



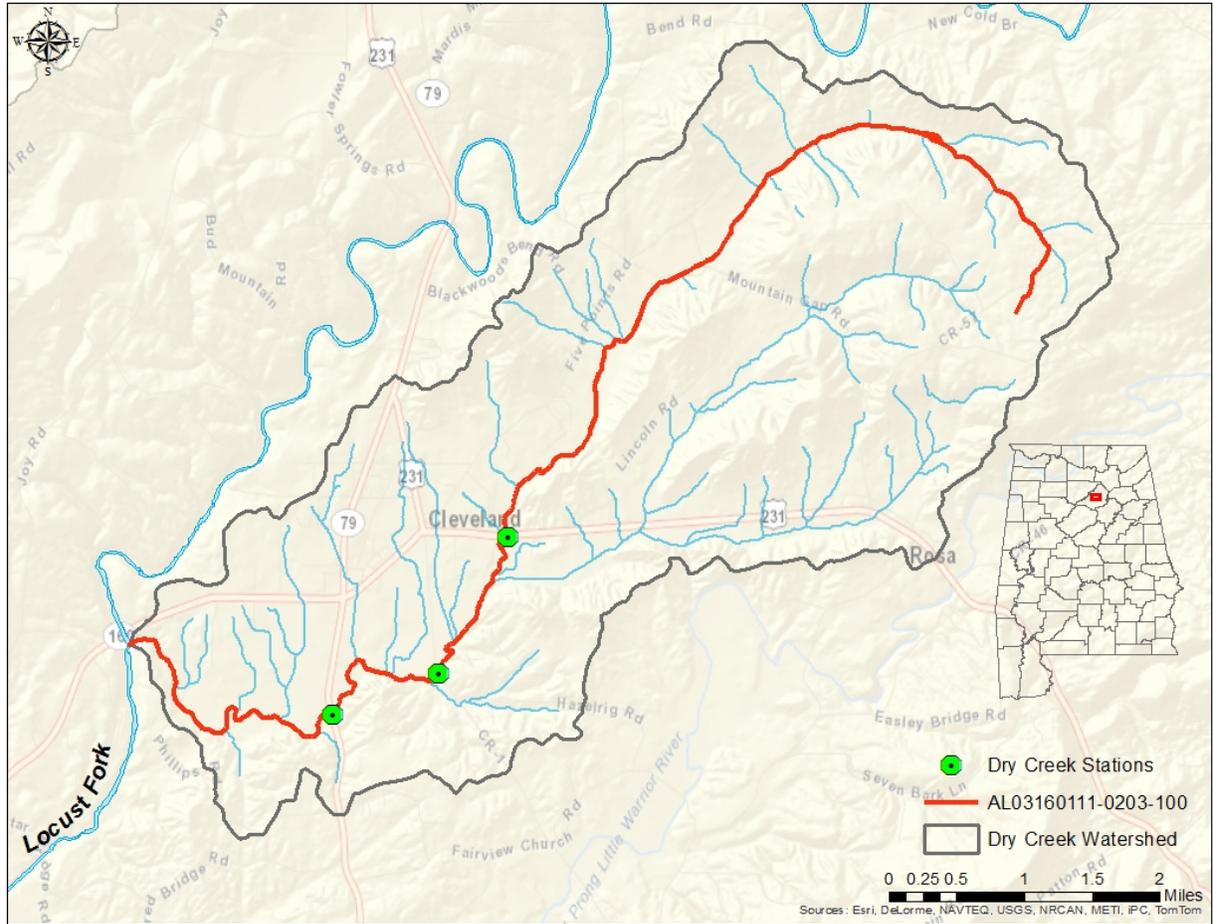
**Draft  
Delisting Decision  
for  
Dry Creek**

Waterbody ID AL03160111-0203-100

**Nutrients  
Organic Enrichment (CBOD,NBOD)**

Alabama Department of Environmental Management  
Water Division  
Water Quality Branch  
September 2015

## Dry Creek Watershed Map in the Black Warrior River Basin



<b>Table of Contents</b>	<b>Page</b>
1. Executive Summary	1
2. Basis for §303(d) Listing	2
3. Technical Basis for Delisting Decision	3
3.1. Water Quality Target Identification	3
3.2. Data Availability and Analysis	5
4. Conclusion	10
5. Public Participation	10
6. Appendices	
A. References	12
B. Dry Creek 2014 NPS post-BMP Sampling Data	13
C. Alabama Water Watch Dry Creek Data	16
D. Dry Creek Station Visit Pictures	18

### List of Tables and Figures

#### Tables

1.	Table 2.1	EPA's Listing of Dry Creek	2
2.	Table 3.1	Dry Creek 2014 NPS post-BMP Sampling Stations	7
3.	Table 3.2	Dry Creek 2014 NPS post-BMP– Nutrient Data Analysis	8-9
4.	Table 3.3	Dry Creek 2014 NPS post-BMP– OE Data Analysis	9-10
5.	Table 3.4	Dry Creek 2014 NPS post-BMP – Station Visit Comments	10

#### Figures

1.	Figure 3.1	Dry Creek Watershed Best Management Practices	6
2.	Figure 3.2.	Map of Sampling Locations for Dry Creek	7

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## **1.0 Executive Summary**

Dry Creek, located in Blount County, is a part of the upper Black Warrior River Basin. Dry Creek originates north of the community of Rosa and flows approximately twelve miles before intersecting the Locust Fork. Dry Creek drains into Locust Fork, which in combination with the Sipsey and Mulberry Forks comprises the upper Black Warrior River Basin. Dry Creek was an EPA addition to the State of Alabama's §303(d) list in 1998.

In 1989, in response to requirements of Section 319 of the Federal Water Pollution Control Act, Alabama published its Nonpoint Source (NPS) Assessment Report (ADEM, 1989). According to the report, Dry Creek was monitored during the years of 1986-87 and listed as partially meeting its use support status based on the USEPA Guidelines for the Preparation of the 1988 State Water Quality Assessment. The causes of impairment listed in the NPS Assessment Report included ammonia, OE/DO, nutrients, and pathogens; however, it is not explicitly stated and is therefore unclear if the causes of impairment listed in the report are a result of actual water quality criteria violations. Dry Creek was subsequently included in the 1990 Water Quality Report to Congress. In 1998, Dry Creek was placed on the §303(d) list as an EPA addition, with the pollutants of concern being ammonia, organic enrichment/dissolved oxygen (OE/DO), nutrients, and pathogens. The original basis for the listing is not provided in the 1999 EPA decision document for proposed additions. Therefore, it is unclear if the Alabama Nonpoint Source Assessment Report was the basis for the addition, or if there was actual data assessed to warrant the listing.

In September 2009, a Total Maximum Daily Load (TMDL) addressing the pathogen impairment was completed for Dry Creek. The TMDL was approved by EPA in September 2009. Consequently, the pathogen pollutant for Dry Creek was removed from Alabama's 2010 §303(d) list. In April 2012, ADEM completed a delisting document for the ammonia impairment on Dry Creek. The delisting document was approved by EPA, and the ammonia impairment for Dry Creek was removed from Alabama's 2012 §303(d) list.

Over the last six years, additional data has been acquired for Dry Creek to assess its ability to meet applicable water quality standards. The data indicates that Dry Creek, from its mouth to its source, now fully supports its use classification with respect to nutrients and organic enrichment. Based on an assessment of the available data, ADEM has determined that a water quality impairment due to nutrients and organic enrichment does not currently exist. Therefore, ADEM will not develop a TMDL due to "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).

## 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. TMDLs for all pollutants causing violation of applicable water quality standards are established for each identified waterbody. Such loads are established at levels necessary to attain the applicable water quality standards when also considering 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 in-stream water quality conditions, so that states can establish water-quality based controls to reduce pollution from both point and non-point sources and restore and maintain the quality of their water resources (USEPA, 1991).

In 1989, in response to requirements of Section 319 of the Federal Water Pollution Control Act, Alabama published its Nonpoint Source Assessment Report (ADEM, 1989). According to the report, Dry Creek was monitored during the years of 1986-87 and listed as partially meeting its use support status based on the USEPA Guidelines for the Preparation of the 1988 State Water Quality Assessment. The causes of impairment listed in the NPS Assessment Report included ammonia, OE/DO, nutrients, and pathogens; however, it is not explicitly stated and is therefore unclear if the listed causes of impairment are a result of actual water quality criteria violations. The categories listed in the report as potential nonpoint sources include feedlots and animal management areas. Dry Creek was subsequently included in the 1990 Water Quality Report to Congress. In 1998, Dry Creek was placed on the Alabama §303(d) list as an EPA addition, with the pollutants of concern being ammonia, OE/DO, nutrients, and pathogens. The original basis for the listing is not provided in the 1999 EPA decision document for the proposed additions. Therefore, it is unclear if the Alabama Nonpoint Source Assessment Report was used as the basis for the addition, or if there was any other additional data collected to warrant the listing.

**Table 2.1 EPA’s Listing of Dry Creek**

Water Name	Location	Pollutant(s) of Concern	Priority Ranking
06030001-160 Dry Creek	Blount County	Ammonia Nutrients Organic Enrichment/DO Pathogens	Medium

In September 2009, ADEM completed a TMDL addressing the pathogen impairment on Dry Creek (ADEM, 2009). The development of this TMDL was based upon water quality data collected during the 2002, 2007, and 2008 §303(d) sampling efforts. The TMDL was

approved by EPA in September 2009. Consequently, the pathogen pollutant for Dry Creek was removed from Alabama's 2010 §303(d) list.

In April 2012, ADEM completed a delisting document for the ammonia impairment on Dry Creek (ADEM, 2012). The development of this delisting document was based upon water quality data collected in 2007 and 2008 during §303(d) sampling efforts, which suggested that a water quality impairment for ammonia did not exist. The delisting document was approved by EPA, and the ammonia pollutant for Dry Creek was removed from Alabama's 2012 §303(d) list. On the Department's 2014 §303(d) List, the only remaining pollutants for Dry Creek are nutrients and organic enrichment (CBOD,NBOD).

### **3.0 Technical Basis for Delisting Decision**

#### **3.1 Water Quality Target Identification**

##### **Nutrient Criteria**

The Department does not currently have numeric nutrient criteria for wadeable streams. 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 continues 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 Minimum Conditions Applicable to All State Waters.** *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 status.

For purposes of evaluating attainment of the narrative criteria above, ADEM will use both EPA's national recommended water quality criteria and ADEM's ecoregional reference guidelines concentrations. EPA's recommended criteria are published in section 304(a) of the Clean Water Act and list guidelines for approximately 150 pollutants. In 2010, ADEM published ecoregional reference guidelines for a number of parameters and pollutants. 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 number of available reference stations 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.

In developing and establishing reference conditions from best available data, frequency distributions are recommended by the *Nutrient Criteria Technical Guidance Manual for Rivers and Streams* (USEPA, 2000b) as the preferred method for setting nutrient criteria. ADEM elected to use the 90<sup>th</sup> percentile of the data distributions from the selected ecoregion reference sites for comparison to the recently collected ambient water quality data from Dry Creek.

The entire Dry Creek watershed is located within the Level IV Ecoregion 68d – Southern Table Plateaus. The 90<sup>th</sup> percentile of the total phosphorus (TP) and total nitrogen (TN) data distributions collected from this eco-region are 0.049 mg/l and 2.269 mg/l, respectively. Ambient nutrient water quality data will be evaluated against these ecoreference concentrations to determine if a nutrient related impairment exists in Dry Creek.

According to the *Nutrient Criteria Technical Guidance Manual for Rivers and Streams* (USEPA, 2000b), chlorophyll a, a photosynthetic pigment and sensitive indicator of algal biomass, is considered the most important biological response variable for nutrient-related impairment problems. Elevated chlorophyll a concentrations are indicative of a high presence of algal growth, which in turn affects the dissolved oxygen balance

through photosynthesis, respiration, and the regeneration of organic materials. Therefore, in addition to comparing the ambient water quality TP and TN concentrations to the eco-reference values mentioned above, the Department will also focus on ambient algal biomass as chlorophyll a to determine if the instream chlorophyll concentrations are indicative of nutrient over-enrichment.

### **Organic Enrichment (CBOD & NBOD) Criteria**

The use classification for Dry Creek is Fish and Wildlife. According to ADEM's Water Quality Criteria (Administrative Code 335-6-10), the Dissolved Oxygen criteria for the Fish and Wildlife use classification is as follows:

*For a diversified warm water biota, including game fish, daily dissolved oxygen concentrations shall not be less than 5 mg/l at all times; except under extreme conditions due to natural causes, it may range between 5 mg/l and 4 mg/, provided that the water quality is favorable in all other parameters. The normal seasonal and daily fluctuations shall be maintained above these levels.*

In order to determine if an organic enrichment impairment exists in Dry Creek, the Department will focus on some of the primary drivers affecting instream dissolved oxygen concentrations, including carbonaceous biochemical oxygen demand (CBOD) and nitrogenous biochemical oxygen demand (NBOD). The 90<sup>th</sup> percentile of the data distributions from the selected eco-region reference sites will again be used in establishing CBOD and NBOD evaluation concentrations that will serve as values for comparison to the recently collected ambient water quality data.

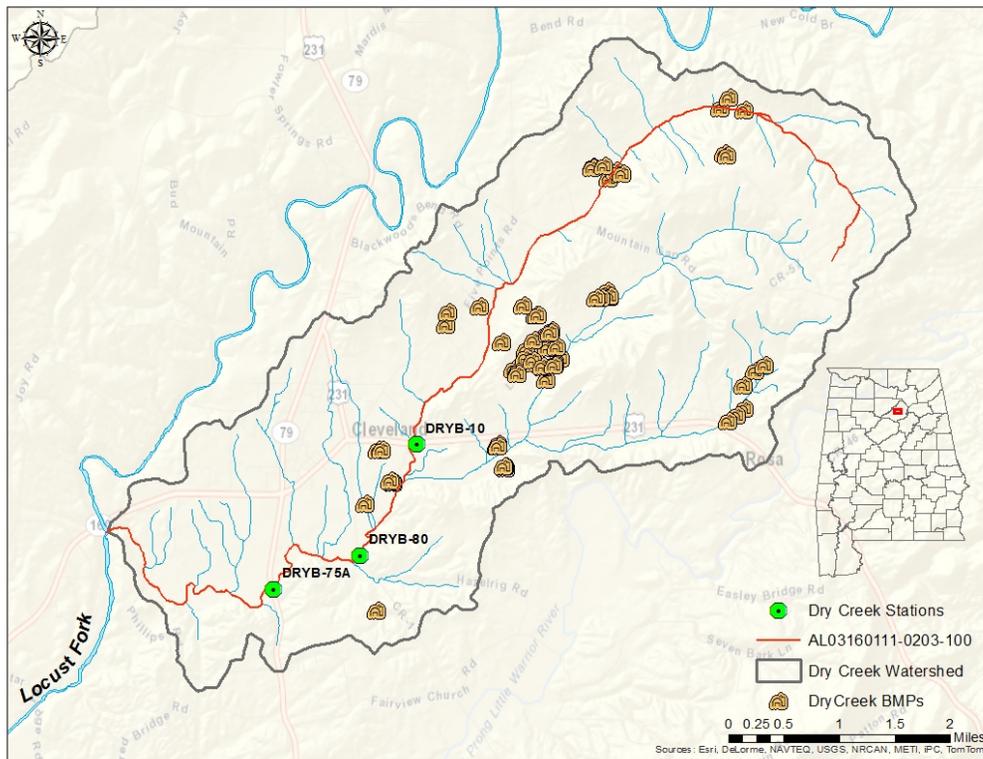
### **3.2 Data Availability and Analysis**

In 2006, the Black Warrior Clean Water Partnership worked with various local private and public entities to compile the existing research and information on Dry Creek, which ultimately culminated in publishing the *Management Plan for the Dry Creek Watershed*. (Cawaco Resource Conservation & Development Council, Inc. 2011). The watershed management plan (WMP) was developed as a tool that would help in addressing the agricultural sources of ammonia, organic enrichment/dissolved oxygen, nutrients, and pathogens identified on the Department's §303(d) List.

The Dry Creek Watershed Management Plan was implemented in part using a Clean Water Act §319(h) nonpoint source grant provided by the USEPA through the ADEM Nonpoint Source Program. Federal, state, and local agencies, as well as local landowners, partnered to implement watershed conservation practices and restoration initiatives. Beginning in 2007, various agricultural best management practices (BMPs) were installed in the Dry Creek watershed including livestock exclusion fencing, alternative watering sources, heavy use areas, alum treatment of poultry litter, and a septic tank pump-out program. In addition, education/outreach activities included

presentations at local schools and public meetings for landowners. The project officially ended in 2010, but implementation of management practices continued through a Phase II effort to address the remaining impairments listed on the §303(d) list at the time. The Phase II project was officially completed in September of 2014, with most of the “on the ground” BMPs completed in late 2013. Figure 3.1 below provides an illustration of where the BMPs were implemented in the Dry Creek Watershed from 2007 to 2013.

**Figure 3.1 Dry Creek Watershed Best Management Practices**



Following the implementation of BMPs in the Dry Creek Watershed during both phases of the projects from 2007 to 2013, the Department decided to return to the watershed and collect post-BMP data in order to determine if Dry Creek was now fully supporting its use classification with respect to nutrients and organic enrichment. Therefore, in 2014, the Department collected both physical and chemical water quality data at the following three sampling stations: DRYB-10, DRYB-80, and DRYB-75A.

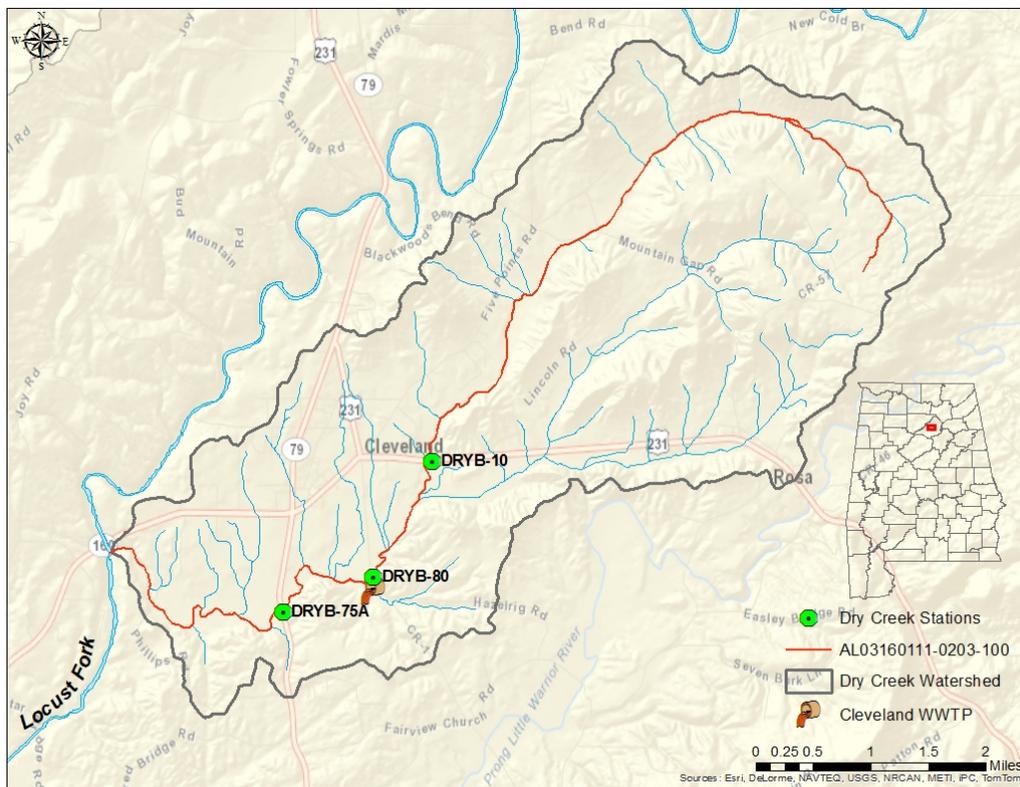
It should be noted that even though Dry Creek was sampled in 2007 and 2008, only the data that is approximately six years in age or less was used in this analysis, which is consistent with *Alabama's Water Quality Assessment and Listing Methodology* (ADEM, 2010). Furthermore, the Department believes that focusing on the recent water quality data collected in 2014 provides a better evaluation of the present water quality conditions of Dry Creek following the implementation of the numerous agricultural best management practices in the watershed during 2007 to 2013. Therefore, the data that

was utilized to evaluate if Dry Creek is now fully supporting its use classification with respect to nutrients and organic enrichment is from ADEM’s 2014 Nonpoint Source (NPS) post-BMP sampling efforts. Refer to Table 3.1 for location descriptions of all the aforementioned sampling stations and to Figure 3.2 for a map depicting the locations of the 2014 Dry Creek sampling stations.

**Table 3.1 Dry Creek 2014 NPS post-BMP Sampling Stations**

Station	Latitude	Longitude	Description
<b>DRYB-10</b>	33.99046	-86.56606	Dry Creek at US Hwy 231
<b>DRYB-80</b>	33.97594	-86.57507	Dry Creek at Blount CR-1 upstream of Cleveland WWTP outfall
<b>DRYB-75A</b>	33.97158	-86.58878	Dry Creek at AL Hwy 79 downstream of Cleveland WWTP outfall

**Figure 3.2 Map of Sampling Locations for Dry Creek**



The citizen-based volunteer group Alabama Water Watch also collected monthly samples at three locations on Dry Creek during 2014. Although this data will not be used solely to make an evaluation as to whether Dry Creek is fully supporting its use classification with respect to nutrients and organic enrichment, the Alabama Water Watch Dry Creek data provides an additional insight and supplemental information to the available data from the Department’s 2014 Nonpoint Source (NPS) post-BMP sampling efforts. Please see Appendix C for further information regarding the Alabama Water Watch Dry Creek 2014 sampling locations and water quality data.

**Nutrient Data Analysis**

In Table 3.2 below, the nutrient data collected from Dry Creek during the 2014 NPS post-BMP sampling efforts are compared to the eco-reference concentrations. The median total phosphorus and total nitrogen concentrations are well below eco-reference values at all three stations.

The primary causal variables, TP and TN, are directly linked to the primary response variable, algal biomass as a measure of the chlorophyll a concentration. Therefore, in addition to comparing the ambient water quality TP and TN concentrations to the eco-reference values mentioned above, the Department will also focus on instream chlorophyll a concentrations to evaluate if a nutrient related impairment exists. The median chlorophyll a concentrations collected on Dry Creek during the 2014 NPS post-BMP sampling efforts are well below eco-reference concentration values, and therefore further suggest that a nutrient impairment does not exist.

**Table 3.2 Dry Creek 2014 NPS post-BMP– Nutrient Data Analysis**

**DRYB-10 2014 Results**

Parameter	N	Min	Max	Med	Avg	SD	10th % ile	90th % ile	Eco-Reference (68d)
<b>Chemical</b>									
Dissolved Oxygen (mg/L)	8	8.9	12.0	<b>9.6</b>	10.0	1.1	8.9	12.0	5.6 <sup>a</sup>
Nitrate+Nitrite Nitrogen (mg/L)	5	0.291	0.487	<b>0.380</b>	0.391	0.074	0.291	0.487	1.202 <sup>b</sup>
Total Nitrogen (mg/L)	5	0.467	0.790	<b>0.703</b>	0.666	0.122	0.467	0.790	2.269 <sup>b</sup>
Dissolved Reactive Phosphorus (mg/L)	5	0.006	0.018	<b>0.009</b>	0.010	0.005	0.006	0.018	0.011 <sup>b</sup>
Total Phosphorus (mg/L)	5	0.009	0.026	<b>0.020</b>	0.018	0.007	0.009	0.026	0.049 <sup>b</sup>
<b>Biological</b>									
Chlorophyll a (ug/L)	5	1.00	1.60	<b>1.07</b>	1.05	0.55	0.50	1.60	1.39 <sup>b</sup>

a. 10<sup>th</sup> Percentile

b. 90<sup>th</sup> Percentile

**DRYB-80 2014 Results**

Parameter	N	Min	Max	Med	Avg	SD	10th % ile	90th % ile	Eco-Reference (68d)
<b>Chemical</b>									
Dissolved Oxygen (mg/L)	11	2.7	11.9	<b>7.4</b>	8.0	2.6	4.4	11.8	5.6 <sup>a</sup>
Nitrate+Nitrite Nitrogen (mg/L)	6	0.029	0.328	<b>0.218</b>	0.203	0.098	0.029	0.328	1.202 <sup>b</sup>
Total Nitrogen (mg/L)	6	0.415	0.720	<b>0.544</b>	0.564	0.123	0.415	0.720	2.269 <sup>b</sup>
Dissolved Reactive Phosphorus (mg/L)	6	0.005	0.014	<b>0.006</b>	0.008	0.004	0.005	0.014	0.011 <sup>b</sup>
Total Phosphorus (mg/L)	6	0.008	0.029	<b>0.012</b>	0.016	0.008	0.008	0.029	0.049 <sup>b</sup>
<b>Biological</b>									
Chlorophyll a (ug/L)	6	1.00	3.47	<b>1.20</b>	1.41	1.10	0.50	3.47	1.39 <sup>b</sup>

a. 10<sup>th</sup> Percentile

b. 90<sup>th</sup> Percentile

### DRYB-75A 2014 Results

Parameter	N	Min	Max	Med	Avg	SD	10th % ile	90th % ile	Eco-Reference (68d)
<b>Chemical</b>									
Dissolved Oxygen (mg/L)	15	4.1	12.0	<b>7.0</b>	7.3	2.4	4.2	11.9	5.6 <sup>a</sup>
Nitrate+Nitrite Nitrogen (mg/L)	8	0.002	0.411	<b>0.237</b>	0.186	0.151	0.001	0.411	1.202 <sup>b</sup>
Total Nitrogen (mg/L)	8	0.523	0.946	<b>0.578</b>	0.655	0.162	0.523	0.946	2.269 <sup>b</sup>
Dissolved Reactive Phosphorus (mg/L)	8	0.009	0.090	<b>0.036</b>	0.040	0.028	0.009	0.090	0.011 <sup>b</sup>
Total Phosphorus (mg/L)	8	0.019	0.103	<b>0.045</b>	0.054	0.028	0.019	0.103	0.049 <sup>b</sup>
<b>Biological</b>									
Chlorophyll a (ug/L)	8	1.00	4.27	<b>0.78</b>	1.32	1.29	0.50	4.27	1.39 <sup>b</sup>

a. 10<sup>th</sup> Percentile

b. 90<sup>th</sup> Percentile

### Organic Enrichment (CBOD & NBOD) Data Analysis

In the table below, the CBOD and NBOD data collected from Dry Creek during the 2014 NPS post-BMP sampling efforts are compared to the eco-reference CBOD and NBOD concentrations. Based on the lab results, all of the collected CBOD5 concentrations were below the Department’s method detection limit of 2 mg/L. Therefore, based on Departmental protocol, one-half of the method detection limit concentration will be used in the data analysis. The median CBOD5 concentrations collected from Dry Creek during the 2014 NPS post-BMP sampling efforts are considerably less than the eco-reference value. Furthermore, the median ammonia and total Kjeldahl nitrogen (TKN) concentrations collected from Dry Creek during the 2014 NPS post-BMP sampling efforts are considerably less than the eco-reference values.

**Table 3.3 Dry Creek 2014 NPS post-BMP– Organic Enrichment Data Analysis**

### DRYB-10 2014 Results

Parameter	N	Min	Max	Med	Avg	SD	10th % ile	90th % ile	Eco-Reference (68d)
Dissolved Oxygen (mg/L)	8	8.9	12.0	<b>9.6</b>	10.0	1.1	8.9	12.0	5.6 <sup>a</sup>
Ammonia Nitrogen (mg/L)	5	0.021	0.044	<b>0.010</b>	0.017	0.015	0.010	0.044	0.119 <sup>b</sup>
Total Kjeldahl Nitrogen (mg/L)	5	0.176	0.359	<b>0.270</b>	0.276	0.066	0.176	0.359	1.460 <sup>b</sup>
CBOD-5 (mg/L)	5	2.0	2.0	<b>1.0</b>	1.0	0.0	1.0	1.0	1.86 <sup>b</sup>

a. 10<sup>th</sup> Percentile

b. 90<sup>th</sup> Percentile

### DRYB-80 2014 Results

Parameter	N	Min	Max	Med	Avg	SD	10th % ile	90th % ile	Eco-Reference (68d)
Dissolved Oxygen (mg/L)	11	2.7	11.9	<b>7.4</b>	8.0	2.6	4.4	11.8	5.6 <sup>a</sup>
Ammonia Nitrogen (mg/L)	6	0.021	0.057	<b>0.010</b>	0.022	0.020	0.010	0.057	0.119 <sup>b</sup>
Total Kjeldahl Nitrogen (mg/L)	6	0.229	0.493	<b>0.360</b>	0.361	0.117	0.229	0.493	1.460 <sup>b</sup>
CBOD-5 (mg/L)	6	2.0	2.0	<b>1.0</b>	1.0	0.0	1.0	1.0	1.86 <sup>b</sup>

a. 10<sup>th</sup> Percentile

b. 90<sup>th</sup> Percentile

**DRYB-75A 2014 Results**

Parameter	N	Min	Max	Med	Avg	SD	10th % ile	90th % ile	Eco-Reference (68d)
Dissolved Oxygen (mg/L)	15	4.1	12.0	<b>7.0</b>	7.3	2.4	4.2	11.9	5.6 <sup>a</sup>
Ammonia Nitrogen (mg/L)	8	0.021	0.077	<b>0.032</b>	0.034	0.022	0.010	0.077	0.119 <sup>b</sup>
Total Kjeldahl Nitrogen (mg/L)	8	0.242	0.646	<b>0.540</b>	0.470	0.150	0.242	0.646	1.460 <sup>b</sup>
CBOD-5 (mg/L)	8	2.0	2.0	<b>1.0</b>	1.0	0.0	1.0	1.0	1.86 <sup>b</sup>

a. 10<sup>th</sup> Percentile

b. 90<sup>th</sup> Percentile

Historical Departmental data and also observations from the Alabama Water Watch (see Appendix C) suggest that Dry Creek, as the name implies, has the propensity to stop flowing and dry up, forming scattered pools of stagnant water during the late summer months. From the 34 dissolved oxygen samples collected on Dry Creek during the 2014 NPS post-BMP sampling effort, four individual samples were below the Fish and Wildlife use classification DO criteria of 5 mg/l. Upon further investigation, based on the station visit comments, there was very little flow in Dry Creek at the time of these DO sample collections. Pictures of the stations taken during sample collection further indicate there was not a sufficient flow to measure and that the creek was stagnant and nearly dry at the time of the four DO criteria violations.

See Table 3.4 below for further information regarding station visit comments during the periods of measured low dissolved oxygen. The station visit pictures can be found in Appendix D.

**Table 3.4 Dry Creek 2014 NPS post-BMP – Station Visit Comments**

Station	Date	DO (mg/L)	Station Visit Comments
DRYB-80	8/11/2014	2.74	Flow is visible, but not measurable with the flow meter.
DRYB-75A	8/11/2014	4.88	Flow is visible, but not measurable with the flow meter.
	9/2/2014	4.27	Creek is 18 inches wide and 1/2 inch deep, will soon be pooled without rain.
	10/2/2014	4.10	Area of greatest flow was 10 inches wide by 1/4 inch deep. Creek is almost stagnant pool.

During the Department’s 2014 station visits to Dry Creek, when there was a sufficient enough flow to measure, the minimum dissolved oxygen concentration observed was 6.56 mg/L. Furthermore, the available data from Alabama Water Watch indicates during periods of adequate stream flow in Dry Creek, the minimum observed dissolved oxygen concentrations remain well above the DO criteria of 5 mg/L.

Based upon this information, the Department believes the four individual dissolved oxygen criteria violations in Dry Creek are not a result of a dissolved oxygen impairment but are attributable to periods of very little flow and stagnant water pools in Dry Creek during the late summer months.

## **4.0 Conclusion**

Based on an examination of the recently collected water quality data on Dry Creek in 2014 following the implementation of numerous best management practices in the watershed from 2007 to 2013, ADEM has determined that a water quality impairment due to nutrients and organic enrichment does not currently exist. The Department believes that Dry Creek is currently fully supporting its use classification with respect to nutrients and organic enrichment. Therefore, ADEM will not develop a TMDL due to “more recent data,” which is a just cause for delisting waterbodies according to Title 40 of the Code of Federal Regulations (CFR), Part 130.7(b)(6)(iv).

## **5.0 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. A 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](http://www.adem.state.al.us). The public can also request hard or electronic copies of the DD by contacting Ms. Kimberly Minton at 334-271-7826 or [kminton@adem.state.al.us](mailto:kminton@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 comment period, all written comments received during the public notice period will become part of the administrative record. ADEM will consider all comments received by the public prior to final completion of this DD and subsequent submission to EPA Region 4 for final approval.

## Appendix A

### References

- 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.
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## **Appendix B**

# **Water Quality Data**

**Dry Creek 2014 NPS post-BMP Sampling - Physical Data**

Station ID	Visit Date/Time	Flow cfs	T H2O C	DO mg/L	Cond µmhos	pH su	Turb NTU
DRYB-10	3/20/14 1:30 PM	15.62	13.87	11.37	214	7.95	5.37
DRYB-10	4/17/14 11:45 AM	13.86	13.05	12.04	210	8.13	4.56
DRYB-10	5/8/14 12:00 PM	4.60	19.64	10.04	262	7.9	2.51
DRYB-10	6/12/14 1:15 PM	5.22	21.64	9.44	202	7.81	5.88
DRYB-10	6/16/14 1:00 PM	3.48	24.03	9.24	213	7.92	3.8
DRYB-10	6/18/14 12:20 PM	2.01	25.69	8.88	240	8.07	3.93
DRYB-10	6/26/14 1:15 PM	1.01	23.35	9.14	238	7.88	3.49
DRYB-10	7/1/14 12:30 PM	0.35	26.48	9.8	256	8.31	2.13
DRYB-80	3/20/14 12:45 PM	33.07	12.6	11.62	277	7.67	5.3
DRYB-80	4/17/14 11:15 AM	34.58	12.25	11.91	282	7.57	4.04
DRYB-80	5/8/14 11:25 AM	10.77	18.02	9.62	431	7.62	2.49
DRYB-80	6/12/14 10:45 AM	14.53	20.86	8.84	285	7.6	11.4
DRYB-80	6/16/14 12:10 PM	6.85	22.23	8.25	332	7.32	4.18
DRYB-80	6/18/14 11:20 AM	4.05	23.08	7.4	394	7.34	4.75
DRYB-80	6/26/14 12:25 PM	2.28	22.73	7.19	488	7.43	3.3
DRYB-80	7/1/14 10:30 AM	1.22	23.92	6.69	580	7.43	7.15
DRYB-80	8/4/14 10:45 AM		21.79	6.05	1181	7.35	1.63
DRYB-80	8/6/14 1:00 PM		24.21	7.14	1169	7.46	1.03
DRYB-80	8/11/14 10:30 AM		23.7	2.74	304	6.99	20.3
DRYB-75A	3/20/14 12:00 PM	37.85	11.85	11.99	288	7.74	6.18
DRYB-75A	4/17/14 10:30 AM	34.52	12.02	11.8	296	7.6	4.04
DRYB-75A	5/8/14 10:45 AM	12.52	18.38	8.94	451	7.55	4.1
DRYB-75A	6/12/14 10:00 AM	20.09	21.28	8.45	344	7.52	17
DRYB-75A	6/16/14 10:50 AM	8.57	23.11	7.72	363	7.39	4.97
DRYB-75A	6/18/14 10:25 AM	5.94	24.33	6.99	417	7.48	4.03
DRYB-75A	6/26/14 11:40 AM	3.06	24.11	6.95	619	7.61	2.91
DRYB-75A	7/1/14 9:45 AM	1.53	24.9	6.56	590	7.59	1.88
DRYB-75A	8/4/14 10:00 AM	0.11	22.57	7	936	7.58	1.08
DRYB-75A	8/6/14 12:30 PM		24.11	8.31	936	7.89	1.02
DRYB-75A	8/11/14 10:00 AM		23.98	4.88	388	7.07	14.4
DRYB-75A	8/18/14 10:50 AM		24.01	6.33	402	7.49	1.28
DRYB-75A	8/25/14 11:25 AM		25.07	5.09	538	7.35	1.31
DRYB-75A	8/25/14 11:25 AM		25.08	5.06	536	7.37	1.3
DRYB-75A	9/2/14 10:30 AM		24.33	4.27	632	7.43	1.71
DRYB-75A	10/2/14 10:30 AM		19.62	4.1	349	7.41	1

**Dry Creek 2014 NPS post-BMP Sampling – Station Visit Comments**

Station ID	Visit Date	Station Visit Comments
DRYB-80	8/4/14 10:45 AM	Area of flow is one foot wide and one inch deep, upstream from the bridge. There is also a beaver dam across the creek upstream of the bridge.
DRYB-80	8/6/14 1:00 PM	Creek is one foot wide and one inch deep upstream of the bridge. Beaver dam upstream of the bridge.
DRYB-80	8/11/14 10:30 AM	Flow is visible, but not measurable with the flow meter.
DRYB-75A	8/6/14 12:30 PM	Creek is five feet wide and 1/4 inch deep where flowing. It is starting to pool. Rock dam 50 yards upstream of the bridge.
DRYB-75A	8/11/14 10:00 AM	Flow is visible, but not measurable with the flow meter.
DRYB-75A	9/2/14 10:30 AM	Creek is 18 inches wide and 1/2 inch deep, will soon be pooled without rain.
DRYB-75A	10/2/14 10:30 AM	Area of greatest flow was 10 inches wide by 1/4 inch deep. Creek is almost stagnant pool.

**Dry Creek 2014 NPS post-BMP Sampling - Chemical Data**

Station ID	Visit Date	TDS mgL	TSS mgL	Alk Tot mgL	Alk Tot dc	NH3 mgL	NH3 dc	CBOD-5 mgL	CBOD-5 dc
DRYB-10	3/20/14 1:30 PM	131	2	13.1		0.021	< MDL .021	2	< MDL 2
DRYB-10	4/17/14 11:45 AM	131	18	21.8		0.021	< MDL .021	2	< MDL 2
DRYB-10	5/8/14 12:00 PM	157	1	28.3		0.021	< MDL .021	2	< MDL 2
DRYB-10	6/12/14 1:15 PM	130	6	18.1		0.021	< MDL .021	2	< MDL 2
DRYB-10	7/1/14 12:30 PM	157	2	25.1		0.044		2	< MDL 2
DRYB-80	3/20/14 12:45 PM	164	3	32.8		0.021	< MDL .021	2	< MDL 2
DRYB-80	4/17/14 11:15 AM	176	3	31.6		0.021	< MDL .021	2	< MDL 2
DRYB-80	5/8/14 11:25 AM	277	1	50		0.021	< MDL .021	2	< MDL 2
DRYB-80	6/12/14 10:45 AM	185	7	31.7		0.021	< MDL .021	2	< MDL 2
DRYB-80	7/1/14 10:30 AM	392	6	74.8		0.057		2	< MDL 2
DRYB-80	8/6/14 1:00 PM	874	1	170		0.035		2	< MDL 2
DRYB-75A	3/20/14 12:00 PM	179	4	16.2		0.041		2	< MDL 2
DRYB-75A	4/17/14 10:30 AM	180	3	33.3		0.021	Jl	2	< MDL 2
DRYB-75A	5/8/14 10:45 AM	289	3	57.6		0.021	< MDL .021	2	< MDL 2
DRYB-75A	6/12/14 10:00 AM	233	10	34.1		0.077		2	< MDL 2
DRYB-75A	7/1/14 9:45 AM	391	4	82.3		0.046		2	< MDL 2
DRYB-75A	8/6/14 12:30 PM	690	3	146		0.023	Jl	2	< MDL 2
DRYB-75A	9/2/14 10:30 AM	397	2	130		0.041		2	< MDL 2
DRYB-75A	10/2/14 10:30 AM	263	3	59.2		0.021	< MDL .021	2	< MDL 2

Station ID	Visit Date	NO3 NO2 N mgL	NO3 NO2 N dc	TKN mgL	TKN dc	DRP mgL	DRP dc	Total P mgL	Total P dc
DRYB-10	3/20/14 1:30 PM	0.487		0.303		0.008	Jl	0.021	
DRYB-10	4/17/14 11:45 AM	0.291		0.176		0.006	Jl	0.009	Jl
DRYB-10	5/8/14 12:00 PM	0.433		0.27		0.009	Jl	0.013	
DRYB-10	6/12/14 1:15 PM	0.38		0.27		0.018		0.026	
DRYB-10	7/1/14 12:30 PM	0.362		0.359		0.011		0.02	
DRYB-80	3/20/14 12:45 PM	0.328		0.271		0.014		0.029	
DRYB-80	4/17/14 11:15 AM	0.186		0.229		0.006	Jl	0.011	
DRYB-80	5/8/14 11:25 AM	0.238		0.448		0.006	Jl	0.01	
DRYB-80	6/12/14 10:45 AM	0.227		0.493		0.011		0.024	
DRYB-80	7/1/14 10:30 AM	0.208		0.268		0.007	Jl	0.014	
DRYB-80	8/6/14 1:00 PM	0.029		0.459		0.005	Jl	0.008	Jl
DRYB-75A	3/20/14 12:00 PM	0.411		0.535		0.019		0.039	
DRYB-75A	4/17/14 10:30 AM	0.27		0.307		0.009	Jl	0.019	
DRYB-75A	5/8/14 10:45 AM	0.281		0.242		0.012		0.029	
DRYB-75A	6/12/14 10:00 AM	0.236		0.646		0.025		0.043	
DRYB-75A	7/1/14 9:45 AM	0.238		0.34		0.063		0.08	
DRYB-75A	8/6/14 12:30 PM	0.047		0.544		0.047		0.074	
DRYB-75A	9/2/14 10:30 AM	0.003	< MDL .003	0.566		0.09		0.103	
DRYB-75A	10/2/14 10:30 AM	0.002	< MDL .002	0.577		0.055		0.047	

## **Appendix C**

# **Alabama Water Watch Data**

**Alabama Water Watch 2014 Dry Creek Data**

<b>AwwSiteCode</b>	<b>Waterbody</b>	<b>Site Description</b>	<b>Latitude</b>	<b>Longitude</b>
10043001	Dry Creek	at AL Hwy 231 bridge E of Cleveland	33.99	-86.57
10043002	Dry Creek	at Mountain Gap Rd bridge N of Cleveland	34.02	-86.54
10043003	Dry Creek	at Phillips Rd bridge S of Cleveland	33.97	-86.61

<b>AwwSiteCode</b>	<b>Date/Time</b>	<b>Water Temp °C</b>	<b>pH</b>	<b>Dissolved Oxygen (ppm)</b>	<b>DO Saturation (%)</b>	<b>Comments</b>
10043001	1/14/14 12:15 PM	10.00	7.00	10.75	95.20	About 1/2 inch rainfall in past 36 hours. Good stream flow.
10043001	2/24/14 12:15 PM	12.00	7.00	11.40	105.80	Heavy rainfall three days earlier.
10043001	3/24/14 11:00 AM	10.00	7.00	11.45	101.40	No rainfall in past 24 hours. Good stream flow.
10043001	4/21/14 12:00 PM	19.00	7.00	10.70	115.40	No rainfall in past 24 hours. Good stream flow.
10043001	5/12/14 11:45 AM	24.00	7.00	8.60	102.20	No rainfall in past 24 hours. Good stream flow.
10043001	6/1/14 11:45 AM	26.00	7.00	8.05	99.20	No rainfall in past 24 hours. Good stream flow.
10043001	8/11/14 11:30 AM					Stream was dry.
10043001	10/27/14 12:45 PM					No flow & inadequate depth (almost dry)
10043002	1/14/14 12:15 PM	10.00	7.00	11.10	98.30	About 1/2 inch rainfall in past 36 hours. Good stream flow.
10043002	2/24/14 12:15 PM	12.00	7.00	9.95	92.30	Heavy rainfall three days earlier.
10043002	3/24/14 11:00 AM	10.00	7.00	11.30	100.10	No rainfall in past 24 hours. Good stream flow.
10043002	4/21/14 12:00 PM	16.00	7.00	10.40	105.40	No rainfall in past 24 hours. Good stream flow.
10043002	5/12/14 11:45 AM	21.00	7.00	8.30	93.10	No rainfall in past 24 hours. Good stream flow.
10043002	6/1/14 11:45 AM	25.00	7.00	7.05	85.30	No rainfall in past 24 hours. Very little stream flow. Beavers put in a dam just down stream of bridge.
10043002	8/11/14 11:30 AM					No flow. Water depth too low for testing.
10043002	10/27/14 12:45 PM					No flow & inadequate depth. (almost dry)
10043003	1/14/14 12:15 PM	10.00	7.00	11.05	97.90	About 1/2 inch rainfall in past 36 hours. Good stream flow.
10043003	2/24/14 12:15 PM	12.00	7.00	10.90	101.10	Heavy rainfall three days earlier.
10043003	3/24/14 11:00 AM	13.00	7.00	11.90	112.90	No rainfall in past 24 hours. Good stream flow.
10043003	4/21/14 12:00 PM	19.00	7.00	10.15	109.40	No rainfall in past 24 hours. Good stream flow.
10043003	5/12/14 11:45 AM	23.00	7.00	9.20	107.30	No rainfall in past 24 hours. Good stream flow.
10043003	6/1/14 11:45 AM	30.00	7.00	9.60	127.00	No rainfall in past 24 hours. Good stream flow.
10043003	8/11/14 11:30 AM					No flow. Water depth was to low for testing.
10043003	10/27/14 12:45 PM					No flow & inadequate depth. (almost dry)

## **Appendix D**

### **Station Pictures**

**DRYB-10**

**5/08/2014**

**Upstream**



**DRYB-10**

**5/08/2014**

**Downstream**



**DRYB-80 8/11/2014 Upstream**



**DRYB-80 8/11/2014 Downstream**



**DRYB-75A 10/2/2014 Upstream**



**DRYB-75A 10/2/2014 Downstream**

