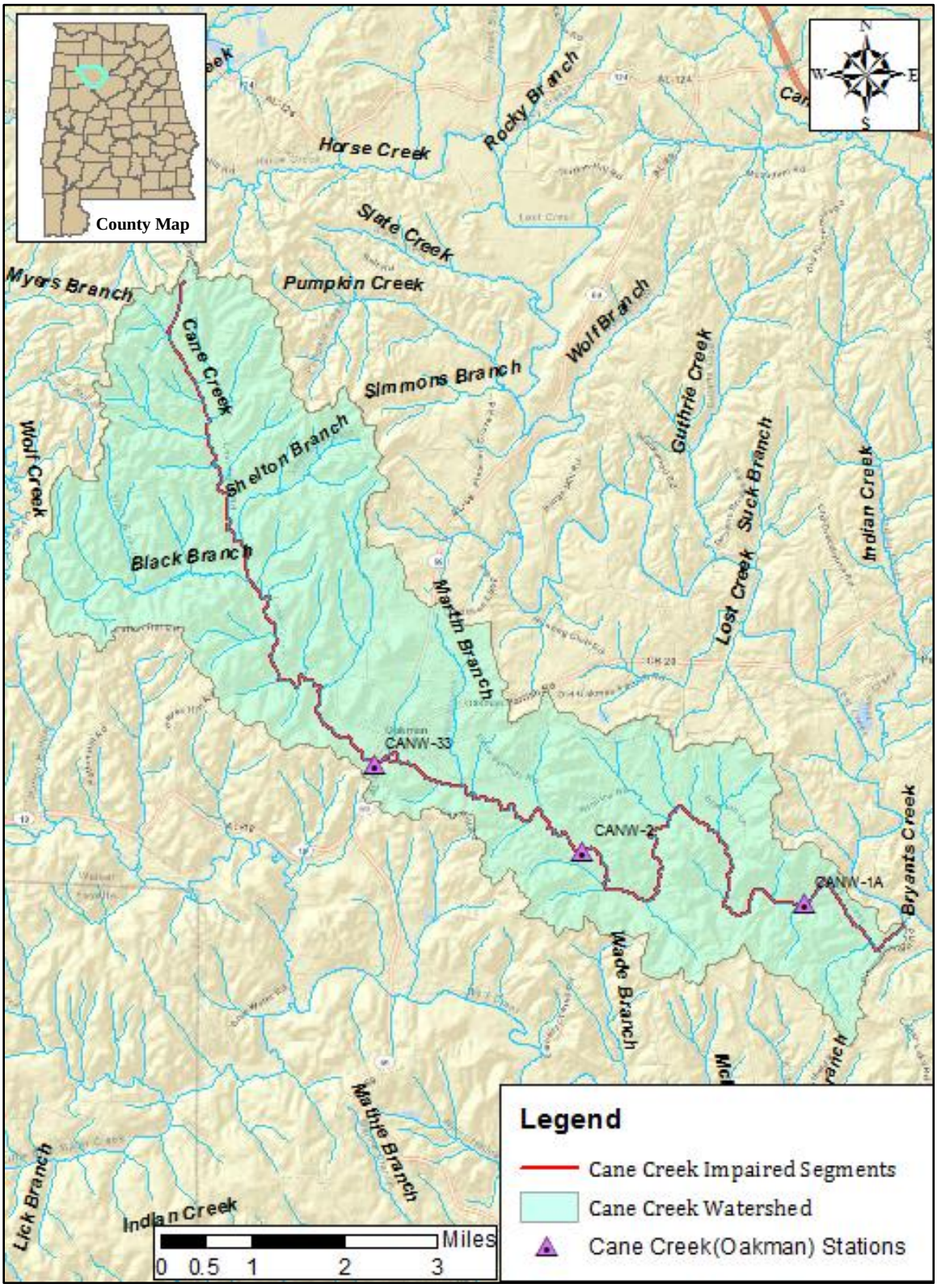
Draft
Delisting Decision
for
Cane Creek (Oakman)

Assessment Unit ID # AL03160109-0404-101
AL03160109-0404-102
AL03160109-0404-103

Metals (Iron and Aluminum)
Nutrients
pH
Organic Enrichment (CBOD, NBOD)
Siltation (Habitat Alteration)

Alabama Department of Environmental Management
Water Quality Branch
Water Division
February 2014

Figure 1: Cane Creek (Oakman) Location Map in the Black Warrior River Basin



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1.0 Executive Summary

Cane Creek (Oakman), located in Walker County, is part of the Black Warrior River Basin. Cane Creek originates approximately 7 miles northwest of the City of Oakman. Cane flows in a southeastern direction into Lost Creek which is a tributary of Mulberry Fork of the Black Warrior River. It has a length of 18.02 miles and a total drainage area of approximately 25 square miles. The Cane Creek watershed consists of rural, forested land with abandoned surface mining areas. The whole watershed constitutes the 8-digit hydrologic unit code (HUC) 03160109. The impaired segments are listed in Table 1.

Cane Creek (Oakman) was first placed on the State of Alabama's §303(d) List for metals, nutrients, pH, organic enrichment, and siltation in 1998 as a result of water quality data collected by ADEM in 1988, 1993 and 1997. The cause of impairment to the creek was originally believed to be surface mining. Subsequent data from the Alabama Department of Environmental Management's (ADEM) surface water quality monitoring program have shown no impairment with respect to metals (aluminum, iron), nutrients, pH, organic enrichment(CBOD,NBOD), and siltation.

The most recent water quality data available for Cane Creek was collected in 2012. ADEM collected samples at CANW-1A, CANW-2, and CANW-33. The ecoregional comparison indicates that the creek shows no exceedances for both aluminum and iron. None of the samples analyzed for pH exceeded the criteria nor were any nutrient concentrations elevated above ecoreference levels. Based on the 2013 indices by ecoregion and drainage area, the bioassessment results indicated the macroinvertebrate community to be in "good" condition at CANW-33 and "Fair" at the other two sampling stations. Overall habitat quality was categorized as "marginal" and "sub-optimal". The ratings indicate no impairment due to siltation.

In addition between June 5, 2012, and June 8, 2012, diurnal dissolved oxygen (DO) data was collected at Cane Creek sampling stations CANW-1A, CANW-2, and CANW-33. Dissolved Oxygen concentrations at the station remained within normal levels. Also, the concentrations of oxygen-demanding pollutants (CBOD5, NH3-N, and TKN) in Cane Creek were low, in the range of background conditions for such pollutants.

The following report addresses the results of the delisting analysis for Cane Creek (Oakman) for metals, nutrients, pH, organic enrichment, and siltation. Based on the assessment of all available water quality data, ADEM has determined that Cane Creek is not impaired for any of these pollutants and water quality standards are being attained. Therefore, ADEM will not develop a Total Maximum Daily Load (TMDL) for any of these pollutants in light of "more recent or accurate data," which is just cause for delisting a waterbody according to Title 40 of the Code of Federal Regulations (CFR), Part 130.7(b)(6)(iv).

Table 1: Cane Creek (Oakman) Segments from the 2012 §303(d) List

ID	Use	Cause	Date of Data	Size	Downstream/Upstream Locations
AL03160109-0404-101	F&W	Metals(Aluminum, Iron) Nutrients pH Organic Enrichment (CBOD, NBOD) Siltation(habitat alteration)	1988 1993	7.15 miles	Lost Creek/ Dixie Springs Road
AL03160109-0404-102	LWF	Metals(Aluminum, Iron) Nutrients pH Organic Enrichment (CBOD, NBOD) Siltation(habitat alteration)	1988 1993	3.49 miles	Dixie Springs Road/ Alabama Highway 69
AL03160109-0404-103	F&W	Metals(Aluminum, Iron) Nutrients pH Organic Enrichment (CBOD, NBOD) Siltation(habitat alteration)	1988 1993	7.38 miles	Alabama Highway 69/its source

2.0 Basis for §303(d) Listing

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987 and EPA's Water Quality Planning and Management Regulations [(Title 40 of the Code of Federal Regulations (CFR), Part 130)], requires states to identify waterbodies which are not meeting water quality standards applicable to their designated use classifications. The identified waters are prioritized based on severity of pollution with respect to designated use classifications. Total maximum daily loads (TMDLs) for all pollutants causing violation of applicable water quality standards are established for each waterbody identified as impaired. Such loads are established at levels necessary to implement the applicable water quality standards with seasonal variations and margins of safety. The TMDL process establishes the allowable loading of pollutants or other quantifiable parameters for a waterbody, based on the relationship between pollution sources and instream water quality conditions, so that states can establish water quality-based controls to reduce pollution from both point and nonpoint sources and restore and maintain the quality of their water resources (USEPA, 1991).

As mentioned in the executive summary, the 303(d) list sites studies from 1988 and 1993 as the supporting data sources. In 1988, ADEM collected samples from two stations on Cane Creek as part of the Alabama Clean Water Strategy. In 1993, ADEM conducted a water quality survey of Cane Creek for a wasteload allocation study of the Oakman WWTP. Cane Creek is prioritized as "medium" on the 303 (d) list(s).

2.1 Aluminum & Iron Listing

The State of Alabama does not have numeric criteria for aluminum and iron. Iron and aluminum are considered to be non-priority pollutants. Please refer to the following section for a more detailed explanation of the interpretation for iron and aluminum. As mentioned in the Executive Summary, the ADEM data placing Cane Creek on the 1998 List (by EPA) for metals was data collected from 1988 and 1993; however, this data alone did not specify the particular kind of metal impairment. The data collected at station C1 over the 1996-1998 timeframe provides sampling data for both iron and aluminum. Of the 14 samples collected by ADEM, 4 exceeded EPA's recommended

criterion of 1 mg/L for iron and 3 samples exceeded EPA's recommended criterion of 0.087 mg/L for aluminum. In 2008, the metals listing for Cane Creek was further specified to be iron and aluminum based on this data. The qualifying data is summarized below in Figure 2.

Figure 2: Data Summary for 303(d) Listing (1996-1998).

EPA recommneded Criteria for Iron(Fe): 1 mg/L							**EPA recommneded Criteria for Aluminum: 0.087**						
		No. of Values:		14					No. of Values:		14		
	No. of Exceedances:			4				No. of Exceedances:			3		
	%Exceedances:			0.285714				%Exceedances:			0.214286		
ECO reference guidelines for ecoregion 68							**ECO reference guidelines for ecoregion 68**						
total(unfiltered) metals		*1.046*					*total(unfiltered) metals*			0.3055			
dissolved(filtered) meta		*0.588*					*dissolved(filtered) metals*			0.1			
				total	dissolved						total	dissolved	
		No. of Values:		14	13				No. of Values:		14	13	
	No. of Exceedances:			4	5			No. of Exceedances:			3	4	
	%Exceedances:			0.285714	0.384615			%Exceedances:			0.214286	0.307692	

2.2 Nutrients Listing

The data from the Alabama Clean Water Strategy showed that 70% of the DO values were below the minimum criteria value of 5 mg/l. The values were also 30% below the pH range of 6.0. Cane Creek was listed for nutrient impairment based on the 1988 study showing low DO and pH readings. The data is listed below in Table 2.

2.3 pH Listing

In accordance with ADEM's water quality regulations, the applicable water quality criterion for instream pH for Cane Creek is $6.0 \leq pH \leq 8.5$ standard units (s.u.). The data from the Alabama Clean Water Strategy indicated values less than 6.0 standard units (s.u.) for 3 of the 10 samples collected. Of the pH readings that were taken during the 1988 study, 30% exceeded the applicable water quality criterion for instream pH. To be listed the pH exceedance rate must be greater than 10%. The results of this study are displayed in Table 2.

2.4 Organic Enrichment Listing

That data collected by ADEM, shown in Table 2, indicated dissolved oxygen values less than 5 mg/L. Monthly sampling in 1988 yielded 7 out of 10 (70%) dissolved oxygen measurements less than 5.0 mg/L. At that time the impairment was attributed to surface mining and municipal sources.

Table 2: Data Summary for 303(d) Listing *(Alabama Clean Water Study 1988).*

Station ID	Stream Mile	Date	Time	Water Temp. (C)	pH (s.u.)	Specific Cond. (mS/cm)	DO (mg/l)	Flow (cfs)	TKN (mg/l)	BOD (mg/l)
CC-01	10.22	6/23/1988	1140	25	3.3	960	8.2	4.207	1.23	1
CC-01	10.22	7/27/1988	1425	24	7.7	875	5.2	0.329	0.82	1
CC-01	10.22	8/26/1988	1538	26	5.8	1050	4.6	2.751	1.03	1
CC-01	10.22	9/16/1988	1215	23	6.5	950	4.2	2.248	1.44	1
CC-01	10.22	10/25/1988	1135	12.5	6	325	4.2		1.23	1
CC-02	7.05	6/23/1988	1215	26	8.3	920	5.6		1.23	1
CC-02	7.05	7/27/1988	1500	26	7.9	700	3.9		1.02	1
CC-02	7.05	8/26/1988	1600	27.5	4.4	855	4.2		1.44	1
CC-02	7.05	9/16/1988	1140	25	6.4	900	3.9		1.23	1
CC-02	7.05	10/25/1988	1045	11.5	6.2	285	4.6	2.562	1.23	1
			Total # Samples:			10	**Total # Samples:**			10
			pH Range			6< pH <8.5	**Minimum DO (mg/L):**			5
			# violations			3	**# violations**			7

2.5 Siltation Listing

In 1989, in response to requirements of Section 319 of the Federal Water Pollution Control Act, Alabama published its Nonpoint Source Assessment Report. Cane Creek's listing for siltation in the assessment report was most likely based on evaluations rather than actual water quality data. These evaluations could have included knowledge of complaints, fish kills, discharge monitoring report violations, and best professional judgement determinations. The addition of Cane Creek to Alabama's 303(d) List came from the 1989 Nonpoint Source Assessment Report, and may have been inadvertently included siltation as a cause on the 303(d) list prior to full documentation of support status. After examining all available water quality data and information related to Cane Creek, ADEM has found no biological data supporting the original listing for siltation.

3.0 Technical Basis for Delisting Decision

3.1 Water Quality Target Identification

Historically, in the absence of established numeric nutrient criteria, ADEM and/or EPA would use available data and information coupled with best professional judgment to determine overall use support for a given waterbody. Narrative criteria continue to serve as a regulatory basis for determining use support and making listing/delisting decisions of waters in regards to Alabama's 303(d) List. ADEM's Narrative Criteria, as shown in ADEM's Administrative Code, Rule 335-6-10-.06, are as follows:

335-6-10-.06 <u>Minimum Conditions Applicable to All State Waters</u>. *The following minimum conditions are applicable to all State waters, at all places and at all times, regardless of their uses:*

(a) State waters shall be free from substances attributable to sewage, industrial wastes or other wastes that settle to form bottom deposits which are unsightly, putrescent or interfere directly or indirectly with any classified water use.

(b) State waters shall be free from floating debris, oil, scum, and other floating materials attributable to sewage, industrial wastes or other wastes in amounts sufficient to be unsightly or which interfere directly or indirectly with any classified water use.

(c) State waters shall be free from substances attributable to sewage, industrial wastes or other wastes in concentrations or combinations, which are toxic or harmful to human, animal or aquatic life to the extent commensurate with the designated usage of such waters.

ADEM is continuing its efforts to develop comprehensive numeric nutrient criteria for all surface waters throughout Alabama, including rivers/streams, lakes/reservoirs, wetlands, and coastal/estuarine waters. However, until numeric nutrient criteria or some form of quantitative interpretations of ADEM's narrative criteria are developed, the Department will continue to use all available data and information coupled with best professional judgment to make informed decisions regarding overall use support and when establishing numeric targets for TMDLs.

For purposes of evaluating attainment of the above narrative criteria, ADEM will use both EPA's national recommended water quality criteria and ADEM's ecoregional reference guidelines. EPA's recommended criteria are published in section 304(a) of the Clean Water Act and lists guidelines for approximately 150 pollutants. In 2010, ADEM published ecoregional reference guidelines for a number of parameters and pollutants. A listing of the guidelines can be found in Appendix 7.4. Reference streams, also referred to as "reference reaches" or "ecoregional reference sites," are defined as relatively homogeneous areas of similar climate, land form, soil, natural vegetation, hydrology, and other ecologically relevant variables (USEPA, 2000b) which have remained comparatively undisturbed or minimally impacted by human activity over an extended period of time in relation to other waters of the State. While not necessarily pristine or completely undisturbed by humans, reference streams do represent desirable chemical, physical and biological conditions for a given ecoregion that can be used for evaluation purposes.

The reference streams selected for a particular analysis depends primarily on the available number of reference streams and associated data within a particular ecoregion. Therefore, the total number of reference sites selected and the aerial scale (i.e. Ecoregion Level III, Level IV) used to represent a reference condition will often vary on a case-by-case basis. ADEM selected to use the 90th percentile of the data distributions from the selected reference sites. Employing values from the reference table, a weighted 90th percentile was calculated based upon Creek Creek's watershed area. In Figure 15, the ecoreference location map, the impaired segment is shown to be in Level IV ecoregion 68f. Since, there were no published Level IV values for ecoregion 68f, the Level III values were employed from ecoregion 68.

Iron and Aluminum Criteria: ADEM's water quality regulations do not provide numeric water quality criteria for iron or aluminum. However, for purposes of listing and delisting decisions ADEM uses both EPA's recommended 304(a) criteria and Alabama's 2010 ecoregional reference guidelines for iron and aluminum. The recommended freshwater chronic concentration criterion for iron is 1 mg/L and 0.087 mg/L for aluminum. Both of these values are in terms of total recoverable metal. The 2010 ecoregional reference guideline (area-weighted 90^{th} percentile) for iron was determined to be 0.588 mg/L dissolved and 1.046 mg/L total. The ecoregional reference guideline

(area-weighted, 90th percentile) is 0.1 mg/L for dissolved aluminum and 0.3055 mg/L for total aluminum.

Most of the listed metals have both chronic and acute criteria. Chronic criteria are intended to protect the health of aquatic life from chronic exposure to a particular pollutant. The concentrations of total metals, as well as the dissolved fraction of the total, are strongly affected by low pH conditions. Dissolved forms of metals are more toxic than particulate forms because they are easily adsorbed or taken up across gills. Measurements of dissolved metals are considered to be a better indication of the fraction of total recoverable metals that would be biologically available and therefore potentially toxic to aquatic life (U.S. EPA. 1996). However, most water quality analyses measure the total recoverable amount of a given metal, and so the targets are usually stated in those terms. The fraction of total recoverable metal present in dissolved form will also depend on other conditions such as the water temperature, hardness, and concentrations of total suspended solids and organic carbon. However, when pH is low it is an important parameter promoting leaching from host material, dissolution and mobility of metals.

Nutrient Criteria: Alabama does not currently have numeric nutrient criteria for rivers and streams with respect to assessment and listing decisions.. Typically, numeric targets are established using our 2010 Ecoregional Reference Guidelines and enforced under our narrative criteria. The 90th percentile of the data distribution was considered an appropriate target, since it falls within an acceptable range of "least-impacted" conditions (i.e. upper quartile). If the TP and TN concentrations of the subject impaired stream are relatively the same or below reference condition levels, then the stream was considered not to be impaired for nutrients. If TP and TN concentrations within the impaired stream are shown to be above reference conditions, then other water quality data and information are used in the evaluation. The weighted 90th percentile value for total phosphorous was determined to be 0.05 mg/L. The ecoregional reference value for total nitrogen was 1.41685 mg/L. Chlorophyll-a is another parameter to consider when evaluating nutrient impairment. The 90th percentile concentration of chlorophyll-a from the ecological reference is 2.670 ug/L. Additional data and information that can be used includes, but is certainly not limited to, diurnal dissolved oxygen readings, habitat assessments, and macroinvertebrate and fish community indices.

pH Criteria: pH (i.e. potential of Hydrogen) is the measure of effective hydrogen-ion activity or concentration of a given solution in terms of relative acidity or alkalinity. The measure of pH is most commonly expressed in relation to a numeric scale ranging from 0 to 14 standard units (s.u.), in which a pH of 7 s.u. represents neutrality. pH values lower than 7 s.u. represent increasing acidity, and pH numbers greater than 7 s.u. represent increasing alkalinity. The pH of water determines the solubility (amount potentially dissolvable in water) and biological availability (amount accessible to aquatic life) of chemical constituents contained in the water. In accordance with ADEM water quality standards the pH shall not be less than 6.0 s.u. nor greater than 8.5 s.u. for streams classified as Public Water Supply and Fish & Wildlife.

Organic Enrichment (CBOD, NBOD) Criteria: According to ADEM's Water Quality Criteria (Administrative Code 335-6-10), the minimum dissolved oxygen concentration for waters classified as Fish and Wildlife (F&W) is 5 mg/l. There are two sections of the impaired stream that are classified as Fish & Wildlife. The first section starts at addition

of Lost Creek to Dixie Springs Road. The other segment occurs at Alabama Highway 69 and ends at Cane Creek's source. Cane Creek was initially listed as F&W and A&I (Agricultural and Industrial Water Supply). The use classification was changed from A&I to LWF for the middle impaired segment in 2000. The Limited Warmwater Fishery classification requires a minimum DO concentration of 3 mg/L during the months of May through November and 5 mg/L during the months of December through April. The Limited Warmwater Fishery (LWF) segment of Cane Creek is defined geographically from the county road crossing 2.5 miles southeast of Oakman to Alabama Highway 69.

Siltation Criteria: For purposes of listing and delisting decisions regarding siltation, ADEM uses both numeric and narrative criteria. According to ADEM's Water Quality Criteria (Administrative Code 335-6-10), maximum turbidity cannot exceed 50 NTUs above background conditions for all classified waters. Siltation can also be quantified by comparing turbidity and total suspended solids (TSS) to the corresponding ecoregional reference guidelines. Median values were used to represent existing conditions of turbidity and TSS within the impaired waterbody. The weighted 90th percentile value for turbidity and TSS is listed as 10.1 NTU and 14 mg/L.

According to the 303(d) pollutant list definition, siltation causes excessive amounts of sediment which degrade the habitat of aquatic organisms and interfere with the stream's aquatic community. For the purpose of determining use support for siltation, the following guidelines regarding interpretation of biological data will be used:

- Fully Supporting - Macroinvertebrates determined to be Excellent (Unimpaired), Good (Slightly Impaired), and Fair (Moderately Impaired) rating if Chemical/Physical/Field Data indicates compliance.
- Partial Supporting - Macroinvertebrates determined to be Fair (Moderately Impaired) and Chemical/Physical/Field Data indicates impairment.
- Not Supporting - Macroinvertebrates determined to be Poor (Severely Impaired) and Chemical/Physical/Field Data indicates impairment.

Habitat assessment scores are based on a variety of habitat conditions. The ratings include optimal, suboptimal, marginal or poor. The habitat assessment categories and interpretations are listed in table 3.

Table 3: Biometric Interpretation of Habitat Assessment

METRIC	Category	INTERPRETATION
Habitat Assessment	Optimal	Conditions meet natural expectations
	Sub-optimal	Satisfies expectations under most conditions
	Marginal	Moderate levels of degradation
	Poor	Substantially altered

3.2 Data Availability and Analysis

It should be noted that even though Cane Creek was sampled prior to 2012, only the data that is approximately six years in age or less will be used in this analysis, which is consistent with Alabama's Water Quality Assessment and Listing Methodology (ADEM, 2012). The source of data that was utilized in the evaluation of Cane Creek is from ADEM's 303(d) sampling program. Physical, chemical and biological data were

collected at the following three sampling stations: CANW-1A, CANW-2, and CANW-33. A description of the stations and their corresponding coordinates is listed in Table 4.

Table 4: ADEM Sampling Stations on Cane Creek (Oakman)

Station Name	Agency Name	Latitude	Longitude	Description
CANW-1A	ADEM	33.68765	-87.30972	On mining land upstream of concrete ford
CANW-2	ADEM	33.69573	-87.35171	Dixie Springs Road
CANW-33	ADEM	33.70939	-87.39071	Highway 69 near Oakman

In 2012, 72-hour continuous data for dissolved oxygen was collected on Cane Creek during the month of June as part of an intensive water quality study. The stations sampled were the same three stations: CANW-1A, CANW-2, and CANW-33.

Habitat and Macroinvertebrate (Ephemeroptera-Plecoptera-Trichoptera taxa) assessments were performed by ADEM's Field Operations Divisions at CANW-1A, CANW-2, and CANW-33. In 2012, the habitat assessment score came to a "marginal" rating at station CANW-1A and "sub-optimal" at CANW-33. There was an indication of vegetation on the bedrock from the instream habitat quality score. Both stations show sub-optimal levels of sediment deposition. Sinuosity, a measure of diversity of the habitat, was measured to be marginal at station CANW-33. Riparian buffer which protects stream from pollutants scored marginal at both stations. The macroinvertebrate assessments for stations CANW-1A and CANW-2 were "fair" indicating a moderate impairment. CANW-33 received a "good" macroinvertebrate score meaning it is slightly impaired. A complete list of available data used in this delisting report and pictures of all three stations can be found in Appendices 7.2-7.5.

3.2.1 Iron and Aluminum Analysis

There were no violations at any of the three stations in reference to EPA's recommended iron criteria. In addition, all stations showed compliance with the 90th percentile ecoregional reference guideline for iron. With respect to aluminum, all three stations reported exceedances of EPA's recommended aluminum criteria. The highest being at CANW-33 with 4 out of 8 samples over the 0.087 mg/L criteria value; however, all three stations median values were below the 90th percentile ecoregional reference guideline for aluminum.

Table 5: EPA's Iron (Fe) Criteria 1mg/L

Station ID	# samples	Date of Samples	EPA's Fe criterion	# of exceedances
CANW-1A	8	2012	1 mg/L	0
CANW-2	7	2012	1 mg/L	0
CANW-33	8	2012	1 mg/L	0

Table 6: Alabama's Ecoregional Reference Guidelines for Iron (Fe)

CANW-1A		
	Fe Dissolved	Fe Total
Mean:	0.023	0.156
Median:	0.019	0.154
75th %tile:	0.029	0.168
90th %tile:	0.03	0.193
Ecoref 90th %tile:	0.588	1.046
Median<Eco90%tile:	Y	Y

CANW-2		
	Fe Dissolved	Fe Total
Mean:	0.023	0.266
Median:	0.02	0.154
75th %tile:	0.025	0.253
90th %tile:	0.028	0.57
Ecoref 90th %tile:	0.588	1.046
Median<Eco90%tile:	Y	Y

CANW-33		
	Fe Dissolved	**Fe Total**
Mean:	0.022	0.111
Median:	0.019	0.096
75th %tile:	0.021	0.139
90th %tile:	0.03	0.179
Ecoref 90th %tile:	0.588	1.046
Median<Eco90%tile:	Y	Y

Table 7: EPA's Aluminum (Al) criteria 0.087 mg/L

Station ID	# samples	Date of Samples	EPA's Al criteria	# of exceedances
CANW-1A	8	2012	0.087 mg/L	1
CANW-2	7	2012	0.087 mg/l	3
CANW-33	8	2012	0.087 mg/L	4

Table 8: Alabama's Ecoregional Reference Guidelines for Aluminum (Al)

CANW-1A		
	Al Dissolved	**Al Total**
Mean:	0.043	0.0739
Median:	0.043	0.066
75th %tile:	0.043	0.0853
90th %tile:	0.043	0.1013
Ecoref 90th %tile:	0.1	0.3055
Median<Eco90%tile:	Y	Y

CANW-2		
	Al Dissolved	**Al Total**
Mean:	0.045	0.2031
Median:	0.043	0.079
75th %tile:	0.043	0.1745
90th %tile:	0.048	0.4532
Ecoref 90th %tile:	0.1	0.3055
Median<Eco90%tile:	Y	Y

CANW-33		
	Al Dissolved	**Al Total**
Mean:	0.054	0.1159
Median:	0.053	0.098
75th %tile:	0.058	0.1123
90th %tile:	0.067	0.1859
Ecoref 90th %tile:	0.1	0.3055
Median<Eco90%tile:	Y	Y

Biological indicators as incorporated in habitat and macroinvertebrate assessments are an important factor in assessing a stream for iron and aluminum impairment. The ratings received by Cane Creek show no indication of impairment due to metals.

3.2.2 Nutrient Analysis

TP, chlorophyll-*a*, and TN concentrations within the impaired stream are shown to be below ecoreference conditions. The comparison is between the median value of the nutrient data and the 90th percentile listed for ecoregion 84 as shown in Table 9.

Table 9: Ecoregional Reference Guidelines for TP, Chlor a & TN

CANW-1A			
	TP	**Chlor a**	**TN**
Mean:	0.014	0.283	0.2669
Median:	0.014	0.270	0.2510
75th %tile:	0.016	0.403	0.3510
90th %tile:	0.017	0.530	0.4353
Eco Ref 90th%	0.050	2.670	1.4169
CANW-2			
	TP	**Chlor a**	**TN**
Mean:	0.039	0.283	0.4191
Median:	0.041	0.270	0.4300
75th %tile:	0.052	0.403	0.5878
90th %tile:	0.063	0.530	0.6092
Eco Ref 90th%	0.050	2.670	1.4169
CANW-33			
	TP	**Chlor a**	**TN**
Mean:	0.010	0.283	0.1993
Median:	0.009	0.270	0.1495
75th %tile:	0.010	0.403	0.1975
90th %tile:	0.013	0.530	0.3370
Eco Ref 90th%	0.050	2.670	1.4169

In addition between June 5, 2010, and June 8, 2010, diurnal dissolved oxygen (DO) data was collected at Cane Creek sampling stations. Dissolved Oxygen concentrations at the station remained within normal levels during this sampling event ranging between 5.55 mg/l and 9.7 mg/l further providing evidence that Cane Creek is not impaired for nutrients. The diurnal data for each station is shown in figure 3-5.

Figure 3: Diurnal Data Summary for Station CANW-1A (June 2012)

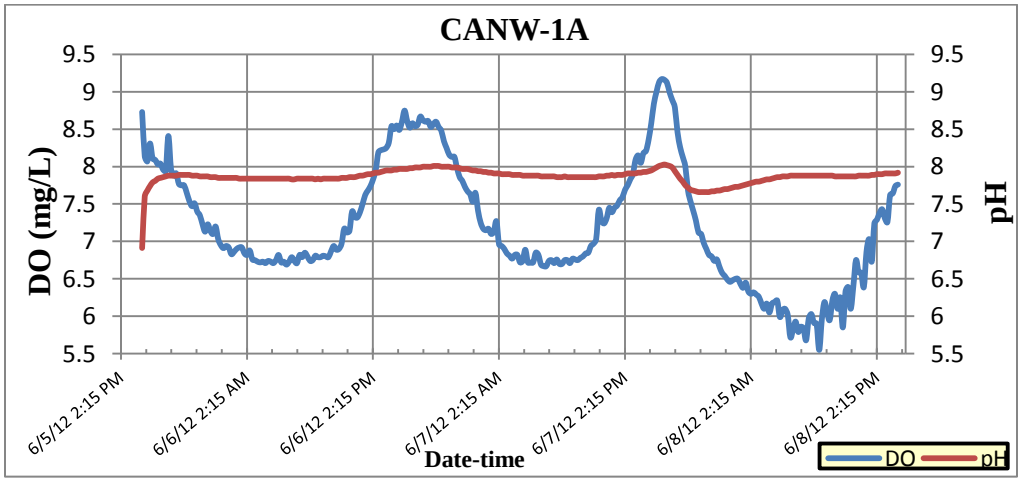


Figure 4: Diurnal Data Summary for Station CANW-2 (June 2012)

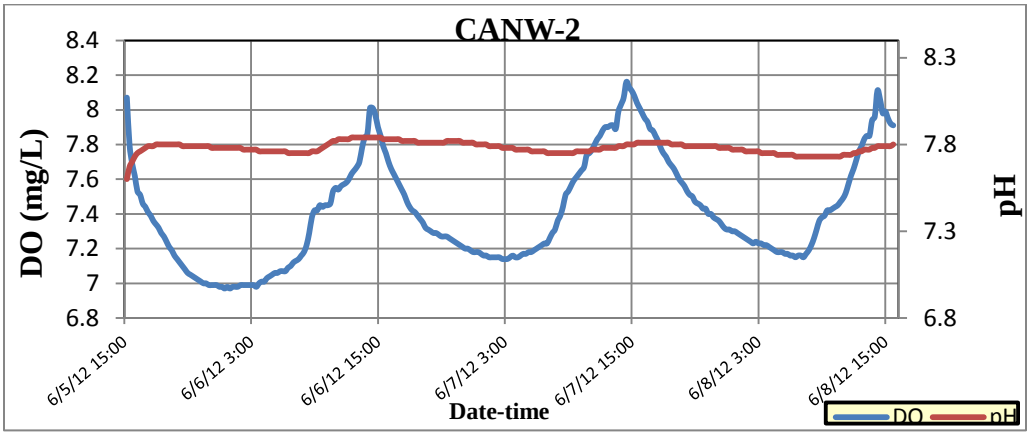
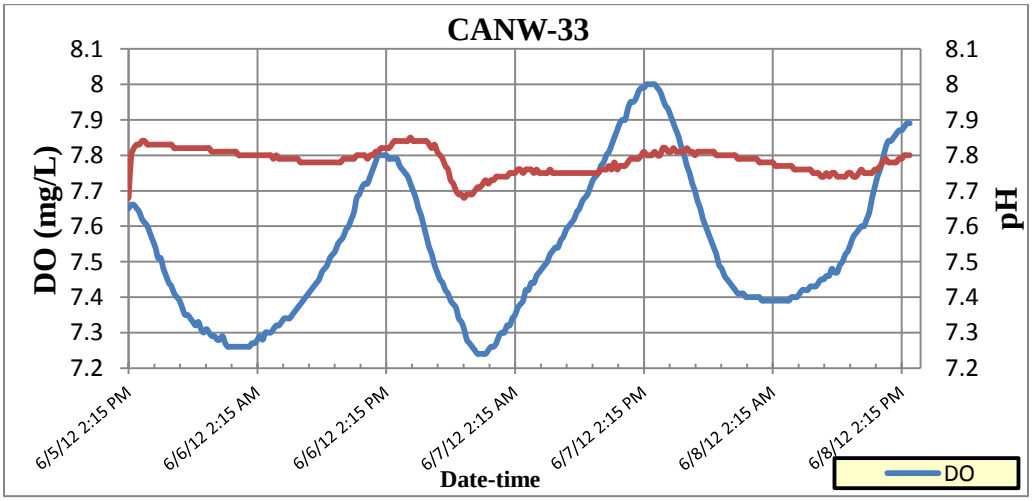


Figure 5: Diurnal Data Summary for Station CANW-33 (June 2012)

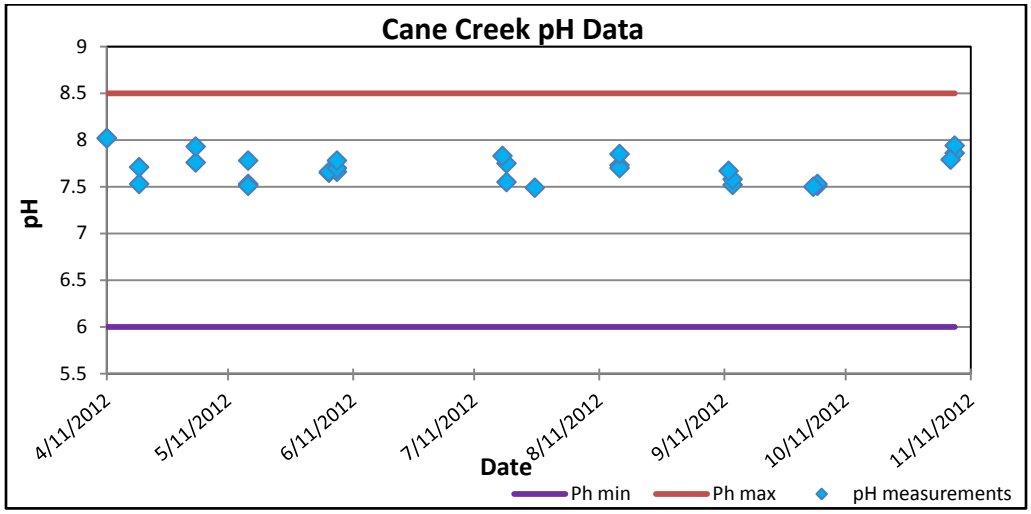


Based on the instream TP and TN values, habitat and bug assessments, and dissolved oxygen concentrations, ADEM does not consider Cane Creek to be impaired as a result of nutrient over enrichment. The available data that was utilized to support this delisting decision can be found in Appendix 7.2.

3.2.3 pH Analysis:

No pH readings collected in 2012 exceeded ADEM's water quality criteria ranging between 6.0 and 8.5 s.u. as shown in Figure 6.

Figure 6: Water Quality Data vs. pH Criteria



3.2.4 Organic Enrichment (CBOD, NBOD) Analysis:

The grab samples collected for the 303(d) program did not indicate low D.O. and were above the minimum criteria.

Table 10: 303(d) Sampling Program DO Data for Cane Creek (2012)

Station	# Grab Samples	Use Classification	Min. DO	# Violations
CANW-1A	9	F&W	5 mg/L	0
CANW-2	8 1	LWF	3mg/L (May-Nov) 5 mg/L (Dec-April)	0 0
CANW-33	13	F&W	5 mg/L	0

Also, the 72-hour continuous data did not indicate low dissolved oxygen values during the water quality study. Since the study was performed only in the month of June, the LWF segment requires a minimum DO of 3mg/L.

Table 11: 72-hour Continuous DO Data Cane Creek (6/5/12-6/8/12)

Station	# Grab Samples	Use Classification	Min. DO	# Violations
CANW-1A	289	F&W	5	0
CANW-2	291	LWF	3	0
CANW-33	292	F&W	5	0

Table 12: Statistical Summary of 303(d) Oxygen-Demanding Pollutants

	CBOD5 (mg/L)				NH3N (mg/L)				TKN (mg/L)			
Station	**Max**	**Min**	**Median**	**Avg**	**Max**	**Min**	**Median**	**Avg**	**Max**	**Min**	**Median**	**Avg**
CANW-1A	2	2	2	2	0.032	0.007	0.008	0.011	0.494	0.04	0.126	0.177
CANW-2	2	2	2	2	0.02	0.007	0.008	0.009	0.363	0.04	0.184	0.205
CANW-33	2	2	2	2	0.008	0.007	0.008	0.008	0.534	0.04	0.13	0.173
all stations	2	2	-	2	0.032	0.007	-	0.009	0.534	0.04	-	0.185
Eco Ref 90th%	1.9				0.62				0.73			

Water quality concentrations of oxygen-demanding pollutants (CBOD5, NH3-N, and TKN) in Cane Creek were low, in the range of background conditions for such pollutants. Typical background concentrations for unimpaired waterbodies are 1.33–2 mg/L CBOD5, 0.11–0.22

mg/L NH3-N, and 0.33–0.66 mg/L TKN. Examination of the water quality data will demonstrate that these oxygen demanding pollutants were at or near background conditions in Cane Creek.

A comparison of the carbonaceous biochemical oxygen demand (CBOD) monitoring results with CBOD concentrations in the ecological reference sites demonstrates that CBOD levels in Cane Creek are at or below typical background concentrations. The biochemical oxygen demand in Cane Creek, from both nitrogenous and carbonaceous sources, is not elevated enough to have a detrimental impact on the water quality, specifically dissolved oxygen levels.

3.2.5 Siltation Analysis

All turbidity data is below ADEM's Water Quality Criteria of 50 NTU above background. All three stations median values show below the ecoreference 90th percentile; therefore, the numeric data meets criteria and indicates low sediment. The assessment scores qualify as fully supporting and are good indicators for delisting Cane Creek for siltation. Please refer to appendix 7.3 for macroinvertebrate and habitat assessments.

Table 13: Ecoreference Guidelines for TSS and Turbidity

CANW-1A		
	TSS mg/L	**Turb NTU**
Mean:	1.875	2.976
Median:	1.000	2.890
75th %tile:	1.000	3.030
90th %tile:	3.100	4.134
Ecoref 90th%tile:	14.000	10.1
Median<Eco90%tile:	Y	Y

CANW-2		
	TSS mg/L	**Turb NTU**
Mean:	3.250	6.306
Median:	1.000	2.450
75th %tile:	3.000	4.680
90th %tile:	1.000	15.330
Ecoref 90th %tile:	14.000	10.1
Median<Eco90%tile:	Y	Y

CANW-33		
	TSS mg/L	**Turb NTU**
Mean:	1.000	3.495
Median:	1.000	2.740
75th %tile:	1.000	3.260
90th %tile:	1.000	8.510
Ecoref 90th %tile:	14.000	10.1
Median<Eco90%tile:	Y	Y

4.0 Source Assessment

Both point and non-point sources may contribute CBODu and NBOD (i.e., organic loading) to a given waterbody. Potential sources of organic loading can be numerous and

often occur in combination. In rural areas, storm runoff from row crops, livestock pastures, animal waste application sites, and feedlots can transport significant loads of organic loading. Nationwide, poorly treated municipal sewage comprises a major source of organic compounds that are hydrolyzed to create additional organic loading. Urban storm water runoff, sanitary sewer overflows, and combined sewer overflows can be significant sources of organic loading.

All potential point and non-point sources of organic loading for the listed portion of Cane Creek were identified using an evaluation of land use/land cover information from the 2006 National Land Cover Dataset (NLCD) and from ADEM's NPDES database inventory.

4.1 Point Sources

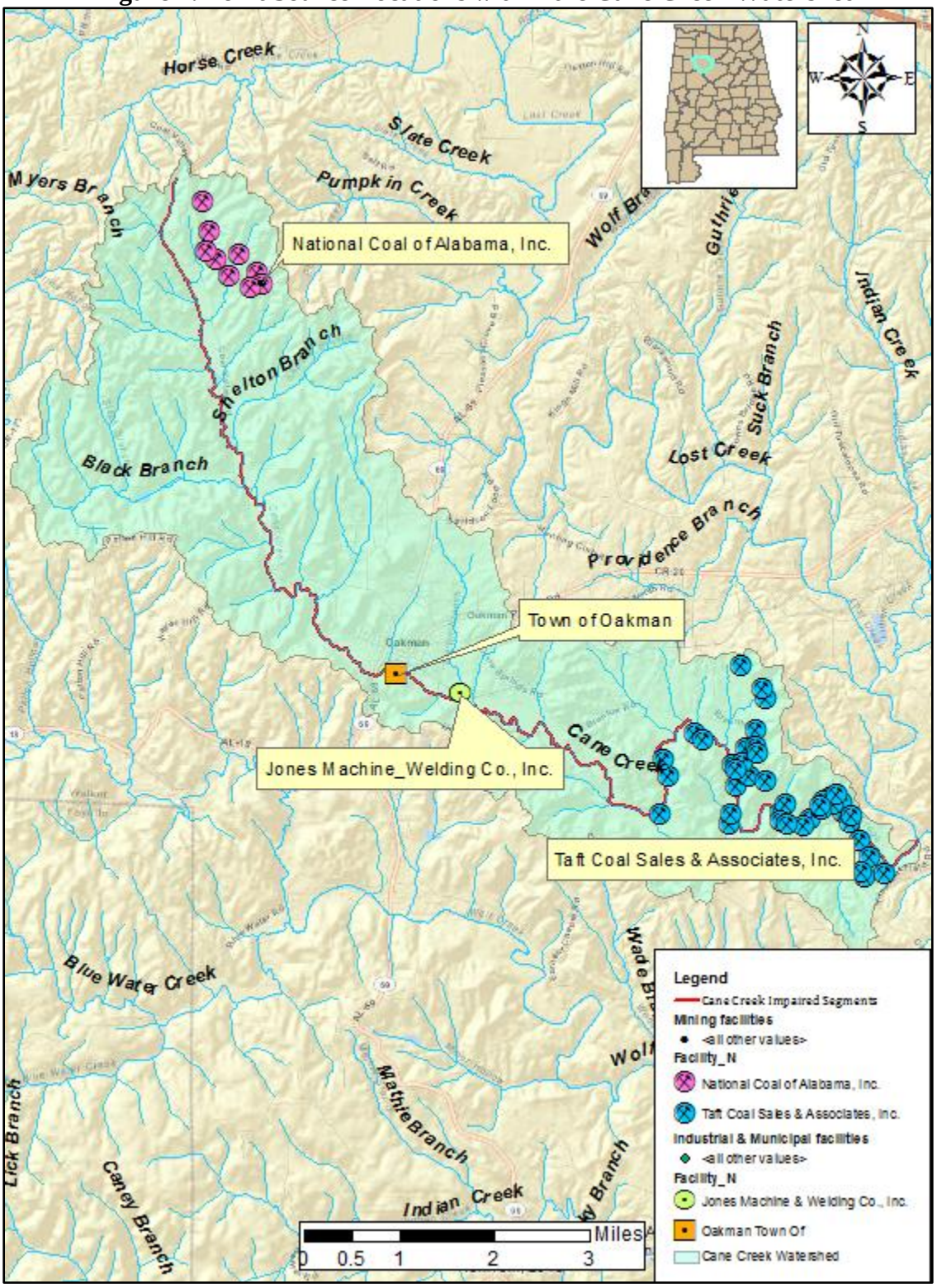
There are two reclaimed mining facilities in the Cane Creek watershed: National Coal of Alabama and Taft Coal Sales Associate. There is one current discharge from a municipal source, namely the Town of Oakman. The Town of Oakman Wastewater Treatment Plant (WWTP) discharges its effluent approximately 1000 feet downstream of Alabama Highway 69. There is a current discharge from an industrial facility to Martin Branch which is a minor tributary to Cane Creek. Table 14 lists relevant data for the facilities. Figure 7 is map of their respective locations in the watershed

Black Branch, a tributary of Cane Creek, has a long history of underground coal mining. The abandoned mines on both Black Branch and Cane Creek are responsible for highly acidic polluted water being historically discharged within Cane Creek watershed. The Cane Creek Acid Mine Drainage Remediation Project Plan outlined a plan to target removal of these pollutants. The plan started in 1997 and continued until 2005. Black Branch had more impairment than Cane Creek, so the stream was assigned an additional remediation plan. There was a significant improvement in aquatic diversity and plant species. A hunting club was even established on the property (Stream Restoration Efforts Reduce Impacts of Acid Mine Drainage: Black Warrior River Basin, 2012). As a tributary to Cane Creek, Black Branch remediation was essential in order to restore both waterbodies.

Table 14: Point Sources- NPDES Regulated Facilities in the Cane Creek Watershed

Facility	Permit #	Permit type	Permit Status	Active Discharge/Receiving Stream
Jones Machine & Welding Co., Inc.	ALG120675	Industrial	in effect	Yes/Martin Branch
Town of Oakman	AL0025348	Municipal	in effect	Yes/Cane Creek
National Coal of Alabama, Inc.	AL0079073	Mining	reclaimed	No/ Cane Creek
Taft Coal Sales & Associate, Inc.	AL0070742	Mining	reclaimed	No/ Cane Creek

Figure 7: Point Source Locations within the Cane Creek Watershed



4.2 Nonpoint Sources

Nonpoint impacts in the Cane Creek watershed are considered to come from its land uses. Land use percentages were determined from the 2006 National Land Cover Dataset (NLCD). Table 15 lists the land use areas and percentages in the watershed as shown in Figure 8. Figure 9 is a map of the watershed's land use. As can be seen from an inspection of the table and map, the predominant land use in the watershed is forested with a percentile value of 81%. The watershed is relatively small measuring at a total area of 25.06 square miles. Grassland and shrubs account for the second largest use of land in the watershed with 11.5% of the total land use. There are several miles of abandoned mining sites.

Figure 8: Pie Chart of Land Use Distribution in Cane Creek Watershed

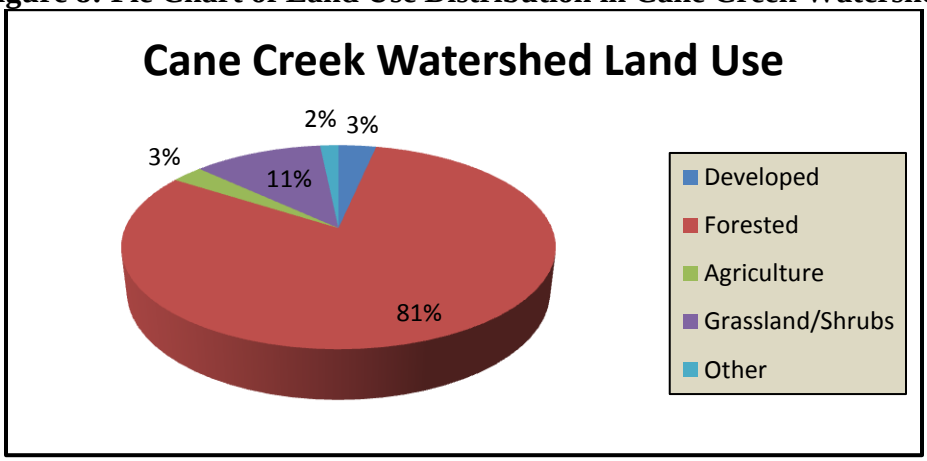
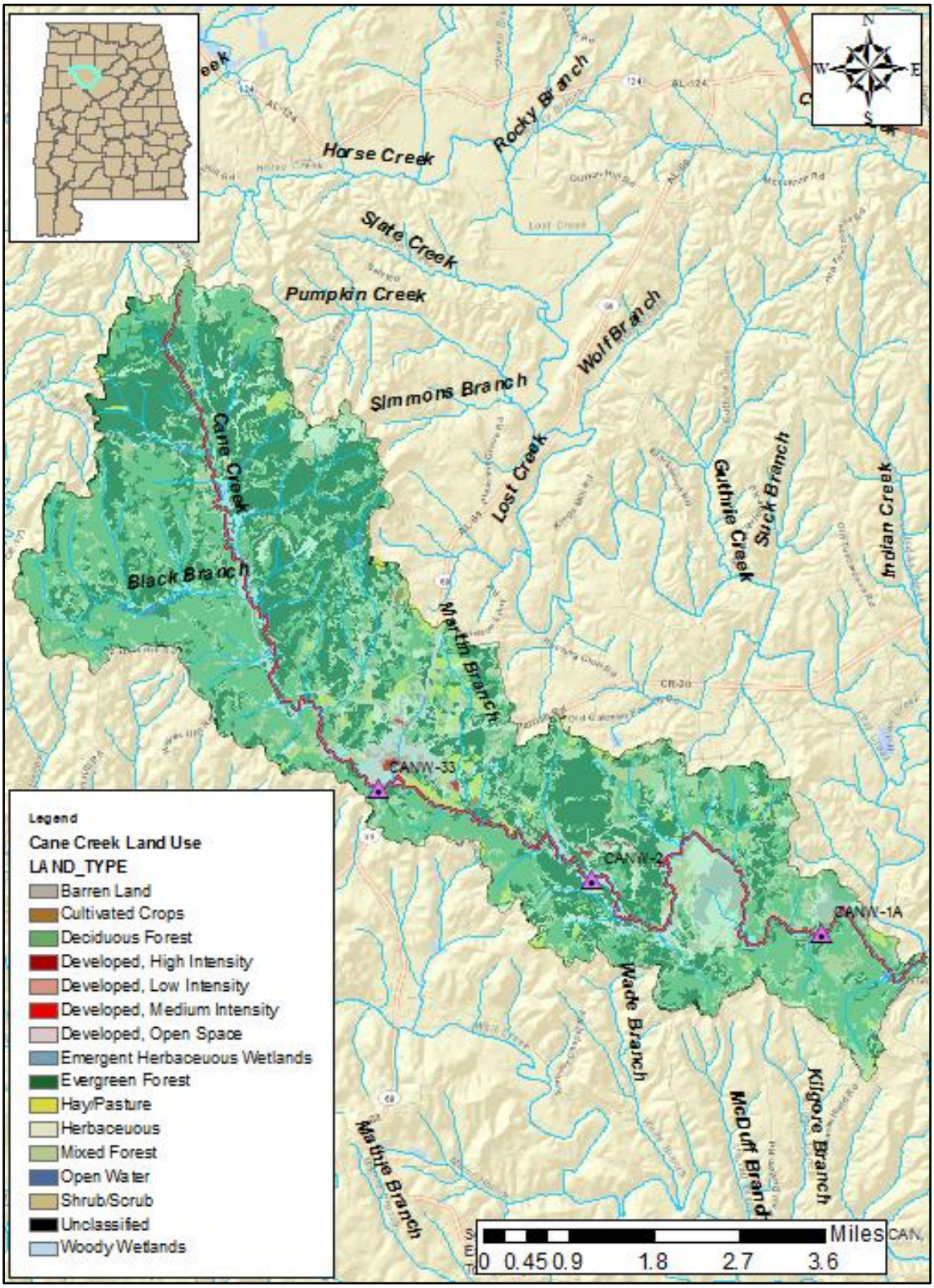


Table 15: Land Use Data

Land Use Description	Square Miles	Percent (%)
Open Water	0.11	0.46
Developed, Open Space	0.69	2.76
Developed, Low intensity	0.11	0.43
developed, medium intensity	0.03	0.13
Developed, high intensity	0.01	0.03
barren land	0.3	1.18
deciduous forest	8.38	33.45
evergreen forest	7.96	31.78
mixed forest	3.01	12.01
shrub/scrub	1.64	6.53
herbaceous	1.25	4.97
Hay/pasture	0.68	2.71
cultivated crops	0.03	0.11
woody wetlands	0.86	3.45
emergent herbaceous wetlands	0	0.01
Total Land Use	**25.06**	**100**
Cumulative Land Use	**Square Miles**	**Percent (%)**
Developed	0.84	3.36
Forested	20.22	80.70
Grassland/Shrubs	0.70	2.81
Agriculture	2.88	11.50
Other	0.41	1.63
Total Land Use	**25.06**	**100**

Figure 9: Land Use Map of the Cane Creek Watershed



5.0 Conclusions

From examination of all available water quality data and information provided for Cane Creek, ADEM has determined that impairment due to metals, nutrients, pH, organic enrichment, and siltation does not currently exist. Therefore, ADEM will not develop a TMDLs for these pollutants in light of "more recent or accurate data," which is just cause for delisting a waterbody according to Title 40 of the Code of Federal Regulations (CFR), Part 130.7(b)(6)(iv). Cane Creek will be proposed for delisting as a part of the development process for Alabama's *2014 §303(d) List of Impaired Waters.*

6.0 Public Participation

As part of the public participation process, this Delisting Decision (DD) will be placed on public notice and made available for review and comment. The public notice will be prepared and published in the major daily newspapers in Montgomery, Huntsville, Birmingham, and Mobile, as well as submitted to persons who have requested to be on ADEM's postal and electronic mailing distributions. In addition, the public notice and subject DD will be made available on ADEM's website: www.adem.state.al.us. The public can also request paper or electronic copies of the DD by contacting Mr. Chris Johnson at 334-271-7827 or cljohnson@adem.state.al.us. The public will be given an opportunity to review the DD and submit comments to the Department in writing. At the end of the public review period, all written comments received during the public notice period will become part of the administrative record. ADEM will consider all comments received from the public prior to finalization of this DD and subsequent submission to EPA Region 4 for final review and approval.

7.0 Appendices

7.1 References

1. Alabama Department of Environmental Management, 1998-2012 Section 303(d) List

2. Alabama's Clean Water Strategy Monitoring Program. 1988. ADEM.

3. Alabama's Water Quality Survey of Cane Creek. 1996. ADEM.

4. Alabama's 303(d) Monitoring Program. 2012. ADEM.

5. ADEM Administrative Code, 2002. Water Quality Program, Chapter 335-6-10, Water Quality Criteria, and Chapter 335-6-11, Use Classifications for Interstate and Intrastate Waters.

6. United States Environmental Protection Agency. 1991. Guidance for Water Quality-Based Decisions: The TMDL Process, Office of Water, EPA 440/4-91-001.

7. Alabama Department of Environmental Management, Water Quality Assessment and Listing Methodology (ADEM 2012).

8. USEPA 304(a) National Recommended Water Quality Criteria (EPA OST, 2009).

9. Alabama Department of Environmental Management. Alabama Nonpoint Source Assessment Report – 1988. Volume I. State of Alabama. April 24, 1989.

10. Alabama Department of Industrial Relations, Mining and Reclamation Division. 2012. Stream Restoration Efforts Reduce Impacts of Acid Mine Drainage: Black Warrior River Basin(Cane Creek Watershed and Black Branch Subwatershed).

7.2 Water Quality Data

Table 16: Cane Creek Sampling Station Locations from 1988, 1993, & 1998 Study.

Station ID	Description	Latitude	Longitude
CC-1 Or CANW-33	Alabama Hwy. 69 bridge crossing in SE $^1/_4$, Sec. 29, T15S, R8W.	33.7092	87.3906
CC-2	Paved drive, 0.3 miles downstream of Oakman outfall, SE $^1/_4$, Sec. 28, T15S, R8W.	33.7067	87.3792
CC-3 Or CANW-2	Bridge near Taft Coal Co. in W $^1/_4$, Sec. 35, T15S, R8W.	33.6936	87.3517
CC-4	Near end of unpaved road in SE $^1/_4$, Sec. 31, T15S, R7W.	33.6911	87.3056

Table 17: Alabama Clean Water Strategy, June through October 1988.

Station ID	Stream Mile	Date	Time	Water Temp. (C)	pH (s.u.)	Specific Cond. (mS/cm)	DO (mg/l)	Flow (cfs)	TKN (mg/l)	BOD (mg/l)
CC-01	10.22	6/23/88	1140	25	3.3	960	8.2	4.207	1.23	1
CC-01	10.22	7/27/88	1425	24	7.7	875	5.2	0.329	0.82	1
CC-01	10.22	8/26/88	1538	26	5.8	1050	4.6	2.751	1.03	1
CC-01	10.22	9/16/88	1215	23	6.5	950	4.2	2.248	1.44	1
CC-01	10.22	10/25/88	1135	12.5	6	325	4.2		1.23	1
CC-02	7.05	6/23/88	1215	26	8.3	920	5.6		1.23	1
CC-02	7.05	7/27/88	1500	26	7.9	700	3.9		1.02	1
CC-02	7.05	8/26/88	1600	27.5	4.4	855	4.2		1.44	1
CC-02	7.05	9/16/88	1140	25	6.4	900	3.9		1.23	1
CC-02	7.05	10/25/88	1045	11.5	6.2	285	4.6	2.562	1.23	1

Table 18: Survey of Cane Creek for a Wasteload Allocation Study of the Oakman WWTP, June, July & September 1993.

Station	Stream Mile	Date	Time	Water Temp. (°C)	pH (s.u.)	Specific Cond. (mS/cm)	DO (mg/L)	Flow (cfs)
CC-1	10.22	6/29/93	16:47:16	24.49	7.49	0.920	7.53	29.20
(upstream	10.22	6/30/93	8:24:53	23.44	7.65	1.126	7.24	16.50
of outfall)	10.22	6/30/93	16:35:59	25.25	7.70	1.098	7.39	
	10.22	7/01/93	8:10:19	24.29	7.70	1.155	6.97	7.80
	10.22	9/28/93	16:42:47	17.89	7.47	1.399	7.93	0.97
	10.22	9/29/93	8:16:31	15.72	7.38	1.402	7.60	0.60
	10.22	9/30/93	8:52:24	14.72	7.38	1.406	7.62	
CC-2	9.48	6/29/93	17:38:32	24.58	7.47	0.833	7.45	
	9.48	6/30/93	8:06:57	23.26	7.64	1.002	7.08	
	9.48	6/30/93	16:49:19	25.98	7.75	0.980	6.86	
	9.48	7/01/93	7:57:29	24.40	7.62	1.061	6.08	
	9.48	9/28/93	16:57:25	18.66	7.47	1.343	7.98	
	9.48	9/29/93	8:02:36	15.93	7.29	1.303	6.42	
	9.48	9/30/93	8:36:40	14.7	7.31	1.312	6.87	
CC-3	7.05	6/29/93	18:00:38	24.15	7.35	0.511	7.48	
	7.05	6/30/93	7:42:51	23.03	7.59	0.868	7.33	26.00
	7.05	6/30/93	17:08:17	25.12	7.72	0.891	7.58	17.30
	7.05	7/01/93	7:40:35	24.48	7.60	0.944	6.84	11.90
	7.05	9/28/93	17:12:36	19.38	7.35	1.56	7.97	1.23
	7.05	9/29/93	7:45:04	17.06	7.25	1.495	7.52	1.16
	7.05	9/30/93	8:20:30	15.68	7.32	1.52	7.81	
CC-4	1.27	6/29/93	18:55:33	23.69	7.58	0.763	7.57	
	1.27	6/30/93	7:06:11	22.47	7.35	0.557	7.39	
	1.27	6/30/93	18:55:19	24.57	7.70	0.832	7.62	
	1.27	7/01/93	7:07:57	23.64	7.64	0.875	6.93	
	1.27	9/28/93	17:42:11	18.23	7.68	1.77	7.35	2.28
	1.27	9/29/93	7:18:30	16.66	7.59	1.77	6.91	3.49
	1.27	9/30/93	7:28:39	15.57	7.54	1.81	7.31	

Table 19 – Cane Creek Water Quality Data 1996-1998.

Date	Site	Fe unfilt	Fe filt	Al unfilt	Al filt
6/24/1996	C1	0.16	.	0.1	.
7/12/1996	C1	0.07	0.04	0.04	0.1
8/8/1996	C1	0.57	0.05	0.042	0.023
9/10/1996	C1	0.413	0.061	0	0.077
10/11/1996	C1	0.275	0.087	0	0.265
11/30/1996	C1	178	43.5	31	75.4
12/23/1996	C1	297	26.6	53	33.2
1/15/1997	C1	167	39.3	46	33
4/25/1997	C1	0.17	0.075	0.028	0.024
5/2/1997	C1	0.165	76.5	0.017	22.5
8/7/1997	C1	0.004	.	0.03	.
1/30/1998	C1	0.97	0.74	0.12	0.09
4/21/1998	C1	0.59	0.5	0.09	0.05
5/29/1998	C1	1.2	1.12	0.08	0.1
8/28/1998	C1		0.82		0.08

Table 20: Water Quality Data (Fe and Al) 2012

Station ID	Visit Date	Al Dis mg/l	Al Dis dc	Al Tot mg/l	Al Tot dc	Fe Dis mg/l	Fe Dis dc	Fe Tot mg/l	Fe Tot dc
CANW-1A	4/19/2012	0.043	< MDL .043	0.085	JI	0.029	JI	0.151	JI
CANW-1A	5/16/2012	0.043	< MDL .043	0.043	<MDL.043	0.019	< MDL .019	0.134	JI
CANW-1A	6/7/2012	0.043	< MDL .043	0.137	JI	0.019	< MDL .019	0.227	
CANW-1A	7/19/2012	0.043	< MDL .043	0.056	JI	0.019	< MDL .019	0.098	JI
CANW-1A	8/16/2012	0.043	< MDL .043	0.076	JI	0.019	< MDL .019	0.157	JI
CANW-1A	9/13/2012	0.044	JI	0.086	JI	0.019	< MDL .019	0.164	JI
CANW-1A	10/4/2012	0.043	< MDL .043	0.053	JI	0.031	JI	0.178	JI
CANW-1A	11/7/2012	0.043	< MDL .043	0.055	JI	0.03	JI	0.142	
CANW-2	4/19/2012	0.055	JI	0.105	JI	0.033	JI	0.154	JI
CANW-2	5/3/2012	0.043	< MDL .043	0.767		0.02	JI	0.912	
CANW-2	6/7/2012	0.043	< MDL .043	0.073	JI	0.019	< MDL .019	0.116	JI
CANW-2	7/19/2012	0.043	< MDL .043	0.244		0.025	JI	0.342	
CANW-2	8/16/2012	0.043	< MDL .043	0.077	JI	0.019	< MDL .019	0.095	JI
CANW-2	9/13/2012	0.043	< MDL .043	0.079	JI	0.019	< MDL .019	0.079	JI
CANW-2	10/4/2012	0.043	< MDL .043	0.077	JI	0.025	JI	0.164	JI
CANW-33	4/11/2012	0.078	JI	0.143	JI	0.025	JI	0.137	JI
CANW-33	5/3/2012	0.043	< MDL .043	0.286		0.019	< MDL .019	0.264	
CANW-33	6/7/2012	0.056	JI	0.096	JI	0.019	< MDL .019	0.111	JI
CANW-33	7/18/2012	0.057	JI	0.102	JI	0.019	< MDL .019	0.065	JI
CANW-33	8/16/2012	0.043	< MDL .043	0.043	<MDL.043	0.019	< MDL .019	0.019	<MDL.019
CANW-33	9/12/2012	0.062	JI	0.079	JI	0.019	< MDL .019	0.081	JI
CANW-33	10/3/2012	0.049	JI	0.1	JI	0.019	< MDL .019	0.143	JI
CANW-33	11/6/2012	0.046	JI	0.078	JI	0.04	JI	0.069	JI

Table 21: Water Quality Data (DO and pH) 2012

Station ID	Visit Date	DO mgl	pH_SU
CANW-1A	4/19/2012	8.3	7.53
CANW-1A	5/16/2012	9.1	7.78
CANW-1A	6/5/2012	7.33	7.65
CANW-1A	6/7/2012	6.5	7.66
CANW-1A	7/19/2012	6.19	7.75
CANW-1A	8/16/2012	6.32	7.73
CANW-1A	9/13/2012	6.87	7.52
CANW-1A	10/4/2012	7.92	7.51
CANW-1A	11/7/2012	8.6	7.86
CANW-2	4/19/2012	9.06	7.71
CANW-2	5/3/2012	7.61	7.76
CANW-2	6/5/2012	7.6	7.66
CANW-2	6/7/2012	7.59	7.7
CANW-2	7/19/2012	6.46	7.55
CANW-2	8/16/2012	7	7.7
CANW-2	9/13/2012	7.73	7.58
CANW-2	10/4/2012	8.7	7.53
CANW-2	11/7/2012	9.24	7.94
CANW-33	4/11/2012	9.05	8.02
CANW-33	4/11/2012	9.08	8.02
CANW-33	5/3/2012	7.49	7.93
CANW-33	5/16/2012	7.97	7.52
CANW-33	5/16/2012	7.97	7.53
CANW-33	5/16/2012	7.98	7.51
CANW-33	6/7/2012	7.88	7.78
CANW-33	7/18/2012	6.46	7.83
CANW-33	7/26/2012	6.08	7.49
CANW-33	8/16/2012	7.39	7.85
CANW-33	9/12/2012	7.79	7.67
CANW-33	10/3/2012	8.46	7.5
CANW-33	11/6/2012	8.29	7.79

Table 22: Water Quality Data (TP, TN, Chlor a) 2012

Station ID	Visit Date	Total P mg/L	TN mg/L	Chlor a (ugl)	Chlor a dc
CANW-1A	4/19/2012	0.01	0.59	0.27	
CANW-1A	5/16/2012	0.012	0.101	0.53	
CANW-1A	6/7/2012	0.016	0.281	0.36	
CANW-1A	7/19/2012	0.015	0.369	0.27	
CANW-1A	8/16/2012	0.012	0.345	0.1	< MDL .1
CANW-1A	9/13/2012	0.016	0.221	0.53	
CANW-1A	10/4/2012	0.018	0.126	0.1	< MDL .1
CANW-1A	11/7/2012	0.011	0.102	0.1	< MDL .1
CANW-2	4/19/2012	0.019	0.42	0.1	< MDL .1
CANW-2	5/3/2012	0.04	0.44	4.27	
CANW-2	6/7/2012	0.048	0.413	0.1	< MDL .1
CANW-2	7/19/2012	0.062	0.64	0.27	
CANW-2	8/16/2012	0.041	0.596	0.1	< MDL .1
CANW-2	9/13/2012	0.066	0.585	0.1	< MDL .1
CANW-2	10/4/2012	0.029	0.17	0.1	< MDL .1
CANW-2	11/7/2012	0.009	0.089	0.1	< MDL .1
CANW-33	4/11/2012	0.008	0.156	0.27	
CANW-33	5/3/2012	0.018	0.184	0.53	
CANW-33	6/7/2012	0.009	0.123	1.07	
CANW-33	7/18/2012	0.008	0.568	0.53	
CANW-33	8/16/2012	0.007	0.238	0.8	
CANW-33	9/12/2012	0.008	0.143	0.1	< MDL .1
CANW-33	10/3/2012	0.009	0.057	0.1	< MDL .1
CANW-33	11/6/2012	0.011	0.125	0.1	< MDL .1

Table 23: Water Quality Data (CBOD5, NH3N, TKN) 2012

Station ID	Visit Date	CBOD5 mgl	CBOD5 dc	NO3 NO2 N mg/L	TKN mg/L
CANW-1A	4/19/2012	2	< MDL 2	0.096	0.494
CANW-1A	5/16/2012	2	< MDL 2	0.06	0.041
CANW-1A	6/7/2012	2	< MDL 2	0.098	0.183
CANW-1A	7/19/2012	2	< MDL 2	0.229	0.14
CANW-1A	8/16/2012	2	< MDL 2	0.028	0.317
CANW-1A	9/13/2012	2	< MDL 2	0.109	0.112
CANW-1A	10/4/2012	2	< MDL 2	0.085	0.041
CANW-1A	11/7/2012	2	< MDL 2	0.015	0.087
CANW-2	4/19/2012	2	< MDL 2	0.057	0.363
CANW-2	5/3/2012	2	JQ	0.089	0.351
CANW-2	6/7/2012	2	< MDL 2	0.262	0.151
CANW-2	7/19/2012	2	< MDL 2	0.318	0.322
CANW-2	8/16/2012	2	< MDL 2	0.388	0.208
CANW-2	9/13/2012	2	< MDL 2	0.425	0.16
CANW-2	10/4/2012	2	< MDL 2	0.129	0.041
CANW-2	11/7/2012	2	< MDL 2	0.048	0.041
CANW-33	4/11/2012	2	< MDL 2,JQ	0.016	0.14
CANW-33	5/3/2012	2	< MDL 2,JQ	0.009	0.175
CANW-33	6/7/2012	2	< MDL 2	0.032	0.091
CANW-33	7/18/2012	2	< MDL 2	0.034	0.534
CANW-33	8/16/2012	2	< MDL 2	0.031	0.207
CANW-33	9/12/2012	2	< MDL 2	0.066	0.077
CANW-33	10/3/2012	2	< MDL 2	0.016	0.041
CANW-33	11/6/2012	2	< MDL 2	0.005	0.12

Table 24: Water Quality Data (TSS, Turbidity) 2012

Station ID	Visit Date	TSS mgl	TSS dc	Turb NTU	Turb dc
CANW-1A	4/19/2012	1	< MDL 1	2.33	NTU
CANW-1A	5/16/2012	1	< MDL 1	2.97	NTU
CANW-1A	6/5/2012			2.89	NTU
CANW-1A	6/7/2012	1	< MDL 1	6.11	NTU
CANW-1A	7/19/2012	8		2	NTU
CANW-1A	8/16/2012	1	< MDL 1	3.64	NTU
CANW-1A	9/13/2012	1		3.03	NTU
CANW-1A	10/4/2012	1	< MDL 1	2.15	NTU
CANW-1A	11/7/2012	1	< MDL 1	1.66	NTU
CANW-2	4/19/2012	1	< MDL 1	2.84	NTU
CANW-2	5/3/2012	11		27.3	NTU
CANW-2	6/7/2012	1	< MDL 1	2.44	NTU
CANW-2	7/19/2012	9		10.2	NTU
CANW-2	8/16/2012	1		1.86	NTU
CANW-2	9/13/2012	1		2.01	NTU
CANW-2	10/4/2012	1	< MDL 1	2.46	NTU
CANW-2	11/7/2012	1	< MDL 1	1.34	NTU
CANW-33	4/11/2012	1	< MDL 1	2.74	NTU
CANW-33	5/3/2012	1	< MDL 1	8.51	NTU
CANW-33	5/8/2012			9.06	NTU
CANW-33	5/16/2012			3.63	NTU
CANW-33	6/7/2012	1	< MDL 1	2.89	NTU
CANW-33	7/18/2012	1	< MDL 1	2.01	NTU
CANW-33	7/26/2012			2.76	NTU
CANW-33	8/16/2012	1		1.25	NTU
CANW-33	9/12/2012	1	< MDL 1	1.3	NTU
CANW-33	10/3/2012	1	< MDL 1	2.69	NTU
CANW-33	11/6/2012	1	< MDL 1	1.6	NTU

Table 25: 72 hour Diurnal Data 2012

Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH
CANW-1A	6/5/12 16:15	20.78	6.8	7.86		CANW-33	6/5/12 14:15	23.33	7.65	7.68		CANW-2	6/5/12 15:15	23.16	8.07	7.6
CANW-1A	6/5/12 16:30	20.79	6.75	7.86		CANW-33	6/5/12 14:30	23.39	7.66	7.8		CANW-2	6/5/12 15:30	23.21	7.8	7.67
CANW-1A	6/5/12 16:45	20.79	6.78	7.86		CANW-33	6/5/12 14:45	23.45	7.66	7.82		CANW-2	6/5/12 15:45	23.28	7.69	7.7
CANW-1A	6/5/12 17:00	20.79	6.84	7.86		CANW-33	6/5/12 15:00	23.51	7.65	7.83		CANW-2	6/5/12 16:00	23.33	7.62	7.73
CANW-1A	6/5/12 17:15	20.8	6.76	7.86		CANW-33	6/5/12 15:15	23.55	7.64	7.83		CANW-2	6/5/12 16:15	23.34	7.53	7.75
CANW-1A	6/5/12 17:30	20.81	6.85	7.86		CANW-33	6/5/12 15:30	23.58	7.62	7.84		CANW-2	6/5/12 16:30	23.38	7.51	7.76
CANW-1A	6/5/12 17:45	20.82	6.77	7.86		CANW-33	6/5/12 15:45	23.61	7.61	7.84		CANW-2	6/5/12 16:45	23.38	7.46	7.77
CANW-1A	6/5/12 18:00	20.83	6.71	7.86		CANW-33	6/5/12 16:00	23.63	7.6	7.83		CANW-2	6/5/12 17:00	23.41	7.44	7.78

Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH
CANW-1A	6/5/12 18:15	20.83	6.94	7.86		CANW-33	6/5/12 16:15	23.64	7.58	7.83		CANW-2	6/5/12 17:15	23.44	7.41	7.79
CANW-1A	6/5/12 18:30	20.85	6.75	7.86		CANW-33	6/5/12 16:30	23.65	7.56	7.83		CANW-2	6/5/12 17:30	23.47	7.39	7.79
CANW-1A	6/5/12 18:45	20.86	6.97	7.86		CANW-33	6/5/12 16:45	23.67	7.54	7.83		CANW-2	6/5/12 17:45	23.51	7.36	7.79
CANW-1A	6/5/12 19:00	20.88	6.75	7.87		CANW-33	6/5/12 17:00	23.69	7.51	7.83		CANW-2	6/5/12 18:00	23.53	7.34	7.8
CANW-1A	6/5/12 19:15	20.9	7.03	7.86		CANW-33	6/5/12 17:15	23.71	7.51	7.83		CANW-2	6/5/12 18:15	23.55	7.32	7.8
CANW-1A	6/5/12 19:30	20.91	6.7	7.86		CANW-33	6/5/12 17:30	23.74	7.48	7.83		CANW-2	6/5/12 18:30	23.57	7.29	7.8
CANW-1A	6/5/12 19:45	20.95	6.7	7.86		CANW-33	6/5/12 17:45	23.76	7.46	7.83		CANW-2	6/5/12 18:45	23.58	7.27	7.8
CANW-1A	6/5/12 20:00	20.95	7.42	7.87		CANW-33	6/5/12 18:00	23.77	7.44	7.83		CANW-2	6/5/12 19:00	23.58	7.24	7.8
CANW-1A	6/5/12 20:15	21	6.76	7.86		CANW-33	6/5/12 18:15	23.77	7.43	7.83		CANW-2	6/5/12 19:15	23.58	7.21	7.8
CANW-1A	6/5/12 20:30	21.01	7.28	7.87		CANW-33	6/5/12 18:30	23.78	7.41	7.82		CANW-2	6/5/12 19:30	23.58	7.19	7.8
CANW-1A	6/5/12 20:45	21.05	6.71	7.87		CANW-33	6/5/12 18:45	23.78	7.4	7.82		CANW-2	6/5/12 19:45	23.57	7.16	7.8
CANW-1A	6/5/12 21:00	21.05	7.24	7.87		CANW-33	6/5/12 19:00	23.76	7.39	7.82		CANW-2	6/5/12 20:00	23.55	7.14	7.8
CANW-1A	6/5/12 21:15	21.09	6.75	7.87		CANW-33	6/5/12 19:15	23.75	7.37	7.82		CANW-2	6/5/12 20:15	23.54	7.12	7.8
CANW-1A	6/5/12 21:30	21.1	7.31	7.88		CANW-33	6/5/12 19:30	23.74	7.35	7.82		CANW-2	6/5/12 20:30	23.52	7.1	7.79
CANW-1A	6/5/12 21:45	21.14	7.45	7.88		CANW-33	6/5/12 19:45	23.73	7.35	7.82		CANW-2	6/5/12 20:45	23.5	7.08	7.79
CANW-1A	6/5/12 22:00	21.16	6.74	7.87		CANW-33	6/5/12 20:00	23.72	7.34	7.82		CANW-2	6/5/12 21:00	23.47	7.06	7.79
CANW-1A	6/5/12 22:15	21.17	7.39	7.89		CANW-33	6/5/12 20:15	23.71	7.33	7.82		CANW-2	6/5/12 21:15	23.44	7.05	7.79
CANW-1A	6/5/12 22:30	21.2	7.45	7.88		CANW-33	6/5/12 20:30	23.69	7.32	7.82		CANW-2	6/5/12 21:30	23.4	7.04	7.79
CANW-1A	6/5/12 22:45	21.22	6.67	7.87		CANW-33	6/5/12 20:45	23.68	7.33	7.82		CANW-2	6/5/12 21:45	23.36	7.03	7.79
CANW-1A	6/5/12 23:00	21.22	7.48	7.89		CANW-33	6/5/12 21:00	23.65	7.31	7.82		CANW-2	6/5/12 22:00	23.32	7.02	7.79
CANW-1A	6/5/12 23:15	21.26	7.55	7.89		CANW-33	6/5/12 21:15	23.62	7.3	7.82		CANW-2	6/5/12 22:15	23.28	7.01	7.79
CANW-1A	6/5/12 23:30	21.27	6.67	7.87		CANW-33	6/5/12 21:30	23.59	7.31	7.82		CANW-2	6/5/12 22:30	23.24	7	7.79
CANW-1A	6/5/12 23:45	21.33	7.59	7.89		CANW-33	6/5/12 21:45	23.55	7.3	7.82		CANW-2	6/5/12 22:45	23.2	7	7.79
CANW-1A	6/6/12 0:00	21.35	6.69	7.87		CANW-33	6/5/12 22:00	23.51	7.29	7.81		CANW-2	6/5/12 23:00	23.15	6.99	7.79
CANW-1A	6/6/12 0:15	21.37	6.79	7.83		CANW-33	6/5/12 22:15	23.47	7.29	7.81		CANW-2	6/5/12 23:15	23.11	6.99	7.78
CANW-1A	6/6/12 0:30	21.37	6.79	7.84		CANW-33	6/5/12 22:30	23.44	7.28	7.81		CANW-2	6/5/12 23:30	23.06	6.99	7.78
CANW-1A	6/6/12 0:45	21.37	6.8	7.84		CANW-33	6/5/12 22:45	23.4	7.28	7.81		CANW-2	6/5/12 23:45	23.01	6.99	7.78
CANW-1A	6/6/12 1:00	21.37	6.81	7.84		CANW-33	6/5/12 23:00	23.36	7.29	7.81		CANW-2	6/6/12 0:00	22.97	6.98	7.78
CANW-1A	6/6/12 1:15	21.38	6.79	7.84		CANW-33	6/5/12 23:15	23.33	7.27	7.81		CANW-2	6/6/12 0:15	22.92	6.98	7.78
CANW-1A	6/6/12 1:30	21.38	6.87	7.84		CANW-33	6/5/12 23:30	23.29	7.26	7.81		CANW-2	6/6/12 0:30	22.87	6.97	7.78
CANW-1A	6/6/12 1:45	21.39	6.81	7.83		CANW-33	6/5/12 23:45	23.26	7.26	7.81		CANW-2	6/6/12 0:45	22.83	6.98	7.78
CANW-1A	6/6/12 2:00	21.4	6.94	7.84		CANW-33	6/6/12 0:00	23.22	7.26	7.81		CANW-2	6/6/12 1:00	22.79	6.97	7.78

Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH
CANW-1A	6/6/12 2:15	21.41	6.75	7.84		CANW-33	6/6/12 0:15	23.18	7.26	7.81		CANW-2	6/6/12 1:15	22.74	6.98	7.78
CANW-1A	6/6/12 2:30	21.41	6.82	7.88		CANW-33	6/6/12 0:30	23.15	7.26	7.8		CANW-2	6/6/12 1:30	22.7	6.98	7.78
CANW-1A	6/6/12 2:45	21.43	6.89	7.84		CANW-33	6/6/12 0:45	23.11	7.26	7.8		CANW-2	6/6/12 1:45	22.66	6.98	7.78
CANW-1A	6/6/12 3:00	21.44	6.74	7.84		CANW-33	6/6/12 1:00	23.08	7.26	7.8		CANW-2	6/6/12 2:00	22.62	6.99	7.78
CANW-1A	6/6/12 3:15	21.44	7.69	7.9		CANW-33	6/6/12 1:15	23.04	7.26	7.8		CANW-2	6/6/12 2:15	22.58	6.99	7.77
CANW-1A	6/6/12 3:30	21.46	6.8	7.84		CANW-33	6/6/12 1:30	23.01	7.26	7.8		CANW-2	6/6/12 2:30	22.53	6.99	7.77
CANW-1A	6/6/12 3:45	21.47	6.9	7.84		CANW-33	6/6/12 1:45	22.97	7.27	7.8		CANW-2	6/6/12 2:45	22.48	6.99	7.77
CANW-1A	6/6/12 4:00	21.48	7.75	7.91		CANW-33	6/6/12 2:00	22.93	7.27	7.8		CANW-2	6/6/12 3:00	22.43	6.99	7.77
CANW-1A	6/6/12 4:15	21.49	6.85	7.88		CANW-33	6/6/12 2:15	22.88	7.28	7.8		CANW-2	6/6/12 3:15	22.37	6.99	7.77
CANW-1A	6/6/12 4:30	21.5	6.85	7.84		CANW-33	6/6/12 2:30	22.83	7.29	7.8		CANW-2	6/6/12 3:30	22.32	6.98	7.77
CANW-1A	6/6/12 4:45	21.5	6.97	7.85		CANW-33	6/6/12 2:45	22.79	7.28	7.8		CANW-2	6/6/12 3:45	22.28	7	7.76
CANW-1A	6/6/12 5:00	21.54	6.79	7.84		CANW-33	6/6/12 3:00	22.74	7.3	7.8		CANW-2	6/6/12 4:00	22.23	7.01	7.76
CANW-1A	6/6/12 5:15	21.54	7.83	7.91		CANW-33	6/6/12 3:15	22.7	7.3	7.8		CANW-2	6/6/12 4:15	22.18	7.01	7.76
CANW-1A	6/6/12 5:30	21.55	6.72	7.88		CANW-33	6/6/12 3:30	22.65	7.3	7.8		CANW-2	6/6/12 4:30	22.13	7.03	7.76
CANW-1A	6/6/12 5:45	21.55	7.17	7.85		CANW-33	6/6/12 3:45	22.6	7.31	7.79		CANW-2	6/6/12 4:45	22.08	7.04	7.76
CANW-1A	6/6/12 6:00	21.57	6.82	7.84		CANW-33	6/6/12 4:00	22.55	7.32	7.8		CANW-2	6/6/12 5:00	22.03	7.05	7.76
CANW-1A	6/6/12 6:15	21.59	7.12	7.85		CANW-33	6/6/12 4:15	22.5	7.32	7.79		CANW-2	6/6/12 5:15	21.97	7.06	7.76
CANW-1A	6/6/12 6:30	21.59	7.9	7.91		CANW-33	6/6/12 4:30	22.45	7.33	7.79		CANW-2	6/6/12 5:30	21.92	7.06	7.76
CANW-1A	6/6/12 6:45	21.62	6.71	7.84		CANW-33	6/6/12 4:45	22.4	7.34	7.79		CANW-2	6/6/12 5:45	21.87	7.07	7.76
CANW-1A	6/6/12 7:00	21.62	6.72	7.88		CANW-33	6/6/12 5:00	22.34	7.34	7.79		CANW-2	6/6/12 6:00	21.82	7.07	7.76
CANW-1A	6/6/12 7:15	21.64	8.09	7.91		CANW-33	6/6/12 5:15	22.28	7.34	7.79		CANW-2	6/6/12 6:15	21.77	7.07	7.76
CANW-1A	6/6/12 7:30	21.67	6.74	7.83		CANW-33	6/6/12 5:30	22.22	7.35	7.79		CANW-2	6/6/12 6:30	21.72	7.09	7.75
CANW-1A	6/6/12 7:45	21.67	7.14	7.86		CANW-33	6/6/12 5:45	22.16	7.36	7.79		CANW-2	6/6/12 6:45	21.68	7.1	7.75
CANW-1A	6/6/12 8:00	21.7	6.72	7.88		CANW-33	6/6/12 6:00	22.11	7.37	7.79		CANW-2	6/6/12 7:00	21.64	7.12	7.75
CANW-1A	6/6/12 8:15	21.71	8.15	7.92		CANW-33	6/6/12 6:15	22.05	7.38	7.78		CANW-2	6/6/12 7:15	21.6	7.13	7.75
CANW-1A	6/6/12 8:30	21.72	6.79	7.83		CANW-33	6/6/12 6:30	22.01	7.39	7.78		CANW-2	6/6/12 7:30	21.57	7.14	7.75
CANW-1A	6/6/12 8:45	21.72	7.4	7.86		CANW-33	6/6/12 6:45	21.97	7.4	7.78		CANW-2	6/6/12 7:45	21.55	7.16	7.75
CANW-1A	6/6/12 9:00	21.75	6.89	7.88		CANW-33	6/6/12 7:00	21.93	7.41	7.78		CANW-2	6/6/12 8:00	21.53	7.18	7.75
CANW-1A	6/6/12 9:15	21.75	8.05	7.92		CANW-33	6/6/12 7:15	21.89	7.42	7.78		CANW-2	6/6/12 8:15	21.5	7.22	7.75
CANW-1A	6/6/12 9:30	21.78	6.73	7.84		CANW-33	6/6/12 7:30	21.85	7.43	7.78		CANW-2	6/6/12 8:30	21.48	7.29	7.75
CANW-1A	6/6/12 9:45	21.78	7.33	7.86		CANW-33	6/6/12 7:45	21.82	7.44	7.78		CANW-2	6/6/12 8:45	21.46	7.38	7.76
CANW-1A	6/6/12 10:00	21.83	6.69	7.84		CANW-33	6/6/12 8:00	21.79	7.45	7.78		CANW-2	6/6/12 9:00	21.45	7.42	7.76

Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH
CANW-1A	6/6/12 10:15	21.83	6.74	7.88		CANW-33	6/6/12 8:15	21.76	7.47	7.78		CANW-2	6/6/12 9:15	21.45	7.42	7.76
CANW-1A	6/6/12 10:30	21.84	8.18	7.93		CANW-33	6/6/12 8:30	21.75	7.48	7.78		CANW-2	6/6/12 9:30	21.45	7.45	7.77
CANW-1A	6/6/12 10:45	21.85	7.32	7.87		CANW-33	6/6/12 8:45	21.73	7.49	7.78		CANW-2	6/6/12 9:45	21.45	7.44	7.78
CANW-1A	6/6/12 11:00	21.89	6.73	7.84		CANW-33	6/6/12 9:00	21.73	7.51	7.78		CANW-2	6/6/12 10:00	21.45	7.45	7.79
CANW-1A	6/6/12 11:15	21.9	6.72	7.89		CANW-33	6/6/12 9:15	21.73	7.52	7.78		CANW-2	6/6/12 10:15	21.47	7.45	7.8
CANW-1A	6/6/12 11:30	21.92	8.21	7.93		CANW-33	6/6/12 9:30	21.74	7.53	7.78		CANW-2	6/6/12 10:30	21.49	7.46	7.81
CANW-1A	6/6/12 11:45	21.93	7.39	7.88		CANW-33	6/6/12 9:45	21.75	7.55	7.78		CANW-2	6/6/12 10:45	21.52	7.53	7.82
CANW-1A	6/6/12 12:00	21.95	6.72	7.84		CANW-33	6/6/12 10:00	21.76	7.56	7.78		CANW-2	6/6/12 11:00	21.55	7.55	7.82
CANW-1A	6/6/12 12:15	21.97	6.82	7.89		CANW-33	6/6/12 10:15	21.78	7.57	7.79		CANW-2	6/6/12 11:15	21.58	7.54	7.83
CANW-1A	6/6/12 12:30	22.01	6.82	7.84		CANW-33	6/6/12 10:30	21.8	7.59	7.79		CANW-2	6/6/12 11:30	21.63	7.56	7.83
CANW-1A	6/6/12 12:45	22.01	7.5	7.88		CANW-33	6/6/12 10:45	21.83	7.6	7.79		CANW-2	6/6/12 11:45	21.69	7.57	7.83
CANW-1A	6/6/12 13:00	22.02	8.36	7.94		CANW-33	6/6/12 11:00	21.87	7.62	7.79		CANW-2	6/6/12 12:00	21.75	7.58	7.83
CANW-1A	6/6/12 13:15	22.03	6.82	7.89		CANW-33	6/6/12 11:15	21.93	7.64	7.79		CANW-2	6/6/12 12:15	21.81	7.6	7.83
CANW-1A	6/6/12 13:30	22.06	6.75	7.84		CANW-33	6/6/12 11:30	22	7.68	7.8		CANW-2	6/6/12 12:30	21.89	7.63	7.84
CANW-1A	6/6/12 13:45	22.09	6.77	7.89		CANW-33	6/6/12 11:45	22.05	7.69	7.8		CANW-2	6/6/12 12:45	21.98	7.65	7.84
CANW-1A	6/6/12 14:00	22.1	7.62	7.89		CANW-33	6/6/12 12:00	22.08	7.71	7.8		CANW-2	6/6/12 13:00	22.04	7.67	7.84
CANW-1A	6/6/12 14:15	22.11	6.71	7.84		CANW-33	6/6/12 12:15	22.1	7.72	7.8		CANW-2	6/6/12 13:15	22.11	7.7	7.84
CANW-1A	6/6/12 14:30	22.13	8.58	7.95		CANW-33	6/6/12 12:30	22.14	7.72	7.79		CANW-2	6/6/12 13:30	22.19	7.78	7.84
CANW-1A	6/6/12 14:45	22.16	6.81	7.9		CANW-33	6/6/12 12:45	22.17	7.74	7.8		CANW-2	6/6/12 13:45	22.26	7.84	7.84
CANW-1A	6/6/12 15:00	22.17	6.73	7.84		CANW-33	6/6/12 13:00	22.26	7.76	7.8		CANW-2	6/6/12 14:00	22.35	7.86	7.84
CANW-1A	6/6/12 15:15	22.18	7.68	7.9		CANW-33	6/6/12 13:15	22.33	7.78	7.81		CANW-2	6/6/12 14:15	22.43	8.01	7.84
CANW-1A	6/6/12 15:30	22.2	5.85	7.87		CANW-33	6/6/12 13:30	22.4	7.8	7.81		CANW-2	6/6/12 14:30	22.5	8.01	7.84
CANW-1A	6/6/12 15:45	22.2	6.25	7.87		CANW-33	6/6/12 13:45	22.45	7.8	7.82		CANW-2	6/6/12 14:45	22.56	7.97	7.84
CANW-1A	6/6/12 16:00	22.2	6.33	7.87		CANW-33	6/6/12 14:00	22.5	7.8	7.82		CANW-2	6/6/12 15:00	22.62	7.9	7.84
CANW-1A	6/6/12 16:15	22.21	6.39	7.87		CANW-33	6/6/12 14:15	22.55	7.8	7.82		CANW-2	6/6/12 15:15	22.67	7.85	7.84
CANW-1A	6/6/12 16:30	22.22	6.1	7.87		CANW-33	6/6/12 14:30	22.61	7.79	7.82		CANW-2	6/6/12 15:30	22.71	7.79	7.83
CANW-1A	6/6/12 16:45	22.22	6.3	7.87		CANW-33	6/6/12 14:45	22.71	7.79	7.83		CANW-2	6/6/12 15:45	22.75	7.75	7.83
CANW-1A	6/6/12 17:00	22.22	6.74	7.84		CANW-33	6/6/12 15:00	22.83	7.79	7.84		CANW-2	6/6/12 16:00	22.79	7.7	7.83
CANW-1A	6/6/12 17:15	22.22	6.84	7.9		CANW-33	6/6/12 15:15	22.94	7.79	7.84		CANW-2	6/6/12 16:15	22.82	7.66	7.83
CANW-1A	6/6/12 17:30	22.23	6.1	7.87		CANW-33	6/6/12 15:30	23.03	7.77	7.84		CANW-2	6/6/12 16:30	22.84	7.63	7.83
CANW-1A	6/6/12 17:45	22.23	6.4	7.87		CANW-33	6/6/12 15:45	23.09	7.76	7.84		CANW-2	6/6/12 16:45	22.85	7.6	7.83
CANW-1A	6/6/12 18:00	22.25	6.21	7.88		CANW-33	6/6/12 16:00	23.14	7.75	7.84		CANW-2	6/6/12 17:00	22.86	7.57	7.83

Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH
CANW-1A	6/6/12 18:15	22.25	7.74	7.9		CANW-33	6/6/12 16:15	23.18	7.74	7.84		CANW-2	6/6/12 17:15	22.86	7.54	7.82
CANW-1A	6/6/12 18:30	22.26	6.75	7.87		CANW-33	6/6/12 16:30	23.21	7.72	7.85		CANW-2	6/6/12 17:30	22.86	7.51	7.82
CANW-1A	6/6/12 18:45	22.27	5.95	7.88		CANW-33	6/6/12 16:45	23.24	7.7	7.84		CANW-2	6/6/12 17:45	22.85	7.47	7.82
CANW-1A	6/6/12 19:00	22.28	6.59	7.88		CANW-33	6/6/12 17:00	23.25	7.68	7.84		CANW-2	6/6/12 18:00	22.84	7.44	7.82
CANW-1A	6/6/12 19:15	22.28	6.71	7.84		CANW-33	6/6/12 17:15	23.25	7.65	7.84		CANW-2	6/6/12 18:15	22.83	7.42	7.82
CANW-1A	6/6/12 19:30	22.28	6.9	7.9		CANW-33	6/6/12 17:30	23.27	7.63	7.84		CANW-2	6/6/12 18:30	22.81	7.41	7.82
CANW-1A	6/6/12 19:45	22.29	6.05	7.88		CANW-33	6/6/12 17:45	23.26	7.6	7.84		CANW-2	6/6/12 18:45	22.8	7.39	7.81
CANW-1A	6/6/12 20:00	22.3	8.84	7.97		CANW-33	6/6/12 18:00	23.26	7.57	7.84		CANW-2	6/6/12 19:00	22.78	7.37	7.81
CANW-1A	6/6/12 20:15	22.31	6.58	7.88		CANW-33	6/6/12 18:15	23.25	7.54	7.83		CANW-2	6/6/12 19:15	22.76	7.35	7.81
CANW-1A	6/6/12 20:30	22.32	6.19	7.88		CANW-33	6/6/12 18:30	23.24	7.52	7.82		CANW-2	6/6/12 19:30	22.75	7.32	7.81
CANW-1A	6/6/12 20:45	22.33	6.73	7.84		CANW-33	6/6/12 18:45	23.21	7.49	7.83		CANW-2	6/6/12 19:45	22.74	7.31	7.81
CANW-1A	6/6/12 21:00	22.34	5.96	7.88		CANW-33	6/6/12 19:00	23.18	7.47	7.81		CANW-2	6/6/12 20:00	22.73	7.3	7.81
CANW-1A	6/6/12 21:15	22.34	6.39	7.88		CANW-33	6/6/12 19:15	23.15	7.45	7.8		CANW-2	6/6/12 20:15	22.72	7.29	7.81
CANW-1A	6/6/12 21:30	22.34	6.94	7.9		CANW-33	6/6/12 19:30	23.1	7.44	7.79		CANW-2	6/6/12 20:30	22.7	7.29	7.81
CANW-1A	6/6/12 21:45	22.35	7.83	7.91		CANW-33	6/6/12 19:45	23.04	7.42	7.77		CANW-2	6/6/12 20:45	22.68	7.28	7.81
CANW-1A	6/6/12 22:00	22.37	6.86	7.88		CANW-33	6/6/12 20:00	22.96	7.41	7.76		CANW-2	6/6/12 21:00	22.66	7.27	7.81
CANW-1A	6/6/12 22:15	22.38	5.55	7.88		CANW-33	6/6/12 20:15	22.89	7.39	7.73		CANW-2	6/6/12 21:15	22.63	7.27	7.81
CANW-1A	6/6/12 22:30	22.38	6.72	7.84		CANW-33	6/6/12 20:30	22.82	7.38	7.72		CANW-2	6/6/12 21:30	22.6	7.27	7.82
CANW-1A	6/6/12 22:45	22.39	6.96	7.91		CANW-33	6/6/12 20:45	22.75	7.37	7.7		CANW-2	6/6/12 21:45	22.57	7.26	7.82
CANW-1A	6/6/12 23:00	22.41	7.03	7.88		CANW-33	6/6/12 21:00	22.69	7.34	7.69		CANW-2	6/6/12 22:00	22.54	7.25	7.82
CANW-1A	6/6/12 23:15	22.43	5.9	7.88		CANW-33	6/6/12 21:15	22.64	7.33	7.69		CANW-2	6/6/12 22:15	22.5	7.24	7.82
CANW-1A	6/6/12 23:30	22.44	6.73	7.84		CANW-33	6/6/12 21:30	22.6	7.31	7.68		CANW-2	6/6/12 22:30	22.46	7.23	7.82
CANW-1A	6/6/12 23:45	22.44	7.95	7.92		CANW-33	6/6/12 21:45	22.56	7.28	7.69		CANW-2	6/6/12 22:45	22.42	7.22	7.82
CANW-1A	6/7/12 0:00	22.45	6.73	7.89		CANW-33	6/6/12 22:00	22.53	7.27	7.69		CANW-2	6/6/12 23:00	22.38	7.21	7.81
CANW-1A	6/7/12 0:15	22.45	7.27	7.91		CANW-33	6/6/12 22:15	22.5	7.26	7.69		CANW-2	6/6/12 23:15	22.34	7.2	7.81
CANW-1A	6/7/12 0:30	22.48	5.91	7.88		CANW-33	6/6/12 22:30	22.47	7.25	7.7		CANW-2	6/6/12 23:30	22.29	7.2	7.81
CANW-1A	6/7/12 0:45	22.49	7.24	7.89		CANW-33	6/6/12 22:45	22.44	7.24	7.71		CANW-2	6/6/12 23:45	22.24	7.19	7.81
CANW-1A	6/7/12 1:00	22.5	6.75	7.84		CANW-33	6/6/12 23:00	22.4	7.24	7.71		CANW-2	6/7/12 0:00	22.19	7.18	7.81
CANW-1A	6/7/12 1:15	22.5	7.13	7.91		CANW-33	6/6/12 23:15	22.36	7.24	7.72		CANW-2	6/7/12 0:15	22.14	7.18	7.8
CANW-1A	6/7/12 1:30	22.52	8.19	7.92		CANW-33	6/6/12 23:30	22.31	7.24	7.73		CANW-2	6/7/12 0:30	22.08	7.18	7.8
CANW-1A	6/7/12 1:45	22.52	9	7.99		CANW-33	6/6/12 23:45	22.26	7.25	7.72		CANW-2	6/7/12 0:45	22.02	7.17	7.8
CANW-1A	6/7/12 2:00	22.53	6.03	7.88		CANW-33	6/7/12 0:00	22.2	7.26	7.73		CANW-2	6/7/12 1:00	21.97	7.16	7.8

Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH
CANW-1A	6/7/12 2:15	22.53	7.29	7.9		CANW-33	6/7/12 0:15	22.15	7.26	7.73		CANW-2	6/7/12 1:15	21.9	7.16	7.8
CANW-1A	6/7/12 2:30	22.55	6.76	7.84		CANW-33	6/7/12 0:30	22.09	7.27	7.74		CANW-2	6/7/12 1:30	21.84	7.15	7.79
CANW-1A	6/7/12 2:45	22.55	7.1	7.92		CANW-33	6/7/12 0:45	22.02	7.29	7.74		CANW-2	6/7/12 1:45	21.78	7.15	7.79
CANW-1A	6/7/12 3:00	22.55	7.38	7.9		CANW-33	6/7/12 1:00	21.96	7.3	7.74		CANW-2	6/7/12 2:00	21.71	7.15	7.79
CANW-1A	6/7/12 3:15	22.59	5.97	7.88		CANW-33	6/7/12 1:15	21.89	7.3	7.74		CANW-2	6/7/12 2:15	21.65	7.15	7.79
CANW-1A	6/7/12 3:30	22.59	7.43	7.9		CANW-33	6/7/12 1:30	21.83	7.32	7.74		CANW-2	6/7/12 2:30	21.58	7.15	7.79
CANW-1A	6/7/12 3:45	22.61	6.88	7.84		CANW-33	6/7/12 1:45	21.77	7.32	7.75		CANW-2	6/7/12 2:45	21.52	7.14	7.78
CANW-1A	6/7/12 4:00	22.61	7.31	7.91		CANW-33	6/7/12 2:00	21.71	7.34	7.75		CANW-2	6/7/12 3:00	21.45	7.14	7.78
CANW-1A	6/7/12 4:15	22.62	7.17	7.92		CANW-33	6/7/12 2:15	21.65	7.35	7.75		CANW-2	6/7/12 3:15	21.39	7.14	7.78
CANW-1A	6/7/12 4:30	22.64	5.68	7.88		CANW-33	6/7/12 2:30	21.59	7.37	7.76		CANW-2	6/7/12 3:30	21.32	7.15	7.78
CANW-1A	6/7/12 4:45	22.64	7.26	7.91		CANW-33	6/7/12 2:45	21.53	7.38	7.76		CANW-2	6/7/12 3:45	21.25	7.16	7.78
CANW-1A	6/7/12 5:00	22.64	8.22	7.93		CANW-33	6/7/12 3:00	21.48	7.39	7.75		CANW-2	6/7/12 4:00	21.18	7.15	7.77
CANW-1A	6/7/12 5:15	22.67	6.82	7.84		CANW-33	6/7/12 3:15	21.42	7.42	7.76		CANW-2	6/7/12 4:15	21.11	7.15	7.77
CANW-1A	6/7/12 5:30	22.67	7.15	7.93		CANW-33	6/7/12 3:30	21.36	7.42	7.76		CANW-2	6/7/12 4:30	21.05	7.16	7.77
CANW-1A	6/7/12 5:45	22.67	7.62	7.91		CANW-33	6/7/12 3:45	21.31	7.44	7.76		CANW-2	6/7/12 4:45	20.98	7.17	7.77
CANW-1A	6/7/12 6:00	22.68	9.13	8.01		CANW-33	6/7/12 4:00	21.25	7.44	7.75		CANW-2	6/7/12 5:00	20.92	7.17	7.77
CANW-1A	6/7/12 6:15	22.72	5.84	7.88		CANW-33	6/7/12 4:15	21.2	7.46	7.76		CANW-2	6/7/12 5:15	20.85	7.18	7.77
CANW-1A	6/7/12 6:30	22.72	6.84	7.84		CANW-33	6/7/12 4:30	21.15	7.47	7.75		CANW-2	6/7/12 5:30	20.79	7.18	7.76
CANW-1A	6/7/12 6:45	22.73	7.17	7.93		CANW-33	6/7/12 4:45	21.1	7.48	7.75		CANW-2	6/7/12 5:45	20.73	7.19	7.76
CANW-1A	6/7/12 7:00	22.73	7.64	7.91		CANW-33	6/7/12 5:00	21.05	7.49	7.75		CANW-2	6/7/12 6:00	20.67	7.2	7.76
CANW-1A	6/7/12 7:15	22.74	7.74	7.91		CANW-33	6/7/12 5:15	20.99	7.5	7.75		CANW-2	6/7/12 6:15	20.6	7.21	7.76
CANW-1A	6/7/12 7:30	22.74	8.23	7.94		CANW-33	6/7/12 5:30	20.94	7.52	7.76		CANW-2	6/7/12 6:30	20.54	7.22	7.76
CANW-1A	6/7/12 7:45	22.77	7.25	7.94		CANW-33	6/7/12 5:45	20.89	7.53	7.75		CANW-2	6/7/12 6:45	20.49	7.23	7.76
CANW-1A	6/7/12 8:00	22.78	6.92	7.84		CANW-33	6/7/12 6:00	20.83	7.54	7.75		CANW-2	6/7/12 7:00	20.44	7.23	7.75
CANW-1A	6/7/12 8:15	22.78	7.76	7.92		CANW-33	6/7/12 6:15	20.78	7.54	7.75		CANW-2	6/7/12 7:15	20.4	7.26	7.75
CANW-1A	6/7/12 8:30	22.79	5.86	7.88		CANW-33	6/7/12 6:30	20.73	7.56	7.75		CANW-2	6/7/12 7:30	20.36	7.29	7.75
CANW-1A	6/7/12 8:45	22.82	8.25	7.95		CANW-33	6/7/12 6:45	20.7	7.57	7.75		CANW-2	6/7/12 7:45	20.33	7.31	7.75
CANW-1A	6/7/12 9:00	22.83	6.92	7.84		CANW-33	6/7/12 7:00	20.67	7.59	7.75		CANW-2	6/7/12 8:00	20.3	7.36	7.75
CANW-1A	6/7/12 9:15	22.83	7.41	7.94		CANW-33	6/7/12 7:15	20.63	7.6	7.75		CANW-2	6/7/12 8:15	20.28	7.39	7.75
CANW-1A	6/7/12 9:30	22.84	9.17	8.02		CANW-33	6/7/12 7:30	20.61	7.61	7.75		CANW-2	6/7/12 8:30	20.26	7.44	7.75
CANW-1A	6/7/12 9:45	22.86	8.32	7.95		CANW-33	6/7/12 7:45	20.59	7.62	7.75		CANW-2	6/7/12 8:45	20.25	7.51	7.75
CANW-1A	6/7/12 10:00	22.88	5.79	7.88		CANW-33	6/7/12 8:00	20.58	7.64	7.75		CANW-2	6/7/12 9:00	20.24	7.53	7.75

Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH
CANW-1A	6/7/12 10:15	22.88	7.65	7.95		CANW-33	6/7/12 8:15	20.57	7.65	7.75		CANW-2	6/7/12 9:15	20.23	7.56	7.75
CANW-1A	6/7/12 10:30	22.89	6.9	7.85		CANW-33	6/7/12 8:30	20.56	7.67	7.75		CANW-2	6/7/12 9:30	20.24	7.59	7.75
CANW-1A	6/7/12 10:45	22.9	8.54	7.95		CANW-33	6/7/12 8:45	20.56	7.68	7.75		CANW-2	6/7/12 9:45	20.24	7.61	7.76
CANW-1A	6/7/12 11:00	22.93	7.53	7.95		CANW-33	6/7/12 9:00	20.57	7.69	7.75		CANW-2	6/7/12 10:00	20.25	7.63	7.76
CANW-1A	6/7/12 11:15	22.94	8.5	7.96		CANW-33	6/7/12 9:15	20.58	7.71	7.75		CANW-2	6/7/12 10:15	20.27	7.65	7.76
CANW-1A	6/7/12 11:30	22.95	6.86	7.85		CANW-33	6/7/12 9:30	20.59	7.73	7.75		CANW-2	6/7/12 10:30	20.3	7.67	7.76
CANW-1A	6/7/12 11:45	22.96	5.93	7.88		CANW-33	6/7/12 9:45	20.6	7.74	7.75		CANW-2	6/7/12 10:45	20.32	7.74	7.76
CANW-1A	6/7/12 12:00	22.98	7.63	7.96		CANW-33	6/7/12 10:00	20.61	7.75	7.75		CANW-2	6/7/12 11:00	20.35	7.75	7.76
CANW-1A	6/7/12 12:15	22.98	8.55	7.96		CANW-33	6/7/12 10:15	20.64	7.77	7.76		CANW-2	6/7/12 11:15	20.39	7.77	7.77
CANW-1A	6/7/12 12:30	22.98	9.16	8.03		CANW-33	6/7/12 10:30	20.66	7.78	7.76		CANW-2	6/7/12 11:30	20.45	7.8	7.77
CANW-1A	6/7/12 12:45	23.01	6.83	7.85		CANW-33	6/7/12 10:45	20.7	7.8	7.76		CANW-2	6/7/12 11:45	20.51	7.83	7.77
CANW-1A	6/7/12 13:00	23.01	8.49	7.97		CANW-33	6/7/12 11:00	20.75	7.81	7.77		CANW-2	6/7/12 12:00	20.58	7.85	7.77
CANW-1A	6/7/12 13:15	23.02	7.67	7.97		CANW-33	6/7/12 11:15	20.81	7.83	7.76		CANW-2	6/7/12 12:15	20.64	7.88	7.78
CANW-1A	6/7/12 13:30	23.03	5.82	7.88		CANW-33	6/7/12 11:30	20.88	7.85	7.78		CANW-2	6/7/12 12:30	20.72	7.9	7.78
CANW-1A	6/7/12 13:45	23.03	8.6	7.97		CANW-33	6/7/12 11:45	20.95	7.87	7.76		CANW-2	6/7/12 12:45	20.77	7.9	7.78
CANW-1A	6/7/12 14:00	23.05	8.73	6.91		CANW-33	6/7/12 12:00	21.04	7.89	7.77		CANW-2	6/7/12 13:00	20.83	7.91	7.78
CANW-1A	6/7/12 14:15	23.06	8.75	7.97		CANW-33	6/7/12 12:15	21.06	7.9	7.77		CANW-2	6/7/12 13:15	20.87	7.91	7.78
CANW-1A	6/7/12 14:30	23.07	6.92	7.85		CANW-33	6/7/12 12:30	21.08	7.9	7.77		CANW-2	6/7/12 13:30	20.89	7.89	7.78
CANW-1A	6/7/12 14:45	23.07	7.73	7.97		CANW-33	6/7/12 12:45	21.16	7.93	7.78		CANW-2	6/7/12 13:45	20.95	7.99	7.79
CANW-1A	6/7/12 15:00	23.07	8.14	7.6		CANW-33	6/7/12 13:00	21.25	7.95	7.79		CANW-2	6/7/12 14:00	21.03	8.03	7.79
CANW-1A	6/7/12 15:15	23.08	9.12	8.02		CANW-33	6/7/12 13:15	21.3	7.95	7.79		CANW-2	6/7/12 14:15	21.07	8.07	7.79
CANW-1A	6/7/12 15:30	23.1	7.81	7.97		CANW-33	6/7/12 13:30	21.34	7.96	7.79		CANW-2	6/7/12 14:30	21.12	8.16	7.8
CANW-1A	6/7/12 15:45	23.1	8.61	7.97		CANW-33	6/7/12 13:45	21.42	7.98	7.79		CANW-2	6/7/12 14:45	21.17	8.13	7.8
CANW-1A	6/7/12 16:00	23.12	5.72	7.88		CANW-33	6/7/12 14:00	21.47	7.99	7.8		CANW-2	6/7/12 15:00	21.22	8.11	7.8
CANW-1A	6/7/12 16:15	23.13	6.94	7.85		CANW-33	6/7/12 14:15	21.54	7.99	7.81		CANW-2	6/7/12 15:15	21.28	8.08	7.8
CANW-1A	6/7/12 16:30	23.14	8.52	7.98		CANW-33	6/7/12 14:30	21.6	8	7.8		CANW-2	6/7/12 15:30	21.33	8.04	7.81
CANW-1A	6/7/12 16:45	23.15	7.86	7.98		CANW-33	6/7/12 14:45	21.66	8	7.8		CANW-2	6/7/12 15:45	21.38	8.01	7.81
CANW-1A	6/7/12 17:00	23.16	8.07	7.68		CANW-33	6/7/12 15:00	21.71	8	7.8		CANW-2	6/7/12 16:00	21.41	7.98	7.81
CANW-1A	6/7/12 17:15	23.17	8.58	7.98		CANW-33	6/7/12 15:15	21.77	8	7.81		CANW-2	6/7/12 16:15	21.45	7.95	7.81
CANW-1A	6/7/12 17:30	23.17	8.99	8.01		CANW-33	6/7/12 15:30	21.83	7.99	7.8		CANW-2	6/7/12 16:30	21.48	7.93	7.81
CANW-1A	6/7/12 17:45	23.19	6.91	7.85		CANW-33	6/7/12 15:45	21.9	7.98	7.8		CANW-2	6/7/12 16:45	21.52	7.89	7.81
CANW-1A	6/7/12 18:00	23.19	7.98	7.99		CANW-33	6/7/12 16:00	21.96	7.96	7.82		CANW-2	6/7/12 17:00	21.56	7.88	7.81

Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH
CANW-1A	6/7/12 18:15	23.21	6.02	7.87		CANW-33	6/7/12 16:15	22.02	7.94	7.82		CANW-2	6/7/12 17:15	21.6	7.85	7.81
CANW-1A	6/7/12 18:30	23.21	8.54	7.99		CANW-33	6/7/12 16:30	22.09	7.93	7.81		CANW-2	6/7/12 17:30	21.63	7.82	7.81
CANW-1A	6/7/12 18:45	23.23	8.13	7.99		CANW-33	6/7/12 16:45	22.15	7.91	7.81		CANW-2	6/7/12 17:45	21.66	7.78	7.81
CANW-1A	6/7/12 19:00	23.24	8.31	7.74		CANW-33	6/7/12 17:00	22.2	7.89	7.82		CANW-2	6/7/12 18:00	21.67	7.75	7.81
CANW-1A	6/7/12 19:15	23.24	8.89	7.99		CANW-33	6/7/12 17:15	22.26	7.87	7.81		CANW-2	6/7/12 18:15	21.68	7.73	7.81
CANW-1A	6/7/12 19:30	23.25	6.95	7.85		CANW-33	6/7/12 17:30	22.31	7.85	7.81		CANW-2	6/7/12 18:30	21.69	7.7	7.81
CANW-1A	6/7/12 19:45	23.25	8.56	7.99		CANW-33	6/7/12 17:45	22.35	7.82	7.81		CANW-2	6/7/12 18:45	21.71	7.68	7.8
CANW-1A	6/7/12 20:00	23.26	8.13	7.99		CANW-33	6/7/12 18:00	22.4	7.8	7.81		CANW-2	6/7/12 19:00	21.71	7.66	7.8
CANW-1A	6/7/12 20:15	23.28	8.67	7.99		CANW-33	6/7/12 18:15	22.43	7.77	7.82		CANW-2	6/7/12 19:15	21.71	7.63	7.8
CANW-1A	6/7/12 20:30	23.29	8.16	8		CANW-33	6/7/12 18:30	22.46	7.75	7.81		CANW-2	6/7/12 19:30	21.71	7.6	7.8
CANW-1A	6/7/12 20:45	23.3	7.03	7.85		CANW-33	6/7/12 18:45	22.49	7.72	7.81		CANW-2	6/7/12 19:45	21.71	7.58	7.8
CANW-1A	6/7/12 21:00	23.3	8.11	7.79		CANW-33	6/7/12 19:00	22.52	7.7	7.8		CANW-2	6/7/12 20:00	21.7	7.56	7.79
CANW-1A	6/7/12 21:15	23.32	6.1	7.87		CANW-33	6/7/12 19:15	22.53	7.67	7.81		CANW-2	6/7/12 20:15	21.7	7.53	7.79
CANW-1A	6/7/12 21:30	23.32	8.62	8		CANW-33	6/7/12 19:30	22.54	7.65	7.81		CANW-2	6/7/12 20:30	21.7	7.51	7.79
CANW-1A	6/7/12 21:45	23.33	8.09	7.81		CANW-33	6/7/12 19:45	22.54	7.62	7.81		CANW-2	6/7/12 20:45	21.69	7.5	7.79
CANW-1A	6/7/12 22:00	23.33	8.25	8		CANW-33	6/7/12 20:00	22.55	7.6	7.81		CANW-2	6/7/12 21:00	21.68	7.47	7.79
CANW-1A	6/7/12 22:15	23.33	8.79	7.94		CANW-33	6/7/12 20:15	22.54	7.58	7.81		CANW-2	6/7/12 21:15	21.67	7.46	7.79
CANW-1A	6/7/12 22:30	23.35	8.34	8		CANW-33	6/7/12 20:30	22.54	7.56	7.81		CANW-2	6/7/12 21:30	21.66	7.45	7.79
CANW-1A	6/7/12 22:45	23.35	8.6	8		CANW-33	6/7/12 20:45	22.53	7.54	7.81		CANW-2	6/7/12 21:45	21.66	7.43	7.79
CANW-1A	6/7/12 23:00	23.36	7.2	7.86		CANW-33	6/7/12 21:00	22.53	7.52	7.8		CANW-2	6/7/12 22:00	21.65	7.43	7.79
CANW-1A	6/7/12 23:15	23.37	8.03	7.84		CANW-33	6/7/12 21:15	22.52	7.49	7.8		CANW-2	6/7/12 22:15	21.65	7.4	7.79
CANW-1A	6/7/12 23:30	23.37	8.48	8		CANW-33	6/7/12 21:30	22.51	7.48	7.8		CANW-2	6/7/12 22:30	21.65	7.4	7.79
CANW-1A	6/7/12 23:45	23.38	8.61	8		CANW-33	6/7/12 21:45	22.5	7.46	7.8		CANW-2	6/7/12 22:45	21.65	7.38	7.79
CANW-1A	6/8/12 0:00	23.39	8.53	8		CANW-33	6/7/12 22:00	22.48	7.45	7.8		CANW-2	6/7/12 23:00	21.65	7.37	7.79
CANW-1A	6/8/12 0:15	23.39	8.53	8.01		CANW-33	6/7/12 22:15	22.46	7.44	7.8		CANW-2	6/7/12 23:15	21.64	7.36	7.78
CANW-1A	6/8/12 0:30	23.39	8.57	8.01		CANW-33	6/7/12 22:30	22.43	7.43	7.8		CANW-2	6/7/12 23:30	21.64	7.34	7.78
CANW-1A	6/8/12 0:45	23.39	8.6	8.01		CANW-33	6/7/12 22:45	22.39	7.42	7.8		CANW-2	6/7/12 23:45	21.64	7.32	7.78
CANW-1A	6/8/12 1:00	23.4	6.08	7.87		CANW-33	6/7/12 23:00	22.36	7.41	7.79		CANW-2	6/8/12 0:00	21.64	7.31	7.78
CANW-1A	6/8/12 1:15	23.4	7.1	7.86		CANW-33	6/7/12 23:15	22.32	7.41	7.79		CANW-2	6/8/12 0:15	21.63	7.31	7.78
CANW-1A	6/8/12 1:30	23.41	8.04	7.85		CANW-33	6/7/12 23:30	22.28	7.41	7.79		CANW-2	6/8/12 0:30	21.63	7.3	7.77
CANW-1A	6/8/12 1:45	23.44	8.46	7.89		CANW-33	6/7/12 23:45	22.24	7.4	7.79		CANW-2	6/8/12 0:45	21.62	7.3	7.77
CANW-1A	6/8/12 2:00	23.45	7.14	7.86		CANW-33	6/8/12 0:00	22.19	7.4	7.79		CANW-2	6/8/12 1:00	21.61	7.29	7.77

Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH
CANW-1A	6/8/12 2:15	23.46	7.96	7.86		CANW-33	6/8/12 0:15	22.15	7.4	7.79		CANW-2	6/8/12 1:15	21.61	7.28	7.77
CANW-1A	6/8/12 2:30	23.49	7.23	7.87		CANW-33	6/8/12 0:30	22.1	7.4	7.79		CANW-2	6/8/12 1:30	21.6	7.27	7.77
CANW-1A	6/8/12 2:45	23.49	7.94	7.87		CANW-33	6/8/12 0:45	22.06	7.4	7.79		CANW-2	6/8/12 1:45	21.59	7.26	7.76
CANW-1A	6/8/12 3:00	23.5	5.99	7.86		CANW-33	6/8/12 1:00	22.01	7.4	7.78		CANW-2	6/8/12 2:00	21.58	7.25	7.76
CANW-1A	6/8/12 3:15	23.53	7.13	7.87		CANW-33	6/8/12 1:15	21.96	7.39	7.78		CANW-2	6/8/12 2:15	21.57	7.24	7.76
CANW-1A	6/8/12 3:30	23.53	8.41	7.88		CANW-33	6/8/12 1:30	21.92	7.39	7.78		CANW-2	6/8/12 2:30	21.56	7.23	7.76
CANW-1A	6/8/12 3:45	23.57	7.23	7.87		CANW-33	6/8/12 1:45	21.88	7.39	7.78		CANW-2	6/8/12 2:45	21.55	7.24	7.76
CANW-1A	6/8/12 4:00	23.59	6.21	7.86		CANW-33	6/8/12 2:00	21.83	7.39	7.78		CANW-2	6/8/12 3:00	21.53	7.23	7.76
CANW-1A	6/8/12 4:15	23.59	7.97	7.88		CANW-33	6/8/12 2:15	21.79	7.39	7.78		CANW-2	6/8/12 3:15	21.51	7.23	7.75
CANW-1A	6/8/12 4:30	23.59	8.26	7.84		CANW-33	6/8/12 2:30	21.76	7.39	7.77		CANW-2	6/8/12 3:30	21.49	7.22	7.75
CANW-1A	6/8/12 4:45	23.61	7.35	7.87		CANW-33	6/8/12 2:45	21.72	7.39	7.77		CANW-2	6/8/12 3:45	21.47	7.22	7.75
CANW-1A	6/8/12 5:00	23.63	7.88	7.88		CANW-33	6/8/12 3:00	21.68	7.39	7.77		CANW-2	6/8/12 4:00	21.44	7.21	7.75
CANW-1A	6/8/12 5:15	23.65	7.4	7.88		CANW-33	6/8/12 3:15	21.65	7.39	7.77		CANW-2	6/8/12 4:15	21.41	7.2	7.75
CANW-1A	6/8/12 5:30	23.67	6.19	7.85		CANW-33	6/8/12 3:30	21.61	7.39	7.77		CANW-2	6/8/12 4:30	21.39	7.19	7.75
CANW-1A	6/8/12 5:45	23.68	7.91	7.88		CANW-33	6/8/12 3:45	21.58	7.39	7.77		CANW-2	6/8/12 4:45	21.35	7.18	7.74
CANW-1A	6/8/12 6:00	23.69	7.51	7.88		CANW-33	6/8/12 4:00	21.54	7.4	7.77		CANW-2	6/8/12 5:00	21.32	7.18	7.74
CANW-1A	6/8/12 6:15	23.72	7.47	7.88		CANW-33	6/8/12 4:15	21.5	7.4	7.76		CANW-2	6/8/12 5:15	21.28	7.18	7.74
CANW-1A	6/8/12 6:30	23.72	7.77	7.89		CANW-33	6/8/12 4:30	21.46	7.4	7.76		CANW-2	6/8/12 5:30	21.25	7.17	7.74
CANW-1A	6/8/12 6:45	23.72	8.13	7.8		CANW-33	6/8/12 4:45	21.43	7.41	7.76		CANW-2	6/8/12 5:45	21.21	7.17	7.74
CANW-1A	6/8/12 7:00	23.74	7.54	7.89		CANW-33	6/8/12 5:00	21.39	7.42	7.76		CANW-2	6/8/12 6:00	21.17	7.16	7.74
CANW-1A	6/8/12 7:15	23.76	6.17	7.84		CANW-33	6/8/12 5:15	21.35	7.42	7.76		CANW-2	6/8/12 6:15	21.13	7.16	7.74
CANW-1A	6/8/12 7:30	23.76	7.65	7.89		CANW-33	6/8/12 5:30	21.31	7.42	7.76		CANW-2	6/8/12 6:30	21.09	7.15	7.73
CANW-1A	6/8/12 7:45	23.76	7.75	7.89		CANW-33	6/8/12 5:45	21.28	7.43	7.76		CANW-2	6/8/12 6:45	21.05	7.16	7.73
CANW-1A	6/8/12 8:00	23.77	7.75	7.89		CANW-33	6/8/12 6:00	21.24	7.43	7.75		CANW-2	6/8/12 7:00	21.03	7.16	7.73
CANW-1A	6/8/12 8:15	23.85	6.05	7.83		CANW-33	6/8/12 6:15	21.21	7.43	7.75		CANW-2	6/8/12 7:15	21	7.15	7.73
CANW-1A	6/8/12 8:30	23.92	6.17	7.83		CANW-33	6/8/12 6:30	21.18	7.44	7.75		CANW-2	6/8/12 7:30	20.98	7.17	7.73
CANW-1A	6/8/12 8:45	23.92	8	7.75		CANW-33	6/8/12 6:45	21.17	7.45	7.74		CANW-2	6/8/12 7:45	20.97	7.19	7.73
CANW-1A	6/8/12 9:00	24.02	6.1	7.82		CANW-33	6/8/12 7:00	21.15	7.45	7.74		CANW-2	6/8/12 8:00	20.96	7.22	7.73
CANW-1A	6/8/12 9:15	24.08	6.17	7.81		CANW-33	6/8/12 7:15	21.15	7.46	7.75		CANW-2	6/8/12 8:15	20.95	7.26	7.73
CANW-1A	6/8/12 9:30	24.08	7.68	7.72		CANW-33	6/8/12 7:30	21.14	7.46	7.74		CANW-2	6/8/12 8:30	20.95	7.31	7.73
CANW-1A	6/8/12 9:45	24.16	6.26	7.8		CANW-33	6/8/12 7:45	21.14	7.48	7.75		CANW-2	6/8/12 8:45	20.95	7.36	7.73
CANW-1A	6/8/12 10:00	24.24	6.29	7.8		CANW-33	6/8/12 8:00	21.14	7.47	7.75		CANW-2	6/8/12 9:00	20.96	7.38	7.73

Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH		Station ID	Date/Time	T H2O C	DO	pH
CANW-1A	6/8/12 10:15	24.29	7.53	7.69		CANW-33	6/8/12 8:15	21.15	7.47	7.74		CANW-2	6/8/12 9:15	20.96	7.39	7.73
CANW-1A	6/8/12 10:30	24.31	6.32	7.79		CANW-33	6/8/12 8:30	21.16	7.49	7.74		CANW-2	6/8/12 9:30	20.96	7.42	7.73
CANW-1A	6/8/12 10:45	24.38	6.3	7.78		CANW-33	6/8/12 8:45	21.18	7.5	7.74		CANW-2	6/8/12 9:45	20.96	7.42	7.73
CANW-1A	6/8/12 11:00	24.43	7.41	7.68		CANW-33	6/8/12 9:00	21.2	7.52	7.74		CANW-2	6/8/12 10:00	20.97	7.43	7.73
CANW-1A	6/8/12 11:15	24.45	6.33	7.77		CANW-33	6/8/12 9:15	21.22	7.53	7.75		CANW-2	6/8/12 10:15	21	7.44	7.73
CANW-1A	6/8/12 11:30	24.52	6.45	7.76		CANW-33	6/8/12 9:30	21.24	7.55	7.75		CANW-2	6/8/12 10:30	21.01	7.45	7.73
CANW-1A	6/8/12 11:45	24.58	7.28	7.67		CANW-33	6/8/12 9:45	21.27	7.57	7.74		CANW-2	6/8/12 10:45	21.01	7.47	7.73
CANW-1A	6/8/12 12:00	24.59	6.38	7.75		CANW-33	6/8/12 10:00	21.29	7.58	7.74		CANW-2	6/8/12 11:00	21.01	7.49	7.74
CANW-1A	6/8/12 12:15	24.65	6.43	7.74		CANW-33	6/8/12 10:15	21.31	7.59	7.75		CANW-2	6/8/12 11:15	21.02	7.52	7.74
CANW-1A	6/8/12 12:30	24.69	7.12	7.66		CANW-33	6/8/12 10:30	21.31	7.6	7.76		CANW-2	6/8/12 11:30	21.05	7.57	7.74
CANW-1A	6/8/12 12:45	24.7	6.5	7.73		CANW-33	6/8/12 10:45	21.31	7.6	7.75		CANW-2	6/8/12 11:45	21.08	7.62	7.74
CANW-1A	6/8/12 13:00	24.76	6.5	7.73		CANW-33	6/8/12 11:00	21.32	7.62	7.75		CANW-2	6/8/12 12:00	21.12	7.66	7.75
CANW-1A	6/8/12 13:15	24.79	7.1	7.66		CANW-33	6/8/12 11:15	21.35	7.64	7.75		CANW-2	6/8/12 12:15	21.17	7.71	7.75
CANW-1A	6/8/12 13:30	24.8	6.48	7.72		CANW-33	6/8/12 11:30	21.4	7.68	7.75		CANW-2	6/8/12 12:30	21.23	7.76	7.76
CANW-1A	6/8/12 13:45	24.84	6.46	7.71		CANW-33	6/8/12 11:45	21.46	7.71	7.76		CANW-2	6/8/12 12:45	21.28	7.79	7.76
CANW-1A	6/8/12 14:00	24.85	6.98	7.66		CANW-33	6/8/12 12:00	21.53	7.74	7.76		CANW-2	6/8/12 13:00	21.36	7.83	7.77
CANW-1A	6/8/12 14:15	24.87	6.49	7.7		CANW-33	6/8/12 12:15	21.59	7.76	7.77		CANW-2	6/8/12 13:15	21.43	7.85	7.77
CANW-1A	6/8/12 14:30	24.89	6.9	7.66		CANW-33	6/8/12 12:30	21.67	7.79	7.78		CANW-2	6/8/12 13:30	21.47	7.85	7.77
CANW-1A	6/8/12 14:45	24.91	6.54	7.7		CANW-33	6/8/12 12:45	21.76	7.82	7.79		CANW-2	6/8/12 13:45	21.54	7.94	7.78
CANW-1A	6/8/12 15:00	24.95	6.76	7.68		CANW-33	6/8/12 13:00	21.83	7.84	7.78		CANW-2	6/8/12 14:00	21.63	7.96	7.78
CANW-1A	6/8/12 15:15	24.95	6.82	7.66		CANW-33	6/8/12 13:15	21.87	7.84	7.78		CANW-2	6/8/12 14:15	21.73	8.11	7.79
CANW-1A	6/8/12 15:30	24.96	6.58	7.69		CANW-33	6/8/12 13:30	21.9	7.85	7.78		CANW-2	6/8/12 14:30	21.74	8.06	7.79
CANW-1A	6/8/12 15:45	24.96	6.66	7.68		CANW-33	6/8/12 13:45	21.96	7.86	7.78		CANW-2	6/8/12 14:45	21.74	7.98	7.79
CANW-1A	6/8/12 16:00	24.96	6.8	7.67		CANW-33	6/8/12 14:00	22.02	7.87	7.79		CANW-2	6/8/12 15:00	21.78	7.99	7.79
CANW-1A	6/8/12 16:15	24.97	6.74	7.67		CANW-33	6/8/12 14:15	22.05	7.87	7.79		CANW-2	6/8/12 15:15	21.82	7.95	7.79
						CANW-33	6/8/12 14:30	22.08	7.88	7.8		CANW-2	6/8/12 15:30	21.85	7.92	7.79
						CANW-33	6/8/12 14:45	22.11	7.89	7.8		CANW-2	6/8/12 15:45	21.91	7.91	7.8
						CANW-33	6/8/12 15:00	22.14	7.89	7.8						

7.3 Habitat and Macroinvertebrate Assessments

Figure 10: Macroinvertebrate Assessment CANW-1A

Macroinvertebrate Assessment		
	Results	**Scores (0-100)**
Taxa richness measures		
# EPT taxa	8	17
Taxonomic composition measures		
% Non-insect taxa	12	52
% Dominant taxon	20	77
% EPC taxa	16	28
Functional feeding group measures		
% Predators	18	77
Tolerance measures		
% Taxa as Tolerant	35	39
WMB-I Assessment Score	**---**	**48**
WMB-I Assessment Rating		**Fair (39-58)**

Figure 11: Macroinvertebrate Assessment CANW-2

Macroinvertebrate Assessment		
	Results	**Scores (0-100)**
Taxa richness measures		
# EPT taxa	10	26
Taxonomic composition measures		
% Non-insect taxa	9	67
% Dominant taxon	21	74
% EPC taxa	19	33
Functional feeding group measures		
% Predators	19	82
Tolerance measures		
% Taxa as Tolerant	30	54
WMB-I Assessment Score	**---**	**56**
WMB-I Assessment Rating		**Fair (39-58)**

Figure 12: Macroinvertebrate Assessment CANW-33

Macroinvertebrate Assessment		
	Results	**Scores (0-100)**
Taxa richness measures		
# EPT taxa	9	22
Taxonomic composition measures		
% Non-insect taxa	11	57
% Dominant taxon	13	99
% EPC taxa	19	35
Functional feeding group measures		
% Predators	25	100
Tolerance measures		
% Taxa as Tolerant	32	48
WMB-I Assessment Score	**---**	**60**
WMB-I Assessment Rating		**Good (59-79)**

Figure 13: Habitat Assessment CANW-1A

Table 3. Results of the habitat assessment conducted on Cane Ck at CANW-1A, May 16, 2012. Macroinvertebrates were also collected.

Habitat Assessment	%Maximum Score	Rating
GP		
Instream Habitat Quality	59	Sub-optimal (59-70)
Sediment Deposition	63	Sub-optimal (59-70)
Sinuosity	43	Poor <45
Bank and Vegetative Stability	53	Marginal (35-59)
Riparian Buffer	66	Marginal (50-69)
Habitat Assessment Score	**130**	
% Maximum Score	**59**	Marginal (41-58)

Figure 14: Habitat Assessment CANW-33

Table 3. Results of the habitat assessment conducted on Cane Ck at CANW-33, May 16, 2012. Macroinvertebrates were also collected.

Habitat Assessment	%Maximum Score	Rating
GP		
Instream Habitat Quality	53	Marginal (41-58)
Sediment Deposition	68	Sub-optimal (59-70)
Sinuosity	45	Marginal (45-64)
Bank and Vegetative Stability	56	Marginal (35-59)
Riparian Buffer	69	Marginal (50-69)
Habitat Assessment Score	**133**	
% Maximum Score	**60**	Sub-optimal (59-70)

7.4 Ecoregional Reference Guidelines

Figure 15: Ecoregional Map of Alabama

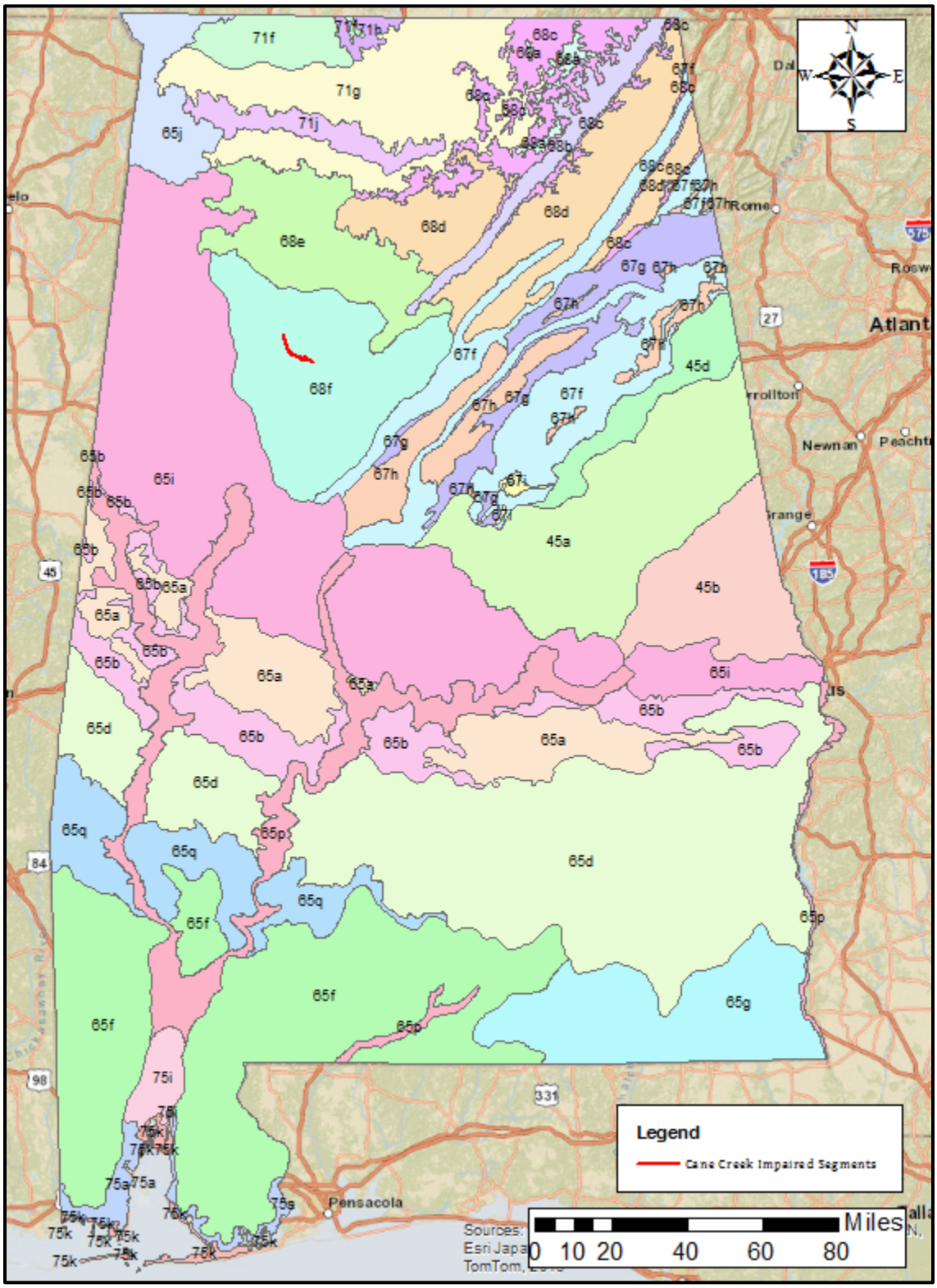


Figure 16: Ecoregional Reference Guidelines

			Level 4	Level 4	Level 3	Level 4	Level 4	Level 4	Level 4	Level 4	Level 4	Level 4	Level 4	Level 3	Level 4	Level 4	Level 3	Level 4	Level 3
Parameters	Basis of comparison	Result to compare	45a	45d	45	65a/b	65f	65g	65i	65j	65q	67f	67h	67	68d	68e	68	71f	71
Physical																			
Temperature (°C)	90th %ile	Median	24.656	25	25	27	24.6	27	25	24	27	24	26	25.7	25	23.48	24	22.12	22.586
Turbidity (NTU)	90th %ile	INDIVIDUAL	21.7	6.823	15	49.56	9.7	13.05	26.21	10.73	42.3	6.622	10.787	8.824	9.667	9.025	10.1	3.693	11.1
Total Dissolved Solids (mg/L)	90th %ile	Median	67.9	85.4	80	162.8	53.4	97.4	63.3	167.6	103.4	165	79.4	151.2	118	84.8	97.2	79.6	150.5
Total Suspended Solids (mg/L)	90th %ile	Median	16	12	15	45	13.2	16.3	27.5	26.9	104.6	11.3	12.7	12.4	27	10	14	9.6	8.9
Specific Conductance (µmhos)	Median	Median	40.1	37	39.05	129.7	20.4	53.4	25.8	70	72.5	207	34.35	86	49.5	37	39.15	96	109
Hardness (mg/L)	Median	Median	10.65	11.1	11	56	14	14.2	6.52	82.1	34.6	94.05	8.56	42.3	16.2	10	12.15	47.2	56
Alkalinity (mg/L)	90th %ile	Median	21.8	23.5	23.01	84.41	11.8	21.85	21.05	130.64	36.36	121.73	16.54	117.716	21	44.2	42.2	57.492	109.4
Stream Flow (cfs)																			
Chemical																			
Dissolved Oxygen (mg/L)	10th %ile	Median	7.665	7.6	7.6	5.1	6.94	4.484	6.692	7.64	6.8	7.44	7	7	5.609	7.51	6.79	8.113	7.61
pH (su)	10th %ile	Median	6.5	6.787	6.64	6.758	4.436	5.69	5.82	6.31	6.6	6.938	6.69	6.768	6.482	6.522	6.5	7.162	7.345
pH (su)	90th %ile	Median	7.68	7.679	7.7	8.052	6.55	6.815	7.18	8.1	7.74	8.294	8	8.278	7.352	7.852	7.84	8.35	8.34
Ammonia Nitrogen (mg/L)	90th %ile	Median	0.0078	0.0105	0.0105	0.04802	0.046	0.0203	0.0905	0.0932	0.074	0.0228	0.031	0.0346	0.119	0.0945	0.1007	0.023	0.023
Nitrate+Nitrite Nitrogen (mg/L)	90th %ile	Median	0.1241	0.0718	0.0974	0.286	0.3258	0.2432	0.2764	0.3436	0.0634	0.261	0.0888	0.2403	1.202	0.456	0.6191	0.6895	1.42
Total Kjeldahl Nitrogen (mg/L)	90th %ile	Median	0.40482	0.2598	0.28448	0.887	0.4176	0.583	0.6782	0.4858	0.6346	0.431	0.5107	0.5826	1.46	0.6595	0.733	0.624	0.466
Total Nitrogen (mg/L)	90th %ile	Median	0.53114	0.3224	0.40016	1.1634	0.6396	0.773	0.8512	0.8064	0.69205	0.6836	0.69365	0.7109	2.269	0.9185	1.41685	1.295	1.57
Dissolved Reactive Phosphorus (mg/L)	90th %ile	Median	0.0214	0.027	0.0243	0.0618	0.0264	0.0236	0.023	0.0167	0.0193	0.0174	0.0162	0.017	0.0109	0.019	0.0182	0.017	0.0155
Total Phosphorus (mg/L)	90th %ile	Median	0.0663	0.0537	0.0599	0.201	0.04	0.0698	0.0682	0.0577	0.064	0.0514	0.0429	0.0566	0.0491	0.0501	0.05	0.1059	0.0497
CBOD-5 (mg/L)	90th %ile	Median	2.57	2.37	2.4	3.2	1.96	2.65	2	2.53	2.3	1.78	2.58	2.3	1.86	1.9	1.9	1.1	1.1
Chlorides (mg/L)	90th %ile	Median	4.778	4.029	4.495	12.032	6.692	6.066	4.2852	5.247	5.95	4.266	3.61	3.89	9.118	1.051	6.37	2.4112	2.622
Total Metals																			
Aluminum (mg/L)	90th %ile	Median	0.2437	0.1558	0.1954	1.181	0.4886	0.2732	0.801	0.4045	1.561	0.2104	0.356	0.4114	0.155	0.265	0.3055	0.1954	0.127
Iron (mg/L)	90th %ile	Median	1.094	0.5648	0.8722	2.362	1.352	3.976	3.548	0.839	2.13	0.893	0.733	0.9803	0.6855	1.047	1.046	0.4085	0.4294
Manganese (mg/L)	90th %ile	Median	0.0554	0.0647	0.057	0.215	0.0436	0.7372	0.8094	0.081	0.113	0.067	0.052	0.0628	0.184	0.0563	0.1553	0.025	0.025
Dissolved Metals																			
Aluminum (mg/L)	90th %ile	Median	0.05485	0.0545	0.0545	0.1365	0.2242	0.0545	0.1	0.11	0.193	0.1	0.1	0.1	0.1	0.1	0.1	0.03	0.03
Antimony (µg/L)	90th %ile	Median	1	1	1	1	3.75	1	5	5	3.75	5	1	5		14	14	5	5
Arsenic (µg/L)	90th %ile	Median	5	5	5	5	5	5	5	5	5	9.2	5	5		5	5	12.1	12
Cadmium (mg/L)	90th %ile	Median	0.0435	0.0435	0.0435	0.0435	0.0394	0.0435	0.0435	0.0435	0.0435	0.0435	0.0435	0.0435		0.0448	0.04415	0.0075	0.0075
Chromium (mg/L)	90th %ile	Median	0.0395	0.0395	0.0395	0.0395	0.0321	0.0395	0.0395	0.0395	0.0395	0.0395	0.0395	0.0395		0.0416	0.04055	0.025	0.025
Copper (mg/L)	90th %ile	Median	0.043	0.043	0.043	0.043	0.0349	0.043	0.043	0.075	0.043	0.043	0.043	0.043	0.0298	0.043	0.043	0.1	0.1
Iron (mg/L)	90th %ile	Median	0.292	0.2248	0.256	0.503	0.6132	0.8042	0.5392	0.2445	1.255	0.1218	0.1885	0.2428	0.1552	0.588	0.588	0.025	0.0579
Lead (µg/L)	90th %ile	Median	1	1	1	1	2.5	1	5	5	2.5	5	1	5	1	5	5	5	5
Manganese (mg/L)	90th %ile	Median	0.02665	0.0235	0.0253	0.1224	0.0328	0.7886	0.8218	0.025	0.1084	0.025	0.0235	0.025		0.05	0.05	0.025	0.025
Mercury (µg/L)	90th %ile	Median	0.15	0.15	0.15	0.15	0.25	0.15	0.25	0.2	0.25	0.2	0.2	0.2	0.18	0.2	0.2	0.15	0.15
Nickel (mg/L)	90th %ile	Median	0.114	0.114	0.114	0.114	0.0936	0.114	0.05	0.114	0.114	0.0884	0.114	0.114		0.114	0.114	0.025	0.025
Selenium (µg/L)	90th %ile	Median	5	5	5	5	5	5	25	23	5	23	5	5		50	50	15	25
Silver (mg/L)	90th %ile	Median	0.058	0.058	0.058	0.058	0.0467	0.058	0.05	0.058	0.058	0.0548	0.058	0.058		0.058	0.058	0.025	0.025
Thallium (µg/L)	90th %ile	Median	0.5	0.5	0.5	0.5	4.5	0.5	5	5	4.5	5	0.5	5		18.5	18.5	5	5
Zinc (mg/L)	90th %ile	Median	0.0345	0.0345	0.0345	0.0345	0.0294	0.0345	0.0345	0.0345	0.0345	0.0345	0.0345	0.0345	0.0267	0.0438	0.0345	0.03	0.0285
Biological																			
Chlorophyll a (µg/L)	90th %ile	Median	5.019	2.14	2.67	5.181	1.755	1.282	4.732	3.31	3.949	2.562	2.086	2.322	1.392	2.458	2.67	3.044	4.255
Fecal Coliform (col/100 mL)	90th %ile	Median	332	116	201.2	1564	400	234	620	582	1025	141.6	152.2	197	829	252	320	200	435

7.5 Pictures of Stations

Figure 17: Upstream picture at station CANW-1A (11/7/12)

Figure 18: Downstream picture at station CANW-1A (11/7/12)

Figure 19: Upstream picture at station CANW-2 (10/4/12)

Figure 20: Downstream picture at station CANW-2 (10/4/12)

Figure 21: Upstream picture at Station CANW-33 (11/6/12)

Figure 22: Downstream picture at Station CANW-33 (11/6/12)