0.031	0.12	0.037	0.006					
8	11/07/08	9:54	Mid-Depth	12.0	14.1	92.8	9.56	6.18	0.412	145					0.53	0.51	0.023	0.04	0.022	0.006					
8	11/07/08	9:30	Surface	0.1	15.4	109	10.9	6.36	0.426	140	3.5	6.3	4.0 Q	3.4 Q	0.55	0.52	0.028	< 0.03	0.022	0.005	6.73	5.80	3.55	< 0.0025	< 0.05
8	11/07/08	9:32	Mid-Depth	1.0	14.7	109	10.9	6.37	0.427	143															
8	11/07/08	9:34	Mid-Depth	2.0	14.5	108	10.9	6.35	0.427	144															
8	11/07/08	9:36	Mid-Depth	3.0	14.3	107	10.8	6.33	0.426	145															
8	11/07/08	9:38	Mid-Depth	4.0	14.2	105	10.7	6.31	0.425	145															
8	11/07/08	9:40	Mid-Depth	5.0	14.2	103	10.6	6.29	0.425	144															
8	11/07/08	9:42	Mid-Depth	6.0	14.2	99.7	10.2	6.29	0.423	145															
8	11/07/08	9:44	Mid-Depth	7.0	14.2	97.6	10.0	6.28	0.421	145															
8	11/07/08	9:46	Mid-Depth	8.0	14.2	96.3	9.93	6.26	0.420	145															
8	11/07/08	9:48	Mid-Depth	9.0	14.2	95.2	9.81	6.24	0.418	145															
8	11/07/08	9:50	Mid-Depth	10.0	14.1	94.8	9.77	6.22	0.417	145															
8	11/07/08	9:52	Mid-Depth	11.0	14.1	93.4	9.63	6.20	0.415	145															
8	11/07/08	9:56	Mid-Depth	13.0	14.1	92.2	9.51	6.18	0.414	145															
8	11/07/08	9:58	Mid-Depth	14.0	14.1	91.6	9.44	6.16	0.411	145															
8	11/07/08	10:00	Mid-Depth	15.0	14.1	90.8	9.36	6.14	0.408	145															
8	11/07/08	10:02	Mid-Depth	16.0	14.1	87.9	9.07	6.11	0.406	145															
8	11/07/08	10:04	Mid-Depth	17.0	14.1	86.0	8.87	6.08	0.403	146															
8	11/07/08	10:06	Mid-Depth	18.0	14.0	84.0	8.66	6.02	0.400	146															
8	11/07/08	10:08	Mid-Depth	19.0	13.9	78.5	8.09	5.98	0.397	147															
8	11/07/08	10:10	Mid-Depth	20.0	13.9	74.6	7.69	5.93	0.393	147															
8	11/07/08	10:12	Mid-Depth	21.0	13.9	69.6	7.18	5.95	0.395	147															
8	11/07/08	10:14	Mid-Depth	22.0	13.9	59.5	6.13	5.92	0.391	147															
5	11/18/08	13:40	Bottom	15.0	11.8	78.7	8.58	6.76	0.279	51.5					0.48	0.46	0.015	0.04	0.048	0.004					
5	11/18/08	13:26	Middle	8.0	12.0	90.6	9.86	6.79	0.322	51.8					0.42	0.41	0.011	< 0.03	0.034	0.005					
5	11/18/08	13:10	Surface	0.1	11.9	91.3	9.94	6.79	0.350	52.0	4.0	42.8	3.4	3.0	0.47	0.45	0.022	0.05	0.031	0.005		8.40	6.41		
5	11/18/08	13:12	Mid-Depth	1.0	11.9	90.4	9.83	6.78	0.346	51.7															
5	11/18/08	13:14	Mid-Depth	2.0	11.9	90.1	9.81	6.79	0.343	52.0															
5	11/18/08	13:16	Mid-Depth	3.0	11.9	90.5	9.84	6.76	0.341	51.8															
5	11/18/08	13:18	Mid-Depth	4.0	11.9	90.1	9.81	6.76	0.337	51.8															
5	11/18/08	13:20	Mid-Depth	5.0	12.0	90.5	9.84	6.76	0.334	51.9															
5	11/18/08	13:22	Mid-Depth	6.0	12.0	90.2	9.81	6.77	0.329	51.8															
5	11/18/08	13:24	Mid-Depth	7.0	12.0	90.3	9.82	6.78	0.326	51.9															
5	11/18/08	13:28	Mid-Depth	9.0	12.0	90.4	9.83	6.79	0.317	51.9															
5	11/18/08	13:30	Mid-Depth	10.0	12.0	90.1	9.79	6.79	0.311	51.9															
5	11/18/08	13:32	Mid-Depth	11.0	12.0	90.0	9.78	6.80	0.306	51.8															
5	11/18/08	13:34	Mid-Depth	12.0	12.0	90.5	9.84	6.80	0.299	51.8															
5	11/18/08	13:36	Mid-Depth	13.0	12.0	89.6	9.74	6.80	0.292	51.8															
5	11/18/08	13:38	Mid-Depth	14.0	11.9	86.7	9.44	6.82	0.285	51.6															
8	11/18/08	13:01	Bottom	23.0	12.1	64.2	6.63	6.75	0.000	52.2					0.64	0.62	0.020	0.05	0.032	0.004					
8	11/18/08	12:17	Mid-Depth	1.0	12.2	95.2	9.83	6.68	0.393	51.6															
8	11/18/08	12:19	Mid-Depth	2.0	12.2	94.8	9.79	6.72	0.389	51.7															
8	11/18/08	12:21	Mid-Depth	3.0	12.2	94.7	9.78	6.69	0.389	51.7															
8	11/18/08	12:23	Mid-Depth	4.0	12.3	94.4	9.74	6.69	0.387	51.8															
8	11/18/08	12:25	Mid-Depth	5.0	12.3	94.8	9.79	6.70	0.384	51.8															
8	11/18/08	12:27	Mid-Depth	6.0	12.3	94.4	9.74	6.71	0.382	51.6															
8	11/18/08	12:29	Mid-Depth	7.0	12.3	93.6	9.66	6.72	0.380	51.7															
8	11/18/08	12:31	Mid-Depth	8.0	12.3	92.7	9.57	6.71	0.378	51.6															
8	11/18/08	12:33	Mid-Depth	9.0	12.3	89.9	9.28	6.74	0.372	51.7															
8	11/18/08	12:35	Mid-Depth	10.0	12.2	88.9	9.18	6.73	0.370	51.8															
8	11/18/08	12:35	Mid-Depth	11.0	12.2	88.1	9.09	6.74	0.368	51.8															
8	11/18/08	12:41	Mid-Depth	13.0	12.2	86.0	8.88	6.75	0.363	51.6															
8	11/18/08	12:43	Mid-Depth	14.0	12.2	85.4	8.81	6.76	0.359	51.8															
8	11/18/08	12:45	Mid-Depth	15.0	12.2	84.6	8.73	6.77	0.355	51.6															
8	11/18/08	12:47	Mid-Depth	16.0	12.2	83.5	8.62	6.78	0.351	51.8															
8	11/18/08	12:49	Mid-Depth	17.0	12.2	82.1	8.47	6.78	0.348	51.6															
8	11/18/08	12:51	Mid-Depth	18.0	12.2	79.7	8.23	6.78	0.346	51.7															
8	11/18/08	12:53	Mid-Depth	19.0	12.2	78.6	8.11	6.85	0.344	51.6															
8	11/18/08	12:55	Mid-Depth	20.0	12.2	78.4	8.09	6.89	0.343	51.7															
8	11/18/08	12:57	Mid-Depth	21.0	12.1	78.4	8.09	6.89	0.341	51.6															
8	11/18/08	12:59	Mid-Depth	22.0	12.1	69.6	7.18	6.92	0.340	51.8															
8	11/18/08	12:39	Mid-Depth	12.0	12.2	87.9	9.07	6.75	0.366	51.7					0.45	0.43	0.016	0.07	0.027	0.004					
8	11/18/08	12:15	Surface	0.1	12.1	96.3	9.94	6.68	0.397	52.3	3.5	20.3	1.3	2.4	0.49	0.47	0.018	0.07	0.036	0.003		7.20	6.34		
1	12/03/08	12:21	Bottom	8.0	5.1	79.6	10.3	6.85	0.514	58.9															
1	12/03/08	12:17	Mid Depth	2.0	5.4	81.1	10.4	6.59	0.507	58.7															
1	12/03/08	12:19	Mid Depth	5.0	5.1	79.4	10.2	6.68	0.506	58.9															
1	12/03/08	12:15	Surface	0.1	5.8	81.1	10.3	6.54	0.502	58.8	2.0	36.4	1.5	1.7	0.43	0.41	0.021	< 0.03	0.043	0.011		4.40	10.8		
2	12/03/08	12:30	Bottom	6.0	5.9	84.9	10.7	6.39	0.423	55.9															
2	12/03/08	12:28	Mid-Depth	3.0	6.0	85.6	10.8	6.41	0.424	56.2															

* Total nitrogen is calculated as the sum of total kjeldahl nitrogen and total oxidized nitrogen
** Data excluded due to analytical error.
*** Orthophosphate measured greater than total phosphorus, however within analytical methods error.
QC Data rejected due to quality control failure.
Q Data analyzed past acceptable holding time.

CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
2	12/03/08	12:26	Surface	0.1	6.0	86.0	10.8	6.43	0.426	56.3	2.0	16.0	.8	1.0	0.50	0.47	0.025	< 0.03	0.033	0.005		6.00	9.88		
3	12/03/08	12:48	Bottom	12.0	5.6	85.5	10.9	6.59	0.442	73.2															
3	12/03/08	12:42	Mid-Depth	3.0	6.0	87.5	11.0	6.58	0.440	67.3															
3	12/03/08	12:44	Mid-Depth	6.0	5.4	85.5	11.0	6.58	0.441	74.2															
3	12/03/08	12:46	Mid-Depth	9.0	5.7	86.5	11.0	6.59	0.440	74.2															
3	12/03/08	12:40	Surface	0.1	6.6	90.0	11.2	6.60	0.439	59.3	2.5	52.0	2.1	2.0	0.50	0.48	0.024	< 0.03	0.029	0.003		< 2.00	9.38		
4	12/03/08	12:59	Bottom	8.0	6.2	63.5	7.96	6.49	0.296	53.9															
4	12/03/08	12:55	Mid-Depth	2.0	7.0	87.6	10.8	6.66	0.281	51.3															
4	12/03/08	12:57	Mid-Depth	5.0	6.1	88.6	11.2	6.62	0.274	53.3															
4	12/03/08	12:53	Surface	0.1	7.2	93.7	11.5	6.66	0.294	51.2	3.5	57.6	3.7	4.0	0.46	0.46	< 0.005	< 0.03	0.027	< 0.002		6.80	4.94		
5	12/03/08	13:37	Bottom	16.0	6.8	6.80	0.84	6.45	0.242	91.2					0.51	0.51	< 0.005	< 0.03	0.021	0.002					
5	12/03/08	13:21	Middle	8.0	6.5	88.6	11.0	6.56	0.279	51.4					0.48	0.48	< 0.005	< 0.03	0.024	0.002					
5	12/03/08	13:05	Surface	0.1	7.5	94.8	11.5	6.63	0.309	51.7	3.5	435.2	4.0	4.6	0.47	0.47	< 0.005	< 0.03	0.026	0.004		4.80	4.52		
5	12/03/08	13:07	Mid-Depth	1.0	7.5	93.8	11.4	6.62	0.307	51.7															
5	12/03/08	13:09	Mid-Depth	2.0	7.0	92.9	11.4	6.64	0.305	51.5															
5	12/03/08	13:11	Mid-Depth	3.0	6.9	91.9	11.3	6.59	0.302	51.4															
5	12/03/08	13:13	Mid-Depth	4.0	6.8	90.4	11.2	6.58	0.300	51.3															
5	12/03/08	13:15	Mid-Depth	5.0	6.7	89.6	11.1	6.57	0.295	51.0															
5	12/03/08	13:17	Mid-Depth	6.0	6.6	88.5	11.0	6.55	0.287	51.1															
5	12/03/08	13:19	Mid-Depth	7.0	6.5	88.2	11.0	6.56	0.283	51.3															
5	12/03/08	13:23	Mid-Depth	9.0	6.5	88.0	11.0	6.54	0.272	51.2															
5	12/03/08	13:25	Mid-Depth	10.0	6.5	75.7	9.44	6.53	0.249	51.4															
5	12/03/08	13:27	Mid-Depth	11.0	6.4	65.7	8.11	6.45	0.225	51.4															
5	12/03/08	13:29	Mid-Depth	12.0	6.7	47.7	5.89	6.39	0.216	87.7															
5	12/03/08	13:31	Mid-Depth	13.0	6.7	28.1	3.47	6.40	0.219	87.9															
5	12/03/08	13:33	Mid-Depth	14.0	6.8	18.0	2.22	6.41	0.225	88.3															
5	12/03/08	13:35	Mid-Depth	15.0	6.8	11.0	1.36	6.44	0.231	89.4															
6	12/03/08	14:14	Bottom	16.0	6.8	4.20	0.52	6.53	0.257	51.8															
6	12/03/08	13:44	Mid-Depth	1.0	7.0	90.6	11.1	6.60	0.308	51.0															
6	12/03/08	13:46	Mid-Depth	2.0	7.0	90.0	11.1	6.59	0.306	51.2															
6	12/03/08	13:48	Mid-Depth	3.0	7.0	89.6	11.0	6.61	0.303	51.0															
6	12/03/08	13:50	Mid-Depth	4.0	7.0	89.5	11.0	6.61	0.301	51.1															
6	12/03/08	13:52	Mid-Depth	5.0	7.0	89.3	11.0	6.60	0.299	50.9															
6	12/03/08	13:54	Mid-Depth	6.0	6.9	89.1	11.0	6.60	0.296	51.0															
6	12/03/08	13:56	Mid-Depth	7.0	6.9	88.8	11.0	6.59	0.294	51.1															
6	12/03/08	13:58	Mid-Depth	8.0	7.0	88.1	10.8	6.58	0.292	50.9															
6	12/03/08	14:00	Mid-Depth	9.0	6.9	87.5	10.8	6.57	0.290	51.0															
6	12/03/08	14:02	Mid-Depth	10.0	6.8	86.6	10.7	6.56	0.286	51.2															
6	12/03/08	14:04	Mid-Depth	11.0	6.7	86.3	10.7	6.57	0.283	51.0															
6	12/03/08	14:06	Mid-Depth	12.0	6.8	85.0	10.5	6.58	0.279	51.1															
6	12/03/08	14:08	Mid-Depth	13.0	6.7	83.3	10.3	6.57	0.275	51.0															
6	12/03/08	14:10	Mid-Depth	14.0	6.6	81.0	10.0	6.55	0.272	51.1															
6	12/03/08	14:12	Mid-Depth	15.0	6.5	71.4	8.88	6.57	0.267	51.0															
6	12/03/08	13:42	Surface	0.1	7.0	90.1	11.1	6.60	0.309	51.1	3.5	143.9	2.4	3.3	0.42	0.41	0.005	< 0.03	0.024	0.002		4.80	3.94		
7	12/03/08	14:20	Bottom	10.0	6.4	90.1	11.3	6.70	0.296	53.2															
7	12/03/08	14:17	Mid-Depth	1.0	6.7	92.9	11.5	6.74	0.311	52.5															
7	12/03/08	14:18	Mid-Depth	4.0	6.7	92.4	11.4	6.72	0.309	52.4															
7	12/03/08	14:19	Mid-Depth	7.0	6.7	92.1	11.4	6.72	0.307	52.6															
7	12/03/08	14:16	Surface	0.1	6.7	92.3	11.4	6.75	0.313	52.4	3.0	11.8	2.0	3.4	0.41	0.41	< 0.005	< 0.03	0.025	0.002		4.80	4.59		
8	12/03/08	15:12	Bottom	24.0	6.8	10.9	1.34	6.11	0.341	51.3					0.49	0.48	0.014	< 0.03	0.025	0.004					
8	12/03/08	14:48	Mid-Depth	12.0	6.8	82.8	10.2	6.40	0.344	50.9					0.48	0.47	0.009	< 0.03	0.029	0.002					
8	12/03/08	14:24	Surface	0.1	7.3	88.0	10.7	6.50	0.355	50.9	3.5	7.4	2.8	3.3	0.48	0.47	0.009	< 0.03	0.026	0.002		2.80	4.10		
8	12/03/08	14:26	Mid-Depth	1.0	7.3	87.9	10.7	6.48	0.354	50.8															
8	12/03/08	14:28	Mid-Depth	2.0	7.3	87.7	10.7	6.49	0.353	51.0															
8	12/03/08	14:30	Mid-Depth	3.0	7.3	87.7	10.7	6.47	0.353	50.9															
8	12/03/08	14:32	Mid-Depth	4.0	7.3	87.2	10.6	6.46	0.352	51.0															
8	12/03/08	14:34	Mid-Depth	5.0	7.2	87.0	10.6	6.46	0.352	50.8															
8	12/03/08	14:36	Mid-Depth	6.0	7.2	84.1	10.3	6.46	0.350	50.8															
8	12/03/08	14:38	Mid-Depth	7.0	6.9	85.0	10.5	6.43	0.349	50.8															
8	12/03/08	14:40	Mid-Depth	8.0	6.9	84.8	10.5	6.42	0.348	50.8															
8	12/03/08	14:42	Mid-Depth	9.0	6.9	85.5	10.6	6.41	0.348	50.9															
8	12/03/08	14:44	Mid-Depth	10.0	6.9	83.6	10.3	6.41	0.346	50.8															
8	12/03/08	14:46	Mid-Depth	11.0	6.8	83.6	10.3	6.41	0.345	50.7															
8	12/03/08	14:50	Mid-Depth	13.0	6.8	82.5	10.2	6.40	0.344	50.8															
8	12/03/08	14:52	Mid-Depth	14.0	6.8	82.5	10.2	6.38	0.342	50.8															
8	12/03/08	14:54	Mid-Depth	15.0	6.8	83.1	10.3	6.38	0.341	50.8															
8	12/03/08	14:56	Mid-Depth	16.0	6.8	83.0	10.3	6.38	0.341	50.8															
8	12/03/08	14:58	Mid-Depth	17.0	6.8	83.4	10.3	6.35	0.340	50.8															
8	12/03/08	15:00	Mid-Depth	18.0	6.8	82.9	10.2	6.36	0.338	50.8															
8	12/03/08	15:02	Mid-Depth	19.0	6.8	83.2	10.3	6.32	0.339	50.8															
8	12/03/08	15:04	Mid-Depth	20.0	6.8	82.7	10.2	6.32	0.336	50.8															
8	12/03/08	15:06	Mid-Depth	21.0	6.7	81.3	10.1	6.31	0.335	50.8															
8	12/03/08	15:08	Mid-Depth	22.0	6.7	73.7	9.13	6.25	0.337	51.0															
8	12/03/08	15:10	Mid-Depth	23.0	6.7	60.7	7.52	6.19	0.336	51.0															
5	12/29/08	14:37	Bottom	16.0	7.8	78.1	9.35	6.80	0.425	46.8					0.54	0.47	0.068	0.10	0.028	0.008					
5	12/29/08	14:21	Middle	8.0	8.2	83.9	9.96	6.30	0.453	46.8					0.51	0.44	0.066	0.09	0.028	0.008					

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CHESTERFIELD COUNTY UTILITIES DEPARTMENT
ADDISON-EVANS WATER PRODUCTION FACILITY
RESULTS OF 2008 RESERVOIR SURVEY WATER QUALITY ANALYSES (JANUARY - DECEMBER)

STATION	DATE	TIME	DEPTH_TXT	DEPTH (Feet)	TEMPERATURE (Degrees Celsius)	DISSOLVED OXYGEN (% Saturation)	DISSOLVED OXYGEN (mg/L)	pH	ORP (volts)	CONDUCTIVITY (micro-mhos/cm)	SECCHI DISK (Feet)	FECAL COLIFORM (Colonies/100mL)	CHLOROPHYLL a (ppb)	PHEOPHYTIN a (ppb)	TOTAL NITROGEN* (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	OXIDIZED NITROGEN (mg/L as N)	AMMONIA NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L as P)	ORTHOPHOSPHATE PHOSPHORUS (mg/L as P)	TOTAL ORGANIC CARBON (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)	TURBIDITY (ntu)	LEAD (mg/L)	ZINC (mg/L)
5	12/29/08	14:05	Surface	0.1	9.2	88.6	10.3	6.24	0.464	46.4	4.0	238.2	**	**	0.46	0.40	0.064	0.08	0.024	0.007		9.00	4.64		
5	12/29/08	14:07	Mid-Depth	1.0	9.1	88.7	10.3	6.23	0.464	46.5															
5	12/29/08	14:09	Mid-Depth	2.0	9.1	88.1	10.2	6.23	0.463	46.3															
5	12/29/08	14:11	Mid-Depth	3.0	9.0	87.1	10.1	6.23	0.462	46.5															
5	12/29/08	14:13	Mid-Depth	4.0	8.5	85.8	10.1	6.25	0.462	46.3															
5	12/29/08	14:15	Mid-Depth	5.0	8.4	85.0	10.0	6.26	0.459	46.4															
5	12/29/08	14:17	Mid-Depth	6.0	8.3	84.7	10.0	6.26	0.458	46.5															
5	12/29/08	14:19	Mid-Depth	7.0	8.2	84.2	9.99	6.27	0.455	46.6															
5	12/29/08	14:23	Mid-Depth	9.0	8.1	83.5	9.93	6.34	0.450	46.8															
5	12/29/08	14:25	Mid-Depth	10.0	8.0	82.3	9.82	6.37	0.448	46.5															
5	12/29/08	14:27	Mid-Depth	11.0	7.9	81.3	9.72	6.41	0.445	46.8															
5	12/29/08	14:29	Mid-Depth	12.0	7.8	80.2	9.60	6.43	0.442	46.7															
5	12/29/08	14:31	Mid-Depth	13.0	7.8	79.6	9.53	6.50	0.438	46.7															
5	12/29/08	14:33	Mid-Depth	14.0	7.8	79.4	9.51	6.53	0.436	46.7															
5	12/29/08	14:35	Mid-Depth	15.0	7.8	78.3	9.39	6.65	0.432	46.6															
8	12/29/08	13:58	Bottom	24.0	7.2	57.9	7.03	6.67	0.395	46.5					0.54	0.48	0.064	0.10	0.029	0.009					
8	12/29/08	13:34	Mid-Depth	12.0	7.9	81.3	9.72	6.85	0.427	46.8					0.48	0.43	0.059	0.09	0.032	0.008					
8	12/29/08	13:10	Surface	0.1	8.9	85.4	9.96	6.97	0.443	47.1	3.5	21.6	**	**	0.44	0.38	0.054	0.09	0.029	0.007		10.2	4.27		
8	12/29/08	13:12	Mid-Depth	1.0	9.0	84.8	9.87	6.96	0.442	47.2															
8	12/29/08	13:14	Mid-Depth	2.0	8.7	83.9	9.83	6.94	0.442	46.9															
8	12/29/08	13:16	Mid-Depth	3.0	8.2	83.4	9.89	6.93	0.442	46.9															
8	12/29/08	13:18	Mid-Depth	4.0	8.0	82.8	9.86	6.93	0.440	46.8															
8	12/29/08	13:20	Mid-Depth	5.0	8.0	82.3	9.81	6.88	0.439	46.7															
8	12/29/08	13:22	Mid-Depth	6.0	8.0	81.2	9.69	6.90	0.437	46.9															
8	12/29/08	13:24	Mid-Depth	7.0	7.9	81.5	9.72	6.89	0.435	47.1															
8	12/29/08	13:26	Mid-Depth	8.0	7.9	81.6	9.75	6.89	0.433	47.1															
8	12/29/08	13:28	Mid-Depth	9.0	7.9	82.0	9.79	6.88	0.432	46.9															
8	12/29/08	13:30	Mid-Depth	10.0	7.9	81.7	9.76	6.88	0.430	46.9															
8	12/29/08	13:32	Mid-Depth	11.0	7.9	81.2	9.71	6.85	0.428	46.9															
8	12/29/08	13:36	Mid-Depth	13.0	7.9	81.1	9.71	6.81	0.424	46.9															
8	12/29/08	13:38	Mid-Depth	14.0	7.9	81.0	9.67	6.79	0.422	46.8															
8	12/29/08	13:40	Mid-Depth	15.0	7.8	79.9	9.57	6.78	0.418	46.9															
8	12/29/08	13:42	Mid-Depth	16.0	7.7	78.5	9.37	6.76	0.414	46.9															
8	12/29/08	13:44	Mid-Depth	17.0	7.6	77.1	9.29	6.72	0.409	46.9															
8	12/29/08	13:46	Mid-Depth	18.0	7.3	71.7	8.71	6.71	0.405	47.1															
8	12/29/08	13:48	Mid-Depth	19.0	7.2	61.5	7.47	6.68	0.399	46.8															
8	12/29/08	13:50	Mid-Depth	20.0	7.3	61.1	7.42	6.65	0.393	46.7															
8	12/29/08	13:52	Mid-Depth	21.0	7.3	60.0	7.29	6.64	0.396	46.6															
8	12/29/08	13:54	Mid-Depth	22.0	7.2	58.7	7.13	6.64	0.396	46.6															
8	12/29/08	13:56	Mid-Depth	23.0	7.2	58.4	7.09	6.65	0.395	46.5															

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Appendix C: Reservoir Algae Data

CHESTERFIELD COUNTY UTILITIES

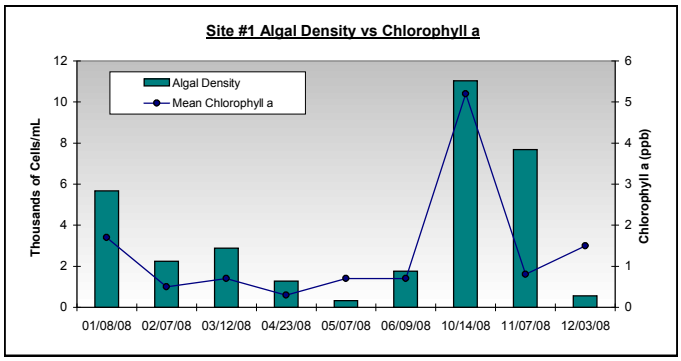
ADDISON-EVANS WATER PRODUCTION AND LABORATORY FACILITY

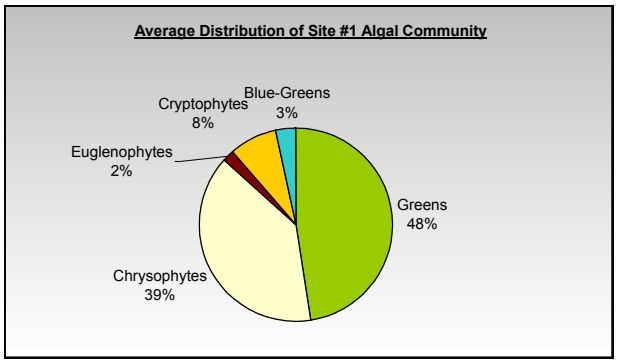
2008 PHYTOPLANKTON ASSESSMENT OF SWIFT CREEK RESERVOIR SITE 1

PHYTOPLANKTON CELL DENSITY COUNTS (Cells / mL)

TAXON	01/08/08	02/07/08	03/12/08	04/23/08	05/07/08	06/09/08	10/14/08	11/07/08	12/03/08
CHLOROPHYTA									
Ankistrodesmus	160	80	160	80	0	160	960	880	160
Chotadella	0	0	0	0	0	0	160	400	0
Closteriopsis	0	0	80	0	0	0	80	0	0
Crucigenia	320	0	0	640	0	0	1920	3120	0
Dictyosphaerium	0	0	0	0	0	0	1520	0	0
Euastrum	0	0	0	0	0	0	160	0	0
Golenkinia	0	0	0	0	0	240	0	0	0
Kirchneriella	0	0	0	0	0	0	640	320	0
Micractinium	0	0	0	0	0	0	960	0	0
Pediastrum	0	0	80	0	0	0	320	0	0
Scenedesmus	0	0	0	0	0	0	960	320	0
Tetraedron	80	0	0	80	0	0	240	80	80
CHRYSOPHYTA									
Attheya	0	0	0	0	0	80	80	0	0
Chrysochromulina	4000	1600	2000	0	0	960	160	1200	0
Chrysococcus	80	0	0	0	0	0	0	0	0
Cyclotella	0	0	0	0	0	0	160	0	0
Diceras	0	0	0	80	0	0	0	0	0
Dinobryon	240	0	160	0	0	0	0	560	0
Kephyrion	0	80	0	80	80	0	0	0	0
Mallomonas	0	0	0	0	0	0	80	0	0
Nitzschia	240	80	0	240	0	0	160	240	80
Rhizosolenia	0	0	0	0	0	160	80	80	0
EUGLENOPHYTA									
Euglena	0	0	0	0	80	80	80	0	0
Trachelomonas	0	0	0	0	80	80	240	0	0
CRYPTOPHYTA									
Chroomonas	80	320	240	0	80	0	160	240	240
Cryptomonas	480	80	160	80	0	0	80	240	160
CYANOPROKARYOTA									
Anabaena	0	0	0	0	0	0	1120	0	0
SUMMARY STATISTICS									
DENSITY (Cells / ml):									
CHLOROPHYTA	560	80	320	800	0	400	8640	5120	80
CHRYSOPHYTA	4560	1760	2160	400	80	1200	720	2080	80
EUGLENOPHYTA	0	0	0	0	160	160	320	0	0
CRYPTOPHYTA	560	400	400	80	80	0	240	480	400
CYANOPROKARYOTA	0	0	0	0	0	0	1120	0	0
TOTAL	5680	2240	2880	1280	320	1760	11040	7680	560
RELATIVE ABUNDANCE:									
CHLOROPHYTA	9.9%	3.6%	11.1%	62.5%	0.0%	22.7%	78.3%	66.7%	14.3%
CHRYSOPHYTA	80.3%	78.6%	75.0%	31.3%	25.0%	68.2%	6.5%	27.1%	14.3%
EUGLENOPHYTA	0.0%	0.0%	0.0%	0.0%	50.0%	9.1%	2.9%	0.0%	0.0%
CRYPTOPHYTA	9.9%	17.9%	13.9%	6.3%	25.0%	0.0%	2.2%	6.3%	71.4%
CYANOPROKARYOTA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.1%	0.0%	0.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
TAXONOMIC RICHNESS:									
CHLOROPHYTA	3	1	3	3	0	2	11	6	2
CHRYSOPHYTA	4	3	2	3	1	3	6	4	1
EUGLENOPHYTA	0	0	0	0	1	2	2	0	0
CRYPTOPHYTA	2	2	2	1	0	0	2	2	2
CYANOPROKARYOTA	0	0	0	0	0	0	1	0	0
TOTAL	9	6	7	7	2	7	22	12	5
CHLOROPHYLL *a* (ug / L):									
TOTAL	1.7	0.5	0.7	0.3	0.7	0.7	5.2	0.8	1.5

Note: 06/09 Chlorophyll samples held beyond the accepted holding time
Note: No samples collected on 07/08, 08/05, 09/04





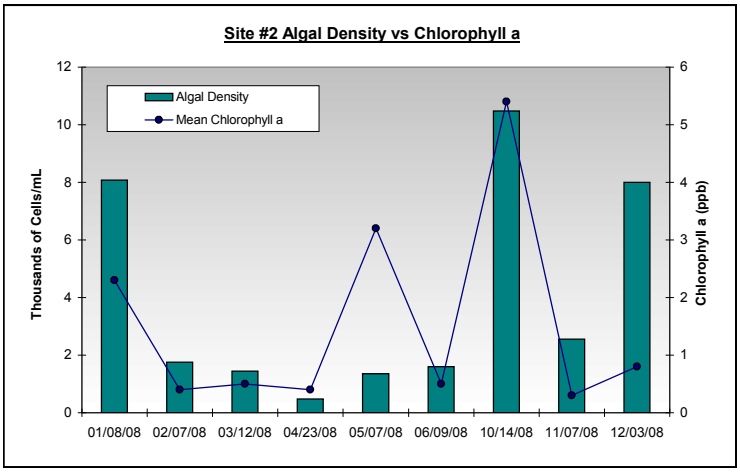
CHESTERFIELD COUNTY UTILITIES
ADDISON-EVANS WATER PRODUCTION AND LABORATORY FACILITY

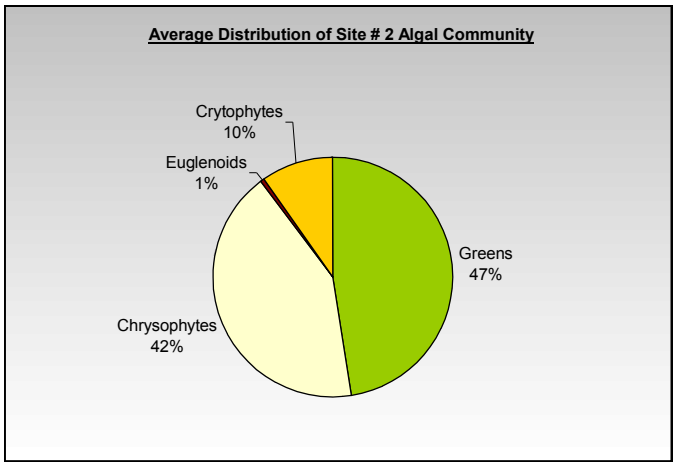
2008 PHYTOPLANKTON ASSESSMENT OF SWIFT CREEK RESERVOIR SITE 2

PHYTOPLANKTON CELL DENSITY COUNTS (Cells / mL)

TAXON	01/08/08	02/07/08	03/12/08	04/23/08	05/07/08	06/09/08	10/14/08	11/07/08	12/03/08
CHLOROPHYTA									
Ankistrodesmus	240	160	560	0	80	0	2080	960	160
Chotadella	80	0	0	0	0	0	240	160	0
Closteriopsis	0	0	0	0	80	0	0	0	0
Crucigenia	0	0	0	320	0	320	3520	0	0
Dictyosphaerium	0	0	0	0	0	0	560	0	0
Kirchneriella	0	0	0	0	0	0	960	0	0
Pediastrum	0	0	0	0	0	0	640	0	0
Scenedesmus	0	0	0	0	320	0	1280	0	0
Tetraedron	80	0	0	80	0	0	80	400	0
Tetrastrum	0	0	0	0	0	0	320	0	0
CHRYSOPHYTA									
Attheya	0	0	0	0	0	80	80	0	0
Chrysochromulina	7200	880	0	0	0	880	240	640	0
Dinobryon	160	0	320	0	80	0	0	0	0
Kephyrion	80	0	80	0	0	0	0	0	0
Mallomonas	80	0	0	0	0	0	80	0	0
Melosira	0	0	0	0	320	0	0	0	0
Nitzschia	80	80	0	0	80	0	160	80	80
Rhizosolenia	0	0	0	0	0	80	0	0	80
EUGLENOPHYTA									
Euglena	0	0	0	0	0	0	80	0	0
Trachelomonas	0	0	0	0	0	80	0	0	0
CRYPTOPHYTA									
Chroomonas	80	560	160	0	240	0	0	320	480
Cryptomonas	0	80	240	80	160	160	160	0	0
Rhodomonas	0	0	80	0	0	0	0	0	0
SUMMARY STATISTICS									
DENSITY (Cells / ml):									
CHLOROPHYTA	400	160	560	400	480	320	9680	1520	160
CHRYSOPHYTA	7600	960	400	0	480	1040	560	720	160
EUGLENOPHYTA	0	0	0	0	0	80	80	0	0
CRYPTOPHYTA	80	640	480	80	400	160	160	320	480
TOTAL	8080	1760	1440	480	1360	1600	10480	2560	800
RELATIVE ABUNDANCE:									
CHLOROPHYTA	5.0%	9.1%	38.9%	83.3%	35.3%	20.0%	92.4%	59.4%	20.0%
CHRYSOPHYTA	94.1%	54.5%	27.8%	0.0%	35.3%	65.0%	5.3%	28.1%	20.0%
EUGLENOPHYTA	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	0.8%	0.0%	0.0%
CRYPTOPHYTA	1.0%	36.4%	33.3%	16.7%	29.4%	10.0%	1.5%	12.5%	60.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
TAXONOMIC RICHNESS:									
CHLOROPHYTA	3	1	1	2	3	1	9	3	1
CHRYSOPHYTA	5	2	2	0	3	3	4	2	2
EUGLENOPHYTA	0	0	0	0	0	1	1	0	0
CRYPTOPHYTA	1	2	3	1	2	1	1	1	1
TOTAL	9	5	6	3	8	6	15	6	4
CHLOROPHYLL a (ug / L):									
TOTAL	2.3	0.4	0.5	0.4	3.2	0.5	5.4	0.3	0.8

Note: 06/09 Chlorophyll samples held beyond the accepted holding time
Note: No samples collected on 07/08, 08/05, 09/04





CHESTERFIELD COUNTY UTILITIES
ADDISON-EVANS WATER PRODUCTION AND LABORATORY FACILITY

2008 PHYTOPLANKTON ASSESSMENT OF SWIFT CREEK RESERVOIR SITE 3

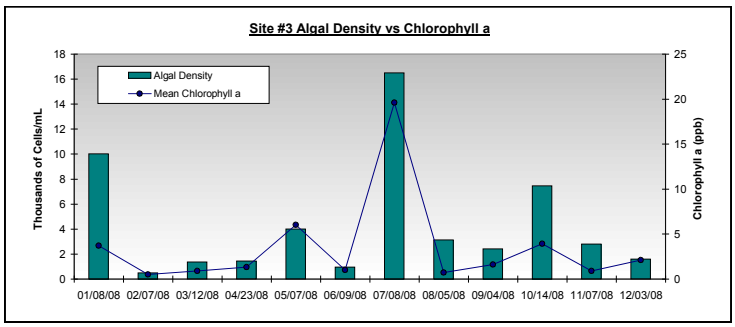
PHYTOPLANKTON CELL DENSITY COUNTS (Cells / mL)

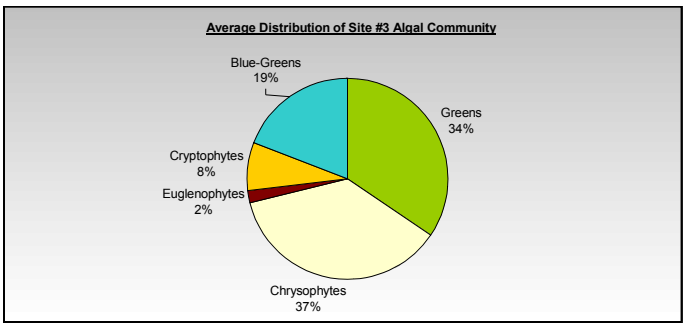
TAXON	01/08/08	02/07/08	03/12/08	04/23/08	05/07/08	06/09/08	07/08/08	08/05/08	09/04/08	10/14/08	11/07/08	12/03/08
CHLOROPHYTA												
Ankistrodesmus	720	80	240	400	400	160	560	160	160	0	320	560
Chlamydomonas	0	0	0	0	0	0	80	0	0	0	0	0
Chotadella	0	0	0	0	0	0	0	0	0	80	0	240
Closteriopsis	0	0	0	0	0	0	0	320	0	0	0	0
Crucigenia	960	0	0	0	1600	0	880	0	1280	1600	240	320
Dictyosphaerium	320	0	0	0	0	0	800	0	320	320	640	0
Elakatothrix	0	0	0	400	0	0	0	0	0	0	160	0
Euastrum	0	0	0	0	0	0	0	160	0	0	0	0
Kirchneriella	0	0	0	0	0	0	0	0	0	560	0	0
Micractinium	0	0	0	0	0	0	320	0	320	240	0	0
Oocystis	0	0	0	0	0	0	240	240	0	0	0	0
Pediastrum	0	0	0	0	0	0	80	0	0	0	0	0
Scenedesmus	320	0	0	0	0	0	320	320	0	0	0	0
Tetraedron	80	80	0	80	80	0	0	0	0	160	0	80
Treubaria	0	0	0	0	0	0	80	0	0	0	0	0
CHRYSOPHYTA												
Attheya	0	0	0	0	0	0	0	80	0	0	0	0
Chrysochromulina	6560	0	640	80	320	0	80	0	0	800	720	160
Chrysococcus	0	0	160	0	0	0	80	0	80	0	0	0
Cyclotella	0	0	0	0	0	0	80	0	80	240	0	0
Dinobryon	80	0	240	0	640	0	0	0	0	240	0	0
Kephyrion	160	80	0	80	0	0	0	0	0	0	0	0
Mallomonas	80	0	0	0	0	0	0	0	0	0	0	0
Melosira	0	0	0	0	0	0	0	1200	0	2960	320	0
Navicula	0	0	0	0	0	0	0	80	0	0	0	0
Nitzschia	80	0	0	80	80	0	480	80	160	160	0	80
Rhizosolenia	0	0	80	0	80	320	160	80	0	0	80	0
Tabellaria	0	0	0	0	0	0	640	0	0	0	0	0
EUGLENOPHYTA												
Euglena	0	0	0	0	80	400	80	160	0	0	0	0
Trachelomonas	0	0	0	0	0	80	160	80	0	80	0	0
CRYPTOPHYTA												
Chroomonas	320	0	0	80	160	0	0	80	0	0	320	160
Cryptomonas	320	240	0	240	560	0	1360	80	0	0	0	0
CYANOPROKARYOTA												
Anabaena	0	0	0	0	0	0	10000	0	0	0	0	0

SUMMARY STATISTICS

	01/08/08	02/07/08	03/12/08	04/23/08	05/07/08	06/09/08	07/08/08	08/05/08	09/04/08	10/14/08	11/07/08	12/03/08
DENSITY (Cells / ml):												
CHLOROPHYTA	2400	160	240	880	2080	160	3360	1200	2080	2960	1360	1200
CHRYSOPHYTA	6960	80	1120	240	1120	320	1520	1520	320	4400	1120	240
EUGLENOPHYTA	0	0	0	0	80	480	240	240	0	80	0	0
CRYPTOPHYTA	640	240	0	320	720	0	1360	160	0	0	320	160
CYANOPROKARYOTA	0	0	0	0	0	0	10000	0	0	0	0	0
TOTAL	10000	480	1360	1440	4000	960	16480	3120	2400	7440	2800	1600
RELATIVE ABUNDANCE:												
CHLOROPHYTA	24.0%	33.3%	17.6%	61.1%	52.0%	16.7%	20.4%	38.5%	86.7%	39.8%	48.6%	75.0%
CHRYSOPHYTA	69.6%	16.7%	82.4%	16.7%	28.0%	33.3%	9.2%	48.7%	13.3%	59.1%	40.0%	15.0%
EUGLENOPHYTA	0.0%	0.0%	0.0%	0.0%	2.0%	50.0%	1.5%	7.7%	0.0%	1.1%	0.0%	0.0%
CRYPTOPHYTA	6.4%	50.0%	0.0%	22.2%	18.0%	0.0%	8.3%	5.1%	0.0%	0.0%	11.4%	10.0%
CYANOPROKARYOTA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	60.7%	0.0%	0.0%	0.0%	0.0%	0.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
TAXONOMIC RICHNESS:												
CHLOROPHYTA	5	2	1	3	3	1	9	5	4	6	4	4
CHRYSOPHYTA	5	1	4	3	4	1	7	5	3	5	3	2
EUGLENOPHYTA	0	0	0	0	1	2	2	2	0	1	0	0
CRYPTOPHYTA	2	1	0	2	2	0	1	2	0	0	1	1
CYANOPROKARYOTA	0	0	0	0	0	0	1	0	0	0	0	0
TOTAL	12	4	5	8	10	4	20	14	7	12	8	7
CHLOROPHYLL a (ug / L):												
TOTAL	3.7	0.5	0.9	1.3	6	1	19.6	0.7	1.6	3.9	0.9	2.1

Note: 06/09 Chlorophyll samples held beyond the accepted holding time





CHESTERFIELD COUNTY UTILITIES
ADDISON-EVANS WATER PRODUCTION AND LABORATORY FACILITY

2008 PHYTOPLANKTON ASSESSMENT OF SWIFT CREEK RESERVOIR SITE 4

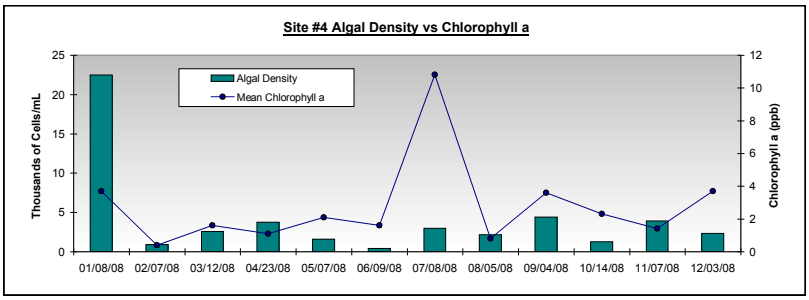
PHYTOPLANKTON CELL DENSITY COUNTS (Cells / mL)

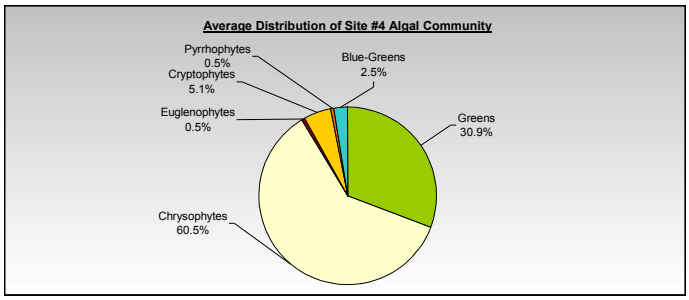
TAXON	01/08/08	02/07/08	03/12/08	04/23/08	05/07/08	06/09/08	07/08/08	08/05/08	09/04/08	10/14/08	11/07/08	12/03/08
CHLOROPHYTA												
Ankistrodesmus	1200	80	640	1920	800	80	880	80	160	480	320	400
Chotadella	0	0	0	0	0	0	0	0	0	0	80	160
Closteriopsis	0	0	0	0	0	0	80	80	80	0	0	0
Crucigenia	960	0	0	0	0	0	320	320	0	0	1280	320
Dictyosphaerium	0	0	0	0	0	0	640	640	320	0	0	0
Elakatothrix	0	0	0	0	160	0	0	0	0	0	160	0
Kirchneriella	0	0	0	0	0	0	0	0	0	80	0	0
Micractinium	0	0	0	0	0	0	320	0	0	240	0	0
Oocystis	0	0	0	0	0	0	0	0	320	0	0	0
Raciborskiella	0	0	240	0	0	0	0	0	0	0	0	0
Scenedesmus	320	0	0	0	0	0	80	0	160	0	0	0
Tetraedron	240	80	0	0	0	0	0	0	0	240	80	80
Treubaria	0	0	0	0	0	0	80	0	0	0	0	0
CHRYSOPHYTA												
Attheya	0	0	0	0	0	0	0	0	0	80	0	0
Chrysochromulina	19280	80	960	640	160	80	0	0	80	80	1840	560
Chrysococcus	0	80	0	0	0	0	0	0	0	0	0	0
Cyclotella	0	0	80	0	0	80	0	80	0	80	0	0
Dinobryon	0	0	0	80	0	0	0	80	0	0	0	0
Kephyrion	80	0	80	0	0	0	0	0	0	0	0	0
Mallomonas	0	0	0	0	0	0	0	0	0	0	80	0
Melosira	0	0	320	0	0	0	320	320	1840	0	0	560
Nitzschia	0	0	80	0	0	0	80	0	160	0	0	160
Rhizosolenia	160	0	80	80	160	0	0	240	80	0	80	0
EUGLENOPHYTA												
Euglena	0	0	0	0	0	0	0	80	0	0	0	0
Phacus	0	0	0	0	0	0	0	80	0	0	0	0
Trachelomonas	0	0	0	0	0	0	0	80	0	0	0	0
CRYPTOPHYTA												
Chroomonas	240	480	0	880	160	80	0	0	0	0	0	0
Cryptomonas	0	80	80	0	160	80	160	0	0	0	0	80
PYRRHOPHYTA												
Peridinium	0	0	0	160	0	0	0	80	0	0	0	0
CYANOPROKARYOTA												
Anabaena	0	0	0	0	0	0	0	0	1200	0	0	0

SUMMARY STATISTICS

DENSITY (Cells / ml):												
CHLOROPHYTA	2720	160	880	1920	960	80	2400	1120	1040	1040	1920	960
CHRYSOPHYTA	19520	160	1600	800	320	160	400	720	2160	240	2000	1280
EUGLENOPHYTA	0	0	0	0	0	0	0	240	0	0	0	0
CRYPTOPHYTA	240	560	80	880	320	160	160	0	0	0	0	80
PYRRHOPHYTA	0	0	0	160	0	0	0	80	0	0	0	0
CYANOPROKARYOTA	0	0	0	0	0	0	0	0	1200	0	0	0
TOTAL	22480	880	2560	3760	1600	400	2960	2160	4400	1280	3920	2320
RELATIVE ABUNDANCE:												
CHLOROPHYTA	12.1%	18.2%	34.4%	51.1%	60.0%	20.0%	81.1%	51.9%	23.6%	81.3%	49.0%	41.4%
CHRYSOPHYTA	86.8%	18.2%	62.5%	21.3%	20.0%	40.0%	13.5%	33.3%	49.1%	18.8%	51.0%	55.2%
EUGLENOPHYTA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.1%	0.0%	0.0%	0.0%	0.0%
CRYPTOPHYTA	1.1%	63.6%	3.1%	23.4%	20.0%	40.0%	5.4%	0.0%	0.0%	0.0%	0.0%	3.4%
PYRRHOPHYTA	0.0%	0.0%	0.0%	4.3%	0.0%	0.0%	0.0%	3.7%	0.0%	0.0%	0.0%	0.0%
CYANOPROKARYOTA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.3%	0.0%	0.0%	0.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
TAXONOMIC RICHNESS:												
CHLOROPHYTA	4	2	2	1	2	1	7	4	5	4	5	4
CHRYSOPHYTA	3	2	6	3	2	2	2	4	4	3	3	3
EUGLENOPHYTA	0	0	0	0	0	0	0	3	0	0	0	0
CRYPTOPHYTA	1	2	1	1	2	2	1	0	0	0	0	1
PYRRHOPHYTA	0	0	0	1	0	0	0	1	0	0	0	0
CYANOPROKARYOTA	0	0	0	0	0	0	0	0	1	0	0	0
TOTAL	8	6	9	6	6	5	10	12	10	7	8	8
CHLOROPHYLL a (ug / L):												
TOTAL	3.7	0.4	1.6	1.1	2.1	1.6	10.8	0.8	3.6	2.3	1.4	3.7

Note: 06/09 Chlorophyll samples held beyond the accepted holding time





CHESTERFIELD COUNTY UTILITIES
ADDISON-EVANS WATER PRODUCTION AND LABORATORY FACILITY

2008 PHYTOPLANKTON ASSESSMENT OF SWIFT CREEK RESERVOIR SITE 5

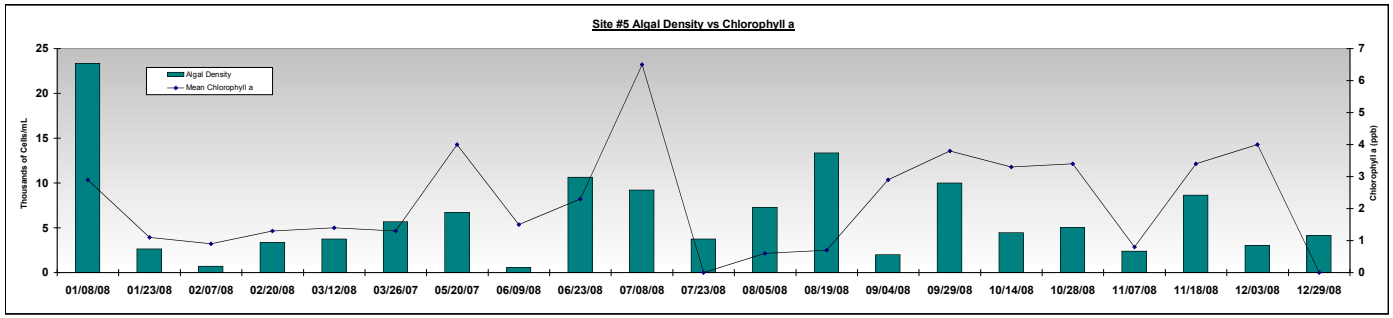
PHYTOPLANKTON CELL DENSITY COUNTS (Cells / mL)

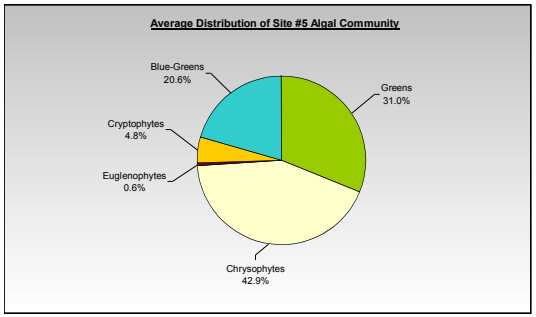
TAXON	01/08/08	01/23/08	02/07/08	02/20/08	03/12/08	03/26/07	04/23/08	04/30/08	05/07/08	05/20/07	06/09/08	06/23/08	07/08/08	07/23/08	08/05/08	08/19/08	09/04/08	09/29/08	10/14/08	10/28/08	11/07/08	11/18/08	12/03/08	12/29/08
CHLOROPHYTA		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental
Ankistrodesmus	1120	240	320	1440	880	1040	960	400	960	2080	0	320	80	320	320	240	160	160	720	320	480	160	640	400
Chotadella	240	80	0	0	0	0	0	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	80	0
Closteriopsis	0	0	0	0	0	0	0	0	0	0	0	0	80	0	240	80	0	160	0	0	0	0	0	0
Coelastrum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	720	0	0	0	0	0	0
Crucigenia	1280	0	0	0	0	0	0	320	640	640	0	0	320	0	0	320	0	2560	960	0	320	640	640	1520
Dictyosphaerium	0	0	0	0	0	0	0	0	0	0	0	0	560	320	1840	2240	320	0	0	0	0	0	0	0
Elakatothrix	0	0	0	160	0	0	0	0	0	0	0	0	0	0	240	0	0	0	0	0	0	0	0	0
Euastrum	0	0	0	0	0	0	0	0	0	0	0	0	320	960	160	480	0	0	160	0	0	0	0	0
Kirchneriella	0	0	0	0	0	0	0	0	0	0	0	0	640	320	0	0	0	320	160	1280	0	0	0	0
Micractinium	0	0	0	0	0	0	0	0	0	0	0	880	0	0	320	240	0	0	0	0	0	0	0	0
Oocystis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	160	0	0	0	0	0
Pediastrum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	640	0	0	0	0	0	0	0	0
Scenedesmus	0	0	0	0	0	0	0	0	0	320	0	0	0	0	800	0	240	0	0	0	0	0	0	0
Staurastrum	0	0	0	0	0	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0
Tetraedron	0	80	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	0	0	160	240	80	80	80
Treubaria	0	0	0	0	0	0	0	0	0	0	0	0	80	80	0	0	0	80	0	0	0	0	0	0
Ulothrix	0	0	0	0	0	0	0	0	0	0	0	1760	0	0	0	0	0	0	0	0	0	0	0	0
CHRYSOPHYTA																								
Asterionella	0	0	0	0	320	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Attheya	0	0	0	0	0	0	0	0	0	0	0	80	80	0	0	0	0	0	80	0	0	0	0	0
Chrysochromulina	19840	1680	80	1520	2160	4240	80	320	0	0	160	80	160	0	0	400	160	80	400	0	1040	0	1120	880
Chrysococcus	0	0	80	0	0	0	0	0	80	0	0	0	0	0	0	160	0	0	0	0	80	0	0	0
Cyclotella	80	0	0	0	0	0	0	0	0	80	0	0	80	240	0	160	240	0	560	0	80	0	0	0
Diceras	0	0	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dinobryon	80	0	0	80	160	80	0	0	160	0	0	80	0	0	160	0	0	0	0	0	0	0	0	0
Kephyrion	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mallomonas	80	0	0	80	0	0	0	80	0	0	0	0	0	0	0	0	0	80	80	0	0	0	0	0
Melosira	0	320	0	0	0	0	320	800	0	2240	0	1440	1280	0	480	0	720	960	1200	3200	0	160	0	960
Navicula	0	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	80	0	0
Nitzschia	240	0	0	0	0	0	0	0	80	160	80	560	480	160	480	160	80	80	0	0	80	0	80	80
Rhizosolenia	160	80	0	0	0	240	80	80	240	0	80	80	0	80	0	80	0	0	0	0	0	80	0	80
Tabellaria	0	0	0	0	0	0	0	0	0	0	0	1040	0	0	0	880	0	0	0	0	0	0	0	0
EUGLENOPHYTA																								
Euglena	0	0	0	0	0	0	0	0	0	80	0	80	0	160	0	0	0	0	0	0	0	0	0	0
Trachelomonas	0	0	0	0	0	0	0	0	0	0	0	80	160	0	0	160	0	0	0	80	0	0	0	0
CRYPTOPHYTA																								
Chroomonas	160	160	160	80	160	80	0	0	160	800	80	640	0	640	0	80	0	560	0	0	0	0	400	80
Cryptomonas	0	0	0	0	80	0	160	80	160	240	160	0	0	320	160	160	0	480	0	0	0	80	0	80
Rhodomonas	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	0	0	0
PYRRHOPHYTA																								
Peridinium	0	0	0	0	0	0	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0
CYANOPROKARYOTA																								
Anabaena	0	0	0	0	0	0	0	0	0	0	0	3520	4800	0	1920	6800	0	0	0	0	0	7360	0	0
Microcystis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3760	0	0	0	0	0	0

SUMMARY STATISTICS

	01/08/08	01/23/08	02/07/08	02/20/08	03/12/08	03/26/07	04/23/08	04/30/08	05/07/08	05/20/07	06/09/08	06/23/08	07/08/08	07/23/08	08/05/08	08/19/08	09/04/08	09/29/08	10/14/08	10/28/08	11/07/08	11/18/08	12/03/08	12/29/08
DENSITY (Cells / ml):																								
CHLOROPHYTA	2640	400	320	1600	880	1040	960	720	1600	3040	0	2960	2160	2080	4080	4320	800	4000	2160	1760	1040	880	1440	2000
CHRYSOPHYTA	20480	2080	240	1680	2640	4560	480	1280	640	2560	320	3360	2080	480	1120	1840	1200	1200	2320	3200	1280	320	1200	2000
EUGLENOPHYTA	0	0	0	0	0	0	0	0	0	80	0	160	160	160	0	160	0	0	0	80	0	0	0	0
CRYPTOPHYTA	240	160	160	80	240	80	160	80	320	1040	240	640	0	960	160	240	0	1040	0	0	80	80	400	160
PYRRHOPHYTA	0	0	0	0	0	0	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0
CYANOPROKARYOTA	0	0	0	0	0	0	0	0	0	0	0	3520	4800	0	1920	6800	0	3760	0	0	0	7360	0	0
TOTAL	23360	2640	720	3360	3760	5680	1600	2080	2560	6720	560	10640	9200	3760	7280	13360	2000	10000	4480	5040	2400	8640	3040	4160
RELATIVE ABUNDANCE:																								
CHLOROPHYTA	11.3%	15.2%	44.4%	47.6%	23.4%	18.3%	60.0%	34.6%	62.5%	45.2%	0.0%	27.8%	23.5%	55.3%	56.0%	32.3%	40.0%	40.0%	48.2%	34.9%	43.3%	10.2%	47.4%	48.1%
CHRYSOPHYTA	87.7%	78.8%	33.3%	50.0%	70.2%	80.3%	30.0%	61.5%	25.0%	38.1%	57.1%	31.6%	22.6%	12.8%	15.4%	13.8%	60.0%	12.0%	51.8%	63.5%	53.3%	3.7%	39.5%	48.1%
EUGLENOPHYTA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	1.5%	1.7%	4.3%	0.0%	1.2%	0.0%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%
CRYPTOPHYTA	1.0%	6.1%	22.2%	2.4%	6.4%	1.4%	10.0%	3.8%	12.5%	15.5%	42.9%	6.0%	0.0%	25.5%	2.2%	1.8%	0.0%	10.4%	0.0%	0.0%	3.3%	0.9%	13.2%	3.8%
PYRRHOPHYTA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CYANOPROKARYOTA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	33.1%	52.2%	0.0%	26.4%	50.9%	0.0%	37.6%	0.0%	0.0%	0.0%	85.2%	0.0%	0.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
TAXONOMIC RICHNESS:																								
CHLOROPHYTA	3	3	1	2	1	1	1	2	2	3	0	3	8	5	9	8	4	6	5	3	3	3	4	3
CHRYSOPHYTA	6	3	3	3	3	3	3	4	5	4	3	7	5	3	3	6	4	4	5	1	4	3	2	4
EUGLENOPHYTA	0	0	0	0	0	0	0	0	0	1	0	2	1	1	0	1	0	0	0	1	0	0	0	0
CRYPTOPHYTA	2	1	1	1	2	1	1	1	2	2	2	1	0	2	1	2	0	2	0	0	1	1	1	2
PYRRHOPHYTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CYANOPROKARYOTA	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	1	0	0	0	1	0	0
TOTAL	11	7	5	6	6	5	5	7	9	10	5	14	15	11	14	18	8	13	10	5	8	8	7	9
CHLOROPHYLL a (ug / L):																								
TOTAL	2.9	1.1	0.9	1.3	1.4	1.3	1.5	1.2	1.9	4	1.5	2.3	6.5	0	0.6	0.7	2.9	3.8	3.3	3.4	0.8	3.4	4	0

Note: 06/09 and 06/23 Chlorophyll samples held beyond the accepted holding time





CHESTERFIELD COUNTY UTILITIES
ADDISON-EVANS WATER PRODUCTION AND LABORATORY FACILITY

2008 PHYTOPLANKTON ASSESSMENT OF SWIFT CREEK RESERVOIR SITE 6

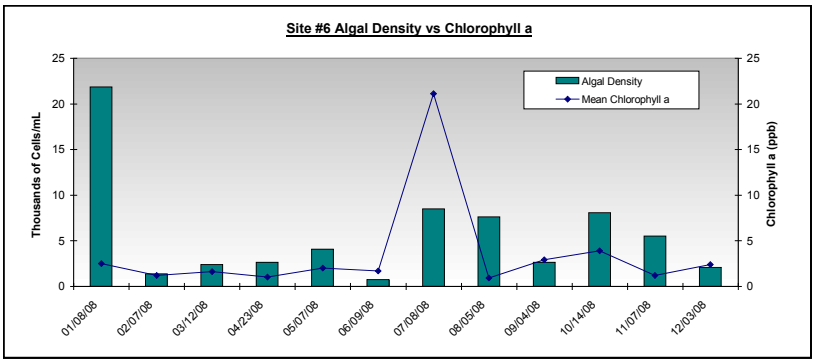
PHYTOPLANKTON CELL DENSITY COUNTS (Cells / mL)

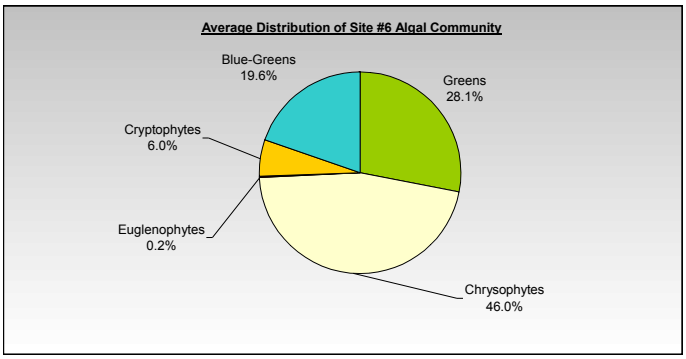
TAXON	01/08/08	02/07/08	03/12/08	04/23/08	05/07/08	06/09/08	07/08/08	08/05/08	09/04/08	10/14/08	11/07/08	12/03/08
CHLOROPHYTA												
Ankistrodesmus	1920	320	640	1680	1520	160	330	160	240	880	800	160
Chotadella	80	0	0	0	0	80	80	0	0	0	0	80
Crucigenia	320	640	0	0	800	0	320	320	640	320	0	0
Dictyosphaerium	0	0	0	0	0	0	0	2320	0	0	240	0
Elakatothrix	160	0	0	0	0	0	0	0	0	0	160	0
Euastrum	0	0	0	0	0	0	160	320	160	0	0	0
Golenkinia	0	0	0	0	0	80	0	0	0	0	0	0
Micractinium	0	0	0	0	0	0	80	320	160	0	0	0
Pediastrum	0	0	0	0	0	0	0	560	0	0	0	0
Scenedesmus	0	0	0	0	0	0	0	0	160	0	960	0
Tetraedron	80	0	0	80	0	80	0	0	0	80	320	160
CHRYSOPHYTA												
Asterionella	0	0	800	0	0	0	0	0	0	0	0	0
Attheya	0	0	0	0	0	80	0	0	0	0	0	0
Chrysochromulina	18480	0	320	640	160	80	0	0	80	0	2400	960
Cyclotella	0	0	80	0	160	80	0	80	80	320	240	0
Dinobryon	0	0	80	0	0	0	0	0	0	0	0	0
Kephyrion	80	0	0	0	0	0	0	0	0	0	0	0
Mallomonas	0	0	80	0	0	0	0	80	0	80	0	0
Melosira	0	0	0	0	320	0	960	0	960	0	0	640
Nitzschia	160	0	0	80	0	0	240	80	80	0	80	0
Rhizosolenia	160	80	160	80	80	0	80	0	80	80	0	80
Synedra	0	0	0	0	0	0	80	0	0	0	0	0
Tabellaria	0	0	0	0	0	0	720	240	0	0	0	0
EUGLENOPHYTA												
Euglena	0	0	0	0	0	80	0	0	0	0	0	0
Trachelomonas	0	0	0	0	0	0	0	80	0	0	0	0
CRYPTOPHYTA												
Chroomonas	400	160	80	0	800	0	320	240	0	80	0	0
Cryptomonas	0	160	160	80	240	0	320	400	0	240	80	0
Rhodomonas	0	0	0	0	0	0	0	0	0	0	240	0
CYANOPROKARYOTA												
Anabaena	0	0	0	0	0	0	4800	2400	0	6000	0	0

SUMMARY STATISTICS

DENSITY (Cells / ml):												
CHLOROPHYTA	2560	960	640	1760	2320	400	970	4000	1360	1280	2480	400
CHRYSOPHYTA	18880	80	1520	800	720	240	2080	480	1280	480	2720	1680
EUGLENOPHYTA	0	0	0	0	0	80	0	80	0	0	0	0
CRYPTOPHYTA	400	320	240	80	1040	0	640	640	0	320	320	0
CYANOPROKARYOTA	0	0	0	0	0	0	4800	2400	0	6000	0	0
TOTAL	21840	1360	2400	2640	4080	720	8490	7600	2640	8080	5520	2080
RELATIVE ABUNDANCE:												
CHLOROPHYTA	11.7%	70.6%	26.7%	66.7%	56.9%	55.6%	11.4%	52.6%	51.5%	15.8%	44.9%	19.2%
CHRYSOPHYTA	86.4%	5.9%	63.3%	30.3%	17.6%	33.3%	24.5%	6.3%	48.5%	5.9%	49.3%	80.8%
EUGLENOPHYTA	0.0%	0.0%	0.0%	0.0%	0.0%	11.1%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%
CRYPTOPHYTA	1.8%	23.5%	10.0%	3.0%	25.5%	0.0%	7.5%	8.4%	0.0%	4.0%	5.8%	0.0%
CYANOPROKARYOTA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	56.5%	31.6%	0.0%	74.3%	0.0%	0.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
TAXONOMIC RICHNESS:												
CHLOROPHYTA	5	2	1	2	2	4	5	6	5	3	5	3
CHRYSOPHYTA	4	1	6	3	4	3	5	4	5	3	3	3
EUGLENOPHYTA	0	0	0	0	0	1	0	1	0	0	0	0
CRYPTOPHYTA	1	2	2	1	2	0	2	2	0	2	2	0
CYANOPROKARYOTA	0	0	0	0	0	0	1	1	0	1	0	0
TOTAL	10	5	9	6	8	8	13	14	10	9	10	6
CHLOROPHYLL a (ug / L):												
TOTAL	2.5	1.2	1.6	1	2	1.7	21.1	0.9	2.9	3.9	1.2	2.4

Note: 06/09 and 08/05 Chlorophyll samples held beyond the accepted holding time





CHESTERFIELD COUNTY UTILITIES
ADDISON-EVANS WATER PRODUCTION AND LABORATORY FACILITY

2008 PHYTOPLANKTON ASSESSMENT OF SWIFT CREEK RESERVOIR SITE 7

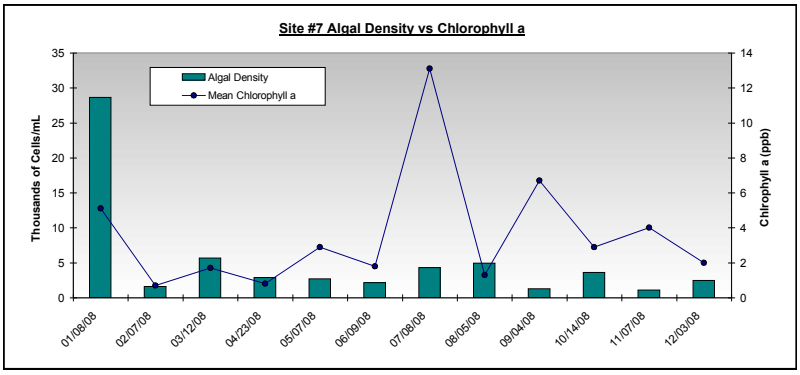
PHYTOPLANKTON CELL DENSITY COUNTS (Cells / mL)

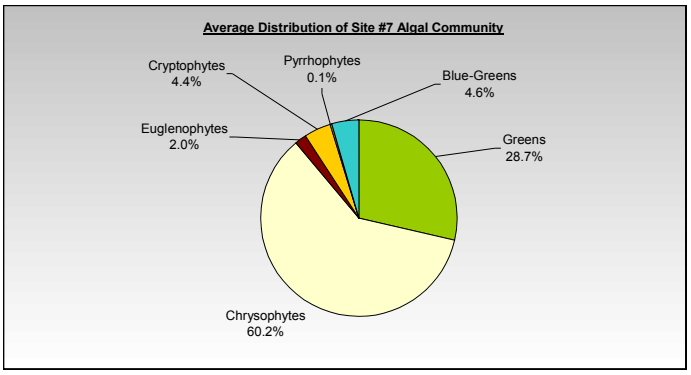
TAXON	01/08/08	02/07/08	03/12/08	04/23/08	05/07/08	06/09/08	07/08/08	08/05/08	09/04/08	10/14/08	11/07/08	12/03/08
CHLOROPHYTA												
Ankistrodesmus	2080	240	640	2320	960	320	720	160	80	320	320	160
Chotadella	320	0	0	0	0	0	0	0	0	0	0	80
Closteriopsis	0	0	0	0	0	0	0	80	80	0	0	0
Crucigenia	960	0	0	0	640	640	0	320	960	1920	0	320
Dictyosphaerium	0	0	0	0	0	0	0	640	0	0	0	0
Euastrum	0	0	0	0	0	0	0	160	0	0	0	0
Golenkinia	0	0	0	0	0	80	0	0	0	0	0	0
Kirchneriella	0	0	0	0	0	0	0	320	0	0	0	0
Micractinium	0	0	0	0	0	240	0	0	0	240	0	0
Scenedesmus	160	0	0	0	160	0	0	0	0	0	0	640
Tetraedron	80	0	0	0	0	0	0	0	0	0	240	80
Treubaria	0	0	0	0	0	0	0	80	0	0	0	0
CHRYSOPHYTA												
Asterionella	0	0	1520	0	0	0	0	0	0	0	0	0
Attheya	0	0	0	0	0	80	0	0	0	0	0	0
Chrysochromulina	23280	160	2480	160	80	0	0	0	0	160	560	800
Chrysococcus	0	80	0	0	0	0	0	160	0	0	0	0
Cyclotella	0	0	0	0	80	0	320	0	0	240	0	0
Diceras	80	0	0	0	0	0	0	0	0	0	0	0
Dinobryon	640	400	720	0	0	0	80	0	0	0	0	0
Kephyrion	0	0	0	0	80	0	0	0	0	0	0	0
Melosira	0	0	0	0	0	0	240	800	0	320	0	0
Nitzschia	160	0	0	0	80	80	320	320	80	0	0	160
Rhizosolenia	240	320	160	80	160	480	160	80	0	80	0	80
Tabellaria	0	0	0	0	0	0	0	320	0	0	0	0
EUGLENOPHYTA												
Euglena	0	0	0	0	0	0	160	240	0	0	0	0
Trachelomonas	0	0	0	0	0	80	320	320	80	0	0	0
CRYPTOPHYTA												
Chroomonas	640	400	0	80	480	0	0	0	0	240	0	80
Cryptomonas	0	0	80	240	0	80	0	160	0	80	0	80
Rhodomonas	0	0	80	0	0	0	0	0	0	0	0	0
PYRRHOPHYTA												
Peridinium	0	0	0	0	0	80	0	0	0	0	0	0
CYANOPROKARYOTA												
Anabaena	0	0	0	0	0	0	2000	800	0	0	0	0

SUMMARY STATISTICS

DENSITY (Cells / ml):												
CHLOROPHYTA	3600	240	640	2320	1760	1280	720	1760	1120	2480	560	1280
CHRYSOPHYTA	24400	960	4880	240	480	640	1120	1680	80	800	560	1040
EUGLENOPHYTA	0	0	0	0	0	80	480	560	80	0	0	0
CRYPTOPHYTA	640	400	160	320	480	80	0	160	0	320	0	160
PYRRHOPHYTA	0	0	0	0	0	80	0	0	0	0	0	0
CYANOPROKARYOTA	0	0	0	0	0	0	2000	800	0	0	0	0
TOTAL	28640	1600	5680	2880	2720	2160	4320	4960	1280	3600	1120	2480
RELATIVE ABUNDANCE:												
CHLOROPHYTA	12.6%	15.0%	11.3%	80.6%	64.7%	59.3%	16.7%	35.5%	87.5%	68.9%	50.0%	51.6%
CHRYSOPHYTA	85.2%	60.0%	85.9%	8.3%	17.6%	29.6%	25.9%	33.9%	6.3%	22.2%	50.0%	41.9%
EUGLENOPHYTA	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%	11.1%	11.3%	6.3%	0.0%	0.0%	0.0%
CRYPTOPHYTA	2.2%	25.0%	2.8%	11.1%	17.6%	3.7%	0.0%	3.2%	0.0%	8.9%	0.0%	6.5%
PYRRHOPHYTA	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CYANOPROKARYOTA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	46.3%	16.1%	0.0%	0.0%	0.0%	0.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
TAXONOMIC RICHNESS:												
CHLOROPHYTA	5	1	1	1	3	4	1	7	3	3	2	5
CHRYSOPHYTA	5	4	4	2	5	3	5	5	1	4	1	3
EUGLENOPHYTA	0	0	0	0	0	1	2	2	0	0	0	0
CRYPTOPHYTA	1	1	2	2	1	1	0	1	0	2	0	2
PYRRHOPHYTA	0	0	0	0	0	1	0	0	0	0	0	0
CYANOPROKARYOTA	0	0	0	0	0	0	1	1	0	0	0	0
TOTAL	11	6	7	5	9	10	9	16	4	9	3	10
CHLOROPHYLL a (ug / L):												
TOTAL	5.1	0.7	1.7	0.8	2.9	1.8	13.1	1.3	6.7	2.9	4	2

Note: 06/09 and 08/05 Chlorophyll samples held beyond the accepted holding time





CHESTERFIELD COUNTY UTILITIES
ADDISON-EVANS WATER PRODUCTION AND LABORATORY FACILITY

2008 PHYTOPLANKTON ASSESSMENT OF SWIFT CREEK RESERVOIR SITE 8

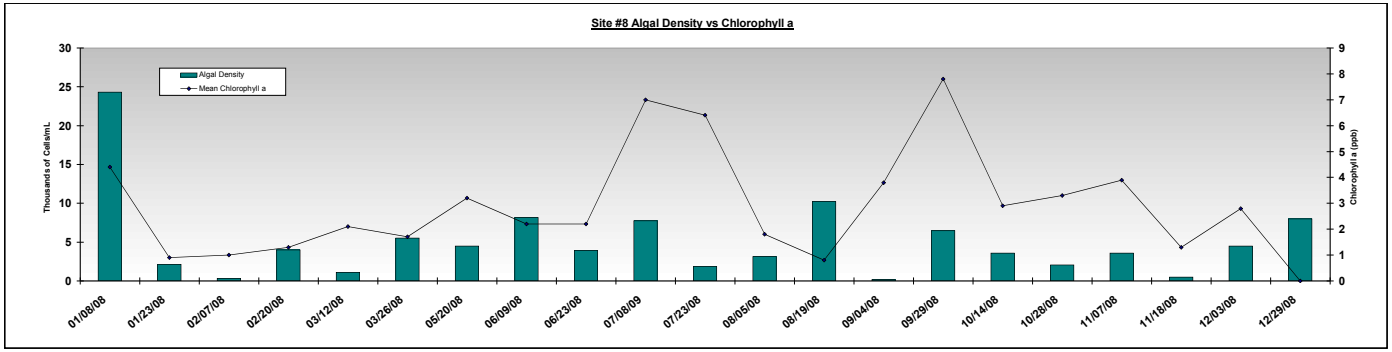
PHYTOPLANKTON CELL DENSITY COUNTS (Cells / mL)

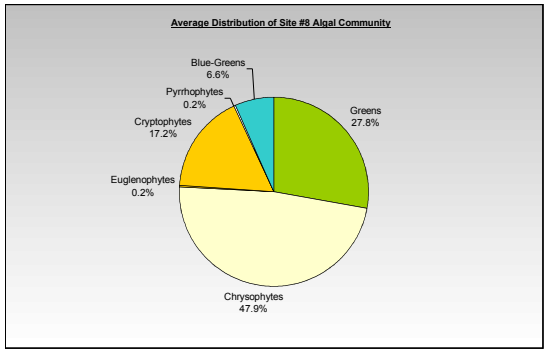
TAXON	01/08/08	01/23/08	02/07/08	02/20/08	03/12/08	03/26/08	04/23/08	04/30	05/07/08	05/20/08	06/09/08	06/23/08	07/08/08	07/23/08	08/05/08	08/19/08	09/04/08	09/29/08	10/14/08	10/28/08	11/07/08	11/18/08	12/03/08	12/29/08
CHLOROPHYTA		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental		Supplemental
Ankistrodesmus	1280	0	80	1520	480	480	880	240	1040	1200	160	320	640	240	80	560	0	80	240	240	960	240	800	480
Chotadella	80	0	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	0	80	160	0
Closteriopsis	0	0	0	0	0	0	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0
Coelastrum	0	0	0	0	0	0	0	560	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crucigenia	0	0	0	320	0	0	0	960	320	0	0	0	1280	0	240	0	0	0	0	1280	0	0	320	1280
Dictyosphaerium	240	0	0	0	0	0	0	0	0	0	0	0	560	320	320	2800	0	0	0	0	0	0	560	0
Elakatothrix	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Euastrum	0	0	0	0	0	0	0	0	0	0	0	0	160	320	0	320	0	0	0	0	0	0	0	0
Kirchneriella	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	880	0	0	320	0	0	0	0	0
Oocystis	0	0	0	0	0	0	0	0	0	0	0	240	0	0	0	0	0	0	0	0	0	0	0	0
Raciborskiella	0	0	0	0	0	320	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scenedesmus	160	0	0	0	0	0	0	0	160	0	0	800	0	320	320	800	0	0	0	0	0	0	0	320
Tetraedron	80	0	0	0	0	0	80	160	0	0	0	0	80	0	80	0	0	0	80	0	80	0	240	480
Treubaria	0	0	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ulothrix	0	0	0	0	0	0	0	400	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHRYSOPHYTA																								
Asterionella	0	0	0	0	320	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Attheya	0	0	0	0	0	0	0	0	0	0	80	0	0	0	0	0	80	0	0	0	0	0	0	0
Chrysochromulina	21200	1680	0	320	0	4000	240	80	80	80	80	0	0	0	0	80	0	0	0	0	800	0	1600	4000
Chrysococcus	0	0	80	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cyclotella	0	0	0	0	0	0	0	0	0	80	0	0	0	0	80	0	0	0	80	240	320	0	0	0
Dinobryon	160	80	0	160	0	160	0	480	0	0	0	320	0	0	0	0	0	0	0	0	0	0	0	0
Kephyrion	0	0	0	0	0	80	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mallomonas	0	0	0	80	0	0	0	160	0	80	0	0	0	0	80	160	0	0	0	0	0	0	0	0
Melosira	0	0	0	0	0	0	0	320	0	720	320	1120	1920	0	160	320	0	2160	2800	160	960	0	160	0
Nitzschia	240	0	0	0	0	0	80	0	80	240	80	480	80	80	240	240	0	0	0	80	0	0	160	80
Rhizosolenia	80	80	80	0	80	160	80	0	0	80	160	80	80	0	80	160	80	80	0	0	80	80	80	160
Tabellaria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1520	0	0	0	0	0	0	0	0
EUGLENOPHYTA																								
Euglena	0	0	0	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0
Trachelomonas	0	0	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	0	0	0	0	0
CRYPTOPHYTA																								
Chroomonas	320	240	0	1360	160	240	80	240	480	1520	6880	320	1440	80	160	720	0	800	0	0	240	80	160	160
Cryptomonas	0	80	0	0	80	80	0	80	0	320	80	160	400	400	80	480	0	160	80	0	80	0	240	240
Rhodomonas	480	0	0	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	0	0	0
PYRRHOPHYTA																								
Peridinium	0	0	0	0	0	0	0	0	0	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0
CYANOPROKARYOTA																								
Anabaena	0	0	0	0	0	0	0	0	0	0	0	0	1120	0	1200	1200	0	3200	0	0	0	0	0	800

SUMMARY STATISTICS

	01/08/08	01/23/08	02/07/08	02/20/08	03/12/08	03/26/08	04/23/08	04/30	05/07/08	05/20/08	06/09/08	06/23/08	07/08/08	07/23/08	08/05/08	08/19/08	09/04/08	09/29/08	10/14/08	10/28/08	11/07/08	11/18/08	12/03/08	12/29/08
DENSITY (Cells / ml):																								
CHLOROPHYTA	1840	0	160	1920	480	800	960	2320	1920	1280	160	1360	2720	1280	1040	5360	0	80	640	1600	1040	320	2080	2560
CHRYSOPHYTA	21680	1840	160	560	400	4400	400	1040	320	1280	720	2000	2080	80	640	2480	160	2240	2880	480	2160	80	2000	4240
EUGLENOPHYTA	0	0	0	0	0	0	0	0	0	0	240	0	0	0	0	0	0	0	0	0	0	0	0	0
CRYPTOPHYTA	800	320	0	1520	240	320	80	320	480	1840	6960	480	1840	480	240	1200	0	960	80	0	400	80	400	400
PYRRHOPHYTA	0	0	0	0	0	0	0	0	0	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0
CYANOPROKARYOTA	0	0	0	0	0	0	0	0	0	0	0	0	1120	0	1200	1200	0	3200	0	0	0	0	0	800
TOTAL	24320	2160	320	4000	1120	5520	1440	3680	2720	4480	8160	3920	7760	1840	3120	10240	160	6480	3600	2080	3600	480	4480	8000
RELATIVE ABUNDANCE:																								
CHLOROPHYTA	7.6%	0.0%	50.0%	48.0%	42.9%	14.5%	66.7%	63.0%	70.6%	28.6%	2.0%	34.7%	35.1%	69.6%	33.3%	52.3%	0.0%	1.2%	17.8%	76.9%	28.9%	66.7%	46.4%	32.0%
CHRYSOPHYTA	89.1%	85.2%	50.0%	14.0%	35.7%	79.7%	27.8%	28.3%	11.8%	28.6%	8.8%	51.0%	26.8%	4.3%	20.5%	24.2%	100.0%	34.6%	80.0%	23.1%	60.0%	16.7%	44.6%	53.0%
EUGLENOPHYTA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CRYPTOPHYTA	3.3%	14.8%	0.0%	38.0%	21.4%	5.8%	5.6%	8.7%	17.6%	41.1%	85.3%	12.2%	23.7%	26.1%	7.7%	11.7%	0.0%	14.8%	2.2%	0.0%	11.1%	16.7%	8.9%	5.0%
PYRRHOPHYTA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	1.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CYANOPROKARYOTA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.4%	0.0%	38.5%	11.7%	0.0%	49.4%	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
TAXONOMIC RICHNESS:																								
CHLOROPHYTA	5	0	2	3	1	2	2	5	5	2	1	3	5	5	5	5	0	1	3	3	2	2	5	4
CHRYSOPHYTA	4	3	2	3	2	4	3	4	4	6	5	4	3	1	5	6	2	2	2	3	4	1	4	3
EUGLENOPHYTA	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
CRYPTOPHYTA	2	2	0	2	2	2	1	2	1	2	2	2	2	2	2	2	0	2	1	0	3	1	2	2
PYRRHOPHYTA	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
CYANOPROKARYOTA	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0	0	0	1
TOTAL	11	5	4	8	5	8	6	11	10	11	11	10	11	8	13	14	2	6	6	6	9	4	11	10
CHLOROPHYLL a (ug / L):																								
TOTAL	4.4	0.9	1	1.3	2.1	1.7	0.7	1	2.9	3.2	2.2	2.2	7	6.4	1.8	0.8	3.8	7.8	2.9	3.3	3.9	1.3	2.8	0

Note: 06/09, 06/23 and 08/05 Chlorophyll samples held beyond the accepted holding time





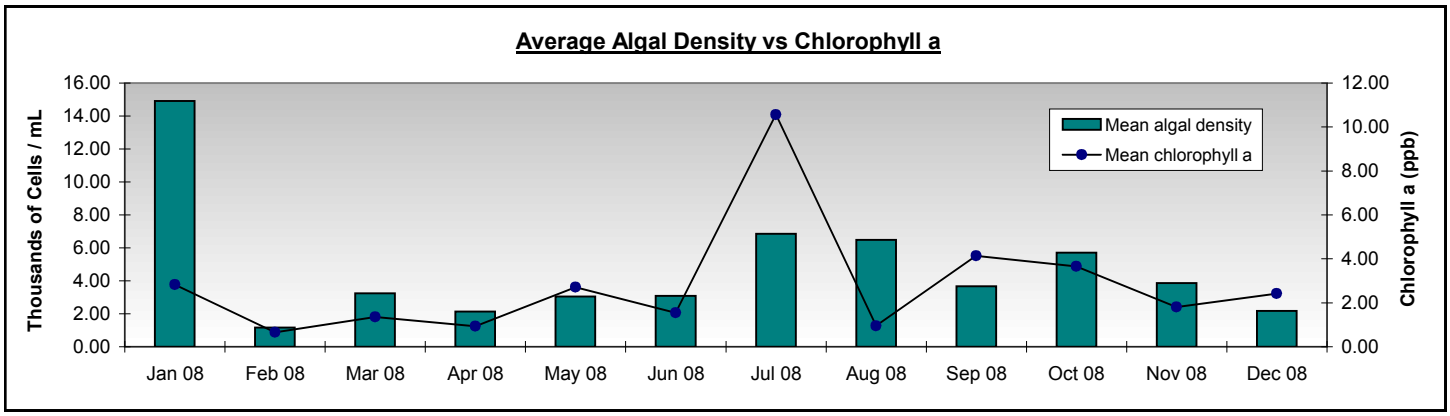
CHESTERFIELD COUNTY UTILITIES
ADDISON-EVANS WATER PRODUCTION & LABORATORY FACILITY

2008 Phytoplankton Assessment of Swift Creek Reservoir Sites 1 - 8

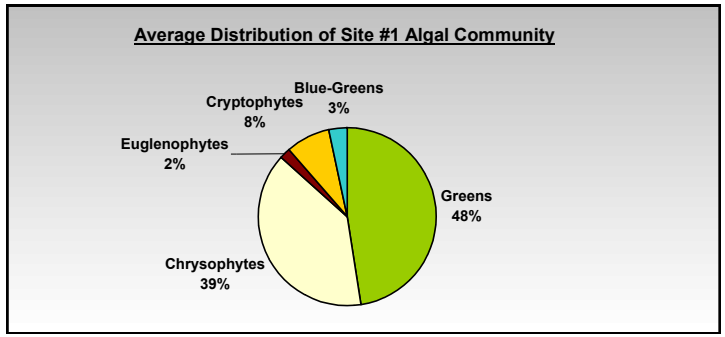
2008 Chlorophyll *a*	Jan 08	Feb 08	Mar 08	Apr 08	May 08	Jun 08	Jul 08	Aug 08	Sep 08	Oct 08	Nov 08	Dec 08
Site #1	1.7	0.5	0.7	0.3	0.7	0.7	**0**	**0**	**0**	5.2	0.8	1.5
Site #2	2.3	0.4	0.5	0.4	3.2	0.5	**0**	**0**	**0**	5.4	0.3	0.8
Site #3	3.7	0.5	0.9	1.3	6.0	1.0	19.6	0.7	1.6	3.9	0.9	2.1
Site #4	3.7	0.4	1.6	1.1	2.1	1.6	10.8	0.8	3.6	2.3	1.4	3.7
Site #5	2.9	0.9	1.4	1.5	1.9	1.5	6.5	0.6	2.9	3.3	0.8	4.0
Site #6	2.5	1.2	1.6	1.0	2.0	1.7	21.1	0.9	2.9	3.9	1.2	2.4
Site #7	5.1	0.7	1.7	0.8	2.9	1.8	13.1	1.3	6.7	2.9	4.0	2.0
Site #8	4.4	1.0	2.1	0.7	2.9	2.2	7.0	1.8	3.8	2.9	3.9	2.8
Supplemental Site #5	1.1	0.4	1.3	1.2	4.0	2.3	0.0	0.7	3.8	3.4	3.4	0.0
Supplemental Site #8	0.9	1.3	1.7	1.0	3.2	2.2	6.4	0.8	7.8	3.3	1.3	0.0
Mean Chlorophyll *a* ppb	2.83	0.66	1.35	0.93	2.71	1.55	10.56	0.95	4.14	3.65	1.80	2.41

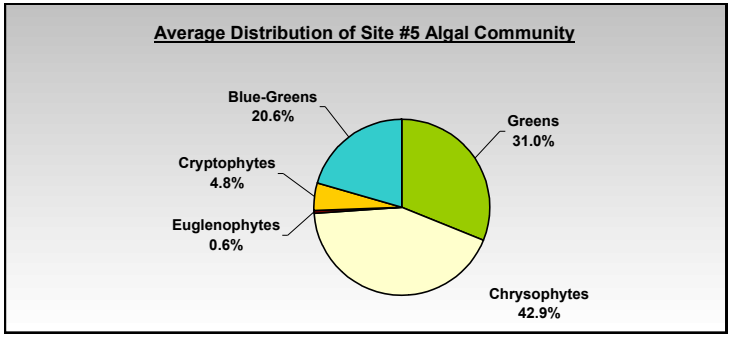
2008 Algal Density	Jan 08	Feb 08	Mar 08	Apr 08	May 08	Jun 08	Jul 08	Aug 08	Sep 08	Oct 08	Nov 08	Dec 08
Site #1	5680	2240	2880	1280	320	1760	**0**	**0**	**0**	11040	7680	560
Site #2	8080	1760	1440	480	1360	1600	**0**	**0**	**0**	10480	2560	800
Site #3	10000	480	1360	1440	4000	960	16480	3120	2400	7440	2800	1600
Site #4	22480	880	2560	3760	1600	400	2960	2160	4400	1280	3920	2320
Site #5	23360	720	3760	1600	2560	560	9200	7280	2000	4480	2400	3040
Site #6	21840	1360	2400	2640	4080	720	8490	7600	2640	8080	5520	2080
Site #7	28640	1600	5680	2880	2720	2160	4320	4960	1280	3600	1120	2480
Site #8	24320	320	1120	1440	2720	8160	7760	3120	160	3600	3600	4480
Supplemental Site #5	2640	3360	5680	2080	6720	10640	3760	13360	10000	5040	8640	4160
Supplemental Site #8	2160	4000	5520	3680	4480	3920	1840	10240	6480	2080	480	8000
Mean Cells/mL	14920	1170	3240	2128	3056	3088	6851.25	6480	3670	5712	3872	2170

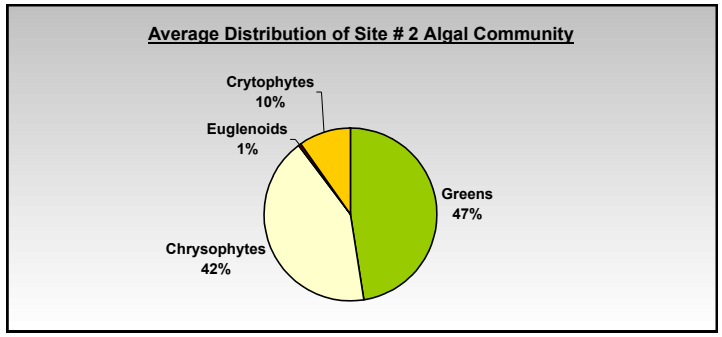
	Jan 08	Feb 08	Mar 08	Apr 08	May 08	Jun 08	Jul 08	Aug 08	Sep 08	Oct 08	Nov 08	Dec 08
Mean algal density	14.92	1.17	3.24	2.13	3.06	3.09	6.85	6.48	3.67	5.71	3.87	2.17
Mean chlorophyll *a*	2.83	0.66	1.35	0.93	2.71	1.55	10.56	0.95	4.14	3.65	1.80	2.41

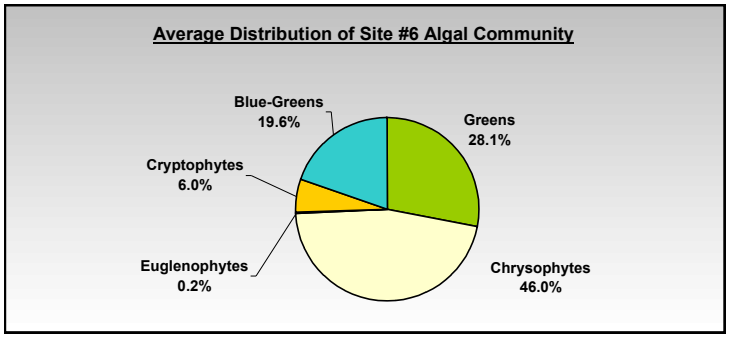


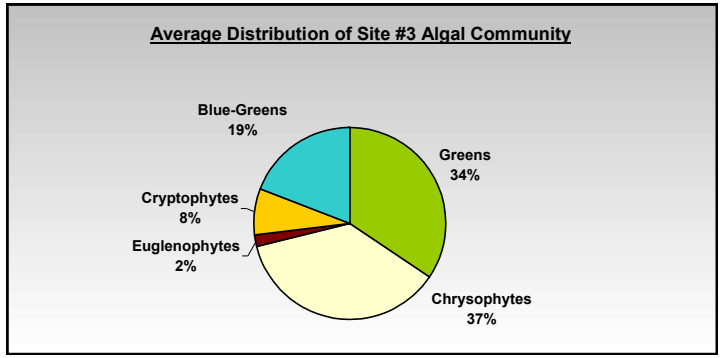
2008 Distribution of Algal Community Sites 1 - 8

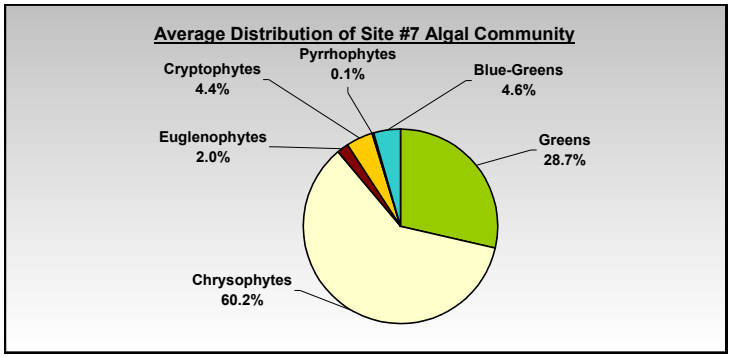


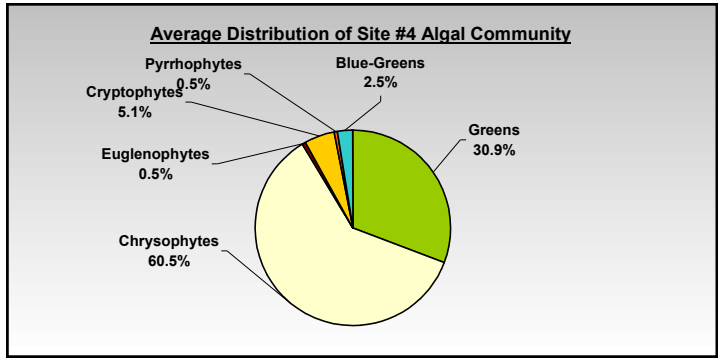


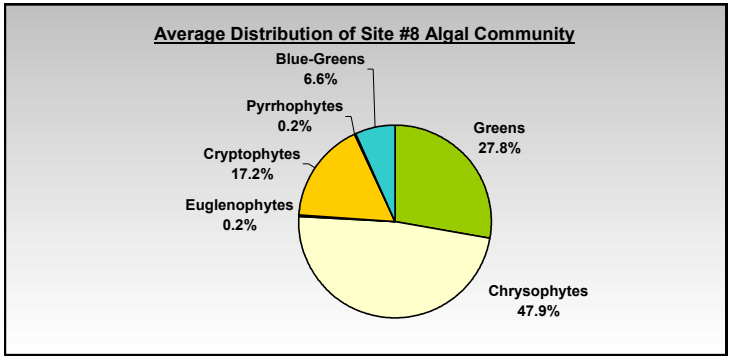










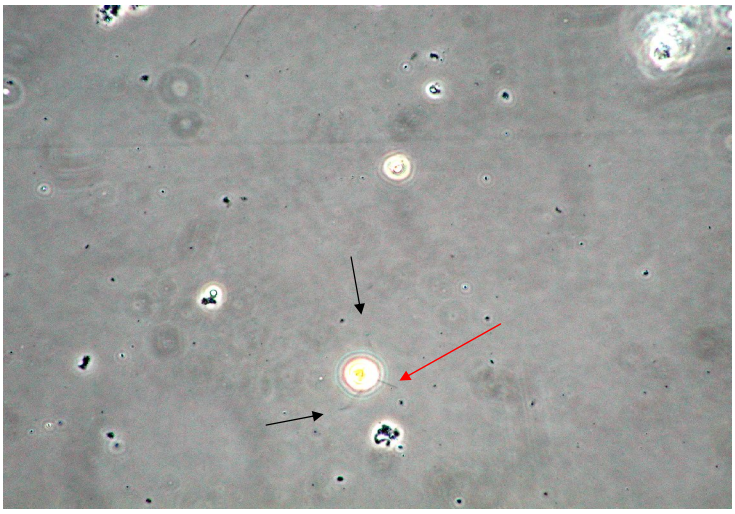


ADDISON - EVANS WATER PRODUCTION AND LABORATORY FACILITY
SWIFT CREEK RESERVOIR

PHYTOPLANKTON ASSESSMENT OF ALGAL BLOOM

Date collected:	01/11/08	**Notable comments:**	Live sample photographed
Collectors:	GED		Preserved sample counts obtained (see below)
Date analyzed:	01/15/08	**Swift Creek Reservoir location:**	Woodlake Real Estate office dock
Analyst:	CFH	**Copper sulfate applied:**	Unknown

Chrysochromulina **(Phylum Chrysophyta)**



400X Mag

Comments:
Chrysochromulina haptonema (see red arrow) and two flagella observed (see black arrows)

Other algae observed in sample: See attached sheet

Phylum Chlorophyta total cells/mL count : 4800

Phylum Chrysophyta total cells/mL count: 6560
Chrysochromulina cells/mL: 5600

Phylum Cryptophyta total cells/mL count: 1600

Total number of cells/mL count of slide: 12,960