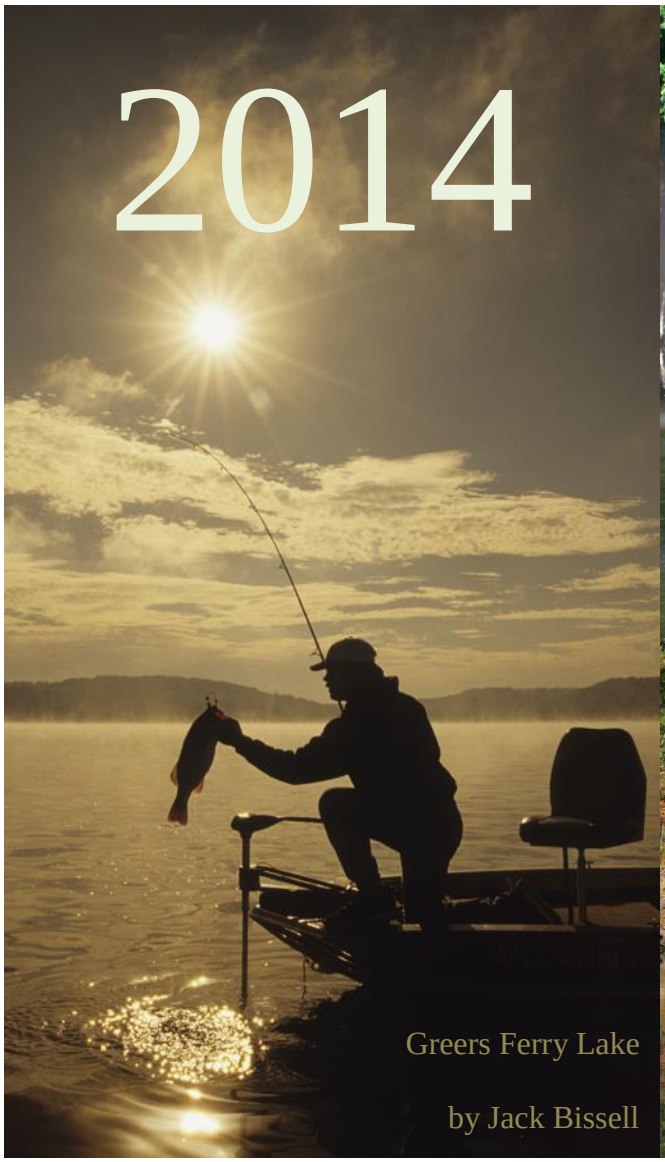
Integrated Water Quality Monitoring Assessment Report

Prepared pursuant to Section 305(b) and 303(d) of the Federal Pollution Control Act

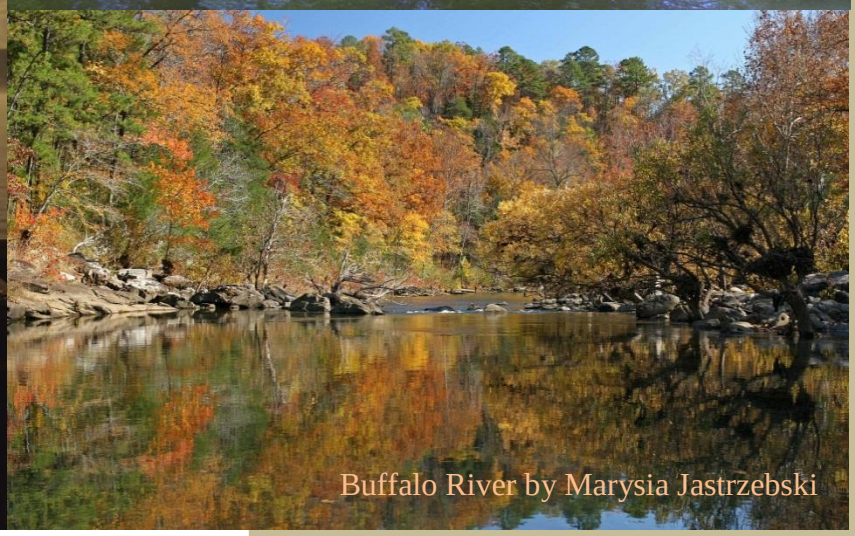
2014



Greers Ferry Lake

by Jack Bissell

Fourche Creek by Dennis Benson



Buffalo River by Marysia Jastrzebski

Arkansas Department of Environmental Quality

"To Protect, Enhance, and Restore

the

Natural Environment

for the

Well-being of all Arkansans."

This report is maintained by:

Arkansas Department of Environmental Quality

Water Division

Prepared pursuant to Sections 305(b) and 303(d)
of the
Federal Water Pollution Control Act

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STATE OF ARKANSAS

DEPARTMENT
OF
ENVIRONMENTAL QUALITY

INTEGRATED WATER QUALITY MONITORING AND ASSESSMENT REPORT 2014

Prepared pursuant to Sections 305(b) and 303(d)
of the
Federal Water Pollution Control Act

WQ14-03-01

WATER QUALITY PLANNING BRANCH

The Planning Branch of the Arkansas Department of Environmental Quality consists of biologists, ecologists, and geologists that manage activities related to both surface and groundwater. Among the activities is the management of the State Water Quality Monitoring Networks for both surface and subsurface waters; routine monitoring activities; and intensive, special investigations of the physical, chemical, and biological characteristics of watersheds and/or aquifers. Data generated from these activities, as well as other readily available data, are used to prepare the biennial "Integrated Water Quality Monitoring and Assessment Report (305(b))," the "List of Impaired Waterbodies, (303(d) list)," and develop Total Maximum Daily Loads. The data may also be used to develop water quality standards and criteria for the evaluation of designated use attainment and to prioritize restoration and remediation activities.

The staff is responsible for a variety of water quality planning activities, including ongoing work to develop and/or enhance ecoregion-based biological assessment criteria, develop and update water quality standards, review and administer the National Pollutant Discharge Elimination System Permits Whole Effluent Toxicity Testing Program, and represent the Department on numerous federal, state, local, and watershed-based advisory boards and technical support groups. The Groundwater Section is currently completing work to establish the automatic flow of the Department's ambient groundwater quality data to EPA's STORET/WQX data "warehouse" and to implement a web-based mapping and retrieval application for the data, funded by an EPA Exchange Network grant. Groundwater sampling is ongoing in the established monitoring areas and a new groundwater monitoring area is under development in northwest Arkansas, in which springs are the principal focus. The Groundwater Section also administers funding that supports Groundwater Protection programs that are delegated to other state agencies, e.g. the Wellhead Protection Program at the Arkansas Department of Health.

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To learn more about the Water Division and other divisions of the Arkansas Department of Environmental Quality, and to view a list of publications by the Planning Branch, visit www.adeq.state.ar.us or call at (501) 682-0744.

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ABBREVIATIONS AND ACRONYMS

ADEQ	Arkansas Department of Environmental Quality
ADPC&E	Arkansas Department of Pollution Control and Ecology
ADH	Arkansas Department of Health
AGFC	Arkansas Game and Fish Commission
AGS	Arkansas Geological Survey
ANRC	Arkansas Natural Resources Commission
AOGC	Arkansas Oil and Gas Commission
APC&EC	Arkansas Pollution Control and Ecology Commission
AST	Aboveground Storage Tanks
AWAG	Arkansas Watershed Advisory Group
AWQMN	Ambient Water Quality Monitoring Network
AWWCC	Arkansas Water Well Construction Commission
BMP	Best Management Practice
CBA	Cost/Benefit Analysis
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CNMB	Camp Nine Mitigation Bank
COD	Chemical Oxygen Demand
CPP	Continuing Planning Process
CSI	Community Structure Index
CWA	Clean Water Act
DLG	Digital Line Graph
DMR	Discharge Monitoring Report
EPA	Environmental Protection Agency
EPT	Ephemeroptera/Plecopter/Trichoptera
ERW	Extraordinary Resource Waters
ESW	Ecologically Sensitive Waterbody
HBI	Hilsenhoff Biotic Index
HUC	Hydrologic Unit Code
ICIS	Integrated Compliance Information System
IGP	Industrial Stormwater General Permit
IWC	Instream Waste Concentration
MAWPT	Multi-Agency Wetland Planning Team
MC	Methylene Chloride
MCL	Maximum Contaminant Level
MIT	Mechanical Integrity Testing
MS4	Municipal Separate Storm Sewer System
NFH	National Fish Hatchery

NHD	National Hydrography Dataset
NOEC	No Observed Effect Concentration
NPDES	National Pollutant Discharge Elimination System
NPS	Non-Point Source
NRCS	Natural Resources Conservation Service
NRSA	National Rivers and Streams Assessment
NSW	Natural and Scenic Waterways
ORP	Oxidation-Reduction Potential
PWS	Public Water Suppliers
PWSSP	Public Water Supply Supervision Program
QA/QC	Quality Assurance / Quality Control
RF3	River Reach File
RST	Regulated Storage Tanks
RWQMN	Roving Water Quality Monitoring Network
SDWA	Safe Drinking Water Act
SIC	Standard Industrial Code
SMCL	Secondary Maximum Contaminant Level
SOP	Standard Operating Procedure
SVOC	Semi-Volatile Organic Compounds
SWAP	Source Water Protection Program
SWMD	Solid Waste Management Division
SWMP	Storm Water Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TRE	Toxicity Reduction Evaluation
TSS	Total Suspended Solids
UIC	Underground Injection Control
USDW	Underground Sources of Drinking Water
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USNPS	United States National Park Service
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
WER	Water Effects Ratio
WET, Testing	Whole Effluent Toxicity
WET, Project	Water Education for Teachers
WHPA	Wellhead Protection Area
WHPP	Wellhead Protection Program
WOE	Watershed Outreach and Education

WQMP Water Quality Management Plan

ACKNOWLEDGEMENTS

Appreciation is given to all those individuals, agencies, and groups that sent in information and/or data for the development of this report.

In addition, appreciation is given to all of those individuals in the Public Outreach and Assistance Division, Mining Division, Environmental Preservation & Technical Services Division, Hazardous Waste Division, Regulated Storage Tanks Division, and the Water Division of the ADEQ who contributed to this report.

Special thanks to Dennis Benson, Jack Bissell, and Marysia Jastrzebski for providing beautiful cover photos of the waters of the state of Arkansas.

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PART I EXECUTIVE SUMMARY AND OVERVIEW

Section 305(b) of the Clean Water Act requires states to perform a comprehensive assessment of the state's water quality, which is to be reported to Congress every two years. In addition, Section 303(d) of the Clean Water Act requires states to prepare a list of impaired waters on which Total Maximum Daily Loads or other corrective actions must be implemented. Current U.S. Environmental Protection Agency (EPA) guidance recommends producing an integrated report combining requirements of the Clean Water Act for Sections 305(b) reporting and 303(d) submissions. The combined report is the *Integrated Water Quality Monitoring and Assessment Report.* This report is prepared using the *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act* (EPA 2006) and supplements.

Specific guidance developed by EPA is used by all states to aid in making water quality standards and designated use attainment determinations. This guidance is intended to provide national consistency in the assessment process. However, to be meaningful, assessment criteria must take into account the variations in ecology and water quality standards within a state, as well as data type, quality, and data quality objectives. Accordingly, the assessment methodology should address federal requirements and reflect each state's individual reference conditions and water quality objectives and goals.

The Arkansas Department of Environmental Quality's (ADEQ or the Department) water quality monitoring networks database is the primary database used for this assessment in Arkansas. Data are gathered for inclusion into ADEQ's database through several monitoring networks: Ambient, Roving, Watershed, Lakes and Reservoirs, and Groundwater. The Ambient Surface Water Network comprises approximately 150 stations sampled monthly for chemical parameters and flow when available. The Ambient network focuses on characterizing big river systems, potentially problematic nonpoint source areas, and least-disturbed reference streams. The Roving Surface Water Network comprises approximately 200 stations sampled for chemical parameters and bacteria. A portion of the Roving stations are sampled bimonthly over a 2-year period before moving to a different section of the state. The Roving network focuses on characterizing waters with limited or no water quality data. The Watershed Monitoring Network is comprised of 10-30 sites, which may coincide with the Ambient or Roving sites, and focuses on gathering biological data. Samples are collected during the spring, summer, and fall seasons. Macroinvertebrate and/or fish samples, chemical parameters, periphyton samples, and flow are collected at these sites. The Lakes and Reservoirs Monitoring Network comprises 16 lakes that are sampled quarterly. The Lakes & Reservoirs network focuses on identifying potential reference lakes, verifying reference lakes, and developing water quality standards for lakes. The Ambient Groundwater Monitoring Network comprises approximately 250 stations sampled triennially for ions, metals, nutrients, and total organic carbon. The Ambient Groundwater

network focuses on characterizing major aquifers and documenting natural background conditions.

In addition to the data gathered by ADEQ's Water Division, all readily available data is solicited from other ADEQ divisions, state and federal agencies, universities, and other public and private entities. All data received is evaluated against the acceptability requirements outlined in Arkansas' Assessment Methodology as described in Part III, Chapter 3.

The data included in the database described above and evaluated outside data are compared against Regulation No. 2 and Arkansas' Assessment Methodology in order to make water quality standard and designated use attainment decisions.

The number of evaluated waterbodies meeting all of the assessed designated uses and water quality standards remains similar to previous years. Exact estimates and percentages cannot be extrapolated to all waters of the State for the following reasons: (a) if any of the designated uses or assigned water quality standards of a waterbody are not met, the waterbody is listed as "not attaining water quality standards" even though other designated uses and/or water quality standards are adequately met; (b) a large number of the water quality monitoring stations are purposely located in areas known or suspected of having water quality contamination. Thus, this results in a higher percentage of problem areas being monitored, thereby skewing results toward the impaired use category; (c) much of the data from the Delta ecoregion of the State were listed as "unassessed" due to the difficulty of determining water quality impacts where severe physical alteration of the habitat has occurred; and (d) although fish consumption is not a statutory or a water quality standard designated use, EPA guidelines require this be evaluated. Waters with restricted fish consumption advisories are assessed as impaired; therefore, these waters do not meet all designated uses. Previously, overall use support was based on the full support of all designated uses; if one of those uses was not assessed, it was not counted as supporting all uses. New guidance requires tabulation of waters supporting all *assessed* uses; therefore, if one or more uses were not assessed, but all assessed uses were fully supported, the water is counted as "supporting all assessed uses."

Potential impacts to water quality could include point and nonpoint sources. Arkansas has programs in place to manage point source discharges. Arkansas' point source discharge controls are managed through the National Pollutant Discharge Elimination System (NPDES) program which was delegated to the State by the EPA. This program is guided by the State's Water Quality Management Plan and the State's Surface Water Quality Standards. Enforcement activities are based on non-compliance as reported through the NPDES permitting system, with monitoring data compiled through monthly discharge monitoring reports and inspections of NPDES facilities. Additionally, Section 401 (water quality certification) is utilized to review all federal licenses or permits, including but not limited to Section 404, which may result in any discharge of dredged or fill materials into navigable waters. Such certification is determined on

the basis of protection of designated uses and the antidegradation requirement of the State's water quality standards.

Nonpoint source impacts to water quality are managed through non-regulatory activities. The formation of watershed groups and educational outreach programs has encouraged the implementation of watershed restoration activities which have begun to address nonpoint source issues through the voluntary implementation of watershed management plans. The Nonpoint Source Pollution Assessment for Arkansas was last updated in 1997 and indicated land use related to agricultural activities as the major source of waterbody impairment.

Classification of the State's waters by ecoregion not only categorizes them by physical, chemical and biological features, but separates major pollution problems, most of which are related to land use.

Water quality in the Delta Ecoregion is primarily influenced by nonpoint source runoff from agricultural areas. The vast majority of waterways within this region form a network of extensively channelized drainage ditches. Government programs have been used to develop this highly productive agricultural land. In contrast, many of the practices utilized in making this land more productive actually impair designated water quality uses. Most agency work within this region indicates that, in the majority of these waters, the best that can be expected in terms of a fishery is an altered fishery. Once a natural stream has been channelized, only those organisms which do not require in-stream cover and can exist in highly turbid waters will survive. Within these systems the fishable goal of the Clean Water Act is being met, even though the aquatic life communities have been substantially altered.

The Gulf Coastal Ecoregion of southern Arkansas exhibits site specific impacts due to historic resource extraction activities including the extraction of petroleum products, brine, bromine, barite, gypsum, bauxite, gravel, and other natural resources. Water quality impacts occur from the extraction, storage, transport, and processing of resources. Although timber is the major resource harvested in this area as well as the primary land use, no large scale impairments from silviculture (timber harvest) activities have been identified in this area.

The Ouachita Mountain Ecoregion has characteristically been described as a recreational region which possesses exceptionally high quality water. The predominant land use is silviculture, both in private timber companies and National Forest holdings. Some areas of the Ouachita Mountains have been identified nationally as areas potentially sensitive to acidification (acid rain). Data are currently inconclusive concerning any impact on the region due to acid precipitation. Additional concerns have been voiced by various groups and organizations regarding potential erosion and siltation as a result of management practices used in timber harvest. Periodic water quality monitoring data have not indicated significant impairments to the streams within this region. Occasional elevated turbidity values have been observed during

periods of significant rainfall. Potential impairments to waters in this region include land clearing for pasture without protective riparian zones, in-stream gravel removal, post resource extraction, and existing areas of confined animal production.

The Arkansas River Valley Ecoregion exhibits distinct seasonal characteristics of its surface waters with zero flows common during summer critical conditions. Peak runoff events from within this region tend to introduce contaminants from the predominantly agricultural land uses, which are primarily pasture lands with increasing poultry production. Fecal coliform bacteria have been a parameter of concern due to its preclusion of the swimmable use. Measurements during storm events routinely exceed the water quality standard, although the source usually is not fecal contamination. The use of *E. coli* as the indicator organism provides a more accurate measurement of contamination from warm-blooded animals and has indicated no significant problems. The current exploitation of natural gas deposits has resulted in some site specific water quality degradation. Soil types in much of this area are highly erosive and tend to stay suspended in the water column, thus causing long-lasting, high turbidity values.

The Boston Mountains Ecoregion, located in north central Arkansas, is a sparsely populated area. The dominant land use is silviculture and much of the region is located within the Ozark National Forest. It is a high recreational use region with exceptionally high quality water. A large percentage of the streams from this region are designated as Extraordinary Resource Waters (ERWs). Major concerns about potential water quality degradation include: 1) conversion of hardwoods to improved pastures, 2) confined animal operations, 3) even-aged timber management, and 4) localized natural gas production. Current monitoring data from within this region continue to reflect high quality water. Periodic, elevated levels of turbidity are noted in some waters in this region. Elevated turbidity is most likely caused by clearing of timberland adjacent to major streams for conversion to pastures, which accelerates stream channel and bank erosion. In addition, secondary and tertiary road construction and maintenance and in-stream gravel removal are exacerbating the turbidity problems.

The Ozark Highlands Ecoregion, located in extreme northern Arkansas, is noted for its mountainous terrain with steep gradients and fast-flowing, spring-fed streams. A large percentage of the streams from within this region are designated as ERWs. The fractured limestone and dolomite lithology of the region allows a direct linkage from surface waters to groundwater. The water quality problems within this region are directly related to land use. The large human population increase in this area also results in increased water contamination from infrastructure development as well as surface erosion from construction activities. This region has some of the highest animal production rates in the State. Additionally, removal of gravel from the banks and beds of streams is a frequent activity that causes direct habitat degradation and greatly accelerates siltation problems within the streams.

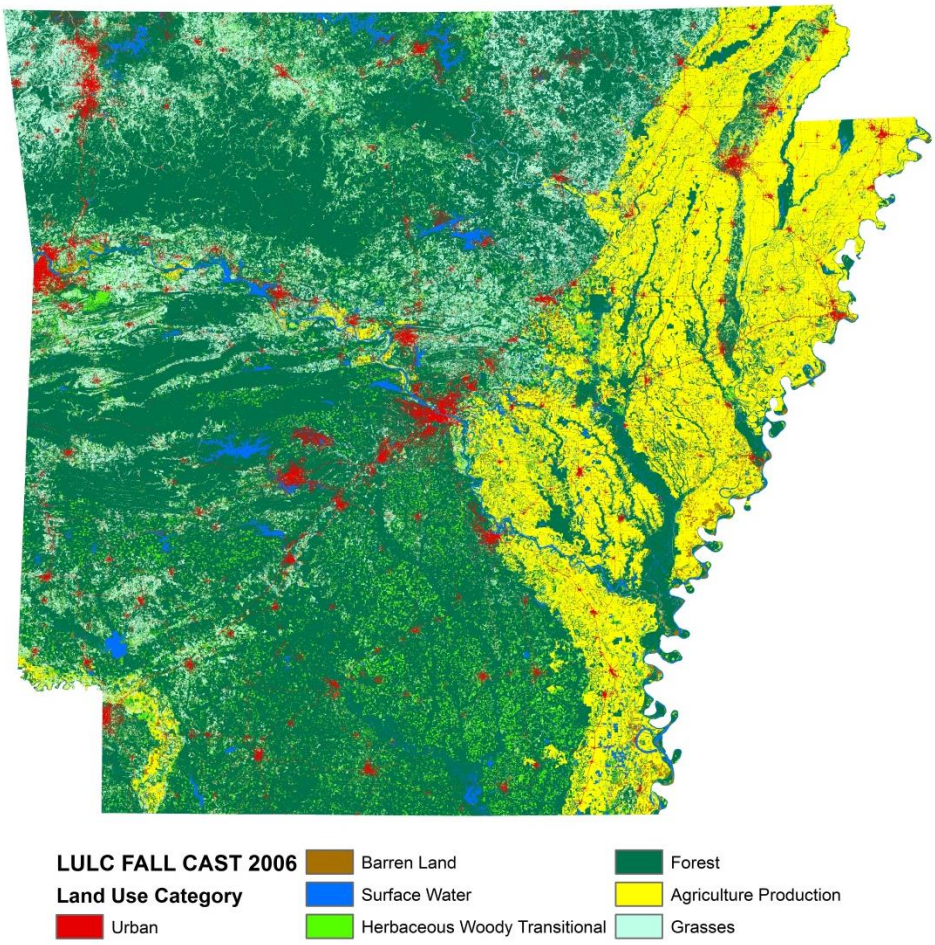
PART II BACKGROUND

Chapter One ATLAS OF ARKANSAS

Introduction

Arkansas boasts approximately 34 million acres of land and surface water. Of this total, approximately 14 million acres are in agriculture production: approximately 9 million acres in crop production and approximately 3 million acres in pasture land and other agricultural uses. There are approximately 18 million acres of forests in the State; however, not all of this acreage is managed for timber production. There are approximately 500 thousand acres of surface waters; and approximately 1 million acres in urban areas. The remaining acreage is in herbaceous/woody/transitional land, barren land, state parks, wildlife areas, highways, roads, and other non-agricultural lands. Figure II-1 is a depiction of the overall land use in the State.

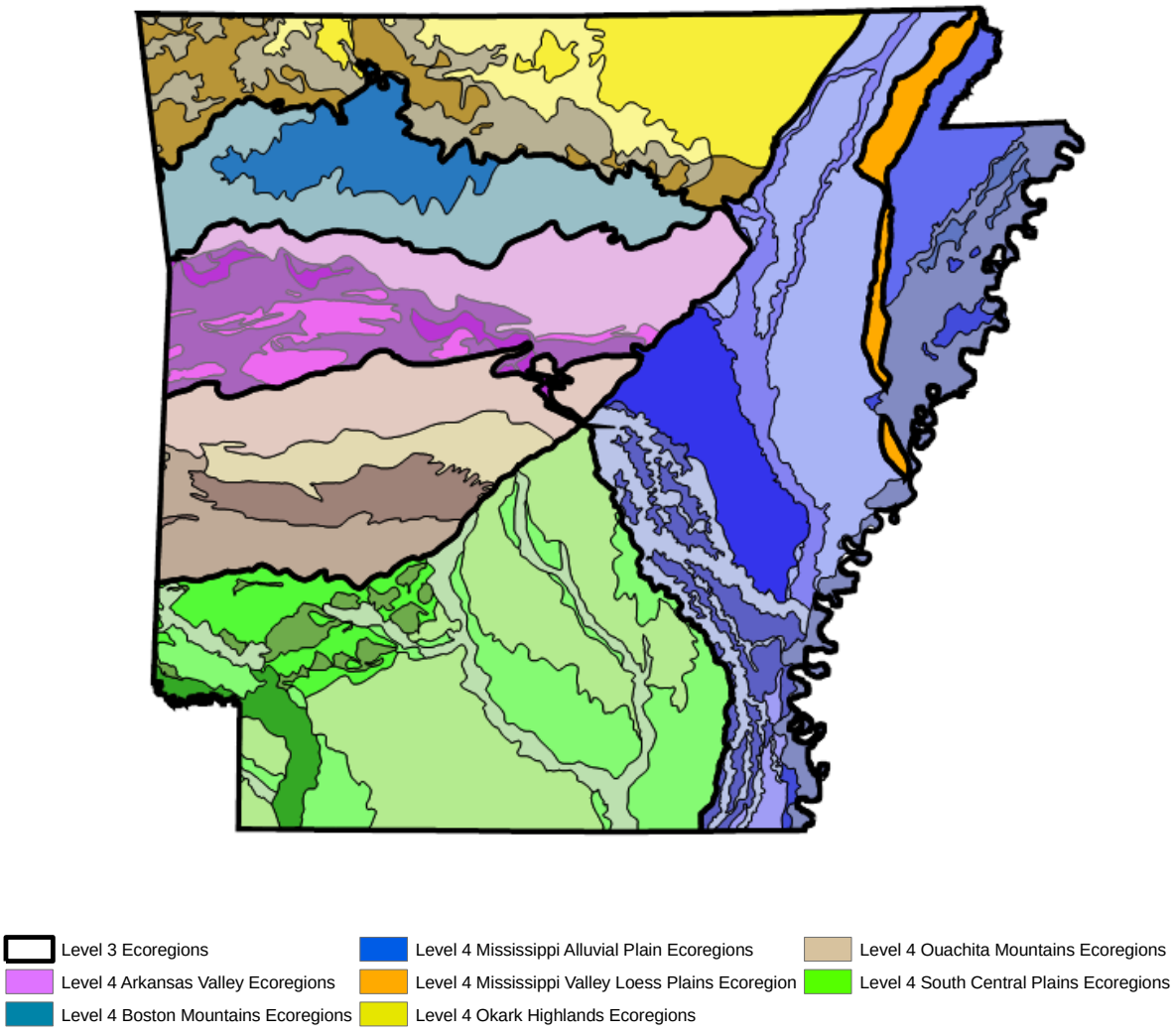
Figure II-1: Land Use



Ecoregions

The original ecoregion survey (ADPC&E 1987) identified six distinct ecoregions (Level III Ecoregions) in the State. Since that time there has been continued discussion concerning the boundaries of the ecoregions and if Crowley's Ridge, located in eastern Arkansas, should be identified as a separate ecoregion. In the late 1990s and early 2000s, a diverse group of scientists convened to better define the Level III Ecoregion boundaries and subdivide them into smaller sections: Level IV Ecoregions. Woods, et al. (2004), identified seven Level III Ecoregions and 32 Level IV Ecoregions in the State of Arkansas (Figure II-2).

Figure II-2: Arkansas' Ecoregions



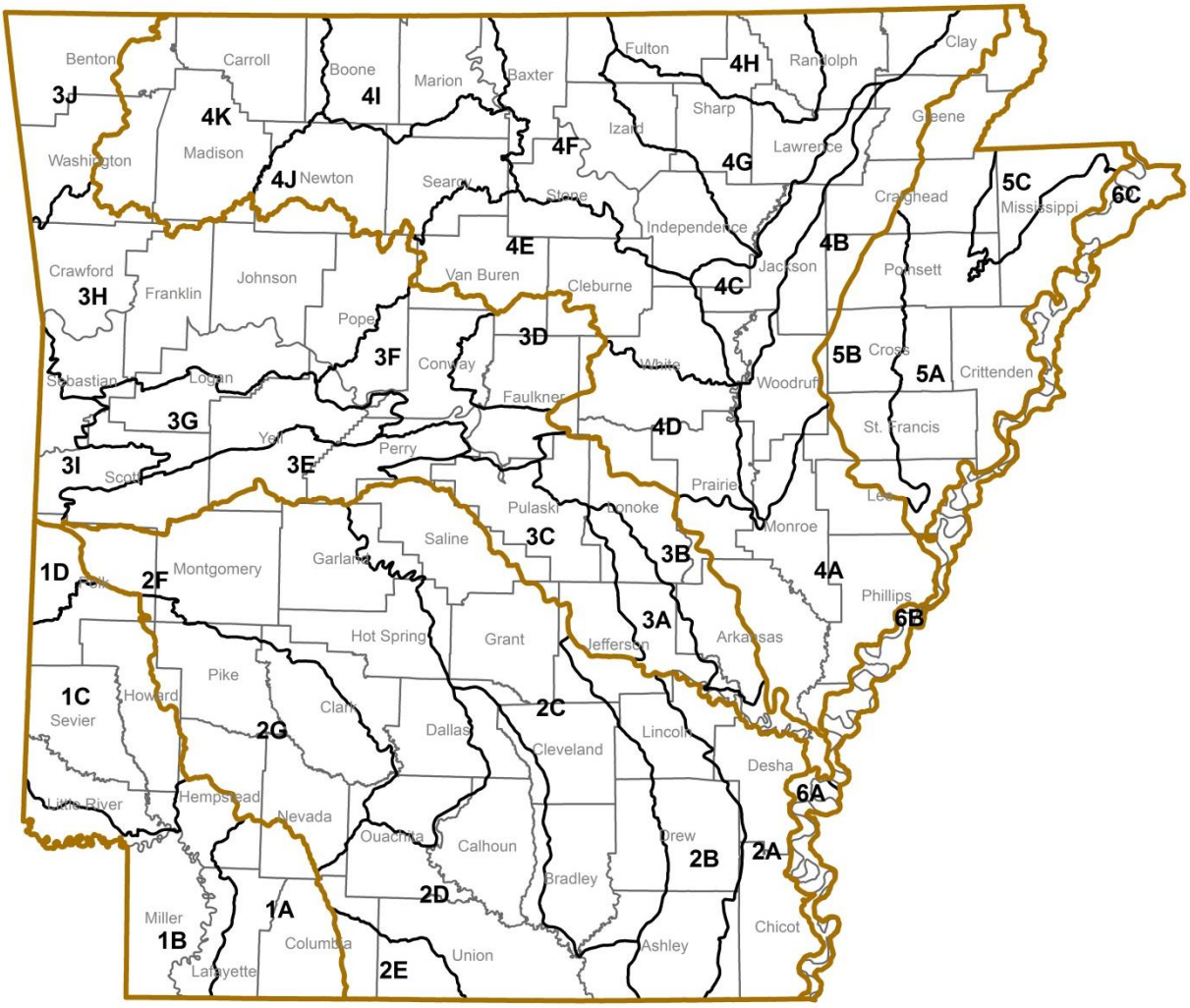
River Basins / Total River Miles

The State is divided into six major river basins: Red River, Ouachita River, Arkansas River, White River, St. Francis River, and the Mississippi River. Arkansas has 13,490 miles of rivers and streams digitized in the ADEQ Water Base Layer. The ADEQ Water Base Layer was created from the Medium Resolution (1:100,000-scale) National Hydrography Dataset (NHD). The Medium Resolution NHD includes the 2nd, 3rd, 4th and 5th order streams. The National Hydrography Dataset combines elements of the Digital Line Graph (DLG) and EPA River Reach File (RF3): spatial accuracy and comprehensiveness from the DLG and network relationships, names, and a unique identifier (reach code) for surface water features from RF3. The NHD supersedes DLG and RF3 by incorporating them, not by replacing them. The Department continues to primarily use the Medium Resolution NHD for management and planning activities, but supplements the database primarily by utilizing the High Resolution NHD. The High Resolution NHD includes the 1st order streams, or the intermittent streams and ephemeral drainages that flow only during a rainfall event.

Total river and stream miles	87,617.5
Perennial stream miles	28,408.2
Intermittent stream miles	53,465.2
Ditches and canal miles	5,250.6
Border stream miles	493.5
Total acres of lakes, reservoirs, and ponds	515,635.0

The six river basins are subdivided into ADEQ's 38 water quality planning segments (Figure II-3) based on hydrological characteristics, human activities, geographic characteristics, and other factors. The planning segments are further broken down into almost 1,600 smaller watersheds, based on discrete hydrological boundaries as defined by the United States Geological Survey (USGS) 12-digit hydrologic unit codes (HUCs).

Figure II-3: ADEQ Planning Segments



- 1 Red River Basin
- 2 Ouachita River Basin
- 3 Arkansas River Basin
- 4 White River Basin
- 5 St. Francis River Basin
- 6 Mississippi River Basin

Publically Owned Lakes and Reservoirs

A discussion of lakes and reservoirs is included in Part III, Chapter Five and includes a list of Arkansas' significant publicly owned lakes and reservoirs and their trophic status. The State has a total of 357,896 acres of significant publicly-owned lakes. The EPA RF3/DLG calculation identifies a total of 515,635 acres of lakes, ponds and other impounded waters in the State some of which are private fish production facilities and water treatment facilities.

Wetlands

The draft National Wetlands Priority Conservation Plan identified Arkansas as one of nineteen states that experienced significant decreases in wetlands from 1954 to 1974. The primary threat to Arkansas' wetlands, most of which are located in the Delta Ecoregion, is conversion to cropland. The total wetland base is only a fraction of its original size, making any current losses more critical. Additional discussion about the States' wetlands is located in Part III, Chapter Six.

Summary of Classified Uses

Essentially, all waters of the State are classified for specific designated uses. Approximately 1,833 miles (about 16%) of Arkansas' streams are classified as high quality, outstanding state or national resources. The designated uses assigned to various waterbodies include:

Extraordinary Resource Waters (ERW) (Figure II-4) – This beneficial use is a combination of the chemical, physical, and biological characteristics of a waterbody and its watershed which is characterized by scenic beauty, aesthetics, scientific values, broad scope recreation potential, and intangible social values.

Ecologically Sensitive Waterbody (ESW) (Figure II-5) – This beneficial use identifies stream segments known to provide habitat within the existing range of threatened, endangered, or endemic species of aquatic or semi-aquatic life forms.

Natural and Scenic Waterways (NSW) – This beneficial use identifies stream segments which have been legislatively adopted into a state or federal system.

Primary Contact Recreation – This beneficial use designates waters where full body contact recreation is involved.

Secondary Contact Recreation – This beneficial use designates waters where secondary activities like boating, fishing, or wading are involved.

Fisheries – This beneficial use provides for the protection and propagation of fish, shellfish, and other forms of aquatic life and is further subdivided in these following categories:

Trout

Lake and Reservoir

Stream

- Ozark Highlands
- Boston Mountains
- Arkansas River Valley
- Ouachita Mountains
- Typical Gulf Coastal
- Spring water-influenced Gulf Coastal
- Least-altered Delta
- Channel-altered Delta

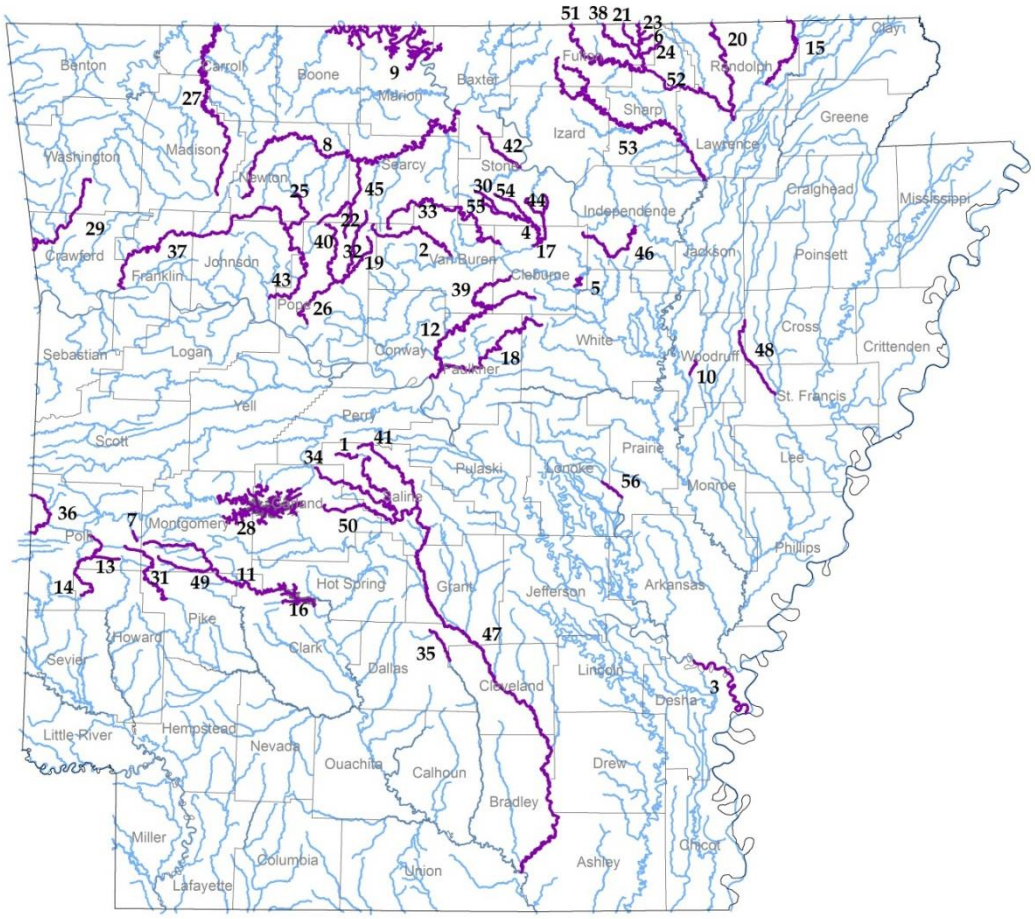
Domestic Water Supply – This designated use designates water which will be protected for use in public and private water supplies.

Industrial Water Supply – This beneficial use designates water which will be protected for use as process or cooling water.

Agricultural Water Supply – This beneficial use designates waters which will be protected for irrigation of crops and/or consumption by livestock.

Other Uses – This category of beneficial use is generally used to designate uses not dependent upon water quality such as hydroelectric power generation and navigation.

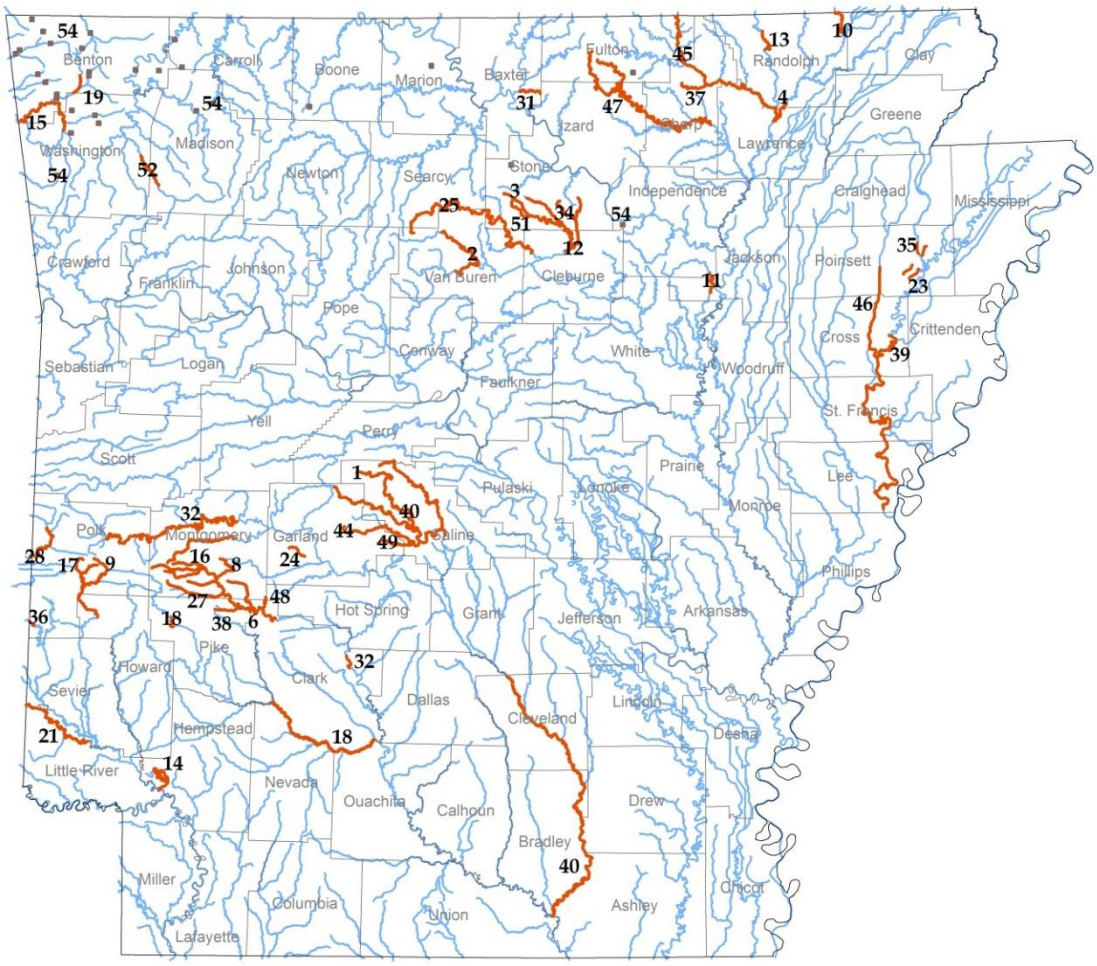
Figure II-4: Arkansas' Extraordinary Resource Waters



1 Alum Fork Saline River	15 Current River	29 Lee Creek	43 Big Piney Creek
2 Archey Fork	16 DeGray Reservoir	30 Lick Creek	44 Raccoon Creek
3 Arkansas River	17 Devil's Fork Little Red R.	31 Little Missouri River*	45 Richland Creek*
4 Beech Creek	18 East fork Cadron Creek	32 Middle Fork Illinois R.	46 Salado Creek
5 Big Creek, Cleburne Co.	19 East Fork Illinois River	33 Middle Fork Little Red R.	47 Saline River*
6 Big Creek, Fulton Co.	20 Eleven Point River	34 Middle Fork Saline River	48 Second Creek
7 Big Fork Creek	21 English Creek	35 Moro Creek	49 South Fork Caddo R.
8 Buffalo River*	22 Falling Water Creek	36 Mountain Fork River	50 South Fork Saline R.
9 Bull Shoals Reservoir	23 Field Creek	37 Mulberry River*	51 South Fork Spring R.
10 Cache River	24 Gut Creek	38 Myatt Creek	52 Spring River
11 Caddo River	25 Hurricane Creek*	39 North Fork Cadron Cr.	53 Strawberry River*
12 Cadron River	26 Illinois Bayou	40 North Fork Illinois R.	54 Tomahawk Creek
13 Caney River	27 Kings River*	41 North Fork Saline R.	55 Turkey Creek
14 Cossatot River	28 Lake Ouachita	42 North Sylamore Creek*	56 Two Prairie Bayou

*Designated as a National Scenic Waterway (NSW) for all or part of segments shown.
Brushy Creek (not listed) is also designated as an NSW, as designated in the National Wild and Scenic Rivers System.

Figure II-5: Arkansas' Ecologically Sensitive Waters



1 Alum Fork Saline River	15 Illinois River	29 North Fork Saline R.	43 South Fork Ouachita R.
2 Archey Fork	16 Lick Creek	30 Osage Creek	44 South Fork Saline R.
3 Beech Creek	17 Little Brushy Creek	31 Otter Creek	45 Spring River
4 Black River	18 Little Missouri River	32 Ouachita River	46 Straight Slough
5 Brushy Creek	19 Little Osage Creek	33 Polk Creek	47 Strawberry River
6 Caddo River	20 Little Raccoon Creek	34 Raccoon Creek	48 Sugarloaf Creek
7 Caney River	21 Little River	35 Right Hand Chute Little R.	49 Tenmile Creek
8 Collier Creek	22 Little Strawberry River	36 Robinson Creek	50 Tomahawk Creek
9 Cossatot River	23 Lower St. Francis River	37 Rock Creek	51 Turkey Creek
10 Current River	24 Mayberry Creek	38 Rock Creek	52 White River
11 Departee Creek	25 Middle Fork Little Red R.	39 St. Francis River	53 Yellow Creek
12 Devils Fork Little Red	26 Middle Fork Saline R.	40 Saline River	54 Seeps and Springs
13 Eleven Point River	27 Mill Creek	41 South Fork Caddo R.	
14 Grassy Lake	28 Mountain Fork River	42 South Fork Little Red R.	

Water Quality Standards

The Arkansas Water and Air Pollution Control Act (AWAPCA) designates the Department as the state water pollution control agency for purposes of the federal Clean Water Act. Ark. Code Ann. § 8-4-206. Under the AWAPCA, ADEQ is empowered to administer and enforce all laws and regulations relating to the pollution of waters of the state and the Arkansas Pollution Control and Ecology Commission is authorized to promulgate rules and regulations, including water quality standards and the classification of the waters of the state. Ark. Code Ann. § 8-4-201. The term "waters of the state" is broadly defined in Ark. Code Ann. § 8-4-102 to mean:

> all streams, lakes, marshes, ponds, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon the state or any portion of the state.

Surface Water

Arkansas' water quality standards are based on the physical, chemical, and biological characteristics of least-disturbed streams within ecoregions that were established by land surface forms, potential natural vegetation, soil types, and land uses. All waters of the State have been designated to support multiple uses based on the potential attainability of the use.

Specific criteria to protect the designated uses of each waterbody were developed from the intensive ecoregion studies, an abundance of historical data, numerous additional scientific data, and considerable public and other governmental agency input. Criteria can be numeric or narrative and may prohibit physical alterations of certain waters. The aquatic life uses are specifically defined to provide a framework for fisheries designated use support, which includes community structure and toxicity investigations.

Standards were developed with data from least-disturbed streams with characteristics most typical of a particular Level III ecoregion. A single ecoregion can span from one edge of the State to the other and encompass two or three major river basins. The physical, chemical, and biological characteristics of one river basin within a particular ecoregion may or may not be similar to the characteristics of the other river basins in the same ecoregion. In addition, the characteristics of transitions zones between ecoregions, the transition zone of a stream from a highland stream to a lowland stream, and the areas within atypical features of ecoregions may or may not be similar to typical ecoregion characteristics. Therefore, provisions are established in the water quality standards to allow modifications of the criteria and the designated uses of specific waterbodies based on current uses, the level of classification of the waterbody, and the social and economic needs of the area of concern.

On November 1, 1986, EPA delegated the National Pollutant Discharge Elimination System (NPDES) Permit Program to ADEQ. This program is administered by the Permits Branch of the Water Division.

In accordance with the federal Clean Water Act (CWA), Section 303(e), Arkansas maintains a Continuing Planning Process (CPP) to integrate the NPDES Program, the State's water quality standards, and the Water Quality Management Plan (WQMP). The WQMP is the controlling document for issuing point source discharge limits statewide. As new information is developed, revisions to the WQMP are made in accordance with the public participation requirements of the CWA.

The No-Discharge Section of the Permits Branch issues permits relating to waste disposal systems that do not discharge directly to the waters of the State. These systems are most commonly located at confined animal facilities, commercial facilities with septic tanks and leach fields, and centralized or decentralized wastewater treatment systems for residential developments. Permits are also issued for the land application of waste generated by different types of treatment facilities such as wastewater treatment plants, water treatment plants, poultry processing plants, food-processing plants, and drilling fluids from oil and gas field exploration activities. In addition, this Section administers the Underground Injection Control Program for Class I, III, and V wells (excluding bromine-related spent brine disposal wells), and in conjunction with the Arkansas Oil and Gas Commission, issues permits for salt-water disposal systems.

The Individual Permits Section of the Permits Branch administers Arkansas' NPDES program, which is patterned after the EPA program utilizing federally approved forms for permit application and monitoring reports. The Commission has adopted by reference in Regulation No. 6, most of the federal regulations applicable to an NPDES wastewater discharge permitting program. The distribution of Arkansas' major and selected minor NPDES permits is illustrated in Figure II-6.

Stormwater Requirements

The Stormwater Section of the Permits Branch manages three general permits and one individual permit covering various stormwater discharges. The Construction Stormwater General Permit (ARR150000) covers any type of construction activity that is subject to permitting requirements. This general permit requires the development of a Stormwater Pollution Prevention Plan (SWPPP) using Best Management Practices (BMPs) to control stormwater contamination from erosion and other waste generated at a construction site. The SWPPP must include a detailed description of the construction project; a detailed site map showing drainage, erosion controls, discharge locations, etc.; a description of the erosion controls used on the site;

inspection and maintenance procedures for the erosion controls, documentation for Total Maximum Daily Load (TMDL) and Water Quality Standards compliance; and certifications.

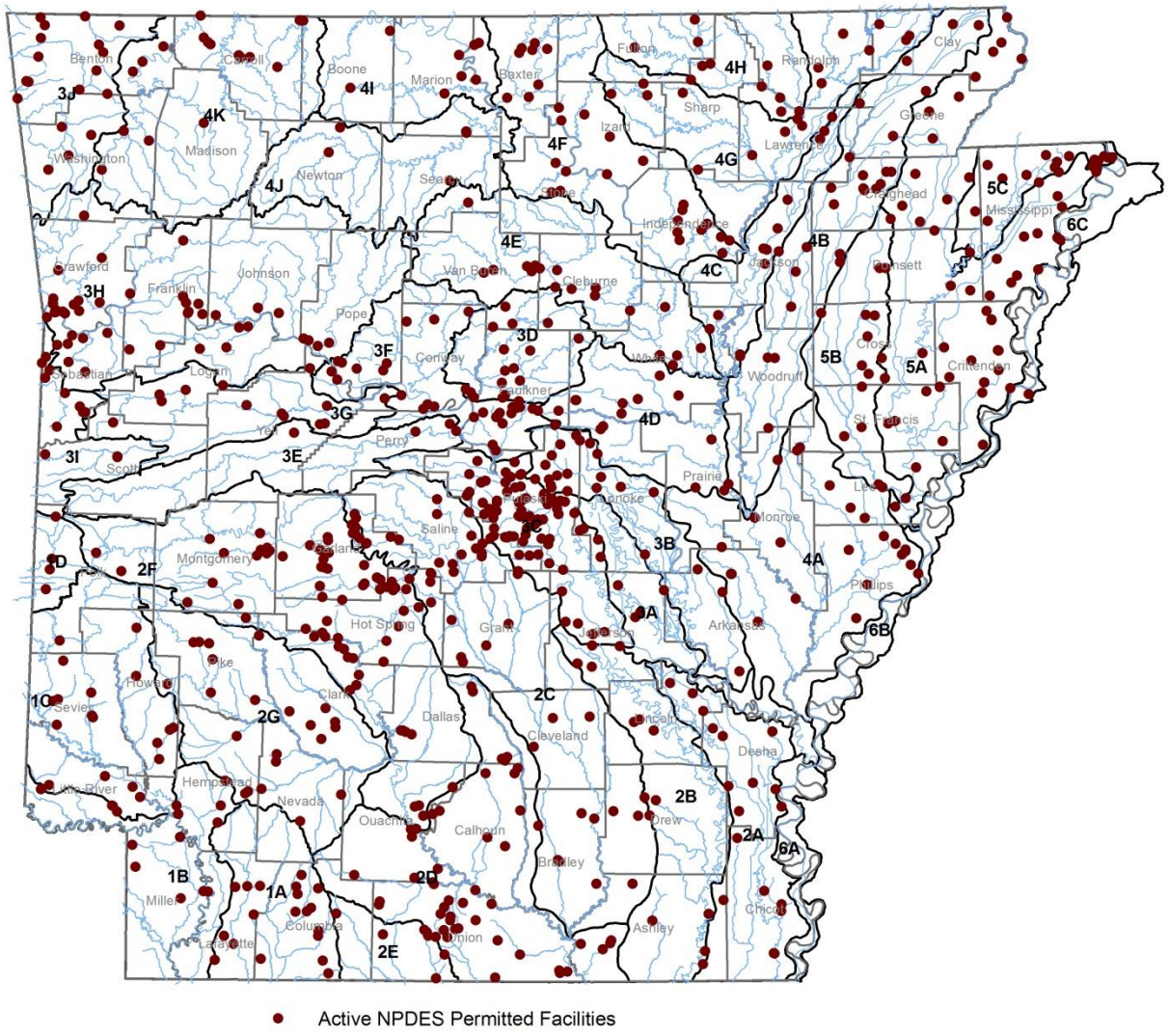
Industrial Stormwater General Permit (IGP) (ARR000000) covers many industry types that are required by federal regulation to obtain permit coverage based on the specific Standard Industrial Code (SIC) or specific industrial activity. All industries covered under the IGP are required to monitor for four basic parameters (Total Suspended Solids (TSS), Carbonaceous Oxygen Demand (COD), Oil and Grease, and pH) twice per year. In addition, some industries, based on the specific industrial sector defined in the IGP, are required to monitor for additional parameters. Facilities with permit coverage must conduct quarterly visual inspections. They are also required to conduct a comprehensive site evaluation once a year. They must schedule and conduct corrective action if their monitoring results indicate parameter benchmark exceedance. The monitoring results, comprehensive site evaluation, four visual inspections and any corrective action needed must be included with the annual report, due no later than January 31 of each year. This general permit requires the development of a SWPPP using BMPs to address the reduction in pollutants exposed to the stormwater runoff and/or removal of the pollutants after the stormwater has been contaminated. The SWPPP must include a list of personnel that will inspect the facility, a non-stormwater discharge certification, good housekeeping, spill prevention and response, and inventory of exposed material.

Industries that do not have any part of their operation exposed to stormwater may submit a no exposure certification request to be covered under no-exposure. Facilities with a no-exposure certification are not required to develop a SWPPP, monitor, or submit an annual report.

The Small Municipal Separate Storm Sewer System (MS4) General Permit (ARR040000) covers all of the regulated small MS4s (generally serving populations less than 100,000) in the State. This general permit requires the development of a Stormwater Management Plan (SWMP) to address the six minimum control measures: public education, public participation, illicit discharge detection, construction site control, post-construction control, and good housekeeping, as required by federal regulation. Each Small MS4 permittee with coverage under this general permit is required to submit an annual report explaining the different activities carried out under their SWMPs that year.

The Individual MS4 Permit (ARS000002) covers the storm sewer discharges from the City of Little Rock and the Arkansas Highway and Transportation Department. This permit requires the development of a program to address the same basic measures as the ARR040000 general permit. This permit also requires the co-permittees to sample the stormwater discharges from the permitted outfalls on a quarterly basis.

Figure II-6: Active NPDES Permitted Facilities



Point Source Impacts Monitoring

The impacts from major point source discharges of concern are monitored primarily through strategically located water quality monitoring stations within the statewide Ambient Water Quality Monitoring Network. The water quality data collected at these stations enable the Department to monitor the discharges from the permitted facilities and identify areas of concern needing enforcement or some other type of abatement activity. The data can also indicate improvement of water quality conditions resulting from pollution control activities. In addition, self-monitoring through monthly discharge monitoring reports is required in the NPDES permits of most dischargers (see Enforcement).

Toxics Strategy

Since FY 1987, the Department has utilized toxicity testing as a monitoring tool to measure compliance with its narrative toxicity standard, which states "Toxic materials shall not be present in receiving waters, after mixing, in such quantities as to be toxic to human, animal, plant or aquatic life, or to interfere with the normal propagation, growth and survival of the indigenous aquatic biota." The implicit intent of the toxics strategy is that there shall be no discharge of any wastewater from any source that:

1. Results in the endangerment of any drinking water supply;
2. Results in aquatic bioaccumulation which endangers human health;
3. Results in any in-stream acute or chronic aquatic toxicity; or
4. Violates any applicable general or numerical state or federal water quality standard.

The toxicity testing program consists of both self-monitoring conducted by the permittees and compliance monitoring conducted by the State. The State has been and will continue to implement the post-third round permit policy endorsed by EPA Region 6, with minor revisions. Whole effluent toxicity testing requirements are included in all major and selected minor permits.

In 1991, the Commission adopted specific numeric criteria for 12 pollutants in terms of their acute and chronic toxicity: Reg. 2.508 of Regulation No. 2. On December 22, 1992, EPA promulgated numeric criteria for 10 heavy metals and cyanide into Arkansas water quality standards. These criteria were initially expressed as total recoverable metals. Later EPA modified these values by applying a conversion factor to the total recoverable values and expressed them as dissolved values. The promulgated standards for chromium (VI), mercury and cyanide are expressed as a function of the pollutant's water-effect ratio (WER), while standards for cadmium, chromium (III), copper, lead, nickel, silver, and zinc are expressed as a function of the pollutant's WER and as a function of hardness. In January 1998, the Commission adopted the National Toxics Rule numbers previously promulgated by EPA as a part of the State's water quality standards.

When NPDES permit applications are submitted, in-stream waste concentrations (IWC) for all potential pollutants for which there is no adopted state standard are calculated and compared to values listed in the *Quality Criteria For Water* (EPA 1986) also known as the "Gold Book." If toxicity values published in the Gold Book are exceeded by the calculated IWC, whole effluent toxicity testing is required.

Self-Monitoring for Toxicity

Whole Effluent Toxicity (WET) testing's objective is to estimate the no observed effect concentration (NOEC) of a facility's effluent. The NOEC is defined as the concentration which will allow normal propagation of fish and other aquatic life in the receiving waters.

Chronic toxicity tests are conducted for a period of seven days and utilize the Fathead minnow (*Pimephales promelas)* and the water flea (*Ceriodaphnia dubia).* The endpoints that are considered to determine adverse effects of toxicants for the Fathead minnow are survival and growth. The endpoints that are considered to determine adverse effects of toxicants for the water flea are survival and reproduction.

Acute toxicity tests are conducted for a period of 48 hours and utilize the Fathead minnow (*Pimephales promelas)* and the water flea (*Daphnia pulex).* The endpoint that is considered to determine adverse effects of toxicants for the Fathead minnow is survival. The endpoint that is considered to determine adverse effects of toxicants for the water flea is survival.

WET testing is included in the major and significant minor industrial NPDES permits. WET testing is also included in both major and minor municipal NPDES permits and in one Federal permit.

When a facility's effluent experiences a certain number of toxic events, a Toxicity Reduction Evaluation (TRE) will be required. A TRE is an investigation intended to determine those actions necessary to achieve compliance with water quality-based effluent limits by reducing an effluent's toxicity to an acceptable level. A TRE is defined as a step-wise process which combines toxicity testing and analyses of the physical and chemical characteristics of a toxic effluent to identify the constituents causing effluent toxicity and/or treatment methods which will reduce the effluent toxicity. The goal of the TRE is to maximally reduce the toxic effects of effluent at the critical dilution. Depending on the results of the TREs, a facility will have either corrected treatment issues, relocated the effluent discharge, improved treatment capabilities, or will have lethal and/or sub-lethal WET limits in their NPDES permits.

The NPDES General Permit number ARG790000, Groundwater Clean-Up Located within the State of Arkansas, authorizes the discharge of treated groundwater/surface water that may have been contaminated with petroleum fuels. Determinations of coverage under this general permit are issued for short duration discharges, which sometimes only last for several months. The

initial general permit was first issued on April 10, 1990. The initial general permit contained monthly acute WET testing requirements for all treated groundwater discharges, which included all permittees covered by the general permit. The monthly acute WET testing requirements were continued with the effective date of the renewal permit on March 1, 1995; February 1, 2001; April 1, 2006; and April 1, 2011.

Certification of Monitoring Data

Pursuant to the provisions of Act 322 of 1993, the Commission established mandatory certification for certain environmental testing laboratories. This Act clarifies the Department's existing power to refuse to accept invalid test results and expands the enforcement powers over environmental testing. Regulation No. 13 establishes the fee system for laboratory certification. As of September 2013, eighty-five environmental testing laboratories have received certification from the State of Arkansas; twenty-seven of those are located in Arkansas.

Enforcement

The Enforcement Branch of the Water Division implements the NPDES enforcement program. The primary basis for enforcement is self-monitoring data submitted by permittees on monthly discharge monitoring reports (DMRs) and routine compliance inspections performed by the Department. All DMR data are entered into the Integrated Compliance Information System (ICIS) national database. The State addresses all permit violations reported by permittees through an initial informal enforcement action. An escalation of enforcement actions occur if the violation is not resolved. Other violations are judged on their severity and actions are taken as necessary.

Wastewater Licensing and Training

Wastewater treatment plant operator licensing and training continues to be a necessary and integral part of the overall scope of the point source pollution control program. The licensing and training verification program administered by the Wastewater Licensing Section, Water Division of ADEQ, operates within the authority of Arkansas Act 211 of 1971, as amended, and Act 1103 of 1991. These Acts set the requirements by law that requires a licensed operator at most wastewater treatment facilities in Arkansas. Act 211 has required licensed operators at Publicly-Operated Treatment Works since 1971. Act 1103 of 1991 added the requirement for the licensing of industrial operators. There are approximately 3000 licensed operators in Arkansas, which includes both municipal and industrial operators. Classification of wastewater treatment plants by the unit processes determine the level of operator staffing and the licensing level of the plant operators.

Most training of wastewater treatment plant operators is accomplished by the Arkansas Environmental Academy, a branch of Southern Arkansas University located at Camden, Arkansas, and the Arkansas Rural Water Association, Lonoke, Arkansas. Over 70 training

sessions are accomplished annually with offerings in all phases of wastewater training at various state locations by the faculty and staff. Other sources of training are provided by private contractors, formal organizations, and other institutions of higher learning.

Nonpoint Source Control Program

In 1988, the Department conducted a nonpoint source assessment and prepared a management plan pursuant to Section 319 of the CWA. This assessment and portions of the original management program were approved by EPA Region 6 nonpoint source program personnel.

In 1996, the former Arkansas Soil and Water Conservation Commission, now the ANRC, was designated as the Nonpoint Source Program Management Agency and the lead agency for the Agriculture nonpoint source category; the Arkansas Forestry Commission assumed the responsibilities for the silviculture category; the Department has retained the responsibility of assessing and reporting on nonpoint source pollution and the responsibilities associated with Resource Extraction (mining); and the University of Arkansas Division of Agriculture, Cooperative Extension Service for education outreach. The Department and ANRC share the responsibilities of the Surface Erosion, Urban Runoff, and Road Construction / Maintenance categories. The Nonpoint Source Management Task Force prioritizes watersheds by the use of a matrix approach. The 8-digit HUCs are further broken down into 12-digit HUCs to facilitate focus in implementing projects in critical areas. In addition, both of these entities and numerous other cooperators lend assistance and/or support to each of the priority watersheds.

Assessment

The initial Arkansas Nonpoint Source Pollution Assessment in 1988 assessed approximately 36 percent of the 11,900 stream miles in the State. Based on assessment criteria established in 1988, 58 percent of the assessed streams were not meeting all designated uses. Limited data for the 79 significant publicly owned lakes indicated no use impairment. There were also inadequate data to identify specific areas of groundwater impairment. The 1988 assessment identified agriculture and mining as the primary categories of nonpoint source pollution in the State.

The 1988 assessment was updated in June 1997 using updated assessment criteria. The 1997 report assessed 8,700 stream miles and indicated that nonpoint source pollution was impacting (but not necessarily impairing) over 4,100 stream miles. Agricultural activities were identified as the major cause of impacts on 3,197 stream miles. Other impacts were related to silviculture activities, road construction/maintenance activities and unknown sources. The unknown source was mercury contamination of fish tissue.

To reduce the confusion between the Nonpoint Source Assessment Report and this document, the Department no longer publishes a separate nonpoint source assessment report. This document, updated every two years, serves as the nonpoint source assessment report.

Management Program

The Arkansas Nonpoint Source (NPS) Pollution Management Plan is developed and implemented by ANRC. It provides for continued monitoring of water quality, demonstrations of the effectiveness of BMPs, and implementation strategies of BMPs to reduce nonpoint source pollutants. In 2006, and in each year since then, ANRC and its subsequent Nonpoint Source Management Program section have and continue to initiate annual meetings of the Nonpoint Source Management Task Force (Task Force). The Task Force utilizes new or updated information and data to incorporate into a 12-tiered risk matrix approach to adjust and/or allocate resources and support, when appropriate, to emerging or changing conditions. This approach also facilitates stakeholder participation. Although the Arkansas Nonpoint Source Management Plan is printed every five years, updates to the plan occur annually. Additional information regarding the Program including past projects can be accessed by visiting www.arkansaswater.org

ANRC conducts in-stream water quality monitoring in various priority areas as defined by the NPS Program. Collected data are utilized to determine project effectiveness, to evaluate NPS contribution trends and to determine water quality improvement as related to best management practice implementation specifically to known NPS sources. Collected data is forward to ADEQ for use and inclusion of the Water Quality Assessment reported when applicable.

Groundwater

ADEQ is empowered to enforce and administer all laws and regulations relating to pollution of the waters of the state and the Commission is authorized to promulgate rules and regulations relating to pollution of waters of the state. Ark. Code Ann. § 8-4-201. Because "waters of the state" include "…all bodies or accumulations of water, surface and *underground*…," the Commission is authorized under state law to develop standards for the protection of groundwater.

In addition to the Water Division, divisions within the Department which protect groundwater include the Hazardous Waste Division, the Solid Waste Division, and the Regulated Storage Tank Division. The Department's Brownfields Program uses the Region VI Human Health Media-Specific Screening Levels for purposes of evaluating risk to human health and the environment. Methodologies and standards for risk assessment evaluations at contaminated sites have been established. Emphasis on risk assessments demonstrates the difficulty of simply establishing numerical standards for all contaminated sites within the State. Establishment of groundwater quality standards must be done in a manner that will augment existing departmental regulations, provide a uniform, statewide set of criteria for defining and addressing groundwater contamination, and fill existing gaps in groundwater protection. A preliminary review of standards from other states and initial discussions with groundwater staff and management has been completed and a number of important issues regarding the development of groundwater

standards were identified. These include fundamental policy decisions such as a non-degradation policy versus a risk-based or numeric cleanup standard, the role of stakeholders, coordination among applicable state agencies, and legislative support. These policy decisions must be made by agency management in the preliminary stages of groundwater standard development.

ADEQ's and the Commission's legislative authority notwithstanding, the task of developing groundwater quality standards was initiated by the Arkansas Natural Resources Commission (ANRC) in recent years. The ANRC has developed a model for standards development and has made progress on a set of numerical groundwater quality standards. The status of the draft document is undetermined but it is expected to be made available for review by affected agencies in the forseeable future.

Watershed Approach

The watershed approach for water quality management in Arkansas was initiated in the early to mid-1970s with the development of Water Quality Planning Segments. This approach provides a framework where local programs can make educated choices about managing their natural resources. The Department provides many resources to citizens, and partners with environmental professionals to bring awareness to watershed topics of concern. Our Watershed Outreach and Education (WOE) section is available to assist citizens and organizations by promoting local approaches to watershed management and conservation.

From 2000 to the spring of 2012, the Department coordinated the Arkansas Watershed Advisory Group (AWAG), which was comprised of a panel of agencies, organizations, and watershed councils. This group brought citizens and environmental professionals together to network about watershed topics of concern. Since that time, many of the same goals have been and continue to be carried out through the WOE section. This section also upholds the same overall mission of the former group: to assist citizens and organizations by promoting local approaches to watershed management and conservation.

The Department and the WOE section continue to promote and support many activities and programs that fit within the missions and goals of the former AWAG. The following includes many of the activities and programs addressed within these goals during the past five years:

Goal I: To promote the public's interest, understanding, and involvement in the management of their watershed resources.

The Department strives to provide citizens the opportunity to learn about the available programs designed to protect natural resources through voluntary efforts at the local level. Programs and activities are tailored to assist and provide information to all citizens and citizen groups from

school-aged children and teachers, to neighborhood and local organizations, clubs, and watershed groups.

We provide services to formal and non-formal educators through our association with the international Project WET (Water Education for Teachers) program, in which we are the state's host institution. All Project WET activities are multi-disciplinary, incorporating language arts, fine arts, health, math, and science to meet Arkansas' core curriculum standards, while bridging to the unifying theme of watersheds and water education. We offer, on average, 35 Project WET workshops each year. Workshops offered by WOE staff include Wonders of the Wetlands, Healthy Water, and Healthy People, as well as special topic workshops specifically tailored for Arkansas watersheds and their issues and concerns. Each May (five total for this period of record) the WOE staff coordinates the Project WET Make a Splash water festival at different locations around the state. This event allows students from area schools to spend a fun day doing interactive, interdisciplinary activities that help them learn about the hydrologic cycle, groundwater, spring water, wetlands, water management, water conservation, water properties and soils. In addition to the Project WET curriculum, the WOE staff provides a variety of in-classroom presentations and demonstrations ranging from water- and science-related career orientation to local water quality stream assessment procedures. We average nearly 40 youth education presentations each year, and assist with an additional 5 non-ADEQ workshops each year.

We also provide educational services to communities by hosting local public awareness events and policy and regulatory hearings in watersheds across the state. We actively participate in local field days, educational fairs (usually 2-3 per year), state park events, 4H/Girl Scout/Boy Scout days, and stream cleanup events. WOE staff also serves as local science fair judges and hold positions on various related boards and advisory councils. The WOE staff is available to provide presentations (about eight per year) and workshops (about two per year) to local civic and citizen groups and organizations. Previous workshop topics have included: general water quality (information, issues, concerns, and assessments), grant writing, recent legislation, watershed management, stormwater issues, rain gardens and rain barrels, water quality and pharmaceuticals, and special focus workshops designed for specific watersheds and ecosystems.

The WOE's watershed coordinator is also available to meet with small groups or individuals to provide direction concerning watershed planning and volunteer opportunities.

Goal II: To improve communication concerning watershed resources.

The former AWAG and the WOE section has encouraged interaction and communication among citizens, agencies and organizations by hosting Roundtable Discussions, quarterly AWAG meetings, and biennial statewide Watershed Conferences (three during this period of record). The primary method of communication is the ADEQ Watershed Listserv. Other forms of

communication are direct communication with watershed coordinators, newsletters, the ADEQ website (and former AWAG website), and presentations at local environmental events.

Goal III: To assist in providing technical support concerning watershed resources and management.

The Department's watershed coordinator is committed to providing planning and technical assistance to watershed groups across Arkansas. A watershed group can request technical and planning advice, or have the coordinator attend meetings to help with group facilitation and watershed planning during the initial formation period. The coordinator will continue to provide technical support after the formation period and assist with project planning and implementation.

The WOE section hosts occasional grant writing workshops which, in the past, have produced several grants for watershed groups. Groups looking for ways to get started can request our nonprofit information packet. This packet was created specifically for watershed groups to provide checklists, state and federal forms, and sample bylaws and articles of incorporation. The WOE watershed coordinator is also available to assist in filling out the federal forms. Funding opportunities are posted in the Watershed Watch newsletter, on the ADEQ website, and on the Watershed Listserv.

Chapter Three COST / BENEFIT ANALYSIS

Introduction

The CWA requires states to provide an estimate of the environmental, economic, and social costs, and benefits needed to achieve CWA objectives and an estimate of the date of such achievement. A comparable procedure is needed to conduct a state-wide economic analysis of environmental, economic and social costs.

A true cost/benefit analysis (CBA) will require assessment of the value of incremental improvements in water quality from a variety of programs, some of which were implemented within the previous reporting cycle. Water quality assessment methodologies presently are inadequate to truly capture the benefits of CWA implementation on water quality. While the Department has monitored water quality as directed by CWA §305(b) guidance, these protocols are biased towards reporting failures, with little provision for reporting successes.

Recent advances in valuing benefits such as ecological services may provide insight into the true benefits of CWA regulations that have not been represented economically in previous assessments. However, protocols for including those benefits are not yet established. Therefore, pertinent accessible information has been utilized for this water quality CBA in order to provide the required information under the CWA.

Cost Information

It is difficult to separate out the costs attributable to water quality pollution control efforts across state, regional, and local governments. The environmental benefits from the environmental resources protected by ADEQ are more important than ever, as evidenced by implementation of programs by agency personnel across Arkansas.

The costs for implementing CWA regulations are summarized as agency programmatic implementation expenses, pollution abatement capital expenditures, and operating costs. Much of the water quality related budget is self-generated through permit fees; however, a portion is derived through federal grants. These include the §104 grant for research investigations, training and informational demonstrations; §106 grant for water pollution control activities; the §319 grant for nonpoint source management issues; and the §604 grant for state water quality management planning activities. Funds from these grants are divided throughout the appropriate water-quality related state programs as directed by each grant and provide funding for personnel, equipment, survey and research work, and ambient water quality monitoring. The federal funds allotted for FY 2013 were estimated at over $5.2 million.

State of Arkansas Budget for Water Quality Control Activities

The Department has primary responsibility for permitting and enforcement of CWA provisions in Arkansas, but the implementation of water quality control activities are distributed across several state agencies, including the Department, Arkansas Natural Resources Commission, Arkansas Department of Health, Rural Water Association of Arkansas, and the Arkansas Division of Agriculture, among others.

Federal CWA Section 106 Budget

The §106 grant program provides funding for ADEQ's general water pollution control/water quality management program. Activities funded under the §106 grant include ambient water quality monitoring, assessment of ambient water quality data, development of the Water Quality Inventory (now known as the Integrated Report), revision of Arkansas' Water Quality Management Plan, development and revision of surface water quality standards, development and issuance of waste water discharge permits (NPDES Program), compliance inspections, complaint investigations, and development of enforcement actions. In 2013, the Department received just over two million dollars in Federal funding for these activities.

Federal CWA Section 319 Budget

The Clean Water Act §319 grant for nonpoint source management issues in Arkansas is implemented by the ANRC. The Arkansas Natural Resources Commission works with universities, city and regional officials, private industries, and the federal governments to prevent, control, and remediate nonpoint source pollution throughout Arkansas. Part II, Chapter 2, Nonpoint Source Pollution Control has more information about the Nonpoint Source Program. In 2013, ANRC received $2,921,000 in Federal funding for these activities.

Benefits Information

The benefits of implementing the Clean Water Act are numerous and obvious. Clean water means higher revenue from aquatic related tourism and recreation, decreased costs to treat drinking and waste water, and higher revenue from commercial fishing and aquaculture.

Tourism and Recreation

Arkansas has over 87,600 miles of streams and rivers, and 515,000 acres of lakes, reservoirs, and ponds; most of which are used for some sort of aquatic recreation: fishing, swimming, kayaking, scuba diving, canoeing, hunting, motor boating, and waterskiing. All of these activities benefit from clean water, as does Arkansas' tourism revenue (directly or indirectly).

The Arkansas tourism industry experienced a year of growth in 2012. Travel expenditures increased from approximately $5.687 billion in 2011 to $5.767 billion in 2012, up 1.4% (http://www.arkansas.com/!userfiles/editor/docs/apt-annual-report-financials-2012.pdf.) A

conservative estimate for tourism revenue that directly benefited from implementation of the Clean Water Act (fishing, boating, canoeing, etc.) would be 10% or approximately $577 million.

According to the United States Fish and Wildlife Service (USFWS) (http://www.census.gov/prod/2013pubs/fhw11-ar.pdf, in 2011 (the most recent data available) $496 million was realized in Arkansas for fishing related expenditures. If we assume a conservative 10% that benefitted from the CWA that would be almost $50 million.

Drinking Water

Arkansas has 70 surface water intake systems that produce (collectively) an average of 284 MGD (Department of Health personal communication). Cost to treat drinking water due to diminished water quality varies by contaminant and is dependent on multiple variables. Dearmont et. al (1998) conducted a case study in Texas and found that costs of treatment increased by $95 per million gallons when contamination is present. If we extrapolate this to Arkansas, this translates to a cost of nearly $27,000 per day or $9.8 million annually. They also found that a 1% increase in turbidity increased chemical treatment costs by 0.25%.

Aquaculture

According to the University of Arkansas at Pine Bluff aquaculture/fisheries center of excellence, Arkansas has a $167 million aquaculture industry. This industry has an economic impact of over $440 million/year in Arkansas.

Warm-water (smallmouth bass, striped bass, and walleye) and cold-water (trout) fisheries is another economically important industry for Arkansas. Arkansas has five hatcheries operated by the Arkansas Game and Fish Commission (AGFC) and three National Fish Hatcheries (NFH). According to the USFWS, for each $1 spent of budget expenditures at the Norfork NFH, $5.86 in tax revenue is generated. For every tax dollar spent for recreational fish production at Mammoth Spring NFH $12 of net economic value is created resulting in a total economic output of more than $1.5 million every year by way of taxes, jobs, and sales. Based on 2012 economic data, for every $1 of hatchery operational budget Greers Ferry hatchery spends, $95 is put back into the economy (http://www.fws.gov/greersferry/).

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Chapter Four SPECIAL STATE CONCERNS

Areas of special concern within the State's Water Pollution Control Program include many of the national concerns and priorities. These concerns extend from wide range, philosophical concerns impacting long range goals and objectives to area- or issue-specific concerns which can be addressed within a short term program cycle. Many of these concerns are listed below simply as an exercise of compiling ideas which are likely to shape future activities.

1. Evaluating waterbodies as impaired based on limited data sets, inappropriate water quality standards, or "one size fits all" assessment criteria results in the development of unnecessary total maximum daily loads and/or the implementation of unnecessary stricter permit limits and expensive pollution reduction activities. Since 2001, 298 TMDLs for water quality pollutant pairs have been developed for state waterbodies. A number of these pollutant pairs with TMDLs have currently been assessed as fully meeting water quality standards in this report. The attainment of water quality standards in the majority of these waterbodies has not been because of the implementation of the TMDLs. In some cases, it is simply a reflection of the natural fluctuations in water quality that occurs from one year to the next. In other cases, it is the result of a more sensitive evaluation methodology which better reflects the many unique water quality characteristics of Arkansas' waterbodies. In yet other situations it is the result of evaluating a more extensive data set that fully represents the actual ambient conditions of the waterbody.

2. Promulgation of groundwater standards which reflect existing water quality in different aquifers and different regions of the State similar to the ecoregion approach.

3. Developing information to expand our knowledge of water quality vs. water quantity in protecting designated uses. As increasing demands are exerted on water quantity, flow and/or volume of water must be considered in protecting specific designated uses. Decreases in water quantity could potentially exacerbate water quality concerns leading to impairment of designated uses, such as aquatic life.

4. Formation and sustainability of local watershed groups to generate local support and assist local governments in developing and implementing watershed restoration management plans for both surface and groundwater resources.

5. The conversion of streams to reservoirs under the provision of "drinking water supply" threatens the State's highest quality and most ecologically important streams.

6. Developing appropriate and scientifically defensible nutrient criteria for Arkansas' diverse watersheds. For lakes and reservoirs, Beaver Reservoir was the starting point for the State. After Beaver Reservoir, ADEQ intends to begin nutrient criteria development for other similar large public water supply lakes, or based on citizens' concerns. For rivers and streams, ADEQ is moving forward with intensive sampling of ERWs.

7. Development of a formal plan for evaluating methods to address minerals criteria. This plan would address a variety of concerns including but not limited to; appropriate methods for development of site specific criteria, appropriate implementation of ecoregion reference values, and appropriate consideration of flow in NPDES permits.

8. Development of water quality standards, assessment methods, and implementation protocols which protect the waters of the state from excess siltation/suspended sediment/embeddedness. Development should assess current data, EPA's 2006 Framework guidance, other states' regulations and procedures, and utilize state resources and expertise in order to determine data needs and gaps, funding needs, feasibility and adaptability, and implementation if possible.

PART III SURFACE WATER ASSESSMENT

Chapter One SURFACE WATER MONITORING PROGRAM

Water Quality Monitoring Program

Arkansas has more than 150 permanent surface water monitoring sites and more than 200 rotating sites across the state (Figure III-1). The current monitoring program operates under four goals: 1) to better assess the effects of point source discharges upon water quality; 2) to observe the impact of known nonpoint source inputs over time; 3) to continue monitoring the major rivers due to their basic importance to the State; and 4) to monitor the carefully selected, high quality (least impaired) streams to provide long term chemical data by physiographic region for use in future water quality standards revisions. The Department's monitoring program is thoroughly outlined in, *State of Arkansas Water Quality Monitoring and Assessment Program, Revision 4* (ADEQ 2011).

If a waterbody is assessed as impaired using the data collected from the permanent or rotating stations, a special or intensive survey may be implemented. Table III-1 lists special projects within this period of record. These surveys are usually on a watershed or site specific scale and can include biological and/or special needs data collection dependent upon the impairment. Figure III-2 shows special project sites within this period of record.

Biological Testing Program

The Department maintains a monitoring system to evaluate the environmental impacts of pollutants on aquatic life and human health. Monitoring programs include macroinvertebrate and fish community assessments; fish tissue analyses for contaminants, which may be harmful for human consumption; sediment testing for pesticides, toxic chemicals, and heavy metals; EPA Ambient Toxicity Monitoring Program (results available at http://www.epa.gov/earth1r6/6wq/ecopro/watershd/monitrng/toxnet/index.htm); and bacteriological analyses. These techniques are used either as stand-alone methods or in conjunction with other biological or chemical analyses to monitor the biological health of waters throughout the State.

Macroinvertebrate and Fish Community Assessment

One of the best ways to monitor the health of a stream or other waterbody is to examine its biological inhabitants. The Department has conducted biological community monitoring throughout the State since the 1970s. Current biological collection methods are based on EPA's *Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers* (Barbour 1999).

Figure III-1: Water Quality Monitoring Stations

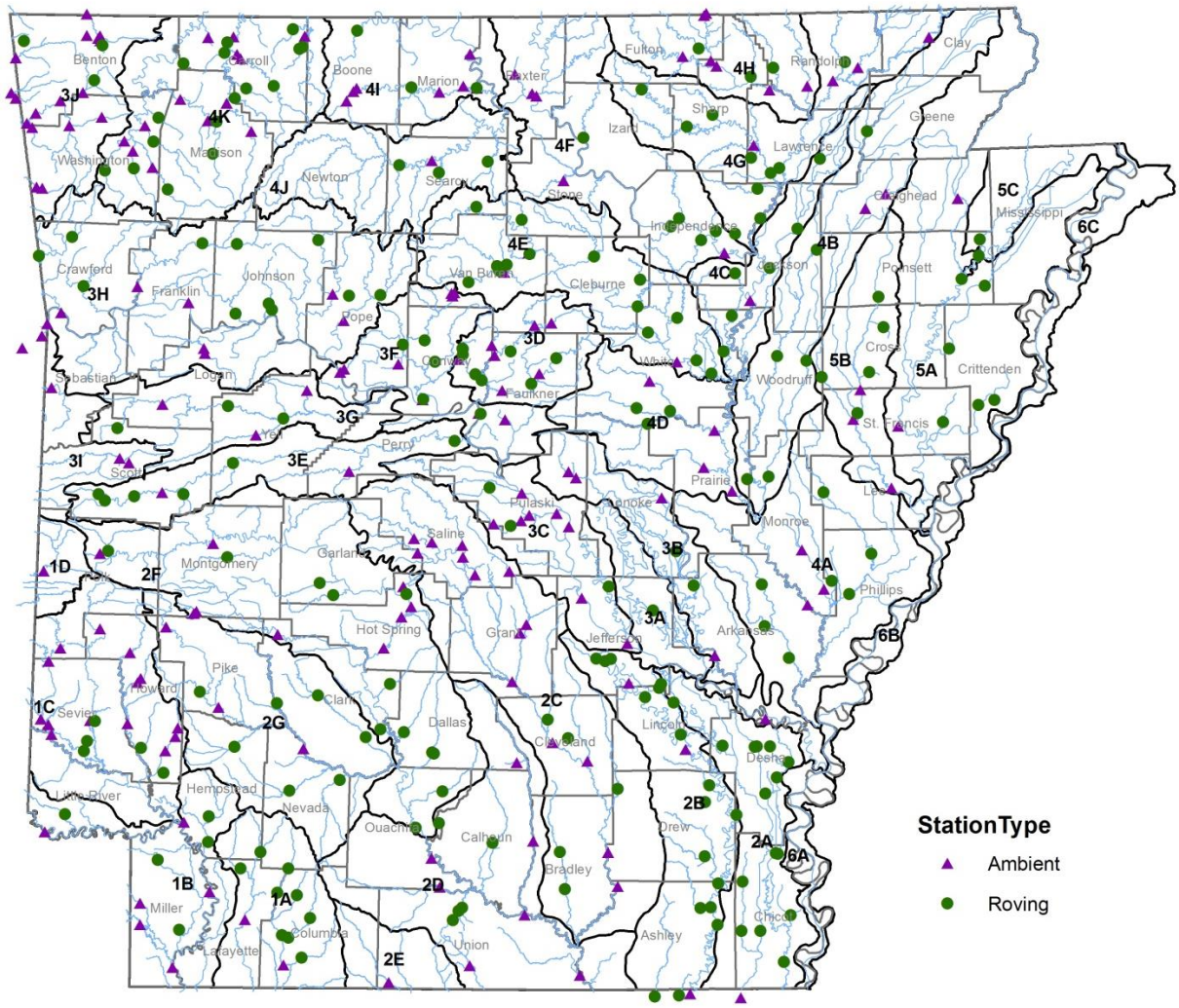

Figure III-2: Special Projects Monitoring Waters

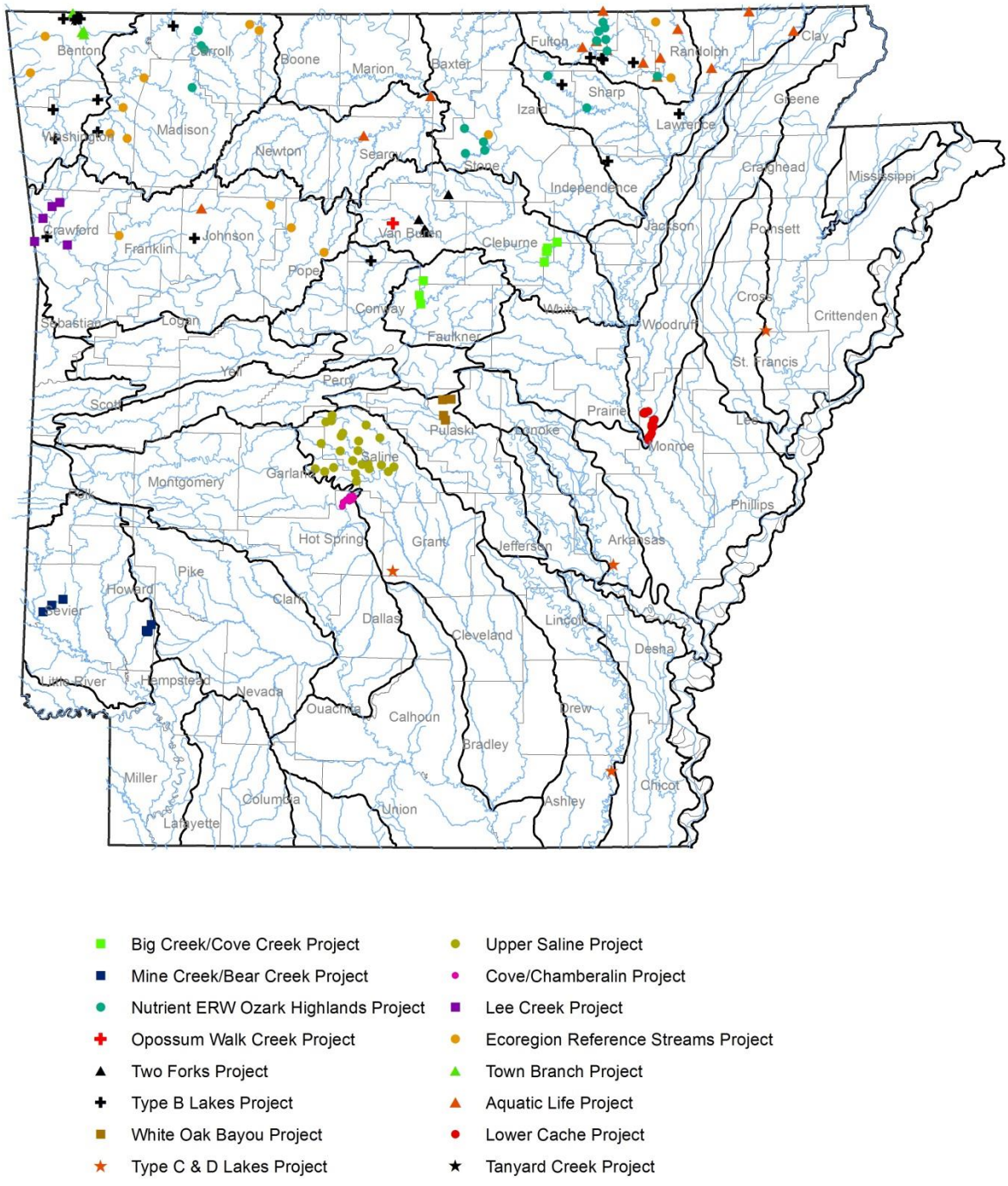

Table III-1: Special Survey Projects (4/1/2008 to 3/31/2013)

Name	Project Year(s)
Type B Reference Lake Identification	2010 to present
White Oak Bayou	2010 to present
Type C and D Reference Lakes Data Collection	2009 to present
Upper Saline Watershed Nutrient Criteria Development and MBMI Pilot Project	2006 - 2010
Cove Creek Physical, Chemical, and Biological Community Assessment	2007 - 2009
Inventory of Biotic Assemblages for Cedar, Cove, Lee, and Webber Creeks	2009-2010
Assessment of Ecoregion Reference Streams	2009-2010
Physical, Chemical, Biological Assessment of Town Branch, Little Sugar, and McKissic Creeks	2009-2010
Aquatic Life Use Attainment Determination of Selected Category 5F Waters Listed on the 2008 List of Impaired Waterbodies	2009-2011
Inventory of Biotic Assemblages for Mine and Bear Creeks	2011
Inventory of Aquatic Species of Big and Cove Creek Natural Areas	2011-2012
Excavation Activities in and near the Opposum Walk Creek, Van Buren County, Arkansas	2012
Lower Cache River Restoration Project	2012-present
Two Forks Restoration- Biological Monitoring Program	2012-present
Stream Restoration of Tanyard Creek in the Little Sugar Watershed	2013-present
Data Collection for the Development of Nutrient Criteria for Extraordinary Resource Waterbodies in the Ozark Highland Ecoregion of Arkansas	2013-present

Bacteriological Program

The bacteriological monitoring network has been substantially modified during the past several years. Because of the incompatibility of current network monitoring strategies and bacteriological sample holding times, a separate sampling scheme was developed. Technicians perform the sampling and analyses in the field to comply with the holding time of the methodology. Bacteriological analyses are performed at the Roving Water Quality Monitoring Network sites and those Ambient Water Quality Monitoring Network sites located in the same region as the current roving sites scheduled for sampling. The sites are sampled bimonthly as well as eight times during the primary contact recreation season to meet assessment criteria. In addition, bacteria samples are collected as part of most of the special survey projects.

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Chapter Two PLAN FOR ACHIEVING COMPREHENSIVE ASSESSMENTS

In Arkansas, the Water Quality Monitoring and Assessment Program has been very progressive and is one of the more intensive programs in the Nation. However, it is primarily limited to chemical monitoring of the water quality using long term, fixed, and specifically targeted stations. Objectives of the program have shifted with changes in types of water quality impacts, but the program has maintained its long-term, historical integrity. The benefits of the program include: 1) the ability to assess the use attainment status of the State's waters; 2) monitor long-term trends in least-disturbed areas; 3) monitor rapidly developing areas of the State; and 4) detect sudden changes in water quality of the State's waters. In addition, the program establishes background (historical) data for parameters that may not be used for assessments, but are necessary in other programmatic functions, e.g., background levels of heavy metals, ecoregion hardness, and suspended solids values for permit implementation procedures.

Water quality networks in Arkansas are statewide in scope; consisting of a group of fixed stations which are sampled monthly and a group of roving stations that are sampled bimonthly. These networks are facilitated by either the regionally located field personnel or personnel from the central office.

The weakest part of Arkansas' assessment program is reliance on chemical water quality data to assess the status of in-stream aquatic life. While some chemical parameters may be more conclusive than others in determining the fisheries designated use support, the direct measure of aquatic life communities is the most precise. The subtle impact of parameters such as minerals, turbidity, and nutrients is difficult to assess using only chemical concentrations. In contrast, other designated uses, e.g., drinking water supply, primary contact recreation, etc., must rely on analyses of water samples directly.

To address this issue, site-specific intensive surveys are conducted to better assess the biological integrity of streams. Data from the water quality monitoring networks are used to identify areas of potential aquatic life impairment. Intensive survey work, including biological assessments, is performed on these designated areas. Examples of such surveys are the implementation of the aquatic life use attainment determination of selected Category 5F waters listed on the 2008 list of impaired waterbodies and fish community sampling of ecoregion reference streams.

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Chapter Three ASSESSMENT METHODOLOGY

Assessment Background

Section 305(b) of the CWA requires states to perform a comprehensive assessment of the state's water quality to be reported to the EPA every two years. The report provides information on the quality of the state's waters; the extent to which state waters provide for the protection and propagation of a balanced population of fish, shellfish, and wildlife, and allow recreational activities in and on the water; and how pollution control measures are leading to water quality standards attainment.

In addition, Section 303(d) of the Clean Water Act requires each state to identify waters where existing pollution controls are not stringent enough to achieve state water quality standards, and establish a priority ranking of these waters; states must develop TMDLs or other corrective actions for the identified waters. TMDLs describe the amount of each pollutant a waterbody can receive and not violate water quality standards. States submit the list of impaired waters (303(d) list) to EPA; EPA has the option to approve, disapprove, or take no action on the list within 30 days of submission.

Current EPA guidance recommends producing an integrated report combining requirements of the Clean Water Act for Sections 305(b) reporting and 303(d) submissions. The combined report is the *Integrated Water Quality Monitoring and Assessment Report* (305(b) Report). The 305(b) Report describes the quality of all of the surface waters of the state that were evaluated for a specified assessment period. This report is prepared using the *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act; TMDL-01-03*, which is supplemented by memoranda regarding development of the 2008, 2010, and 2012 305(b) Reports (EPA 2006, 2009, and 2011, respectively). Arkansas' waters are evaluated in terms of whether their assigned water quality standards and designated uses, as delineated in the Arkansas Pollution Control and Ecology Commission's (APC&EC) Regulation No. 2, are being attained. APC&EC (2011) Regulation No. 2, *Water Quality Standards for Surface Waters of the State of Arkansas*, provides the foundation for the 305(b) Report. APC&EC Regulation No. 2 establishes: water quality standards for surface waters of the State of Arkansas, designated uses associated with those water quality standards, and criteria as well as policies established to protect, maintain, and restore designated uses. Monitoring data are assessed for compliance with APC&EC Regulation No. 2 to determine impairment and designated use support, based upon the frequency, duration, and/or magnitude of water quality standard exceedances.

The Department's assessment methodology constitutes the process that the State of Arkansas employs to determine to which of the five integrated reporting categories a waterbody segment belongs, considering EPA's most current 305(b) reporting and 303(d) listing requirements and guidance. In addition, ADEQ follows the specific requirements of 40 C.F.R. § 130.7-130.8.

Integrated Reporting Categories

The Department bases its water quality and designated use assessments on the ability of a waterbody to support the state's water quality standards (APC&EC 2011). Monitoring segments are the basic unit of record for conducting and reporting water quality assessments. Assessment of monitoring segments is based on individual stream reaches grouped by planning segments and based on watersheds (See "Data Representativeness Consideration" section below).

Upon assessment, stream segments will be categorized as 'support' or 'non-support.' Monitoring segments will be assessed as support if the segment meets all water quality and designated use criteria for which data are available. A monitoring segment will be assessed as non-support if any water quality standard or designated use is not attained. Monitoring segments assessed as non-support, or not attaining water quality standard(s), will be categorized based on the quality and quantity of data available for assessment.

Arkansas' 303(d) list is formatted to reflect the most current EPA guidance (EPA 2011), which suggests placing monitoring segments into one of the following five integrated reporting categories. Category 5 is further subdivided by ADEQ for planning and management purposes.

Category 1. Attaining water quality standards for all designated uses, no use is threatened.

Category 2. Available data and/or information indicate that some, but not all of the designated uses are supported.

Category 3. Insufficient data and information are available to determine if any water quality standards are being attained.

- No data available;
- Data do not meet the spatial and/or temporal requirements outlined in this assessment methodology;
- Waters in which the data are questionable because of Quality Assurance and/or Quality Control (QA/QC) procedures and/or the stream segment requires confirmation of impairment before a TMDL is scheduled.

Category 4. Water quality standards are not attained for one or more designated uses but the development of a TMDL is not required because:

4a. A TMDL has been completed for the listed parameter(s);

4b. Other pollution control requirements are expected to result in the attainment of the water quality standard; or

4c. Non-support of the water quality standard is not caused by a pollutant.

Category 5. The waterbody is impaired, or one or more water quality standards may not be attained. Waterbodies in Category 5 will be prioritized as:

High

- Truly impaired; develop a TMDL or other corrective action(s) for the listed parameter(s).

Medium

- Waters currently not attaining standards, but may be de-listed with future revisions to APC&EC Regulation No. 2, the state water quality standards; or
- Waters which are impaired by point source discharges and future permit restrictions are expected to correct the problem(s).

Low

- Waters currently not attaining one or more water quality standards, but all designated uses are determined to be supported; or
- There is insufficient data to make a scientifically defensible decision concerning designated use attainment; or
- Waters ADEQ assessed as unimpaired, but were assessed as impaired by EPA.

Assessment Process

Data assessment forms the basis of water quality standard and designated use attainment decisions. In order to conduct accurate assessments, evaluated data must reflect current surface water quality conditions. Data types evaluated may include chemical, physical, biological, habitat, bacteriological, or toxicological. These data are compared to current EPA-approved water quality standards for the State of Arkansas (APC&EC 2011).

Data Assembly

Pursuant to 40 C.F.R. § 130.7(b)(5), ADEQ assembles and evaluates all existing and readily available water quality data and information to make water quality and designated use attainment decisions. The primary data used in the assessment of Arkansas' water quality are generated as part of ADEQ's water quality monitoring activities, described in the *State of Arkansas Water Quality Monitoring and Assessment Program, Revision 4* (ADEQ 2011). In addition, with a minimum 30-day response period before the draft 303(d) list is prepared, state and federal agencies and other entities are solicited for water quality data that meets or exceeds ADEQ's or USGS' QA/QC protocols.

ADEQ requests data and information including, but not limited to:

- Closures, restrictions, and/or advisories applicable to swimming, fish consumption, and drinking water
- Violations of Safe Drinking Water Act Standards
- Segment-specific ambient monitoring
- Large-scale probabilistic monitoring designs

- Landscape analysis
- Complaints from the public

The period of record for the 2014 305(b) Report is:

Metals and ammonia toxicity analysis: April 1, 2010 to March 31, 2013
All other analyses: April 1, 2008 to March 31, 2013

Data developed prior to the period of record will be used for long-term trend analysis; and data developed after the period of record will be evaluated during the next assessment period, this includes: water quality data, completed surveys (including completion of the final report), revisions in water quality standards, and the completion of TMDLs.

No new data

If no new water quality data have been generated for a monitoring segment during the current period of record, water quality standard and designated use attainment decisions from the preceding assessment period will be carried forward - unless a substantial change in the water quality standards or the assessment methodology has occurred. If substantial changes in the water quality standards or the assessment methodology has occurred since the preceding assessment period, and those changes would affect previous assessment decisions, the data from the preceding period of record will be re-assessed using the newly-defined water quality standards/methodology to determine current water quality standard attainment.

Absence of data

Water quality standard and designated use attainment assessments can be made for monitoring segments, in the absence of data, if it can be reasonably established that non-monitored segments are similar in watershed characteristic and condition to contiguous monitored segments. ADEQ will consider land use practices, the location of tributaries, impoundments, and other hydrological alterations that could impact the water quality between the station site and the adjacent non-monitored segment. If similarity in watershed characteristic and/or condition cannot be established, contiguous non-monitored segments will remain unassessed.

Water quality standard and designated use non-attainment assessments, in the absence of data, can be made for non-monitored stream segments if it can be reasonably established that the segment is similar with respect to the cause and magnitude of impairment to contiguous monitored waters. However, an evaluation of non-attainment will not be made for non-monitored segments when the source or the origin of the impairment in contiguous monitored waters is unknown, and/or when the magnitude or frequency of the impairment is such that contiguous segments may not be impacted.

Non-monitored segments evaluated using data from monitored segments will be delineated in the Impaired Waterbodies 303(d) list, which can be found at the ADEQ website: http://www.adeq.state.ar.us.

Data Quality considerations

ADEQ maintains a strong commitment to the collection and use of high quality data to support environmental decisions and regulatory programs. ADEQ uses data submitted by various entities in different ways, depending on the QA/QC of the data; however, all data submitted to ADEQ will be evaluated.

For data to be utilized in making water quality standard and designated use attainment decisions, data must comply with the acceptability requirements below. Data that do not meet acceptability requirements below will not be used to determine impairments; however, these data may be used as a screening tool to determine whether additional monitoring is warranted. In order to be used for 305(b) reporting and 303(d) listing assessments, data must:

- Represent actual spatial and temporal annual ambient conditions;
- Be characteristic of the main water mass or distinct hydrologic areas;
- Not be biased toward specific conditions, such as flow, runoff, or season. The exceptions are the analysis of data for those designated uses that require seasonally based water quality data (e.g., primary contact recreation, biological community data, or critical season dissolved oxygen);
- Be reported in standard units recommended in the relevant approved method;
- Have been collected and analyzed under a QA/QC protocol equivalent to or more stringent than that of ADEQ or the USGS. Data collection protocols should either be readily available or accompany the data;
- Be distributed over at least three seasons (to include inter-seasonal variation) and over at least two years (to include temporal variation);
- Not have more than two-thirds of the samples be in one year or one season. The exceptions are the analysis of data for those designated uses that require seasonally based water quality data (e.g., primary contact recreation, biological community data, or critical season dissolved oxygen);
- Have been analyzed pursuant to the rules outlined in the State Environmental Laboratory Certification Program Act, Ark. Code Ann. § 8-2-201 *et seq.* The name and location of the laboratory should either be readily available or accompany the data;
- Be accompanied by precise sample site location(s) data, preferably latitude and longitude in either decimal degrees or degrees, minutes, seconds;
- Be received in either an Excel spreadsheet or compatible format not requiring excessive formatting; and
- Have been collected within the period of record.

Tiered approach to qualifying data

As stated above, data must, at a minimum, have been collected and analyzed under a QA/QC protocol equivalent to or more stringent than that of ADEQ or USGS to be considered for water quality and designated use assessments. Table I describes the defined levels of data quality for each type of data recognized in making support determinations. These tables are adapted from the *Consolidated Assessment and Listing Methodology: Towards a Compendium of Best Practices* guidance document (EPA 2002).

Tier I and Tier II data do not meet acceptability requirements and will be used for screening purposes. Tier III and Tier IV data meet acceptability requirements and will be considered for water quality and designated use assessments.

Table III-2: Hierarchy of Data Quality Levels for Assessment Use

Data Use	Data Level	Technical Component	Spatial & Temporal Coverage	Data Quality
Used for screening purposes	**Tier I**	Water quality monitoring using grab samples	Low spatial and temporal coverage: • Only a few sites within a basin • Quarterly or less frequent sampling with limited period of record (e.g., 1 day) • Limited data during key periods (e.g., critical hydrological regimes) • Data older than five years that are not likely to reflect current conditions	• Low precision and sensitivity • QA/QC protocols are not met or followed, or QA/QC results are inadequate • Methods not documented • Inadequate metadata
	Tier II	One of the following: • Water quality monitoring using grab samples • Rotating basin surveys involving single visits • Verified volunteer data	Moderate spatial and temporal coverage: • Stream basin coverage, several sites within a basin • Quarterly or bimonthly sampling at fixed stations • Sampling only during a key period (e.g., high and/or low flow) • Data that are likely to reflect current conditions, but may be older than five years	• Low precision and sensitivity • QA/QC protocols followed, QA/QC results adequate • Approved SOPs used for field and lab • Adequate metadata*
Used for assessments	**Tier III**	One of the following: • Water quality monitoring using grab samples • Rotating basin surveys involving multiple visits or automatic sampling • Calibrated models (calibration data greater than 5 years old) • Limited use of continuous monitoring instrumentation	Broad spatial and temporal coverage of sites with sufficient frequency and coverage to capture acute events: • Multiple sites within a basin • Quarterly, bimonthly, or monthly sampling during key periods (e.g., critical hydrological regimes), multiple samples at high and low flows. • Period of sampling adequate to monitor for chronic conditions for the specific parameter of concern (sampling over at least 3 seasons) • Data five years old or less	• Moderate precision and sensitivity • QA/QC protocols followed, QA/QC results adequate • Approved SOPs used for field and lab • Adequate metadata*
	Tier IV	Water quality monitoring using composite samples, a series of grab samples, and/or continuous monitoring devices	Broad spatial and temporal (at least 2 years) coverage of fixed sites with sufficient frequency and coverage to capture acute events, chronic conditions, and all other potential chemical/ physical impacts: • Multiple sites within a basin • Bimonthly or monthly sampling during key periods (e.g., critical hydrological regimes), including multiple samples at high and low flows • Continuous monitoring (e.g., use of thermographs, sondes, or similar devices) • Data five years old or less	• High precision and sensitivity • QA/QC protocols followed, QA/QC results adequate • Approved SOPs used for field and lab; samplers well trained • Adequate metadata*

*Adequate metadata includes: time, date, stream name, latitude/longitude, parameters sampled, Chain of Custody from a State certified lab, and a reference to the QA/QC and standard operating procedures (SOPs) used.

Biological integrity data

The following tables describe defined levels of data quality for each type of data recognized in making fisheries use support determinations. These tables are adapted from the *Consolidated Assessment and Listing Methodology: Towards a Compendium of Best Practices* guidance document (EPA 2002). Tables for determining the level of data quality for biological, habitat, chemical/physical, and toxicological data types are presented below. It is important to evaluate data quality when an assessment performed with more than one data type results in conflicting designated use attainment decisions. These tables are included only for fisheries use determinations because it is the only designated use for which multiple data types are currently utilized.

Table III-3: Hierarchy of Bioassessment Approaches for Fisheries Assessment

Data Use	Data Level	Technical Components	Spatial &Temporal Coverage	Data Quality
Used for screening purposes	Tier I	• Visual observation of biota • Reference conditions not used • Simple documentation	Low spatial and temporal coverage: • Extrapolation from other sites • Limited monitoring • No taxa identification	• Low precision and sensitivity • Biologist not required • No biological assessment performed
	Tier II	• One assemblage • Reference condition pre-established by a Biologist at site or in comparable watershed • Biotic index or narrative evaluation of historical records	Moderate spatial and temporal coverage: • Minimum of one site • Limited to a single sampling • Identifications to family level	• Low precision and sensitivity • Biologist may provide correspondence • No biological assessment performed
Used for assessments	Tier III	• One assemblage • Reference condition may be site specific, or composite of sites • Biotic index (interpretation may be supplemented by narrative evaluation of historical records)	Broad spatial and temporal coverage: • May include limited spatial coverage, with multiple sites, for watershed-level assessments • Monitoring of targeted sites during a single season, may be limited sampling for site-specific studies • Identification to lowest possible taxa*	• Moderate precision and sensitivity • Biologist performs survey or provides training • Biologist performs biological assessment
	Tier IV	• Two assemblages • Regional reference conditions used • Biotic index (single dimension or multi metric index)	Broad spatial and temporal coverage: • Broad coverage of sites for either site-specific or watershed assessments • Monitoring during two sampling seasons • Identification to lowest possible taxa* • Conducive to regional assessments using targeted or probabilistic design	• High precision and sensitivity • Biologist performs survey • Biologist performs biological assessment

*****Identification to lowest possible taxa is generally genus for macroinvertebrates and species for fish.

Table III-4: Hierarchy of Habitat Assessment Approaches for Fisheries Assessment

Data Use	Data Level	Technical Components	Spatial & Temporal Coverage	Data Quality
Used for screening purposes	Tier I	• Visual observation of habitat, no true assessment • Documentation of readily discernible land use characteristics that might alter habitat quality • Reference conditions not used	Low spatial and temporal coverage: • Limited spatial coverage • Sporadic visits	• Low precision and sensitivity • Biologist not required
	Tier II	• Visual observation of habitat, simple assessment • Use of land use maps for characterizing watershed condition • Reference conditions pre-established by a biologist	Moderate spatial and temporal coverage: • Limited spatial coverage and/or site-specific studies • Limited to annual visits non-specific to season	• Low precision and sensitivity • Biologist may provide correspondence
Used for assessment	Tier III	• EPA's Rapid Bioassessment Protocol used; bioassessment performed • Data on land use may be compiled and used to supplement assessment • Reference condition may be site specific, or composite of sites	Broad spatial and temporal coverage: • Spatial coverage may be limited sampling or broad and commensurate with biological sampling • Assessment during one season usually the norm • Assessment may be regional or site-specific	• Moderate precision and sensitivity • Biologist performs survey or provides training
	Tier IV	• Habitat assessment based on quantitative measurements of in-stream parameters, channel morphology, and floodplain characteristics; bioassessment performed • Data on land use compiled and used to supplement assessment • Reference conditions used as a basis for assessment	Broad spatial and temporal coverage: • Spatial coverage broad and corresponding with biological sampling • Assessment during one to two (1-2) seasons • Assessment may be regional or site-specific	• High precision and sensitivity • Biologist performs survey

Table III-5: Hierarchy of Chemical/Physical Data for Fisheries Assessment

Data Use	Data Level	Technical Component	Spatial & Temporal Coverage	Data Quality
Used for screening purposes	**Tier I**	Water quality monitoring using grab samples	Low spatial and temporal coverage: • Only a few sites within a basin • Quarterly or less frequent sampling with limited period of record (e.g., 1 day) • Limited data during key periods (e.g., critical hydrological regimes) • Data older than five years that are not likely to reflect current conditions	• Low precision and sensitivity • QA/QC protocols are not followed, or QA/QC results are inadequate • Methods not documented • Inadequate metadata
	Tier II	One of the following: • Water quality monitoring using grab sampling • Rotating basin surveys involving single visits or routine sampling • Verified volunteer data	Moderate spatial and temporal coverage: • Stream basin coverage, several sites within a basin • Quarterly or bimonthly sampling at fixed stations • Sampling during a key period (e.g., high and/or low flow) • Data that are likely to reflect current conditions, but may be older than five years	• Low precision and sensitivity • QA/QC protocols followed, QA/QC results adequate • Approved SOPs used for field and lab • Adequate metadata*
Used for assessment	**Tier III**	One of the following: • Water quality monitoring using grab samples • Rotating basin surveys involving multiple visits or routine sampling • Limited use of continuous monitoring instrumentation • Synthesis of existing or historical information on fish tissue contamination levels	Broad spatial and temporal coverage of sites with sufficient frequency and coverage to capture acute events: • Multiple sites within a basin • Quarterly, bimonthly, or monthly sampling during key periods (e.g., critical hydrological regimes), multiple samples at high and low flows. • Period of sampling adequate to monitor for chronic concerns for the specific parameter of concern (sampling over at least 3 seasons) • Data five 5 years old or less	• Moderate precision and sensitivity • QA/QC protocols followed, QA/QC results adequate • Approved SOPs used for field and lab • Adequate metadata*
	Tier IV	All of the following: • Water quality monitoring using composite samples, series of grab samples, and continuous monitoring devices • Follow-up sediment quality sampling or fish-tissue analyses at site with high probability of contamination	Broad spatial and temporal (at least 2 years) coverage of fixed sites with sufficient frequency and coverage to capture acute events, chronic conditions, and all other potential chemical/ physical impacts: • Multiple sites within a basin • Bimonthly or monthly, including multiple samples at high and low flows • Continuous monitoring (e.g., use of thermographs, sondes, or similar devices) • Data five years old or less	• High precision and sensitivity • QA/QC protocols followed, QA/QC results adequate • Approved SOPs used for field and lab; well-trained personnel • Adequate metadata*

*Adequate metadata includes: time, date, stream name, latitude/longitude, parameters sampled, Chain of Custody from a State certified lab, and a reference to the QA/QC and standard operating procedures (SOPs) used.

Table III-6: Hierarchy of Toxicological Approaches for Fisheries Assessment

Data Use	Data Level	Technical Components	Spatial & Temporal Coverage	Data Quality
Used for screening purposes	**Tier I**	Any one of the following: • Acute or chronic WET* for effluent-dominated channel • Acute ambient water	• One ambient water sample tested in a monitoring segment or site • A minimum of one species	• Low precision and sensitivity • Lab certification unknown
	Tier II	Any one of the following: • Acute or chronic WET for effluent-dominated channel • Acute or chronic ambient water	• Two ambient water samples tested in a monitoring segment or site • Two different dates at least two weeks apart using • A minimum of one species	• Low to moderate precision and sensitivity • Lab certification unknown
Used for assessment	**Tier III**	Any one of the following: • Acute and chronic WET for effluent-dominated channel • Acute or chronic ambient water	• Three ambient water samples tested in a monitoring segment or site • Three different dates at least two weeks apart • A minimum of two species for at least two of the tests	• Moderate precision and sensitivity • Certified Lab
	Tier IV	One of the following: • Acute and chronic WET for effluent-dominated channel • Acute or chronic ambient water	• Four or more (≥4) tests in total, based on samples collected in a monitoring segment or site • Four different dates at least two weeks apart • A minimum of two species for at least two of the tests	• High precision and sensitivity • Certified Lab

*Whole Effluent Toxicity (WET) test.

Data Representativeness Considerations

Spatial and temporal representativeness of data and information must be considered when characterizing annual ambient conditions for a given monitoring segment.

Spatial Distribution

Arkansas is divided by six major river basins: Red River, Ouachita River, Arkansas River, White River, St. Francis River, and Mississippi River. These six river basins are subdivided into 38 water quality planning segments based on hydrological characteristics, anthropogenic activities, geographic characteristics, and other factors. Water quality planning segments are further broken down into approximately 1,600 smaller watersheds, based on discrete hydrological boundaries as defined by the USGS 12-digit hydrologic unit codes.

Assessment of the State's water quality is based on individual stream reaches grouped by planning segments and based on watersheds. Planning segments are congruent with 12-digit hydrologic unit code boundaries in EPA's River Reach File. This allows geographic information system support with designation, characterization, assessment, and management. Sample locations on streams and open waterbodies should be characteristic of the main water mass or distinct hydrologic areas. Data should not be biased toward specific conditions, such as flow, runoff, etc., unless otherwise stated for a specific standard.

Arkansas has approximately 13,490 miles of rivers and streams digitized in the ADEQ Water Base Layer. The ADEQ Water Base Layer was created from the Medium Resolution (1:100,000-scale) NHD. The Medium Resolution NHD includes 2nd, 3rd, 4th and 5th order streams. The NHD combines elements of the DLG and EPA RF3: spatial accuracy and comprehensiveness from the DLG and network relationships, names, and a unique identifier (reach code) for surface water features from RF3. The NHD supersedes DLG and RF3 by incorporating them, not by replacing them. ADEQ continues to primarily use the Medium Resolution NHD for management and planning activities, but supplements the database primarily by utilizing the High Resolution NHD (1:24,000-scale). The High Resolution NHD includes 1st order streams, or intermittent streams and ephemeral drainages that flow only during a rainfall event.

Temporal Distribution

The primary database for the 305(b) Report is generated by ADEQ's Water Quality Monitoring Networks. The networks include the monthly-sampled Ambient Water Quality Monitoring Network (AWQMN) stations and the semi-monthly-sampled Roving Water Quality Monitoring Network (RWQMN). The RWQMN stations are divided into five geographic groups that are sampled on a rotating two-year schedule. Additional data, including but not limited to lakes sampling and special projects, developed by ADEQ will be evaluated and used if the sampling frequency and duration represent actual annual ambient conditions.

At a minimum, samples should be distributed over at least three seasons (to include inter-seasonal variation) and over two years (to include inter-year variation) to be utilized for assessment purposes. No more than two-thirds of the samples should be in one year or one season. The exception to this is analysis of data for those designated uses that require seasonally-based water quality data (e.g., primary contact recreation, biological community data, or critical season dissolved oxygen).

The spatial and temporal representativeness of a grab sample is a qualitative assessment that is addressed primarily in the sample design; through the selection of sampling sites and use of procedures that reflect the project goals and environment being sampled (i.e., monitoring the presence and magnitude of toxicity at specific sites for potential impacts on aquatic life may require specialized parameter sampling). For assessment purposes, grab samples from a given monitoring site are considered representative of the waterbody for that distance upstream and downstream in which there are no significant influences to the waterbody that might cause a change in water quality (e.g., point source discharges, confluence with another stream, etc.) or when there is an absence of contextual information indicating unstable hydrologic conditions, such as: 1) precipitation, 2) streamflow, 3) differing land use patterns, or 4) historic patterns of pollutant concentrations in the monitoring segment.

Instrument Error

Instrument error refers to the combined accuracy and precision of a measuring instrument, or the difference between the value indicated and the actual value. Instrument error must be taken into consideration when conducting water quality standard and use attainment assessments. Water quality data collected from ADEQ's monitoring programs will be evaluated for instrument error, such that values that exceed the numeric water quality standards, but fall within the precision/accuracy error range of the given field instrument, will not be considered an excursion from the water quality standard. See *Arkansas' Water Quality and Compliance Monitoring Quality Assurance Project Plan* (ADEQ 2013) for ADEQ's field instrument performance criteria and for precision/accuracy error range values.

Aggregation of Samples within a Monitoring Segment

Monitoring segments are designed to represent homogenous waters with regard to water quality. ADEQ does not typically establish more than one sampling station in any particular monitoring segment for water quality monitoring programs, but there are occasions where more than one river or stream station with available data (typically chemical/physical data) is either established by ADEQ or another entity. If all monitoring segments were selected to be relatively homogenous, it follows that any independent sample taken from a monitoring segment is representative of conditions within that segment. Since each independent sample is considered to be representative of the monitoring segment, aggregation of independent samples within a monitoring segment to assess water quality and designated use support is appropriate.

If water quality data indicate that a monitoring segment is not homogenous (due to point or non-point source discharges), resulting in conflicting attainment conclusions, the monitoring segment will warrant further examination. The assessor will evaluate data from each station individually to confirm impairments and determine whether or not it would be more appropriate to split a monitoring segment. If data indicate that it is more appropriate to split a segment, the resulting monitoring segment(s) will be re-assessed based on data within the newly-defined boundaries for the applicable period of record.

Data Quantity Considerations

The State of Arkansas has abundant surface water resources; it is estimated that 87,617 stream and river miles, 356,254 acres of publicly-owned lakes, and 800,000 acres of wetlands occur in the state. With this amount of surface water, it is essential that ADEQ develop a monitoring strategy that can provide the information necessary to properly assess these resources so that the physical, chemical, and biological integrity of all Arkansas' waters are protected and enhanced.

ADEQ water quality monitoring goals:

- Identify impaired waters
- Support the evaluation of program effectiveness
- Establish, review, and revise water quality standards
- Establish geographic trends in stream quality
- Refine physical, chemical, and biological assessment tools to improve water quality assessments
- Evaluate water quality and designated use attainment for development of the 305(b) Report
- Characterize the performance of management actions
- Determine appropriate management strategies if designated uses are not being attained
- Assess the effects of point source dischargers upon water quality
- Observe the impact of known nonpoint source pollution trends
- Monitor all waters of the state
- Provide long-term physical, chemical, and biological data, and monitoring of the State's least-disturbed ecoregion reference waterbodies

The Department strives to follow EPA guidance, which encourages the collection of adequate data to make well-grounded attainment determinations (EPA 2005). The use of limited datasets is acceptable to EPA as limited financial, field, and laboratory resources often dictate the number of samples that can be collected and analyzed (EPA 2002). EPA has not established, required, nor encouraged the establishment of rigid minimum sample set size requirements in the water quality standards attainment status determination process (EPA 2005). As such, EPA discourages

the use of target sample sizes applied in an assessment methodology as absolute exclusionary rules (EPA 2005).

However, EPA recognizes that assessments based on larger sample sets are more likely to yield accurate conclusions than assessments based on smaller sample sets, and that it may be appropriate to identify an initial sample size screen, but also provide for a further assessment of sample sets that do not meet the target sample size (EPA 2005).

In an effort to obtain adequate data sets for water quality and designated use attainment decisions, Arkansas' water quality monitoring programs consist of the following surface water networks:

Routine Water Quality Monitoring Activities

Ambient Water Quality Monitoring Network

Water samples are systematically collected monthly and analyzed for the parameters listed in the current *State of Arkansas Water Quality Monitoring and Assessment Program, Revision 4* (ADEQ 2011). Flows are determined at a select number of sites taken either by continuous read gages, wire gages, or staff gages read by USGS or ADEQ personnel. The Ambient Water Quality Monitoring Network provides an overview of water quality conditions and trends at specific sites across the entire state, and generally produces 60 data points per site over a 5-year period.

Roving Water Quality Monitoring Network

Water samples are collected from a section of the state on a semi-monthly basis for a two-year period. The samples are analyzed for the same parameters as the Ambient Water Quality Monitoring stations plus *Escherichia coli* bacteria. The Roving Water Quality Monitoring Network typically produces 12 data points per site. At the end of the two-year period, the sampling effort moves to another section of the state.

Non-Routine Water Quality Monitoring Activities

Intensive Surveys

These surveys are implemented to assess the physical, chemical, and/or biological conditions of a specific waterbody or watershed.

Special Studies

These studies may or may not be limited to a specific geographic area but may have a very specific objective (e.g., fish tissue consumption, TMDL development, specific designated use attainment determination). In addition, these studies may be necessary if an investigation of a spill area or an area experiencing pollution due to a specific cause is identified.

Ambient Toxicity Testing Program

Water samples are collected at least on a quarterly basis in coordination with the EPA's Houston laboratory to determine the presence and magnitude of toxicity. These surveys are limited to specific streams or watersheds.

Probabilistic Monitoring

These studies are implemented to provide a general overview of the conditions of similar waterbodies, such as lakes of similar characteristics, within an ecoregion.

Through the current water quality monitoring programs, ADEQ strives for a minimum of 10 water quality samples to make water quality standard and designated use attainment decisions for physical and chemical parameters. The primary goal of obtaining 10 data points is to protect against the occurrence of false positives, which would result in Type I and Type II errors. A Type I error would result in assessing a monitoring segment as non-support when it is actually fully supporting its standards and uses. A Type II error occurs when a monitoring segment is assessed as support despite not meeting its standards or uses.

For water quality and designated use attainment decisions, data sets containing fewer than 10 ($n<10$) data points will be used as a screening sample. Surface water monitoring segments with fewer than 10 ($n<10$) data points and two or more (≥ 2) exceedances will warrant additional monitoring and may be placed into Category 3 for further investigation; impairments based on this limited dataset may be assessed on a case-by-case basis. Once the sample size reaches 10 data points or greater ($n \geq 10$) the appropriate rate of exceedance will apply.

Lakes

Arkansas has many diverse landforms that are distinctly divided into major ecoregions. This diversity in geology significantly influences the biological, physical, and chemical nature of the lakes within these regions. The lake area to watershed ratio, watershed land use and geology, primary purpose of the lake, lake construction, and lake management all influence a lake's characteristics.

Surveying Arkansas' significant publicly-owned lakes was initiated in 1989. Currently, Arkansas has 79 impoundments identified as significant publicly-owned lakes. These lakes range in size from 60 acres to over 45,000 acres. Sampling and assessment of each of the lakes has occurred generally once every five years. Water samples were collected from various transects of each lake and at different depths and analyzed for routine water quality parameters, as well as chlorophyll *a*, bacteria, metals, plankton, and temperature and dissolved oxygen depth profiles.

In 2008, ADEQ revised its lakes monitoring program in order to generate the data necessary to develop appropriate lake-specific water quality standards and monitoring strategies. The *Beaver Reservoir Water Quality Standards and Assessment Criteria Development* (ADEQ 2005) and the

Water Quality of Potential Reference Lakes in Two Level-III Ecoregions of Arkansas (ADEQ 2006) projects have been completed, and two additional studies have been initiated to help accomplish this task. Both studies are still in progress with one focusing on data collection of type C and D reference lakes for development of water quality standards and the other focusing on water quality of potential reference lakes for type B lakes in Arkansas.

The completion of the *Beaver Reservoir Water Quality Standards and Assessment Criteria Development* (ADEQ 2005) project has led to the creation of site specific numeric nutrient criteria for Beaver Lake. ADEQ is moving forward with its Nutrient Criteria Development Plan, with the intention of adapting the methodology, tools, and procedures derived from the Beaver Lake study to establish numeric nutrient criteria (chlorophyll *a* and transparency) for additional lakes around the state. The goal of this project is to develop nutrient criteria that fully recognize localized conditions and protect the specific designated uses of these waterbodies. Lake classification and adoption of this classification into the state's water quality standards must also be completed.

Once appropriate water quality standards and criteria have been adopted into APC&EC Regulation No. 2, and compiled into the state's overall monitoring strategy plan, an assessment methodology will be developed to address lake water quality standards. Until this is accomplished, only those water quality standards currently listed in APC&EC Regulation No. 2 can be assessed.

Impairment Source Determination

For any monitored surface water segment where a water quality standard has been evaluated as non-support, the source(s) of impairment will be identified using all available information (field observation, land use maps, point source location, nonpoint source assessment reports, special studies, and knowledge of field personnel familiar with the waterbody) and best professional judgment.

Water Quality Standard Assessment Methodology

Water quality standards are comprised of: 1) an antidegradation policy, 2) designated uses, and 3) narrative and numeric criteria, which work in concert to protect water quality.

Antidegradation

An antidegradation policy is a requirement of the federal Clean Water Act, which is designed to prevent or limit future degradation of the nation's waters. The APC&EC's Regulation No. 2 contains an antidegradation policy that applies to all surface waters of the state. Existing instream uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. Arkansas' Outstanding Resource Waters, as delineated in APC&EC Reg. 2.203, are to be protected and maintained for those beneficial uses and water quality for

which the outstanding resource designation was granted. These waterbodies will be listed as non-support if the chemical, physical, and/or biological characteristics for which the waterbody was designated have been determined to be impaired or absent, as defined by the following assessment criteria. Per APC&EC Reg. 2.204, in those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with Section 310 of the Clean Water Act, 33 U.S.C. § 1326.

Designated Uses

Table III-7: Designated Uses and Corresponding Parameters

Designated Use	Parameters
Fisheries (Reg. 2.302(F))	Biological Integrity (macroinvertebrate and/or fish) data.
Domestic Water Supply (Reg. 2.302(G))	Compounds that are not easily removed by drinking water treatment facilities; compounds with established secondary maximum contaminant levels (e.g., chlorides, sulfates, & total dissolved solids).
Primary and Secondary Contact (Reg. 2.302(D) & (E))	*Escherichia coli* (*E. coli*) (Fecal Coliform bacteria data will be used in the absence of *E. coli* data).
Industrial and Agricultural Water Supply (Reg. 2.302(H) and (I)	Compounds which interfere with industrial uses, such as cooling water or the water used in certain manufacturing processes; or waters unsuitable for livestock watering or crop irrigation; most often includes chlorides, sulfates, & total dissolved solids.

Narrative and Numeric Criteria

Narrative Criteria

APC&EC Regulation No. 2 contains narrative criteria (written descriptions) that apply to all waters of the state and are used to evaluate support of applicable uses. Narrative criteria include general descriptions, such as the existence of nuisance species, taste- and odor-producing substances, visible globules on surface waters, and toxins. Narrative criteria are evaluated by

using screening levels, if they are available, as well as other information, including water quality studies, existence of fish kills or contaminant spills, and photographic evidence. Waters will be assessed as non-support when a violation of any narrative water quality standard has been verified by ADEQ. In addition, waters will be assessed as non-support if any associated numeric standard of a narrative criterion is violated pursuant to this assessment methodology.

Numeric Criteria

Numeric criteria are values established in APC&EC Regulation No. 2 that provide a quantitative basis for evaluating designated use support and for managing point and nonpoint loadings in Arkansas' surface waters. Procedures for assessing instream water quality against numerical criteria are outlined in the "Specific Standards" section below.

General Standards

Biological Integrity

This section establishes the protocol for assessment of biological integrity for Arkansas' surface waters, per APC&EC Reg. 2.405:

> For all waters with specific fisheries use designated in Appendix A, aquatic biota should not be impacted. Aquatic biota should be representative of streams that have the ability to support the designated fishery, taking into consideration the seasonal and natural variability of the aquatic biota community under naturally varying habitat and hydrological conditions; the technical and economic feasibility of the options available to address the relevant conditions; and other factors. An aquatic biota assessment should compare biota communities that are similar in variety and abundance, based upon either an in-stream study including an upstream and downstream comparison, a comparison to a reference waterbody within the same ecoregion, or a comparison to community characteristics from a composite of reference waters. The reference stream should have similar habitat and hydrologic conditions. Such a comparison should consider the seasonal and natural variability of the aquatic biota community. It is the responsibility of the Department to collect and evaluate the data for an aquatic biota assessment and such data will not be used to develop or impose permit limits.

Assessment Methodology for Biological Integrity

The fisheries designated use is evaluated based on the biological integrity (macroinvertebrate and/or fish communities) of the waterbody, where biological data exist to make an assessment. At a minimum, biological and chemical/physical data must have been collected over two seasons (preferably a minimum of 2 years) using methods outlined in a Quality Assurance Project Plan with requirements equal to or more stringent than that of ADEQ or USGS (See the "Biological

Integrity Data" section above for additional information on data requirements). Results from acute and chronic toxicity tests of vertebrates and invertebrates will also be evaluated, when available, but are not required to make a use determination.

Macroinvertebrate Assemblage Analysis

Matrices set forth in *Rapid Bioassessment Protocols for Use in Stream and Rivers* (Barbour 1999) are used in analysis of macroinvertebrate assemblage samples. Each site will have a Rapid Bioassessment score derived from multi-metric analysis, which include: 1) Taxa Richness, 2) Ephemeroptera-Plecoptera-Tricoptera Index (EPT), 3) Hilsenhoff Biotic Index (HBI), 4) Percent Dominant Contribution. See *Arkansas' Water Quality and Compliance Monitoring Quality Assurance Project Plan* (ADEQ 2013) at the ADEQ website: http://adeq.state.ar.us for more information.

A total score consisting of macroinvertebrate assemblage analysis is calculated for each sample and sample site, as outlined in the following table.

Table III-8: Macroinvertebrate Community Structure Analysis

Attainment Status	% Comparable Estimate	Attribute
Comparable to reference	≥90%	Expected to support the community structure present at the reference site
Supporting	75-88%	Should support a diverse community similar to the reference site
Partially Supporting	60-73%	Difference in the biological community may be due to the poor habitat. Comparisons may be difficult
Non-supporting	<58%	Should not be expected to support the community present at the reference site

Fish Assemblage Analysis

ADEQ's Community Structure Index (CSI) will be used in the analysis of fish assemblages. The CSI was established utilizing information from the Department's ecoregion survey (ADPC&E 1987) and supplemented with data from additional least-disturbed streams identified by ADEQ

personnel. A group of Arkansas ichthyologists reviewed the data and utilizing the prevailing deviations in the data set and employing best professional judgment, established the current metric scores and similarity ranking categories. Ecoregion specific metrics for watersheds (>10mi^2) outlined in *Arkansas' Water Quality and Compliance Monitoring Quality Assurance Project Plan* (ADEQ 2013), available at the ADEQ website: http://adeq.state.ar.us, will be calculated for each site and total scores will be evaluated and assessed as follows:

Table III-9: Fish Community Structure Index (CSI)

Ecoregion(s)	Total Score	Category	Attribute
Ozark Highlands, Boston Mountains, Ouachita Mountains, AR River Valley, Typical Gulf Coastal, and Spring-Influenced Gulf Coastal	25-32	Mostly Similar	Comparable to the best situation to be expected. Balanced trophic structure and optimum community structure present.
	24-17	Generally Similar	Community structure less than expected. Taxa richness lower than expected. Some intolerant taxa loss. Percent contribution of tolerant forms may increase.
	16-9	Somewhat Similar	Obvious decline in taxa richness due to the loss of tolerant forms. Loss of Key and Indicator taxa.
	0-8	Not Similar	Few taxa present and normally dominated by one or two taxa.
Channel Altered Delta and Least-Disturbed Delta	22-28	Mostly Similar	Comparable to the best situation to be expected. Balanced trophic structure and optimum community structure present.
	21-15	Generally Similar	Community structure less than expected. Taxa richness lower than expected. Some intolerant taxa loss. Percent contribution of tolerant forms may increase.
	14-8	Somewhat Similar	Obvious decline in taxa richness due to the loss of tolerant forms. Loss of Key and Indicator taxa.
	0-8	Not Similar	Few taxa present and normally dominated by one or two taxa.

Results from fish and macroinvertebrate assemblage analysis, along with evaluation of chemical and physical data, will be used to determine support or non-support of the fisheries designated use.

Table III-10: Biological Assemblage Assessment Determination

Data Type	Support	Non-Support
Macroinvertebrate Community Data Available	Macroinvertebrate community structure analysis indicates comparable to reference or supporting	Macroinvertebrate community structure analysis indicates partially supporting or non-supporting*
Fish Community Data Available	Community Structure Index score is either mostly or generally similar; general presence of sensitive and indicator species	Community Structure Index score is either somewhat or not similar; absence of sensitive and indicator species*

* The fisheries designated use may be assessed as support, despite an initial evaluation of non-support, if it is demonstrated that the non-support assessment is due to unrepresentative biological community data and not an environmental factor (low dissolved oxygen, low pH, toxicity); based on acceptable variances in ecoregion assemblage structures. Under certain conditions, biological community data can be skewed due to an unrepresentative sample, which includes but is not limited to:

- Collection of irruptive species (e.g., large percentage of young-of-year in an isolated area that is not representative of the entire reach), which could trigger an inaccurate 'non-support' determination.
- Transitional areas between ecoregions.

Best professional judgment is used in these circumstances to prevent the inappropriate listing of waters. If a support determination is made due to an unrepresentative sample, it will be explained in detail in the 305(b) Report and supporting documentation will be provided.

Listing Methodology

Stream and river monitoring segments will be listed as non-support when one or both of the evaluated biological communities (macroinvertebrates and/or fish) indicate perturbation/degradation, or when one or both of the toxicological test organisms (vertebrate and/or invertebrate) fail more than one acute or chronic toxicity test in a three year period.

Delisting Methodology

Stream and river monitoring segments will be listed as support when evaluated biological communities (macroinvertebrates and/or fish) do not indicate perturbation/degradation, and when there have been no acute or chronic toxicity test failures in a three year period.

Table III-11: Fisheries Designated Use Listing Protocol

Type of Data Present	Evaluation Result		Final Assessment	303 (d) Listing Category
	Fish Community	Macroinvertebrate Community		
Fish Community and/or Macroinvertebrate Community	S	S	FS	1
	S	NS	NS	5
	NS	S	NS	5
	NS	NS	NS	5
At Least One Biological Community	S	NA	FS	1
	NA	S	FS	1
	S	S	FS	1
	NA	NA	UA	3
	NS	NA	NS	5
	NA	NS	NS	5

S = Supporting NS = Non-Supporting FS = Fully Supporting NA = No Available Data
UA = Unassessed Listing Methodology

Per APC&EC Reg. 2.501 (2011), unless otherwise indicated, the following specific standards shall apply to all surface waters of the state at all times except during periods when flows are less than the applicable critical flow. Streams with regulated flow will be addressed on a case-by-case basis to maintain designated instream uses. These standards apply outside the applicable mixing zone.

Unless otherwise stated for a specific standard, the number of samples needed for determination of non-support is calculated using the total number of samples collected, rounded up to the nearest 'tens' place (10, 20, 30…), then multiplied by the applicable percent exceedance criterion. For example, given a sample size of 18 and a greater than 10 percent exceedance rate, a total of 3 exceedances are needed for the determination of non-support (18 samples is rounded up to 20, then multiplied by the 10% exceedance rate, which equals 2 samples; thus if 3 or more samples exceed the criterion, a non-support evaluation is assigned).

The rounding method used by the Department has been shown to be no less stringent than other methods approved by EPA for protecting water quality. This method allows the Department to assess the data in the same way as the samples are collected - as whole samples. Not using the rounding method would result in the assessment of partial samples, which does not reflect actual field sampling procedures.

Refer to Tables III-16 through III-23 for ecoregion based assessment criteria, Tables III-24 through III-29 for assessment criteria for Arkansas' major rivers, and Table III-30 for assessment criteria for Arkansas' lakes.

Temperature

This section establishes the protocol for determining impairment due to increases in temperature of Arkansas' surface waters, per APC&EC Reg. 2.502:

> Heat shall not be added to any waterbody in excess of the amount that will elevate the natural temperature, outside the mixing zone, by more than 5°F (2.8°C) based upon the monthly average of the maximum daily temperatures measured at mid-depth or three feet (whichever is less) in streams, lakes or reservoirs. Maximum allowable temperatures from man-induced causes in the following waters are:

Waterbodies	Limit °C (°F)
Streams	
Ozark Highlands	29 (84.2)
Boston Mountains	31 (87.8)
Arkansas River Valley	31 (87.8)
Ouachita Mountains	30 (86.0)
Springwater-influenced Gulf Coastal	30 (86.0)
Typical Gulf Coastal	30 (86.0)
Least-Altered Delta	30 (86.0)
Channel-Altered Delta	32 (89.6)
White River (Dam #1 to mouth)	32 (89.6)
St. Francis River	32 (89.6)
Mississippi River	32 (89.6)
Arkansas River	32 (89.6)
Ouachita River (L. Missouri to Louisiana state line)	32 (89.6)
Red River	32 (89.6)
Lakes and Reservoirs	32 (89.6)
Trout waters	20 (68.0)

Temperature requirements shall not apply to off-stream privately-owned reservoirs constructed primarily for industrial cooling purposes and financed in whole or in part by the entity or successor entity using the lake for cooling purposes.

Assessment Methodology for Temperature

Listing Methodology:

Stream and river monitoring segments will be listed as non-support when ADEQ determines that more than 10 percent of the total samples (for the period of record) exceeding the applicable temperature standard listed in APC&EC Reg. 2.502.

Lakes and reservoirs will be listed as non-support when ADEQ determines that more than 10 percent of the total samples (for the period of record) exceeding the temperature standard of

32°C (89.6°F). Samples collected approximately one meter below the surface of the water will be used to make lake and reservoir attainment decisions.

Delisting Methodology:

Stream and river monitoring segments will be listed as support when ADEQ determines that 10 percent or less of the total samples (for the period of record) exceeding the applicable temperature standard listed in APC&EC Reg. 2.502.

Lakes and reservoirs will be listed as support when ADEQ determines that 10 percent or less of the total samples for the period of record (collected approximately 1 meter below the surface of the water) exceeding the temperature standard of 32°C (89.6°F).

Turbidity

As established by APC&EC Reg. 2.503, turbidity will be evaluated for both base flows and all flows values. Base flows values represent the critical season, June 1 to October 31, when rainfall is infrequent; all flows values take into account samples collected throughout the year (including samples collected between June 1 to October 31). APC&EC Reg. 2.503 states:

> There shall be no distinctly visible increase in turbidity of receiving waters attributable to discharges or instream activities. The values below should not be exceeded during base flow (June to October) in more than 20% of samples. The values below should not be exceeded during all flows in more than 25% of samples taken in not less than 24 monthly samples.

Waterbodies	Base Flows Values (NTU)	All flows Values (NTU)
Streams		
Ozark Highlands	10	17
Boston Mountains	10	19
Arkansas River Valley	21	40
Ouachita Mountains	10	18
Springwater-influenced Gulf Coastal	21	32
Typical Gulf Coastal	21	32
Least-Altered Delta	45	84
Channel-Altered Delta	75	250
Arkansas River	50	52
Mississippi River	50	75
Red River	50	150
St. Francis River	75	100
Trout	10	15
Lakes and Reservoirs	25	45

Assessment Methodology for Turbidity

Base Flows Values

Base flow values apply to data collected between June 1 and October 31.

Listing Methodology:

Stream and river monitoring segments will be listed as non-support when more than 20 percent of the total samples in the period of record exceed the applicable base flows values, listed in APC&EC Reg. 2.503.

Lakes and reservoirs will be listed as non-support when more than 20 percent of the total samples for the period of record (collected approximately 1 meter below the surface of the water) exceed the turbidity standard of 25 NTU.

Delisting Methodology:

Stream and river monitoring segments will be listed as support when 20 percent or less of the total samples in the period of record exceed the applicable base flows values, listed in APC&EC Reg. 2.503.

Lakes and reservoirs will be listed as support when 20 percent or less of the total samples for the period of record (collected approximately 1 meter below the surface of the water) exceed the turbidity standard of 25 NTU.

All Flows Values

All flows values apply to data collected throughout the year, including data collected between June 1 and October 31.

Listing Methodology:

Stream and river monitoring segments will be listed as non-support when more than 25 percent of the total samples (sample set not to be fewer than 24 data points) for the period of record exceed the applicable all flows values, listed in APC&EC Reg. 2.503.

Lakes and reservoirs will be listed as non-support when more than 25 percent of the total samples (sample set not to be fewer than 24 data points) for the period of record (collected approximately 1 meter below the surface of the water) exceed the turbidity standard of 45 NTU.

Delisting Methodology:

Stream and river monitoring segments will be listed as support when 25 percent or less of the total samples (sample set not to be fewer than 24 data points) for the period of record exceed the applicable all flows values listed in APC&EC Reg. 2.503.

Lakes and reservoirs will be listed as support when 25 percent or less of the total samples (sample set not to be fewer than 24 data points) for the period of record (collected approximately 1 meter below the surface of the water) exceed the turbidity standard of 45 NTU.

If a monitoring segment is assessed as not meeting either the base flows or all flows values, or both, it will be listed as non-support for turbidity.

pH

This section establishes the protocol for determining impairment due to fluctuations in pH, per APC&EC Reg. 2.504:

> As a result of waste discharges, the pH of water in streams or lakes must not fluctuate in excess of 1.0 unit over a period of 24 hours and pH values shall not be below 6.0 or above 9.0.

Assessment Methodology for pH

Listing Methodology:

Stream and river monitoring segments will be listed as non-support when ADEQ determines that anthropogenic activities result in a variance from the pH standard (between 6.0 and 9.0 standard units) in more than 10 percent of the total samples for the period of record.

Lakes and reservoirs will be listed as non-support when ADEQ determines that anthropogenic activities result in a variance from the pH standard (between 6.0 and 9.0 standard units) in more than 10 percent of the total samples for the period of record. Samples collected approximately one meter below the surface of the water will be used to make lake and reservoir attainment decisions.

If the pH value for lakes, rivers, or streams varies from the pH standard due to natural conditions, (i.e., anthropogenic activities cannot be identified by ADEQ as the source) the waterbody will not be listed as non-support, but will be noted in the 305(b) Report.

Delisting Methodology:

Stream and river monitoring segments will be listed as support when ADEQ determines that anthropogenic activities result in variance from the pH standard (between 6.0 and 9.0 standard units) in 10 percent or less of the total samples for the period of record.

Lakes and reservoirs will be listed as support when ADEQ determines that anthropogenic activities result in variance from the pH standard (between 6.0 and 9.0 standard units) in 10 percent or less of the total samples (collected approximately 1 meter below the surface of the water) for the period of record.

Dissolved Oxygen

This section establishes the protocol for determining impairment due to variations in dissolved oxygen, per APC&EC Reg. 2.505:

> In streams with watersheds of less than 10 mi^2, it is assumed that insufficient water exists to support a fishery during the critical season. During this time, a D.O. standard of 2 mg/l will apply to prevent nuisance conditions. However, field verification is required in areas suspected of having significant groundwater flows or enduring pools which may support unique aquatic biota. In such waters the critical season standard for the next size category of stream shall apply.

All streams with watersheds of less than 10 mi^2 are expected to support a fishery during the primary season when stream flows, including discharges, equal or exceed 1 cubic foot per second (CFS); however, when site verification indicates that a fishery exists at flows below 1 CFS, such fishery will be protected by the primary standard.

Also, in these streams with watersheds of less than 10 mi^2, where waste discharges are 1 CFS or more, they are assumed to provide sufficient water to support a perennial fishery and, therefore, must meet the dissolved oxygen standards of the next size category of streams.

For purposes of determining effluent discharge limits, the following conditions shall apply:

(A) The primary season dissolved oxygen standard is to be met at a water temperature of 22°C (71.5°F) and at the minimum stream flow for that season. At water temperatures of 10°C (50°F), the dissolved oxygen standard is 6.5 mg/l.

(B) During March, April and May, when background stream flows are 15 CFS or higher, the D.O. standard is 6.5 mg/l in all areas except the Delta Ecoregion, where the primary season D.O. standard will remain at 5 mg/l.

(C) The critical season dissolved oxygen standard is to be met at maximum allowable water temperatures and at Q7-10 flows. However, when water temperatures exceed 22°C (71.6°F), a 1 mg/l diurnal depression will be allowed below the applicable critical standard for no more than 8 hours during any 24-hour period.

The following dissolved oxygen standards must be met:

Waterbodies	**Limit (mg/l)**	
Streams	Primary	Critical
Ozark Highlands		
<10 mi^2 watershed	6	2
10 to 100 mi^2	6	5
>100 mi^2 watershed	6	6
Boston Mountains		
<10 mi^2 watershed	6	2
>10 mi^2 watershed	6	6
Arkansas River Valley		
<10 mi^2 watershed	5	2
10 mi^2 to 150 mi^2	5	3
151 mi^2 to 400 mi^2	5	4
>400 mi^2 watershed	5	5
Ouachita Mountains		
<10 mi^2 watershed	6	2
>10 mi^2 watershed	6	6
Typical Gulf Coastal		
<10 mi^2 watershed	5	2
10 mi^2 to 500 mi^2	5	3
>500 mi^2 watershed	5	5
Springwater-influenced Gulf Coastal		
All size watersheds	6	5
Delta (least-altered and channel altered)		
<10 mi^2 watershed	5	2
10 mi^2 to 100 mi^2	5	3
>100 mi^2 watershed	5	5
Trout Waters		
All size watersheds	6	6

Lakes and Reservoirs

Specific dissolved oxygen standards for lakes and reservoirs shall be 5 mg/l. Effluent limits for oxygen-demanding discharges into impounded waters are promulgated in Regulation #6 of the Arkansas Pollution Control and Ecology Commission. However, the Commission may, after full satisfaction of the intergovernmental coordination and public participation provisions of the

> state's continuing planning process, establish alternative limits for dissolved oxygen in lakes and reservoirs where studies and other relevant information can demonstrate that predominant ecosystem conditions may be more accurately reflected by such alternate limits; provided that these limits shall be compatible with all designated beneficial uses of named lakes and reservoirs.

Assessment Methodology for Dissolved Oxygen

Dissolved oxygen standards are divided into two categories:

1) Primary season: Water temperatures are at or below 22°C.
2) Critical season: Water temperatures exceed 22°C.

Listing Methodology:

Stream and river monitoring segments will be listed as non-support when more than 10 percent of the total samples in the period of record fail to meet the minimum applicable dissolved oxygen standard listed in APC&EC Reg. 2.505.

Lakes and reservoirs will be listed as non-support when more than 10 percent of the samples in the period of record falls below 5 mg/L. Samples collected approximately one meter below the surface of the water will be used to make lake and reservoir attainment decisions.

Delisting Methodology:

Stream and river monitoring segments will be listed as support when 10 percent or less of the total samples in the period of record fail to meet the minimum applicable dissolved oxygen standard listed in APC&EC Reg. 2.505.

Lakes and reservoirs will be listed as support when 10 percent or less of the total samples (collected approximately 1 meter below the surface of the water) in the period of record do not fall below 5 mg/L.

Radioactivity

This section establishes the protocol for determining impairment due to exceedance of limits for Radioactivity, per APC&EC Reg. 2.506:

> The Rules and Regulations for the Control of Sources of Ionizing Radiation of the Division of Radiological Health, Arkansas Department of Health, limits the maximum permissible levels of radiation that may be present in effluents to surface waters in uncontrollable areas. These limits shall apply for the purposes of these standards, except that in no case shall the levels of dissolved radium-226 and strontium-90 exceed 3 and 10 picocuries/liter, respectively, in the receiving

water after mixing, nor shall the gross beta concentration exceed 1000 picocuries/liter.

Assessment Methodology for Radioactivity

Listing Methodology:

Stream and river monitoring segments will be listed as non-support when a single sample in the period of record exceeds the concentration of 3 picocuries/Liter for radium-226, or the concentration of 10 picocuries/Liter for strontium-90.

Lakes and reservoirs will be listed as non-support when a single sample in the period of record exceeds the concentration of 3 picocuries/Liter for radium-226, or the concentration of 10 picocuries/Liter for strontium-90.

Delisting Methodology:

Stream and river monitoring segments will be listed as support when a no samples in the period of record exceed the concentration of 3 picocuries/Liter for radium-226, or the concentration of 10 picocuries/Liter for strontium-90.

Lakes and reservoirs will be listed as support when no samples in the period of record exceed the concentration of 3 picocuries/Liter for radium-226, or the concentration of 10 picocuries/Liter for strontium-90.

Bacteria

This section establishes the protocol for assessment of ambient waters, primary and secondary contact recreation designated uses will be evaluated using *Escherichia coli* (*E. coli*) as outlined in Reg. 2.507:

> The Arkansas Department of Health has the responsibility of approving or disapproving surface waters for public water supply and of approving or disapproving the suitability of specifically delineated outdoor bathing places for body contact recreation, and it has issued rules and regulations pertaining to such uses.
>
> For the purposes of this regulation, all streams with watersheds less than 10 mi^2 shall not be designated for primary contact unless and until site verification indicates that such use is attainable. No mixing zones are allowed for discharges of bacteria.
>
> (A) Primary Contact Waters - Between May 1 and September 30, the maximum allowable fecal coliform criteria, calculated as a geometric

mean, shall be 200 col/100 ml and the single-sample maximum shall be 400 col/100 ml. Alternatively, in these waters, the maximum allowable *Escherichia coli* criteria, calculated as a geometric mean, shall be 126 col/100 ml and the single-sample maximum shall be 298 col/100 ml in lakes, reservoirs, Extraordinary Resource Waters ("ERW"), Ecologically Sensitive Waterbodies ("ESW"), and Natural and Scenic Waterways ("NSW") or 410 col/100 ml in all other rivers and streams. During the remainder of the calendar year, these criteria may be exceeded, but at no time shall these counts exceed the level necessary to support secondary contact recreation (below).

(B) Secondary Contact Waters – The maximum allowable fecal coliform criteria, calculated as a geometric mean, shall be 1000 col/100 ml and the single-sample maximum shall be 2000 col/100 ml. Alternatively, the maximum allowable *E. coli* criteria, calculated as a geometric mean, shall be 630 col/100 ml and the single-sample maximum shall be 1490 col/100 ml for lakes, reservoirs, ERWs, ESWs, and NSWs or 2050 col/100 ml for all other rivers and streams.

(C) For assessment of ambient waters as impaired by bacteria, the above listed applicable values for *E. coli* shall not be exceeded in more than 25% of samples in no less than eight samples taken during the primary contact season or during the secondary contact season.

Assessment Methodology for Bacteria

In the absence of *Escherichia coli* (*E. coli*) bacteria data, fecal coliform bacteria data will be utilized. For the assessment of ambient waters, the geometric mean is calculated on a minimum of 5 samples spaced evenly and within a 30-day period during either contact season. For all other standards, as per APC&EC Reg. 2.507, at least eight data points must be taken during the primary contact season (May 1 through September 30) or during the secondary contact season (October 1 through April 30) of contiguous months to make an evaluation.

In either case, the most recent complete dataset (as described above) will be utilized for assessment evaluation.

Listing Methodology:

Stream and river monitoring segments will be listed as non-support when the geometric mean for the applicable contact season is exceeded, or when the applicable standard is exceeded in greater than 25 percent of the samples collected during contiguous months within the applicable contact season (as described above).

Delisting Methodology:

Stream and river monitoring segments will be listed as support when the geometric mean for the applicable contact season is not exceeded, or when the applicable standard is exceeded in 25 percent or less of the samples collected during contiguous months within the applicable contact season (as described above).

Table III-12: Statewide Bacteria Assessment Criteria

		STANDARD	SUPPORT	NON-SUPPORT
		Escherichia coli		
PRIMIMARY CONTACT	ERW, ESW, and NSW Waters, Lakes, and Reservoirs	298 col/100 mL (May-Sept)	≤ 25% exceedance	>25% exceedance
		GM 126 col/100 mL	≤ standard	> standard
	All other waters	410 col/100 mL (May-Sept)	≤ 25% exceedance	>25% exceedance
SECONDARY CONTACT	ERW, ESW, and NSW Waters, Lakes, and Reservoirs	1490 col/100 mL (anytime)	≤ 25% exceedance	>25% exceedance
		GM 630 col/100 mL	≤ standard	> standard
	All other waters	2050 col/100 mL (anytime)	≤ 25% exceedance	>25% exceedance
		Fecal Coliform		
PRIMARY CONTACT	All Waters including ERW, ESW, NSW, Lakes, and Reservoirs	400 col/100 mL (May-Sept)	≤ 25% exceedance	>25% exceedance
		GM 200 col/100 mL	≤ standard	> standard
SECONDARY CONTACT	All Waters including ERW, ESW, NSW, Lakes, and Reservoirs	2000 col/100 mL (anytime)	≤ 25% exceedance	>25% exceedance
		GM 1000 col/100 mL	≤ standard	> standard

ERW: Extraordinary Resource Water **NSW**: Natural and Scenic Waterway **ESW**: Ecologically Sensitive Water **GM**: Geometric Mean

Toxic Substances

This section establishes the protocol for assessing impairment due to exceedance of limits for toxic substances, per APC&EC Reg. 2.508:

Toxic substances shall not be present in receiving waters, after mixing, in such quantities as to be toxic to human, animal, plant or aquatic life or to interfere with the normal propagation, growth and survival of the indigenous aquatic biota. Acute toxicity standards may not be exceeded outside the zone of initial dilution. Within the ZID acute toxicity standards may be exceeded but acute toxicity may not occur. Chronic toxicity and chronic numeric toxicity standards shall not be exceeded at, or beyond, the edge of the mixing zone. Permitting of all toxic substances shall be in accordance with the toxic implementation strategy found in the Continuing Planning Process. For non-permit issues and as a guideline for evaluating toxic substances not listed in the following tables, the Department may consider No Observed Effect Concentrations (NOECs) or other literature values as appropriate. For the substances listed below, the following standards shall apply:

ALL WATERBODIES - AQUATIC LIFE CRITERIA

Substance	**Acute Values (µg/L)**	**Chronic Values (µg/L) (24-hr Average)**
PCBs		0.0140
Aldrin	3.0	
Dieldrin	2.5	0.0019
DDT (& metabolites)	1.1	0.0010
Endrin*	0.18	0.0023
Toxaphene	0.73	0.0002
Chlordane	2.4	0.0043
Endosulfan*	0.22	0.056
Heptachlor	0.52	0.0038
Hexachlorocyclohexane*	2.0	0.080
Pentachlorophenol	$e^{[1.005(pH)-4.869]}$	$e^{[1.005(pH)-5.134]}$
Chlorpyrifos	0.083	0.041

* Total of all isomers

DISSOLVED METALS *

	Acute Criteria (CMC) - µg/L(ppb)		Chronic Criteria (CCC) - µg/L(ppb)	
Substance	**Formula X Conversion**		**Formula X Conversion**	
Cadmium	$e^{[1.128(\ln hardness)]-3.828}$	(a)	$e^{[0.7852(\ln hardness)]-3.490}$	(c)
Chromium(III)	$e^{[0.819(\ln hardness)]+3.688}$	0.316	$e^{[0.8190(\ln hardness)]+1.561}$	0.860
Chromium (VI)	16	0.982	11	0.962
Copper	$e^{[0..9422(\ln hardness)]-1.464}$	0.960	$e^{[0.8545(\ln hardness)]-1.465}$	0.960
Lead	$e^{[1.273(\ln hardness)]-1.460}$	(b)	$e^{[1.273(\ln hardness)]-4.705}$	(b)
Mercury	2.4	0.85	0.012**	NONE
Nickel	$e^{[0.8460(\ln hardness)]+3.3612}$	0.998	$e^{[0.8460(\ln hardness)]+1.1645}$	0.997
Selenium**	20	NONE	5	NONE
Silver	$e^{[1.72(\ln hardness)]-6.52}$	0.85	----------	NONE
Zinc	$e^{[0.8473(\ln hardness)]+0.8604}$	0.978	$e^{[0.8473(\ln hardness)]+0.7614}$	0.986
Cyanide**	22.36	NONE	5.2	NONE

*These values may be adjusted by a site specific Water Effects Ratio (WER) as defined in 40 CFR Part 131.36 (c).

(a) Calculated as: 1.136672 - [(ln hardness)(0.041838)]
(b) Calculated as: 1.46203 - [(ln hardness)(0.145712)]
(c) Calculated as: 1.101672 - [(ln hardness)(0.041838)]

**Expressed as total recoverable. Mercury based on bioaccumulation of residues in aquatic organisms, rather than toxicity.

ALL WATERBODIES - HUMAN HEALTH CRITERIA

Substance	Criteria (ng/L)*
Dioxin (2,3,7,8 TCDD)	0.001
Chlordane	5.0
PCBs (polychlorinated biphenyls)	0.4
alpha Hexachlorocyclohexane	37.3
Beryllium	4000**
Dieldrin	1.2
Toxaphene	6.3

* Criteria based on a lifetime risk factor of 10^{-5}.

**4000 ng/l is also represented as 4.0 ug/l, which is the Maximum contaminant level (MCL) under the EPA Safe Drinking Water Act [40 U.S.C. s/s 300f et seq. (1974)]

The permittee shall have the option to develop site-specific numerical standards for toxic substances using EPA approved bioassay methodology and guidance. Such guidance may include but may not be limited to *Water Quality Standards Handbook*; *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (August, 1994); *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms* (EPA 600/4-90/027F. 5th ed. December 2002); *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA/600/4-91/002. 4th ed. October 2002) or most recent update thereof.

Only ambient water quality data for dissolved metals generated or approved by ADEQ after March 1, 1993 will be considered in the documentation of background concentrations for the purpose of developing permit limitations.

Assessment Methodology for Toxic Substances

Metals toxicity will be evaluated based on instream hardness values at the time of sample collection. If the ambient hardness value is less than 25 mg/L, then a hardness value of 25 mg/L will be used to calculate metals toxicity.

Listing Methodology:

Monitoring segments will be listed as non-support when more than one exceedance of the criterion occurs during the period of record.

Delisting Methodology:

Monitoring segments will be listed as support when there are one or fewer (≤ 1) exceedances of the criterion during the period of record.

Fish Consumption

This section establishes the protocol for assessing impairment due to exceedance of limits for fish consumption, based on numeric criteria in APC&EC Reg. 2.508 and narrative criteria in APC&EC Reg. 2.409.

Fish consumption listings are determined in conjunction with the Arkansas Department of Health.

Assessment Methodology for Fish Consumption

Listing Methodology:

Monitoring segments will be listed as non-support for fish consumption if a primary segment of the fish community (e.g., all predators or all largemouth bass) is recommended for *non-consumption* by *any user group* (e.g., general population or high risk groups).

Delisting Methodology:

Monitoring segments will be listed as support if there are no fish consumption restrictions or only a *limited consumption* of fish is recommended (e.g., no more than 2 meals per month or no consumption of fish over 15 inches).

Nutrients

In 2001 EPA published recommended water quality criteria for nutrients under section 304(a) of the Clean Water Act (66 FR 1671) with the intention that this document would serve as a starting point for states, tribes, interstate commissions, and others to develop refined nutrient criteria (EPA 2001). According to the EPA, nutrient criteria are needed due to impairment of designated uses per the listing in Dodds and Welch 2000: 1) adverse effects on humans and domestic animals; 2) aesthetic impairment; 3) interference with human use; 4) negative impacts on aquatic life; and 5) excessive nutrient input into downstream systems.

Currently, Arkansas maintains the following narrative nutrient standard, APC&EC Reg. 2.509:

> Materials stimulating algal growth shall not be present in concentrations sufficient to cause objectionable algal densities or other nuisance aquatic vegetation or otherwise impair any designated use of the waterbody. Impairment of a waterbody from excess nutrients are dependent on the natural waterbody characteristics such as stream flow, residence time, stream slope, substrate type, canopy, riparian vegetation, primary use of waterbody, season of the year and ecoregion water

chemistry. Because nutrient water column concentrations do not always correlate directly with stream impairments, impairments will be assessed by a combination of factors such as water clarity, periphyton or phytoplankton production, dissolved oxygen values, dissolved oxygen saturation, diurnal dissolved oxygen fluctuations, pH values, aquatic-life community structure and possibly others. However, when excess nutrients result in an impairment, based upon Department assessment methodology, by any established, numeric water quality standard, the waterbody will be determined to be impaired by nutrients.

All point source discharges into the watershed of waters officially listed on Arkansas' impaired waterbody list (303d) with phosphorus as the major cause shall have monthly average discharge permit limits no greater than those listed below. Additionally, waters in nutrient surplus watersheds as determined by Act 1061 of 2003 Regular Session of the Arkansas 84th General Assembly and subsequently designated nutrient surplus watersheds may be included under this Reg. if point source discharges are shown to provide a significant phosphorus contribution to waters within the listed nutrient surplus watersheds.

Facility Design Flow –	**Total Phosphorus discharge limit – mg/L**
= or > 15	Case by case
3 to <15	1.0
1 to <3	2.0
0.5 to <1.0	5.0
<0.5	Case by Case

For discharges from point sources which are greater than 15 mgd, reduction of phosphorus below 1 mg/L may be required based on the magnitude of the phosphorus load (mass) and the type of downstream waterbodies (e.g., reservoirs, Extraordinary Resource Waters). Additionally, any discharge limits listed above may be further reduced if it is determined that these values are causing impairments to special waters such as domestic water supplies, lakes or reservoirs or Extraordinary Resource Waters.

As part of Arkansas' Nutrient Criteria Development Plan (ADEQ 2008), ADEQ developed pilot studies for the Upper Saline River watershed and Beaver Reservoir to test the methods for developing appropriate nutrient criteria for Arkansas' rivers/streams and lakes.

It was the purpose of these studies to set narrative or quantitative translators for rivers/streams on an ecoregional, watershed, or site specific basis. Qualitative criteria with numeric translators for parameters such as dissolved oxygen, dissolved oxygen percent saturation, pH, nitrite + nitrate-nitrogen (NO_2 +NO_3 – N), total phosphorus (TP), ortho-phosphate as phosphorus, turbidity, and biological community composition were also to be developed.

Arkansas' Nutrient Criteria Development Plan (ADEQ 2008) resulted in the following proposed changes to the APC&EC (2013) Regulation No. 2 narrative nutrient standard, APC&EC Reg. 2.509:

> (A) Materials stimulating algal growth shall not be present in concentrations sufficient to cause objectionable algal densities or other nuisance aquatic vegetation or otherwise impair any designated use of the waterbody. Impairment of a waterbody from excess nutrients is dependent on the natural waterbody characteristics such as stream flow, residence time, stream slope, substrate type, canopy, riparian vegetation, primary use of waterbody, season of the year and ecoregion water chemistry. Because nutrient water column concentrations do not always correlate directly with stream impairments, impairments will be assessed by a combination of factors such as water clarity, periphyton or phytoplankton production, dissolved oxygen values, dissolved oxygen saturation, diurnal dissolved oxygen fluctuations, pH values, aquatic-life community structure and possibly others. However, when excess nutrients result in an impairment, based upon Department assessment methodology, by any Arkansas established numeric water quality standard, the waterbody will be determined to be impaired by nutrients.
>
> (B) Site Specific Nutrient Standards

Lake	Chlorophyll a (ug/L)**	Secchi Transparency (m)***
Beaver Lake*	8	1.1

*These standards are for measurement at the Hickory Creek site over the old thalweg, below the confluence of War Eagle Creek and the White River in Beaver Lake.

**Growing season geometric mean (May - October)

***Annual Average

The Department is continuing to work towards EPA's objective of developing refined nutrient criteria through the State's Level III ecoregion approach, which categorizes Arkansas' waters into six ecoregions based on their physical, chemical, and biological features (APC&EC 1987). Currently, ADEQ is conducting a study for classification and validation of nutrient criteria for the Extraordinary Resource Waterbodies in the Ozark Highlands Ecoregion of Arkansas to

correlate water quality parameters to biological assemblages within this ecoregion. The intent of this study is to develop appropriate effects-based nutrient criteria and translators on an ecoregion level. Upon completion of this study, ADEQ intends to apply its methodology to other ecoregions of the state and to continue its efforts to develop numeric criteria and/or translators to be adopted into the state's water quality standards.

Until numeric nutrient criteria has been adopted into Regulation 2.509, ADEQ will only assess nutrients for those segments with sufficient biological data to determine fisheries designated use attainment.

The relationship between nutrient enrichment and dissolved oxygen concentrations has long been established. Upon completion and validation of nutrient criteria translators from stressor/response studies, ADEQ will rely on the narrative nutrient criteria provided in Regulation 2.509. Based upon the nutrient narrative, impairments will be assessed by a combination of dissolved oxygen values, dissolved oxygen saturation, diurnal dissolved oxygen fluctuations, pH values, and aquatic life community structure

Assessment Methodology for Nutrients

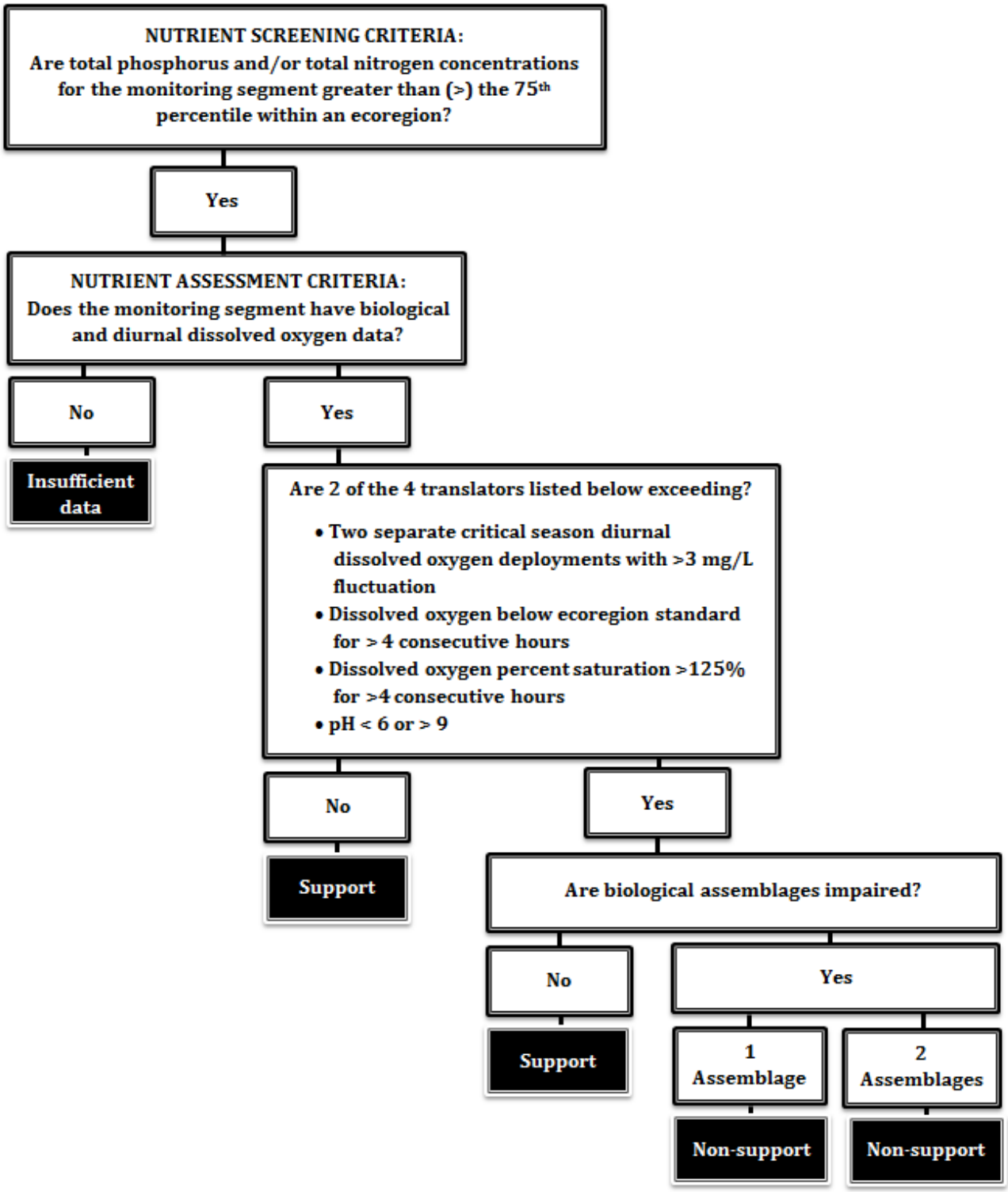
Listing Methodology:

Monitoring segments will be listed as non-support for total phosphorus or total nitrogen if two of the four water quality translators are exceeded and one or both biological assemblages are impaired. Water quality translators for total phosphorus and total nitrogen are two separate critical season diurnal dissolved oxygen deployments (May-September) which indicate a >3 mg/L fluctuation in concentration, dissolved oxygen saturation is >125% for four consecutive hours, dissolved oxygen concentrations are below ecoregion standard for greater than four consecutive hours, or pH varies from the standard of between 6.0 and 9.0 standard units. Monitoring segments that are greater than the 75^{th} percentile for total phosphorus and total nitrogen concentrations within each ecoregion will serve as the screening criteria.

Delisting Methodology:

Monitoring segments will be listed as support for nutrients if there are fewer than two exceedances of nutrient translators and biological assemblages are fully supported.

Figure III-3: Nutrient Assessment Flowchart



Mineral Quality

This section establishes the protocol for assessing impairment due to exceedance of limits for mineral quality. Assessment for mineral quality impairment in the State of Arkansas is written per APC&EC Reg. 2.511, Sections (A) and (C):

> (A) Site Specific Mineral Quality Criteria
>
> Mineral quality shall not be altered by municipal, industrial, other waste discharges or instream activities so as to interfere with designated uses. The following limits apply to the streams indicated, and represent the monthly average concentrations of chloride (Cl^-), sulfate ($SO_4^{=}$) and total dissolved solids (TDS).
>
> (C) Domestic Water Supply Criteria
>
> In no case shall discharges cause concentrations in any waterbody to exceed 250, 250 and 500 mg/l of chlorides, sulfates and total dissolved solids, respectively, or cause concentrations to exceed the applicable limits in the streams to which they are a tributary, except in accordance with Reg. 2.306.

Assessment Methodology for Mineral Quality

Assessments for waterbodies with site specific criteria will be made according to the specific values listed in Reg. 2.511(A). For those waterbodies without site-specific criteria, the criteria of 250 mg/L of chlorides, 250 mg/L of sulfates, and 500 mg/L of total dissolved solids will apply. For Site Specific Standards, if greater than 25 percent of the total samples for the period of record exceed the applicable criteria, the waterbody will be included on the 303(d) list as non-support of the mineral standard(s). For waterbodies without site specific standards, if greater than 10 percent of the total samples for the period of record exceed the applicable criteria, the waterbody will be included on the 303(d) list as non-support of the mineral standard(s).

Table III-13: Statewide Minerals Assessment Criteria

Parameter	Standard	Support	Non-Support
Site Specific Standards (mg/L)	See Reg. 2.511(A)	≤ 25%	>25%
No Site Specific Standards (mg/L)	250/250/500	≤ 10%	>10%

For waterbodies without site specific standards, any discharge which results in instream concentrations more than 1/3 higher than the values found in Reg. 2.511(B) for chlorides (Cl^-) and sulfates ($SO_4^{=2}$) or more than 15 mg/L, whichever is greater, is considered to be a significant modification of the maximum naturally occurring values. These waterbodies should be considered as candidates for site specific criteria development in accordance with Regs. 2.306

and 2.308. Similarly, site specific criteria development should be considered if the following TDS values are exceeded after being increased by the sum of the increases to Cl and SO_4.

Domestic, Agricultural, and Industrial Water Supply Uses

This section establishes the protocol for assessing impairment due to exceedance of limits for domestic water supply designated uses, per APC&EC Reg. 2.511 Section (C), and is written in accordance with the Federal Safe Drinking Water Act (40 § C.F.R 143.3).

Assessment Methodology for Domestic, Agricultural, and Industrial Water Supply Use

For assessment of ambient waters, the domestic, agricultural, and industrial water supply designated uses will be evaluated using (Reg. 2.511) chloride, sulfate, and total dissolved solids in accordance with the Federal Safe Drinking Water Act (40 § C.F.R 143.3). If greater than 10 percent of the total samples for the period of record exceed the criteria, the waterbody will be included on the 303(d) list as non-support of the mineral standard(s).

Table III-14: Statewide Water Supply Assessment Criteria

PARAMETER	STANDARD	SUPPORT	NON-SUPPORT
Chloride	250	≤ 10%	>10%
Sulfates	250	≤ 10%	>10%
Total Dissolved Solids	500	≤ 10%	> 10%

Ammonia

This section establishes the protocol for determining impairment due to ammonia in Arkansas' surface waters, per APC&EC Reg. 2.512:

> Total ammonia nitrogen (N) shall not exceed those values and frequency of occurrence established in the following tables:
>
> (A) The one-hour average concentration of total ammonia nitrogen shall not exceed, more than once every three years on the average, the acute criterion as shown in the following table:

pH-Dependent Values of the CMC (Acute Criterion)- mg/L

pH	Salmonids*	Salmonids
	Present	**Absent**
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

* Family of fishes which includes trout.

Waters with salmonids present are delineated in Appendix A of APC&EC Regulation No. 2.

(B) The thirty-day average concentration of total ammonia nitrogen shall not exceed those values shown as the chronic criterion in the following tables:

Temperature and pH-Dependent Values of the CCC (Chronic Criterion)for Fish Early Life Stages Present – mg/L

	Temperature °C									
pH	**0**	**14**	**16**	**18**	**20**	**22**	**24**	**26**	**28**	**30**
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

Temperature and pH-Dependent Values of the CCC (Chronic Criterion)for Fish Early Life Stages Absent – mg/L

	Temperature °C									
pH	**0-7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15***	**16***
6.5	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46	6.06
6.6	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97
6.7	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86
6.8	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72
6.9	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56
7.0	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37
7.1	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49	5.15
7.2	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90
7.3	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61
7.4	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30
7.5	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97
7.6	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61
7.7	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25
7.8	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89
7.9	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54
8.0	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21
8.1	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91
8.2	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74	1.63
8.3	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39
8.4	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
8.5	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.990
8.6	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892	0.836
8.7	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754	0.707
8.8	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641	0.601
8.9	0.917	0.860	0.806	0.756	0.709	0.664	0.623	0.584	0.548	0.513
9.0	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471	0.442

*At 15^{o} C and above, the criterion for fish Early Life Stage absent is the same as the criterion for fish ELS present.

(C) The highest four-day average within a 30-day period should not exceed 2.5 times the chronic values shown above.

(D) For permitted discharges, the daily maximum or seven-day average permit limit shall be calculated using the four-day average value described above as an instream value, after mixing and based on a season when fish early life stages

are present and a season when fish early life stages are absent. Temperature values used will be 14o C when fish early life stages are absent and the ecoregion temperature standard for the season when fish early life stages are present. The pH values will be the ecoregion mean value from least-disturbed stream data.

Assessment Methodology for Ammonia:

Total ammonia nitrogen will be evaluated based on concurrently measured instream pH and temperature, as applicable, at the time of sample collection using APC&EC Reg. 2.512(A) – (D) standards. The Chronic Criterion for fish early life stages present apply during the critical season (April 1 thru October 31). The criterion shall be applied 1) the arithmetic mean of the analytical results of consecutive-day samples when available, or 2) the result of individual grab samples.

Listing Methodology:

Stream and river monitoring segments, as well as lakes and reservoirs, will be listed as non-support for ammonia toxicity standards:

I. If more than one (>1) violation of the 1-hour average concentration of total ammonia nitrogen exceeds the calculated Acute Criterion within the period of record; or
II. If more than one (>1) violation of the 30-day average concentration of total ammonia nitrogen exceeds the Chronic Criterion within the period of record; or
III. If more than one (>1) violation of the 4-day average within a 30-day period exceeds 2.5 times the Chronic Criterion value within the period of record.

Delisting Methodology:

Stream and river monitoring segments, as well as lakes and reservoirs, will be listed as support for ammonia toxicity standards:

I. If there is a maximum of one violation of the one hour average concentration of total ammonia nitrogen exceeding the calculated acute criterion within the period of record; or
II. If there is a maximum of one violation of the 4-day average within a 30-day period exceeding 2.5 times the chronic criterion value within the period of record; or
III. If there is a maximum of one violation of the 30-day average concentration of total ammonia nitrogen exceeding the chronic criterion within the period of record.

Table III-15: Statewide Total Ammonia Nitrogen Assessment Criteria

Assessment	1-hour average	4-day average	30-day average
Support	1 in 3 years	1 in 3 years	1 in 3 years
Non-Support	>1 in 3 years	>1 in 3 years	>1 in 3 years

Assessment Criteria for Streams per Ecoregion

Table III-16: Assessment Criteria for Streams in the Arkansas River Valley Ecoregion

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	31° C		≤10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
<10 mi^2	5	2	≤ 10%		>10%	
10-150 mi^2	5	3	≤ 10%		>10%	
151-400 mi^2	5	4	≤ 10%		>10%	
>400 mi^2	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
CL/SO_4/TDS[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	21 NTU		≤ 20%		>20%	
All Flows	40 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Table III-17: Assessment Criteria for Streams in the Boston Mountain Ecoregion

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	31° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
<10 mi^2	6	2	≤ 10%		>10%	
> 10 mi^2	6	6	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
$CL/SO_4/TDS$[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	10 NTU		≤ 20%		>20%	
All Flows	19 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Table III-18: Assessment Criteria for Streams in the Delta Ecoregion (Channel Altered)

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	32° C		≤10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
<10 mi^2	5	2	≤ 10%		>10%	
10-100 mi^2	5	3	≤ 10%		>10%	
>100 mi^2	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
$CL/SO_4/TDS$[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	75 NTU		≤ 20%		>20%	
All Flows	250 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Table III-19: Assessment Criteria for Streams in the Delta Ecoregion (Least Altered)

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	30° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
<10 mi^2	5	2	≤ 10%		>10%	
10-100 mi^2	5	3	≤ 10%		>10%	
>100 mi^2	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
CL/SO_4/TDS[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	45 NTU		≤ 20%		>20%	
All Flows	84 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Table III-20: Assessment Criteria for Streams in the Gulf Coastal Ecoregion (Typical Streams)

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	30° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
<10 mi^2	5	2	≤ 10%		>10%	
10-500 mi^2	5	3	≤ 10%		>10%	
>500 mi^2	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
CL/SO_4/TDS[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	21 NTU		≤ 20%		>20%	
All Flows	32 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Table III-21: Assessment Criteria for Streams in the Gulf Coastal Ecoregion (Springwater Influenced)

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	30° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
All Watersheds	6	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
$CL/SO_4/TDS$[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	21 NTU		≤ 20%		>20%	
All Flows	32 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Table III-22: Assessment Criteria for Streams in the Ouachita Mountain Ecoregion

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	30° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
<10 mi^2	6	2	≤ 10%		>10%	
>10 mi^2	6	6	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
$CL/SO_4/TDS$[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	10 NTU		≤ 20%		>20%	
All Flows	18 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Table III-23: Assessment Criteria for Streams in the Ozark Highland Mountain Ecoregion

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	29° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
<10 mi^2	6	2	≤ 10%		>10%	
10-100 mi^2	6	5	≤ 10%		>10%	
> 100 mi^2	6	6	≤ 10%		>10%	
Trout Waters	6	6	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
CL/SO_4/TDS[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	10 NTU		≤ 20%		>20%	
All Flows	17 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Assessment Criteria for Specific Waterbodies or Segments

Table III-24: Assessment Criteria for the Arkansas River

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	32° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
All Waters	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
TURBIDITY						
Base Flows	50 NTU		≤ 20%		>20%	
All Flows	52 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Table III-25: Assessment Criteria for the Mississippi River

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	32° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
All Waters	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
TURBIDITY						
Base Flows	50 NTU		≤ 20%		>20%	
All Flows	75 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Table III-26: Assessment Criteria for the Ouachita River

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]						
Little Missouri R. to State Line	32° C		≤ 10%		>10%	
Above Little Missouri R.	30° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
All Waters	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
TURBIDITY						
Base Flows	21 NTU		≤ 20%		>20%	
All Flows	32 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Table III-27: Assessment Criteria for the Red River

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	32° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
All Waters	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
TURBIDITY						
Base Flows	50 NTU		≤ 20%		>20%	
All Flows	150 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Table III-28: Assessment Criteria for the St. Francis River

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	32° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
All Waters	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
TURBIDITY						
Base Flows	75 NTU		≤ 20%		>20%	
All Flows	100 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

Table III-29: Assessment Criteria for the White River (main stem)

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]						
Dam #1 to Mouth	32° C		≤ 10%		>10%	
Ozark Highlands	29° C		≤ 10%		>10%	
Trout Waters	20° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
Delta	5	5	≤ 10%		>10%	
Ozark Highlands	6	6	≤ 10%		>10%	
Trout Waters	6	6	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
TURBIDITY						
Base Flows - Delta	45 NTU		≤ 20%		>20%	
All Flows - Delta[2]	84 NTU		≤ 25%		>25%	
Base Flows - Ozark Highlands	10 NTU		≤ 20%		>20%	
All Flows - Ozark Highlands[2]	17 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.
[2] Criteria based on 90th percentile of ecoregion values.

Table III-30: Assessment Criteria for Arkansas Lakes

PARAMETER	STANDARD	SUPPORT	NON-SUPPORT
		DATA POINTS EXCEEDING CRITERIA	
TEMPERATURE[1]	32° C	≤ 10%	>10%
DISSOLVED OXYGEN[1] (mg/L)	5	≤ 10%	>10%
pH	6 to 9 standard pH units	≤ 10%	>10%
$CL/SO_4/TDS$[1]	250/250/500	≤ 10%	>10%
TURBIDITY			
Base Flows	25 NTU	≤ 20%	>20%
All Flows	45 NTU	≤ 25%	>25%

[1] Except for site specific standards approved in water quality standards.

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The following tables summarize the use support of the Category 4 and Category 5 303(d) listings of the State's river and stream water bodies. A detailed listing of each segment-specific waterbody, a designated use and a water quality standards attainment assessment, and other segment specific data are located Appendix A.

Table III-31: Designated Use and Water Quality Standards Support in Arkansas

Degree of Use Support	Assessed Total (miles)
Supporting all assessed uses	5651.3
Not supporting a use	3395.7
Total Waters Assessed	10025.0

Table III-32: Designated Use Support of Assessed Waters by Use Type

Use Type	Support (miles)	Non-Support (miles)
Fisheries	7929.0	2096.0
Primary contact	9733.9	291.1
Secondary contact	10025.0	0.0
Domestic Water Supply	9557.1	211.5
Agri & Industrial Water Supply	9605.3	419.7
Fisheries	7929.0	2096.0

Table III-33: Total Sizes of Waters Listed Not Supporting Water Quality Standards of Designated Used by Various Source Categories

Source Categories	Stream Segments	Stream Miles
Agriculture	39	707.3
Industrial point sources	7	89.5
Municipal point sources	7	79.4
Resource extraction	4	44.2
Surface erosion	16	263.7
Urban run-off	3	14.1
Silviculture	0	0
Unknown	59	1244.1

Table III-34: Total Sizes of Waters Listed Not Attaining Water Quality Standards by Various Cause Categories

Cause Categories	Stream Segments	Stream Miles
Ammonia	0	0
Nitrogen	2	16.5
Phosphorus	0	0
Chlorides	21	451.3
Sulfates	27	336.3
Total Dissolved Solids	24	447.2
Siltation/Turbidity	42	768.8
Pathogen Indicators	9	92.5
Aluminum	2	4.7
Cadmium	1	2.5
Copper	24	396.9
Lead	13	308.0
Mercury	0	0
Nickel	1	2.5
Selenium	1	2.5
Zinc	6	74.6
Priority Organics	1	44.8
Dissolved Oxygen	52	1068.8
pH	8	104.0
Temperature	10	215.3
Toxicity	2	10.3

Biological Parameters

Fisheries designated use assessment is a tool used to better characterize the health of the aquatic biota based on macroinvertebrate and fish community structures. Short-term water quality impairments either from point and/or nonpoint source inputs or from short-term seasonal and/or storm events may not be detected using water quality data from grab samples. Individual short-term events most likely do not have a significant effect on the biological communities within a stream; however, these communities may be affected by frequent short-term events that limit full recovery between episodes. Therefore, biological data, when available, will be the ultimate

deciding factor of the attainment of the Fisheries designated use, regardless of chemical conditions.

Between April 1, 2008 and March 31, 2013, nearly 300 aquatic biota samples were collected for the purpose of watershed assessment surveys or the establishment of ecoregion based indices of biotic integrity, as well as use support determination. Data are accessible on line: www.adeq.state.ar.us/compsvs/webmaster/databases.htm. Some of these samples were part of the special project surveys listed in Part III, Chapter 1. Tables III-35 through III-47 provide information on biological samples for various projects throughout this period of record.

Percent comparability evaluation techniques were used in the evaluation of the macroinvertebrate and fish communities. Two types of community comparisons were made: upstream-downstream community comparison and least disturbed reference stream comparison.

Macroinvertebrate communities were collected and evaluated following the Department's Rapid Bioassessment Protocols.

Fish communities were analyzed following EPA's *Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analysis* (1983), and direct comparisons were made with ecoregion fish community data outlined in the Department's *Physical, Chemical, and Biological Characteristics of Least-Disturbed Reference Streams in Arkansas' Ecoregions* (ADPC&E 1987).

Table III-35: Upper Saline Watershed Nutrient Criteria Development and MBMI Pilot Project (2006 – 2010)

Site Name	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Fish Community Collected
AF-1 (Alum Fork)	8040203	-014	2C	OM	X	
AFS0001 (Alum Fork)	8040203	-014	2C	OM	X	
Alum Fork at Hwy 229	8040203	-012	2C	OM	X	
Alum Fork at Sulphur Spgs Rd.	8040203	-014	2C	OM	X	
Alum Fork near Alum View Rd	8040203	-014	2C	OM	X	
Bread Creek	8040203	-223	2C	OM	X	
Cedar Creek at Hwy 5	8040203	-021	2C	OM	X	
LAF01 (Little Alum Fork)	8040203	-261	2C	OM	X	X
Lee Creek at Unity	8040203	-252	2C	OM	X	
MFS01 (Middle Fork Saline)	8040203	-019	2C	OM	X	X
MFS06 (Middle Fork Saline)	8040203	-019	2C	OM	X	
NF-2	8040203	-011	2C	OM	X	
NF-4	8040203	-011	2C	OM	X	
NF-5 (North Fork Saline)	8040203	-011	2C	OM	X	
NF6-A (North Fork Saline)	8040203	-011	2C	OM	X	
NF6-B (North Fork Saline)	8040203	-011	2C	OM	X	
NFS01 (North Fork Saline)	8040203	-011	2C	OM	X	X
SFS02 (South Fork Saline)	8040203	-020	2C	OM	X	X
South Fork Saline at Hwy 5	8040203	-020	2C	OM	X	X
Stillhouse Creek	8040203	-547	2C	OM	X	
Ten Mile Creek at Hwy 70	8040203	-717	2C	OM	X	
Williams Creek at Hwy 5	8040203	-285	2C	OM	X	

OM = Ouachita Mountains

Table III-36: Cove Creek Physical, Chemical, and Biological Community Assessment (2007)

Site Name	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Fish Community Collected
OUA0101	8040102	-500	2F	OM	X	
OUA0104	8040102	-500	2F	OM	X	
OUA0103	8040102	-147	2F	OM	X	
OUA0100	8040102	-143	2F	OM	X	
OUA0159	8040102	-142	2F	OM	X	
OUA0171D	8040102	-505	2F	OM	X	
OUA0171C	8040102	-001	2F	OM	X	
OUA0171B	8040102	-501	2F	OM	X	

OM = Ouachita Mountain

Table III-37: Inventory of Biotic Assemblages for Cedar, Cove, Lee, and Webber Creeks (2009-2010)

Site Name	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Fish Community Collected
Cedar Creek at Hwy 248	11110104	-019	3H	BM	X	X
Cove Creek at Creek Ford Rd	11110104	-010	3H	BM	X	X
Lee Creek at Hwy 220	11110104	-006	3H	BM	X	X
Lee Creek at Independence Rd	11110104	-005	3H	BM	X	X
Webber Creek at Goines Rd	11110104	-019	3H	BM	X	X

BM = Boston Mountains

Table III-38: Assessment of Ecoregion Reference Streams (2009-2010)

Site Name	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Fish Community Collected
Indian Creek	11110202	-020	3H	BM		X
Hurricane Creek	11110202	-022	3H	BM		X
Illinois Bayou	11110202	-011	3H	BM		X
Lee Creek	11110104	-005	3H	BM		X
Mulberry River	11110201	-006	3H	BM		X
South Fork Spavinaw Creek	11070209	-048t	3J	OH		X
Flint Creek	11110103	-031	3J	OH		X
Long Creek	11010001	-054	4K	OH		X
Yocum Creek	11010001	-052	4K	OH		X
War Eagle Creek	11010001	-034	4K	OH		X
Kings River	11010001	-037	4K	OH		X
Diles Creek	11010011	-399	4H	OH		X
Weldon Creek	11010010	-550	4H	OH		X
West Livingston Creek	11010004	-1150	4F	BM		X
Piney Creek	11010004	-009	4F	OH		X
Strawberry River	11010012	-011	4G	OH		X
Rock Creek	11010012	-469	4G	OH		X

BM = Boston Mountains, OH = Ozark Highlands

Table III-39: Aquatic Life Use Attainment Determination of Selected Category 5F Waters Listed on the 2008 List of Impaired Waterbodies (2009-2011)

Site Name	Station ID	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Fish Community Collected
Mulberry River	ARK0138	11110201	-009	3H	BM	X	X
Black River at Corning	WHI0003	11010007	-002	4G	D	X	X
Black River at Pocahontas	WHI0025	11010007	-005	4G	D	X	X
Current River	WHI0004	11010008	-001	4H	D	X	X
Eleven Point River	WHI0005B	11010010	-001	4H	D	X	X
Fourche River	WHI0170	11010010	-008	4G	D	X	X
Janes Creek	UWJNC01	11010010	-002	4H	OH	X	X
Martins Creek	UWMTC01	11010010	-004	4H	OH	X	X
Myatt Creek	WHI0171	11010010	-010	4H	OH	X	X
Spring River at Hardy	WHI0022	11010010	-003	4H	OH	X	X
Spring River at Ravenden	WHI0021	11010010	-006	4H	OH	X	X
South Fork Spring	WHI0023	11010010	-012	4H	OH	X	X
Warm Fork Spring River	WHI006A	11010010	-008t	4H	OH	X	X
Buffalo River at St. Joe	WHI0049A	11010005	-001	4J	OH	X	X
Buffalo River at confluence	BUFR09	11010005	-005	4J	OH	X	X

BM = Boston Mountains, D = Delta, OH = Ozark Highlands

Table III-40: Physical, Chemical, Biological Assessment of Town Branch, Little Sugar, and McKissic Creeks (2009-2010)

Site Name	Station ID	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Fish Community Collected
Town Branch	ARK0056	11070208	-903	3J	OH	X	X
Little Sugar	UWLSC01	11070208	-035	3J	OH	X	X
Little Sugar	ARK0001	11070208	-003	3J	OH	X	X
McKissic	UWMKC01	11070208	-116	3J	OH	X	X

OH = Ozark Highland

Table III-41: Inventory of Biotic Assemblages for Mine and Bear Creeks (2011)

Site Name	Station ID	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Fish Community Collected
Mine Creek	RED0048A	11140109	-934	1C	GCP	X	X
Mine Creek	RED0048B	11140109	-933	1C	GCP	X	X
Mine Creek	RED0051B	11140109	-932	1C	GCP	X	X
Bear Creek	RED0033	11140109	-025	1C	GCP	X	X
Bear Creek	RED0033D	11140109	-212	1C	GCP	X	

GCP = Gulf Coastal Plain

Table III-42: Inventory of Aquatic Species of Big and Cove Creek Natural Areas (2011-2012)

Site Name	Station ID	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Fish Community Collected
Big Creek	UWBCK01	11010014	013	4E	BM	X	X
Big Creek	UWBCK02	11010014	013	4E	BM	X	X
Big Creek	UWBCK03	11010014	013	4E	BM	X	X
Big Creek	UWBCK04	11010014	013	4E	BM	X	X
Cove Creek	ARK0171	11110205	016	3D	BM	X	X
Cove Creek	ARK0172	11110205	016	3D	BM	X	X

BM = Boston Mountains

Table III-43: Excavation Activities in and near the Opossum Walk Creek, Van Buren County, Arkansas (2012)

Site Name	Station ID	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Fish Community Collected
Opossum Walk Creek	OWC01	11010014	039	4E	BM	X	
Opossum Walk Creek	OWC02	11010015	039	4E	BM	X	
Opossum Walk Creek	OWC03	11010016	039	4E	BM	X	

BM = Boston Mountains

Table III-44: Lower Cache River Restoration Project (2012). All stations located on Cache River

Station ID	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Fish Community Collected
N1	8020302	016	4B	D	X	X
N2	8020302	016	4B	D	X	X
N3	8020302	016	4B	D		X
N4	8020302	016	4B	D		X
N5	8020302	016	4B	D		X
WD01	8020302	001	4B	D	X	X
WD02	8020302	001	4B	D	X	X
WD03	8020302	001	4B	D	X	X
WD04	8020302	001	4B	D		X
WD05	8020302	001	4B	D		X
WN01	8020302	001	4B	D	X	X
WN02	8020302	001	4B	D	X	X
WN03	8020302	001	4B	D	X	X
WN04	8020302	001	4B	D		X
WN05	8020302	001	4B	D		X
D1	8020302	001	4B	D	X	X
D2	8020302	001	4B	D	X	X
D3	8020302	001	4B	D		X
D4	8020302	001	4B	D		X
D5	8020302	001	4B	D		X

D = Delta

Table III-45: Two Forks Restoration-Biological Monitoring Program (2012)

Site Name	Station ID	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Fish Community Collected
Archey Fork	AF-P1	11010014	037	4E	BM	X	X
Archey Fork	AF-P2	11010014	037	4E	BM	X	X
Archey Fork	AF-P3	11010014	037	4E	BM	X	X
Archey Fork	WHI0194	11010014	037	4E	BM	X	X
Middle Fork	MF01	11010014	028	4E	BM	X	X
Beech Fork	WHI0188	11010014	025	4E	BM		X

BM = Boston Mountains

Table III-46: Stream Restoration of Tanyard Creek in the Little Sugar Watershed (2013)

Site Name	Station ID	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Fish Community Collected
Tanyard Creek	TC01	11070208	-	3J	OH	X	
Tanyard Creek	TC02	11070208	-	3J	OH	X	
Tanyard Creek	TC03	11070208	-	3J	OH	X	
Tanyard Creek	TC-CON	11070208	-	3J	OH	X	

OH = Ozark Highlands

Table III-47: Data Collection for the Development of Nutrient Criteria for Extraordinary Resource Waterbodies in the Ozark Highlands Ecorgion of Arkansas (2013)

Site Name	Station ID	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Periphyton Community Collected
Big Creek	WHI0142J	11010010	908	4H	OH	X	X
English Creek	WHI0142H	11010010	009	4H	OH	X	X
Field Creek	WHI0142I	11010010	909	4H	OH	X	X
Gut Creek	WHI0142K	11010010	906	4H	OH	X	X
Kings River	WHI0009A	11010001	037	4K	OH	X	X
Kings River	WHI0123	11010001	042	4K	OH	X	X
Myatt Creek	WHI0171	11010010	010	4H	OH	X	X
North Sylamore Creek	WHI0144A	11010004	009	4F	OH	X	X
North Sylamore Creek	WHI0202	11010004	009	4F	OH	X	X
Osage Creek	WHI0068	11010001	045	4K	OH	X	X
Osage Creek	WHI0069	11010001	045	4K	OH	X	X
Roasting Ear Creek	WHI0144F	11010004	-	4F	OH	X	X
South Fork Spring	WHI0023	11010010	012	4H	OH	X	X

Table III-47: Data Collection for the Development of Nutrient Criteria for Extraordinary Resource Waterbodies in the Ozark Highlands Ecorgion of Arkansas (2013)

Site Name	Station ID	H.U.C.	Reach	Planning Segment	Ecoregion	Macro-Invertebrates Collected	Periphyton Community Collected
South Sylamore Creek	WHI0145B	11010004	010	4F	OH	X	X
Spring River at Hardy	WHI0022	11010010	003	4H	OH	X	X
Spring River at Ravenden	WHI0021	11010010	006	4H	OH	X	X
Strawberry River	UWSBR01	11010012	011	4G	OH	X	X
Strawberry River	UWSBR02	11010012	009	4G	OH	X	X

OH = Ozark Highlands

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Chapter Five LAKES WATER QUALITY ASSESSMENT

Background

Although selected lakes have had some historic, long-term assessments, the water quality data from the majority of Arkansas' lakes are sparse. Some have only specific purpose data, e.g., bacteria sampling from swimming areas. A few lakes have been investigated as a short term project when a specific or potential problem was identified. Such studies were associated with the Clean Lakes Section of the Water Quality Act, or municipal water supply reservoirs with treatment related concerns. In contrast, the Corps's lakes of the Little Rock District have a relatively large amount of historic, multi-parameter and multi-site water quality data. Additionally, DeGray Reservoir probably has the most extensive historic water quality database of any reservoir in this region of the country.

Arkansas currently has identified 79 significant publicly-owned lakes (Figure III-4) ranging in size from 60 to over 45,000 acres; totaling 357,896 acres. The lakes are categorized into five "Types" (ADEQ 2000) by ecoregion, primary construction purpose, and certain morphometric features such as size and average depth (Table III-48). In 2007, construction was completed on the Lake Fort Smith dam in Crawford County in northwest Arkansas which combined Lake Shepherd Springs and the original Lake Fort Smith. The new Lake Fort Smith is 1390 surface acres, 422 surface acres larger than the original two lakes combined.

Lake Water Quality Assessment

Since 1989, four lake water quality assessments have been completed on Arkansas' significant publicly-owned lakes. Water quality samples, metals, pesticides, and pathogens, as well as dissolved oxygen and temperature profiles were collected from most of these lakes between mid-July and the end of August in 1989, 1994, 1999, and 2004. Sediment samples were collected in 1994 and plankton samples were collected in 1999 and 2004.

Using lake morphology, ecoregion, and purpose of construction, all of the lakes were grouped in the following manner:

Type A

These are the larger lakes, usually of several thousand acres in size. They have average depths of 30 to 60 feet and are located in the mountain areas of the State in the Ozark Highlands, Ouachita Mountains, and Boston Mountains. The watersheds of most are forest dominated, and the primary purpose of most of these lakes is hydropower and/or flood control. The watershed-to-lake area ratio (W/A) is relatively large for these impoundments, but the large reservoir volume lengthens the water residence time.

Type B

These are the smaller lakes of the uplands or steeper terrains of the mountainous regions and are probably the most heterogeneous group of lakes. Most are 500 acres or less in size and are located in the Ozark Highlands, Ouachita Mountains and Boston Mountains. Several are located in the more mountainous areas of the Arkansas River Valley. Average depths range from 10 to 25 feet and watersheds are normally dominated by forest lands. The W/A ratios are normally high which results in a high flushing rate and low water retention time for these smaller lakes.

Type C

This group is composed of the smaller lakes of the lowlands or flat terrain areas. Sizes range from 300 to 1,000 acres with average depths of normally less than 10 feet. These lakes are located in the Arkansas River Valley, Gulf Coastal Plains, and Delta ecoregions. The Delta lakes of this group are generally associated with the Crowley's Ridge region. Watersheds of these lakes include timberlands of both lowland hardwoods and pines, but some are broken by pasture land and small farms. These lakes have relatively small storage volumes due to shallow average depths and those with higher W/A ratios have high flushing rates.

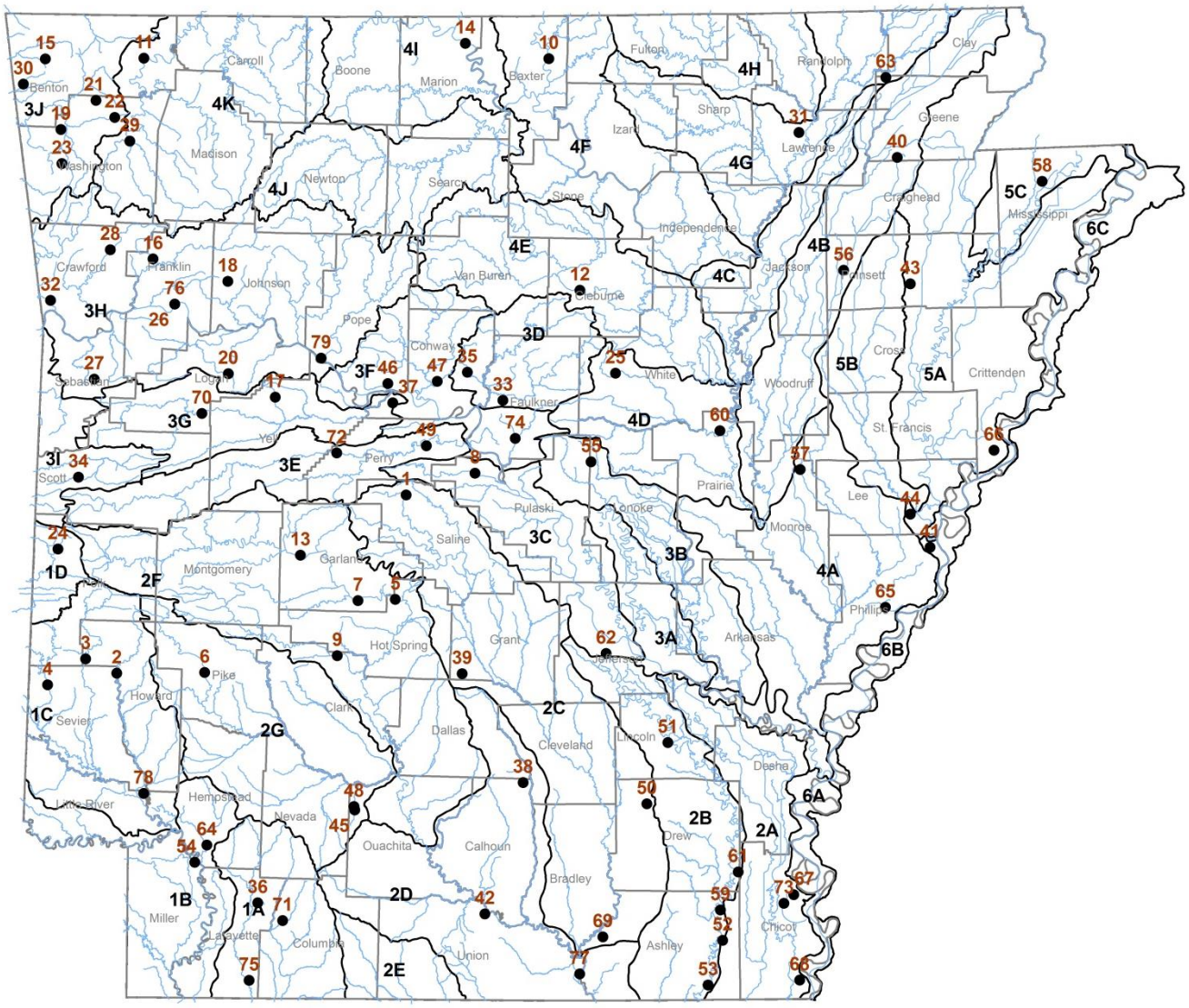
Type D

These are small impoundments of the Delta area of the State, but include two similar type lakes from the large river alluvium of the Gulf Coastal Plains Ecoregion. These type lakes are generally 200 to 500 acres in size with average depths of around five feet. This group includes several natural, oxbow cutoff lakes which have been modified by a water control structure to increase their isolation from the parent stream and maintain higher dry season water levels. These lakes are only occasionally flooded by the parent stream and generally have very small direct runoff watersheds. The other lakes of this type are man-made, but they are almost totally isolated from their watershed by levees. Water levels are maintained through occasional pumping from adjacent waterways. In this group, runoff from watersheds that discharge directly into oxbow lakes is primarily from row crop agriculture.

Type E

These are the large lowland lakes of the Delta, Gulf Coastal Plains, and the large alluvial areas of the Arkansas River Valley Ecoregion. They range from several thousand to over 30,000 acres in size, but average depth is usually less than 10 feet. This group also includes four large, oxbow cutoff lakes which have been substantially modified by construction of drainage ditches, levees and other water control structures. Watershed types include mixtures of intensive row crop agriculture, small farms and pastures (with increasing amounts of confined animal production) and timberlands.

Figure III-4: Significant Publicly-Owned Lakes



See Table III-48 for lake information corresponding to numbers on map.

Table III-48: Significant Publicly-Owned Lakes

No.	Lake	County	Acres	Ave. Depth	Water Shed (mi^2)	W/A[#]	Eco-region[*]	Purpose[+]	Type
1	Winona	Saline	1240	30	44.4	22.9	OM	W	A
2	Dierks	Howard	1360	22	114	53.6	OM	F	A
3	Gillham	Howard	1370	21	271	126.6	OM	F	A
4	DeQueen	Sevier	1680	21	169	64.4	OM	F	A
5	Catherine	Hot Spring	1940	18	1516	500.1	OM	H	A
6	Greeson	Pike	7200	39	237	21.1	OM	H	A
7	Hamilton	Garland	7300	26	1441	126.3	OM	H	A
8	Maumelle	Pulaski	8900	23	137	9.9	OM	W	A
9	DeGray	Clark	13200	49	453	22	OM	H	A
10	Norfork	Baxter	22000	57	1806	52.5	OH	H	A
11	Beaver	Benton	28200	58	1186	26.9	OH	H	A
12	Greers Ferry	Cleburne	31500	60	1153	23.4	BM	H	A
13	Ouachita	Garland	40100	51	1105	17.6	OM	H	A
14	Bull Shouls	Marion	45440	67	6036	85	OH	H	A
15	Crystal	Benton	60	12	4.5	48	OH	A	B
16	Shores	Franklin	82	10	26	202.9	BM	R	B
17	Spring	Yell	82	23	10.5	82	ARV	R	B
18	Horsehead	Johnson	100	16	17.3	110.7	BM	R	B
19	Wedington	Washington	102	16	3	18.8	OH	R	B
20	Cove	Logan	160	10	8.5	34	ARV	R	B
21	Elmdale	Washington	180	8	6	21.3	OH	A	B
22	Fayetteville	Washington	196	15	6	19.6	OH	R	B
23	Bobb Kidd	Washington	200	13	4	12.8	OH	A	B
24	Wilhelmina	Polk	200	10	13.5	43.2	OM	A	B
25	Barnett	White	245	27	37.5	98	ARV	A	B
26	Sugarloaf	Sebastian	250	12	5	12.8	ARV	A	B
27	Nolan (Wright)	Sebastian	350	9	3.1	5.7	ARV	A	B
28	Ft. Smith	Crawford	1390	---	73	33.6	BM	W	B
29	Sequoyah	Washington	500	8	275	352	OH	R	B
30	SWEPCO	Benton	531	17	14	16.9	OH	W	B
31	Charles	Lawrence	562	8	18	20.5	OH	A	B
32	Lee Creek	Crawford	634	11	465	469.4	BM	W	B
33	Beaver Fork	Faulkner	900	10	11.5	8.2	ARV	R	B
34	Hinkle	Scott	965	15	27.5	18.2	ARV	A	B
35	Brewer	Conway	1165	20	36.4	20	ARV	W	B
36	June	Lafayette	60	5	4	42.7	GCP	A	C
37	Bailey	Conway	124	8	7.5	38.7	ARV	R	C

Table III-48: Significant Publicly-Owned Lakes

No.	Lake	County	Acres	Ave. Depth	Water Shed (mi^2)	W/A[#]	Eco-region[*]	Purpose[+]	Type
38	Tricounty	Calhoun	280	7	11.5	26.3	GCP	A	C
39	Cox Creek	Grant	300	6	17	36.3	GCP	A	C
40	Frierson	Greene	335	8	7.3	13.9	D	A	C
41	Storm Creek	Phillips	420	7	8	12.2	D	R	C
42	Calion	Union	510	6	6.7	8.4	GCP	A	C
43	Poinsett	Poinsett	550	7	4.5	5.2	D	A	C
44	Bear Creek	Lee	625	10	6	6.1	D	R	C
45	Upr White Oak	Ouachita	630	8	20.7	21	GCP	A	C
46	Atkins	Pope	750	6	10.2	8.7	ARV	A	C
47	Overcup	Conway	1025	4	17.2	10.7	ARV	A	C
48	Lwr White Oak	Ouachita	1080	8	42.5	25.2	GCP	A	C
49	Harris Brake	Perry	1300	6	11.2	5.5	ARV	A	C
50	Monticello	Drew	1520	12.5	6.8	2.9	GCP	A	C
51	Cane Creek	Lincoln	1620	6	24	9.5	GCP	A	C
52	Wilson	Ashley	150	5	1	4.3	D	A	D
53	Enterprise	Ashley	200	5	2	6.4	D	A	D
54	First Old River	Miller	200	4	2	6.4	GCP	A	D
55	Pickthorne	Lonoke	207	5	13.2	40.8	D	A	D
56	Hogue	Poinsett	280	4	2	4.6	D	A	D
57	Greenlee	Monroe	300	6	0.5	1.1	D	A	D
58	Mallard	Mississippi	300	6	0.5	1.1	D	A	D
59	Grampus	Ashley	334	6	2	3.8	D	A	D
60	Des Arc	Prairie	350	6	1	1.8	D	A	D
61	Wallace	Drew	362	5	1	1.8	D	A	D
62	Pine Bluff	Jefferson	500	6	4	5.1	D	A	D
63	Ashbaugh	Greene	500	5	1	1.3	D	A	D
64	Bois D'Arc	Hempstead	750	4	4	3.4	GCP	A	D
65	Old Town	Phillips	900	4	23	16.4	D	R	D
66	Horseshoe	Crittenden	1200	10	13.5	7.2	D	R	E
67	Upper Chicot	Chicot	1270	15	14	7.1	D	R	E
68	Grand	Chicot	1400	7	5.5	2.5	D	A	E
69	Georgia Pacific	Ashley	1700	4	4	1.5	GCP	W	E
70	Blue Mountain	Logan	2900	9	488	107.7	ARV	F	E
71	Columbia	Columbia	2950	11	48	10.4	GCP	W	E
72	Nimrod	Yell	3600	8	680	120.9	ARV	F	E
73	Lower Chicot	Chicot	4030	15	350	55.6	D	R	E
74	Conway	Faulkner	6700	5	136	13	ARV	A	E

Table III-48: Significant Publicly-Owned Lakes

No.	Lake	County	Acres	Ave. Depth	Water Shed (mi^2)	W/A[#]	Eco-region[*]	Purpose[+]	Type
75	Erling	Lafayette	7000	7	400	36.6	GCP	W	E
76	Ozark	Franklin	10600	14	151801	9165.3	ARV	N	E
77	Felsenthal	Bradley	14000	7	10852	496.1	GCP	R	E
78	Millwood	Little River	29500	5	4144	89.9	GCP	F	E
79	Dardanelle	Pope	34300	14	153666	2867.2	ARV	N	E
		Total Acres	**357896**						

[#] Watershed (Acres)/Area of Lake

* OM=Ouachita Mountains; BM=Boston Mountains; OH=Ozark Highlands; ARV=Arkansas River Valley; GCP=Gulf Coastal Plain; D=Delta

+ W=Water Supply; F=Flood Control; H=Hydropower; A=Angling (Public Fishing); N=Navigation; R=Recreation

Water Quality Standards Development

In cooperation with the Little Rock office of the USGS, the Department has initiated projects to develop water quality standards for publicly-owned lakes. The first phase is to identify reference lakes for each of the lake types and different lake purposes within each of the State's ecoregions. The goals of the first phase are to develop a process for identifying potential reference lakes, identify these lakes, and collect water quality data from these lakes to verify reference conditions. The second phase includes intensive, multi-year water quality sampling to support the reference lake determination; establish a database that can be used to help determine water quality trends and criteria; determine the similarities and differences between and among the lakes; and establish a more precise classification of the lakes.

A Phase I and Phase II project for the smaller impoundments of the Gulf Coastal and Mississippi Alluvial Plains ecoregions has been completed. Currently, Phase I projects have been implemented for the Type B lakes of the Ouachita Mountains, Ozark Highlands, Boston Mountains, and Arkansas River Valley ecoregions.

Lakes on the List of Impaired Waterbodies

Part IV of this report (Table IV-2) lists lakes that have had TMDLs completed (Category 4a). The majority of the TMDLs completed involving lakes have been for mercury contamination of edible fish tissue. Other TMDLs have been completed for either nutrients or turbidity.

Impaired Uses of Lakes

Table III-49: Lakes Use Support

Degree of Use Support	Monitored Assessment	Total Assessed (acres)
Size Fully Supporting	322,363	322,363
Size Not Supporting	35,533	35,533
Total Assessed (acres)	357,896	357,896

Table III-50: Designated Use Support of Assessed Lakes by Use Type

Use Type	Support (Lake acres)	Non-Support (Lake acres)
Fish consumption	334,259	23,637+
Fisheries	346,648	11,046
Primary Contact Recreation	356,396	1,500
Secondary Contact Recreation	357,896	0
Domestic Water Supply	357,896	0
Agricultural & Industrial Water Supply	357,896	0

+Total surface acres of the oxbow lakes in the Ouachita River basin are unknown.
*See text above.

Table III-51: Total Sizes of Lakes Listed Not Supporting Uses by Various Source Categories

Source Categories	Number of Lakes	Lake Acres
Surface erosion	2	4,410
Unknown	26	~29,385

Table III-51: Total Sizes of Lakes Listed Not Supporting Uses by Various Cause Categories

Cause Categories	Number of Lakes	Lake Acres
Nutrients (nitrogen & phosphorus)	6	4,165
Siltation/Turbidity	3	4,745
Pathogens	1	1,500
Copper	1	335
Mercury	12+	23,084+
Unknown	4	18,001

+Total surface acres of the oxbow lakes in the Ouachita River basin are unknown.
*See text above.

Chapter Six WETLANDS

The Arkansas Multi-Agency Wetland planning Team (MAWPT) coordinator position is currently vacant. Therefore, there are no new data for this period of record. Information regarding the Arkansas MAWPT can be found at www.mawpt.org.

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Chapter Seven PUBLIC HEALTH / AQUATIC LIFE CONCERNS

Background

The 1994 Water Quality Inventory report contained an in-depth look at bioaccumulative compounds and trace metals in Arkansas' lakes and streams. It was the culmination of a cooperative effort with the AGFC to collect, analyze, and evaluate data on compounds that could affect public health or aquatic life. The report contained data collected from numerous streams, rivers, and lakes. Overall, data collected and/or analyzed during the 1994 reporting period were much more extensive than usual. Since that report, the collection and analysis of data has been concentrated on evaluating the mercury problems discussed in the 1994 report.

During the 1996 reporting period, the Department's monitoring program concentrated on mercury and its effects on public health. Edible fish tissue (fillets), usually from predatory fishes, was analyzed for metals and pesticides from 32 lakes and numerous stream segments. These results are documented in the ADEQ (1996) *Integrated Water Quality Monitoring and Assessment Report*.

Since the 1996 reporting period, fish tissue has only been collected from those areas of the State with the greatest risk and highest concentrations of mercury and/or other fish tissue contaminants.

Public Health and Aquatic Life Impacts

Fish Consumption Advisories

Table III-52 lists the current fish consumption advisories for the State. The most significant health advisory changes in the State over the last several years have been the reduction in the total number of stream miles with dioxin advisories.

The Arkansas Department of Health (ADH) is responsible for issuing fish consumption advisories. Few waters have been added to the fish consumption advisory list since the 1996 report. Some advisories concerning the consumption of fish tissue with mercury contamination have been better defined and some dioxin advisories have been removed and/or scaled back. It is important to contact ADEQ, ADH, or AGFC for the latest advisories.

Table III-52: Fish Consumption Advisories in Place as of January, 2000

Waterbody /Reach No.	Type	Size Affected	Type Fish Consumption Restricted				Pollutant of Concern
			No Consumption		Lim. Consumption		
			Gen Pop	High Risk	Gen Pop	High Risk	
Bayou Bartholomew 08040205–002 08040205–012	River	~48 miles		X	X		Mercury
	High risk groups should not consume flathead catfish, gar, bowfin, pickerel, and blue catfish over 20", largemouth bass over 12", or buffalo over 18". The general public should not consume more than 2 meals per month of flathead catfish, gar, pickerel, bowfin, or blue catfish over 20" in length, largemouth bass over 12" in length, or buffalo over 18" in length.						
Bayou Meto 08020402–007	Stream	~48 miles	X	X			Dioxin
	Consumption of fish from this area is not recommended due to dioxin contamination. This applies to all risk groups.						
Big Cr Tributary 11140203–XXX	Stream	~2 miles	X	X			PCBs
	This stream is closed to fishing due to polychlorinated biphenyl contamination.						
Big Johnson Lake (Calhoun County)	Lake	80 acres		X	X		Mercury
	High risk groups have no restrictions on consumption of crappie or buffalo. They should not consume all other predators and non-predators. The general public has no restrictions on the consumption of crappie or buffalo. They should not consume more than two meals per month of all other predators. There is no restriction on consumption of non-predator fish.						
Champagnolle 08040201–003 L. Champagnolle 08040201–903	Stream	~20 miles			X	X	Mercury
	High risk groups should not consume predator or non-predator species over 13". The general public should not consume more than 2 meals per month of the predator species over 13". There are no restrictions on non-predator species.						
Lake Columbia	Lake	2,950 acres		X	X		Mercury
	High risk groups do not have any restrictions on the consumption of crappie, channel or blue catfish. They should not consume all other predators and non-predators. The general public has no restrictions on the consumption of largemouth bass less than 16 inches in length, or crappie, channel and blue catfish. They should not consume all other predators. There are no restrictions on non-predator fish.						
Cove Creek Lake (Perry County)	Lake	46 acres			X	X	Mercury
	High risk groups should not consume largemouth bass 12" or longer. There are no restrictions on all other predator or non-predator species. The general public should not consume more than 2 meals per months of largemouth bass 12-16" in length. They should not consume largemouth bass greater than 16" in length. There are no restrictions on all other predator or non-predator species.						
Cut-Off Creek 08040205–007	Stream	16.8 miles		X	X		Mercury
	High risk groups should not consume predator or non-predator species. The general public should consume no more than 2 meals per month of the predator species. They should not consume the non-predator species.						
Dorcheat Bayou 11140203–020 11140203–022 11140203–024 11140203–026	Stream	50.6 miles		X	X		Mercury
	High risk groups should not consume predator or non-predator species. The general public should not consume largemouth bass >16" in length or consume more than 2 meals per month of all other predator species.						
Dry Fork Lake (Perry County)	Lake	104 acres			X	X	Mercury
	High risk groups should not consume largemouth bass 16" or longer.						

Table III-52: Fish Consumption Advisories in Place as of January, 2000

Waterbody /Reach No.	Type	Size Affected	Type Fish Consumption Restricted				Pollutant of Concern
			No Consumption		Lim. Consumption		
			Gen Pop	High Risk	Gen Pop	High Risk	
	The general public should not consume more than 2 meals per month of largemouth bass 16" in length. There are no restrictions on all other predator and non-predator species.						
Dupree Lake	Lake	<10 acres	X	X			Dioxin
	Consumption of fish from this area is not recommended due to dioxin contamination. This applies to all risk groups.						
Felsenthal Lake	Lake	14,000 acres		X			Mercury
	High risk groups have no restrictions on the consumption of crappie and channel catfish 19" in length or less. They should not consume all other predators. There are no restrictions on the consumption of bluegill, but high risk groups should not consume all other non-predators. The general public should not consume more than 2 meals per month of blue catfish 18" in length or less. There are no restrictions on the consumption of crappie or channel catfish 19" in length or less. They should not consume all other predators. There are no restrictions on the consumption of bluegill, but the general public should not consume more than 2 meals a month of all other non-predator fish.						
Fourche La Fave River 11110206–002	River	8.7 miles			X	X	Mercury
	High risk groups should not consume largemouth bass 16" or longer. There are no restrictions on all other predator and non-predator species. The general public should not consume more than 2 meals per month of largemouth bass 16" or longer. There are no restrictions on all other predator and non-predator species.						
Grays Lake (Cleveland County)	Lake	22 acres		X	X		Mercury
	High risk groups should not consume largemouth bass over 13" in length, flathead catfish over 26" in length, or any gar, bowfin or pickerel. The general public should not consume any largemouth bass over 16" in length. The general public should not consume more than two meals per month of gar, bowfin, pickerel, flathead catfish over 26" in length, or largemouth bass 13" to 16" in length.						
Johnson Hole (Van Buren County)	Lake	~50 acres			X	X	Mercury
	High risk groups should not consume largemouth bass over 16" in length. The general public should not consume largemouth bass over 16" in length.						
Moro Bay Creek 08040201–001	Stream	~12 miles	X	X			Mercury
	High risk groups should not consume predator or non-predator species. The general public should not consume the predator species. They should not consume more than 2 meals per month of the non-predator species.						
Nimrod Lake	Lake	3,600 acres			X	X	Mercury
	High risk groups should not consume largemouth bass 16" in length or greater. The general public should consume no more than 2 meals per month of largemouth bass 16" or longer. There are no restrictions on all other predators.						
Ouachita River 08040201–002 08040201–004 08040202–002 08040202–003 08040202–004	River	66.3 miles	X	X			Mercury
	High risk groups should not consume predator or non-predator species. The general public should not consume the predator species. They should not consume more than 2 meals per month of the non-predator species.						
Saline River 08040204–001	River	55.8 miles	X	X			Mercury
	High risk groups should not consume predator or non-predator species.						

Table III-52: Fish Consumption Advisories in Place as of January, 2000

Waterbody /Reach No.	Type	Size Affected	Type Fish Consumption Restricted				Pollutant of Concern
			No Consumption		Lim. Consumption		
			Gen Pop	High Risk	Gen Pop	High Risk	
08040204–002	The general public should not consume the predator species. There are no restrictions on the non-predator species.						
Saline River 08040204–004 08040204–006	River	33.9 miles		X	X		Mercury
	High risk groups should not consume predator or non-predator species. The general public should not consume more than 2 meals per month of the predator or non-predator species.						
Lake Fort Smith Formerly Shepherd Springs Lake Area (Crawford County)	Lake	1,390 acres			X	X	Mercury
	High risk groups should not consume black bass 16" or longer. There are no restrictions on all other predator or non-predator species. The general public should not consume more than 2 meals per month of black bass 16" to 20" long. No black bass over 20" should be consumed. There are no restrictions on all other predator or non-predator species.						
South Fork Little Red River 11010014–036	River	2.0 miles			X	X	Mercury
	High risk groups should not consume largemouth bass over 16" in length. The general public should not consume more than 2 meals per month of largemouth bass 16" long or greater. There are no restrictions for all other predators.						
Lake Winona (Saline County)	Lake						
	High risk groups should not consume black bass 16" or larger. The general public should not consume more than two meals per month of black bass 16" or larger.						
Oxbow Lakes	All types	1,240 acres			X	X	Mercury
	There is an advisory on all oxbow lakes, backwaters, overflow lakes and bar ditches formed by the Ouachita River below Camden. This includes waters inside the Felsenthal National Wildlife Refuge. High risk groups should not consume predator or non-predator species. The general public should not consume predator species. They should not consume more than 2 meals per month of all non-predator species. There are no restrictions on the consumption of buffalo or crappie.						
Spring Lake (Yell County)	Lake	Total Area not known	X	X			Mercury
	High risk groups should not consume largemouth bass 16" or longer from this lake. The general public should not consume more than 2 meals per month of largemouth bass 16" or longer.						
Lake Sylvia (Perry County)	Lake	82 acres			X	X	Mercury
	High risk groups should not consume largemouth bass 16" or longer from this lake. The general public should not consume more than 2 meals per month of largemouth bass 16" or longer.						

Public Water Supply / Drinking Water Use

The ambient monitoring network provided monthly data from all stations for nitrate and minerals (chlorides, sulfates, total dissolved solids) which were compared against the drinking water

standards to assess the protection of the drinking water use. Of the more than 9700 miles assessed for these parameters for drinking water use support, approximately 160 miles were not meeting the use. Most of the exceedances were caused by excess mineral concentrations. In addition, approximately 547 stream miles have had the drinking water designated use removed through site specific amendments to the water quality standards, to date (not just this period of record).

Source Water Protection Program, Arkansas Department of Health

Arkansas' Source Water Protection Program (SWAP) is an EPA program mandated by the 1996 amendments to the Safe Drinking Water Act that required each state to assess all public drinking water sources for vulnerability to contamination. Responsibility for the development of the SWAP plan and for conducting the vulnerability assessments was given to the Engineering Division at the ADH, now the Engineering Section at the ADH.

Vulnerability assessment is a multi-step process consisting of accurate mapping of drinking water source locations, delineation of source water "assessment" areas where the water is likely derived from, mapping of potential contaminant locations within the assessment areas, and producing a susceptibility analysis using a Geographical Information System. The purpose of the SWAP is to establish a viable method for assessing vulnerability and for producing accurate maps intended to serve as the basis for source water protection planning by public water systems, their customers, and other interested parties. Source protection programs help to ensure a continued safe drinking water supply, provide for monitoring flexibility, and limit capital expenditures for treatment. The results of the assessments can also be used by other government entities and conservation groups to better understand the cumulative effects of various human activities; they also help to determine where the most critical problems are located within a watershed. Arkansas' SWAP was approved by EPA Region 6 in November 1999, and the original assessments were completed in May 2003 using ArcView 3.2. Currently, USGS is under contract to ADH to update the SWAP model so that it will support ArcGIS 10.x, with a scheduled completion date of July, 2014. ADH's Source Water Protection team—continues to provide technical assistance for the development of source water protection plans—and produces program report elements as required, for new water systems or new drinking water sources. More information about the SWAP and source water protection planning can be accessed on the Arkansas Department of Health's Engineering Section website at: http://www.healthy.arkansas.gov/programsServices/environmentalHealth/Engineering/sourceWaterProtection/Pages/default.aspx.

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Chapter Eight REVIEW OF EPA'S NATIONAL RIVERS AND STREAMS ASSESSMENT 2008-2009

The Department, at the request of U.S. EPA Region VI, reviewed EPA's National Rivers and Streams Assessment 2008-2009 (2013). The National Rivers and Streams Assessment (NRSA) was designed to study all rivers and streams of the United States from the largest rivers to the smallest streams following a statistically validated approach. ADEQ review was initiated to address discrepancies brought forth by U.S EPA Region VI regarding the percentage of impaired waters on Arkansas' 2008 and draft 2010, 2012 303(d) listings and the percentage of impaired waters described from the 2008-2009 NRSA. In short, the 2008-2009 NRSA classifies 57% of the State's river miles sampled as "Poor" condition due to total nitrogen, total phosphorous, and/or salinity. Arkansas' 2008 303(d) classifies 41% of State assessed waters as impaired for all parameters, including nutrients, while the State's draft 2010 and 2012 303(d) list identifies 38% and 37% as impaired, respectively.

Furthermore, 2008-2009 NRSA data indicate biological impairment at approximately 89% of stations sampled. Impairments of periphyton, macroinvertebrate, and/or fish assemblages were determined using metrics derived from a large-scale dataset and the assemblage derivation from least-disturbed reference conditions. Due to concerns of longitudinal shifts in assemblage structure associated with stream order, Planning staff only assesses biocriteria scores for fishes collected from wadeable streams. Multi-metric indices to evaluate macroinvertebrate or periphyton assemblages in Arkansas have yet to be established; therefore, comparisons were only made regarding fish collections. Planning staff thoroughly reviewed fish assemblage data and are in disagreement on the proportion of site identified as "Poor" condition (43% or 30 of 69). Planning staff analyzed fish assemblages using ADEQ's CSI and determined only 14 of 69 stations had less than comparable fish assemblages. However, there were discrepancies between specific sites characterized by ADEQ and NRSA as having a poor fish assemblage. Additionally, 10 of ADEQ's 14 stations were considered as either intermittent or canal/ditch by NHD. A disproportionate amount of headwater streams may be influencing results and interpretation of water quality and biological impairment for several key reasons. A one-time site visit to headwater streams, without regard to duration of flow, cannot be expected to portray an accurate depiction of biotic and abiotic conditions. As mentioned, a number of stations sampled were actually agricultural ditches. These waterbodies should not be included when interpreting the state of our waters.

The NRSA study design was specifically geared for uneven selection of sites among stream orders for wadeable and non-wadeable. Distribution of 2008-2009 NRSA sites indicated 52% had watershed areas < 10 mi^2. Arkansas streams with watershed sizes of <10 mi^2 and of 1st-3rd order are most likely intermittent, at best. A total of 39 % of NRSA stations were identified as intermittent using NHD, and 6 sites were classified as canal/ditch. Arkansas' Regulation No. 2 establishes a secondary fisheries use for watersheds <10 mi^2 during the primary season. Of the

43 <10 mi^2 NRSA sites, 93% were sampled during the critical season, May through September, when sites are not expected to support aquatic life. The Department's water quality monitoring stations have been more orientated towards larger watersheds to fully assess waters of the State. In 2008, distribution of ADEQ's water quality monitoring stations was weighted more heavily towards streams and rivers with watersheds >100mi^2, however in 2011, a more even distribution of stations among watershed was observed. From 2008 to 2011, there was a 9% increase of streams with <10 mi^2 and a 243% increase in total number of stations. Despite marked increase of sampling stations between 2008 and 2011, there was a reduction of 2078 impaired miles between Arkansas' 2008 303(d) list and draft 2012 303(d) list.

PART IV WATER QUALITY LIMITED WATERBODIES LIST: 303(D) LIST

Introduction

Clean Water Act Section 303(d) requires states to identify waters which do not meet or are not expected to meet applicable water quality standards. These waterbodies are compiled into a list known as the 303(d) list. The 2014 list of impaired waterbodies (303(d) list) contained in this report has not yet been approved by the U. S. Environmental Protection Agency.

Methodology

The methodology used for listing of impaired waters (303(d)) is essentially the same as for the 305(b) assessments. This is detailed in Part III, Chapter Three of this document.

Water Quality Limited Waters

Waterbodies listed on the 2014 list of impaired waterbodies are depicted on Figures IV-1 (Category 4a listings) and Figure IV-2 (Category 5 listings). The 2014 list of impaired waterbody segments is divided into four tables: a list of stream segments (Table IV-1) and a list of lakes (Table IV-2) not currently meeting water quality standards but have completed TMDLs; and a list of stream segments (Table IV-3) and lakes (Table IV-4) listed in Category 5 as described below.

The waterbody may be impaired, or one or more water quality standards may not be attained. Waterbodies in Category 5 will be prioritized in the following manner:

Category 5. The waterbody is impaired, or one or more water quality standards may not be attained. Waterbodies in Category 5 will be prioritized as:

High

- Truly impaired; develop a TMDL or other corrective action(s) for the listed parameter(s).

Medium

- Waters currently not attaining standards, but may be de-listed with future revisions to APC&EC Regulation No. 2, the state water quality standards; or
- Waters which are impaired by point source discharges and future permit restrictions are expected to correct the problem(s).

Low

- Waters currently not attaining one or more water quality standards, but all designated uses are determined to be supported; or

- There is insufficient data to make a scientifically defensible decision concerning designated use attainment; or
- Waters ADEQ assessed as unimpaired, but were assessed as impaired by EPA.

Key to Table IV-1 through IV-4 abbreviations:

Designated Use Not Supported: uses specified in water quality standards for each waterbody or stream segment which are not being supported.

AI = agricultural and/or industrial water supply
DW = domestic water supply
FC = fish consumption
FSH = fisheries
PC = primary contact
SC = secondary contact

Assessment Method:

e = evaluated assessment
M = monitored assessment

Water Quality Standard Non-Attainment: contaminant identified as the cause of impairment.

Al = aluminum
AM = ammonia
Be = beryllium
Cd = cadmium
Cl = chlorides
Cu = copper
DO = dissolved oxygen
Hg = mercury
Ni = Nickel
NU = nutrients[2]
NO3 = nitrate nitrogen
OE = organic enrichment/low dissolved oxygen
PA = pathogen indicator bacteria
Pb = lead
PCB = Polychlorinated biphenyl
pH = pH
PO = priority organics
Se = Selenium
SI = siltation/turbidity
SO4 = sulfates
Tb = turbidity
TDS = total dissolved solids
Tm = temperature
Tox = Toxicity
TP = total phosphorus
Zn = zinc

Sources of Contamination - the probable source of the contaminant causing impairment.

AG = agriculture activities
HP = hydropower
IP = industrial point source
MP = municipal point source
SE[1] = surface erosion
SV = silviculture
UN = unknown
UR = urban runoff
RC = road construction/maintenance
RE = resource extraction (mining; oil and gas extraction)

Priority Rank - A ranking of waters in order of need for corrective action taking into account the severity of the pollution and designated uses of the waters.

H = High priority: highest risk of affecting public health or welfare; substantial impact on aquatic life.
M = Medium priority: moderate risk to public health, welfare or to aquatic life.

L = Low priority: lowest risk to public health or welfare; secondary impact on aquatic life.

Notes:

[1] Surface Erosion – This category includes erosion from agriculture activities, unpaved road surfaces, in-stream erosion, mainly from unstable stream banks, and any other land surface disturbing activity.

[2] This listing was used in previous 303(d) lists. TMDLs are currently being developed for these listings.

HUC - Reach - a numerical identifier of a specific segment of a stream

Miles - the total length (in miles) of a specific reach or segment of a stream

Station - water quality monitoring station number

Figure IV-1: Arkansas' Impaired Waterbodies with Completed TMDLs (Category 4a)

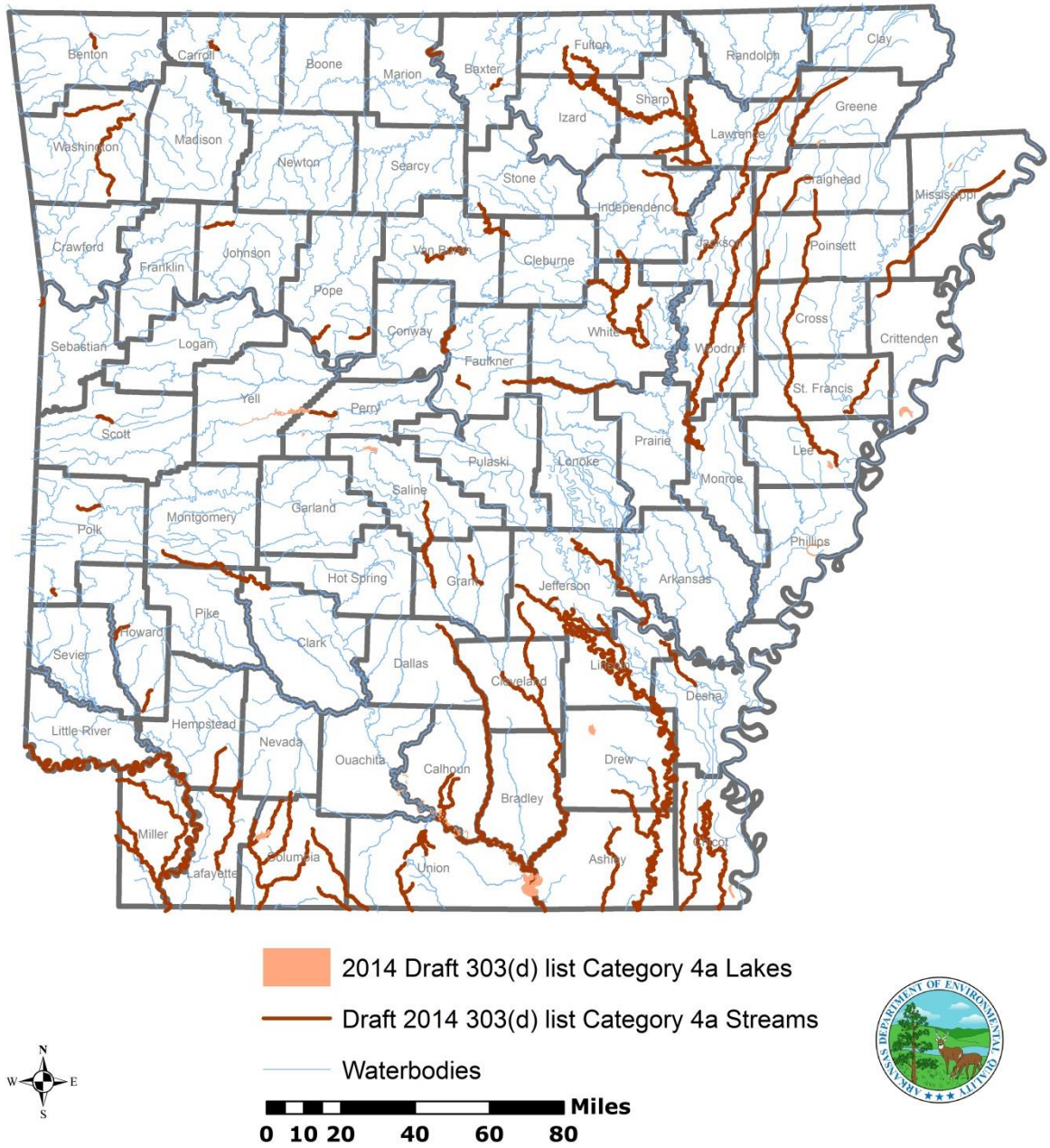

Figure IV-2: Arkansas' Impaired Waterbodies without Completed TMDLs (Category 5)

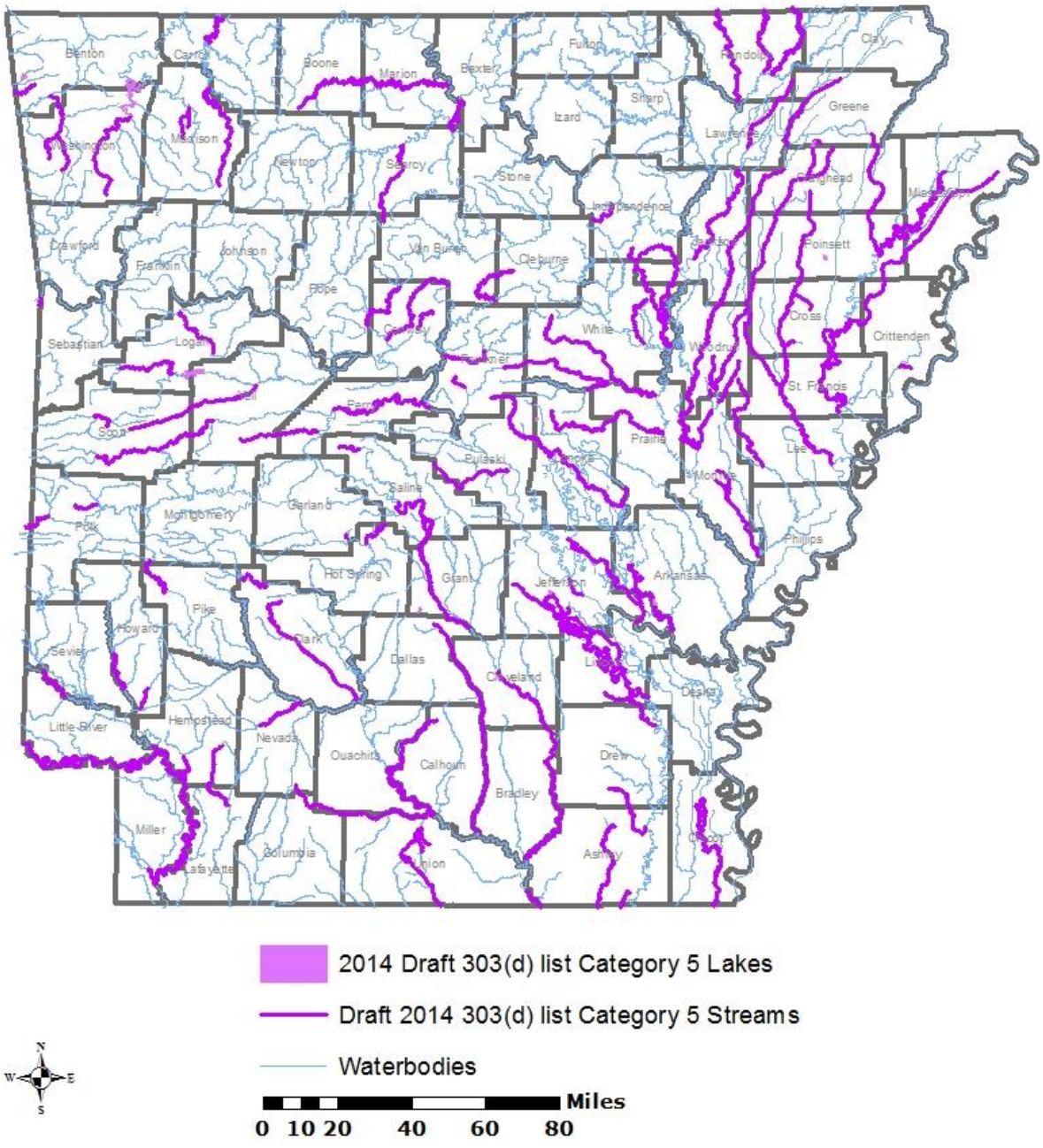

Table IV-1: Water Quality Limited Waterbodies – Streams and Rivers (Category 4a) - 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source of Contamination					
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other
Dorcheat Bayou	Columbia	11140203	-022	1A	8.40	RED0015A	x							x				x				x		Hg						UN
Dorcheat Bayou	Columbia	11140203	-020	1A	11.90	e	x							x				x				x		Hg						UN
Dorcheat Bayou	Columbia, Lafayette	11140203	-026	1A	11.70	UWBDT01, 02	x							x								x		Hg						UN
Dorcheat Bayou	Columbia	11140203	-024	1A	7.00	e	x							x										Hg						UN
Little Bodcau Creek	Hempstead, Lafayette	11140205	-010	1A	19.50																	x								
Bodcau Creek	Hempstead, Lafayette	11140205	-007	1A	7.80																	x								
Bodcau Creek	Lafayette	11140205	-06	1A	22.40									x		x					x	x								
Bodcau Creek	Lafayette	11140205	-02	1A	6.00									x		x					x	x								
Beech Creek	Columbia	11140203	-025	1A	15.70								x			x						x								
Big Creek	Columbia, Nevada	11140203	-923	1A	26.46									x								x								
Big Creek	Columbia	11140203	-023	1A	21.80												x	x	x			x								UN
Horsehead Creek	Columbia	11140203	-021	1A	16.80									x								x								
Days Creek	Miller	11140302	-003	1B	11.00	RED0004A					x													NO_3		x				
Sulphur River	Miller	11140302	-008	1B	7.20	e									x	x		x	x											
Sulphur River	Miller	11140302	-006	1B	6.50	RED0005									x	x		x	x											
Sulphur River	Miller	11140302	-004	1B	0.70	e									x	x		x	x											
Sulphur River	Miller	11140302	-002	1B	8.50	e									x	x		x	x											

Table IV-1: Water Quality Limited Waterbodies – Streams and Rivers (Category 4a) - 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment											Source of Contamination					
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other
Sulphur River	Miller	11140302	-001	1B	6.30	e									x	x		x	x											
Red River	Lafayette, Miller	11140201	-003	1B	15.50	RED0009									x	x			x											
Red River	Little River	11140106	-025	1B	8.00	e											x	x	x											
Red River	Little River	11140106	-005	1B	25.30	RED0025											x	x	x											
Red River	Little River	11140106	-003	1B	9.80	e											x	x	x											
Red River	Little River, Miller	11140106	-001	1B	34.80	e											x	x	x											
Red River	Hempstead, Miller	11140201	-011	1B	15.20	RED0046													x											
Red River	Hempstead, Lafayette, Miller	11140201	-007	1B	40.10	RED0045											x		x											
Red River	Lafayette, Miller	11140201	-005	1B	12.00	e											x		x											
Red River	Lafayette, Miller	11140201	-004	1B	4.00	e											x		x											
McKinney Bayou	Miller	11140201	-014	1B	21.60	RED0055												x	x											
McKinney Bayou	Miller	11140201	-012	1B	23.10	RED0054											x	x	x											
Rolling Fork	Polk	11140109	-919	1C	12.80	RED0058																		TP, NO_3	x					
Holly Creek	Howard	11140109	-013	1C	6.20	RED0034B														x										
Mine Creek	Howard	11140109	-033	1C	11.40	MIN0002														x										
Oak Bayou	Desha, Lincoln	8050002	-910	2A	18.30	OUA0179		x			x	x				x	x		x									x		
Boeuf River	Chicot	8050001	-018	2A	49.40	OUA0015A		x				x				x	x	x	x									x		
Boeuf River	Chicot	8050001	-019	2A	58.10	UWBFR01		x			x	x				x	x	x	x									x		
Bayou Macon	Chicot	8050002	-003	2A	80.50	UWBYM01; UWBYM02										x														

Table IV-1: Water Quality Limited Waterbodies – Streams and Rivers (Category 4a) - 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source of Contamination					
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other
Bayou Macon	Chicot	8050002	-006	2A	38.60	e										x														
Big Bayou	Chicot	8050001	-022	2A	27.10	OUA0032; UWBGB01										x	x													
Bayou Bartholomew	Ashley	8040205	-001	2B	60.10	OUA0013		x								x	x		x									x		
Bayou Bartholomew	Ashley	8040205	-002	2B	17.90	UWBYB01	x	x								x	x		x					Hg				x		UN
Melton's Creek	Lincoln	8040205	-903	2B	8.70	OUA0148			x											x										UN
Harding Creek	Jefferson	8040205	-902	2B	4.60	OUA0145			x											x								x	X	
Deep Bayou	Jefferson, Lincoln	8040205	-005	2B	28.90	OUA0151		x	x							x				x							x	x		UN
Bayou Bartholomew	Jefferson, Lincoln	8040205	-006	2B	82.30	OUA0033		x								x												x		
Cutoff Creek	Ashley, Drew	8040205	-007	2B	16.80	UWCOC01	x									x								Hg			x			UN
Bayou Bartholomew	Drew, Chicot, Desha, Ashley	8040205	-912	2B	82.70	UWBYB02		x								x	x		x									x		
Cross Bayou	Lincoln	8040205	-905	2B	2.40	OUA0152			x											x										UN
Bayou Bartholomew	Lincoln, Desha	8040205	-013	2B	33.90	UWBYB03		x	x							x	x		x	x								x		
Bayou Bartholomew	Drew, Desha, Lincoln	8040205	-012	2B	25.00	UWBYB02	x	x								x	x		x					Hg				x		UN

Table IV-1: Water Quality Limited Waterbodies – Streams and Rivers (Category 4a) - 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source of Contamination					
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other
Chemin-A-Haut Cr.	Ashley	8040205	-907	2B	30.50	OUA0012			x											x										UN
Bearhouse Creek	Ashley, Drew	8040205	-901	2B	24.40	OUA0155														x										
Jack's Bayou	Jefferson, Lincoln	8040205	-904	2B	6.00	OUA0150														x										
Saline River	Cleveland	8040203	-001	2C	0.20	OUA0010A,117	x																	Hg						UN
Big Creek	Grant	8040203	-904	2C	12.09	OUA0018							x			x						x									
Saline River	Grant, Saline	8040203	-010	2C	29.80	OUA0026													x											
Saline River	Ashley, Bradley	8040204	-001	2C	2.80	e	x																	Hg						UN
Saline River	Bradley, Drew, Ashley	8040204	-002	2C	53.00	e	x																	Hg						UN
Saline River	Bradley, Cleveland	8040204	-004	2C	16.40	e	x																	Hg						UN
Big Creek	Cleveland, Jefferson	8040204	-005	2C	28.90	OUA0043										x											x			
Saline River	Cleveland	8040204	-006	2C	17.50	OUA0118	x												x					Hg						UN
Ouachita River	Ashley, Union	8040202	-002	2D	4.00	OUA008B	x																	Hg						UN
Ouachita River	Union	8040202	-003	2D	8.40	e	x																	Hg						UN
Ouachita River	Union	8040202	-004	2D	28.90	OUA0124B	x																	Hg						UN
Moro Creek	Calhoun, Cleveland, Bardley, Dallas	8040201	-001	2D	12.00	OUA0028	x									x								Hg						UN
Moro Creek	Dallas, Cleveland	8040201	-901	2D	57.90	e										x											x			

Table IV-1: Water Quality Limited Waterbodies – Streams and Rivers (Category 4a) - 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source of Contamination					
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other
Ouachita River	Ashley, Union	8040201	-002	2D	22.50	OUA008B	x																	Hg						UN
Ouachita River	Bradley, Union	8040201	-004	2D	2.50	OUA0037	x																	Hg						UN
L. Champagnolle Cr.	Calhoun	8040201	-903	2D	20.90	e	x																	Hg						UN
Champagnolle	Calhoun	8040201	-003	2D	20.00	UWCHC01	x																	Hg						UN
Elcc Tributary	Union	8040201	-606	2D	8.50	OUA0137A+		x			x						x	x	x					AM	x					
Flat Creek	Union	8040201	-706	2D	16.00	OUA0137C		x			x						x	x	x											RE
Salt Creek	Union	8040201	-806	2D	8.00	OUA0137D		x			x						x		x											RE
Big Cornie Creek	Columbia, Union	8040206	-015	2E	15.00	OUA0002												x												
Little Cornie Creek	Columbia, Union	8040206	-016	2E	18.00	e												x												
Little Cornie Creek	Union	8040206	-716	2E	5.00	e												x												
Little Cornie Creek	Union	8040206	-816	2E	3.00	e												x												
Walker Branch	Union	8040206	-916	2E	3.00	e												x												
South Fork Caddo River	Montgomery	8040102	-023	2F	16.60	OUA0044										x					x	x	x								
Prairie Creek	Polk	8040101	-048	2F	10.00	OUA0040										x											x			
Caddo River	Montgomery, Pike	8040102	-019	2F	7.70	OUA0023															x		x							RE
Caddo River	Clark, Pike	8040102	-018	2F	4.10	OUA0023															x		x							RE
Caddo	Clark	8040102	-016	2F	13.50	OUA0023															x		x							RE

Table IV-1: Water Quality Limited Waterbodies – Streams and Rivers (Category 4a) - 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source of Contamination					
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other
River																														
Wabbaseka Bayou	Arkansas, Jefferson, Lincoln	8020401	-003	3A	101.70	UWWSB01										x														
Cadron Creek	Conway, Faulkner	11110205	-011	3D	2.20	UWCCR01										x														
Cadron Creek	Conway, Faulkner	11110205	-012	3D	9.50	e										x														
Fourche LaFave	Perry	11110206	-002	3E	8.70	e	x																	Hg						UN
White Oak Creek	Pope	11110203	-927	3F	10.00	ARK0053		x								x														UN
Stone Dam Creek	Faulkner	11110203	-904	3F	3.00	ARK0051		x			x													AM, NO_3		x				
Whig Creek	Pope, Yell	11110203	-931	3F	10.00	ARK0067		x			x										x			NO_3		x				
Mulberry River	Johnson	11110201	-009	3H	9.10	ARK0138								x																
Poteau River	Sebastian	11110105	-001	3I	2.00	ARK0014		x								x											x			
Poteau River near Waldron	Scott	11110105	-031	3I	6.60	ARK0055		x													x		x	TP	x	x				
Clear Creek	Washington	11110103	-029	3J	1.50	ARK0010C														x										
Town Branch	Benton	11070208	-903	3J	3.00	ARK0056; UWTBC01																		NU						
Cache River Ditch	Greene	8020302	-032	4B	11.40	e		x								x												x		
Cache River	Greene, Lawrence	8020302	-031	4B	3.40	e		x								x												x		
Cache River	Greene, Lawrence	8020302	-029	4B	3.90	e		x								x												x		

Table IV-1: Water Quality Limited Waterbodies – Streams and Rivers (Category 4a) - 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source of Contamination					
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other
Cache River	Greene, Lawrence	8020302	-028	4B	5.90	UWCHR04		x								x												x		
Cache River	Greene, Lawrence	8020302	-027	4B	3.90	e		x								x												x		
Cache River	Craighead, Jackson	8020302	-021	4B	18.40	e										x														
Cache River	Jackson, Poinsett	8020302	-020	4B	22.60	UWCHR03										x														
Cache River	Jackson, Woodruff	8020302	-019	4B	13.70	e										x														
Cache River	Woodruff	8020302	-018	4B	25.00	UWCHR02										x														
Cache River	Woodruff, Prairie	8020302	-017	4B	15.80	e										x														
Cache River	Monroe, Prairie	8020302	-016	4B	21.80	WHI0032										x														
Bayou DeView	Woodruff	8020302	-004	4B	21.20	UWBDV02										x														
Bayou DeView	Woodruff, Jackson	8020302	-005	4B	8.60	e										x														
Bayou DeView	Cross, Jackson, Poinsett	8020302	-006	4B	10.20	e										x														
Bayou DeView	Poinsett	8020302	-007	4B	18.20	e										x														
Bayou DeView	Craighead	8020302	-009	4B	11.70	WHI0026										x														
Village Creek	Jackson	11010013	-006	4C	25.20	UWVGC01; UWVGC03										x														
Village Creek	Jackson	11010013	-007	4C	1.20	e										x														
Village Creek	Jackson	11010013	-008	4C	13.00	e										x														

Table IV-1: Water Quality Limited Waterbodies – Streams and Rivers (Category 4a) - 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source of Contamination					
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other
Village Creek	Lawrence	11010013	-012	4C	7.40	e										x														
Village Creek	Lawrence, Randolph	11010013	-014	4C	22.80	UWVGC02										x														
Cypress Bayou	Prairie, White, Lonoke	8020301	-010	4D	5.00	UWCPB01														x										
Cypress Bayou	White, Lonoke	8020301	-011	4D	9.50	e														x										
Cypress Bayou	White, Lonoke, Faulkner	8020301	-012	4D	17.50	e														x										
S. Fk. L. Red River	Van Buren	11010014	-036	4E	2.00	e	x																	Hg						UN
M. Fk. Little Red	Stone, Van Buren	11010014	-028	4E	12.00	e			x											x										UN
M. Fk. Little Red	Cleburne, Van Buren	11010014	-027	4E	8.80	WHI0043			x											x										UN
Ten Mile Creek	Independence, White	11010014	-009	4E	18.60	UWTMC01										x				x										
Little Red River	White	11010014	-007	4E	21.40	WHI0059														x										
Little Red River	White	11010014	-008	4E	9.00	e														x										
Little Red River	White	11010014	-010	4E	2.90	e														x										
Little Red River	White, Cleburne	11010014	-012	4E	8.00	e														x										
Overflow Creek	White	11010014	-004	4E	0.60	e														x										
Overflow Creek	White	11010014	-006	4E	21.70	UWOFC01														x										

Table IV-1: Water Quality Limited Waterbodies – Streams and Rivers (Category 4a) - 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source of Contamination					
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other
South Fork Little Red River	Van Buren	11010014	-038	4E	14.70	UWSRR01; UWSRR02; WHI0190														x										
North Fork River	Baxter	11010006	-001	4F	2.38	USGS							x																	HP
North Fork River	Baxter	11010006	-701	4F	1.58	USGS							x																	HP
North Fork River	Baxter	11010006	-801	4F	0.56	USGS							x																	HP
Strawberry River	Fulton, Izard	11010012	-011	4G	20.40	UWSBR01		x								x				x							x			
L. Strawberry River	Fulton, Izard	11010012	-010	4G	16.00	WHI0143E; WHI0143H		x								x				x							x			
Strawberry River	Sharp	11010012	-008	4G	8.40	e		x								x											x			
Strawberry River	Sharp, Lawrence	11010012	-006	4G	19.00	WHI0024		x								x											x			
Strawberry River	Lawrence	11010012	-005	4G	0.70	e		x								x											x			
Strawberry River	Lawrence	11010012	-004	4G	0.30	e		x								x											x			
Strawberry River	Lawrence	11010012	-002	4G	9.40	UWSBR03		x								x											x			
Caney Creek	Sharp, Lawrence	11010012	-015	4G	11.60	WHI0143Q; WHI0143R														x										
Cooper Creek	Lawrence	11010012	-003	4G	11.80	WHI0143S														x										
Dota Creek	Independence	11010009	-902	4G	21.80	WHI0165														x										
Mill Creek	Sharp	11010012	-016	4G	9.90	WHI0143N														x										
Reeds' Creek	Sharp, Lawrence	11010012	-014	4G	15.00	UWRDC01														x										

Table IV-1: Water Quality Limited Waterbodies – Streams and Rivers (Category 4a) - 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source of Contamination					
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other
White River	Baxter, Marion	11010003	-902	4I	3.00	USGS							x																	HP
West Fork	Washington	11010001	-024	4K	27.20	WHI0051		x								x											x			
White River	Washington	11010001	-023	4K	6.20	WHI0052		x								x											x			
Osage Creek Near Berryville	Carroll	11010001	-945	4K	5.00	BUFET008; WHI0065; WHI0069; WHI0130																		TP						
Blackfish Bayou	St. Francis	8020203	-003	5A	2.40	FRA0027		x								x												x		
Blackfish Bayou	St. Francis	8020203	-005	5A	2.60	e		x								x												x		
Blackfish Bayou	St. Francis	8020203	-007	5A	16.10	e		x								x												x		
Tyrnoza River	Mississippi	8020203	-012	5A	50.00	FRA0033										x														
L'Anguille River	Lee	8020205	-001	5B	19.70	FRA0010		x								x												x		
L'Anguille River	Lee, St. Francis	8020205	-002	5B	16.80	e		x								x												x		
L'Anguille River	St. Francis	8020205	-003	5B	1.80	e		x								x												x		
L'Anguille River	St. Francis, Cross	8020205	-004	5B	16.00	UWLGR01		x	x							x				x								x		
L'Anguille River	Cross, Poinsett, Craighead	8020205	-005	5B	44.10	UWLGR02		x	x							x				x								x		

Table IV-2: Water Quality Waterbodies-Lakes (Category 4a) – 303(d) List

Lake Name	HUC	Lake Type	Plan Seg	Acres	County	Assessment Methodology	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source						TMDL Date
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	UN	
Ouachita River Oxbows below Camden	8040202		2D		Ashley Calhoun Union Bradley Ouachita	M	X																	HG						x	2002
Felsenthal	8040202	E	2D	14,000	Bradley	M	X																	HG						x	2004
Big Johnson	8040201	NC	2D	49	Calhoun	M	X																	HG						x	2004
Grand	8050002	E	2A	900	Chicot	M		X																NU						x	2007
Grays	8040204	NC	2C	36	Cleveland	M	X																	HG						x	2004
Columbia	11140203	E	1A	3000	Columbia	M	X																	HG						x	2002
Horseshoe	8020203	E	5A	1200	Crittenden	M		X																NU						x	2007
Monticello	8040204	B	2C	1520	Drew	M	X																	HG						x	2004
Frierson	8020302	C	4B	335	Greene	M		X																SI						x	2007
Bear Creek	8020203	C	5B	625	Lee	M		X																NU						x	2007
Cove Creek	11110206	B	3H	59	Logan	M	X																	HG						x	2002
First Old River	11140201	D	1B	240	Miller	M		X																NU						x	2007
Mallard	8020204	D	5C	300	Mississippi	M		X																NU						x	2007
Dry Fork	11110206		3E	90	Perry	M	X																	HG						x	2002
Old Town	8020302	D	4A	900	Phillips	M		X																NU						x	2007
Winona	8040203	A	2C	715	Saline	M	X																	HG						x	2002
Johnson Hole	11010014	A	4E	26	Van Buren	M	X																	HG						x	2002
Nimrod	11110206	E	3E	3550	Yell	M	X																	HG						x	2002
Spring	11110204	B	3G	82	Yell	M	X																	HG						x	2004

Table IV-3: Water Quality Limited Waterbodies -Streams and Rivers (Category 5) – 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source						Priority
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	
Little Bodcau Creek	Hempstead, Lafayette	11140205	-010	1A	19.5	RED0056		x					x																	UN	
Red River	Hempstead	11140201	-011	1B	15.2	RED0046		x								x											x			UN	L
Bois D'Arc Creek	Hempstead	11140201	-008	1B	8.9	UWBDK02							x																	UN	L
Red River	Little River	11140106	-025	1B	8.0	e		x								x														UN	L
Red River	Little River	11140106	-005	1B	25.3	RED0025		x								x														UN	L
Red River	Little River	11140106	-003	1B	9.8	e		x								x														UN	L
Red River	Little River	11140106	-001	1B	34.8	e		x								x														UN	L
Red River	Miller	11140201	-007	1B	40.1	RED0045		x								x											x			UN	L
Red River	Miller	11140201	-005	1B	12.0	e		x								x											x			UN	L
Red River	Miller	11140201	-004	1B	4.0	e		x								x											x			UN	L
Little River	Hempstead	11140109	-001	1C	4.0	Report									x																
Mine Creek	Howard	11140109	-033	1C	11.4	RED0018B												x							x						L
Saline River	Howard	11140109	-010	1C	15.2	RED0021		x								x					x									HP	L
Little River	Little River	11140109	-023	1C	15.8	RED0002		x								x															
Mountain Fork	Polk	11140108	-014	1D	11.0	RED0001										x														UN	L
Bayou Macon	Chicot	8050002	-003	2A	80.5	UWBYM01											x													UN	L
Bayou Macon	Chicot	8050002	-006	2A	47.5	e											x														
Chemin-A-Haut Cr.	Ashley	8040205	-907	2B	30.5	OUA0012							x																	UN	L
Bearhouse Creek	Ashley	8040205	-901	2B	24.4	OUA0155		x					x									x								UN	M
Overflow Creek	Ashley	8040205	-908	2B	9.9	OUA0012A		x								x	x										x			UN	M

Table IV-3: Water Quality Limited Waterbodies -Streams and Rivers (Category 5) – 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source						Priority
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	
Main Street Ditch	Jefferson	8040205	-909	2B	2.0	OUA0146		x					x								x	x							x		M
Harding Creek	Jefferson	8040205	-902	2B	4.6	OUA0145		x													x	x							x		M
Bayou Imbeau	Jefferson	8040205	-910	2B	7.5	OUA0147		x					x							x		x							x		M
Deep Bayou	Jefferson	8040205	-005	2B	28.9	OUA0151															x										
Able's Creek	Lincoln	8040205	-911	2B	14.6	OUA0158										x														UN	M
Bayou Bartholomew	Lincoln	8040205	-013	2B	33.9	UWBYB03							x								x							x			M
Bayou Bartholomew	Lincoln	8040205	-006	2B	82.3	OUA0033																x								UN	L
Cross Bayou	Lincoln	8040205	-905	2B	2.4	OUA0152							x																	UN	
Saline River	Dallas	8040203	-007	2C	3.8	OUA0042										x															
Saline River	Dallas	8040204	-004	2C	16.4	e										x															
Saline River	Grant	8040203	-009	2C	15.6	e										x															
Saline River	Grant	8040204	-002	2C	53	OUA0010A+										x															
Saline River	Saline	8040203	-010	2C	29.8	OUA0026,41										x										x				UN	H
Saline River	Saline	8040203	-012	2C	10.2	e										x															
Saline River	Saline	8040203	-013	2C	4.0	e										x															
Saline River	Saline	8040203	-913	2C	9.3	e										x															

Table IV-3: Water Quality Limited Waterbodies -Streams and Rivers (Category 5) – 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment													Source						Priority
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	
Alum Fk. Saline River	Saline	8040203	-018	2C	10	USGS								x																	
Saline River	Saline	8040204	-006	2C	17.5	OUA0118										x											x			UN	L
Moro Creek	Bradley, Calhoun	8040201	-001	2D	12.0	OUA0028		x														x								UN	L
Ouachita River	Calhoun, Ouachita	8040201	-005	2D	34.2	OUA0037		x													x									UN	L
Moro Creek	Cleveland, Dallas	8040201	-901	2D	57.9	e		x													x	x								UN	L
E. Two Bayou	Ouachita	8040201	-905	2D	30.7	OUA0052B			x					x						x										UN	
Smackover Creek	Union	8040201	-007	2D	29.1	e		x					x																	UN	M
Smackover Creek	Union	8040201	-006	2D	14.8	OUA0027		x					x																	UN	M
Flat Creek	Union	8040201	-706	2D	16.0	OUA0137C		x									x														
Salt Creek	Union	8040201	-806	2D	8.0	OUA0137D		x						x			x													UN	H
Elcc Tributary	Union	8040201	-606	2D	8.5	OUA0137A+		x													x			NO3	x						H
Bayou De L'outre	Union	8040202	-008	2D	10.6	UAA											x	x	x					Se							
Bayou De L'outre	Union	8040202	-006	2D	32.4	OUA0005, UAA												x	x												
Bayou De L'outre	Union	8040202	-007	2D	6.9	e												x	x												
Loutre Creek	Union	8040202	-909	2D	3.3	UAA											x	x	x												
Ouachita River	Ashley, Union	8040202	-002	2D	4.0	OUA0008B		x								x														UN	L
Indian Springs Creek	Garland	8040101	-902	2F	1.5	UAA												x	x												

Table IV-3: Water Quality Limited Waterbodies -Streams and Rivers (Category 5) – 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source						Priority
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	
Cove Creek	Hot Spring	8040102	-970	2F	7.8	OUA0100 OUA0159		x										x						Tox	x					RE	H
Chamberlain Creek	Hot Spring	8040102	-971	2F	2.5	OUA0104 OUA0171A		x			x	x		x				x	x		x		x	Al, Be Cd Ni, Se Tox	x					RE	H
Lucinda Creek	Hot Spring	8040102	-975	2F	2.2	OUA0171B		x						x							x		x	Al						RE	H
Cove Creek	Hot Spring	8040102	-976	2F	3.6	OUA0171C								x																UN	L
Prairie Creek	Polk	8040101	-048	2F	10.0	OUA0040		x					x								x									UN	M
Terre Noir Creek	Clark	8040103	-003	2G	19.6	UWTNO01								x																UN	L
Terre Noir Creek	Clark	8040103	-002	2G	27.4	UWTNR02								x																UN	L
Terre Rouge Creek	Nevada	8040103	-031	2G	14.5	UWTRC01										x										x					L
L. Missouri River	Pike	8040103	-022	2G	17.6	OUA0022		x													x									UN	H
Wabbaseka Bayou	Jefferson	8020401	-003	3A	35.4	UWWSB01		x					x																	UN	L
Bayou Meto	Arkansas, Jefferson	8020402	-001	3B	4.3	e		x					x		x															UN	L
Bayou Meto	Arkansas, Jefferson	8020402	-003	3B	39.8	ARK0023		x					x		x															UN	L
Bayou Meto	Lonoke	8020402	-007	3B	44.8	ARK0050		x								x			x					PO	x						H
Bayou Two Prairie	Lonoke, Prairie	8040202	-006	3B	44.7	ARK0097							x																		
Bayou Meto	Pulaski	8020402	-907	3B	12.3	ARK0060		x					x																	UN	L

Table IV-3: Water Quality Limited Waterbodies -Streams and Rivers (Category 5) – 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment													Source						Priority
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	
Arkansas River	Jefferson	11110207	-001	3C	6.7	ARK0048										x															
Fourche Creek	Pulaski	11110207	-024	3C	11.2	ARK0130+										x					x						x				L
Fourche Creek	Pulaski	11110207	-022	3C	9.2	ARK0131+		x							x	x					x						x			UN	L
Cypress Creek	Conway	11110205	-917	3D	11.2	ARK0132		x													x		x					x			L
E. Fork Cadron Creek	Faulkner	11110205	-002	3D	15.6	ARK0158+										x											x				
N. Fork Cadron Creek	VanBuren	11110205	-015	3D	26.5	UWNCC02							x																		
Fourche LaFave R.	Perry	11110206	-001	3E	25.7	ARK0036		x					x																	UN	L
S. Fourche R.	Perry, Yell	11110206	-014	3E	26.1	ARK0052									x																
Fourche LaFave R.	Scott	11110206	-008	3E	25.7	UWFLR01							x		x															UN	L
Fourche LaFave R.	Scott, Yell	11110206	-007	3E	20.2	ARK0037		x					x																	UN	L
W. Fk.Point Remove	Conway	11110203	-017	3F	14.4	ANRC										x															
E. Fk Point Remove	Conway	11110203	-014	3F	20.9	ANRC										x															
Stone Dam Creek	Faulkner	11110203	-904	3F	3.0	ARK0051												x													
W. Fk. Point Remove	Pope	11110203	-016	3F	3.3	ANRC										x															
Petit Jean River	Logan	11110204	-011	3G	21.6	ARK0034		x								x											x				H

Table IV-3: Water Quality Limited Waterbodies -Streams and Rivers (Category 5) – 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source						Priority
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	
Dutch Creek	Scott, Yell	11110204	-015	3G	28.9	ARK0057		x								x														UN	H
Short Mountain Cr.	Logan	11110202	-043	3H	14.9	ARK0011B		x													x					x					H
Poteau River	Scott	11110105	-031	3I	6.6	ARK0055, UAA										x	x	x	x						x	x					M
Unnamed Tributary to Poteau	Scott	11110105	-831	3I	1.9	UAA											x		x												
Poteau River	Sebastian	11110105	-001	3I	2.0	ARK0014		x					x																	UN	L
Sager Creek	Benton	11110103	-932	3J	8.0	ARK0005																		NO3		x					H
Illinois River	Benton, Washington	11110103	-023	3J	8.1	ILL04			x											x								x			L
Muddy Fork Illinois River	Washington	11110103	-025	3J	3.2	MFI0004			x											x								x			L
Moores Creek	Washington	11110103	-026	3J	9.8	e												x		x											
Muddy Creek	Washington	11110103	-027	3J	11.0	e												x		x											
Illinois River	Washington	11110103	-024	3J	2.5	ARK0040			x									x		x							x	x			L
Clear Creek	Washington	11110103	-029	3J	13.5	ARK0010C			x											x									x		L
Big Creek	Lee, St Francis	8020304	-010	4A	34.3	UWBGC03											x		x								x				L
Boat Gunwale Slash	Monroe	8020304	-914	4A	5.0	WHI0074							x																	UN	L
Prairie Cypress	Monroe	8020304	-014	4A	26.1	WHI0073							x								x									UN	L

Table IV-3: Water Quality Limited Waterbodies -Streams and Rivers (Category 5) – 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source						Priority
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	
Cache River	Craighead	8020302	-021	4B	18.4	e		x														x						x			L
Bayou DeView	Craighead	8020302	-009	4B	20.3	WHI0026		x													x									UN	H
Big Creek Ditch	Craighead	8020302	-910	4B	13.0	WHI0196		x													x									UN	L
Lost Creek Ditch	Craighead	8020302	-909	4B	7.9	WHI0172		x					x				x				x				x	x					M
Cache River Ditch	Greene	8020302	-032	4B	11.4	e		x										x										x			L
Cache River	Greene	8020302	-028	4B	5.9	UWCHR04		x										x										x			L
Cache River	Greene, Lawrence	8020302	-029	4B	3.9	e		x										x										x			L
Cache River	Jackson	8020302	-020	4B	22.6	UWCHR03		x														x						x			L
Cache River	Jackson	8020302	-019	4B	13.7	e		x														x						x			L
Bayou DeView	Jackson, Woodruff	8020302	-002	4B	19.2	ANRC							x																		
Cache River	Lawrence	8020302	-027	4B	3.9	e		x										x										x			L
Cache River	Lawrence, Randolph	8020302	-031	4B	3.4	e		x										x										x			L
Cache River	Monroe	8020302	-016	4B	21.8	WHI0032, ANRC		x					x									x						x			L
Caney Creek	Monroe	8020302	-903	4B	16.8	ANRC							x																		
Bayou DeView	Poinsett	8020302	-007	4B	18.2	e		x										x										x			L
Bayou DeView	Poinsett, Cross	8020302	-006	4B	10.2	e		x										x										x			L
Cache River	Woodruff	8020302	-018	4B	25.0	UWCHR02		x														x						x			L

Table IV-3: Water Quality Limited Waterbodies -Streams and Rivers (Category 5) – 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source						Priority
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	
Cache River	Woodruff	8020302	-017	4B	15.8	e		x														x						x			L
Bayou DeView	Woodruff	8020302	-005	4B	8.6	e		x										x										x			L
Bayou DeView	Woodruff	8020302	-004	4B	21.2	UWBDV02		x					x					x										x			L
Buffalo Creek	Woodruff	8020302	-014	4B	13.1	ANRC							x																		
Unnamed Trib to Turkey Creek	Woodruff	8020302	-915	4B	2.3	ANRC							x																		
Departee Creek	Independence, Jackson, White	11010013	-020	4C	46.1	UWDTC01		x					x			x												x			L
Village Creek	Jackson	11010013	-008	4C	13.0	e							x																	UN	L
Village Creek	Jackson	11010013	-007	4C	1.2	e							x																	UN	L
Village Creek	Jackson	11010013	-006	4C	25.2	UWVGC01+							x																	UN	L
Glaise Creek	Jackson, White	11010013	-021	4C	30.1	UWGSC01		x					x															x			L
Village Creek	Lawrence, Randolph	11010013	-014	4C	22.8	UWVGC02									x																
Wattensaw Bayou	Lonoke, Prairie	8020301	-015	4D	48.2	WHI0072							x																	UN	L
Cypress Bayou	Prairie, White	8020301	-010	4D	5.0	UWCPB01		x					x															x			L
Bayou Des Arc	Prairie, White	8020301	-006	4D	17.8	WHI0056		x					x			x												x			L
Bull Creek	White	8020301	-009	4D	29.0	UWBLB01		x					x															x			L
Bayou Des Arc	White	8020301	-007	4D	36.4	UWBDA01		x															x					x			L

Table IV-3: Water Quality Limited Waterbodies -Streams and Rivers (Category 5) – 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source						Priority
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	
Overflow Creek	White	11010014	-006	4E	21.7	UWOFC01		x															x					x			L
Overflow Creek	White	11010014	-004	4E	0.6	e		x															x					x			L
Hicks Creek	Baxter	11010004	-015	4F	9.1	WHI0065, WHI0139, WHI0140			x											x						x					H
Greenbrier Creek	Independence	11010004	-017	4F	10.6	WHI0167		x	x				x							x										UN	L
Current River	Clay, Randolph	11010008	-017	4G	12.0	e		x								x											x				M
Current River	Randolph	11010008	-001	4G	23.6	WHI0004		x								x											x				M
Fourche River	Randolph	11010009	-008	4G	25.0	WHI0170		x								x											x				L
Eleven Point River	Randolph	11010011	-001	4H	33.1	WHI0005B										x															
Crooked Creek	Boone, Marion	11010003	-049	4I	36.2	WHI0067+													x											UN	L
Crooked Creek	Marion	11010003	-048	4I	31.7	WHI0048A+		x											x											RE	L
Big Creek	Searcy	11010005	-027	4J	2.6	BUFT18		x					x																	UN	L
Bear Creek	Searcy	11010005	-026	4J	23.9	UWBRK01+					x								x							x					L
Buffalo River	Baxter, Marion	11010005	-001	4J	12.8	BUFR09									x																
Kings River	Carroll	11010001	-037	4K	19.1	WHI0009A													x											UN	L
Kings River	Madison	11010001	-042	4K	39.5	WHI0123													x											UN	L
Town Branch	Madison	11010001	-959	4K	4.5	UAA													x												
Holman Creek	Madison	11010001	-059	4K	9.1	WHI0070, UAA													x												

Table IV-3: Water Quality Limited Waterbodies -Streams and Rivers (Category 5) – 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source						Priority
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	
White River	Washington	11010001	-023	4K	6.2	WHI0052, UAA									x			x												UN	H
West Fork	Washington	11010001	-024	4K	27.2	WHI0051, UAA		x							x			x	x											UN	H
St. Francis River	Craighead	8020203	-018	5A	17.8	FRA0008											x				x										
St. Francis River	Craighead, Poinsett	8020203	-014	5A	22.8	e											x				x							x			L
Ten Mile Bayou	Crittenden	8020203	-906	5A	17.3	FRA0029		x					x																	UN	L
Tyronza river	Crittenden, Poinsett	8020203	-909	5A	34.3	FRA0032										x															
St. Francis River	Cross	8020203	-009	5A	17.1	e							x				x											x			L
St. Francis River	Cross, St. Francis	8020203	-008	5A	55.9	FRA0013							x				x											x			L
Tyronza river	Mississippi	8020203	-012	5A	50.0	FRA0033									x			x													
Caney Creek	Cross	8020205	-901	5B	9.0	FRA0034		x													x					x					L
L' Anguille River	Cross	8020205	-005	5B	44.1	UWLGR02		x					x				x	x	x									x			L
Prairie Creek	Cross	8020205	-902	5B	12.8	FRA0035											x	x	x									x			L
L' Anguille River	Cross, St. Francis	8020205	-004	5B	16.0	UWLGR01		x					x				x		x		x							x			L
Second Creek	Cross, St. Francis, Woodruff	8020205	-008	5B	16.4	FRA0012		x					x															x			L
L' Anguille River	Lee	8020205	-001	5B	19.7	FRA0010		x					x				x		x									x			L
L' Anguille River	Lee, St. Francis	8020205	-002	5B	1.8	e		x					x				x		x									x			L

Table IV-3: Water Quality Limited Waterbodies -Streams and Rivers (Category 5) – 303(d) List

Stream Name	County	HUC	RCH	Plan Seg	Miles	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment												Source						Priority
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	
L' Anguille River	St. Francis	8020205	-003	5B	16.8	e		x					x				x		x									x			L
Little River, Left	Poinsett	8020204	-001	5C	20.3	FRA0037							x																		
Little River, Left	Poinsett, Mississippi	8020204	-002	5C	61.7	e							x																		

Table IV-4: Water Quality Limited Waterbodies - Lakes (Category 5) – 303(d) List

Lake Name	HUC	Lake Type	Plan Seg	Acres	County	Monitoring Station	Designated Use Not Supported						Water Quality Standard Non-Attainment													Source						Priority
							FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	UN	
Rodgers	8020402	C	3B	560	Arkansas	LARK027A							x																	x	L
Swepco	11110103	B	3J	531	Benton	LARK009A		x																UN						x	L
Beaver - Upper	1101001	A	4K	1500	Benton, Washington	LWHI013B, BWD		x	x							x				x							x					H
Cox Creek	8040203	C	2C	300	Grant	LOUA021A								x																x	L
Frierson	8020302	C	4B	335	Greene	LWHI002A		x													x									x	L
Saracen	11110207	D	3C	500	Jefferson	LARK026A	x																	PCB	x						L
Blue Mountian	11110204	E	3G	2910	Logan, Yell	LARK028A+ B		x								x											x					H
Pickthorne	8020402	D	3B	350	Lonoke	LARK025A		x																UN						x	L
Greenlee	8020304	D	4A	320	Monroe	LWHI006A		x																UN						x	L
Poinsette	8020203	C	5A	600	Poinsett	LMIS002A		x																UN						x	L

PART V GROUNDWATER ASSESSMENT

Introduction

Section 106(e) of the CWA specifies that each state monitor the quality of its groundwater resources and report results to Congress on a biennial basis in its state 305(b) report. The Department has sampled all major fresh-water aquifers per the EPA goal of reporting groundwater quality for specific aquifers or hydrologic setting. This section of the report consists of (1) a summary of State groundwater protection programs and (2) a listing of the major sources of groundwater contamination in the State.

The following is a combination of information from the previous report and new information since the last publication of the Arkansas Water Quality Inventory Report. Specifically, activities from the last quarter of State FY 2008 through the third quarter of State FY 2013 (March 31, 2013) is included; activities prior to April 1, 2008 have been omitted. Due to the three year rotational period for the monitoring areas, and for completeness of major program changes in other areas in the last five years, the present report may include information also provided in the last report.

Overview

Shallow fresh water aquifer systems are found throughout Arkansas, and supply high quality groundwater for a wide range of uses including industrial, municipal, agricultural, and domestic. Groundwater is one of the most important water supply sources in Arkansas and accounts for approximately 60 percent of the total water use in the state. Most all of the surficial aquifers supply water of good to very good quality, ranging from calcium-bicarbonate to sodium-bicarbonate water types. Localized areas of poor water quality result from both natural and anthropogenic effects. Natural sources of contamination are typically regional in extent and are related to water-rock interactions, whereas the anthropogenic effects are more localized, including both point and nonpoint sources of contamination. Nonpoint sources do affect larger areas, but contaminant concentrations are typically much lower than those resulting from point sources and the contaminants are normally soluble, non-reactive constituents. Point sources of contamination often result in elevated concentrations of contaminants above federal MCLs; however, the extent of contamination normally is confined to a small area with little to no offsite migration or contact with receptors.

Groundwater in Arkansas occurs in two general geologic settings, distributed among five major physiographic regions of the State: Ozark Plateaus, Arkansas River Valley, Ouachita Mountains, West Gulf Coastal Plain, and Mississippi River Alluvial Plain. The aquifer systems in eastern Arkansas (West Gulf Coastal Plain and the Mississippi River Alluvial Plain) are mainly composed of alternating sequences of gravel, sand, silt, and clay, which form both confining layers and aquifers. The main aquifer systems are located in the Quaternary deposits (the

Alluvial aquifer), the Cockfield Formation, the Sparta Formation, the Wilcox Group, the Nacatoch Sand, and the Tokio Formation (Table V-1). The Alluvial aquifer and the Sparta aquifer supply most of the groundwater used in the state. The thickness of the alluvial aquifer ranges from approximately 50 to 150 feet, and is used mainly for irrigation. It is often able to yield up to 1700 gallons per minute (gpm) to a well. The Sparta aquifer is used mainly for municipal and industrial supply, although declining levels in the alluvial aquifer in some areas have resulted in increasing exploitation of the underlying Sparta aquifer for irrigation.

Three aquifers which comprise the Ozark Plateaus Aquifer System are located in northern Arkansas (Table V-2). The Springfield Plateau aquifer is generally under unconfined conditions, with groundwater movement occurring through fractures and solution cavities formed by dissolution of carbonate rock. Local discharge is to springs and streams. The Ozark aquifer is generally under confined conditions, especially where overlain by the units of the Ozark Confining Unit (Chattanooga Shale). Most wells in the Springfield Plateau and upper units in the Ozark aquifer yield 5-10 gpm on the average, with yields greater than 25 gpm in rare cases. The Roubidoux Formation and the Gunter Sandstone Member of the Gasconade Formation in northern Arkansas constitute the only significant deep aquifer system in the Ozarks. They are used mainly for municipal supply systems where surface water sources are unavailable or unreliable. These units may yield up to 500 gpm to wells that are completed in both zones.

Table V-1: Generalized Stratigraphic Column of the Gulf Coastal Plain of Southern and Eastern Arkansas (modified from Haley et al., 1993).

ERA	SYSTEM	SERIES	GROUP	FORMATION
Cenozoic	Quaternary	Holocene & Pleistocene		Alluvium & Terrace Deposits *
	Tertiary	Eocene	Jackson	Undifferentiated
			Claiborne	Cockfield Formation *
				Cook Mountain Formation
				Sparta and Memphis Sand *
				Cane River Formation
				Carrizo Sand
		Paleocene	Wilcox	Undifferentiated *
			Midway	Undifferentiated
Mesozoic	Cretaceous	Upper Cretaceous		Arkadelphia Marl
				Nacatoch Sand *
				Tokio Formation *
				Undifferentiated
Paleozoic	Undifferentiated	Undifferentiated		Undifferentiated

(* denotes major aquifers)

Table V-2: Generalized Stratigraphic Units in Northern Arkansas with Corresponding Geohydrologic Units (modified from Imes and Emmett, 1994).

ERA	SYSTEM	FORMATION	GEOHYDROLOGIC UNIT	GEOHYDROLOGIC SYSTEM
Paleozoic	Pennsylvanian	Atoka Formation Bloyd Formation Hale Formation		Western Interior Plains Confining System
	Mississippian	Pitkin Limestone Fayetteville Shale Batesville Sandstone Moorefield Formation		
		Boone Formation St. Joe Limestone Member	Springfield Plateau Aquifer	Ozark Plateaus Aquifer System
		Chattanooga Shale	Ozark Confining Unit	
	Devonian	Clifty Limestone Penters Chert	Ozark Aquifer	
	Silurian	Lafferty Limestone St.Clair Limestone Brassfield Limestone		
	Ordovician	Cason Shale Fernvale Limestone Kimmswick Limestone Plattin Limestone Joachim Dolomite St. Peter Sandstone Everton Formation Smithville Formation Powell Dolomite Cotter Dolomite Jefferson City Dolomite Roubidoux Formation Gasconade Dolomite Van Buren Formation Gunter Sandstone Member		
	Cambrian	Eminence Dolomite Potosi Dolomite		
		Doe Run Dolomite Derby Dolomite Davis Formation	St. Francois Confining Unit	
		Bonneterre Dolomite Regan Sandstone Lamotte Sandstone	St. Francois Aquifer	

The Western Interior Highlands (Arkansas River Valley and Ouachita Mountains) are underlain by thick sequences of consolidated rocks of mostly Paleozoic age consisting generally of sandstones, shale, and novaculite (Table V-3). Groundwater in these units occurs primarily in fractures and joints, and is used both for domestic and municipal supplies. Wells throughout western Arkansas average about 150 feet in depth and normally produce less than 10 gpm.

Table V-3: Generalized Stratigraphic Column of the Arkansas River Valley and Ouachita Mountain Region. (modified from Haley et al., 1993)

ERA	SYSTEM	FORMATION
Cenozoic	Quaternary	Alluvium & Terrace Deposits
Paleozoic	Pennsylvanian	Boggy Formation Savanna Formation McAlester Formation Hartshorne Sandstone Atoka Formation Johns Valley Shale Jackfork Sandstone
	Mississippian	Stanley Shale
	Devonian	Arkansas Novaculite
	Silurian	Missouri Mountain Shale Blaylock Sandstone
	Ordovician	Polk Creek Shale Big Fork Chert Womble Shale Blakely Sandstone Mazarn Shale Crystal Mountain Sandstone Collier Shale

Groundwater Availability and Use

Groundwater use in Arkansas has more than doubled since 1985; the increased demand has resulted in water-level declines in many areas of the State. Act 154 of 1991, allows designation of "critical" groundwater areas based on indicators of groundwater depletion, and authorizes regulation of usage. Recent policy changes place an increased emphasis on the achievement of sustainable yield of all the State's aquifers. Determination of sustainable yield is established by the ANRC as part of a joint project with the USGS Arkansas Water Science Center in Little Rock.

Beginning in 1995, the Sparta aquifer beneath a five-county area in south Arkansas was designated as a critical groundwater area by the ANRC, then in 1998, they designated a second

area in eastern and central Arkansas for the Alluvial and Sparta aquifers. Priority study areas for present and future analyses include the Alluvial and Sparta aquifers in parts of northeastern and southeastern Arkansas, including the Cache and St. Francis study areas in northeast Arkansas and the Boeuf-Tensas study area in southeast Arkansas.

Information used to evaluate water-level trends in the various aquifers is based on a water-level monitoring measurement network maintained under cooperative agreements between the ANRC, USGS, the Arkansas Geological Survey (AGS), and the Natural Resources Conservation Service (NRCS). Through this process, over 1500 measurements are collected annually, and trends in water-level changes are used in evaluating potential critical use areas within the State.

Water use registration for all wells capable of producing 50,000 gallons per day has been required since 1985 along with an annual water use registration fee. Arkansas Act 1426 was promulgated in 2001 for the purpose of requiring a properly functioning metering device for any well constructed after September 30, 2001, which withdraws groundwater from a sustaining aquifer. Domestic wells are specifically exempt from the metering requirement. After September 30, 2006 all wells withdrawing groundwater from a sustaining aquifer were required to have a properly functioning meter. Sustaining aquifers include the Sparta, Memphis, Cockfield, Cane River, Carrizo, Wilcox, Nacatoch, Roubidoux and the Gunter aquifers. The Alluvial aquifer is not considered a sustaining aquifer. Based on sustainable yield estimates produced by groundwater modeling at the USGS Water Science Center in Little Rock, the ANRC is considering formal recommendation of sustainable yield for the Sparta/Memphis Aquifer in eastern and southern Arkansas.

The greatest water quantity issue in Arkansas is the extensive use of the Alluvial aquifer (primarily for irrigation purposes) and the Sparta aquifer (primarily for municipal and industrial supply) in eastern Arkansas. While both have historically provided abundant water, neither can sustain the current withdrawal rates indefinitely. Although the amount of water withdrawn annually from the Sparta aquifer is much less than what is withdrawn from the Alluvial aquifer, its coefficient of storage (or "storativity" that describes the amount of water released from an aquifer per unit volume) is several orders of magnitude smaller than that of the Alluvial aquifer. Thus, a much larger volume of the Sparta is dewatered compared to the alluvial aquifer in obtaining an equal volume of water. The alluvial aquiver yields around 3000 times more water per unit volume than the Sparta does, thus the drawdown from pumping at a given rate from the Sparta aquifer extends much farther than pumping at the same rate from the alluvial aquifer does.

In response to high usage rates, water levels have declined substantially in both aquifers. Large "cones of depression" have developed across broad areas. Individual cones of depression have coalesced into larger cones, eventually forming depressions of regional scale. In this way, extensive water-level declines have occurred in the Sparta, due to water being withdrawn at higher rates than the lateral recharge replenishes it. The Sparta cannot sustain the current rates of

withdrawals, and certainly not the accelerating rates of withdrawal observed in many areas. The effect of increased pumping will be especially evident where high-volume agricultural users tap the Sparta as a supplemental water source. Where pumping from the Alluvial and Sparta aquifers continues to exceed sustainable rates, water levels will continue to decline and eventually reach a physical limit at which water cannot be produced at the desired rates.

Groundwater - Surface Water Interactions

The subject of interaction of ground and surface water, exemplified by losing and gaining streams, encompasses regulatory, pollution-prevention, and research programs among others. It must be considered during development of policies and regulations regarding groundwater, and in groundwater remediation projects. For example, standards for remediation of groundwater contamination at a site (say, treating to the applicable MCLs for drinking water) may be acceptable for the local groundwater use requirements; however, the same concentrations that are acceptable at the remediated site may nevertheless exceed stream standards locally if the groundwater seeps into a stream. Another example is over pumping of groundwater leading to development of a persistent cone of depression, which may then reduce baseflow to streams in the area.

Hydrologic budget analyses and contaminant transport associated with groundwater – surface water interaction have been studied more intensively in northwest Arkansas than in the remainder of the State. Investigations have been undertaken mainly by coalitions of state and federal agencies including the Department, the University of Arkansas at Fayetteville, the USGS, and the U. S. National Park Service (USNPS). Some of the studies have concentrated on nutrient budgets in addition to hydrologic budgets, while others focus on water quality monitoring coupled with implementation of BMPs. All such studies, however, involve groundwater - surface interaction.

Many U of A investigations address surface/groundwater interaction occurring on karst terrain at the study sites. Many of the flow paths discharge as springs and seeps into nearby streams, and movement of contaminants within the karst aquifer system has a more pronounced effect on both surface and subsurface water quality because of the rapidity and higher degree of groundwater - surface water interaction relative to other geologic settings.

Chapter One PRINCIPAL SOURCES OF CONTAMINATION

Most of the potential and actual sources of groundwater contamination in the State are common to many states, i.e. anthropogenic and natural sources of contamination. Each source varies in its areal extent and in its effect on water quality, making it difficult to state which sources have the greatest effect. For example, a hazardous waste site may severely affect groundwater, with numerous organic contaminants exceeding drinking water standards. However, the areal extent of the contaminant plume may be small, with no known receptors at risk. Conversely, contamination from various land use activities may be widespread, impacting numerous receptors but possibly exhibiting few discernible effects on the usability of the water.

Potential point sources of contamination from disposal sites, underground storage tanks, mining operations, and other activities are regulated under various ADEQ programs; whereas agriculture and other wide-ranging land-use activities commonly are addressed by voluntary BMPs, which strive to protect groundwater by educating farmers and others on management strategies. These and related programs are described in more detail in the following section titled "Groundwater Protection Programs."

Nonpoint sources of contamination range from elevated nutrients and bacteria in shallow aquifers in northern Arkansas where animal production and septic systems are numerous, to low-level pesticide detections in eastern Arkansas associated with row-crop agriculture. Point sources of contamination include landfills, underground storage tanks, leaking waste- and process-water storage ponds, industrial facilities, military installations and petroleum storage and transfer sites. Although these sources are responsible for a significant number of localized groundwater contamination instances, offsite migration of contaminants is much less frequent because the flow behavior of organic constituents in the subsurface is different from that of groundwater; plumes usually stop expanding after the release of contaminants is stopped. However, costs for procuring an alternate water supply for impacted users can exceed one million dollars, and total contamination remediation costs can exceed several million dollars at a single site, thus the current federal and state focus on contamination prevention measures is the best approach.

In addition to anthropogenic sources of contamination, water quality degradation resulting from natural water-rock interaction ranges from simple TDS and hardness issues related to high concentrations of dissolved calcium and magnesium, to high concentrations of iron related to the dissolution of iron-oxide coatings from the aquifer sediments. Elevated manganese above the MCL (50 µg/L) is frequently noted, for the same reason. Other areas of concern from natural sources include areas of saltwater intrusion (chloride as high as 1000 mg/L) predominantly in southeast Arkansas, though isolated areas of elevated chloride are also found in several locations throughout the Alluvial aquifer in east central Arkansas, probably related to heavy drawdown and/or the depositional environments and local hydrogeologic variables.

Also, naturally-occurring radionuclides (radium) and fluoride above MCLs are known to exist in localized areas of deeper Paleozoic aquifer systems in north central Arkansas; strongly reducing conditions that allow mobilization and concentration of these constituents is the putative cause. This situation is encountered occasionally during development of new public water supplies, but due to a paucity of foregoing research and background data, it is difficult to predict and avoid.

Elevated iron and manganese concentrations are ubiquitous throughout the State, in the Alluvial aquifer in eastern Arkansas and in the Paleozoic strata in north central Arkansas with the exception of the carbonate aquifers. Dissolved iron and manganese do not present a health hazard, but do cause aesthetic problems (staining, taste, etc.) that can also interfere with industrial applications where high-quality water is often required. Naturally-occurring arsenic concentrations as high as 70 µg/L have been documented in isolated areas of the alluvial aquifer. These excursions are the result of reductive dissolution of iron oxides that were originally co-precipitated along with arsenic and trace metals; these then remobilize when the redox condition of the aquifer becomes reducing.

Geographically, regarding anthropogenic effects, nitrate concentrations appear to be increasing in groundwater in northwest and northern Arkansas due to the combination of the predominant land use (e.g. poultry production) and Karst terrain that is more vulnerable to surface water influence. Elsewhere, in the Coastal Plain area of the State, past groundwater quality monitoring has indicated low concentrations of pesticides in association with row-crop agriculture. Finally, brine contamination can also be a localized problem where leaky surface impoundments, corroded injection well casing, or pre-law disposal to the land surface or streams are located.

The Safe Drinking Water Act has focused attention on minimizing microbial contaminants in public water supplies; also waterborne disease outbreaks and recent spills upstream of public water intakes have been a cause of national concern. These incidents emphasize the need for effective local source water protection measures, and reinforce the proven value of adhering to the long-established “multiple barrier” approach in water production and treatment.

The ADEQ Water Division has gradually increased groundwater monitoring requirements during permitting of facilities with potential sources of groundwater contamination. This procedure assists in assessing the effects of sludge application, manure spreading, earthen lagoons, and other potential sources of groundwater contaminants. Recent examples are the permitting of facilities which treat petroleum contaminated soils and the recent update of permitting requirements for land application of drilling fluids. Water Division geologists often review these permits to better ensure that groundwater is protected beneath these facilities.

There are many groundwater protection programs within the State that include both regulatory and voluntary groundwater contamination prevention activities from both point sources and nonpoint sources. Point source prevention programs are almost entirely regulatory programs and are administered by the Department, while the majority of nonpoint sources are related to agriculture and other land-use activities and commonly include joint efforts by several agencies.

Regulated Storage Tanks Division (ADEQ)

The Regulated Storage Tanks (RST) Division at the Department has program responsibility for implementing the federal underground storage tank (UST) program in Arkansas, and for the cleanup of releases from both regulated USTs and aboveground storage tanks (ASTs).

During this reporting period, the RST Division experienced significant developments including the following:

Implementation of the division's UST Operator Certification program required by the Energy Policy Act of 2005. RST staff trained and certified over 2,200 UST operators to meet the August 8, 2012, compliance deadline. To accomplish this, the RST Division worked closely with regulated industry to develop a free training video (made available on DVD and through ADEQ's website) and also provided free live training classes in local venues across the state to help operators prepare for the required exam.

RST is nearing completion of its second three-year inspection cycle on all UST facilities. The Energy Policy Act also had a significant impact on several other RST program areas, especially the three-year inspection cycle, the requirement for secondary containment on new or replaced USTs and piping, and the regulated substances delivery prohibition for noncompliant UST systems. These pollution prevention aspects of the federal UST program are increasingly successful. The number of confirmed releases peaked in the third quarter of 2001, and has been slowly declining since that time. The division recorded a significant operational compliance rate for UST owners of 53 percent as of September 30, 2012.

Claims for reimbursement of corrective action costs from the Arkansas Petroleum Storage Tank Trust Fund continue to increase. In October 2005, the Petroleum Environmental Assurance Fee was increased to 3/10ths of one cent per gallon of motor fuel or distillate special fuel purchased in or imported into the State in order to help ensure the fund stays financially sound. The trust fund balance as of March 31, 2013, was $20.3 million, with total estimated obligations (corrective action and third-party) of $9.9 million.

Underground Injection Control Program (ADEQ)

The Underground Injection Control (UIC) Program regulates disposal of waste waters into appropriate underground reservoirs under authority of Part C of the federal Safe Drinking Water Act (SDWA). Congress passed the SDWA in 1974, requiring the EPA to establish a system of regulations for injection activities. The regulations are designed to establish minimum requirements for controlling all injection activities, to provide mechanisms for implementation and authorization of enforcement authority, and to provide protection of underground sources of drinking water (USDW).

Arkansas was given authority to administer the UIC program as a primacy state in 1982 and is 75 percent funded by a grant from EPA. This primacy authority (primary enforcement authority) allows the Department to regulate Class I, Class III, and Class V wells (excluding bromine-related spent brine disposal wells). The Arkansas Oil and Gas Commission (AOGC) regulates the Class II wells and Class V bromine-related spent-brine disposal wells. Protecting USDWs is accomplished through the issuance of permits, inspections, annual testing, continuous monitoring, and enforcement of the regulations in 40 CFR Parts 124, 144, 145, 146, and 147.

There were 14 Class I injection wells in the State effective April 1, 2008. These wells inject into underground saline fluid-containing formations at depths ranging from 2500' to 8800' below ground surface. There were four hazardous waste injection wells and ten non-hazardous waste injection wells in existence in Arkansas. Four of the Class I wells (one hazardous and four non-hazardous) were "shut-in" or temporarily abandoned and not injecting. No significant noncompliance or similar violations occurred. All operating wells except one passed their annual mechanical integrity testing (MIT) requirements during the time frame of April 1, 2008 to March 31, 2013. The former Red River Aluminum WDW 1 UIC well has been shut in since December 1998. ADEQ has continued inspecting this well and making sure it is secured. Once the City of Stamps obtains ownership of the Red River Aluminum property, plans are to test and if needed, rework the well for use as a Class II UIC well. Great Lakes Chemical Corporation SWD 1 M at the West Plant was plugged and abandoned according to 40 CFR § 146.10 requirements in September 2012. At present there are 13 Class I UIC wells in Arkansas.

Solid Waste Management Division (ADEQ)

The Department's Solid Waste Management Division (SWMD) is responsible for regulating disposal of non-hazardous solid waste and handling, processing, recycling, and marketing of recycled materials. Arkansans are provided with environmentally safe options for solid waste collection and disposal through municipal solid waste landfills, construction landfills, industrial landfills, transfer stations, waste-tire collection facilities, composting facilities and material recycling centers. Department SWMD staff oversee implementation of Regulation No. 22 solid waste management rules. This regulation governs the State's municipal, industrial, and

commercial solid waste programs and was established to protect human health and the environment.

Landfills are a potential point source for groundwater contamination. To reduce groundwater contamination potential, Arkansas regulations require all landfills to:

1) Be built five feet above the seasonal high groundwater level and
2) Have liners to reduce or stop leachate from percolating through the bottom and sides of the landfill.

In addition, landfills which are considered to have a higher potential to impact the environment are required to:

1) Collect their leachate and treat it prior to discharge and
2) Perform groundwater monitoring around the landfill.

These landfills include all municipal solid waste landfills (Class 1) and certain private industrial landfills, depending on the type of waste that is disposed at the private facility. If groundwater around the landfill exceeds Groundwater Protection Standards then corrective action is required.

The SWMD investigates groundwater contamination caused by older, closed landfills. A Post-Closure Trust Fund contains monies to pay for any corrective action needed at the landfills after closure. Currently, design plans have been approved to place a compacted clay cap on C&L Landfill located in Washington County, south of Fayetteville. The cap is to help prevent the generation and release of leachate from the landfill. It is the Department's goal to begin the first phase of work at the C&L site this year (2013).

Hazardous Waste Division (ADEQ)

The following items are regulatory or policy changes that may impact sites within the State requiring groundwater monitoring, groundwater investigations, and groundwater remediation under the Department's Hazardous Waste Program.

Regulation No. 23

Regulation No. 23, Hazardous Waste Management, was updated, effective September 26, 2011, to include revisions to (1) Requirements for Trans-boundary Shipments of Hazardous Wastes Between OECD Member Countries, Export Shipments of Spent Lead-Acid Batteries, Submitting Exception Reports for Export Shipments of Hazardous Wastes, and Imports of Hazardous Wastes, and (2) a Hazardous Waste Management System Identification and Listing of Hazardous Waste Final Exclusion to delist specific wastes produced at the Tokusen, Inc. plant in Conway, which otherwise would be considered F006 hazardous wastes.

Regulation No. 23, Hazardous Waste Management, was updated, effective August 12, 2012, to include revisions to the following: 1) Withdrawal of the Emission Comparable Fuel Exclusion, 2) the Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Removal of Saccharin and Its Salts from the Lists of Hazardous Constituents, Hazardous Wastes, and Hazardous Substances, 3) Technical Corrections to the Standards Applicable to Generators of Hazardous Waste; Alternative Requirements for Hazardous Waste Determination and Accumulation of Unwanted Material at Laboratories Owned by Colleges and Universities and Other Eligible Academic Entities Formally Affiliated with Colleges and Universities, 4) Land Disposal Restrictions: Revision of the Treatment Standards for Carbamate Wastes, 5) Hazardous Waste Manifest Printing Specifications Correction Rule, 6) Miscellaneous Technical Corrections under the Burden Reduction Rule.

Regulation No. 30

Regulation No. 30, The Arkansas Remedial Action Trust Fund Hazardous Substance Site Priority List, was proposed to be updated in December 2011. Five sites were proposed for deletion and one site for listing on the State Priority List. The changes were effective June 2012.

Sites Proposed for Delisting

Baird Manufacturing, Clarendon, Monroe County

Dana Minton, Alexander, Saline County

I Easter, Pine Bluff, Jefferson County

Valueline 10th Street, Arkadelphia, Clark County

Wal-Greens #03426, Hot Springs, Garland County

Site Proposed for Listing

Fulton Class 3C Landfill, Rodgers, Benton County

Regulation No. 30, The Arkansas Remedial Action Trust Fund Hazardous Substance Site Priority List, was proposed to be updated in January 2013. Five sites were proposed for deletion from the State Priority List and one site for transfer from the State Priority List to the National Priority List. These changes are expected to be effective June 2013.

Sites Proposed for Delisting

Amity Lacquer Paint and Chemical MFG Company, Amity, Clark County

Hadco of Arkansas, Inc., Gillham, Sevier County

Jimelco, Little Rock, Pulaski County

R&P Electroplating, Fayetteville, Washington County

Swift Chemical Co. Farm Property, Rodgers, Benton County

Site Proposed for Transfer to the National Priority List

Cedar Chemical Co., Helena, Phillips County

Regulation No. 32

Regulation 32 was amended to establish cleanup standards for clandestine drug laboratories on April 25, 2008; effective May 26, 2008. No additional changes have been proposed for this regulation.

Department Groundwater Remediation Level Interim Policy and Technical Guidance

The Department has developed an interim Policy for the establishment of groundwater remediation requirements for contaminated sites. This policy will apply to Divisions responsible for the oversight of groundwater remediation within the Department. The purpose of this policy is to establish consistent methods for establishing groundwater remediation levels regardless of the media Division having principal responsibility for the action.

Until a final regulation is promulgated by the Arkansas Pollution Control and Ecology Commission that is specific to the establishment of groundwater remediation levels, such levels will be established on a case-by-case basis.

Elective Site Cleanup Program

The Department administers an Elective Site Cleanup Program that allows responsible parties to enter into an agreement with the Department to govern the cleanup of sites. The Elective Site Cleanup Program does not offer a release of liability but does offer participants a means to address historic contamination on their site without penalty and with known objectives. The Department is working to promote the Elective Site Cleanup Program in order to maximize cleanups of sites within the State.

Groundwater Contamination Prevention Programs

Wellhead Protection Program (Arkansas Department of Health)

The Arkansas Wellhead Protection Program (WHPP) is designed to prevent contamination of underground sources of water used by Public Water Suppliers (PWS). The WHPP was authorized in the 1986 Amendments to the federal SDWA and assigned to the Public Water Supply Supervision Program (PWSSP) in the Engineering Division of the ADH. Wellhead Protection is a voluntary program that is maintained by Public Water Systems and local communities with technical assistance and guidance from ADH. A WHPP minimizes the potential for contamination by: 1) identifying the probable area that contributes water to municipal water supply wells, i.e., the Wellhead Protection Area (WHPA)) and 2) implementing

protection strategies within each WHPA that will help prevent release of contaminants and thus avoid costs to develop alternative water supplies.

The program is divided into three steps: 1) delineating a WHPA for each well or wellhead; 2) identifying all potential sources of contaminants detrimental to public health within each WHPA; and 3) developing strategies and means to manage the WHPA to protect the groundwater resource from contamination. The more successful WHP Programs include public outreach activities to increase awareness and coordinate local pollution prevention efforts. Assistance in targeting local stakeholders is provided to PWSs and local officials during development of a WHPP. Emphasis is placed on public participation and local control of the plan.

Integration of the WHPP and the SWAP (a similar program authorized in the 1996 amendments to the SDWA) began in 2003. The SWAP entailed assessment of all sources of Public Water Supply (surface water supplies as well as groundwater sources) for their vulnerability to contamination. The SWAP was partly modeled after the WHPP and extended its emphasis on contamination prevention to all drinking water sources. The SWAP reports sent to each PWS were intended to serve as the basis for protection planning efforts. In keeping with long-term planning goals and guidance from EPA, Arkansas has been combining the functions of the WHPP and SWAP programs where feasible.

Another source water protection activity coordinated by the Arkansas SWAP program is technical review and comment on permitting actions of other agencies and organizations to assess potential adverse effects on drinking water sources. This activity results in the review and tracking of various permitting activities including NPDES permits, land application permits, and permits associated with oil and gas drilling and disposal of drilling fluids. Permit reviews associated with oil and gas drilling have increased substantially to an approximately 1,400 permit reviews per year during the peak activity of the Fayetteville Shale gas play.

Technical assistance with proper siting and design of public water supply wells is another important mandate of the WHPP. WHPP geologists review over 40 proposed well designs and analyze drill cuttings for about 10 wells each year and produce detailed construction recommendations and maps for district staff use for each proposal.

Well construction information and other data is maintained in a database as an integral part of the program, which supports other aspects of the Health Department's PWSSP. Comprehensive hydrologic information is presently available for over 1,000 community PWS wells and over 600 non-community PWS wells. These data are used by other agencies and organizations as well.

The success of the source water protection program is measured by the number of Community Water Systems (CWSs) and the population served by those CWSs that have met the criteria set forth in the state's definition of "Substantial Implementation," Designated as any CWS that has a Source Water Program (SWP) in place that includes a management team, a SWAP or WHPP

delineation, a PSOC inventory, and one of the following control measures/management strategies: (1) SWP/WHPP ordinance/resolution, or (2) any two of the following: SWP Emergency/Contingency plan, public outreach program, drinking water protection road signs, or other control measure/management strategy deemed acceptable by the State.

Water Well Construction Commission

Act 641 of 1969 created the Arkansas Water Well Construction Commission (AWWCC), which provides for safe, sanitary and organized water well development. Standards ensure proper well-construction and pump-installation procedures. Administration of the licensing and registration of drillers and pump installers, as well as technical assistance, is provided by the ANRC, and includes field inspectors, management, and technical support personnel. Act 297, effective July 1, 2003, authorized the AWWCC to develop a training program for drillers and pump installers and added a continuing education requirement for drillers and pump installers. It also tied the AWWCC's enforcement actions into the criminal justice system, so that assisting law enforcement officers and judicial personnel can draw upon pre-existing knowledge of Class A misdemeanor, Class B misdemeanor, and Class D felonies. It increased the amount of civil penalties the Commission may seek from $500 to $2,500, and required contractors to obtain a bond of $10,000 rather than $2,000 to protect consumers.

Several part-time employees assist in building and maintaining the water-well construction report database, housing information on well construction. The database contains well-construction details, depth to static water level and water-producing formations encountered, well yield, pump-setting information, and the geologic setting of each well. It is now been linked to the USGS water use database and is searchable online.

Act 855 of 2003, effective March 31, 2003, provides a means of holding persons accountable for violations of Arkansas law regarding water well construction. It requires proper training and licensing for water well drillers and specifies minimum bond amounts to protect well owners. Water well contractors who repeatedly violate Arkansas law regarding proper registration and training can find their property subject to forfeiture. The act provides a forfeiture process to be followed by law enforcement agencies. Subject property may be confiscated, and will be disposed of at public auction. Sale proceeds and other monies forfeited shall be applied to entities in the order listed.

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Chapter Three GROUNDWATER QUALITY MONITORING

Groundwater quality monitoring is available from ongoing ambient monitoring; short-term research- oriented monitoring, and mandated monitoring at regulated sites. The types of data available depend on the monitoring goals, and range from hard-copy reports and/or journal articles to publicly accessible computer storage formats such as the EPA's STORET database. It is important to consider the sources of water quality data when investigating groundwater conditions. For example, contaminants in a water supply system, domestic or municipal, may simply be derived from the treatment process, the distribution lines or household plumbing. As such, they would be an artifact of treatment and/or distribution processes rather than groundwater (source) problems. Comparison of quality information from various time periods and data collectors is problematic because of the differences in monitoring goals, reporting requirements, and continuing evolution of laboratory instrumentation and methods that provide ever lower quantification levels.

Ambient Groundwater Quality Monitoring

Much groundwater quality data has been collected as a result of numerous investigations primarily by the U of A at Fayetteville, the USGS, and the Department. These investigations are a valuable source of groundwater quality data. However, most of this information is available in hard-copy only in the form of reports and publications. Data from regulated sites with known sources of contamination can be useful but may not represent backgroundwater quality.

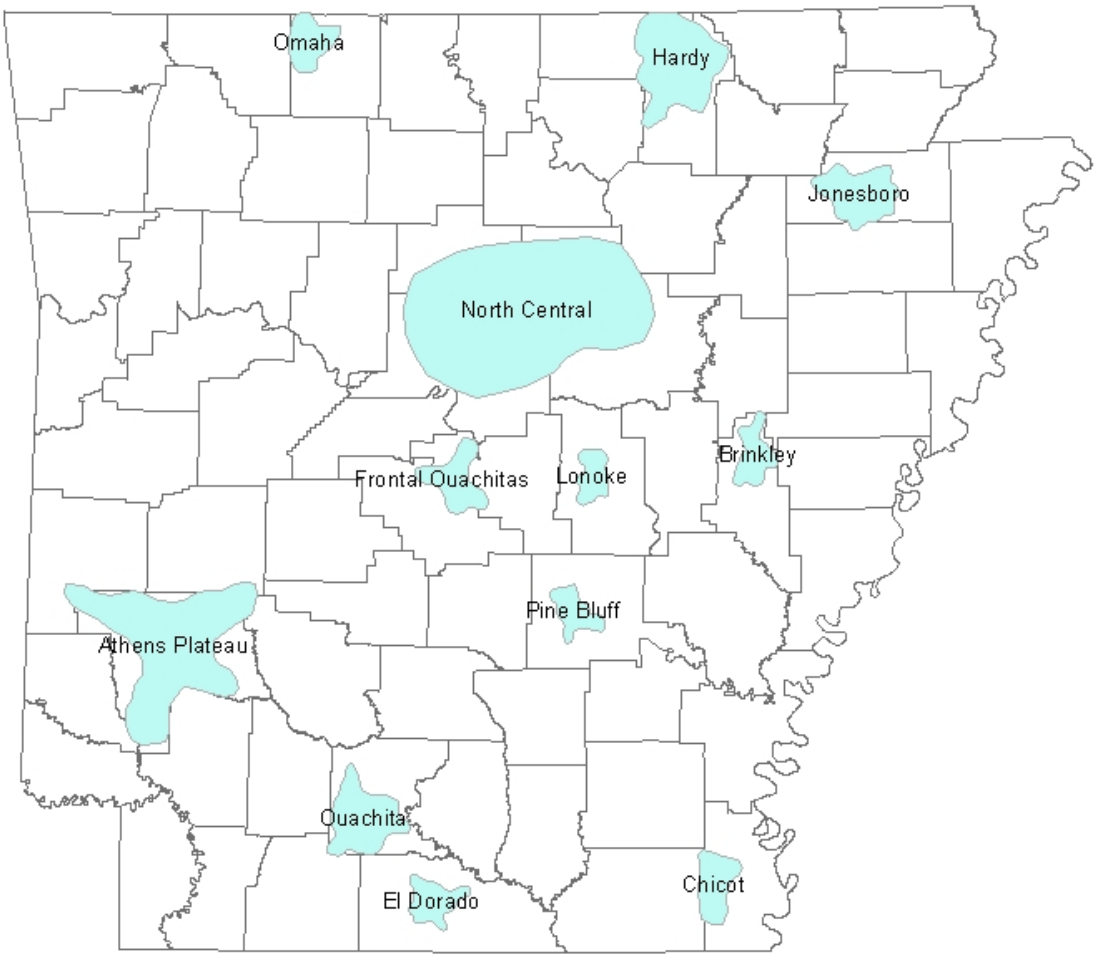
Arkansas Department of Environmental Quality

Considering the range of potential and known contamination sources in the various aquifers of the State, the principal goal of the Department's ambient water quality monitoring program is to analyze the appropriate constituents needed to document changes in the quality of groundwater over time; to determine if known areas of contamination (i.e., areas of saltwater intrusion) are expanding; and to assist in water quality planning efforts at the Department and other state and federal agencies with groundwater quality protection responsibilities. Toward that end, the Arkansas Ambient Groundwater Monitoring Program (Program) was begun in 1986 to monitor overall groundwater quality in the State. The Program currently consists of 12 monitoring areas throughout Arkansas (Figure V-1). Each area was selected to monitor various aquifers in representative areas of the State and evaluate potential impacts from multiple land uses. Monitoring is conducted on an approximate three-year basis.

Because of the various potential sources of contamination among the different monitoring areas, each area has a specific parameter list to best evaluate water quality. All of the monitoring areas include field pH, conductivity, Oxidation-Reduction Potential (ORP), and temperature, laboratory analysis of nutrients, major cations and anions, TDS and trace metals. Selected sites in areas potentially impacted by industrial or other point sources are analyzed for volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC), and likewise samples from

areas potentially impacted by agricultural activities are analyzed for pesticides. The current and proposed monitoring areas are described individually below.

Figure V-1: Arkansas' Groundwater Monitoring Areas



Athens Plateau Monitoring Area

The Athens Plateau Monitoring Area in southwest Arkansas encompasses Paleozoic rocks of the Ouachita Mountains physiographic region and Cretaceous rocks and Quaternary deposits of the West Gulf Coastal Plain physiographic province. Addition of this monitoring area expanded the baseline groundwater quality data in this area including potential impacts to groundwater from the widespread agricultural activities. The agricultural industry in this region includes extensive swine, poultry, and cattle operations. The monitoring area includes Howard and Pike counties and was first sampled in 2004. A total of 25 wells and 1 spring were sampled during the initial

sampling event. A total of 23 groundwater wells and 1 spring were sampled during in 2008 and slightly fewer in 2013.

The sites in the northern part of the study area (along the southern margin of the Ouachita Mountains) are in the Devonian to Pennsylvanian Arkansas Novaculite, Stanley Shale and Jackfork Sandstone. The southern part of the study area (within the northern part of the West Gulf Coastal Plain) is in the Cretaceous Tokio Formation and Quaternary (Pleistocene and Holocene) deposits comprising the Alluvial aquifer. The majority of towns within the area utilize surface water sources, thus few municipal wells exist. However, many domestic and livestock wells are developed in the Cretaceous formations within the study area.

Water quality in the study area is generally good. TDS concentrations exceed the Secondary Maximum Contaminant Level (SMCL) of 500 mg/L in one deep well, although higher mineralization is expected at greater depth. One well in the Stanley Shale and one spring exceed the MCL for nitrate (10 mg/L) but the well has exhibited a noticeable decline after the onsite poultry operation ceased some years ago. Two other wells in the Stanley Shale had somewhat elevated nitrate concentrations. The nitrate concentrations in the remainder of the samples were well below 1.0 mg/L. Chloride concentrations are highest in the Alluvial aquifer, particularly the Quaternary alluvium, ranging up to 131 mg/L in this interval. Dissolved iron concentrations often exceed the EPA Secondary MCLs (which address aesthetics like taste and odor rather than health concerns) and can range as high as 3.8 mg/L. Logically, many of the exceedances occur in samples derived from the Stanley Shale; for example, manganese is detected in all of the Athens Plateau samples, reaching a maximum of slightly more than 550 µg/L. Low concentrations of Arsenic occur in three wells, but well below the MCL of 10 µg/L. As noted previously, mobilization of naturally-occurring iron, manganese, and other multivalent ions (e.g. Arsenic) is a common occurrence in aquifers across the state, due to reducing conditions that develop in shallow aquifers in response to the presence of organic matter concentrated in some parts of the formations.

Brinkley Monitoring Area

The Brinkley Monitoring Area encompasses the town of Brinkley and surrounding areas in northern Monroe County. It is located within the Mississippi River Alluvial Plain physiographic region. The Alluvial and Sparta aquifers provide 100 percent of community water needs. The primary uses are drinking water and crop irrigation. Monitoring in this area was initiated in 1989 to characterize chloride levels and assess potential presence of pesticides in the Alluvial aquifer. A total of 29 wells in the Alluvial aquifer were sampled during the most recent sampling (2011).

Chloride concentrations ranged from 13.8 to 619 mg/L, and concentrations in seven wells exceeded the SMCL (250 mg/L). Iron concentrations exceeded the SMCL of 300 µg/L in 27 of the 29 wells, and manganese concentrations exceeded the SMCL of 50 µg/L in 28 wells. TDS concentrations exceeded the SMCL of 500 mg/L in 22 of the 29 wells. Arsenic was detectable in

all 29 samples at concentrations ranging from 0.88 µg/L to 7.90 µg/L, though with no exceedances of the MCL (10 µg/L).

El Dorado Monitoring Area

The El Dorado Monitoring Area includes the town of El Dorado and surrounding areas in central Union County and is located in the West Gulf Coast Plain physiographic region. Three aquifers, the Cockfield, Upper Sparta (Greensand), and Lower Sparta (El Dorado) are sampled in this area. The Cockfield aquifer is used primarily as a domestic drinking water supply. The Greensand aquifer is used for domestic and industrial purposes. The El Dorado aquifer is used for industrial and municipal purposes. This area is highly industrialized: oil and gas production; bromine extraction, production, and refining; light manufacturing; and food processing, all of which are potential threats to the shallow Cockfield aquifer. Groundwater monitoring in the El Dorado Monitoring Area began in 1987 with the most recent sampling event conducted in late 2011.

Iron and manganese are present above the SMCL in about 20 percent of the wells sampled. In addition to the routine parameters, selected samples (from the Cockfield aquifer) are analyzed for VOCs, SVOCs, Pesticides and PCBs. In 2008, low-level detections of phthalates (manufactured chemicals in plastics, glue, hair spray, and other household products) and VOCs that had not been present previously were noted results. However, since these are common laboratory contaminants, the detections were attributed to the increasingly low detection limits of the laboratory equipment, per ADEQ lab personnel. There are no drinking water standards for these compounds. In any event, these constituents were not detected in the next samples collected in 2011. Pesticides and PCBs have not been detected in any of the El Dorado groundwater samples.

Omaha Monitoring Area

The Omaha Monitoring Area encompasses the northwest quarter of Boone County and is located in the Ozark Plateaus physiographic region. Groundwater is derived from the Springfield Plateau and Ozark aquifers, which are primarily limestone and dolostone formations, respectively. The monitoring area is intended to monitor potential impacts in karst terrain. Potential contaminant sources include abundant livestock, poultry houses, and USTs. The monitoring sites consist nominally of 10 springs and 18 wells, depending on accessibility and flow conditions. The springs discharge from the Springfield Plateau aquifer, and all but one of the wells penetrates the Ozark aquifer.

Overall, groundwater quality is good. Iron is not detectable in any of the Springfield Plateau aquifer samples due mainly to the type of geology and the oxidative state of the aquifers; this also keeps manganese concentrations low, ranging from mostly non-detectable to just over 2 µg/L, well below the SMCL of 50 µg/L. Nitrate is present in all Springfield Plateau aquifer

samples, ranging up to almost 7 mg/L. Arsenic has been detected in some samples, but well below the MCL of 10 µg/L, also due to the general oxidizing state of the groundwater, which suppresses arsenic mobility.

Hardy Monitoring Area

The Hardy Monitoring Area is located in northeast Arkansas in Sharp and Fulton counties. The standard sampling round includes 24 wells ranging in depth from 150 to 1200 feet and 2 springs. The area was originally chosen to address the paucity of water quality data from the Lower Ordovician aquifers along the eastern end of the Ozark Plateaus physiographic region. The wells produce water from various formations including the Cotter and Jefferson City Dolomites and the Roubidoux Formation.

Generally speaking, the groundwater quality on the Hardy monitoring area is good. The water type is calcium or magnesium bicarbonate, in which concentrations of magnesium and calcium, expressed as equivalent weights, are approximately equal. Sodium concentrations are generally less than five mg/L. TDS concentrations are generally below 500 mg/L in all wells and springs including four wells exceeding 1000 feet in depth. The average TDS concentration is approximately 300 mg/L. As expected, the deeper wells have very low nitrate concentrations relative to the overall mean for all wells, which is also low (0.845 mg/L). Average TDS, nitrogen and other parameters closely resemble the Ozark aquifer samples from the Omaha Monitoring Area. Iron is rarely detected and the maximum manganese concentration is quite low as well (2.6 µg/L), well below the SMCL (50 µg/L).

Jonesboro Monitoring Area

The Jonesboro Monitoring Area includes Jonesboro and surrounding areas in central Craighead County and northern Poinsett County, in the Mississippi River Alluvial Plain physiographic region. The Alluvial aquifer and the Memphis aquifer (northern extension of the Sparta) are the primary groundwater sources. The monitoring area was chosen because it has large populations using groundwater that is vulnerable to surface contaminants, and is subject to intensive pumping from the Alluvial aquifer. A cone of depression coinciding with drawdown in the underlying Memphis aquifer indicates that there is minimal physical (hydraulic) separation between the two aquifers. Potential contaminant sources in the area include pesticides, industrial solvents, landfill leachate, and septic systems. One of the sampling sites is in the deeper Wilcox Formation.

Groundwater ranges from a calcium-bicarbonate to a strongly sodium-bicarbonate water type, with an intermediate “mixed” type containing approximately equal portions of calcium, sodium and magnesium. This suggests a gradual chemical evolution from a calcium-dominated water type in the shallow Alluvial aquifer to sodium-dominated water at depth within the Memphis aquifer due to natural ion-exchange processes. TDS concentrations range from less than 100 mg/L, to just over 1110 mg/L in one well. High dissolved iron is common, ranging up to 7000

µg/L. About one third of wells exceed the SMCL of 300 µg/L. Manganese is detectable in all wells at concentrations ranging from less than 1 to over 1200 µg/L, and about one third exceed the SMCL of 50 µg/L. Nitrate is present in almost 50 percent of wells, ranging from very low concentrations to just above 2 mg/L.

Lonoke Monitoring Area

The Lonoke Monitoring Area includes the town of Lonoke and surrounding areas in central Lonoke County and is also located in the Mississippi River Alluvial Plain physiographic region. Groundwater is produced from the Alluvial and Sparta aquifers for agricultural, domestic and municipal use. This monitoring area was selected because it encompasses a rural, agricultural area that relies entirely on groundwater for water. Pesticides are the primary potential contaminants in the area.

Elevated iron and manganese are common, ranging from 1490 to 30,000 µg/L, due to reducing conditions that develop as a result of a high proportion of disseminated organic debris in the aquifer. TDS concentrations range from 140 to almost 500 mg/L, with no exceedances of the SMCL.

Frontal Ouachita Monitoring Area

The Frontal Ouachita Monitoring Area is located in central Arkansas within Pulaski and Saline counties in the Ouachita Mountains physiographic region. Strata within this monitoring area consist of intensely folded and faulted Paleozoic sandstones, shales, novaculites and cherts. These strata were deformed during the late Paleozoic, into generally east-west trending anticlines and synclines. Paleozoic strata exposed at the surface include formations ranging in age from Ordovician through Mississippian. Typically, the more resistant novaculite or sandstone persists to form ridge tops, while valleys develop above the less resistant shale intervals. Sixteen wells and three springs comprise the currently available monitoring sites, although several new ones are slated to be added in 2014. Laboratory analyses include inorganic chemistry and nutrients.

Most wells are completed in bedrock and have minimal surface casing are thus likely producing water from a wide vertical interval, i.e. more than one formation. Twelve wells are within the Ordovician Womble Shale, two in the Ordovician Bigfork Chert, one from the Devonian to Mississippian Arkansas Novaculite, one from the Mississippian Stanley Shale, one from the Bigfork Chert/Arkansas Novaculite contact, and one from a spring at the Ordovician Bigfork Chert/Polk Creek Shale contact. The remaining two wells are completed in Quaternary terrace deposits of the Alluvial aquifer.

Generally, the groundwater quality is good. Iron is detected in about one third of the wells at concentrations up to 1540 µg/L. Manganese is likewise present in many of the wells, at concentrations ranging up to 150 µg/L, with several exceeding the SMCL (50 µg/L). Due to reducing conditions, arsenic is present in concentrations ranging up to almost 4 µg/L, but still

below the MCL of 10 µg/L. Nitrite is present in slightly more than half the wells, at concentrations ranging from 0.060 to 8.15 mg/L. Most of the nitrate detections correlate to the presence of septic systems, livestock, or poultry houses.

Ouachita Monitoring Area

The Ouachita Monitoring Area is located in western Ouachita County and includes the city of Camden. This monitoring area is located in the West Gulf Coast Plain physiographic region, and was chosen since it is within the recharge area of the Sparta aquifer; in addition, a portion of the Cockfield aquifer recharge area is located in the southwestern portion of this monitoring area. Groundwater is the primary water source in the area. Most of the sampled wells penetrate the Sparta aquifer; however, several wells potentially tap the underlying Cane River Formation, which is considered the lower confining unit of the Sparta. However, some minor water-bearing zones exist within the Cane River that are sufficient for domestic water supplies.

Generally, groundwater quality in this monitoring area is good, with TDS concentrations ranging from 31 to just over 150 mg/L. Water type ranges from a calcium-bicarbonate water type at shallow depths to a sodium-bicarbonate water type in the deeper portions of the aquifer where natural ion exchange processes have neared completion along the flowpath. Iron is elevated in about half of the wells, at concentrations ranging to 3350 µg/L. Manganese is ubiquitous in the area at concentrations ranging up to 54.6 µg/L. Nitrate is present in moderate amounts but currently there are no exceedances of the MCL with the highest at just above 5 µg/L. Arsenic is generally not present in the sites within this monitoring area.

Pine Bluff Monitoring Area

The Pine Bluff Monitoring Area includes the town of Pine Bluff and environs, in central Jefferson County. The monitoring area spans the boundary between the West Gulf Coast Plain and the Mississippi River Alluvial Plain physiographic regions. Groundwater in the area is produced from the Alluvial, Cockfield and Sparta aquifers, the only sources of water to the community. The Alluvial and Cockfield aquifers are used primarily for irrigation and domestic purposes, while the Sparta is used for municipal and industrial purposes.

The groundwater quality is generally good. The Alluvial aquifer produces a calcium-bicarbonate water type and the Cockfield and Sparta aquifers produce a sodium-bicarbonate water type, similar to its composition elsewhere. Iron is detectable in all the wells at concentrations ranging from 10.0 to 38,500 µg/L, with many exceeding the SMCL (300 µg/L). Manganese is also nearly always present, in concentration ranging from 15.0 to 2600 µg/L, with many exceeding the SMCL (50 µg/L). In association with the iron and manganese, arsenic is detectable in several wells, but well below the MCL. Nitrate has only been detected in one well at a concentration of 0.060 mg/L, well below the MCL. VOC analysis is conducted on the four alluvial wells, but only a very small concentration of Methylene Chloride (MC), a common

laboratory contaminant, has been detected and is attributed to the presence of MC within the instrument.

North Central Monitoring Area

The North Central Monitoring Area is the newest of the ambient groundwater monitoring areas, developed in response to the shale gas development "boom." It was initially sampled in May through November 2010; it includes portions of Conway, Van Buren, Cleburne, White, and Faulkner Counties in the Arkansas River Valley physiographic region. Groundwater in the area is derived from the Pennsylvanian Atoka Formation or Hale Formation which lie well above the Fayetteville Shale. Historically public water supply wells in the area were beset by iron problems, hydrogen sulfide and limited supply and thus were all abandoned decades ago after a regional surface water supply (from Greer's Ferry Lake) became available. Though the majority of the area is served by surface water from Greer's Ferry, there are still a small fraction of domestic wells in use, mainly as backup supplies for livestock and home garden irrigation, though a small percentage are used as primary (drinking water) supply. A total of 64 springs and wells were sampled during the initial sampling event. During subsequent sampling events, some of the shallow springs were discontinued and some new wells were added. Over the long term, the North Central monitoring area will be reduced to a small subset of sites on par with the other monitoring areas.

The groundwater quality was generally good, though iron was detected in about two thirds of the sites and was above SMCLs in about half of them. Manganese was detected in all 64 sample locations at concentration ranging from 0.91 to 2800 µg/L, with 45 detections exceeding the SMCL (50 µg/L). Arsenic, commonly co-precipitated with iron, and mobilized under similar conditions, was detected in 17 of the 64 samples at concentrations ranging from 0.51 to 18.1 µg/L (one detection above the MCL). Nitrate was detected in about 30 percent of the samples at concentrations ranging from 0.020 to 6.40 mg/L, all below the MCL. Chloride and TDS, primary indicator compounds of potential impacts from deeper groundwater zones and gas drilling were within normal ranges; chloride was detected in all 64 samples at concentrations ranging from 1.1 to 105 mg/L. TDS ranged from 10 to 644 mg/L. Three exceedances of the SMCL for TDS were in the mineral springs located in Heber Springs Park, assumed to tap deeper groundwater zones. One additonal exceedance was a domestic well with artesian flow and also interpreted to connect to a deeper, more mineralized groundwater horizon. Based upon the analyses conducted, no effects from the gas drilling or hydraulic fracturing in the underlying shale were evident.

Other Monitoring Efforts

Some ambient monitoring is also performed by other divisions within ADEQ and the USGS, at numerous Department-regulated facilities throughout Arkansas. However, because the purpose of the monitoring is to evaluate potential and actual anthropogenic impacts, the parameter list is

limited, and thus is not as useful interpretation of natural or background quality. However, in the absence of other data, monitoring results from these sites, especially the upgradient "background" wells, can be a valuable source of information.

Arkansas Department of Health

Monitoring of public water supply wells by the ADH under the SDWA provides another source of groundwater data. The ADH monitors approximately 1200 wells every three years for inorganic, organic (pesticide, herbicide, SVOCs, VOCs) contaminants and radionuclides. The Total Coliform Rule requires sampling on a monthly basis, with the number of samples dependent on the population size. Nitrate monitoring is conducted on a yearly basis unless a sample greater than or equal to 50 percent of the MCL triggers the need for increased frequency. Additionally, the Disinfection Byproduct Rule requires monitoring for trihalomethanes and haloacetic acids, byproducts of the disinfection process, on a quarterly or annual basis, with the number of samples dependent on the type of source and population served by the system.

Raw water sampling is conducted for selected wells in "hydrologically sensitive" aquifers (i.e. those which may be at risk for contamination per the Groundwater Rule) to assess whether they are influenced by surface water pathogens; this sampling includes frequent raw water bacteriological testing during the evaluation period, and may include water temperature variations and Microscopic Particulate Analysis to detect insects, organic debris, large diameter pathogens, and algae and other microorganisms. Raw water sampling for *E. coli* is conducted monthly for at least 12 months to establish baseline conditions, including analysis for *E. coli* and/or cryptosporidium oocysts.

Short Term Water Quality Monitoring (Special Investigations)

Arkansas Department of Environmental Quality

Special groundwater investigations are occasionally undertaken, normally upon request by management or as a result of general interest in an area or to address an identified or incipient groundwater problem that warrants examination. Recent examples of such projects range from occasional complaint investigations in conjunction with Inspection or Enforcement duties of the Water Division or other agency divisions, to comprehensive investigations of groundwater conditions associated with land uses at permitted facilities. The establishment of the North Central ambient monitoring area falls into this category of activities. However, these projects are intentionally limited in scope and duration so as to minimize the diversion of the groundwater section's staff time and budget, which is primarily dedicated to the operation of the ongoing long-term ambient monitoring network.

United States Geological Survey

The USGS has 25 master wells throughout the State that are sampled every five years. Other wells are utilized for water quality sampling, but are sampled for special investigations and do not provide long-term data for trend analyses. The data derived from water quality investigations are presented in reports, which are easily obtainable at the local or national level or online at http://ar.water.usgs.gov/; data also are available in downloadable tabular or graphic format on the USGS NWISWeb, see http://waterdata.usgs.gov/ar/nwis/qw/. The USGS, in cooperation with the ANRC, additionally monitors 100 wells in the Sparta-Memphis aquifer and 100 wells in the Alluvial aquifer for chloride and conductivity on an alternating 5-year rotational basis, and 50 wells in both the Sparta and Alluvial aquifers for conductivity on an alternating 1-year rotational basis. Although limited in the number of constituents, the relatively large number of wells provides a means of documenting general water-quality trends over time, through the plotting and comparison of isopleth maps and the use of statistical programs.

PART VI PUBLIC PARTICIPATION (REGULATION NO. 8)

The Public Participation Program (Regulation No. 8) at the Department is designed to be an active program that seeks out individuals and/or organizations that may provide useful input and those who will be affected by Department activities. The program includes provisions for disseminating information to the public through easily accessible avenues. These avenues include, but are not limited to, local media, internet access, and information depositories located throughout the State. Additional avenues include the publication and distribution of newsletters, informational pamphlets, and activity reports; and the participation of Department representatives at public meeting, hearings, and citizen group gatherings.

The purpose of the public participation program at the Department is to inform affected Arkansans, organizations, and public officials of the factors involved in, and of decisions contemplated in, Department activities. It is also used to incorporate public thinking into planning decisions and to provide all citizens and organizations an equal opportunity to influence the design of alternatives and selection of choices. This process will produce activities that have substantial community support.

The current Public Participation Program at the Department complies with all applicable regulations and guidelines of the Federal Water Pollution Control Act amendments of 1979 40 CFR, Parts 25 and 35.

For additional information concerning the Public Participation Program at the Department, visit the Water Division website http://www.adeq.state.ar.us/water/reports_data.htm and go to the State of Arkansas Continuing Planning Process document.

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APPENDIX A WATERBODY-SPECIFIC INFORMATION BY PLANNING SEGMENT

A segment-specific water quality analysis was conducted for each of the 38 planning segments utilizing the monitoring network stations and other available data. Support or nonsupport of a designated use was assessed by using the assessment methodology described earlier.

Data included for each planning segment includes:

1. A description of the segment location and its major waters.
2. A narrative summary of the water quality within the segment.
3. A planning segment map with river reaches identified by hydrologic unit code and reach numbers, monitoring stations, and NPDES permitted discharges.
4. An assessment of use support by river reach.
5. A listing of permitted discharges within the segment.

Key to abbreviations on "Planning Section Designated Use Attainment and Water Quality Status" tables within Appendix A:

Assess:
E = Evaluated Assessment
M = Monitored Assessment
U = Unassessed (Unknown)

Cause:
SI = Siltation/Turbidity
AM = Ammonia
NO_3 = Nitrogen (Nitrates)
TP = Total Phosphorus
DO = Dissolved Oxygen
Temp = Water Temperature
PA = Pathogen Indicators (Bacteria)
CL = Chlorides
SO_4 = Sulfates
TDS = Total Dissolved Solids
OE = Organic Enrichment
PO = Priority Organics
Al = Aluminum
Be = Beryllium
Cu = Copper

Designated Use:
FC = Fish Consumption
FSH = Fisheries Use
PC = Primary Contact
SC = Secondary Contact
DW = Drinking Water Use
AI =Agriculture and Industrial Use
S = Use Supported
N = Use Not Supported
R = Use Removed

Source:
AG = Agriculture
SE = Surface Erosion
RE = Resource Extraction
SV = Silviculture
UR = Urban Runoff
RC = Road Construction/Maintenance
IP = Industrial Point Source
MP = Municipal Point Source
HP = Hydropower

Cause (cont.):

Hg = Mercury
Pb = Lead
Zn = Zinc
Se = Selenium

Status:

1-5 = Assessment Category (see below)

Data Period:

1 = Assessment based on new data

2 = Assessment forwarded from 2012

Source (cont.):

UN = Unknown
NB = Naturally Occurring (Background)

Monitoring Network:

Y = USGS Gauging Station Present
A = Ambient Network Sampling Station
R = Roving Network Sampling Station
S = Special Project Sampling Station
USNPS = U.S. National Park Service

Assessment Categories

1. Attaining water quality standards for all designated uses, no use is threatened.
2. Available data and/or information indicate that some, but not all of the designated uses are supported.
3. Insufficient data and information are available to determine if any water quality standards are being attained.
   - No data available;
   - Data do not meet the spatial and/or temporal requirements outlined in this assessment methodology;
   - Waters in which the data are questionable because of Quality Assurance and/or Quality Control (QA/QC) procedures and/or the stream segment requires confirmation of impairment before a TMDL is scheduled.
4. Water quality standards are not attained for one or more designated uses but the development of a TMDL is not required because:

   4a. A TMDL has been completed for the listed parameter(s);
   4b. Other pollution control requirements are expected to result in the attainment of the water quality standard; or
   4c. Non-support of the water quality standard is not caused by a pollutant.
5. The waterbody is impaired, or one or more water quality standards may not be attained. Waterbodies in Category 5 will be prioritized as:

   High

- Truly impaired; develop a TMDL or other corrective action(s) for the listed parameter(s).

Medium

- Waters currently not attaining standards, but may be de-listed with future revisions to APC&EC Regulation No. 2, the state water quality standards; or
- Waters which are impaired by point source discharges and future permit restrictions are expected to correct the problem(s).

Low

- Waters currently not attaining one or more water quality standards, but all designated uses are determined to be supported; or
- There is insufficient data to make a scientifically defensible decision concerning designated use attainment; or
- Waters ADEQ assessed as unimpaired, but were assessed as impaired by EPA.

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RED RIVER BASIN

The Red River Basin is located in the extreme southwest corner of the state. The majority of its waterbodies flow south directly into Louisiana and a few flow west into Oklahoma.

This basin is bisected into four ADEQ planning segments and eight major watersheds (8 digit HUCs): Dorcheat Bayou, Bodcau Bayou, Lower Middle Red River, Lower Red River, Sulphur River, McKinney Bayou, Little River, and Mountain Fork. Major reservoirs within this basin are, Millwood Reservoir, Lake Erling, Lake Columbia, De Queen Reservoir, Gillham Reservoir, and Dierks Reservoir.

Parts, or all, of eight Arkansas counties are within this basin's boundaries: Polk, Howard, Sevier, Little River, Hempsted, Miller, Lafayette, and Columbia.

This basin spans parts of the Ouachita Mountains ecoregion and the Gulf Coastal Plains ecoregion.

Figure A-1: Red River Basin

SEGMENT 1A DORCHEAT BAYOU AND BODCAU BAYOU

This segment is located in the southwest corner of the State and includes most of Columbia County as well as parts of Nevada, Hempstead, and Lafayette Counties. The drainage is generally southward into Louisiana and the major streams are Dorcheat Bayou and Bodcau Bayou. Lake Erling is a major impoundment on Bodcau Bayou and Lake Columbia is a major impoundment on Beech Creek, a tributary to Dorcheat Bayou.

Summary of Water Quality Conditions

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial, and agricultural water supplies.

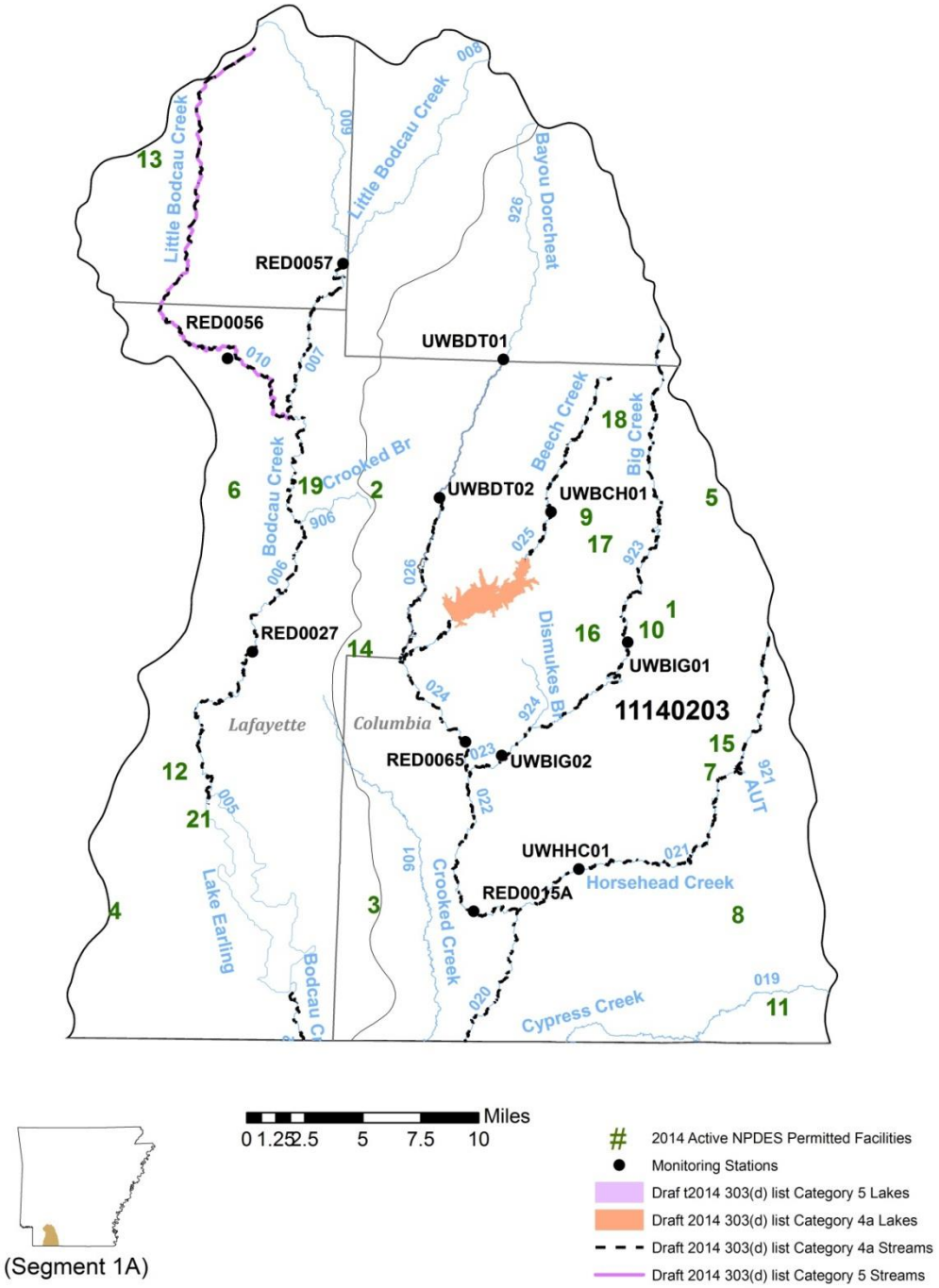
Many of the streams in this segment are affected by low pH values and are unable to meet the minimum pH standard of 6 standard units. The soils in these watersheds are acidic and have a low buffering capacity. Arkansas' pH standards, adopted in the 1970s, were established to protect the variable life stages of the most sensitive aquatic life species. These standards were based on data generated in a laboratory setting, unlike most of Arkansas' other water quality standards that were developed by utilizing the least-disturbed ecoregion reference stream approach. In addition, the current assessment protocol is from an EPA guidance document that sets a nationwide exceedance criterion. Thus, neither Arkansas' current pH standards, nor the assessment criteria, are based on "actual ambient conditions."

Many of the streams in this segment have mineral concentrations (chlorides, sulfates, and total dissolved solids) above the applicable standards. While the source of the minerals is listed as unknown, it most likely from a combination of point source discharges and nonpoint source inputs from oil and gas activities.

Toxic amounts of lead concentrations are present in the streams throughout the segment. It is unknown at this time what affects, if any, these elevated concentrations are having on aquatic life within the streams of the segment. The source is also unknown at this time.

Numerous waterbody segments have been moved from Category 5 to Category 4a in the list of impaired waterbodies, as TMDLs have been established for constituents listed on previous lists of impaired waterbodies.

Figure A-2: Planning Segment 1A



(Segment 1A)

Miles
0 1.25 2.5 5 7.5 10

\# 2014 Active NPDES Permitted Facilities
Monitoring Stations
Draf t2014 303(d) list Category 5 Lakes
Draft 2014 303(d) list Category 4a Lakes
Draft 2014 303(d) list Category 4a Streams
Draft 2014 303(d) list Category 5 Streams

Table A-1: Planning Section 1A Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	FLOW	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-1A																											
Dorcheat Bayou	11140203	-926	11.4	UWBDT01	M		S	S	S	S	S	S									1				FISH CONSUMPTION	121.4	39.0
Dorcheat Bayou	11140203	-026	11.7	UWBDT02	M		N	S	S	S	S	S	UN	UN	UN		pH	Pb	Hg		4a	4a	4a		FISHERIES	140.9	19.5
Dorcheat Bayou	11140203	-024	7.0	RED0065	M		N	S	S	S	S	S	UN	UN			pH	Hg			4a	4a			PRIMARY CONTACT	160.4	0.0
Dorcheat Bayou	11140203	-022	8.4	RED0015A	M	07348650	N	S	S	S	S	N	UN	UN	UN	UN	pH	SO4	Pb	Hg	4a	4a	4a	4a	SECONDARY CONTACT	160.4	0.0
Dorcheat Bayou	11140203	-020	11.9		E	E	N	S	S	S	S	N	UN	UN	UN	UN	pH	SO4	Pb	Hg	4a	4a	4a	4a	DRINKING SUPPLY	160.4	0.0
Cypress Creek	11140203	-019	18.5		U																3				AGRI&INDUSTRY	136.8	23.6
Horsehead Creek	11140203	-021	16.8	UWHHC01	M		S	S	S	S	S	S	UN	UN			pH	Pb			4a	4a					
Big Creek	11140203	-923	18.5	UWBIG01	M		S	S	S	S	S	S	IP	IP			pH	Pb			4a	4a					
Big Creek	11140203	-023	3.3	UWBIG02	M		S	S	S	S	S	N	IP	IP			Cl	SO4	TDS	Pb	4a	4a	4a	4a			
Beech Creek	11140203	-025	15.7	UWBCH01	M		S	S	S	S	S	S	UN	UN	UN		DO	Tb	Pb		4a	4a	4a				
L. Bodcau Creek	11140205	-010	19.5	RED0056	M		S	N	S	S	S	S	UN	UN			DO	Pb			5	4a					
Bodcau Creek	11140205	-009	9.5		U																3						
Bodcau Creek	11140205	-008	9.1		U																3						
Bodcau Creek	11140205	-007	7.8	RED0057	M		S	S	S	S	S	S	UN				Pb				4a						
Bodcau Creek	11140205	-006	22.4	RED0027	M	07349440	S	S	S	S	S	S	UN	SE	UN		pH	Tb	Pb		4a	4a	4a				
Bodcau Creek	11140205	-002	6.0		E		S	S	S	S	S	S	UN	SE	UN		pH	Tb	Pb		4a	4a	4a				
TOTAL MILES	197.5																										
MILES UNASSESSED	37.1																										
MILES EVALUATED	17.9																										
MILES MONITORED	142.5																										

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
UWBDT01	Bayou Dorcheat at Highway 355		2	R
UWBDT02	Bayou Dorcheat at Highway 82, 6 miles west of Waldo		2	R
RED0015A	Bayou Dorcheat east of Taylor	07348650	1	A
UWHHC01	Horsehead Creek at Highway 19, 2 miles north of Walkerville		2	R
UWBIG01	Big Creek at Highway 132 near Magnolia		2	R
UWBIG02	Big Creek at Co. Rd. ~1.3 mi. SE of Highway 371		2	R
RED0065	Bayou Dorcheat at Highway 371		2	R
UWBCH01	Beech Creek at Highway 82 near Waldo		2	R
RED0056	Little Bodcaw Creek at Highway 29 near Lewisville		2	R
RED0057	Bodcaw Creek at Highway 355 near Hempstead County Line		2	R
RED0027	Bodcaw Creek south of Lewisville	07349440	1	A

Table A-2: Active NPDES permits for Planning Segment 1A

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0000434	AMFUEL - MAGNOLIA	TRIB,BIG CR,DORCHEAT BU,RED R	023	11140203	Columbia	1
AR0000493	ENTERGY ARKANSAS-HARVEY COUCH STEAM ELECTRIC STATION	TRIB, LK JUNE,CROOKED BRANCH,BODCAU CR	006	11140205	Lafayette	2
AR0020044	TAYLOR, CITY OF	LTL CROOKED CR, RED R	020	11140203	Columbia	3
AR0020621	BRADLEY, CITY OF-WWTP	TRIB,WHEELER CR,MARTIN CR,BODCAU BU	002	11140205	Lafayette	4
AR0021555	MCNEIL, CITY OF	O'REAR CR,BIG CR,RED R	023	11140203	Columbia	5
AR0035696	LEWISVILLE, CITY OF	BATTLE CR,STEEL CR, BODCAU CR, LK ERLING	006	11140205	Lafayette	6
AR0038857	ALBEMARLE CORPORATION - SOUTH PLANT	TRIB,HORSEHEAD CR,DORCHEAT BU,RED R	021	11140203	Columbia	7
AR0039594	EMERSON, CITY OF	TRIB,LTL CYPRESS CR,CYPRESS CR,DORCHEAT BU, RED R	019	11140203	Columbia	8
AR0043508	WALDO, CITY OF	TRIB,BIG CR,DORCHEAT BU	023	11140203	Columbia	9
AR0043613	MAGNOLIA, CITY OF-BIG CREEK WWTP	BIG CR,DORCHEAT BU,RED R	023	11140203	Columbia	10
AR0043923	WEYERHAEUSER NR COMPANY - EMERSON DIVISION	DIT,N CYPRESS CR,DORCHEAT BU,LK BISTINEAU,LOGGY BU	019	11140203	Columbia	11
AR0045535	CANFIELD BAPTIST ASSEMBLY	TRIB,MILL BR,HEIRS BR,BODCAU CR,LK ERLING, BODCAU CR	006	11140205	Lafayette	12
AR0046345	SPRING HILL SCHOOL-WWTF	TRIB,FLAT BOIS D'ARC CR,LTL BODCAU CR	010	11140201	Hempstead	13
AR0046418	BONANZA CREEK ENERGY RESOURCES, LLC - MCKAMIE PLANT	TRIB,CROOKED CR,DORCHEAT BU,RED R	020	11140203	Lafayette	14
AR0046973	MAGNOLIA COUNTRY CLUB	TRIB, HORSEHEAD CR, DORCHEAT BU	021	11140203	Columbia	15
AR0047635	ALBEMARLE CORP-WEST PLANT	TRIB,DISMUKES CR,BIG CR,BU DORCHEAT BU	023	11140203	Columbia	16
AR0047953	DELTIC TIMBER CORPORATION-WALDO MILL	TRIB,BEECH CR,LK COLUMBIA	025	11140203	Columbia	17
AR0048054	QUAD HARDWOOD PRODUCTS, INC.	TRIB,BEECH CR,DORCHEAT BU,RED R	025	11140203	Columbia	18
AR0048305	STAMPS, CITY OF-SOUTH WWTF	DIT,BODCAU CR,LK ERLING,RED R	006	11140205	Lafayette	19
AR0051349	TUCKER LUMBER CO., LLC	UNNAMED TRIB, LTL CROOKED CR,DORCHEAT BU, RED R	NA	11140203	Columbia	20
AR0051004	EAGLE VIEW WWTF	DITCH, TRIB, LK ERLING BODCAU BU	005	11140205	Bradley	21

SEGMENT 1B RED RIVER, SULPHUR RIVER AND MCKINNEY BAYOU

Segment 1B is located in the southwest corner of the State. It includes all of Miller County and parts of Little River, Hempstead, and Lafayette Counties. Major streams within this segment are the Red River from its point of entrance into Arkansas to the Louisiana state line, the Sulphur River and McKinney Bayou.

Summary of Water Quality Conditions

Waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial, and agricultural water supplies.

Monitored data on the Red River near its entrance into Arkansas indicate that the total dissolved solids, sulfate, and chloride criteria, protective of the public water supply use, are not being maintained. However, the domestic water supply designated use has been removed from the Red River from its point of entrance into the State to its confluence with the Little River. The source of the minerals is thought to be from naturally occurring mineral deposits located in western Oklahoma.

Total dissolved solids and sulfate concentrations exceed the domestic water supply and agricultural and industrial water supply standards for McKinney Bayou. This is a reflection of the natural background conditions of the streams in the area.

Data trends for Days Creek reveal major water quality improvements in the creek as a result of the City of Texarkana's improvement of the WWTPs. However, Day's Creek continues to not meet the domestic water supply designated use because of high nitrate levels. A TMDL to address this issue was completed in early 2006.

Turbidity trend analysis from the Sulphur River indicates an increasing trend over the past 16 years from an average of about 20 NTU to over 50 NTU (Figure A-3). Turbidity concentrations the past seven years have routinely been above the instream "All Flows" standard of 32 NTU. Three stream reaches of the Sulphur River in Arkansas have been assessed as not attaining the fisheries designated use due to excessive instream turbidity; predominately caused by surface erosion.

Numerous total maximum daily loads have been established for constituents listed on previous lists of impaired waterbodies. These waterbody segments have been moved from Category 5 to Category 4a in the list of impaired waterbodies.

Figure A-3: Planning Segment 1B

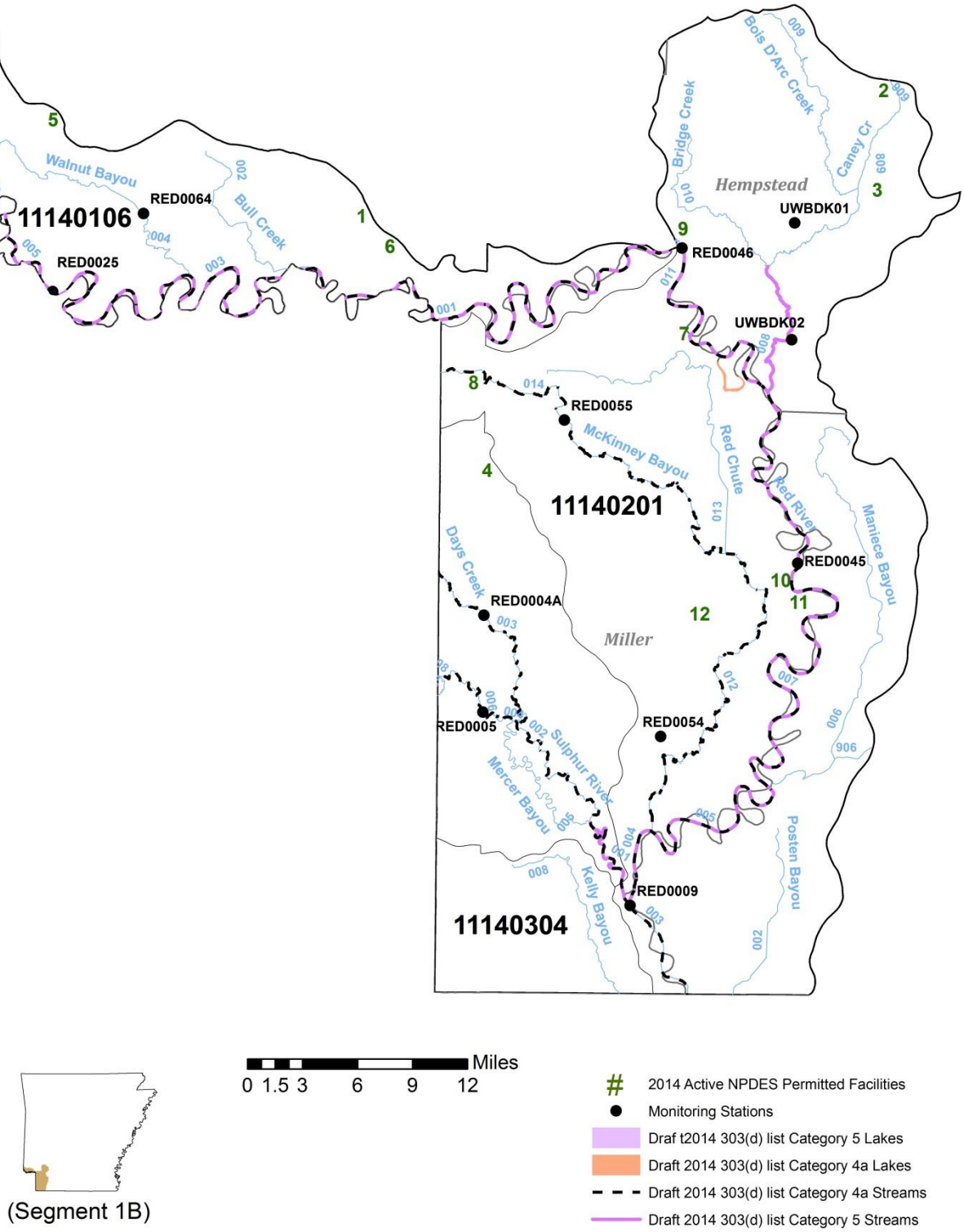


Table A-3: Planning Section 1B Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	FLOW	Designated Use						SOURCE				CAUSE				STATUS				USE	SUPPORT	NON-SUPPORT
							FC	FSH	PC	SC	DW	AI	1	2	3	4	1	2	3	4	1	2	3	4			
SEG-1B																											
Red River	11140201	-011	15.2	RED0046	M	07337000	S	S	S	S	S	N	UN	UN			Tb	TDS			5	4a			FISH CONSUMPTION	321.4	0.0
Red River	11140201	-007	40.1	RED0045	M	E	S	S	S	S	S	N	UN	UN	UN		Tb	Cl	TDS		5	4a	4a		FISHERIES	298.6	22.8
Red River	11140201	-005	12.0		E	E	S	S	S	S	S	N	UN	UN	UN		Tb	Cl	TDS		5	4a	4a		SWIMMING	321.4	0.0
Red River	11140201	-004	4.0		E	E	S	S	S	S	S	N	UN	UN	UN		Tb	Cl	TDS		5	4a	4a		SECONDARY CONTACT	321.4	0.0
Red River	11140201	-003	15.5	RED0009	M	07344350	S	S	S	S	S	N	UN	UN	UN		Tb	TDS	Tm		4a	4a	4a		DRINKING SUPPLY	180.4	33.8
Posten Bayou	11140201	-002	18.7		U																3				AGRI&INDUSTRY	112.0	209.4
Maniece Bayou	11140201	-006	24.2		U																3						
Bois D'Arc Cr.	11140201	-008	8.9	UWBDK02	M		S	S	S	S	R	S	UN				DO				5						
Bois D'Arc Cr.	11140201	-009	20.4	UWBDK01	M		S	S	S	S	R	S									1						
Caney Creek	11140201	-909	7.1		U						R										3						
Bridge Creek	11140201	-010	12.1		E		S	S	S	S	S	S									1						
McKinney Bayou	11140201	-012	23.1	RED0054	M		S	S	S	S	S	N	UN	UN	UN		Cl	SO4	TDS		4a	4a	4a				
McKinney Bayou	11140201	-014	21.6	RED0055	M		S	S	S	S	S	N	UN	UN			SO4	TDS			4a	4a					
Red Chute Creek	11140201	-013	12.5		U																3						
Sulphur River	11140302	-001	6.3		E	E	S	N	S	S	N	S	UN	SE	UN	UN	Tm	Tb	SO4	TDS	4a	4a	4a	4a			
Sulphur River	11140302	-002	8.5		E	E	S	N	S	S	N	S	UN	SE	UN	UN	Tm	Tb	SO4	TDS	4a	4a	4a	4a			
Sulphur River	11140302	-004	0.7		E	E	S	N	S	S	N	S	UN	SE	UN	UN	Tm	Tb	SO4	TDS	4a	4a	4a	4a			
Sulphur River	11140302	-006	6.5	RED0005	M	07344275	S	N	S	S	N	S	UN	SE	UN	UN	Tm	Tb	SO4	TDS	4a	4a	4a	4a			
Sulphur River	11140302	-008	0.8		E	E	S	N	S	S	N	S	UN	SE	UN	UN	Tm	Tb	SO4	TDS	4a	4a	4a	4a			
Days Creek	11140302	-003	11.0	RED0004A	M	07344300	S	S	S	S	N	S	MP				NO3				4a						
Mercer Bayou	11140302	-005	12.8		U																3						
Red River	11140106	-001	34.8		E	E	S	S	S	S	R	N	UN	UN	UN	UN	Cl	SO4	TDS	Tb	4a	4a	4a	5			
Red River	11140106	-003	9.8		E	E	S	S	S	S	R	N	UN	UN	UN	UN	Cl	SO4	TDS	Tb	4a	4a	4a	5			
Red River	11140106	-005	25.3	RED0025	M	07336860	S	S	S	S	R	N	UN	UN	UN	UN	Cl	SO4	TDS	Tb	4a	4a	4a	5			
Red River	11140106	-025	8.0		E	E	S	S	S	S	R	N	UN	UN	UN	UN	Cl	SO4	TDS	Tb	4a	4a	4a	5			
Bull Creek	11140106	-002	9.3		E		S	S	S	S	S	S									3						
Walnut Bayou	11140106	-004	20.3	RED0064	M		S	S	S	S	S	S									3						
Kelley Bayou	11140304	-006	7.2		E		S	S	S	S	S	S									3						
TOTAL MILES	396.7																										
MILES UNASSESSED	75.3																										
MILES EVALUATED	113.5																										
MILES MONITORED	207.9																										

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
RED0046	Red River at Fulton railroad bridge	7337000	1	A
RED0045	Red River at Highway 82 near Garland		1	A
RED0009	Red River near Doddridge	7344350	1	A
UWBDK02	Bois D' Arc Creek on county road northwest of Center Point		2	R
UWBDK01	Bois D' Arc Creek at Highway 67 near Hope		2	R
RED0054	McKinney Bayou at Highway 296, east of Mandeville		2	R
RED0055	McKinney Bayou at Highway 134, southeast of Fouke		2	R
RED0005	Sulphur river south of Texarkana	7344275	1	A
RED0004A	Days Creek southeast of Texarkana	7344300	1	A
RED0025	Red River south of Foreman	7336860	1	A

Table A-4: Active NPDES permits for Planning Segment 1B

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0002968	DOMTAR A.W. LLC	PIPING & OPEN CANAL,RED R	001	11140106	Little River	1
AR0021326	TYSON FOODS, INC. - HOPE PROCESSING PLANT	UNNAMED TRIB,CANEY CR,BOIS D'ARC CR,RED R	909	11140201	Hempstead	2
AR0038466	HOPE, CITY OF-BOIS D'ARDC WWTP	BLACK BR,BOIS D'ARC CR,RED R	009	11140201	Hempstead	3
AR0038822	COOPER TIRE & RUBBER COMPANY	TRIB,NIX CR,DAYS CR,SULPHUR R,RED R	003	11140302	Miller	4
AR0042846	ASH GROVE CEMENT COMPANY	FRENCH CR,WALNUT BU,RED R	004	11140106	Little River	5
AR0042951	ASHDOWN WW TREATMENT PLANT	DOMTAR CANAL,RED R	001	11140106	Little River	6
AR0048356	TYSON FOODS, INC.-RIVER VALLEY ANIMAL FOODS	RED R	011	11140201	Miller	7
AR0048691	TEXARKANA, CITY OF-NORTH WWTP	MCKINNEY BU,RED R	014	11140302	Miller	8
AR0048810	FULTON, CITY OF-WWTP	RED R	011	11140201	Hempstead	9
AR0050857	GARLAND, CITY OF	RED R	007	11140201	Miller	10
AR0051942	CHIEFTAIN SAND AND PROPPANT, LLC	RED R	007	11140201	Miller	11
AR0052035	WOOTEN SAND AND GRAVEL, INC.	MCKINNEY BU,RED R	012	11140201	Miller	12

SEGMENT 1C LITTLE RIVER AND TRIBUTARIES

Segment 1C is located in southwest Arkansas north of Texarkana and includes all of Sevier County and parts of Polk, Howard, Hempstead, and Little River Counties. This includes the entire reach of the Little River in Arkansas from its point of entrance into the State to its confluence with the Red River. The major tributaries include Rolling Fork, Cossatot River, Saline River, and Mine Creek. The major reservoirs located in this segment include DeQueen, Gillham, and Dierks Reservoirs, all of which drain into Millwood Reservoir.

Summary of Water Quality Conditions

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation, public, industrial and agricultural water supplies and contain Ecologically Sensitive Waterbodies. Overall water quality is good in the basin with the exception of a few long-term problem areas.

Bear Creek has shown major improvements over the last several years to the point that it has been delisted from the list of impaired waterbodies. There has been a significant decrease in nitrogen concentrations in the stream since 2008 (Figure 1).

The Rolling Fork River above DeQueen Reservoir has elevated nutrient concentrations and has been placed on the 303(d) list for elevated copper concentrations. A TMDL addressing the nutrients was completed in 2006. Additional point source controls will be investigated to implement the TMDL and address the copper issue.

Mine Creek has elevated nutrients and metals (copper and zinc) discharged from the Tyson Inc. plant at Nashville. Additional point source controls will be investigated to address these issues.

Figure A-4: Planning Segment 1C

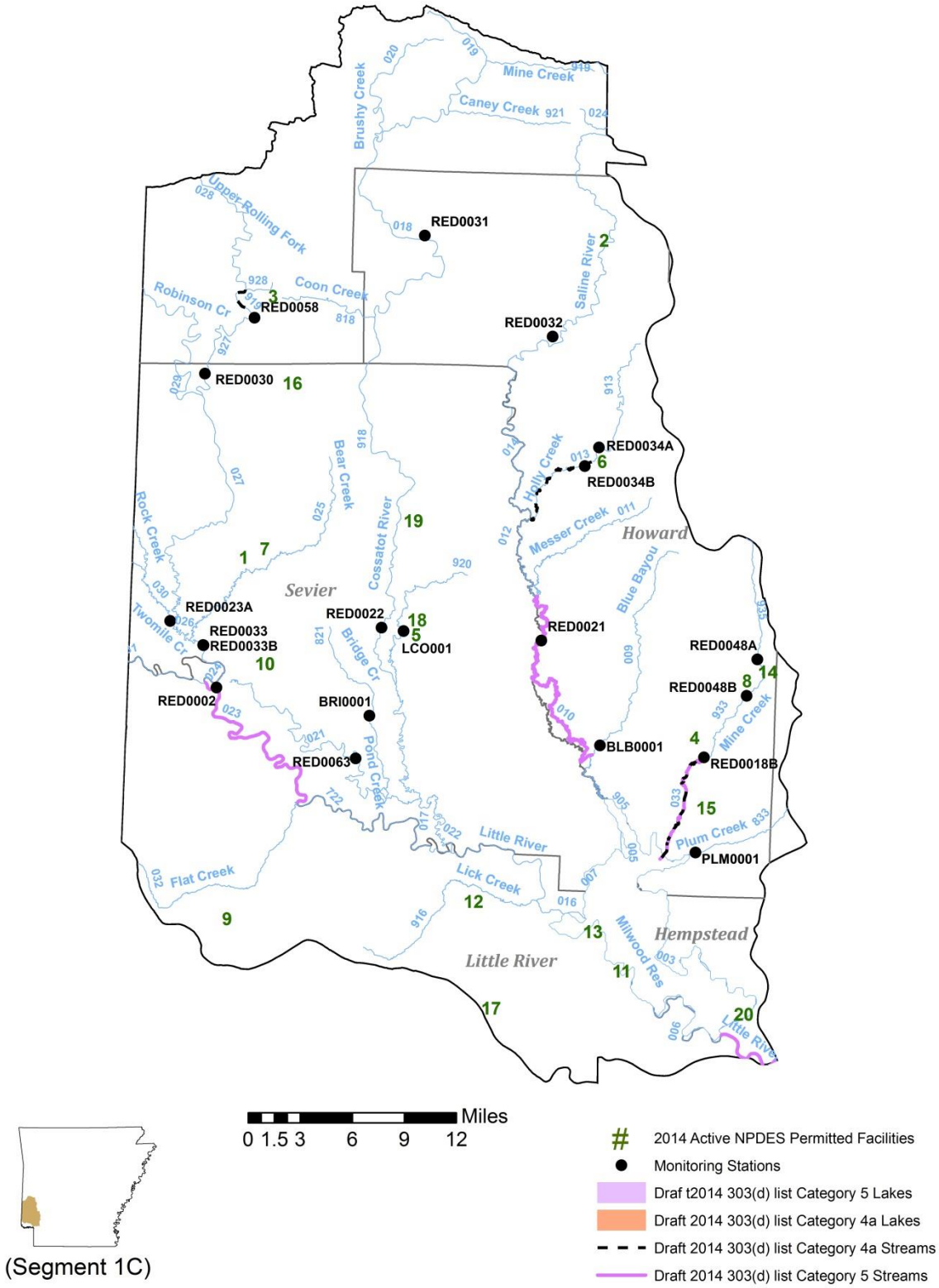


Table A-5: Planning Section 1C Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	FLOW	Designated Use						SOURCE				CAUSE				STATUS				USE	SUPPORT	NON-SUPPORT
							FC	FSH	PC	SC	DW	AI	1	2	3	4	1	2	3	4	1	2	3	4			
SEG-1C																											
Little River	11140109	-001	4.0	Report	M		S	S	S	S	S	S	UN				Tm				5				FISH CONSUMPTION	377.89	0
Mine Creek	11140109	-934	9.1	RED0048A	M		S	S	S	S	S	S									1						
Mine Creek	11140109	-933	1.3	RED0048B	M		S	S	S	S	R	S									1						
Mine Creek	11140109	-033	11.4	RED0018B	M		S	N	S	S	R	S	IP				SO4				5						
Blue Bayou	11140109	-009	16.0	BLB0001	M		S	S	S	S	S	S									1						
Saline River	11140109	-010	15.2	RED0021	M	07341200	S	N	S	S	S	S	SE	UN			Tb	Cu			5	5			FISHERIES	311.6	66.29
Messer Creek	11140109	-011	12.6		E		S	S	S	S	S	S									1						
Saline River	11140109	-012	6.1		E	E	S	S	S	S	S	S									1				PRIMARY CONTACT	377.89	0
Holly Creek	11140109	-913	6.7	RED0034A	M		S	S	S	S	S	S									1				SECONDARY CONTACT	377.89	0
Holly Creek	11140109	-013	6.2	RED0034B	M		S	S	S	S	S	S									1				DRINKING SUPPLY	343.3	0
Saline River	11140109	-917	8.0		E		S	S	S	S	S	S									1				AGRI & INDUSTRY	377.89	0
Saline River	11140109	-014	12.1	RED0032	M	07341000	S	S	S	S	S	S									1						
Bridge Creek	11140109	-821	1.0	BRIOOO1	M		S	S	S	S	S	S									1						
Little River	11140109	-016	11.7		E		S	S	S	S	S	S									1						
Cossatot R.	11140109	-017	4.6		E	E	S	S	S	S	S	S									1						
Pond Creek	11140109	-021	23.5	RED0063	M		S	S	S	S	S	S									1						
Cossatot R.	11140109	-918	37.2	RED0022	M	07340520	S	S	S	S	S	S									1						
Cossatot R.	11140109	-018	19.0	RED0031	M	07340300	S	S	S	S	S	S									1						
L. Cossatot R.	11140109	-920	12.2	LCO01	M		S	S	S	S	S	S									1						
Cossatot R.	11140109	-019	14.2		E	07450500	S	S	S	S	S	S									1						
Bushy Creek	11140109	-020	11.6		E		S	S	S	S	S	S									1						
Little River	11140109	-022	15.8		E	E	S	S	S	S	S	S									1						
Flat Creek	11140109	-032	10.7		U																3						
Little River	11140109	-023	17.8	RED0002	M	07340000	S	N	S	S	S	S	UN				Tb				5						
Rolling Fork	11140109	-024	1.7		E		S	S	S	S	S	S									1						
Bear Creek	11140109	-025	17.3	RED0033	M		S	S	S	S	S	S									1						
Rolling Fork	11140109	-026	2.7	RED0023A	M	07339780	S	S	S	S	S	S									1						
Rock Creek	11140109	-030	10.0		U																3						
Rolling Fork	11140109	-027	15.1		E		S	S	S	S	S	S									1						
Robinson Creek	11140109	-029	25.6		E		S	S	S	S	S	S									1						
Rolling Fork	11140109	-927	9.1	RED0030	M		S	N	S	S	R	S	IP	IP			TP	NO3			4a	4a					
Rolling Fork	11140109	-919	12.8	RED0058	M		S	N	S	S	R	S	IP	IP			TP	NO3			4a	4a					
Rolling Fork	11140109	-028	8.3		E		S	S	S	S	S	S									1						
Little River	11140109	-031	8.0		E	E	S	S	S	S	S	S									1						
TOTAL MILES	398.6																										
MILES UNASSESSED	20.7																										
MILES EVALUATED	143.3																										
MILES MONITORED	234.59																										

Table A-5 cont.: Planning Section 1C Designated Use Attainment and Water Quality Status

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
RED0021	Saline River at Highway 24	7341200	1	A
RED0034A	Holly Creek above Dierks		1	A
RED0034B	Holly Creek below Dierks		1	A
RED0032	Saline River at Highway 4 north of Dierks		1	A
SAL01	Saline River near Direks	7341000	2	S
SAL03	Saline River west Mineral Springs		2	S
PLM0001	Plum Creek at Highway 355		2	R
BLB01	Blue Bayou west of Mineral Springs		1	S
BRI01	Bridge Creek southwest of Lockesburg		1	S
CEG01	Cool Creek south of Walnut Springs		2	S
COS01	Cossatot River northwest of DeQueen		2	S
LCO01	Little Cossatot River Highway 24 near Lockesburg		2	R
COS03	Cossatat River south of Lockesburg	7340500	2	S
RED0031	Cossatot River at Highway 4 near Wickes	7340300	1	A
RED0022	Cossatot River at Highway 24 bridge	7340520	1	A
RED0063	Pond Creek in the National Wildlife Refuge		2	R
RED0064	Walnut Bayou at Co. Rd. off Highway 32		2	R
RED0002	Little River near Horatio	7340000	1	A
RED0033	Bear Creek below Process City		1	A
RED0033B	Bear Creek at Highway 24 near Horatio		2	A
RED0023A	Rolling Fork River at county road north of Highway 24	7339780	1	A
RED0030	Rolling Fork River above Dequeen Reservoir		1	A
RED0058	Rolling Fork River near Grannis		1	A
RED0018B	Mine Creek at Highway 355 above Tyson effluent		1	A
RED0048A	Mine Creek at Highway 27 bypass above Tyson effluent		1	A
RED0048B	Mine Creek near Nashville below Tyson effluent		1	A
RED0051	City of Nashville effluent		2	S
DIL0001	Dillard creek at Highway 27 south of Nashville		2	S
MIN0002	Mine Creek 1.4 miles west of Tollette		2	S

Table A-6: Active NPDES permits for Planning Segment 1C

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0002909	WEYERHAEUSER NR COMPANY-DEQUEEN REMEDIATION	BEAR CR,ROLLING FRK CR,LTL R, RED R	025	11140109	Sevier	1
AR0002917	WEYERHAEUSER NR COMPANY-DIERKS MILL	HOLLY CR, SALINE R, RED R	013	11140109	Howard	2
AR0003018	TYSON FOODS, INC. - GRANNIS PROCESSING FACILITY	TRIB,ROLLING FORK R,LTL R,RED R	919	11140109	Polk	3
AR0021261	MINERAL SPRINGS, CITY OF-WWTP	MINE CR,MILLWOOD LK, LTL R, RED R	033	11140109	Howard	4
AR0021377	LOCKESBURG, CITY OF	LTL COSSATOT R TRIB	918	11140109	Sevier	5
AR0021709	DIERKS, CITY OF	HOLLY CR,SALINE R,LTL R,RED R	013	11140109	Howard	6
AR0021733	DEQUEEN, CITY OF	TRIB,BEAR CR,ROLLING FORK R,LTL R	025	11140109	Sevier	7
AR0021776	NASHVILLE WW TREATMENT PLANT	MINE CR,MILLWOOD LK,LTL R,RED R	033	11140109	Howard	8
AR0023817	FOREMAN, CITY OF	E FLAT CR,FLAT CR,LTL RED R,RED R	032	11140109	Little River	9
AR0035785	HORATIO, CITY OF	TRIB,POND CR,COSSATOT R,LTL R,MILLWOOD LK	032	11140109	Sevier	10
AR0037079	ARKANSAS DEPT OF PARKS & TOURISM - MILLWOOD STATE PARK	TRIB,BUSTER CR,LTL R,RED R	006	11140109	Little River	11
AR0040886	WILTON, TOWN OF - WWTF	TRIB,LICK CR,MILLWOOD LK,LTL R, RED R	016	11140109	Little River	12
AR0041246	MILLWOOD WATER CORP	TRIB (LK MILLWOOD),LTL R,RED R	006	11140109	Little River	13
AR0041734	TYSON FOODS, INC.NASHVILLE	MINE CR,MILLWOOD LK,LTL R,RED R	933	11140109	Howard	14
AR0045144	TOLLETTE, CITY OF	MINE CR,MILLWOOD LK,LTL R,RED R	033	11140109	Howard	15
AR0047996	GILLHAM REGIONAL WASTEWATER DISTRICT	BELLAH CR,LK DEQUEEN,ROLLING FK CR,LTL R, RED R	027	11140109	Sevier	16
AR0048411	DOMTAR A.W.CORP.	TRIB,HUDSON CR,LTL R	016	11140109	Little River	17
AR0048593	LOCKSBURG PLT #1544	BRANCH MILL SLU,COSSATOT R, LTL R	918	11140109	Sevier	18
AR0049034	COSSATOT ROCK, LLC	TRIB,HALE CR,COSSATOT R,LTL R, MILLWOOD LK, RED R	918	11140109	Sevier	19
AR0051136	SWEPCO-JOHN W TURK, JR POWER PLANT	LTL RED, RED R	001	11140109	Hempstead	20

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SEGMENT 1D MOUNTAIN FORK AND TRIBUTARIES

This segment is located on the western edge of Montgomery County and covers a portion of Polk County. It encompasses a 22-mile reach of the Mountain Fork of Little River from its headwaters to the Arkansas-Oklahoma state line.

Summary of Water Quality Conditions

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation and public, industrial, and agricultural water supplies. The Mountain Fork River is also designated as an Extraordinary Resource Waterbody and an Ecologically Sensitive Waterbody because of the occurrence of the leopard darter (*Etheostoma pantherina*).

The waters within this segment currently maintain all assigned designated uses, except for a portion of the Mountain Fork that does not meet the turbidity water quality standard.

The State received a record amount of rainfall in 2009, over 82 inches, which was more than 32 inches above normal. Precipitation during Spring of 2010 was also well above average. Thus, much of the data collected during what would be considered the low-flow season actually occurred during high flow events.

Figure A-5: Planning Segment 1D

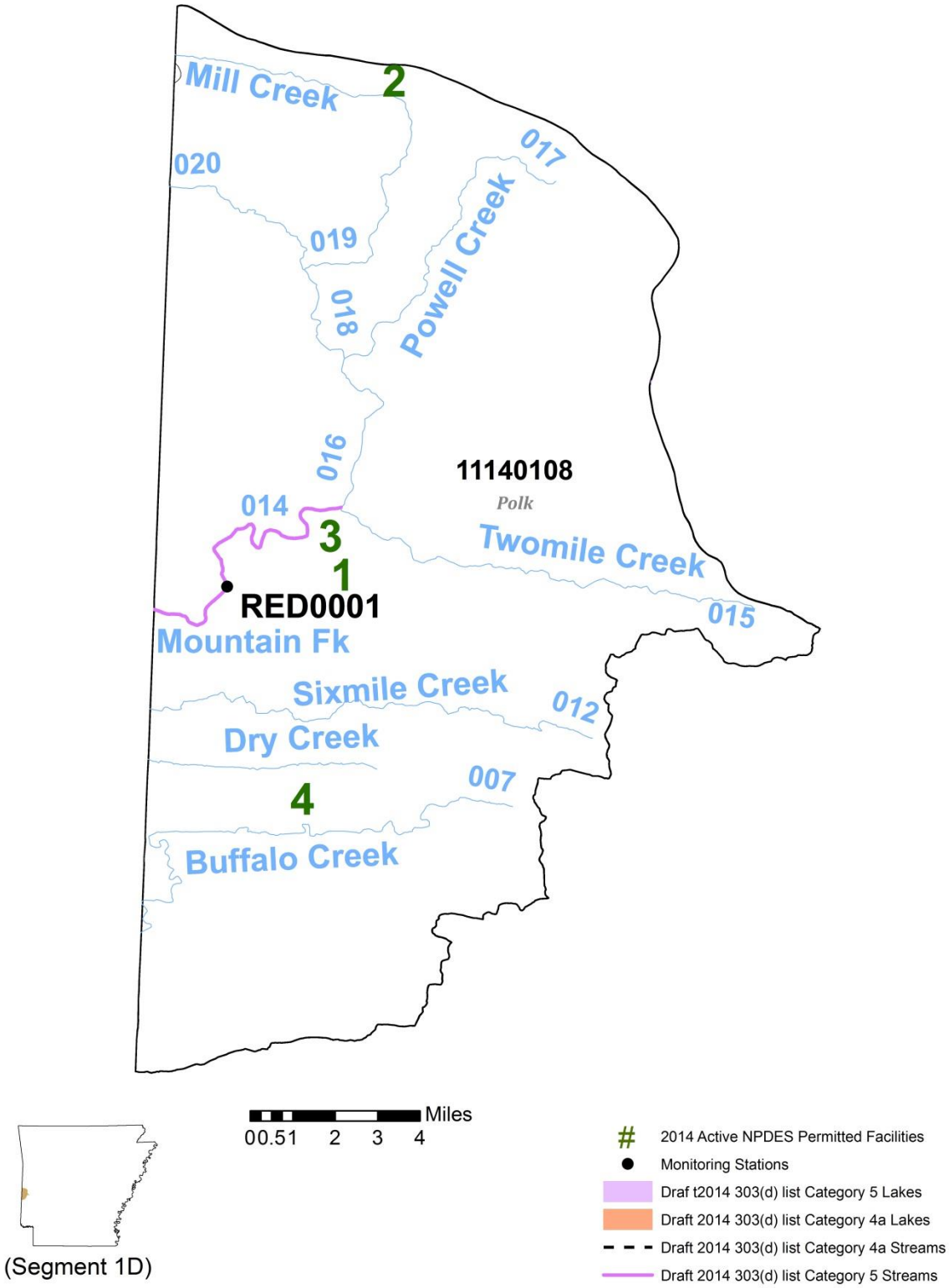


Table A-7: Planning Section 1D Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	FLOW	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-1D																											
Buffalo Creek	11140108	-007	9.5		U																3				FISH CONSUMPTION	47.3	0
Sixmile Creek	11140108	-012	4.1		U																3				FISHERIES	47.3	0
Mountain Fork	11140108	-014	11.0	RED0001	M	07338720	S	S	S	S	S	S	SE				Tb				5				PRIMARY CONTACT	47.3	0
Twomile Creek	11140108	-015	8.1		E		S	S	S	S	S	S									1				SECONDARY CONTACT	47.3	0
Mountain Fork	11140108	-016	4.5		E		S	S	S	S	S	S									1				DRINKING SUPPLY	47.3	0
Mountain Fork	11140108	-018	2.8		E		S	S	S	S	S	S									1				AGRI & INDUSTRY	47.3	0
Powell Creek	11140108	-017	4.7		E		S	S	S	S	S	S									1						
Mill Creek	11140108	-019	12.2		E		S	S	S	S	S	S									1						
Mountain Fork	11140108	-020	4.0		E		S	S	S	S	S	S									1						
TOTAL MILES	60.9																										
MILES UNASSESSED	13.6																										
MILES EVALUATED	36.3																										
MILES MONITORED	11																										

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
RED0001	Mountain Fork near Hatfield	7338720	1	A

Table A-8: Active NPDES permits for Planning Segment 1D

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0035483	HATFIELD, CITY OF	JOSHLING CR,MOUNTAIN FORK R, RED R	014	11140108	Polk	1
AR0037605	ARK PARKS - QUEEN WILHELMINA STATE PARK	TRIB,MILL CR,MTN FORK/LTL R,RED R	019	11140108	Polk	2
AR0046787	BOY SCOUTS OF AMERICA - CAMP PIONEER C/O CADDO AREA COUNCIL	TWO MILE CR,MOUNTAIN FORK R,LTL R	015	11140108	Polk	3
AR0049247	COVE, CITY OF	BUFFALO CR,MOUNTAIN FORK R,LTL R,RED R	007	11140108	Polk	4

OUACHITA RIVER BASIN

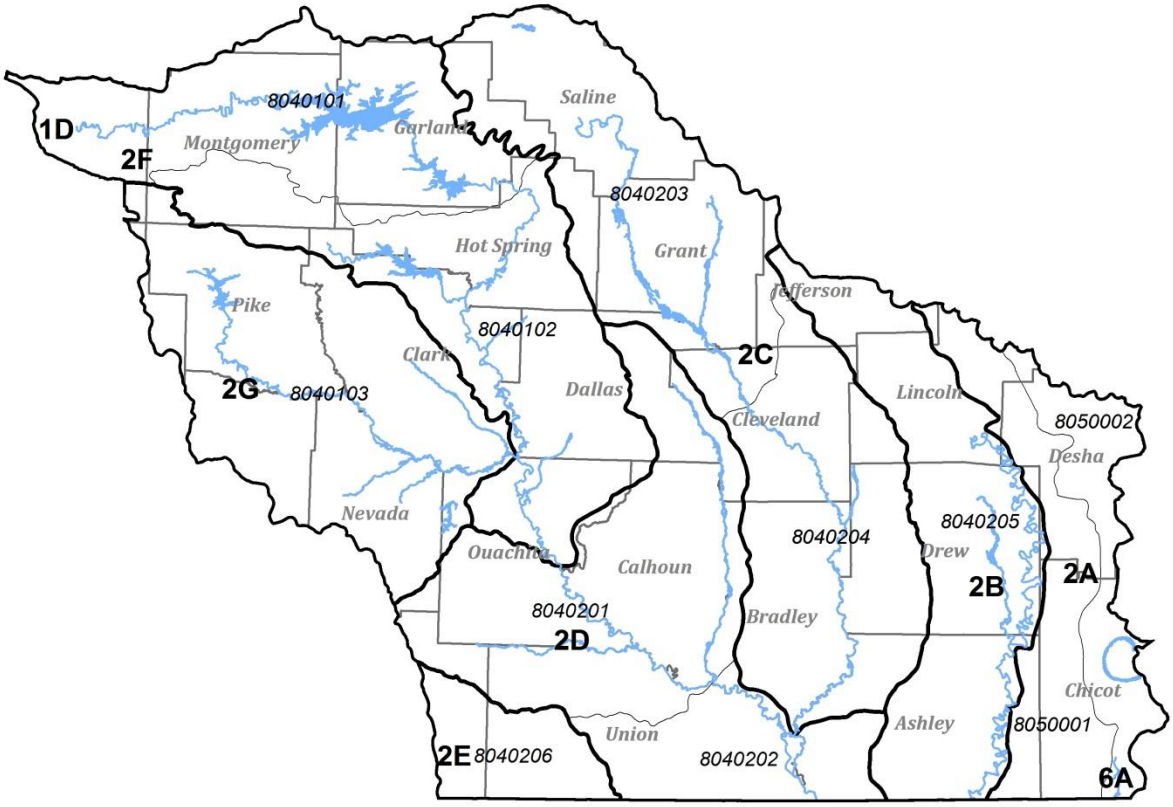
The Ouachita River basin spans parts of three ecoregions, Ouachita Mountains, Gulf Coastal Plains, and Delta, and occupies most of the southern half of the state. All major rivers within this basin drain south, directly into Louisiana.

The basin is divided into seven ADEQ planning segments and ten 8 digit HUCs. Major reservoirs include Lake Ouachita, Lake Hamilton, Lake Catherine, De Gray Reservoir, Lake Greeson, White Oak Lake, Lake Chicot, and Mossy Lake.

Major watersheds include: Boeuf River, Bayou Bartholomew, Saline River, Ouachita River, Cornie Bayou, Little Missouri River, and Antoine River.

This basin spans parts of or all of Yell, Polk, Montgomery, Garland, Saline, Grant, Jefferson, Pike, Howard, Hempstead, Clark, Nevada, Dallas, Hot Spring, Cleveland, Lincoln, Desha, Drew, Bradley, Calhoun, Ouachita, Union, Columbia, Ashley, and Chicot counties.

Figure A-6: Ouachita River Basin



2A - Boeuf River & Tributaries

2B - Bayou Bartholomew & Tributaries

2C - Saline River & Tributaries

2D - Lower Ouachita River & Tributaries

2E - Lower Cornie Bayou & Tributaries

2F - Ouachita River & Tributaries: Headwaters to Little Missouri River

2G - Little Missouri River & Antoine River

Ouachita River Basin

SEGMENT 2A BOEUF RIVER AND TRIBUTARIES

This segment is located in the extreme southeastern corner of Arkansas. It includes most of Chicot and Desha Counties, the northeastern part of Lincoln County, and small areas of Drew, Ashley, and Jefferson Counties. Major streams within this segment include the Boeuf River and its tributaries - Macon Bayou, Cypress Creek, Big Bayou, Oakwood Bayou, and others. The flows are generally southward into Louisiana. Row crop agriculture is also the dominant land use in this watershed.

Summary of Water Quality Conditions

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation, and public, industrial, and agricultural water supplies. The majority of the waters in this segment have been severely altered by channelization, ditching, and rerouting the drainage patterns.

Numerous stream segments in the Planning Segment have been evaluated as not meeting their respective turbidity and mineral standards. Row-crop agriculture dominates the land use in this planning segment. Total Maximum Daily Loads have been completed for most of the listed constituents in these waterbodies and are being implemented through the Nonpoint Source Program at the Arkansas Natural Resources Commission.

Figure A-7: Planning Segment 2A

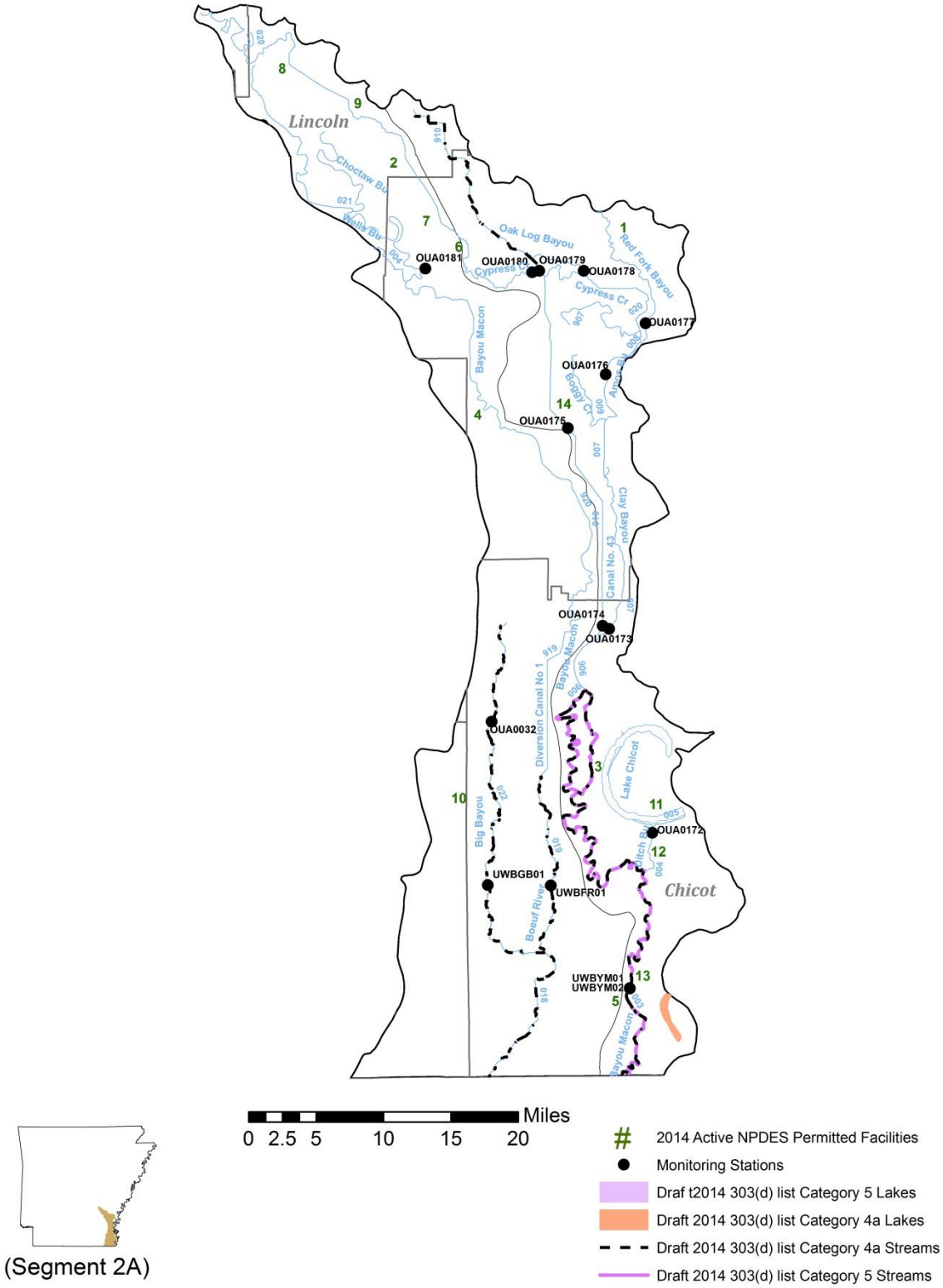


Table A-9: Planning Section 2A Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	FLOW	Designated Use						SOURCE				CAUSE				STATUS				USE	SUPPORT	NON-SUPPORT
							FC	FSH	PC	SC	DW	AI	1	2	3	4	1	2	3	4	1	2	3	4			
SEG-2A																											
Boeuf River	8050001	-018	49.4	OUA0015A	M	07367700	S	N	S	S	S	N	AG	AG	AG	AG	Tb	SO4	CL	TDS	4a	4a	4a	4a	FISH CONSUMPTION	464.2	0
Boeuf River	8050001	-019	58.1	UWBFR01	M		S	N	S	S	N	N	AG	AG	AG	AG	Tb	SO4	CL	TDS	4a	4a	4a	4a	FISHERIES	338.4	125.8
Big Bayou	8050001	-022	27.1	UWBGB01,+	M		S	S	S	S	S	S									1				PRIMARY CONTACT	464.2	0
Cypress Creek	8050001	-020	47.5	OUA0180	M		S	S	S	S	S	S									1				SECONDARY CONTACT	464.2	0
Choctaw Bayou	8050001	-021	58.9	OUA0181	M		S	S	S	S	S	S									1				DRINKING SUPPLY	387.8	76.4
Macon Bayou	8050002	-003	80.5	UWBYM01	M	07369680	S	S	S	S	S	S	UN	SE			CL	Tb			5	4a			AGRI&INDUSTRY	338.4	125.8
Ditch Bayou	8050002	-004	4.0	OUA0172	M		S	S	S	S	S	S									1						
Macon Bayou	8050002	-006	38.6		E		S	S	S	S	S	S	UN	SE			CL	Tb			5	4a					
Clay Ditch	8050002	-007	24.3	OUA0173	M		S	S	S	S	S	S									1						
Boggy Creek	8050002	-009	12.0		E		S	S	S	S	S	S									1						
Oak Bayou	8050002	-910	18.3	OUA0179+	M		S	N	S	S	N	N	AG	AG	AG		Tb	CL	TDS		4a	4a	4a				
Canal No. 43	8050002	-010	28.5	OUA0174	M		S	S	S	S	S	S									1						
Red Fork Creek	8050002	-008	17.0	OUA0177	M		S	S	S	S	S	S									1						
TOTAL MILES	464.2																										
MILES UNASSESSED	0																										
MILES EVALUATED	50.6																										
MILES MONITORED	413.6																										

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
OUA0015A	Boeuf River near Arkansas-Louisiana State line	7367700	1	A
UWBFR01	Boeuf River at Highway 278, 4 miles west of Chicot		1	R
OUA0032	Big Bayou at Highway 144 near Jerome		1	R
UWBGB01	Big Bayou at Highway 278, 5 miles east of Portland		1	R
OUA0180	Cypress Creek on county road off Highway 277 southwest of Dumas		1	R
OUA0181	Choctaw Bayou at county road southwest of Dumas		1	R
UWBYM01	Macon Bayou at Highway 65 near Eudora	7369680	1	R
OUA0172	Ditch Bayou at AGFC access off US 82 near Lake Village		1	R
OUA0173	Clay Bayou at Highway 35		1	R
OUA0175	Macon Bayou at Highway 1near McArthur		1	R
OUA0176	Amos Bayou off Highway 1near Rohwer		1	R
OUA0174	Canal No. 43, Amos Bayou, at Highway 35		1	R
OUA0179	Oak Bayou at Highway 277 southeast of Dumas		1	R
OUA0177	Red Fork Bayou on county road northeast of Kelso		1	R
OUA0178	Oak Log Bayou at county road off Highway 277 southeast of Dumas		1	R

Table A-10: Active NPDES permits for Planning Segment 2A

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0021610	WATSON, CITY OF	RED FORK BU,BOGGY BU,CLAY BU,BU MACON, STATE OF LA	008	8050002	Desha	1
AR0021679	GOULD, CITY OF - MUNICIPAL WWTF	TRIB,KERCH CANAL,CYPRESS CR,BOEUF R,OUACHITA R	020	8050001	Lincoln	2
AR0021849	LAKE VILLAGE, CITY OF	LTL LK BU,BU MACON,BOEUF R,OUACHITA R	006	8050002	Chicot	3
AR0033707	TILLAR, CITY OF	CAN #18,MACON BU,BOEUFF R	920	8050001	Drew	4
AR0033839	EUDORA, CITY OF	BU MACON,OUACHITA R	003	8050002	Chicot	5
AR0033987	DUMAS, CITY OF-WWTP	CANAL #19,BU MACON,OUACHITA R	020	8050001	Desha	6
AR0037125	MITCHELLVILLE, CITY OF	TRIB, DITCH 19,AMOS BU,MACON BU, BOEUF R	020	8050001	Desha	7
AR0039381	GRADY, CITY OF-WWTP	CAN #19,BU MACON,BOEUF R,OUACHITA R	020	8050001	Lincoln	8
AR0040827	AR DEPT OF CORRECTION-CUMMINS	CAN #19	020	8050002	Lincoln	9
AR0041297	MONTROSE, CITY OF - WASTE WATER FACILITIES	TRIB WARDS BU,BIG BU,BOEUF R	022	8050001	Ashley	10
AR0050008	CHICOT COUNTY PARK	LK CHICOT,DITCH BU,MACON BU,...	004	8050002	Chicot	11
AR0050091	DITCH BAYOU BOAT RAMP	DITCH BU,BU MACON	004	8050002	Chicot	12
AR0050580	ALABAMA CATFISH, LLC - HARVEST SELECT CATFISH EUDORA	BU MACON,OUACHITA R	003	8050001	Chicot	13
AR0051985	COON BAYOU, LLC - DELTA CONFERENCE CENTER	CANAL 43,MACON LK, MACON BU, OUACHITA R	010	8050002	Desha	14

SEGMENT 2B BAYOU BARTHOLOMEW AND TRIBUTARIES

Segment 2B, located in the southeastern part of Arkansas and drains portions of Jefferson, Lincoln, Drew, and Ashley Counties and very small portions of Cleveland, Desha, and Chicot Counties. The major streams in this segment are Bayou Bartholomew, Ables Creek, Cutoff Creek, Deep Bayou, and their tributaries.

Summary of Water Quality Conditions

The waters within this segment have been designated as suitable for the propagation of fish, wildlife, primary and secondary contact recreation, as well as public, industrial, and agricultural water supplies. This segment contains a total of 489.3 stream miles, all of which are being assessed, which are mainly used as an irrigation water supply. However, many sections of these waterbodies are used by canoers and offer excellent fishing oportunites.

Water quality is impacted in much of this segment by nonpoint pollution generated by row crop agriculture. Silt loads and turbidity are consistently very high, thus causing degradation to the aquatic life within many of these streams. For almost 20 years, the Bayou Bartholomew Alliance has been addressing these concerns through the implementation of best management practices on a watershed scale. The seven year trend analysis indicates a noticeable decline in the instream turbidity in Bayou Bartholomew. This may be indicating progress towards reducing nonpoint source pollution in the watershed.

Figure A-8: Bayou Bartholomew Turbidity (OUA0013)

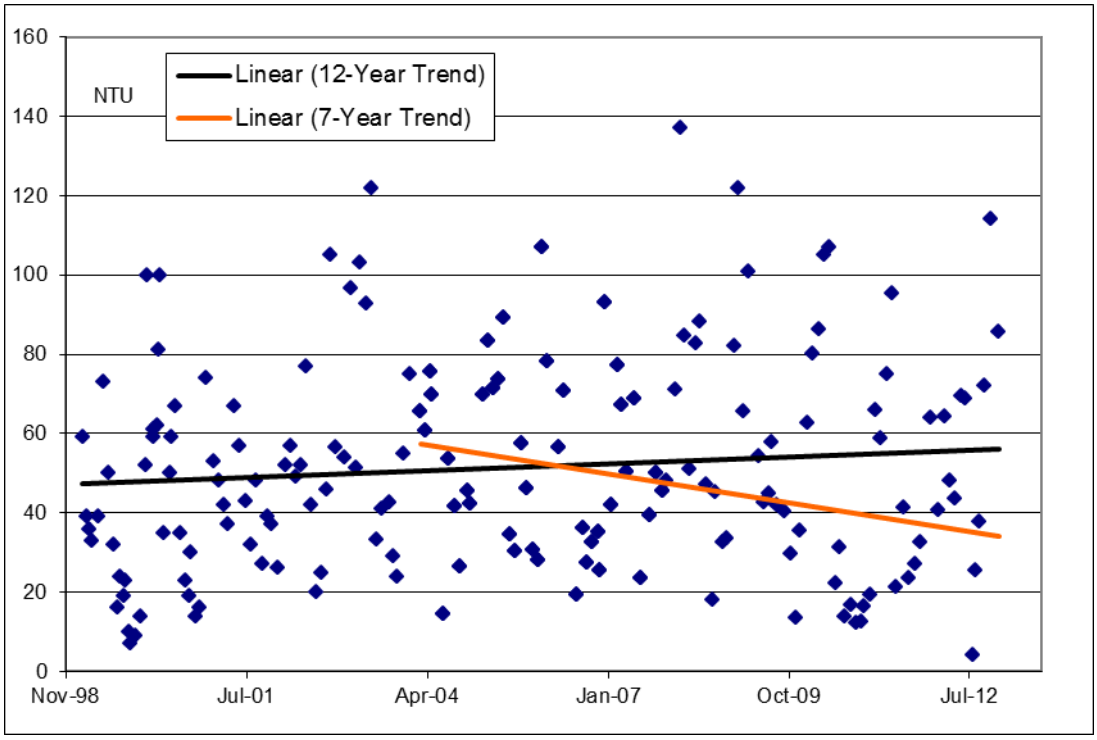


Figure A-9: Planning Segment 2B

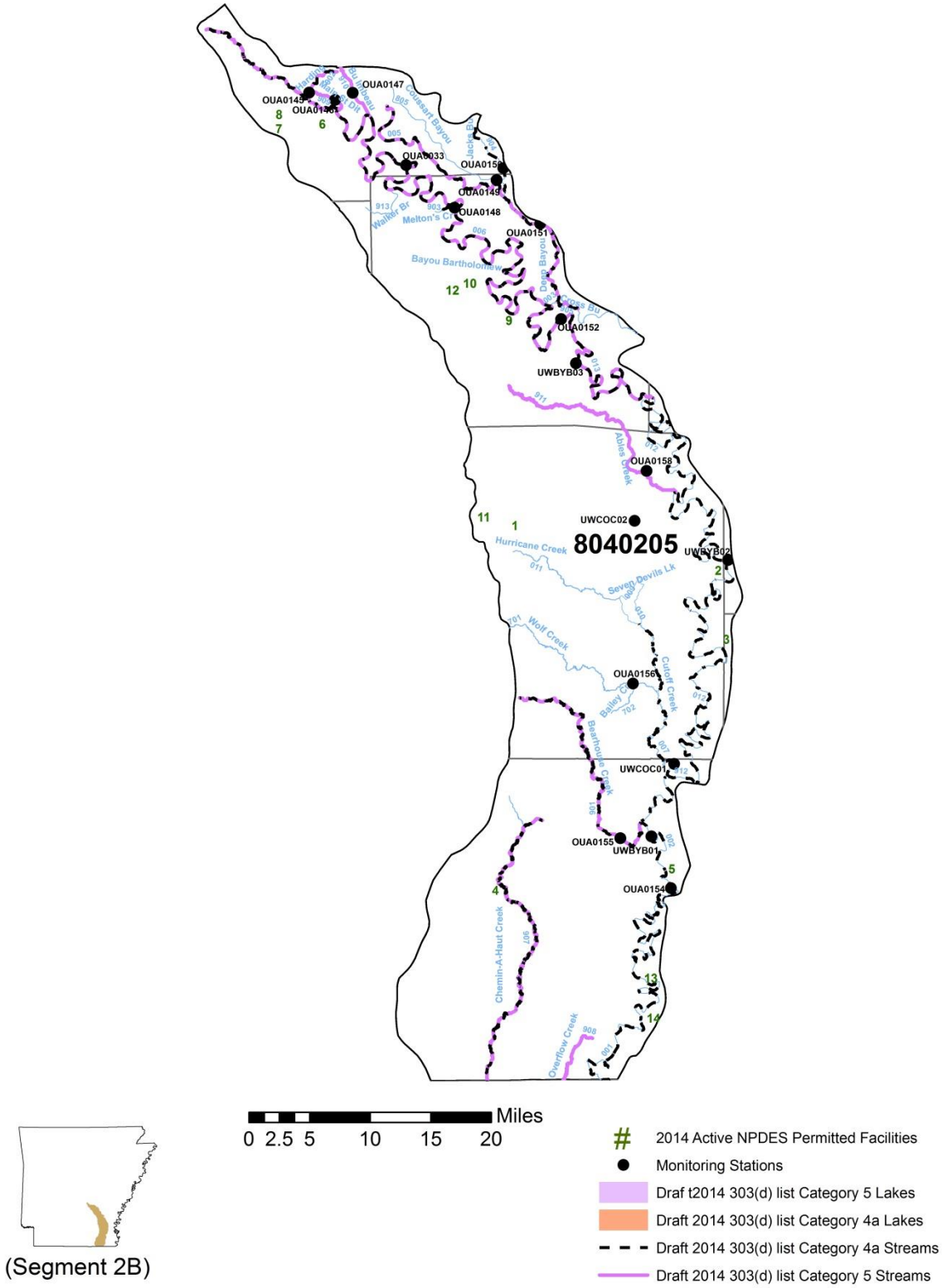


Table A-11: Planning Section 2B Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	FLOW	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-2B																											
B. Bartholomew	8040205	-001	60.1	OUA0013	M	07364200	S	N	S	S	S	S	AG				Tb				4a				FISH CONSUMPTION	429.6	59.7
Wolf Creek	8040205	-701	10.8	OUA0156	M		S	S	S	S	S	S									1						
B. Bartholomew	8040205	-002	17.9	OUA0154	M	07364185	N	S	S	S	S	S	UN	SE			Hg	Tb			4a	4a			FISHERIES	108.8	380.5
Bearhouse Creek	8040205	-901	24.4	OUA0155	M		S	N	S	S	S	S	UN	UN	UN		DO	PA	Pb		5	4a	5		PRIMARY CONTACT	374.3	115
B. Bartholomew	8040205	-006	82.3	OUA0033	M	07364115	S	N	S	S	S	S	UN	AG			Pb	Tb			5	4a			SECONDARY CONTAC	489.3	0
Main Street Ditch	8040205	-909	2.0	OUA0146	M		S	N	S	S	S	S	UR	UR	UR		DO	Pb	Cu		5	5	5		DRINKING SUPPLY	489.3	0
Harding Creek	8040205	-902	4.6	OUA0145	M		S	N	N	S	S	S	UR	UR	UR		PA	Pb	Cu		4a	5	5		AGRI & INDUSTRY	489.3	0
Nevins Creek	8040205	-906	8.5	OUA0144	M		S	S	S	S	S	S									1						
Bayou Imbeau	8040205	-910	7.5	OUA0147	M		S	N	S	S	S	S	UR	UR	UR		DO	Pb	PA		5	5	5				
Melton's Creek	8040205	-903	8.7	OUA0148	M		S	S	N	S	S	S	UN				PA				4a						
Deep Bayou	8040205	-005	28.9	OUA0151	M		S	N	N	S	S	S	UN	SE	AG		PA	Tb	Cu		4a	4a	5				
Jacks Bayou	8040205	-904	6.0	OUA0150	M		S	S	N	S	S	S	UN				PA				4a						
Cross Bayou	8040205	-905	2.4	OUA0152	M		S	N	N	S	S	S	UN	UN			DO	PA			5	4a					
Able's Creek	8040205	-911	14.6	OUA0158	M		S	S	S	S	S	S	SE				Tb				5						
B. Bartholomew	8040205	-912	82.7		E	E	S	N	S	S	S	S		UN	UN	AG		Cl	TDS	Tb		4a	4a	4a			
B. Bartholomew	8040205	-012	25.0	UWBYB02	M	07364150	N	N	S	S	S	S	SE	UN	UN	UN	Tb	Hg	CL	TDS	4a	4a	4a	4a			
B. Bartholomew	8040205	-013	33.9	UWBYB03	M	07364133	S	N	N	S	S	S	SE	UN	UN	UN	DO	Cu	1		5	5	4a				
Cutoff Creek	8040205	-007	16.8	UWCOC01	M		N	N	S	S	S	S	SE	UN			Tb	Hg			4a	4a					
Cutoff Creek	8040205	-011	11.8	UWCOC02	M		S	S	S	S	S	S									1						
Chemin-A-Haut Creek	8040205	-907	30.5	OUA0012	M		S	S	N	S	S	S	UN	UN			DO	PA			5	4a					
Overflow Creek	8040205	-908	9.9	OUA0012A	M		S	N	S	S	S	S	UN	UN			Tb	Cl			5	5					
TOTAL MILES	489.3																1 = Tb, PA, Cl, TDS										
MILES UNASSESSED	0																										
MILES EVALUATED	82.7																										
MILES MONITORED	406.6																										

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
OUA0013	Bayou Bartholomew near Jones Louisiana	7364200	1	A
OUA0154	Bayou Bartholomew at Highway 278 west of Portland	7364185	1	S
OUA0155	Bearhouse Creek at county road 75, north of Snyder		1	S
OUA0033	Bayou Bartholomew near Ladd	7364115	1	A
OUA0145	Harding Creek on Oak Wood road in Pine Bluff		1	S
OUA0148	Melton's Creek on county road 2 miles south of Tarry		1	S
OUA0151	Deep Bayou at Highway 11, 3 miles south of Grady		1	S
OUA0152	Cross Bayou on county road 2 miles south of Highway 114 near Fresno		1	S
UWBYB02	Bayou Bartholomew at Highway 4 near McGehee	7364150	1	R
UWBYB01	Bayou Bartholomew at Highway 82 near Thebes		1	R
UWBYB03	Bayou Bartholomew at Highway 54 at Garrett Bridge	7364133	1	A
OUA0144	Nevins Creek on Good Faith road in Pine Bluff		1	S
UWCOC01	Cut-Off Creek near Boydell		1	R
UWCOC02	Cut-Off Creek at Highway 4 east of Monticello		1	R
OUA0012	Overflow Creek at Louisiana Highway 590 in Morehouse Parish		1	R
OUA0012A	Chemin-A-Haut Creek at Louisiana Highway 834 in Morehouse Parish		1	R

Table A-12: Active NPDES permits for Planning Segment 2B

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0021831	MONTICELLO, CITY OF - EAST PLANT	TRIB,GODFREY CR,LOWER CUTOFF CR,CUTOFF CR,7 DEVILS	009	8040205	Drew	1
AR0022071	MCGEHEE, CITY OF	BU BARTHOLOMEW,OUACHITA R	912	8050001	Desha	2
AR0022250	DERMOTT, CITY OF (SOUTH POND)	BU BARTHOLOMEW,OUACHITA R	912	8050001	Chicot	3
AR0034029	HAMBURG, CITY OF	CHEMIN-A-HAUT CR, OUACHITA R	011	8040205	Ashley	4
AR0034371	PORTLAND, CITY OF	TRIB,BU BARTHOLOMEW,OUACHITA R	002	8040205	Ashley	5
AR0037885	TANTARA #1- D/B/A BOGGY BAYOU SID	BOGGY BU,BU BARTHOLOMEW,ARKANSAS R	006	8040205	Jefferson	6
AR0039144	PINEWOOD SEWER IMPROVEMENT DISTRICT (SID) #1	TRIB,NEVINS CR,BU BARTHOLOMEW, OUACHITA R	006	8040205	Jefferson	7
AR0041602	SUBURBIA SID #1	UNNAMED TRIB NEVIN CR,BU BARTHOLOMEW, OUACHITA R	006	8040205	Jefferson	8
AR0045888	ARKANSAS DEPT OF PARKS & TOURISM - CANE CREEK STATE PARK	CANE CREEK LK,BU BARTHOLOMEW	006	8040205	Lincoln	9
AR0046477	STAR CITY WW TREATMENT FCILITY	CANE CR,BU BARTHOLOMEW,OUACHITA R	006	8040205	Lincoln	10
AR0047350	PINE HAVEN PARK	TRIB,GODFREY CR,CUTOFF CR,BU BARTHOMEW	011	8040205	Drew	11
AR0047872	ROBERT FLOYD SAWMILL, INC.	TRIB,CANE CR,BU BARTHOLOMEW,OUACHITA R	006	8040205	Lincoln	12
AR0050997	PARKDALE, CITY OF	BU BARTHOLOMEW	001	8040205	Ashley	13
AR0050989	WILMOT, CITY OF	BU BARTHOLOMEW, OUACHITA R	001	8040205	Ashley	14

SEGMENT 2C SALINE RIVER AND TRIBUTARIES

Segment 2C is located in south central Arkansas and covers parts of Saline, Garland, Hot Spring, Grant, Dallas, Jefferson, Cleveland, Lincoln, Drew, Bradley, and Ashley Counties. This segment contains the Saline River drainage system from its headwaters in the Ouachita Mountains to its confluence with the Ouachita River. The principal tributaries are Hurricane Creek, Hudgins Creek, L'Aigle Creek, Derrieusseaux Creek, and the four forks of the upper Saline River.

Summary of Water Quality Conditions

The waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation, and public, industrial, and agricultural water supplies. Slightly over one-half of the total stream miles within this segment are designated as Extraordinary Resource Waters. This includes the Saline River and its primary headwater tributaries. These streams offer, and are utilized, by canoers and boaters year-round. Fishing and swimming activities are more dominant during the warmer months.

The domestic water supply use has been removed from 83.8 stream miles in the Hurricane Creek sub-watershed because of excessive mineral content. The minerals (chlorides, sulfates, and other dissolved minerals) in this basin originate from the historic open pit bauxite mine.

Water quality in Big Creek below the City of Sheridan effluent has improved, yet dissolved oxygen violations still occur as well as elevated BOD and TOC levels. A TMDL was completed for dissolved oxygen in Big Creek in 2007. This stream is classified as a seasonal fishery and the critical season dissolved oxygen standard is 2.0 mg/L to prevent nuisance conditions. Many small streams in this ecoregion have dissolved oxygen levels below 2.0 mg/L during the critical season.

A fish consumption advisory has been placed on much of the lower Saline River because of mercury contamination. A TMDL was completed in September 2002 for these waters.

A few total maximum daily loads have been established for constituents listed on previous lists of impaired waterbodies. These waterbody segments have been moved from Category 5 to Category 4a.

Figure A-10: Planning Segment 2C

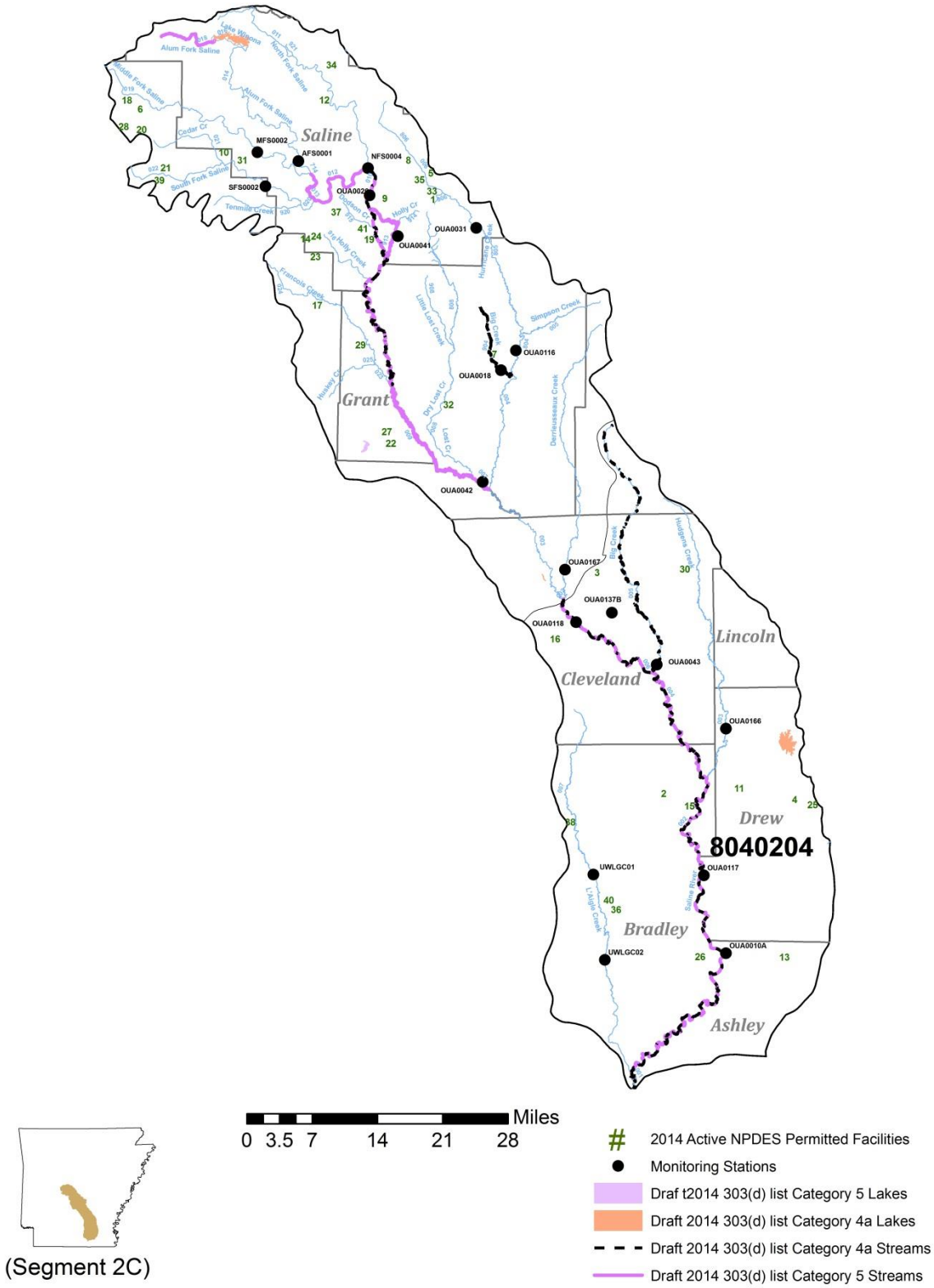


Figure A-11: Planning Segment 2C Close-up of Upper Saline River watershed

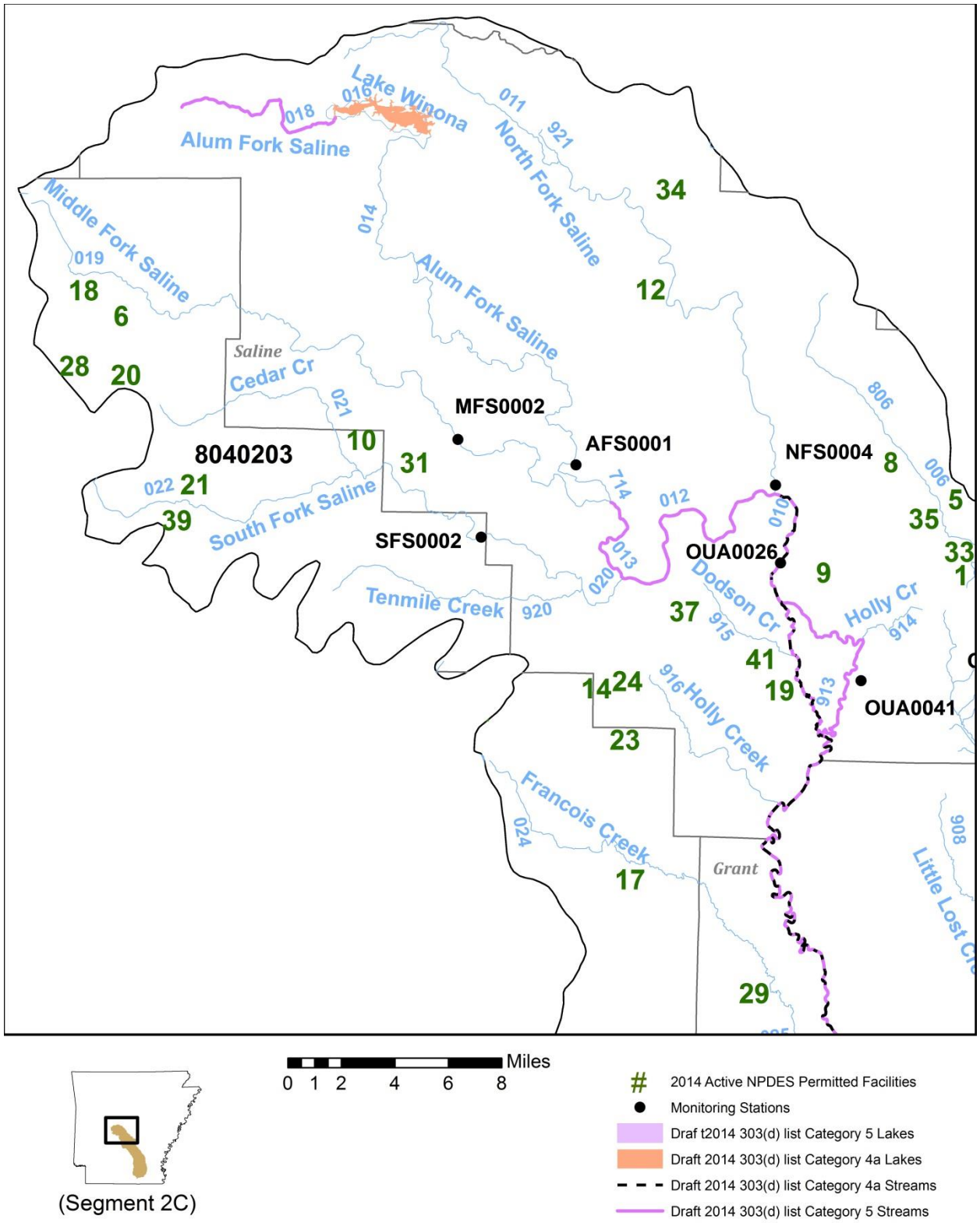


Table A-13: Planning Section 2C Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	FLOW	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4
SEG-2C																								
Saline River	8040203	-001	0.2		E	E	N	S	S	S	S	S	UN				Hg				4a			
Derrieusseaux	8040203	-002	34.3	OUA0166	E		S	S	S	S	S	S									1			
Saline River	8040203	-003	17.2		E	E	S	S	S	S	S	S									1			
Hurricane Cr.	8040203	-004	19.5	OUA0116	M	07363300	S	S	S	S	S	S									1			
Simpson Creek	8040203	-005	12.3		E		S	S	S	S	S	S									1			
Hurricane Cr.	8040203	-006	30.8	OUA0031	M	07363270	S	S	S	S	S	S									1			
Saline River	8040203	-007	3.8	OUA0042	M	07363200	S	S	S	S	S	S	SE				Tb				5			
Lost Creek	8040203	-008	33.5		U																3			
Saline River	8040203	-009	15.6		E		S	S	S	S	S	S	SE				Tb				5			
Saline River	8040203	-010	29.8	OUA0026,41	M	07363002, 5	S	N	S	S	S	S	SE	UN			Tb	TDS			5	4a		
N. Fork Saline	8040203	-011	23.2	NFS01	M		S	S	S	S	S	S									1			
Saline River	8040203	-012	10.2		E		S	S	S	S	S	S	SE				Tb				5			
Saline River	8040203	-013	4.0		E		S	S	S	S	S	S	SE				Tb				5			
Saline Rier	8040203	-913	9.3		E		S	S	S	S	S	S	SE				Tb				5			
Alum Fork	8040203	-014	24.6	AFS01	M		S	S	S	S	S	S									1			
Alum Fork	8040203	-015	3.2		E		S	S	S	S	S	S									1			
Alum Fork	8040203	-018	10.0	USGS	M		S	S	S	S	S	S	UN				pH				5			
M. Fork Saline	8040203	-019	30.9	MFS01	M		S	S	S	S	S	S									1			
S. Fork Saline	8040203	-020	14.9	SFS01	M		S	S	S	S	S	S									1			
Cedar Creek	8040203	-021	9.1		E		S	S	S	S	S	S									1			
S. Fork Saline	8040203	-022	10.9		E		S	S	S	S	S	S									1			
Francois Cr.	8040203	-023	2.9		E		S	S	S	S	S	S									1			
Francois Cr.	8040203	-024	14.9		E		S	S	S	S	S	S									1			
Huskey Creek	8040203	-025	11.0		E		S	S	S	S	S	S									1			
Big Creek	8040203	-904	10.0	OUA0018	M		S	N	S	S	S	S	UN	SE	MP		DO	Tb	OE		4a	4a	4a	
Saline River	8040204	-001	2.8		E		N	S	S	S	S	S	UN				Hg				4a			
Saline River	8040204	-002	53.0	OUA0010A,117	M	07364012, 11	N	S	S	S	S	S	UN	SE			Hg	Tb			4a	5		
Saline River	8040204	-004	16.4		E		N	S	S	S	S	S	UN	SE			Hg	Tb			4a	5		
Saline River	8040204	-006	17.5	OUA0118	M	07363445	N	S	S	S	S	S	UN	SE	SE		Hg	TDS	Tb		4a	4a	5	
Hudgens Creek	8040204	-003	36.7	OUA0167	M		S	S	S	S	S	S									1			
Big Creek	8040204	-005	28.9	OUA0043	M		N	N	S	S	S	S	SE				Tb				4a			
L'Aigle Creek	8040204	-007	44.2	UWLGC01,02	M		S	S	S	S	S	S												
TOTAL MILES	585.6																							
MILES UNASSESSED	33.5																							
MILES EVALUATED	174.3																							
MILES MONITORED	377.8																							

USE	SUPPORT	NON-SUPPORT
FISH CONSUMPTION	433.3	118.8
FISHERIES	483.4	68.7
PRIMARY CONTACT	552.1	0
SECONDARY CONTACT	552.1	0
DRINKING SUPPLY	552.1	0
AGRI & INDUSTRY	552.1	0

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
OUA0166	Derrieusseaux Creek at Highway 35 northwest of Rison		2	R
OUA0116	Hurricane Creek at Highway 270 bridge	7363300	1	A
OUA0031	Hurricane Creek near Sardis	7363270	1	A
OUA0042	Saline River at Highway 167 near Sheridan	7363200	1	A
OUA0026	Saline River near Benton	7363002	1	A
OUA0041	Saline River at Shaw Bridge south of Benton	7363054	1	A
NFS02	North Fork Saline River near Benton		2	R
AFS01	Alum Fork Saline River at Highway 5 east of Crows		2	R
MFS01	Middle Fork Saline River at county road south of Crows		2	R
SFS01	South fork Saline River on county road north of Nance off US 70		2	R
OUA0018	Big Creek below Sheridan		1	A
OUA0010A	Saline Rive near Fountain Hill	7364012	1	A
OUA0117	Saline River at Ozment Bluff	7364011	1	A
OUA0118	Saline River at Highway 79 bridge	7363445	1	A
OUA0167	Hudgens Creek at Highway 35 east of Rye		2	R
OUA0043	Big Creek at Highway 35 northwest of Sheridan		1	A
UWLGC01	L'Aigle Creek at Farmville Road, 2 miles southeast of Farmville		2	R
UWLGC02	L'Aigle Creek at county road, 2.5 miles west of Ingalls		2	R

Table A-14: Active NPDES permits for Planning Segment 2C

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0000582	ALCOA ARKANSAS REMEDIATION	HURRICANE CR (008,028);HOLLY CR(009)	003	8040203	Saline	1
AR0000914	POTLATCH LAND AND LUMBER, LLC - WARREN LUMBER	TRIB,FRANKLIN CR,SALINE R,OUACHITA R	002	8040204	Bradley	2
AR0021695	RISON, CITY OF	TRIB,HARRISON CR,SALINE R,OUACHITA R	006	8040204	Cleveland	3
AR0021822	MONTICELLO, CITY OF-WEST PLANT	TENMILE CR,SALINE R,OUACHITA R	002	8040204	Drew	4
AR0034002	BRYANT SEWAGE TREATMENT FAC	TRIB,HURRICANE CR,SALINE R,OUACHITA	006	8040203	Saline	5
AR0034291	HOT SPRINGS VILLAGE POA-MILL CREEK WWTP	MILL CR,MIDDLE FK,ALUM FK,SALINE R,OUACHITA R	019	8040203	Garland	6
AR0034347	SHERIDAN WW TREATMENT FACILITY	BIG CR,HURRICANE CR,SALINE R,OUACHITA R	904	8040203	Grant	7
AR0035955	BRYANT SCHOOL DISTRICT - SALEM ELEMENTARY SCHOOL WWTP	TRIB,HURRICANE CR,SALINE R,OUACHITA R	006	8040203	Saline	8
AR0036498	BENTON, CITY OF	TRIB,DEPOT CR,SALINE R	010	8040203	Saline	9
AR0039284	HOT SPRINGS VILLAGE P.O.A. - CEDAR CREEK WWTP	CEDAR CR,SOUTH FK SALINE R,SALINE R,OUACHITA R	021	8040203	Garland	10
AR0040096	WILMAR, CITY OF	FLAT BRANCH CR,TEN MILE CR,SALINE R,OUACHITA R	002	8040204	Drew	11
AR0041416	TIMBER RIDGE NEUROREHABILITATION CENTER, INC.	DOG CR,NORTH FORK SALINE R,SALINE R,OUACHITA R	011	8040203	Saline	12
AR0042421	FOUNTAIN HILL, CITY OF	TRIB,FLAT CR,SALINE R	002	8040204	Ashley	13
AR0042889	JJ'S TRUCK STOP	TRIB,BRUSHY CR,FRANCOIS CR,SALINE R	024	8040203	Saline	14
AR0043427	WARREN WATER & SEWER	SALINE R,OUACHITA R	002	8040204	Bradley	15
AR0043672	KINGSLAND, CITY OF	PANTHER CR,SALINE R,OUACHITA R	006	8040204	Cleveland	16
AR0044105	FLAKEBOARD AMERICA LIMITED	TRIB,BIG CR,SALINE R,OUACHITA R	024	8040203	Hot Spring	17
AR0044423	JESSIEVILLE PUBLIC SCHOOL	TRIB,COLEMAN CR,SALINE R	019	8040203	Garland	18
AR0044547	HASKELL, CITY OF	UNNAMED CR,TRACE CR,SALINE R,OUACHITA R	010	8040203	Saline	19
AR0045047	VILLAGE SQUAREOF HSV, LLC D/B/A VILLAGE SQUARE SHOPPING CENTER	TRIB,MILL CR,SALINE R,OUACHITA R	019	8040203	Garland	20
AR0046141	MOUNTAIN VALLEY RETREAT CENTER	TRIB,SOUTH FORK SALINE R,SALINE R,OUACHITA R	022	8040203	Garland	21
AR0046698	WEST FRASER, INC. - LEOLA LUMBER MILL	TRIB,SALINE R,OUACHITA R	009	8040203	Grant	22
AR0046817	GLEN ROSE PUBLIC SCHOOL	TRIB,10-MILE CR, FRANCOIS CR, SALINE R	024	8040203	Hot Spring	23

Table A-14: Active NPDES permits for Planning Segment 2C

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0047431	CHURCH OF GOD IN ARKANSAS DBA PATHWAY CAMPGROUND	TRIB,BRUSHY CR,FRANCOIS CR,SALINE R,OUACHITA R	024	8040203	Saline	24
AR0047732	J.P. PRICE LUMBER COMPANY	TRIB OF CLEAR CR, CLEAR CR, SALINE R, OUACHITA R	002	8040204	Drew	25
AR0047830	JOHNSVILLE COMPANY, LLC	HUNT BR,SALINE R,OUCHITA R	002	8040204	Bradley	26
AR0047902	H.G. TOLER & SON LUMBER COMPANY	TRIB,SALINE R,OUACHITA R	009	8040203	Grant	27
AR0048194	JESSIEVILLE SCHOOL DISTRICT AND FOUNTAIN LAKE SCHOOL DISTRICT	TRIB,COLEMAN CR,MIDDLE FORK SALINE R	019	8040203	Garland	28
AR0048445	POYEN, CITY OF-MSTP	TRIB,BIG CR,FRANCOIS CR,SALINE R,OUACHITA R	025	8040203	Grant	29
AR0048569	WOODLAWN SCH00L DISTRICT #6	TRIB,HUDGIN CR,SALINE R	003	8040204	Cleveland	30
AR0049328	SALINE CO. PROPERTY OWNERS' IMPROV. DIST#37 - WWTP	TRIB SOUTH FORK SALINE R,SOUTH FORK SALINE R	020	8040203	Saline	31
AR0049751	SHERIDAN WHITE ROCK, INC.	TRIB,LOST CR,SALINE R,OUACHITA R	008	8040203	Grant	32
AR0049786	BAUXITE, AR.WWTF	TRIB,HURRICANE CR,SALINE R,OUACHITA R	006	8040203	Saline	33
AR0050202	SECOND CHANCE RANCH	TRIB,N FRK SALINE R,SALINE R.OUACHITA R	011	8040203	Saline	34
AR0050270	ALMATIS, INC.	HURRICANE CR,SALINE R,OUACHITA R	006	8040203	Saline	35
AR0050300	OASIS TRADING CO., LLC	TRIB,L'AIGLE CR,SALINE R,OUACHITA R	007	8040204	Bradley	36
AR0050563	CROSSROADS VILLAGE (LANDERS BCO, LLC)	TRIB,CLIFT CR,SALINE R, OUACHITA R	010	8040203	Saline	37
AR0050601	BANKS, CITY OF	TRIB,L'AIGLE CR,SALINE R,OUACHITA R	007	8040204	Bradley	38
AR0050750	HSNC, INC. D/B/A VILLAGE SPRINGS HEALTHCARE AND REHABILITATION	S FORK OF SALINE R,SALINE R,OUACHITA R	022	8040203	Garland	39
AR0051055	HERMITAGE, CITY OF-STP	BIG TOWN CR, L'AIGLE CR, SALINE R, OUACHITA R	007	8040204	Bradley	40
AR0051713	HASKELL, CITY OF - NORTH WWTP	DODSON CR, SALINE R, OUACHITA R	910	8040203	Saline	41

SEGMENT 2D LOWER OUACHITA RIVER AND TRIBUTARIES

Segment 2D occupies the south central part of Arkansas covering Calhoun, Bradley, Dallas, Ouachita, Cleveland, Columbia, Ashley, Nevada, and Union Counties. It encompasses the lower Ouachita River and its tributaries from the confluence of the Little Missouri and Ouachita Rivers to the Louisiana state line. The major tributaries are Moro Creek, Lapile Creek, Champagnolle Creek, and Smackover Creek.

Summary of Water Quality Conditions

The waters within this segment have been designated as suitable for propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supplies. These waters, which include Felsenthal Reservoir, are heavily used for fishing, boating, and hunting activities.

The Lower Ouachita River, Champagnolle, and Moro Creeks have fish consumption advisories because of mercury contamination. A consumption advisory has been placed on 66.3 miles of the Ouachita River, 20.0 miles of Champagnolle Creek and 12 miles of Moro Creek. A TMDL was completed in 2002 for mercury in the lower Ouachita River Basin in Arkansas and Louisiana.

Bayou de L'outre and L'outre Creek have been listed as not attaining the agriculture and industrial water supply uses because of elevated levels of minerals. A combination of nonpoint source pollution runoff and discharges from industrial and municipal point sources are the suspected sources. Additional monitoring is needed to better assess impairments and delineate the sources.

Some of the most severe water quality problems exist in the unnamed tributary from El Dorado Chemical Company (ELCC), Flat Creek, and Salt Creek. The ELCC tributary contains ammonia at toxic levels; elevated nitrates, minerals (sulfates and total dissolved solids) and copper concentrations. The source is from the El Dorado Chemical Company discharge. Flat Creek and Salt Creek have elevated minerals (chlorides, sulfates, total dissolved solids) and ammonia concentrations. The exact source is unknown, but these streams drain basins from the northern edge of El Dorado where numerous oil and brine processing and storage facilities exist along with numerous abandoned pumping facilities. These streams enter Smackover Creek below the ambient monitoring station. TMDLs were completed in October 2002 and in October 2003. Both point source and nonpoint source controls are needed to address these issues.

Copper continues to show elevated concentrations above the toxic levels. This seems to be a trend throughout the Gulf Coastal Plains. The waters in the Gulf Coastal Plains generally have low hardness values, typically less than 25 mg/L, which causes even the smallest concentrations of copper in the water to be above toxic conditions.

Figure A-12: Planning Segment 2D

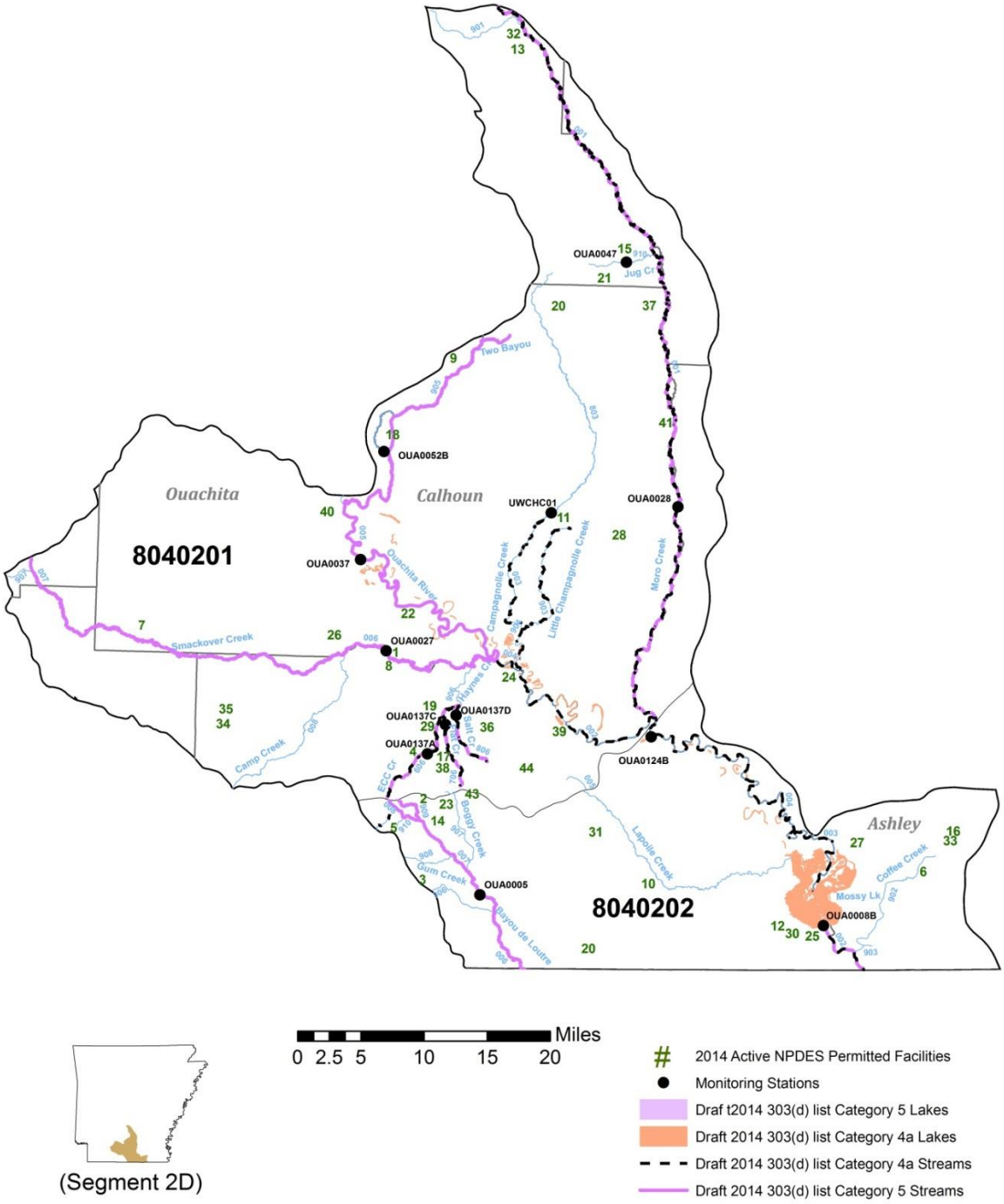


Table A-15: Planning Section 2D Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use						SOURCE				CAUSE				STATUS				USE	SUPPORT	NON-SUPPORT
						FC	FSH	PC	SC	DW	AI	1	2	3	4	1	2	3	4	1	2	3	4			
SEG-2D																										
Ouachita River	8040202	-002	4.0	OUA0008B	M	S	N	S	S	S	S	UN	UN			Hg	Tb			4a	5			FISH CONSUMPTION	313.7	65.9
Ouachita River	8040202	-003	8.4		M	S	S	S	S	S	S	UN				Hg				4a				FISHERIES	145.2	234.4
Ouachita River	8040202	-004	28.9	OUA0124B	M	S	S	S	S	S	S	UN				Hg				4a				PRIMARY CONTACT	348.9	30.7
Lapile Creek	8040202	-005	25.3		U															3				SECONDARY CONTACT	379.6	0.0
B. De L'Outre	8040202	-006	32.4	OUA0005	M	S	N	S	S	R	S	IP	MP			SO4	TDS			5	5			DRINKING SUPPLY	307.8	32.5
B. De L'Outre	8040202	-007	6.9	UAA	E	S	N	S	S	R	S	IP	MP			SO4	TDS			5	5			AGRI&INDUSTRY	379.6	0.0
B. De L'Outre	8040202	-008	10.6	UAA	E	S	N	S	S	S	S	IP	MP			SO4	TDS	Cl	Se	5	5	5	5			
Loutre Creek	8040202	-909	3.3	UAA	M	S	S	S	S	S	S	IP	IP	IP		Cl	SO4	TDS		5	5	5				
Moro Creek	8040201	-901	57.9		E	S	N	S	S	S	S	UN	UN	SE		Cu	Pb	Tb		5	5	4a				
Moro Creek	8040201	-001	12.0	OUA0028	M	S	N	S	S	S	S		UN	SE	UN		Pb	Tb	Hg		5	4a	4a			
Ouachita River	8040201	-002	22.5		M	N	S	S	S	S	S	UN				Hg				4a						
Ouachita River	8040201	-004	2.5		M	N	S	S	S	S	S	UN				Hg				4a						
Ouachita River	8040201	-005	34.2	OUA0037	M	S	N	S	S	S	S	UN				Cu				5						
L. Champagnolle	8040201	-903	20.9		E	N	S	S	S	S	S	UN				Hg				4a						
Champagnolle	8040201	-003	20.0	UWCHC01	M	N	S	S	S	S	S	UN				Hg				4a						
Smackover Cr.	8040201	-006	14.8	OUA0027	M	S	N	S	S	S	S	UN				DO				5						
Smackover Cr.	8040201	-007	29.1		E	S	N	S	S	S	S	UN				DO				5						
Camp Creek	8040201	-008	13.3		U															3						
Elcc Trib.	8040201	-606	8.5	OUA0137A+	M	S	N	S	S	N	S	MP	MP	MP		Cu	NO3	1		5	5	4a				
Flat Cr.	8040201	-706	16.0	OUA0137C	M	S	N	S	S	N	S	IP	IP			Cl			1	5			4a			
Salt Cr.	8040201	-806	8.0	OUA0137D	M	S	N	S	S	N	S	IP	IP			pH	Cl		1	5	5		4a			
Haynes Cr.	8040201	-906	10.0		U															3						
Jug Creek	8040201	-910	8.0	OUA0047	M	S	S	S	S	S	S									3						
E. Two Bayou	8040201	-905	30.7	OUA0052B	M	S	S	N	S	S	S	UN	UN			PA	pH			5	5					

TOTAL MILES	428.2
MILES UNASSESSED	48.6
MILES EVALUATED	125.4
MILES MONITORED	254.2

1 = TMDLs for AM, CL, SO4, & TDS.

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
OUA0008B	Ouachita River at Felsenthal Dam		1	A
OUA0124B	Ouachita River at Pigeon Hill		1	A
OUA0005	Bayou L'Outre near Junction City	7364600	1	A
OUA0028	Moro Creek east of Hampton	7362550	1	A
OUA0037	Ouachita River below Camden	7362065	1	A
UWCHC01	Champagnolle Creek at Highway 4 near Hampton		2	R
OUA0027	Smackover Creek near Smackover	7362110	1	A
OUA0137A	Flat Creek tributary at Highway 7 spur near El Dorado		1	S
OUA0137B	Flat Creek tributary south of Norphlet on O'Rear Road		1	S
OUA0137C	Flat Creek south of Norphlet on O'Rear Road		1	S
OUA0137D	Salt Creek west of Norphlet on O'Rear Road		1	S
OUA0047	Jug Creek below Fordyce		1	A

Table A-16: Active NPDES permits for Planning Segment 2D

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0000591	MARTIN OPERATING PARTNERSHIP, L.P.	SMACKOVER CR,OUACHITA R	006	8040201	Union	1
AR0000647	LION OIL CO-EL DORADO REFINERY	1-7: LOUTRE CR; 010: OUACHITA R	008	8040202	Union	2
AR0000680	GREAT LAKES CHEMICAL CORPORATION-SOUTH	GUM CR-2D (1) & WALKER CR-2E (2,3)	007	8040202	Union	3
AR0000752	EL DORADO CHEMICAL CO., INC.	TRIB,FLAT CR,HAYNES CR,OUACHITA R	606	8040202	Union	4
AR0001171	GREAT LAKES CHEMICAL CORPORATION-CENTRAL	BU DE LOUTRE;LTL CORNIE BU;OUACHITA	007	8040202	Union	5
AR0001210	GEORGIA-PACIFIC, LLC-CROSSETT PAPER OPERATIONS	MOSSY LK,COFFEE CR,OUACHITA R	902	8040202	Ashley	6
AR0020168	STEPHENS, CITY OF	SMACKOVER CR,OUACHITA R	007	8040201	Ouachita	7
AR0021440	SMACKOVER, CITY OF	SMACKOVER CR,OUACHITA R	006	8040201	Union	8
AR0021474	BEARDEN, CITY OF	EAST TWO BU CR,OUACHITA R	005	8040201	Ouachita	9
AR0021687	STRONG, CITY OF	LAPILE CR,OUACHITA R	005	8040202	Union	10
AR0021873	HAMPTON, CITY OF	CHAMPAGNOLLE CR, OUACHITA R	003	8040201	Calhoun	11
AR0022268	HUTTIG, CITY OF	OUACHITA R	002	8040202	Union	12
AR0033715	CARTHAGE, CITY OF	TRIB MATTHEWS CR,MORO CR,MORO BAY,OUACHITA R	001	8040201	Dallas	13
AR0033723	EL DORADO WATER - SOUTH PLANT	BU DE LOUTRE,OUACHITA R	007	8040202	Union	14
AR0033758	FORDYCE, CITY OF	JUG CR,MORO CR,OUACHITA R	901	8040201	Dallas	15
AR0033812	NORTH CROSSETT UTILITIES	TRIB,LTL BRUSHY CR, BIG BRUSHY CR,SALINE R, QUACH	002	8040202	Ashley	16
AR0033936	EL DORADO WATER - NORTH	TRIB,FLAT CR,HAYNES CR,SMACKOVER CR, OUACHITA R	706	8040201	Union	17
AR0034363	SHUMAKER PUBLIC SERVICE CORP.	TRIB,TWO BU CR,OUACHITA R	005	8040201	Ouachita	18
AR0035653	NORPHLET, CITY OF	UNNAMED TRIB FLAT CR,HAYNER CR,SMACKOVER CR	606	8040201	Union	19

Table A-16: Active NPDES permits for Planning Segment 2D

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0035661	THORNTON, CITY OF	TURNERS CR,CHAMPAGNOLLE CR,OUACHITA R	003	8040201	Calhoun	20
AR0036064	FORDYCE PLYWOOD PLANT	TRIB,JUG CR,MORO CR,OUACHITA R	901	8040201	Dallas	21
AR0037761	BEECH SPRINGS BAPTIST CAMP	UNNAMED TRIB,OUACHITA R	005	8040201	Ouachita	22
AR0037800	CLEAN HARBORS EL DORADO, LLC	BOGGY CR,BU DELOUTRE,OUACHITA R	007	8040202	Union	23
AR0038211	CALION, CITY OF	CHAPELLE SLU,OUACHITA R	002	8040201	Union	24
AR0039659	FELSENTHAL, CITY OF	WOLF SLU TO BUCKHORN SLU, OUACHITA R	002	8040202	Union	25
AR0040517	LOUANN, CITY OF	BRUSHY CR,SMACKOVER CR,OUACHITA R	007	8040201	Ouachita	26
AR0042315	CROSSETT HARBOR PORT AUTHORITY	OUACHITA R	003	8040202	Ashley	27
AR0042609	HARRELL, CITY OF - WATERWORKS	SPRING BR,BLANN CR,LLOYD CR,MORO CR,OUACHITA R	001	8040201	Calhoun	28
AR0044733	CEDARWOOD LEISURE PARK, LLC	TRIB,FLAT CR,HAYNES CR,SMACKOVER CR, OUACHITA R	606	8040201	Union	29
AR0046116	WEST FRASER SOUTH, INC.	DOLLAR SLU (1,); BUCKHORN SLU (4)	003	8040202	Union	30
AR0047384	ANTHONY FOREST PRODUCTS-URBANA	TRIB, N LAPILE CR,LAPILE CR,OUACHITA R	005	8040202	Union	31
AR0047503	IDAHO TIMBER CORP. OF CARTHAGE, LLC	TRIB,MORO CR,SALINE R,OUCHITA R	001	8040201	Dallas	32
AR0048097	GEORGIA PACIFIC, LLC - NORTH LOG YARD	TRIB,LTL BRUSHY CR,BIG BRUSHY CR,BRUSHY CR,MARAIS	003	8040202	Ashley	33
AR0048381	WATSON SAWMILL, INC.	TRIB,BEECH CR,SMACKOVER CR,OUACHITA R	007	8040201	Union	34
AR0049123	JIM YEAGER - D/B/A YEAGER APARTMENTS	TRIB,DRY CR,BEECH CR,SMACKOVER CR,OUACHITA R	007	8040201	Union	35
AR0049140	UNION POWER STATION	OUACHITA R	002	8040201	Union	36
AR0049204	GEORGIA PACIFIC CORPORATION - FORDYCE OSB FACILITY	UNNAMED TRIB,MORO CR,OUACHITA R	001	8020401	Dallas	37
AR0049743	EL DORADO WATER UTILITIES	OUACHITA R	706	8040201	Union	38
AR0050296	EL DORADO JOINT PIPELINE	OUACHITA R	002	8040201	Union	39

Table A-16: Active NPDES permits for Planning Segment 2D

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0050482	VICTORY LUMBER, LLC	UNNAMED TRIB,MILL CR,TWO BU,OUACHITA R	005	8040201	Ouachita	40
AR0050661	TINSMAN, AR WASTEWATER TREATMENT FACILITY	WATSON CR,MORO CR,OUACHITA R	001	8040201	Calhoun	41
AR0051071	AEROJET ROCKETDYNE, INC.	TIRB, TWO BU, OUACHITA R	005	8040201	Ouachita	42
AR0051420	SOUTHERN MUD COMPANY, LLC	TRIB, BOGGY CR, BU DE LOUTRE, OUACHITA R	907	8040202	Union	43
AR0051811	EL DORADO PUBLIC SCHOOLS - OLD UNION SCHOOL	TRIB,MILL CR,OUACHITA R	002	8040201	Union	44

SEGMENT 2E UPPER CORNIE BAYOU AND TRIBUTARIES

Segment 2E is located in south central Arkansas and covers parts of Columbia and Union Counties. This segment includes the upper portions of Cornie Bayou and Little Cornie Bayou which eventually flow into the Ouachita River in northern Louisiana. The two major tributaries are Beech Creek and Three Creeks.

Summary of Water Quality Conditions

Waters within this segment have been designated as suitable for the propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supplies.

Sulfates continue to be the major causes of impairment to all of the waters within this basin. Siltation was added most recently as impairing the fisheries designated use to the streams in this basin with resource extraction listed as the source. Additional assessment and reclamation activities are needed to address these issues.

All assessed waters in this segment have been evaluated as not meeting the water quality standards for turbidity, sulfates, and zinc. The source of these pollutants has been identified as resource extraction activities.

Numerous total maximum daily loads have been established for constituents listed on previous lists of impaired waterbodies. These waterbody segments have been moved from Category 5 to Category 4a.

Figure A-13: Planning Segment 2E

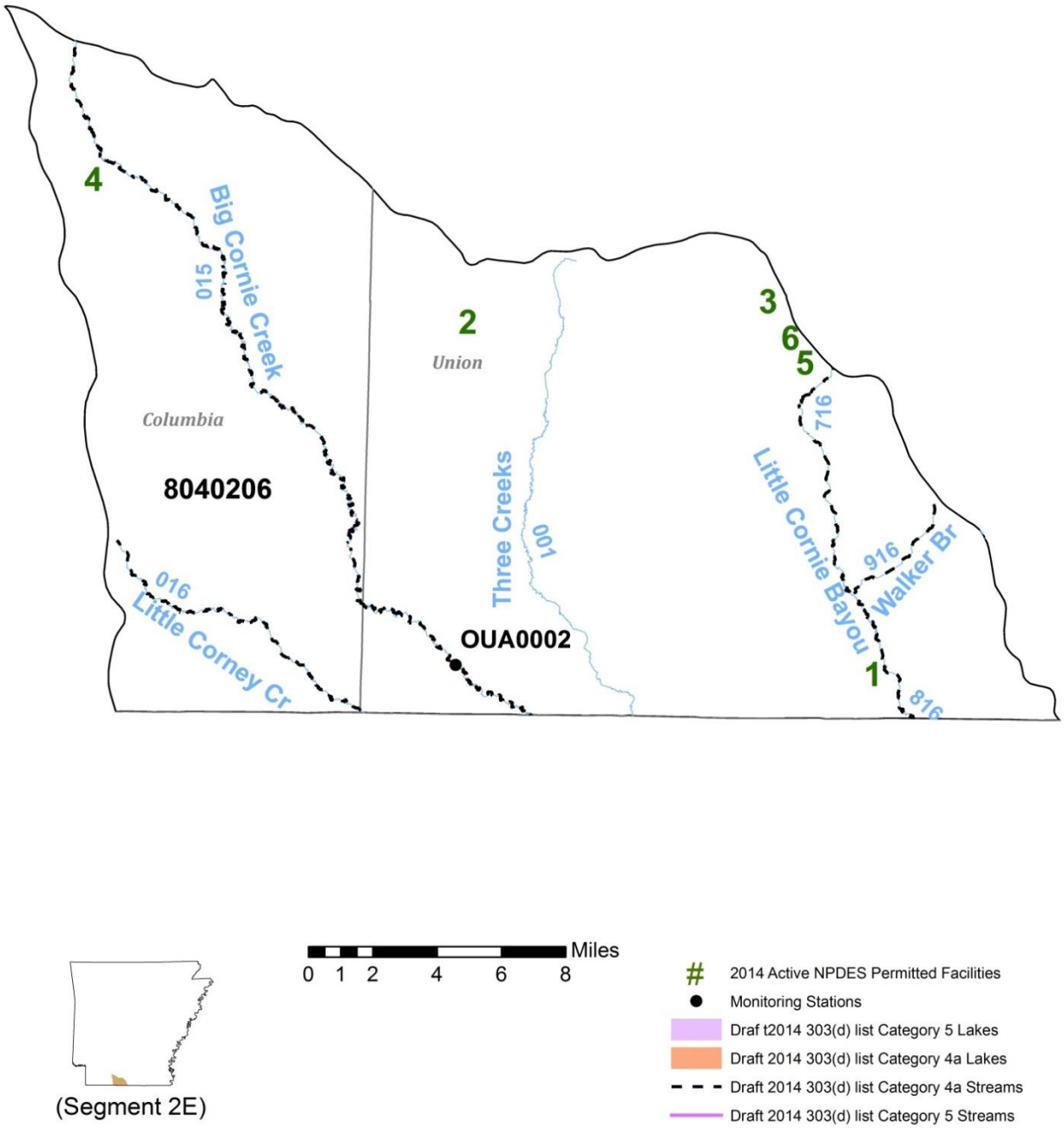


Table A-17: Planning Section 2E Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-2E																								FISH CONSUMPTION	44.0	0.0
Big Cornie Cr.	8040206	-015	15.0	OUA0002	M	S	S	S	S	S	S	IP				SO4				4a				FISHERIES	44.0	0.0
Little Cornie Cr.	8040206	-016	18.0		E	S	S	S	S	S	S	IP				SO4				4a				PRIMARY CONTACT	44.0	0.0
Little Cornie Bayou	8040206	-716	5.0		E	S	S	S	S	S	S	IP				SO4				4a				SECONDARY CONTACT	44.0	0.0
Little Cornie Bayou	8040206	-816	3.0		E	S	S	S	S	R	S	IP				SO4				4a				DRINKING SUPPLY	38.0	0.0
Walker Branch	8040206	-916	3.0		E	S	S	S	S	R	S	IP				SO4				4a				AGRI&INDUSTRY	44.0	0.0

TOTAL MILES	44.0
MILES UNASSESSED	0.0
MILES EVALUATED	29.0
MILES MONITORED	15.0

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
OUA0002	Cornie Bayou near Three Creeks	7365800	1	A

Table A-18: Active NPDES permits for Planning Segment 2E

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0022179	JUNCTION CITY, CITY OF	LTL CORNIE BU	816	8040206	Union	1
AR0043516	GREAT LAKES CHEMICAL CORPORATION-WEST PLANT	SEWELL CR,W THREE CR,THREE CR,CORNIE BU	015	8040202	Union	2
AR0047813	OAK MANOR WATER & WASTEWATER P.F.B.	JAY DISON SPRING BR,DRY CR,LTL CORNIE BU,OUACHITA R	716	8040206	Union	3
AR0047945	GUNNELS MILLS, INC.	TRIB,LTL CORNIE BU,CORNIE CR, BIG CORNIE CR	015	8040206	Columbia	4
AR0048461	DEL-TIN FIBER L.L.C.	TRIB,CORNIE CR,OUACHITA R	716	8040206	Union	5
AR0051861	TIMBER EQUIPMENT LEASING CO., LLC - TLC/TELCO	TRIB,DRY CR,LTL CORNIE BU,OUACHITA R	716	8040206	Union	6

SEGMENT 2F OUACHITA RIVER AND TRIBUTARIES: HEADWATERS TO CONFLUENCE WITH LITTLE MISSOURI RIVER

Segment 2F, located in west central Arkansas, covers most of Hot Spring, Garland, and Montgomery Counties and portions of Clark, Dallas, Pike, Polk, Yell, Perry, Calhoun, and Ouachita Counties. This segment consists of a 220-mile reach of the upper Ouachita River and a 70-mile reach of the Caddo River. Principal tributaries include the South Fork of the Ouachita River, Mazarn Creek, L'Eau Frais Creek, and Irons Fork Creek. Segment 2F contains three major impoundments of the Ouachita River: Lake Ouachita, Lake Hamilton and Lake Catherine; and DeGray Reservoir, an impoundment of the Caddo River.

Summary of Water Quality Conditions

Waters within this segment have been designated as suitable for the propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supplies. Approximately 36 percent of the waters within this segment are designated as Extraordinary Resource Waters. Water quality in Segment 2F is generally good and trends seem to indicate it is improving.

These waters are heavily used for fishing, boating, canoeing year-round, and primary contact water activities during the warmer months.

South Fork of the Caddo and Caddo River downstream of the South Fork are not meeting water quality standards for copper and/or zinc. The source is thought to be from abandoned open pit mining.

Chamberlain Creek and its tributaries receiving drainage from the MagCoBar pit mine were listed as not attaining the fisheries designated use, domestic water supply use, and the industrial and agriculture water supply uses. Low pH values, elevated minerals (total dissolved solids, sulfates, chlorides), and elevated metals (beryllium, cadmium, copper, zinc), are all causes of the impairments. Additional point source and nonpoint source controls are needed to address the problem.

Prairie Creek below the City of Mena was assessed as not meeting the water quality standards for copper and turbidity. Surface erosion, including storm water runoff from industrial sites in the watershed, is listed as the source of the contaminants.

Figure A-14: Planning Segment 2F

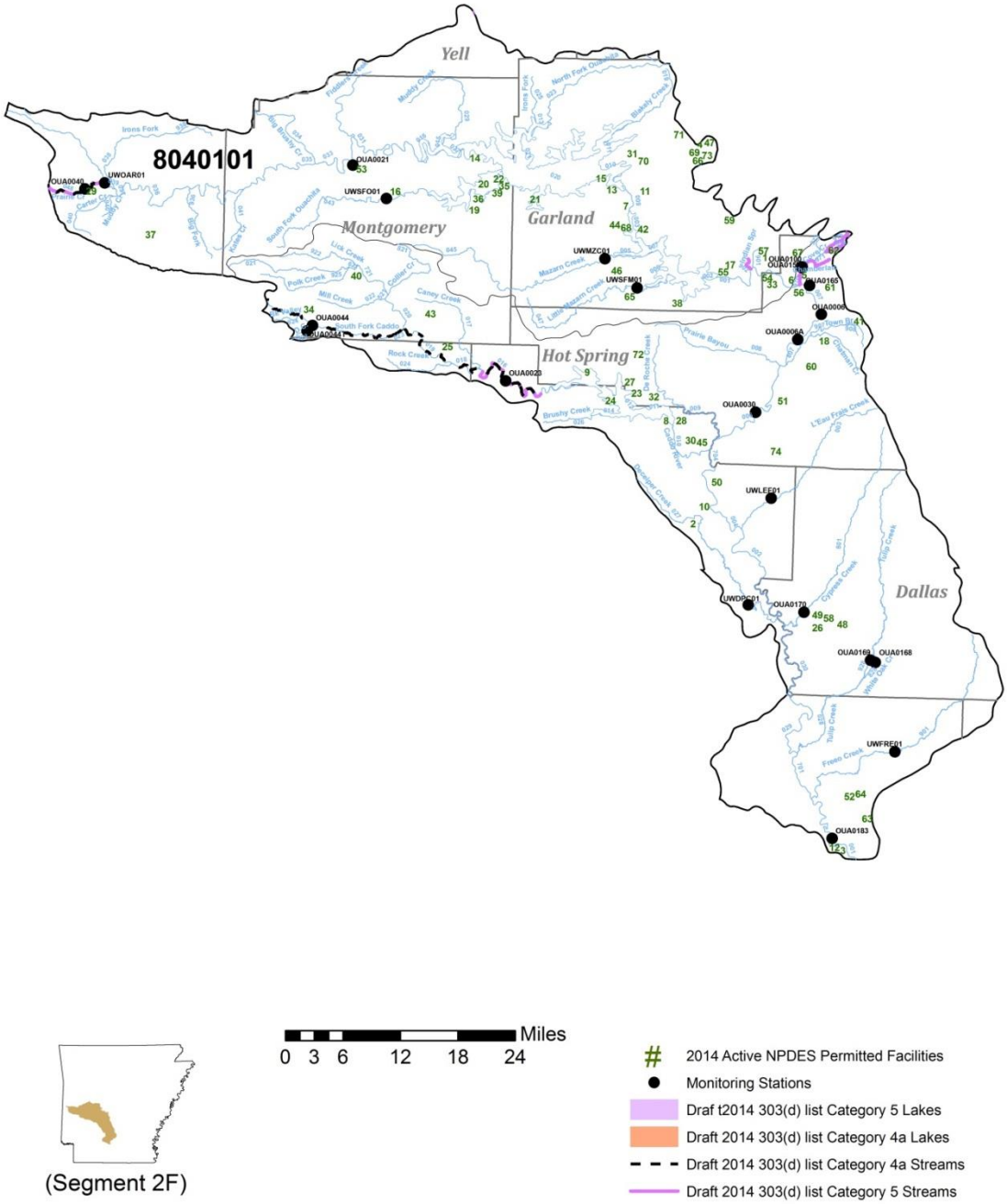


Figure A-15: Planning Segment 2F – Close-up of Ouachita River lakes area

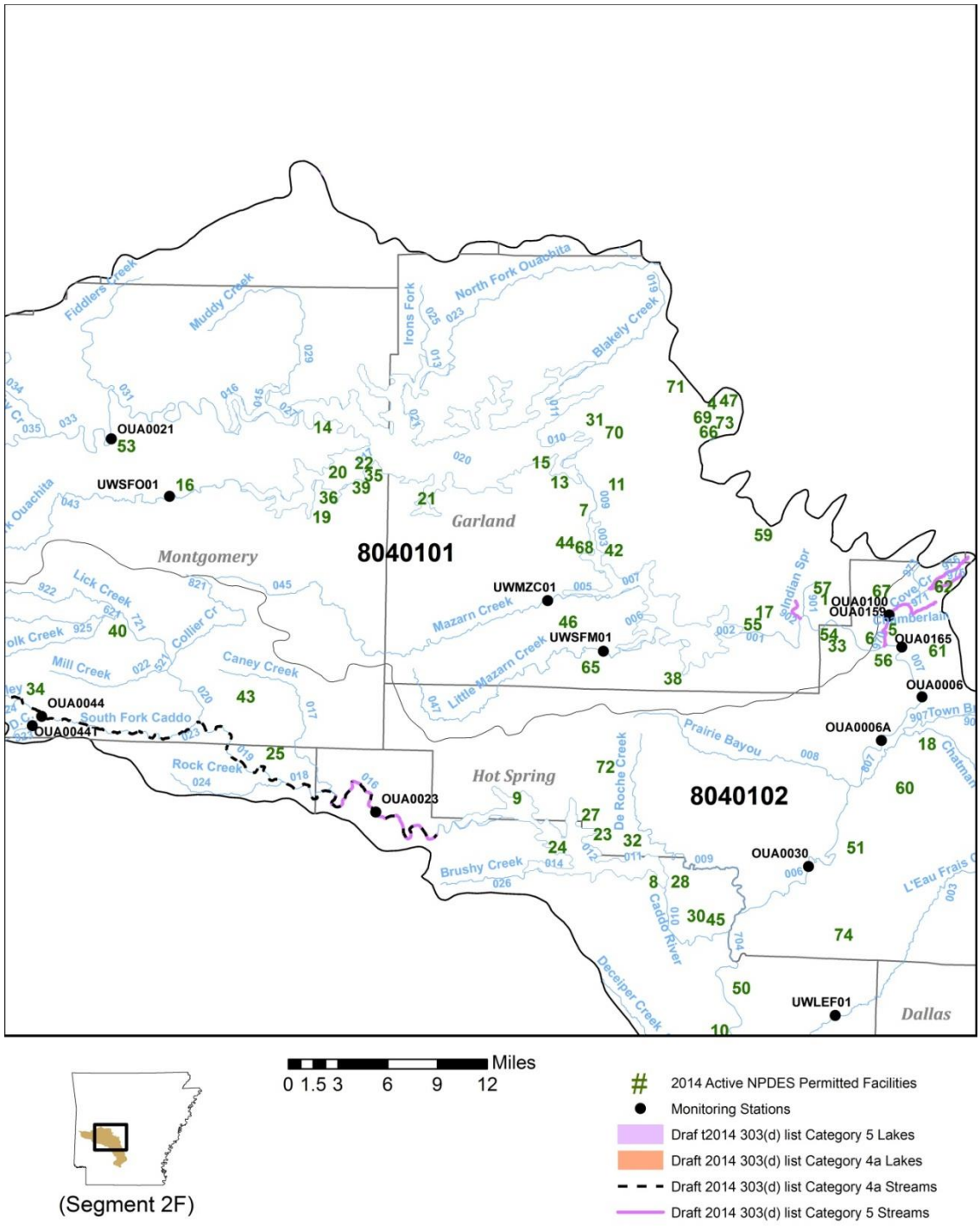


Table A-19: Planning Section 2F Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use						SOURCE				CAUSE				STATUS			
						FC	FSH	PC	SC	DW	AI	1	2	3	4	1	2	3	4	1	2	3	4
SEG-2F																							
Ouachita River	8040102	-001	15.6	OUA0165	M	S	S	S	S	S	S									1			
Ouachita River	8040102	-002	16.9		E	S	S	S	S	S	S									1			
L'Eau Frais C.	8040102	-003	21.5	UWLEF01	M	S	S	S	S	S	S									1			
Ouachita River	8040102	-004	15.8		E	S	S	S	S	S	S									1			
Ouachita River	8040102	-005	0.6		E	S	S	S	S	S	S									1			
Ouachita River	8040102	-006	12.1	OUA0030	M	S	S	S	S	S	S									1			
Ouachita River	8040102	-007	14.5	OUA0006A+	M	S	S	S	S	S	S									1			
Prairie Bayou	8040102	-008	13.5		E	S	S	S	S	S	S									1			
DeRoche Cr.	8040102	-009	16.5		U															3			
Caddo River	8040102	-010	8.1		E	S	S	S	S	S	S									1			
Caddo River	8040102	-016	13.5	OUA0023	M	S	N	S	S	S	S	UN	UN			Cu	Zn			4a	4a		
Caney Creek	8040102	-017	12.5		U															3			
Caddo River	8040102	-018	4.1		E	S	S	S	S	S	S	UN	UN			Cu	Zn			4a	4a		
Caddo River	8040102	-019	7.7		E	S	S	S	S	S	S	UN	UN			Cu	Zn			4a	4a		
Caddo River	8040102	-020	4.1		U															3			
Caddo River	8040102	-021	15.9		U															3			
Mill Creek	8040102	-022	7.3		E	S	S	S	S	S	S									1			
S. Fork Caddo	8040102	-023	16.6	OUA0044	M	S	S	S	S	S	S	RE	RE			Cu	Zn			4a	4a		
D.C. Creek	8040102	-923	5.0	OUA0044T	M	S	S	S	S	S	S									1			
Rock Creek	8040102	-024	8.1		E	S	S	S	S	S	S									1			
Brushy Creek	8040102	-026	6.9		E	S	S	S	S	S	S									1			
Deceiper Cr.	8040102	-027	24.4	UWDPC01	M	S	S	S	S	S	S									1			
Bayou Freeo	8040102	-901	33.9	UWFRE01	M	S	S	S	S	S	S									1			
Ouachita River	8040102	-029	13.3		E	S	S	S	S	S	S									1			
White Oak Creek	8040102			OUA0168	M	S	S	S	S	S	S									1			
Tulip Creek	8040102	-028	20.0	OUA0169+	M	S	S	S	S	S	S									1			
Tulip Creek	8040102	-928	20.0		M	S	S	S	S	S	S									1			
Cypress Creek	8040102	-801	30.0	OUA0170	M	S	S	S	S	S	S									1			
Ouachita River	8040102	-030	12.0		E	S	S	S	S	S	S									1			
Cove Creek	8040102	-976	3.6	OUA0171C	M	S	S	S	S	S	S	UN				pH				5			
Lucinda Creek	8040102	-975	2.2	OUA0171B	M	S	N	S	S	S	S	RE	RE	RE	RE	pH	Al	Cu	Zn	5	5	5	5
Cove Creek	8040102	-974	0.7		E	S	S	S	S	S	S									1			
Basin Creek	8040102	-973	1.4	OUA0171D	M	S	S	S	S	S	S									1			
Cove Creek	8040102	-972	1.1		E	S	S	S	S	S	S									1			
Chamberlain Creek	8040102	-971	2.5	OUA0104	M	S	N	S	S	N	N	IP	RE			pH	Tox	1	2	5	5	5	5
Cove Creek	8040102	-970	7.8	OUA0159	M	S	N	S	S	N	N	IP				SO4	Tox			5	5		
Ouachita River	8040101	-001	10.4		E	S	S	S	S	S	S									1			
Indian Springs Creek	8040101	-902	1.5	UAA	M	S	S	S	S	S	S	IP	IP			SO4	TDS			5	5		
Ouachita River	8040101	-009	2.7		E	S	S	S	S	S	S									1			
Blakely Creek	8040101	-019	8.3		E	S	S	S	S	S	S									1			
N. Fork Ouachita	8040101	-023	10.9		E	S	S	S	S	S	S									1			
Irons Fork	8040101	-025	4.8		E	S	S	S	S	S	S									1			
Muddy Creek	8040101	-029	15.3		E	S	S	S	S	S	S									1			
Ouachita River	8040101	-031	14.4		E	S	S	S	S	S	S									1			
Fiddlers Cr.	8040101	-032	10.6		E	S	S	S	S	S	S									1			
Ouachita River	8040101	-033	11.9	OUA0021	M	S	S	S	S	S	S									1			
Ouachita River	8040101	-035	10.2		E	S	S	S	S	S	S									1			
Ouachita River	8040101	-036	24.1	UWOAR01	M	S	S	S	S	S	S									1			
Bushy Creek	8040101	-034	12.1		E	S	S	S	S	S	S									1			
Ouachita River	8040101	-037	0.7		E	S	S	S	S	S	S									1			
Ouachita River	8040101	-039	11.0	UWOAR01	M	S	S	S	S	S	S									1			
Iron Fork	8040101	-038	17.3		E	S	S	S	S	S	S									1			
Carters Creek	8040101	-040	9.0		U															3			
Kates Creek	8040101	-041	8.2		U															3			
S.Fork Ouachita	8040101	-043	22.5	UWSFO01	M	S	S	S	S	S	S									1			
Mazarn Creek	8040101	-045	23.3	UWMZC01	M	S	S	S	S	S	S									1			
Little Mazarn	8040101	-047	14.8	UWSFM01	M	S	S	S	S	S	S									1			
Prairie Creek	8040101	-048	10.0	OUA0040	M	S	N	S	S	S	S	SE	UN	UN		SI	DO	Cu		4a	5	5	

TOTAL MILES	663.7
MILES UNASSESSED	66.2
MILES EVALUATED	233.8
MILES MONITORED	363.7

1=Al, Be, Cd, Cu, Ni, Zn, Se
2 = SO4, TDS

USE	SUPPORT	NON-SUPPORT
FISH CONSUMPTION	597.5	0.0
FISHERIES	561.5	36.0
PRIMARY CONTACT	597.5	0.0
SECONDARY CONTAC	597.5	0.0
DRINKING SUPPLY	587.2	10.3
AGRI & INDUSTRY	587.2	10.3

Table A-19 cont.: Planning Section 2F Designated Use Attainment and Water Quality Status

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
UWLEF01	L'Eua Frais Creek at Highway 128 near Joan		2	R
OUA0165	Ouachita River off Highway 270 above Stone Quarry Creek		2	R
OUA0030	Ouachita River near Donaldson	7359580	1	A
OUA0006	Ouachita River at Rock Port	7359500	1	A
OUA0023	Caddo River near Amity	7359770	1	A
OUA0044	South Fork of Caddo River at Fancy Hill		1	A
OUA0044T	N.L. Baroid tributary to South Fork Caddo River		1	A
UWDPC01	Deceiper Creek at county road, 8 miles southeast of Gurdon		2	R
UWFRE01	Freeo Creek at Highway 9, 5 miles west of Bearden		2	R
OUA0168	White Oak Creek at Highway 128 northwest of Holly Springs		2	R
OUA0169	Tulip Creek at Highway 128 northwest of Holly Springs		2	R
OUA0170	Cypress Creek at Highway 7 north of Sparkman		2	R
OUA0100	Cove Creek above Highway 51		1	S
OUA0171D	Basin Creek on county road above confluence of Cove Creek		1	S
OUA0171C	Cove Creek on Baroid Road above confluence of Chamberlain Creek		1	S
OUA0171B	Lucinda Creek on Baroid Road above confluence of Chamberlain Creek		1	S
OUA0171A	Chamberlain Creek at Baroid Road near Magnet Cove		1	S
OUA0104	Chamberlain Creek above confluence of Cove Creek		1	S
OUA0159	Cove Creek at Highway 51near Magnet Cove		1	A
OUA0021	Ouachita River near Pencil Bluff	7356000	2	A
UWOAR01	Ouachita River at county road off Highway 88 near Boardcamp		2	R
UWSFO01	South Fork Ouachita River at Highway 270 at Mount Ida		2	R
UWMZC01	Mazarn Creek at Highway 227 near Sunshine		2	R
UWSFM01	Little Mazarn Creek at county road, 1.5 miles north of Pettyview		2	R
OUA0040	Prairie Creek below Mena		1	A

Table A-20: Active NPDES permits for Planning Segment 2F

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0000523	EVRAZ STRATCOR, INC.	TRIB,LK CATHERINE,OUACHITA R	001	8040101	Garland	1
AR0000531	REYNOLDS METALS COMPANY - GUM SPRINGS PLANT	OUACHITA R	027	8040102	Clark	2
AR0000841	AECC-MCCLELLAN GENERATING STAT	OUACHITA R	001	8040201	Ouachita	3
AR0000850	MOUNTAIN VALLEY SPRING COMPANY	TRIB,GLAZYPEAU CR,LK HAMILTON	009	8040101	Garland	4
AR0000868	HOT SPRING CO-JONES MILL WWTF	COVE CR,OUACHITA R	970	8040102	Hot Spring	5
AR0001147	ENTERGY ARKANSAS, INC. - LAKE CATHERINE	LK CATHERINE,OUACHITA R	001	8040101	Hot Spring	6
AR0020109	OUACHITA CIV CONSERVATION CTR	OUACHITA R	009	8040101	Garland	7
AR0020222	USA COE IRON MT-GEGRAY	DEGRAY LK,CADDO R,OUACHITA R	014	8040102	Clark	8
AR0020231	USA COE SHOUSE FORD-DEGRAY	DEGRAY LK,CADDO R,OUACHITA R	012	8040102	Hot Spring	9
AR0020605	ARKADELPHIA WASTEWATER TREATMENT PLANT	OUACHITA R	004	8040102	Clark	10
AR0021539	MOUNTAIN PINE, CITY OF - WWTP	GLAZYPEAU CR,OUACHITA R	009	8040101	Garland	11
AR0022365	CAMDEN WATER UTILITIES	OUACHITA R	005	8040102	Ouachita	12
AR0022781	USACE-SPILLWAY RECREATION AREA WWTP	LK OUACHITA,0UACHITA R	009	8040101	Garland	13
AR0022799	USACE-LITTLE FIR RECREATION AREA	LK OUACHITA	009	8040101	Montgomery	14
AR0022802	USACE-BRADY MOUNTAIN RECREATION AREA	LK OUACHITA	009	8040101	Garland	15
AR0033855	MOUNT IDA, CITY OF	S FRK OUACHITA R,OUACHITA R	043	8040101	Montgomery	16
AR0033880	HOT SPRINGS, CITY OF	LK CATHERINE,OUACHITA R	001	8040101	Garland	17
AR0034126	MALVERN WW TREATMENT PLANT	QUACHITA R	007	8040102	Hot Spring	18
AR0035394	USACE-DENBY POINT RECREATION AREA	LK OUACHITA	043	8040101	Garland	19
AR0035408	USACE-TOMPKINS BEND RECREATION AREA	LK OUACHITA	043	8040101	Montgomery	20

Table A-20: Active NPDES permits for Planning Segment 2F

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0035416	USACE-CRYSTAL SPRINGS REC AREA WWTP	LK OUACHITA	009	8040101	Garland	21
AR0035424	USACE-JOPLIN RECREATION AREA	LK OUACHITA	017	8040101	Garland	22
AR0035432	USACE - CADDO DRIVE RECREATION AREA	DEGRAY LK,CADDO R,OUACHITA R	012	8040102	Hot Spring	23
AR0035459	USACOE ALPINE RIDGE-DEGRAY	DEGRAY LK,CADDO R,OUACHITA R	013	8040102	Clark	24
AR0035645	GLENWOOD, CITY OF	CADDO R	019	8040102	Pike	25
AR0035939	SPARKMAN, CITY OF	CYPRESS CR TRIB,OUACHITA R	801	8040102	Dallas	26
AR0036013	USA-COE ARLIE MOORE-DEGRAY	DEGRAY LK,CADDO R,OUACHITA R	012	8040102	Hot Spring	27
AR0036021	USACE - DEGRAY LAKE SPILLWAY/	TRIB,CADDO R,OUACHITA R	010	8040102	Clark	28
AR0036692	MENA WASTEWATER TREATMENT PLANT	TRIB,PRAIRIE CR,OUACHITA R	048	8040101	Polk	29
AR0036749	ARKADELPHIA HUMAN DEVELOPMENT CENTER	TRIB,CADDO R,OUACHITA R	010	8040102	Clark	30
AR0036811	ARKANSAS DEPT OF PARKS & TOURISM - LAKE OUACHITA STATE PARK	LK OUACHITA,OUACHITA R	009	8040101	Garland	31
AR0037061	DEGRAY LAKE RESORT STATE PARK	DEGRAY LK	012	8040102	Hot Spring	32
AR0038121	ARKANSAS DEPT OF PARKS & TOURISM - LAKE CATHERINE STATE PARK	LK CATHERINE,OUACHITA R	001	8040101	Hot Spring	33
AR0038270	BAKER HUGHES-FANCY HILL OPERATIONS	BACK VALLEY CR,S FK CADDO R,CADDO R,DEGRAY LK	023	8040102	Montgomery	34
AR0039403	HEPOA, LLC	TRIB,LK OUACHITA	017	8040101	Montgomery	35
AR0040801	SHANGRI-LA RESORT, INC	LK OUACHITA	043	8040101	Montgomery	36
AR0041050	NAZARENE CHURCH SOUTH ARK DIST	MACRS CR	036	8040101	Polk	37
AR0041319	MILL POND VILLAGE	SORRELLS CR, FOURCHE A LOUPE CR,LK HAMILTON,OUCHIT	006	8040101	Garland	38
AR0042293	HARBOR SOUTH DEVELOPMENT	TRB,LK OUACHITA R	043	8040101	Montgomery	39
AR0043125	NORMAN, CITY OF	CADDO R,DEGRAY LK,OUACHITA R	021	8040101	Montgomery	40
AR0043354	ACME BRICK CO-PERLA FACILITY	UNNAMED TRIB, TOWN CR,OUACHITA R	007	8040102	Hot Spring	41

Table A-20: Active NPDES permits for Planning Segment 2F

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0044172	WESTWOOD VILLAGE SEWER FACILITIES BOARD	LK HAMILTON, OUACHITA R	006	8040101	Garland	42
AR0044814	GS ROOFING PRODUCTS COMPANY, INC. - CERTAINTEED	TRIB,FIVE MI CR,CADDO R,OUACHITA R	019	8040102	Pike	43
AR0045128	JIMMY A. MCCLARD - D/B/A MCCLARD'S 270 WEST SHOPPING CENTER	UNNAMED TRIB,CEARLEY CR,LK HAMILTON,OUACHITA R	006	8040101	Garland	44
AR0045411	CADDO VALLEY, CITY OF - MUNICIPAL WWTP	CADDO R,OUACHITA R	010	8040102	Clark	45
AR0045624	LAKE HAMILTON SCHOOL DISTRICT NO. 5	UNNAMED TRIB,LOST CR,MAZARN CR,LK HAMILTON	047	8040101	Garland	46
AR0045829	O'BRIEN'S PIZZA PUB	TRIB,GLAZYPEAU CR,OUACHITA R	009	8040101	Garland	47
AR0046612	GENE BRAZEALE LUMBER COMPANY, INC.	TRIB,BRUSHY CR,OUACHITA R	026	8040102	Dallas	48
AR0047139	RAY WHITE LUMBER COMPANY	TRIB,CYPRUS CR,OUACHITA R	030	8040102	Dallas	49
AR0047856	SHIELDS WOOD PRODUCTS, INC.	TRIB,OUACHITA R	004	8040102	Clark	50
AR0048020	DONALDSON, CITY OF	OUACHITA R	006	8040102	Hot Spring	51
AR0048046	ROGERS LUMBER COMPANY, INC.	TRIB, LOWER OLD R,OUACHITA R	001	8040201	Ouachita	52
AR0048275	CAMP OZARK	TRIB,OUACHITA R	031	8040101	Montgomery	53
AR0048615	DIAMONDHEAD RESORT-WWT	TRIB,LK CATHERINE,OUACHITA R	001	8040101	Garland	54
AR0048755	ENTERGY ARKANSAS, INC. - ENTERGY-CARPENTER DAM	OUACHITA R @LK OUACHITA DOWNSTREAM/CARPENTER DAM	001	8040101	Garland	55
AR0048763	ENTERGY ARKANSS - REMMEL DAM	OUACHITA R	007	8040101	Hot Spring	56
AR0048950	UMETCO MINERALS CORPORATION - WILSON MINE AREA	WILSON CR,LK CATHERINE,OUACHITA R	001	8040101	Garland	57
AR0049026	GARLAND GASTON LUMBER CO. INC.	BRUSHY CR,OUACHITA R	026	8040102	Dallas	58
AR0049115	MAGIC SPRINGS & CRYSTAL FALLS	TRIB,MIDDLE BR/GULPHA CR,LK CATHERINE,OUACHITA R	001	8040101	Garland	59
AR0049417	ENTERGY ARKANSAS-HOT SPRING PLANT	OUACHITA R	007	8040102	Hot Spring	60
AR0049611	AECC-MAGNET COVE GENERATING STATION	OUACHITA R	007	8040102	Hot Spring	61

Table A-20: Active NPDES permits for Planning Segment 2F

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0049794	HALLIBURTON ENERGY SERVICES	CHAMBERLAIN CR,COVE CR,OUACHITA R	501	8040102	Hot Spring	62
AR0049891	ANTHONY TIMBERLANDS, INC.	TRIB,OUACHITA R	001	8040102	Ouachita	63
AR0050105	HARMONY GROVE PUBLIC SCHOOL	TRIB,MIZZELL CR,PALMER BU,OUCHITA R	054	8040102	Ouachita	64
AR0050148	HOT SPRINGS, CITY OF SW WWTP	LTL MAZARN CR,LK HAMILTON	047	8040101	Garland	65
AR0050458	EL ACAPULCO RESTAURANT	UNNAMED TRIB,GLAZYPEAU CR,OUACHITA R	009	8040101	Garland	66
AR0050512	REYNOLDS CONSUMER PRODUCTS, INC.	STONEY CR,LK CATHERINE,OUACHITA R	001	8040101	Hot Spring	67
AR0050644	LAKESIDE GARDENS P.O.A. D/B/A LAKESIDE GARDENS CONDOMINIUM	LK HAMILTON,LK CATHERINE,OUACHITA R	004	8040101	Garland	68
AR0050733	WAL-MART SUPERCENTER #5433	TRIB,GLAZYPEAU CR,LK HAMILTON,LK CATHERINE	003	8040101	Garland	69
AR0050806	CAMP YORKTOWN BAY	LK OUACHITA,OUACHITA R	011	8040101	Garland	70
AR0050962	CHARLIE'S PIZZA PUB	TRB, LTL BLKLY CR,LK OUACHITA, OUACHITA R	019	8040101	Garland	71
AR0051098	BISMARCK HIGH SCHOOL	TRIB,BIG HILL CR,LK DEGRAY,CADDO R,OUACHITA R	012	8040102	Hot Spring	72
AR0051829	WAGGIN' WHEEL VET CLINIC	TRIB LTL GLAZYPEAU CR,LK HAMILTON	009	8040102	Garland	73
AR0052043	THE FATHERS HOUSE	SWALE,BROWN SPRINGS BR,WHITE OAK CR,SALINE BU	004	8040102	Hot Spring	74

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SEGMENT 2G LITTLE MISSOURI RIVER AND ANTOINE RIVER

Segment 2G, located in the southwestern part of the State, covers most of Nevada and Pike Counties, large areas of Clark and Hempstead Counties, and small portions of Ouachita, Howard, Polk, and Montgomery Counties. This segment encompasses the entire drainage area of the Little Missouri River with its tributaries. Major tributaries include the Antoine River, Muddy Fork, Caney Creek, Terre Noire Creek, and Terre Rouge Creek. There are two large impoundments in the segment, Lake Greeson and White Oak Lake.

Summary of Water Quality Conditions

Waters within this segment have been designated as suitable for the propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supplies. Approximately 17 percent of the waters within this segment are designated as Extraordinary Resource Waters.

These waters are heavily used for boating, canoeing and fishing year-round, and primary contact water activities during the warmer months.

Portions of the Little Missouri River have been listed as not attaining the fisheries designated use because of excessive copper contamination. Additional investigation into this issue is needed to determine if in fact aquatic life communities are being affected and if the reported metal concentrations are accurate.

Figure A-16: Planning Segment 2G

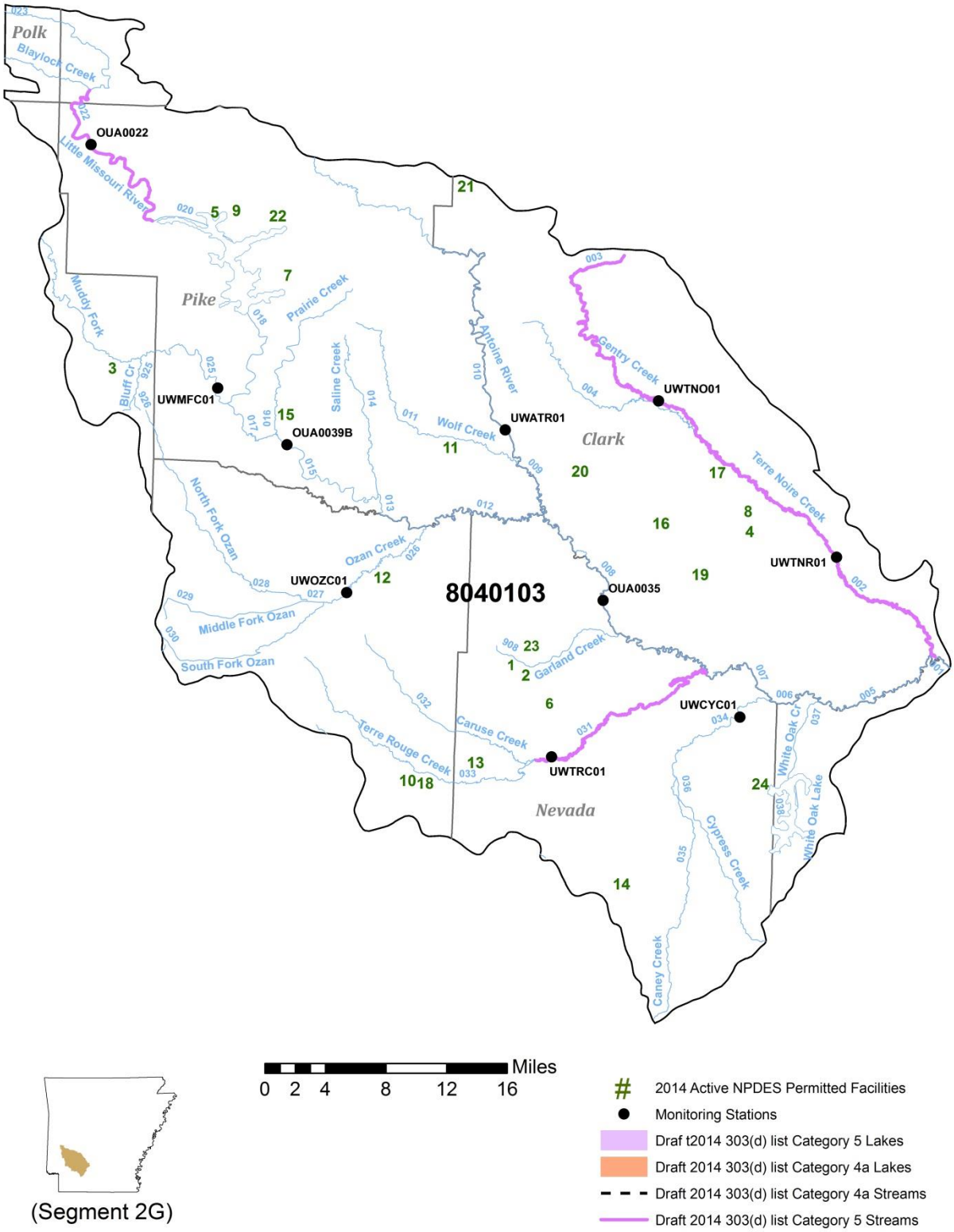

Table A-21: Planning Section 2G Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-2G																										
L. Missouri R.	8040103	-001	1.8		U															3				FISH CONSUMPTION	403.7	0
L. Missouri R.	8040103	-005	10.4		U															3				FISHERIES	403.7	0
L. Missouri R.	8040103	-006	4.6		U															3				PRIMARY CONTACT	403.7	0
L. Missouri R.	8040103	-007	7.0		U															3				SECONDARY CONTACT	403.7	0
L. Missouri R.	8040103	-008	19.6	OUA0035	M	S	S	S	S	S	S									1				DRINKING SUPPLY	403.7	0
Terre Noire Cr.	8040103	-002	27.4	UWTNR01	M	S	S	S	S	S	S	UN				pH				5				AGRI & INDUSTRY	403.7	0
Terre Noire Cr.	8040103	-003	19.6	UWTNR02	M	S	S	S	S	S	S	UN				pH				5						
Gentry Creek	8040103	-004	15.4		E	S	S	S	S	S	S									1						
Antoine River	8040103	-009	5.4		E	S	S	S	S	S	S									1						
Antoine River	8040103	-010	31.6	UWATR01	M	S	S	S	S	S	S									1						
Wolf Creek	8040103	-011	18.0		E	S	S	S	S	S	S									1						
L. Missouri R.	8040103	-012	10.8		E	S	S	S	S	S	S									1						
L. Missouri R.	8040103	-013	5.0		E	S	S	S	S	S	S									1						
L. Missouri R.	8040103	-015	10.5	OUA0039B	M	S	S	S	S	S	S									1						
L. Missouri R.	8040103	-017	5.5		E	S	S	S	S	S	S									1						
L. Missouri R.	8040103	-018	8.9		E	S	S	S	S	S	S									1						
L. Missouri R.	8040103	-022	17.6	OUA0022	M	S	S	S	S	S	S	UN				Cu				5						
L. Missouri R.	8040103	-023	13.6		E	S	S	S	S	S	S									1						
Saline Creek	8040103	-014	13.1		E	S	S	S	S	S	S									1						
Prairie Creek	8040103	-016	11.2		E	S	S	S	S	S	S									1						
Long Creek	8040103	-024	6.8		E	S	S	S	S	S	S									1						
Muddy Fork	8040103	-025	24.4	UWMFC01	M	S	S	S	S	S	S									1						
Ozan Creek	8040103	-026	8.6	UWOZC01	M	S	S	S	S	S	S									1						
Ozan Creek	8040103	-027	2.0		E	S	S	S	S	S	S									1						
N. Fork Ozan	8040103	-028	16.4		E	S	S	S	S	S	S									1						
M. Fork Ozan	8040103	-029	10.9		E	S	S	S	S	S	S									1						
S. Fork Ozan	8040103	-030	13.0		E	S	S	S	S	S	S									1						
Terre Rouge	8040103	-031	14.5	UWTRC01	M	S	S	S	S	S	S	SE				Tb				5						
Caruse Creek	8040103	-032	15.2		E	S	S	S	S	S	S									1						
Terre Rouge	8040103	-033	20.7		M	S	S	S	S	S	S									1						
Caney Creek	8040103	-034	13.6	UWCYC01	M	S	S	S	S	S	S									1						
Caney Creek	8040103	-035	10.6		E	S	S	S	S	S	S									1						
Cypress Creek	8040103	-036	7.9		E	S	S	S	S	S	S									1						
White Oak Creek	8040103	-037	5.9		E	S	S	S	S	S	S									1						
TOTAL MILES	427.5																									
MILES UNASSESSED	23.8																									
MILES EVALUATED	195.6																									
MILES MONITORED	208.1																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
OUA0035	Little Missouri River near Boughton	7361600	1	A
UWTNR01	Terre Noir Creek at Highway 51, 2.5 miles east of Red Springs		2	R
UWTNR02	Terre Noir Creek at Highway 53, 2 miles south of Hollywood		2	R
UWATR01	Antoine River at Highway 26 near Antoine	7361500	2	R
OUA0039B	Little Missouri River below Murfreesboro	7361035	1	A
OUA0022	Little Missouri River near Langley	7360200	1	A
UWMFC01	Muddy Fork at county road off Highway 27 near Murfreesboro		2	R
UWOCZ01	Ozan Creek at Highway 24 near Blevins		2	R
UWTRC01	Terre Rouge Creek at Highway 19, 5 miles south of Prescott		2	R
UWCYC01	Caney Creek at Highway 24 near Bluff City		2	R

Table A-22: Active NPDES Permits for Planning Segment 2G

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0000612	FIRESTONE BLDG PRODUCTS COMPANY	TRIB GARLAND CR,LTL MISSOURI R,OUACHITA R	031	8040103	Nevada	1
AR0000906	PRESCOTT LUMBER MILL	MILL BR,ONION CR,TERRE ROUGE CR	031	8040103	Nevada	2
AR0020729	CERTAINTEED GYPSUM, INC	BLUFF CR,MUDDY FORK CR, LTL MISSOURI R	025	8040103	Howard	3
AR0022551	GURDON, CITY OF	CANEY CR,TERRE NOIR CR,LTL MO R,OUACHITA R	002	8040103	Clark	4
AR0022772	USACE - SELF CREEK-GREESON	LK GREESON,LTL MISSOURI,OUACHITA R	020	8040103	Pike	5
AR0033481	PRESCOTT, CITY OF	SEWER CR,TERRE ROUGE CR, LTL MISSOURI R	031	8040103	Nevada	6
AR0036048	USACE - COWHIDE COVE RECREATION AREA	LK GREESON,LTL MISSOURI R,OUACHITA R	018	8040103	Pike	7
AR0037796	GEORGIA-PACIFIC WOOD PRODUCTS SOUTH LLC-GURDON PLYWOOD AND LUMBER COMPLEX	TRIB,CANEY CR,TERRE NOIRE CR,LTL MO. R,OUACHITA R	010	8040103	Clark	8
AR0038113	AR PARKS & TOURISM-DAISY	LK GREESON,LITL MO R,OUACHITA R	020	8040103	Pike	9
AR0038458	HOPE, CITY OF - PATE CREEK WWTP	PATE CR,TERRE ROUGE CR,LTL MO R,OUACHITA R	033	8040103	Hempstead	10
AR0041432	DELIGHT, CITY OF	TRIB,WOLF CR,ANTOINE R,LTL MISSOURI R,OUACHITA R	011	8040103	Pike	11
AR0041688	BLEVINS, CITY OF	TRIB,OZAN CR,LTL MO R,OUACHITA R	026	8040103	Hempstead	12
AR0041815	EMMET, CITY OF	TERRE ROUGE CR,LTL MO R,OUACHITA R	033	8040103	Nevada	13

Table A-22: Active NPDES Permits for Planning Segment 2G

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0042439	NEVADA HIGH SCHOOL	TRIB,LTL CANEY CR,CANEY CR,LTL MO R,OUACHITA R	034	8040103	Nevada	14
AR0043281	MURFREESBORO, CITY OF	LTL MISSOURI R,OUACHITA R	015	8040103	Pike	15
AR0044270	AHTD-DISTRICT 7-GURDON REST AREA	TRIB,BOGGY CR,BEAVER SLU,LTL MISSOURI R,OUACHITA R	007	8040103	Clark	16
AR0045551	INTERSTATE PROPERTY OWNERS ASSOCIATION, LLC - SOUTH FORK TRUCK STOP	TRIB,S BOAT DIT,TERRE NOIRE CR,OUACHITA R	002	8040103	Clark	17
AR0047180	PERRYTOWN WW TREATMENT PLANT	PATE CR,TERRE ROUCH CR,LTL MO R,OUACHITA R	033	8040103	Hempstead	18
AR0047546	ANTHONY TIMBERLANDS, INC.-BEIRNE FACILITY	TRIB,LTL MCNEELEY CR, MCNEELEY CR,LTL MISSOURI R,	007	8040103	Clark	19
AR0048551	OKOLONA WW TREATMENT PLANT	TRIB,LTL MISSOURI R,OUACHITA R	008	8040103	Clark	20
AR0051101	AMITY, CITY OF	LTL ANTOINE CR,ANTOINE R,LTL MISSOURI R,OUACHITA R	010	8040103	Clark	21
AR0051161	KIRBY LANDING RECREATION AREA	LK GREESON, LTL MO R, OUACHITA R	020	8040103	Pike	22
AR0051187	HORIZON FOOD MART, INC.	GARLAND CR, LIT MISSOURI R, OUACHITA R	008	8040103	Ouachita	23
AR0051241	WHITE OAK LAKE STATE PARK	WHITE OAK LK	038	8040103	Nevada	24

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ARKANSAS RIVER BASIN

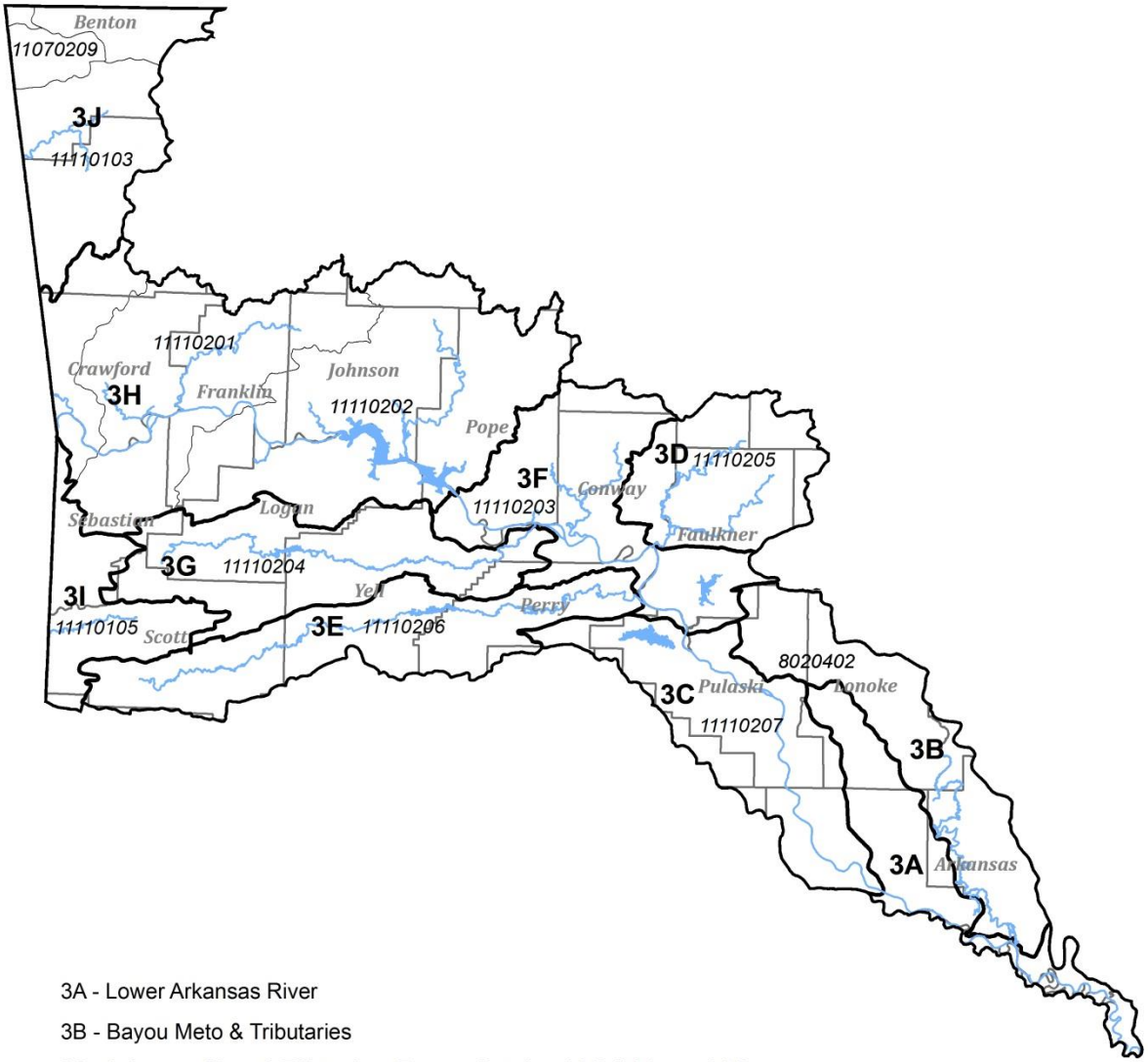
The Arkansas River flows east-southeasterly across Arkansas, bisecting the state roughly through the center. The entire basin spans the state from the extreme northwest corner to the Mississippi River.

The basin spans part of Arkansas' six major ecoregions and consists of ten ADEQ planning segments. The northern extreme of the basin spans parts of Benton and Washington counties and is within the Ozark Highland ecoregion. One planning segment is within part of the Boston Mountain ecoregion, but the majority of the basin lies within the Arkansas River Valley ecoregion. The southwestern most part of the basin dips into the Ouachita Mountain ecoregion. The major tributaries of the Arkansas River drain south easterly through the eastern edge of the Gulf Coastal ecoregion and finally into the Delta ecoregion where the Arkansas empties into the Mississippi River.

Major stream and watersheds within the Arkansas River basin include the Arkansas River, Bayou Meto, Cadron Creek, Fourche LaFave River, Petit Jean River, Poteau River, and Illinois River.

Major reservoirs include: Lake Saracen, Lake Maumelle, Nimrod Lake, Harris Brake Lake, Blue Mountain Lake, and Lake Dardanelle.

Figure A-17: Arkansas River Basin



3A - Lower Arkansas River

3B - Bayou Meto & Tributaries

3C - Arkansas River & Tributaries: Emmett Sanders L&D & Murray L&D

3D - Arkansas River & Tributaries : Murray L&D to Morrilton L&D

3E - Fourche LaFave River

3F - Arkansas River

3G - Petit Jean River & Tributaries

3H - Arkansas River & Tributaries: Oklahoma State Line to River Mile 210

3I - Poteau River

3J - Grand Neosho Basin

Arkansas River Basin

SEGMENT 3A LOWER ARKANSAS RIVER

Segment 3A, located in the southeastern part of Arkansas includes small portions of Desha, Lincoln, Jefferson, Arkansas, and Lonoke Counties. These waters make up the last 52-mile segment of the main stem of the Arkansas River and Wabbaseka Bayou.

Summary of Water Quality Conditions

Waters within this segment have been designated as suitable for the propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supplies. The lower 30-mile portion of the Arkansas River is designated as an Extraordinary Resource Waterbody. This stream segment stretches from the Arkansas Post Lock and Dam to the mouth of the Mississippi River. Barge traffic is diverted out of the Arkansas River above the lock and dam to the White River through the Arkansas Post Canal. Thus, the lower 30-mile stretch of the Arkansas River receives little to no channel maintenance and remains free flowing.

This portion of the Arkansas River is quickly becoming a favorite canoeing and camping destination. It offers excellent fishing and primary contact recreation opportunities.

The fisheries designated use is listed as impaired in Wabbaseka Bayou because the Bayou is unable to maintain the dissolved oxygen standard for Channel Altered Delta streams. However, there is no aquatic community data to support this listing. In addition, low dissolved oxygen concentrations are a naturally occurring condition throughout the Delta ecoregion during the critical season when flows are diminished and water temperatures are elevated. There is also no discernible man-induced cause for the low dissolved oxygen concentrations during the critical season in Wabbaseka Bayou.

Figure A-18: Planning Segment 3A

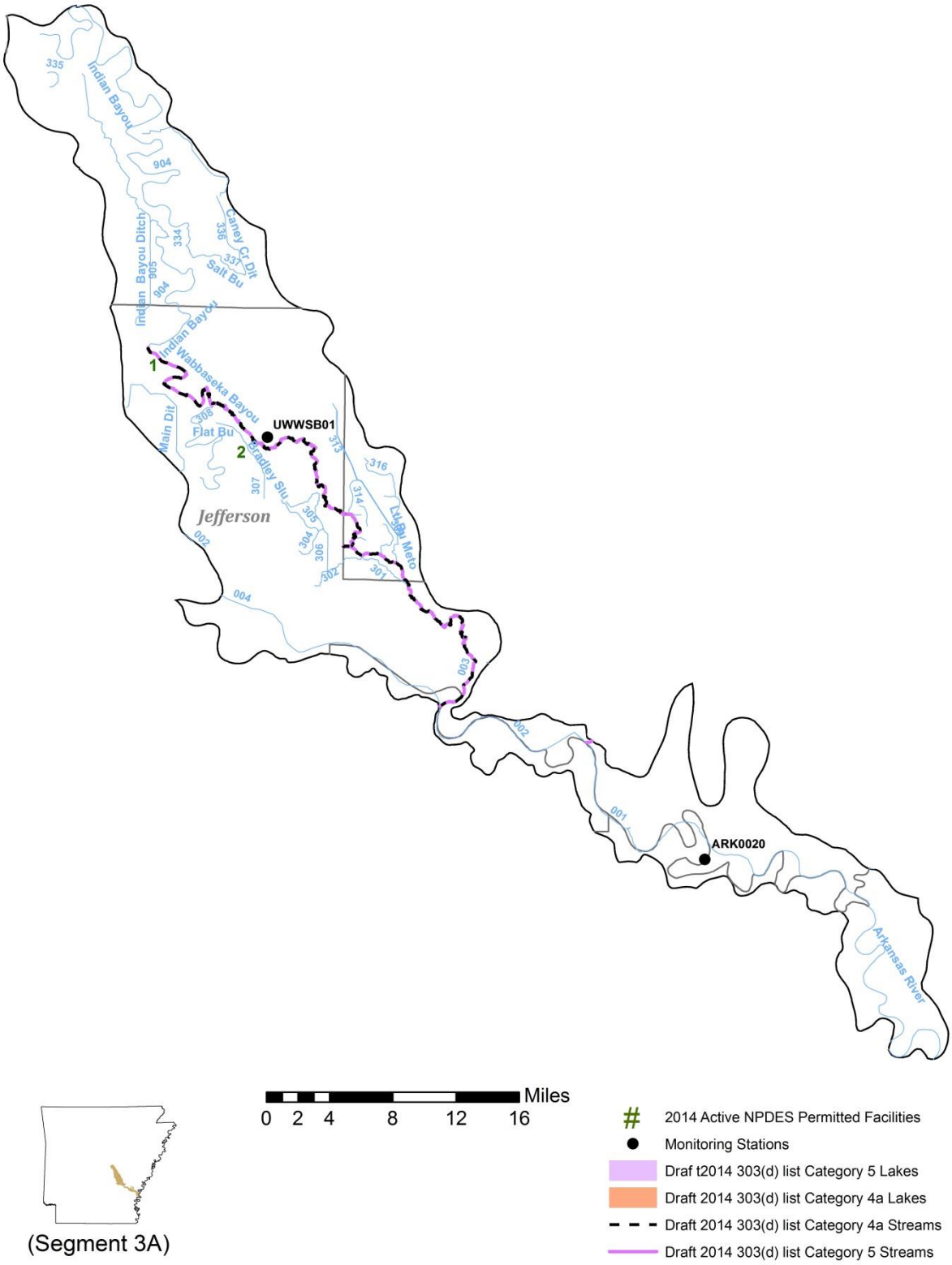


Table A-23: Planning Section 3A Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	FC	FSH	PC	SC	DW	AI	1	2	3	4	1	2	3	4	1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-3A																										
Arkansas River	8020401	-001	52.2	ARK0020	M	S	S	S	S	S	S									1				FISH CONSUMPTION	186.6	0
Arkansas River	8020401	-002	13.3		E	S	S	S	S	S	S									1				FISHERIES	65.5	121.1
Wabbaseka B.	8020401	-003	101.7	UWWSB01	M	S	N	S	S	S	S	UN				DO				5				PRIMARY CONTACT	186.6	0
Arkansas River	8020401	-004	19.4		E	S	N	S	S	S	S									1				SECONDARY CONTACT	186.6	0
TOTAL MILES	186.6																							DRINKING SUPPLY	186.6	0
MILES UNASSESSED	0.0																							AGRI & INDUSTRY	186.6	0
MILES EVALUATED	32.7																									
MILES MONITORED	153.9																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
ARK0020	Arkansas River at Lock and Dam No. 2	7265283	1	A
UWWSB01	Wabbaseka Bayou at Highway 79 near Wabbaseka		2	R

Table A-24: Active NPDES permits for Planning Segment 3A

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0035980	AR DEPT OF CORRECTION-TUCKER	WABBSEKA BU,GRAND CYPRESS LK, BU METO,ARKANSAS	003	8020401	Jefferson	1
AR0039896	WABBASEKA, CITY OF	TRIB,BRADLEY SLU,ARKANSAS R	003	8020401	Jefferson	2

SEGMENT 3B BAYOU METO AND TRIBUTARIES

Segment 3B is located in the east central portion of Arkansas and includes a major portion of Lonoke County as well as parts of Arkansas, Jefferson, Faulkner, Pulaski, and Prairie Counties. Bayou Meto and its tributaries make up the major surface water resource in the segment. Major tributaries include Bayou Two Prairie, Mill Bayou, and Kings Bayou.

Summary of Water Quality Conditions

Waters within this segment have been designated as suitable for the propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supplies. Most of these streams are utilized as irrigation water supply.

The upper segments of Bayou Meto are under a fish consumption advisory due dioxin in fish tissue. The source has been eliminated and the contamination is being addressed through natural attenuation.

Many segments of Bayou Meto and a segment of Bayou Two Prairie are listed because of low dissolved oxygen concentrations. This is a naturally occurring condition throughout the Delta ecoregion during the critical season when flows are diminished and water temperatures are elevated. This issue will need to be addressed either through a standards change or an assessment methodology change.

Figure A-19: Planning Segment 3B

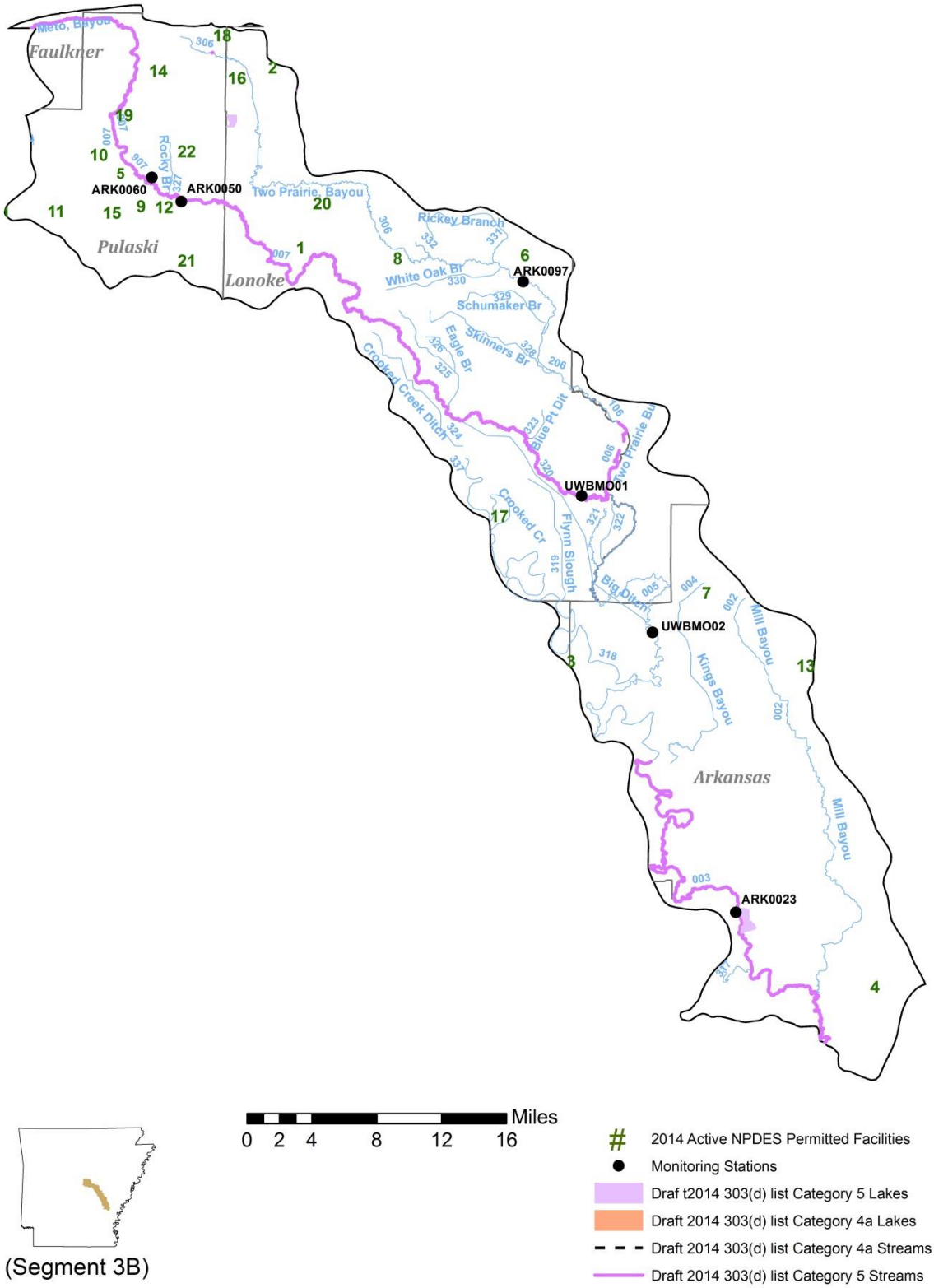


Table A-25: Planning Section 3B Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-3B																										
Bayou Meto	8020402	-001	4.3		E	S	N	S	S	S	S	UN	UN			DO	Tm			5	5			FISH CONSUMPTION	187.4	0
Bayou Meto	8020402	-003	39.8	ARK0023	M	S	N	S	S	S	S	UN	UN			DO	Tm			5	5			FISHERIES	98.5	88.9
Bayou Meto	8020402	-005	41.5	UWBMO02+	M	S	S	S	S	S	S									1				PRIMARY CONTACT	187.4	0
Bayou Meto	8020402	-907	12.3	ARK0060	M	S	S	S	S	S	S	UN				DO				5				SECONDARY CONTACT	187.4	0
Bayou Meto	8020402	-007	44.8	ARK0050	M	S	N	S	S	R	S	SE	UN	IP		Tb	TDS	PO		5	5	5		DRINKING SUPPLY	142.6	0
Mill Bayou	8020402	-002	31.0		U															3				AGRI & INDUSTRY	187.4	0
Kings Bayou	8020402	-004	15.3		U															3						
B.Two Prairie	8020402	-006	44.7	ARK0097	M	S	S	S	S	S	S	UN				DO				5						
TOTAL MILES	233.7																									
MILES UNASSESSED	46.3																									
MILES EVALUATED	4.3																									
MILES MONITORED	183.1																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
ARK0023	Bayou Meto near Bayou Meto		1	A
UWBMO01	Bayou Meto at county road crossing southeast of Seaton Dump		1	R
UWBMO02	Bayou Meto at Highway 79, 2 miles southwest of Stuttgart		2	R
ARK0060	Bayou Meto at west Main Street in Jacksonville		1	A
ARK0050	Bayou Meto at Highway 161 below Jacksonville		1	A
ARK0097	Bayou Two Prairie south of Carlisle		1	A

Table A-26: Active NPDES permits for Planning Segment 3B

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0001163	REMINGTON ARMS COMPANY, LLC	BU METO,ARKANSAS R	007	8020402	Lonoke	1
AR0021661	CABOT WASTEWATER TREATMENT FACILITY	TRIB, BU TWO PRAIRIE,BU METO,ARKANSAS R	006	8020402	Lonoke	2
AR0022284	HUMPHREY, CITY OF - WWTP	LATERAL #5 DIT,BEAR BU,SALT BU,CYPRESS LK, AR R	313	8020401	Arkansas	3
AR0022390	GILLETT, CITY OF-WWTP	BILL'S BU,FLAG LK,BU METO,ARKANSAS R	001	8020402	Arkansas	4
AR0033642	GRAVEL RIDGE SID #213	TRIB,KELLOGG CR,BU METO,ARKANSAS R	007	8020402	Pulaski	5
AR0033740	CARLISLE, CITY OF	BU TWO PRAIRIE,BU METO,ARKANSAS R	006	8020402	Lonoke	6
AR0034380	STUTTGART WW TREATMENT PLANT	DIT,KING BU,BU METO,ARKANSAS R	004	8020402	Arkansas	7
AR0034746	LONOKE, CITY OF	BU TWO PRAIRIE,BU METO,AR R	006	8020402	Lonoke	8
AR0037176	SHERWOOD, CITY OF - NORTH FACILITY	TRIB,KELLOGG CR,BU METO,ARKANSAS R	007	8020402	Pulaski	9
AR0038075	RUNYAN SID #211	TRIB,KELLOGG CR,BU METO,ARKANSAS R	007	8020402	Pulaski	10
AR0041149	ARKANSAS MILITARY DEPARTMENT- ROBINSON MANEUVER TRAINING CENTER 400	5-MILE CR,TRAMMEL LK,BRUSHY ISLAND CR,BU METO,ARKANSAS R	011	8020402	Pulaski	11
AR0041335	JACKSONVILLE, CITY OF	BU METO,ARKANSAS R	007	8020402	Pulaski	12
AR0043761	ALMYRA, CITY OF	MILL BU,BIG BU METO,ARKANSAS R	002	8020402	Arkansas	13
AR0044598	PCSSD-BAYOU METO ELEMENTARY SCHOOL	DITCH, BU METO, ARKANSAS R	007	8020402	Pulaski	14
AR0045608	SHERWOOD, CITY OF-SOUTH FACILITY	WOODRUFF CR,FIVE MILE CR,BU METO CR, ARKANSAS R	007	8020402	Pulaski	15
AR0046311	ROGERS GROUP, INC-CABOT QUARRY	WHITE OAK BR,2 PRAIRIE BU,BU METO, ARKANSAS R	006	8020402	Lonoke	16
AR0048313	H.A.C.T. WW TREATMENT DIST	CROOKED CR,BU METO,AR R	005	8020402	Lonoke	17
AR0049875	PHIL ROD ACRES MOBILE HOME PK	DIT, BLUE BR, BU TWO PRAIRIE, BU METO, AR R	006	8020402	Lonoke	18
AR0050687	HILLSIDE BAYOU, LLC	TRIB BU METO,BU METO,ARKANSAS R	007	8020402	Pulaski	19
AR0051799	DOLLAR GENERAL	TRIB,BU METO,ARKANSAS R	007	8020402	Lonoke	20
AR0052019	TA OPERATING, LLC - PETRO STOPPING CENTERS, LP #326	TRIB,INK BU,LONE CYPRESS BRAKE,HILL LK,FAULKNER LK		8020402	Pulaski	21
	VERTAC CHEMICAL CORP CLEANUP	ROCKY BRANCH, BU METO, ARKANSAS R	327	8020402	Pulaski	22

SEGMENT 3C ARKANSAS RIVER AND TRIBUTARIES EMMETT LOCK AND DAM SANDERS (#4) TO MURRAY LOCK AND DAM (#7)

Segment 3C is located in central Arkansas and covers large portions of Pulaski and Jefferson Counties and small areas of Grant, Saline, Lonoke, and Perry Counties. The Arkansas River is the major surface water resource in this segment. The principal tributaries within this segment are Plum Bayou, Maumelle River, and Fourche Creek. Lake Saracen and Lake Maumelle are located in this segment.

Summary of Water Quality Conditions

Waters within this segment have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation; and public, industrial, and agricultural water supplies. Four monitoring stations are located on the main stem of the Arkansas River which provides monitored data for 52.2 miles of the river. Data from USGS studies on the Maumelle River and Lake Maumelle were used to assess these waterbodies.

These waters are heavily used for boating, hunting and fishing activities year-round, and some primary contact recreation activities during the warmer months.

Fourche Creek, an Arkansas River tributary draining the Little Rock area, has been listed as not attaining the fisheries designated use based on water chemistry data. The cause of the impairment is from low dissolved oxygen concentrations, elevated silt and turbidity, and metals (lead, zinc) concentrations. The exact sources of the contamination are unknown at this time.

Figure A-20: Planning Segment 3C

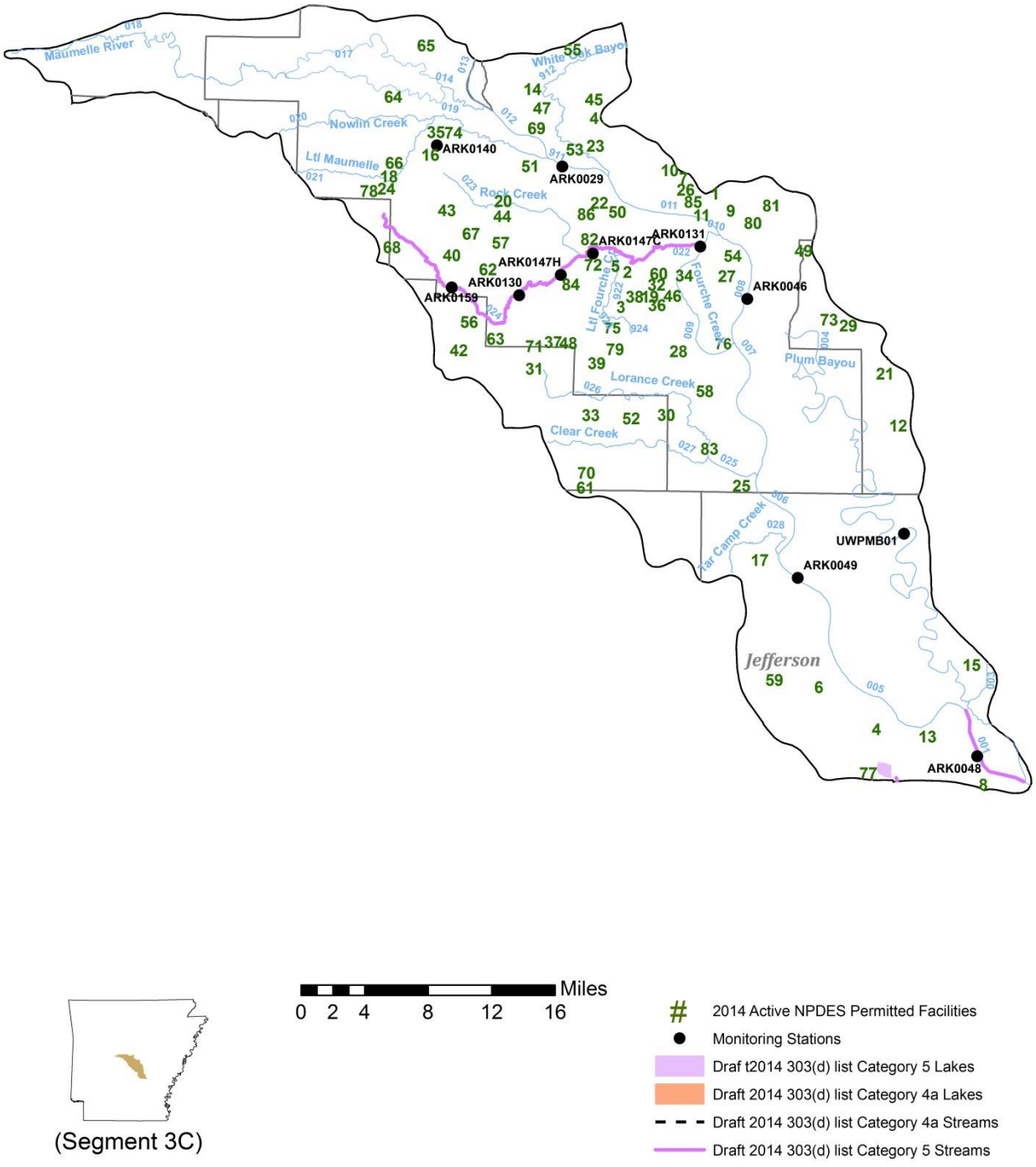


Figure A-21: Planning Segment 3C – Close-Up of Fourche Creek Area

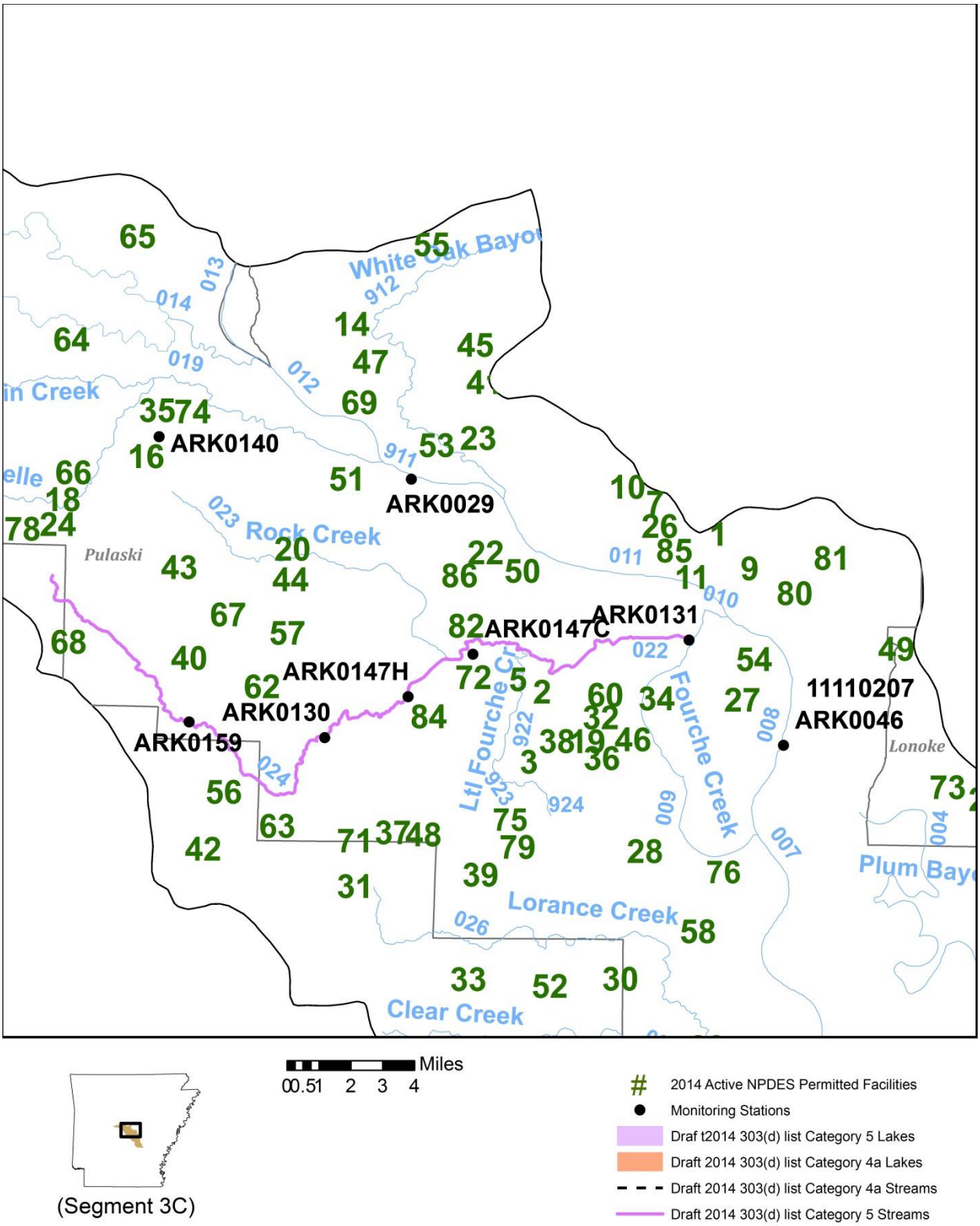


Table A-27: Planning Section 3C Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-3C																										
Arkansas River	11110207	-001	6.7	ARK0048	M	S	S	S	S	S	S	SE				Tb				5				FISH CONSUMPTION	225.1	0
Plum Bayou	11110207	-002	0.3		M	S	S	S	S	S	S									1				FISHERIES	215.9	9.2
Indian Bayou	11110207	-003	3.2		U															3				PRIMARY CONTACT	225.1	0
Plum Bayou	11110207	-004	68.4	UWPMB01	M	S	S	S	S	S	S									1				SECONDARY CONTACT	225.1	0
Arkansas River	11110207	-005	28.0	ARK0049	M	S	S	S	S	S	S									1				DRINKING SUPPLY	225.1	0
Arkansas River	11110207	-006	6.2		E	S	S	S	S	S	S									1				AGRI & INDUSTRY	225.1	0
Arkansas River	11110207	-007	9.2		E	S	S	S	S	S	S									1						
Arkansas River	11110207	-008	9.8	ARK0046	M	S	S	S	S	S	S									1						
Fourche Bayou	11110207	-009	11.0		U															3						
Fourche Bayou	11110207	-010	1.6		U															3						
Arkansas River	11110207	-011	7.7	ARK0029	M	S	S	S	S	S	S									1						
Arkansas River	11110207	-012	5.1		M	S	S	S	S	S	S									1						
Arkansas River	11110207	-013	5.7		E	S	S	S	S	S	S									1						
Maumelle River	11110207	-014	3.3		E	S	S	S	S	S	S									1						
Maumelle River	11110207	-018	24.2	USGS	M	S	S	S	S	S	S									1						
Little Maumelle	11110207	-019	9.5	ARK0140	M	S	S	S	S	S	S									1						
Little Maumelle	11110207	-021	10.1		E	S	S	S	S	S	S									1						
Nowlin Creek	11110207	-020	10.5		E	S	S	S	S	S	S									1						
Fourche Creek	11110207	-022	9.2	ARK0131+	M	S	N	S	S	S	S	SE	UN	UN		Tb	Cu	Tm		5	5	5				
Rock Creek	11110207	-023	13.0		U															3						
Fourche Creek	11110207	-024	11.2	ARK0130+	M	S	S	S	S	S	S	SE	UN			Tb	Cu			5	5					
Clear Creek	11110207	-025	3.2		U															3						
Lorance Creek	11110207	-026	15.2		U															3						
Clear Creek	11110207	-027	11.9		U															3						
Tar Camp Creek	11110207	-028	7.6		U															3						
TOTAL MILES	291.8																									
MILES UNASSESSED	66.7																									
MILES EVALUATED	45.0																									
MILES MONITORED	180.1																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
ARK0048	Arkansas River below Pine Bluff, Lock and Dam No. 4	7263706	1	A
UWPMB01	Plum Bayou 1mile west of Highway 15 near Tucker		2	R
ARK0049	Arkansas River above Pine Bluff, Lock and Dam No. 5	7263640	1	A
ARK0046	Arkansas River at Lock and Dam No. 6	7263620	1	A
ARK0029	Arkansas River at Murray Lock and Dam		1	A
ARK0140	Little Maumelle River near Little Rock		2	R
ARK0147H	Fourche Creek		1	S
ARK0147G	Fourche Creek at Highway 5 Bridge		1	S
ARK0147F	Fourche Creek at Otter Creek Road		1	S
ARK0147E	Fourche Creek below I-430		1	S
ARK0130	Fourche Creek at I-430 bridge in Little Rock		1	R
ARK0147D	Fourche Creek below Rock Creek Confluence		1	S
ARK0147C	Fourche Creek at Benny Craig Park		1	S
ARK0147B	Fourche Creek at Arch-Pike Street Bridge		1	S
ARK0147A	Fourche Creek at Confererate Boulevard		1	S
ARK0131	Fourche Creek at Fourche Dam Pike road off I-440 in Little Rock		1	R

Table A-28: Active NPDES permits for Planning Segment 3C

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0001376	ENTERGY ARKANSAS, INC. - CECIL LYNCH PLANT	ARKANSAS R	011	11110207	Pulaski	1
AR0001414	3M COMPANY - ARCH STREET PLANT	TRIB,FOURCHE CR,ARKANSAS R	022	11110207	Pulaski	2
AR0001503	RAUCH & HENDRON MINE	LTL FOURCHE CR , FOURCHE CR, AR R	022	11110207	Pulaski	3
AR0001601	GRAPHIC FLEXIBLE PACKAGING, LLC	ARKANSAS R	005	11110207	Jefferson	4
AR0001635	SMITH FIBERCAST	DITCH,TRIB,FOURCHE CR,AR R	022	11110207	Pulaski	5
AR0001678	U.S. ARMY - PINE BLUFF ARSENAL	TRIB/PHILLIPS CR & ARKANSAS R	005	11110207	Jefferson	6
AR0001775	UNION PACIFIC RAILROAD COMPANY	E & W BR/DARK HOLLOW CANAL,ARKANSAS	011	11110207	Pulaski	7
AR0001970	EVERGREEN PACKAGING, INC. - PINE BLUFF MILL	AR R-3C (1); TRIBCOUSART BU,BU BARTHOLOMEW 2B (2)	005	11110207	Jefferson	8
AR0020303	NLR WASTEWATER UTILITY-FAULKNER LAKE	ARKANSAS R	008	11110207	Pulaski	9
AR0020320	NLRWU-FIVE MILE CREEK	ARKANSAS R	011	11110207	Pulaski	10
AR0021806	LRWU-ADAMS FIELD WASTEWATER TREATMENT FACILITY	ARKANSAS R	011	11110207	Pulaski	11
AR0022128	ENGLAND, CITY OF	WABBASEKA BU,PLUM BU,ARKANSAS R	004	11110207	Lonoke	12
AR0033316	PINE BLUFF BOYD POINT WW TREATMENT FAC	ARKANSAS R	005	11110207	Jefferson	13
AR0033626	MAUMELLE IMPROVE DISTRICT #500	ARKANSAS R	012	11110207	Pulaski	14
AR0034771	ALTHEIMER, CITY OF	ARKANSAS R	001	11110207	Jefferson	15
AR0035963	PCSSD-ROBINSON ELEMENTARY SCHOOL TREATMENT FACILITY	TRIB,LTL MAUMELLE R,ARKANSAS R	021	11110207	Pulaski	16
AR0036331	ENTERGY-WHITE BLUFF PLANT	ARKANSAS R	005	11110207	Jefferson	17
AR0036421	FERNCLIFF CAMP & CONF. CENTER	FERNDALE CR,,LTL MAUMELLE R,ARKANSAS R	021	11110207	Pulaski	18
AR0036447	GEO SPECIALTY CHEMICALS, INC.	FISH CR, BIG LK, PENNINGTON BU, ARKANSAS R	007	11110207	Pulaski	19

Table A-28: Active NPDES permits for Planning Segment 3C

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0037338	BAKER APARTMENTS	PANTHER BR,BRODIE CR,FOURCHE CR,ARKANSAS R	024	11110207	Pulaski	20
AR0037613	KEO, CITY OF	TRIB,NORTH BU,PLUM BU,ARKANSAS R	004	11110207	Lonoke	21
AR0037745	LITTLE ROCK ZOOLOGICAL GARDENS	COLEMAN CR,FOURCHE CR,AR R	022	11110207	Pulaski	22
AR0038288	NLRWU-WHITE OAK BAYOU	ARKANSAS R	011	11110207	Pulaski	23
AR0039250	4-H EDUCATION CENTER	FERNDALE CR,LTL MAUMELLE R,AR R	021	11110207	Pulaski	24
AR0039357	REDFIELD, CITY OF	ARKANSAS R	006	11110207	Jefferson	25
AR0039543	MCALMONT CHURCH OF CHRIST	STARK BEND,FAULKNER LK		11110207	Pulaski	26
AR0040177	LRWU-FOURCHE CREEK WWTP	ARKANSAS R	008	11110207	Pulaski	27
AR0040266	145TH STREET WATER AND SEWER IMPROVEMENT DISTRICT NO. 345 OF PULASKI COUNTY	CANE CR,FISH CR,LARANCE CR,PENNINGTON BU, AR R	026	11110207	Pulaski	28
AR0040380	ARK PARKS TOLTEC MOUNDS ARCHEOLOGICAL STATE PARK	DIT,NORTH BU,PLUM BU,ARKANSAS R	004	11110207	Lonoke	29
AR0040860	MAPLE CREEK POA	MAPLE CR, PENNINGTON BU, AR R	026	11110207	Pulaski	30
AR0041424	PLEASANT OAKS SID #31	TRIB,OTTER CR,FOURCHE CR	024	11110207	Saline	31
AR0042544	CRILANCO OIL, INC.	TRIB,FISH CR, LORANCE CR, PENNINGTON BU,ARKANSAS R	026	11110207	Pulaski	32
AR0042862	SHERIDAN SCHOOL DIST-EAST END	TRIB,MCCRIGHT BR,LORRANCE CR,BIG LK,PENNINGTON BU,	026	11110207	Benton	33
AR0042927	AUXILIARY SERVICES FACILITY	FOURCHE BU,ARKANSAS R	009	11110207	Pulaski	34
AR0043893	PCSSD-ROBINSON HIGH SCHOOL	UNNAMED TRIB,LTL MAUMELLE R,ARKANSAS R	019	11110207	Pulaski	35
AR0043931	DIXON MANOR MOBILE HOME PARK	TRIB,FISH CR,ARKANSAS R	007	11110207	Pulaski	36
AR0044393	HEINKE ROAD PROPERTY OWNERS SID #34	UNNAMED TRIB,LTL FOURCHE CR,FOURCHE CR,ARKANSAS R	022	11110207	Pulaski	37

Table A-28: Active NPDES permits for Planning Segment 3C

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0044601	PCSSD - FULLER SCHOOL TREATMENT FAC	TRIB,FISH CR,FISH CR,LORANCE CR,PENNINGTON BU,	026	11110207	Pulaski	38
AR0044610	PCSSD-LANDMARK ELEMENTARY SCHOOL TREATMENT FACILITY	TRIB,TREADWAY BR,LORANCE CR	026	11110207	Pulaski	39
AR0044628	PCSSD-LAWSON ELEMENTARY SCHOOL	DIT,TRIB,FOURCHE CR,ARKANSAS R	024	11110207	Pulaski	40
AR0044750	PCSSD - OAK GROVE HIGH SCHOOL TREATMENT FACILITY	UNNAMED TRIB,NEWTON CR,WHITE OAK BU, ARKANSAS R	011	11110207	Pulaski	41
AR0044881	SALINE COUNTY WATERWORKS AND SANITARY SEWER PUBLIC FACILITIES BOARD	CROOKED CR,FOURCHE CR,ARKANSAS R	024	11110207	Saline	42
AR0045471	YOUTH HOME, INC.	MCHENRY CR,FOURCHE CR,ARKANSAS R	024	11110207	Pulaski	43
AR0045560	OASIS RENEWAL CENTER	TRIB,BRODIE CR, FOURCHE CR, ARKANSAS R	023	11110207	Pulaski	44
AR0046086	C.P. GROUP	TRIB,NEWTON CR,WHITE OAK BU,AR R	011	11110207	Pulaski	45
AR0046710	GRANITE MOUNTAIN QUARRIES	TRIB,FOURCHE CR,ARKANSAS R	009	11110207	Pulaski	46
AR0046868	E. C. ROWLETT CONSTRUCTION CO.	WHITE OAK BU,AR R	011	11110207	Pulaski	47
AR0047261	CHICOT SEWER SYSTEM, LLC	TRIB,LTL FOURCHE CR,FOURCHE CR, ARKANSAS R	024	11110207	Pulaski	48
AR0047449	PCSSD-SCOTT SCHOOL TREATMENT	ASHLEY BU,HORSESHOE LK,SCOTT BU	004	11110207	Lonoke	49
AR0047929	CENTRAL ARKANSAS WATER-OZARK POINT WATER TREATMENT PLANT	TRIB,ARKANSAS R	011	11110207	Pulaski	50
AR0047937	CENTRAL ARKANSAS WATER-JACR H. WILSON WATER TREATMENT PLANT	TRIB,GRASSY FLAT CR,ROCK CR,FOURCHE CR,ARKANSAS R	023	11110207	Pulaski	51
AR0048399	MAPLE CREEK FARMS TRACT C H	TRIB,MAPLE CR,LORANCE CR,PENNINGTON BU,ARKANSAS R	026	11110207	Pulaski	52
AR0048542	NORTH LITTLE ROCK ELECTRIC DEPARTMENT - MURRAY HYDROELECTRIC PLANT	ARKANSAS R	011	11110207	Pulaski	53
AR0048895	LITTLE ROCK HARBOR SERVICES	ARKANSAS R	008	11110207	Pulaski	54

Table A-28: Active NPDES permits for Planning Segment 3C

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0048968	CEDAR HEIGHTS BAPTIST CHURCH	TRIB,WHITE OAK BU, AR R	011	11110207	Pulaski	55
AR0049042	OWEN CREEK, LLC	OWEN CR,FOURCHE CR,ARKANSAS R	024	11110207	Pulaski	56
AR0049051	HUMANE SOCIETY OF PULASKI COUNTY	UNNAMED TRIB,MCHENRY CR,FOURCHE CR,ARKANSAS R	024	11110207	Pulaski	57
AR0049255	AECC-HARRY L. OSWALD GENERATING STATION	ARKANSAS R	007	11110207	Pulaski	58
AR0049581	THE FAMILY CHURCH	TRIB,ARNOLD CR,CANEY BU,LK LANGHOFER, ARKANSAS R	005	11110207	Jefferson	59
AR0050075	ERGON ASPHALT AND EMULSIONS-LITTLE ROCK PLANT	TRIB,FISH CR,ARKANSAS R	007	11110207	Pulaski	60
AR0050113	FOREST TOWER FOOD MART, INC	TRIB,KELLEY BR,DUCR CR,CLEAR CR,PENNINGTON BU,ARK	027	8040203	Pulaski	61
AR0050130	CALLAGHAN CREEK SUBDIVISION	CALLAGHAN CR,FOURCHE CR,ARKANSAS R	024	11110207	Pulaski	62
AR0050181	WWTP 1, LLC DBA ST JOSEPH'S GLEN WWTP	TRIB,CROOKED CR,FOURCHE CR,ARKANSAS R	022	11110207	Pulaski	63
AR0050245	ALOTIAN CLUB, LLC	NOWLIN CR,LTL MAUMELLE R,ARKANSAS R	020	11110207	Pulaski	64
AR0050393	WATERVIEW ESTATES, POA	MILL BU,ARKANSAS R	013	11110207	Pulaski	65
AR0050504	FERNDALE GROCERY, INC.	UNNAMED TRIB,LTL MAUMELLE R,ARKANSAS R	021	11110207	Pulaski	66
AR0050521	LOCHRIDGE ESTATES, LLC - SUBDIVISION	MCHENRY CR,FOURCHE CR,ARKANSAS R	024	11110207	Pulaski	67
AR0050539	PINEWOOD ESTATES SUBDIVISION	TRIB,PANTHER CR,FOURCHE CR,ARKANSAS R	024	11110207	Saline	68
AR0050547	TWO RIVERS HARBOR SUBDIVISION	ARKANSAS R	012	11110207	Pulaski	69
AR0050628	MWM DEVELOPMENT, LLC - D/B/A DEER CREEK DEVELOPMENT	KELLY BR,DUCR CR,CLEAR CR,FERGUSON LK,PENNINGTON	027	11110207	Grant	70
AR0050636	SHANNON HILLS, CITY OF	OTTER CR,FOURCHE CR,ARKANSAS R	024	11110207	Saline	71
AR0050679	HILLCREST CAMSHAFT SERVICE, INC.	DIT,FOURCHE CR,ARKANSAS R	024	11110207	Pulaski	72
AR0050831	MOUND LAKE II PHASE III WWTP	PLUM BU,ARKANSAS R	004	11110207	Lonoke	73

Table A-28: Active NPDES permits for Planning Segment 3C

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0050849	LRWU-LITTLE MAUMELLE WWTP	ARKANSAS R	012	11110207	Pulaski	74
AR0050971	DSL DEVELOPMENT, LLC	WILLOW SPGS BR,LTL FOURCHE CR,ARK RI	022	11110207	Pulaski	75
AR0051021	WRIGHTSVILLE, CITY OF	FOURCHE BU, ARKANSAS R	009	11110207	Pulaski	76
AR0051110	COLTEC INDUSTRIES, INC.-CENTRAL MOLONEY FACILITY	BRUMPS BU, LK SARACEN		11110207	Jefferson	77
AR0051144	TALL OAKS, LLC - HAYSTACR CAFE	TRIB,LTL MAUMELLE R,ARKANSAS R	021	11110207	Pulaski	78
AR0051373	JUDY SURRETT - CHINA CAFE	TRIB,WILLOW SPRINGS BR,LTL FOURCHE CR, FOURCHE	923	11110207	Pulaski	79
AR0051454	CATERPILLAR, INC., NORTH AMERICAN MOTOR GRADER FACILITY	UNNAMED DITCH,FAULKNER LK, PLUM BU, ARKANSAS R	008	11110207	Pulaski	80
AR0051802	DESOTO SAND, LLC	TRIB,FAULKNER LK,ASHLEY BU,HORSESHOE LK,OLD R	004	11110207	Pulaski	81
AR0051977	BFI WASTE SYSTEMS OF ARKANSAS, LLC D/B/A BFI MODEL FILL LANDFILL	TRIB, FOURCHE CR, ARKANSAS R	022	11110207	Pulaski	82
AR0051993	WOODSON-HENSLEY WATER COMPANY - WATER TREATMENT FACILITY	DITCH, CLEAR CR, PENNINGTON BU, ARKANSAS	027	11110207	Pulaski	83
AR0052191	SYSCO ARKANSAS	TRIB,FOURCHE CR,ARKANSAS R	024	11110207	Pulaski	84
AR0052213	BRUCE OAKLEY, INC.	ARKANSAS R	011	11110207	Pulaski	85
ARS000002	LITTLE ROCK, CITY OF/AHTD MS4	TRIBS,ARKANSAS R	022	11110207	Pulaski	86

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SEGMENT 3D ARKANSAS RIVER AND TRIBUTARIES" MURRAY LOCK AND DAM (#7) TO MORRILTON LOCK AND DAM (#9)

Segment 3D, located in central Arkansas, covers most of Conway County as well as parts of Cleburne, Van Buren, Faulkner, and White Counties. The principal waters include the Cadron Creek basin.

Summary of Water Quality Conditions

Waters within this segment have been designated as suitable for the propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supply. These waters are used for hunting, boating, and fishing activities year-round, and primary contact recreation activities in the warmer months. Cadron Creek is also a favorite canoeing and kayaking destination.

A small tributary to Cadron Creek, Cypress Creek, is currently evaluated as not attaining the fisheries designated use because of metals (copper, zinc) contamination. This is a very small tributary that ceases to flow during the critical season. The source of the metals contamination is suspected to be from agriculture activities, primarily confined animal operations in the watershed.

East Fork Cadron Creek has been listed for exceeding the turbidity criterion. The source is listed as surface runoff, however, natural gas extraction activities (drilling and piping) continue in the watershed. These activities include drilling extraction wells, construction of pipelines to carry the natural gas from the wells to main distribution lines, and construction of hundreds of miles of unimproved roads to move construction equipment to and from the sites. Thousands of acres of land are exposed and thousands of streams are crossed during this process. Each acre and every stream crossing increases the nonpoint source input into the streams in the area.

Figure A-22: Planning Segment 3D

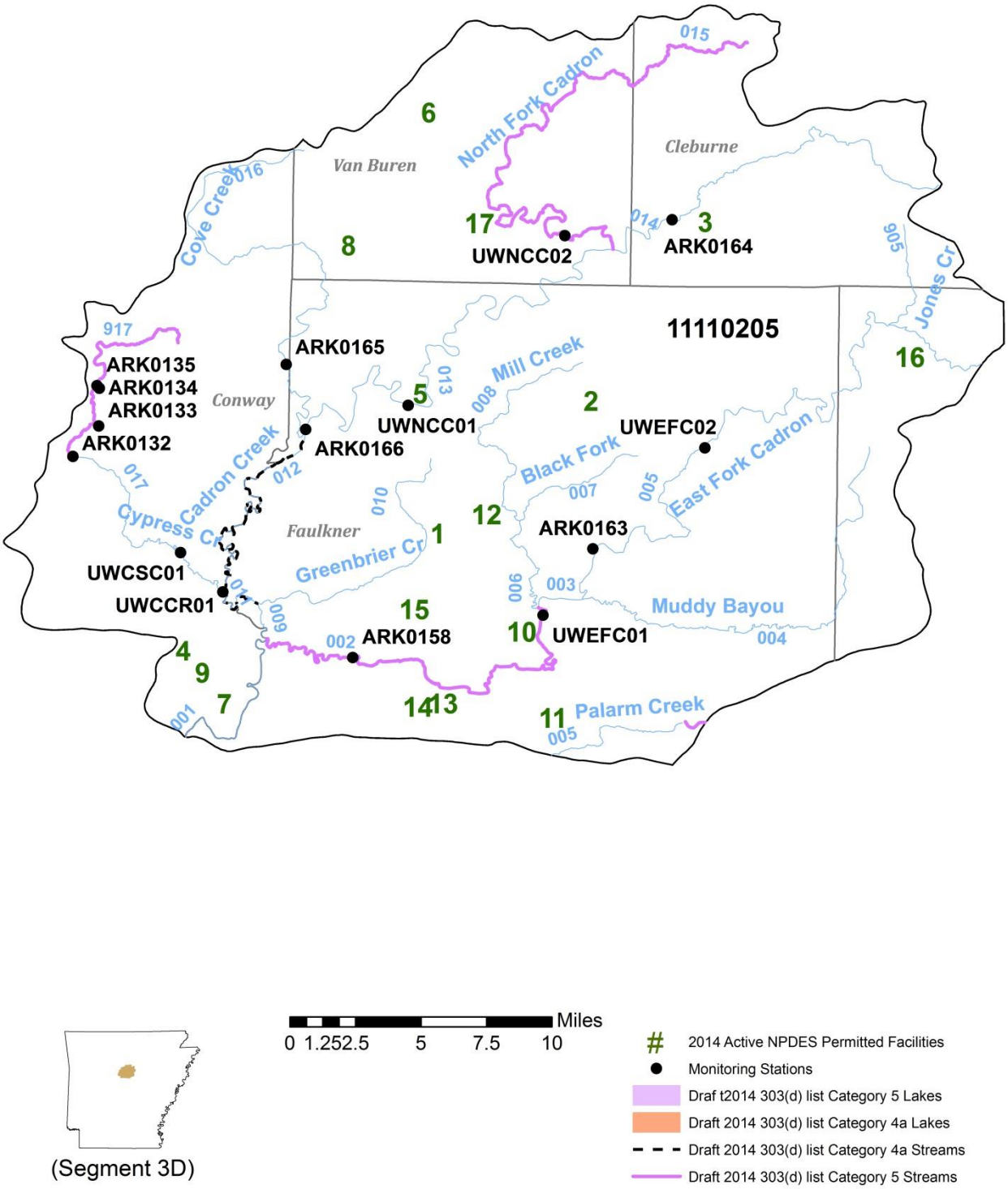


Table A-29: Planning Section 3D Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4
SEG-3D																							
Cadron Creek	11110205	-001	7.7		E	S	S	S	S	S	S									1			
E. Fork Cadron	11110205	-002	15.6	ARK0158	M	S	S	S	S	S	S	SE				Tb				5			
E. Fork Cadron	11110205	-003	2.0		E	S	S	S	S	S	S									1			
E. Fork Cadron	11110205	-005	30.7	UWEFC02	M	S	S	S	S	S	S									1			
Muddy Bayou	11110205	-004	15.7		E	S	S	S	S	S	S									1			
Black Fork	11110205	-006	4.3		E	S	S	S	S	S	S									1			
Black Fork	11110205	-007	7.2		E	S	S	S	S	S	S									1			
Mill Creek	11110205	-008	8.9		E	S	S	S	S	S	S									1			
Cadron Creek	11110205	-009	0.7		E	S	S	S	S	S	S									1			
Cadron Creek	11110205	-011	2.2	UWCCR01	M	S	S	S	S	S	S									1			
Cadron Creek	11110205	-012	9.5		E	S	S	S	S	S	S									1			
Cadron Creek	11110205	-013	26.8	UWNCC01	M	S	S	S	S	S	S									1			
Cadron Creek	11110205	-014	14.7		E	S	S	S	S	S	S									1			
Greenbrier Cr.	11110205	-010	11.1		U															3			
North Cadron	11110205	-015	26.5	UWNCC02	M	S	S	S	S	S	S	UN				DO				5			
Cove Creek	11110205	-016	20.0		E	S	S	S	S	S	S									1			
Cypress Creek	11110205	-917	11.2	ARK0132	M	S	N	S	S	S	S	AG	AG			Cu	Zn			5	5		
Cypress Creek	11110205	-017	5.7	UWCSC01	M	S	S	S	S	S	S									1			
TOTAL MILES	220.5																						
MILES UNASSESSEI	11.1																						
MILES EVALUATED	90.7																						
MILES MONITORED	118.7																						

USE	SUPPORT	NON-SUPPORT
FISH CONSUMPTION	209.4	0
FISHERIES	198.2	11.2
PRIMARY CONTACT	209.4	0
SECONDARY CONTACT	209.4	0
DRINKING SUPPLY	209.4	0
AGRI & INDUSTRY	209.4	0

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
ARK0158	East Fork Cadron Creek near Wooster		1	A
UWEFC01	East Fork Cadron Creek at Highway 287, 3 miles southeast of Greenbrier		1	R
UWEFC02	East Fork Cadron Creek at Highway 107 near Barney		1	R
UWCCR01	Cadron Creek at county road, 5 miles west of Wooster	7261000	1	R
UWNCC01	North Cadron Creek at Highway 65 near Damascus		1	R
UWNCC02	North Cadron Creek at county road, 0.75 miles north of Highway 124		1	R
ARK0132	Cypress Creek at Highway 9 bridge near Cypress Valley		1	R
UWCSC01	Cypress Creek at county road, 2 miles southeast of Highway 92		2	R

Table A-30: Active NPDES permits for Planning Segment 3D

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0036536	GREENBRIER, CITY OF	GREENBRIER CR,CADRON CR,AR R	010	11110205	Faulkner	1
AR0037087	ARKANSAS DEPT. OF PARKS & TOURISM - WOOLLY HOLLOW STATE PARK	BLACK FRK CR,E FRK CADRON CR, CADRON CR, ARK R	007	11110205	Faulkner	2
AR0040321	QUITMAN, CITY OF	MILL CR,CADRON CR,ARKANSAS R	014	11110205	Cleburne	3
AR0043028	GOOD EARTH HORTICULTURE, INC.	TRIB,TANK LK,AR R	010	11110205	Conway	4
AR0047112	ROGERS GROUP GREENBRIER QUARRY	CADRON CR,ARKANSAS R	013	11110205	Faulkner	5
AR0047457	CADRON CREEK CATFISH HOUSE	TRIB,WARD CR,PINE MTN CR,COVE CR,CADRON CR	013	11110205	Van Buren	6
AR0048119	EVERGREEN PACKAGING, INC. - CADRON CREEK CHIP MILL	CADRON CR, ARKANSAS R	001	11110205	Conway	7
AR0049077	BOY SCOUTS OF AMERICA - GUS BLASS SCOUT RESERVATION	COVE CR,CADRON CR,ARKANSAS R	016	11110205	Van Buren	8
AR0049361	MENIFEE, CITY OF	TRIB OF GAP CR,GAP CR,ARKANSAS R	010	11110203	Conway	9
AR0049620	ARKAVALLEY AIRPARK	TRIB,EAST FORK CADRON CR,CADRON CR, ARKANSAS R	002	11110205	Faulkner	10
AR0050253	HAYDEN'S PLACE SUBDIVISION	TRIB,BENTLEY CR,PALARM CR,LK CONWAY, PALARM CR, AR	005	11110203	Faulkner	11
AR0050440	GREENBRIER, CITYOF - GREENBRIER SPORTS PARK	TRIB,BLACK FORK,E FORK CADRON CR,ARKANSAS R	007	11110205	Faulkner	12
AR0050466	SHADOW RIDGE WWTF	EAST FORK OF CADRON CR, ARKANSAS R	002	11110205	Faulkner	13
AR0050491	NORTH HILLS SUBDIVISION WWTP	E FORK CADRON CR,CADRON CR,ARKANSAS R	002	11110205	Faulkner	14
AR0050598	HUNTINGTON ESTATES SUBDIVISION (- ARKANSAS WATER & WASTEWATER MANAGEMENT CORP)	KANEY CR,E FRK CADRON CR,CADRON CR,ARKANSAS R	002	11110205	Faulkner	15
AR0051403	ROSE BUD HIGH SCHOOL	EAST FORK CADRON CR, CADRON CR, ARKANSAS R	005	11110205	White	16
AR0051756	SOUTHWESTERN ENERGY COMPANY SWN DAMASCUS CAMP	TRB,BATESVILLE CR,COVE CR,CADRON CR, AR R	013	11110205	Columbia	17

SEGMENT 3E FOURCHE LAFAVE RIVER

Segment 3E, located in west central Arkansas, includes portions of Perry, Yell, Scott Counties, Saline, and Polk Counties. This segment contains a 148-mile reach of the Fourche LaFave River and its tributaries; Big Cedar Creek, Mill Creek, Gafford Creek, and South Fourche LaFave River. Major impoundments in this segment are Nimrod Lake (formed by a dam on Fourche LaFave River) and Harris Brake Lake.

Summary of Water Quality Conditions

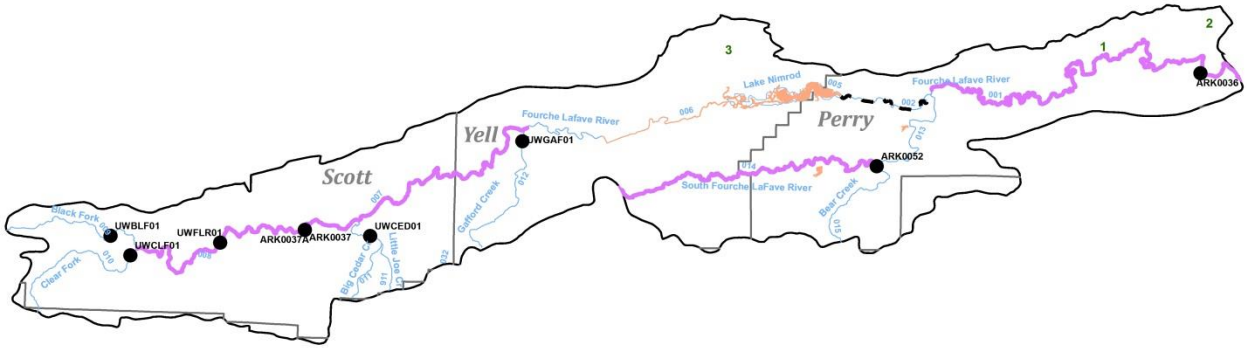
Waters within this segment have been designated as suitable for the propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supplies. These waterbodies are primarily used for fishing and hunting activities with primary contact recreation activities occurring in the warmer months.

One reach of the Fourche LaFave River was assessed as not attaining the fisheries designated use due to excessive turbidity. Previous data have shown occasional periods of elevated turbidity values associated with agriculture and silviculture activities. However, the construction and maintenance of an abundance of unpaved roads for timber access and general transportation is likely to be another contributing factor. A TMDL was completed in 2007.

Other reaches were listed because of low dissolved oxygen concentrations. These streams experience very low flow conditions reducing them to a series of large pools. With little to no water exchange in these pools and high ambient air temperatures during the critical season, dissolved oxygen concentrations routinely fall below the standard.

A statewide sampling effort has determined that some fishes from Lake Nimrod and the Fourche LaFave River below Nimrod Dam have elevated concentrations of mercury. A TMDL addressing this problem was completed in October 2002.

Figure A-23: Planning Segment 3E



(Segment 3E)

0 3 6 12 18 24 Miles

2014 Active NPDES Permitted Facilities

● Monitoring Stations

Draf t2014 303(d) list Category 5 Lakes

Draft 2014 303(d) list Category 4a Lakes

Draft 2014 303(d) list Category 4a Streams

Draft 2014 303(d) list Category 5 Streams

Table A-31: Planning Section 3E Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-3E																										
Fourche LaFave	11110206	-001	44.4	ARK0036	M	S	S	S	S	S	S	UN				DO				5				FISH CONSUMPTION	192.6	8.7
Fourche LaFave	11110206	-002	8.7		E	N	S	S	S	S	S	UN				Hg				4a				FISHERIES	181.1	20.2
Fourche LaFave	11110206	-006	21.5		E	S	S	S	S	S	S									1				PRIMARY CONTACT	201.3	0
Fourche LaFave	11110206	-007	20.2	ARK0037+	M	S	N	S	S	S	S	UN				DO				5				SECONDARY CONTACT	201.3	0
Fourche LaFave	11110206	-008	25.7	UWFLR01	M	S	S	S	S	S	S	UN	UN			DO	Tm			5	5			DRINKING SUPPLY	201.3	0
Black Fork	11110206	-009	14.3	UWBLF01	M	S	S	S	S	S	S									1				AGRI & INDUSTRY	201.3	0
Clear Fork	11110206	-010	12.0	UWCLF01	M	S	S	S	S	S	S									1						
Cedar Creek	11110206	-011	9.6	UWCED01	M	S	S	S	S	S	S									1						
Gafford Creek	11110206	-012	8.5	UWGAF01	M	S	S	S	S	S	S									1						
S.FourcheLaFave	11110206	-013	10.3		E	S	S	S	S	S	S									1						
S.FourcheLaFave	11110206	-014	26.1	ARK0052	M	S	S	S	S	S	S	UN				Tm				5						
Bear Creek	11110206	-015	10.2		U															3						
TOTAL MILES	211.5																									
MILES UNASSESSED	10.2																									
MILES EVALUATED	40.5																									
MILES MONITORED	160.8																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
ARK0036	Fourche La Fave River at Highway 113 south of Bigelow		2	R
ARK0037A	Fourche La Fave River near Harvey		2	A
ARK0037	Fourche La Fave River near Gravelly	7261500	1	A
UWFLR01	Fourche La Fave River at county road near Bluffton		1	R
UWBLF01	Black Fork at county road 3.5 miles above Clear Fork		2	R
UWCLF01	Clear Fork at county road above Black fork, 8 miles west of Boyles		2	R
UWCED01	Big Cedar Creek at Highway 28, 3 miles east of Cedar Creek		2	R
UWGAF01	Gafford Creek at Highway 28 near Bluffton		2	R
ARK0052	South Fourche La Fave River above Hollis	7262985	1	A

Table A-32: Active NPDES permits for Planning Segment 3E

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0020125	PERRYVILLE, CITY OF-STP	FOURCHE LAFAVE R	001	11110206	Perry	1
AR0046957	ANNE WATSON ELEMENTARY SCHOOL	TRIB,MILL CR,FOURCHE LAFAVE R,AR R	001	11110206	Perry	2
AR0049344	PLAINVIEW, CITY OF	SALLY SPRING BRANCH,NIMROD LK,FOURCHE LA FAVE R	004	11110206	Yell	3

SEGMENT 3F ARKANSAS RIVER

Segment 3F is located in central Arkansas and covers parts of Faulkner, Conway, Perry, Pope, and Van Buren Counties. This segment contains the Arkansas River and its tributaries; East and West Forks of Point Remove Creek, Overcup Creek, Gum Log Creek, Palarm Creek, and Galla Creek.

Summary of Water Quality Conditions

Waters within this segment have been designated as suitable for the propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supplies. The Arkansas River and lakes (Overcup, Conway, Brewer) in this segment offer excellent fishing and boating opportunities.

Stone Dam Creek is impaired by a municipal point source discharge. Chronic ammonia toxicity and elevated nitrate levels exceed the drinking water maximum contaminant level. A TMDL to address these issues was completed in 2003.

Whig Creek continues to be impaired by municipal and industrial point source discharges. Elevated levels of nutrients and copper are the cause of the impairment. TMDLs were completed for this waterbody in 2000 (nitrite) and 2003 (copper).

White Oak Creek remains listed for high silt and turbidity levels. Nonpoint sources appear to be the major cause. A TMDL addressing this issue was completed in 2006.

Figure A-24: Planning Segment 3F

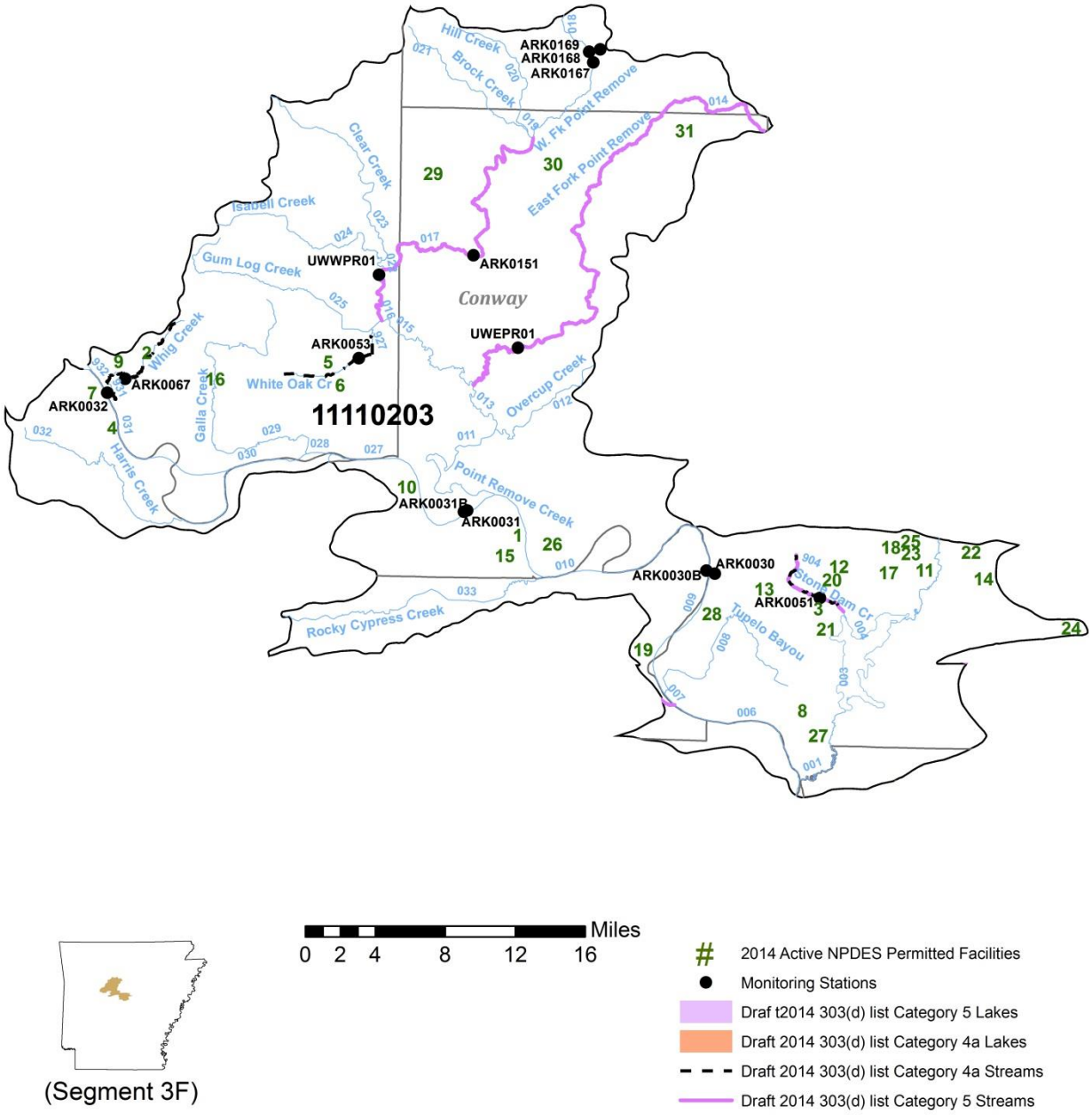


Table A-33: Planning Section 3F Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-3F																										
Palarm Creek	11110203	-001	6.4		U															3				FISH CONSUMPTION	191.9	0
Stone Dam Creek	11110203	-904	3.0	ARK0051	M	S	N	S	S	N	S	MP	MP	MP		AM	NO3	SO4		4a	4a	5		FISHERIES	168.9	23
Palarm Creek	11110203	-005	6.6	ARK0136	M	S	S	S	S	S	S									1				PRIMARY CONTACT	191.9	0
Arkansas River	11110203	-006	10.9		E	S	S	S	S	S	S									1				SECONDARY CONTACT	191.9	0
Arkansas River	11110203	-007	1.0		E	S	S	S	S	S	S									1				DRINKING SUPPLY	178.9	13
Tupelo Bayou	11110203	-008	13.0		U															3				AGRI & INDUSTRY	191.9	0
Arkansas River	11110203	-009	10.6	ARK0030	M	S	S	S	S	S	S									1						
Arkansas River	11110203	-010	16.4		E	S	S	S	S	S	S									1						
Point Remove	11110203	-011	13.1		U															3						
Point Remove	11110203	-013	3.5		U															3						
Overcup Creek	11110203	-012	7.5		U															3						
East Pt.Remove	11110203	-014	20.9	UWEPR01	M	S	S	S	S	S	S	AG				Tb				5						
West Pt.Remove	11110203	-015	8.2		U															3						
West Pt.Remove	11110203	-016	3.3	UWWPR01	M	S	S	S	S	S	S	AG				Tb				5						
West Pt.Remove	11110203	-017	14.4	ARK0151	M	S	S	S	S	S	S	AG				Tb				5						
West Pt.Remove	11110203	-019	4.1		E	S	S	S	S	S	S									1						
Beardy Branch	11110203	-018	12.9		E	S	S	S	S	S	S									1						
Hill Creek	11110203	-020	7.3		E	S	S	S	S	S	S									1						
Brock Creek	11110203	-021	7.4		E	S	S	S	S	S	S									1						
Clear Creek	11110203	-022	0.7		E	S	S	S	S	S	S									1						
Clear Creek	11110203	-023	11.7		E	S	S	S	S	S	S									1						
Isabel Creek	11110203	-024	10.5		E	S	S	S	S	S	S									1						
Gum Log Creek	11110203	-025	15.8		U															3						
Arkansas River	11110203	-026	2.6	ARK0031	M	S	S	S	S	S	S									1						
Arkansas River	11110203	-027	9.9		E	S	S	S	S	S	S									1						
Arkansas River	11110203	-028	1.2		E	S	S	S	S	S	S									1						
Galla Creek	11110203	-029	20.1		U															3						
Arkansas River	11110203	-030	5.1		E	S	S	S	S	S	S									1						
Arkansas River	11110203	-932	2.0	special study	M	S	S	S	S	S	S									1						
Arkansas River	11110203	-031	9.4	ARK0032	M	S	S	S	S	S	S									1						
Harris Creek	11110203	-032	15.6		U															3						
Rocky Cypress	11110203	-033	15.7		U															3						
Whig Creek	11110203	-931	10.0	ARK0067	M	S	N	S	S	N	S	MP	MP			NO3	Cu			4a	4a					
White Oak Creek	11110203	-927	10.0	ARK0053	M	S	N	S	S	S	S	UN				Tb				4a						
TOTAL MILES	310.8																									
MILES UNASSESSED	118.9																									
MILES EVALUATED	99.1																									
MILES MONITORED	92.8																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
ARK0051	Stone Dam Creek below Conway		1	A
ARK0136	Palarm Creek at Highway 36 east of Conway		2	R
ARK0030B	Arkansas River at Lock and Dam No. 8	7261260	1	A
UWEPR01	East Point Remove Creek at Highway 95 near Hickory Hill		1	R
UWWPR01	West Point Remove Creek at Highway 247 near Atkins		2	R
ARK0151	West Point Remove Creek at Highway 124 near Macedonia		1	R
ARK0031B	Arkansas River at Lock and Dam No. 9	7260660	1	A
ARK0032	Arkansas River near Dardanelle	7258000	1	A
ARK0067	Whig Creek below Russellville		1	A
ARK0053	White Oak Creek near Atkins		1	A

Table A-34: Active NPDES permits for Planning Segment 3F

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0001830	GREEN BAY PACKAGING, INC. - ARKANSAS KRAFT DIVISION	TRIB,ARKANSAS R	010	11110203	Conway	1
AR0021768	RUSSELLVILLE WATER & SEWER SYSTEM-CITY CORPORATION	WHIG CR,ARKANSAS R	931	11110203	Pope	2
AR0033359	CONWAY, CITY OF-STONE DAM CREEK WWTP	TRIB,STONE DAM CR,LK CONWAY,PARLARM CR,ARKANSAS R	904	11110203	Faulkner	3
AR0033421	DARDANELLE, CITY OF	ARKANSAS R	031	11110203	Yell	4
AR0034665	ATKINS, CITY OF - NORTH WWTF	ARKANSAS R	927	11110203	Pope	5
AR0034673	ATKINS, CITY OF-SOUTH WWTP	HORSE PEN CR,GALLA CR,ARKANSAS R	029	11110203	Pope	6
AR0036714	TYSON FOODS, INC.-DARDANELLE	ARKANSAS R	031	11110203	Yell	7
AR0037206	MAYFLOWER,CITY OF	ARKANSAS R	006	11110203	Faulkner	8
AR0044474	FREEMAN BROTHERS, INC. D/B/A BIBLER BROTHERS LUMBER COMPANY	TRIB,WHIG CR,ARKANSAS R	931	11110203	Pope	9
AR0044717	CAMP MITCHELL CONFERENCE CTR	UNHNAMED TRIB,FLAT CYPRESS CR,CYPRESS CR, ARANSAS R	033	11110203	Conway	10
AR0044997	BHT INVESTMENT COMPANY, INC.	TRIB,WARREN CR,PALARM CR,LK CONWAY, ARKANSAS R	005	11110203	Faulkner	11
AR0045071	MAPCO EXPRESS #3059	TRIB,STONE DAM CR,LK CONWAY,PALARM CR,ARKANSAS R	904	11110203	Faulkner	12
AR0047279	CONWAY, CITY OF-TUCKER CREEK WWTP	ARKANSAS R	009	11110203	Faulkner	13
AR0047520	ROGERS GROUP, INC. - BERYL QUARRY	TRIB,PALARM CR,LTL PALARM CR,PALARM CR, LK CONWAY	005	11110203	Faulkner	14
AR0047643	OPPELO, CITY OF - OPPELO MUNICIPAL SEWAGE TREATMENT PLANT	TRIB,CYPRESS CR,ARKANSAS R	010	11110203	Conway	15
AR0048011	POTTSVILLE, CITY OF	TRIB,GALLA CR,ARKANSAS R	029	11110203	Pope	16
AR0048879	FLUSHING MEADOWS WATER TREATMENT, INC.	TRIB,GOLD CR,LK CONWAY,PALARM CR,AR	004	11110203	Faulkner	17
AR0049832	JESSE FERREL RENTAL DEVELOP.	TRIB,LTL CR,LK CONWAY,PALARM CR, ARKANSAS R	004	11110203	Faulkner	18
AR0049999	BIGELOW WASTEWATER SYSTEM	TRIB,TAYLOR CR,ARKANSAS R	009	11110203	Perry	19

Table A-34: Active NPDES permits for Planning Segment 3F

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0050474	CORESLAB STRUCTURES (ARK), INC.	TRIB,STONE DAM CR,LK CONWAY,PALARM CR, ARKANSAS R	904	11110203	Faulkner	20
AR0050571	FAULKNER COUNTY PUBLIC FACILITY BOARD - D/B/A PRESTON COMMUNITY WW UTILITY	LK CONWAY ARKANSAS R	004	11110203	Faulkner	21
AR0050717	ARKANSAS WATER AND WASTEWAER MANAGEMENT CORP. - EAGLEBROOK SUBDIVISION	TRIB,LTL PARLARM CR,PARLARM CR,LK CONWAY, ARKANSAS R	005	11110205	Faulkner	22
AR0050792	OAK TREE SUBDIVISION WWTP	BENTLEY CR,PALARM CR,LK CONWAY,PALARM CR, ARKANSAS R	005	11110203	Faulkner	23
AR0050903	FAULKNER COUNTY POID. - SEVEN POINT LAKE SUBDIVISION	TRIB,LT CYPRESS CR,PALARM CR,ARKANSAS R	005	11110203	Faulkner	24
AR0051152	GENESIS WATER TREATMENT, INC.	PALARM CR, ARKANSAS R	005	11110203	Faulkner	25
AR0051357	ENVIRONMENTAL SOLUTIONS & SERVICES, INC.	ARKANSAS R	010	11110203	Conway	26
AR0051764	CONSTRUCTION WASTE MANAGEMENT, INC. CLASS IV LANDFILL	UNNAMED TRIB, PALARM CR, ARKANSAS R	001	11110203	Faulkner	27
AR0051951	CONWAY-TUPELO BAYOU WWTP	ARKANSAS R	001	11110203	Faulkner	28
AR0052141	SEECO, INC. - CAMPBELL THOMAS SE1	POND,CR,CEDAR CR,HACKERS CR,W FRK PT REMOVE CR	003	11110203	Conway	29
AR0052175	SEECO, INC.-CLEVELAND WATER REUSE/RECYCLE FACILITY	TRIB,SUCKER CR,E FORK PT REMOVE CR,ARKANSAS R	014	11110203	Conway	30
AR0052221	SEECO, INC. - J AND R FARMS SE1	POND,TRIB,E FRK PT REMOVE CR,PT REMOVE CR,ARKANSAS R	014	11110203	Van Buren	31

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SEGMENT 3G PETIT JEAN RIVER AND TRIBUTARIES

Segment 3G, located in west central Arkansas, includes portions of Yell, Conway, Perry, Logan, Sebastian, and Scott Counties. This segment includes the entire length of the Petit Jean River and its tributary streams. Major tributaries include Dutch Creek, Spring Creek, Chickalah Creek and Rose Creek. Blue Mountain Lake, formed by damming the Petit Jean River, is the largest impoundment in the segment.

Summary of Water Quality Conditions

Waters within this segment have been designated as suitable for the propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supply. Primary land use within this segment is agriculture activities (primarily pasture land) and timber harvest.

The waterbodies in this segment are primarily used for hunting, boating and fishing activities, and some primary contact recreation activities during the warmer months.

Dutch Creek and the Petit Jean River are both listed for exceeding the turbidity criterion. Exceedances occur during storm events indicating that the primary source is surface erosion.

Figure A-25: Planning Segment 3G

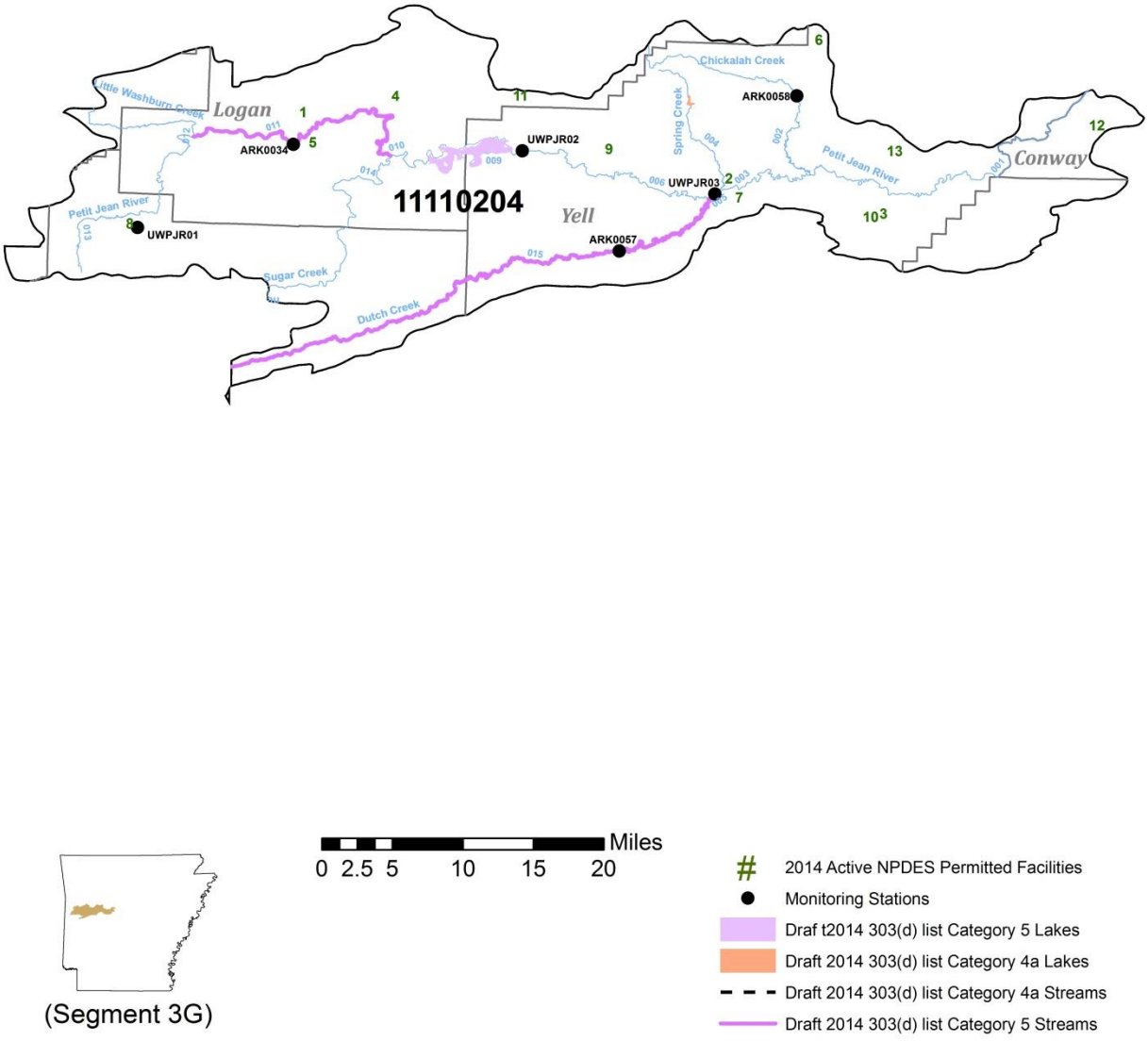

Table A-35: Planning Section 3G Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-3G																										
Petit Jean R.	11110204	-001	30.1		U															3				FISH CONSUMPTION	116.9	0
Petit Jean R.	11110204	-003	8.7		E	S	S	S	S	S	S									1				FISHERIES	47.1	69.8
Petit Jean R.	11110204	-005	1.3	UWPJR03	M	S	S	S	S	S	S									1				PRIMARY CONTACT	116.9	0
Petit Jean R.	11110204	-006	17.9	UWPJR02	M	S	S	S	S	S	S									1				SECONDARY CONTACT	116.9	0
Petit Jean R.	11110204	-007	6.0		U															3				DRINKING SUPPLY	116.9	0
Petit Jean R.	11110204	-010	4.1		U															3				AGRI & INDUSTRY	116.9	0
Petit Jean R.	11110204	-011	21.6	ARK0034	M	S	N	S	S	S	S	SE				Tb				5						
Petit Jean R.	11110204	-013	19.2	UWPJR01	M	S	S	S	S	S	S									1						
Chickalah Cr.	11110204	-002	19.3	ARK0058	M	S	N	S	S	S	S									1						
Spring Creek	11110204	-004	18.6		U															3						
L. Washburn Cr.	11110204	-012	10.0		U															3						
Sugar Creek	11110204	-014	12.8		U															3						
Dutch Creek	11110204	-015	28.9	ARK0057	M	S	N	S	S	S	S	SE				Tb				5						
TOTAL MILES	198.5																									
MILES UNASSESSED	81.6																									
MILES EVALUATED	8.7																									
MILES MONITORED	108.2																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
UWPJR03	Petit Jean River at Highway 10 at Danville		2	R
UWPJR02	Petit Jean River at Highway 309 near Waveland		2	R
ARK0034	Petit Jean River south of Booneville	7258500	1	A
UWPJR01	Petit Jean River at county road off Highway 71 at Elm Park		2	R
ARK0058	Chickalah Creek at Chickalah	7260620	1	A
ARK0057	Dutch Creek below Shark	7260020	1	A

Table A-36: Active NPDES permits for Planning Segment 3G

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0021571	BOONEVILLE, CITY OF	TRIB,BOONEVILLE CR,PETIT JEAN R,ARKANSAS R	011	11110204	Logan	1
AR0022241	DANVILLE, CITY OF-WWTF	PETIT JEAN R	003	11110204	Yell	2
AR0035688	OLA, CITY OF (SEWER LAGOON)	TRIB, KEELAND CR,PETIT JEAN R,ARKANSAS R	001	11110204	Yell	3
AR0037397	MAGAZINE, CITY OF	TRIB,REVILLEE CR,PETIT JEAN R, ARKANSAS R	011	11110204	Logan	4
AR0037541	BOONEVILLE HUMAN DEVELOPMENT CENTER	TRIB,PETIT JEAN R,ARKANSAS R	011	11110204	Logan	5
AR0037966	MT. NEBO STATE PARK	TRIB,LTL CHICKALAH CR,CHICKALAH CR,PETIT JEAN R,AR	002	11110204	Yell	6
AR0038768	WAYNE FARMS, LLC	TRIB, PETIT JEAN R,ARKANSAS R	003	11110204	Yell	7
AR0045799	AR HWY & TRANSPORTATION DEPT DIST 4 - WALDRON REST AREA & COMFORT STATION	TRIB,PETIT JEAN R,ARKANSAS R	013	11110204	Scott	8
AR0046256	HAVANA, CITY OF	PETIT JEAN R,ARKANSAS R	006	11110204	Yell	9
AR0048640	DELTIC TIMBER CORPORATION	KEELAND CR,PETIT JEAN R,ARKANSAS R	001	11110204	Yell	10
AR0048852	AR PARKS & TOURISM-MOUNT MAGAZINE STATE PARK	W BASS CR,SMALLW00D CR,ROCK CR,PETIT JEAN R, ARK R	006	11110204	Logan	11
AR0049972	ARK PARKS PETIT JEAN	DIT,CEDAR CR,PETIT JEAN R,AR R	001	11110204	Conway	12
AR0051195	CUSTOM WOOD RECYCLING, INC.	TRIB,PETIT JEAN R, AR R	001	11110204	Yell	13

SEGMENT 3H ARKANSAS RIVER AND TRIBUTARIES: OKLAHOMA STATE LINE TO RIVER MILE 210

Segment 3H, located in the lower portion of the northwest quarter of Arkansas, includes most of Crawford, Franklin, and Johnson Counties as well as parts of Sebastian, Logan, Pope, Van Buren, Searcy, Newton, Madison, Yell, and Washington Counties. This segment contains a reach of the Arkansas River from the Oklahoma state line to the lower end of Lake Dardanelle. Major tributaries in this reach include Illinois Bayou, Big Piney Creek, Mulberry River, Lee Creek, Six Mile Creek, and Vache Grasse Creek.

Summary of Water Quality Conditions

Waters within this segment are designated as suitable for the propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supply.

Fishing, hunting, and boating activities are common on all of the waterbodies in this segment throughout the year. The tributary streams are utilized for kayaking and canoeing activities as well as primary contact recreation.

Short Mountain Creek is not maintaining the fisheries designated use because of toxic copper concentrations. The source is thought to be a municipal point source discharge; however there are industrial facilities in the watershed just upstream of the sample location.

One reach of the Mulberry River, an ecoregion reference stream, was listed because of low pH values. The statewide pH standard of 6 to 9 standard units does not take into account natural variations because of geology or land use. In addition, there were only three exceedances of the standard, the lowest of which was a 5.49 su reading. During the development of a Total Maximum Daily Load designed to address this issue, aquatic life data were collected. These data indicate no impairment to the aquatic communities in the stream. Thus, the fisheries designated use was evaluated as fully supporting, but the stream is still listed for not supporting the pH water quality standard.

Figure A-26: Planning Segment 3H

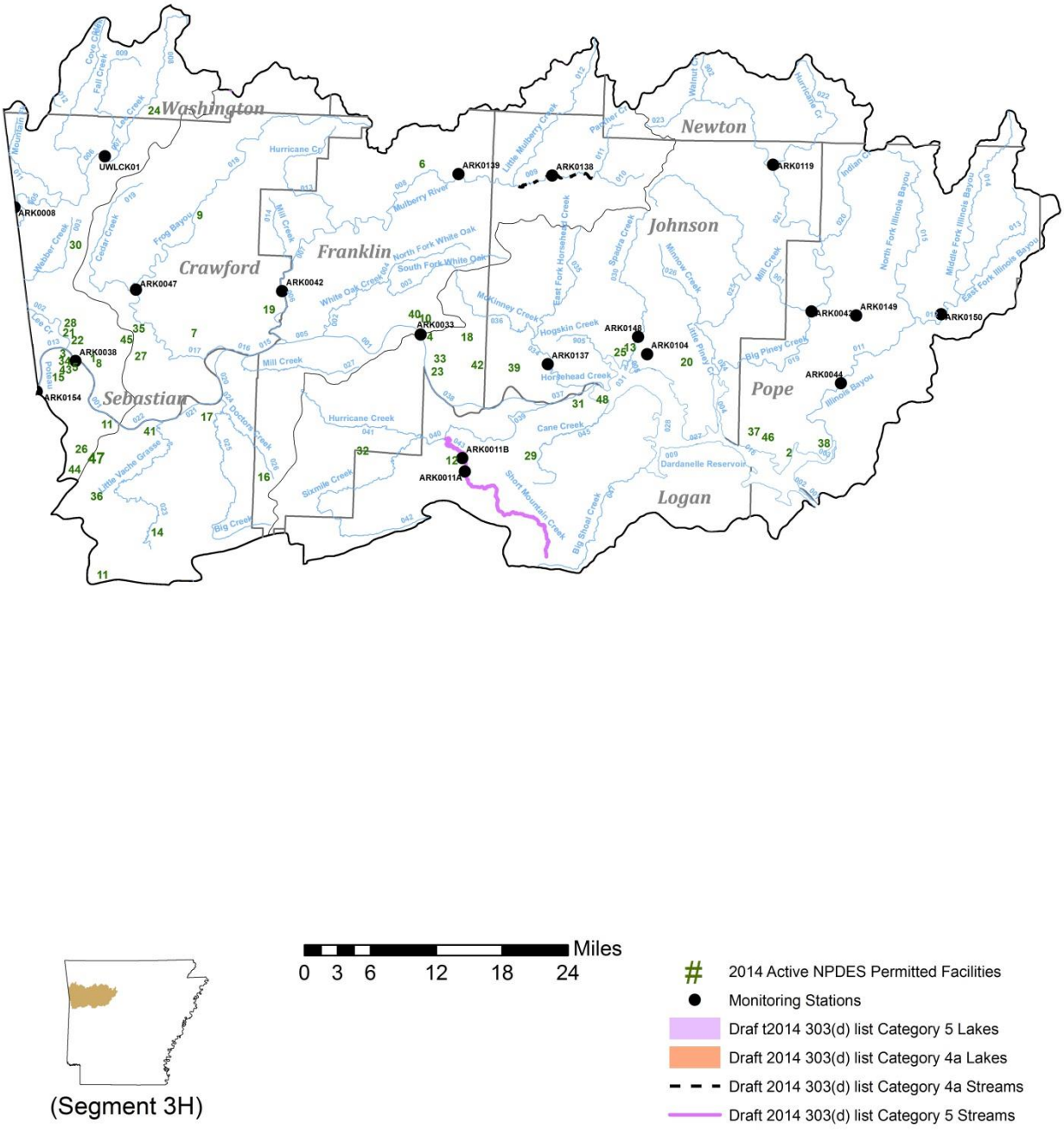

Table A-37: Planning Section 3H Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use						SOURCE				CAUSE				STATUS				USE	SUPPORT	NON-SUPPORT
						FC	FSH	PC	SC	DW	AI	1	2	3	4	1	2	3	4	1	2	3	4			
SEG-3H																										
Arkansas River	11110202	-001	2.8		E	S	S	S	S	S	S									1				FISH CONSUMPTION	626.2	0
Illinois Bayou	11110202	-011	21.0	ARK0044	M	S	S	S	S	S	S									1				FISHERIES	611.3	14.9
Illinois Bayou	11110202	-012	8.1	ARK0150	M	S	S	S	S	S	S									1				PRIMARY CONTACT	626.2	0
Illinois Bayou	11110202	-013	14.1		E	S	S	S	S	S	S									1				SECONDARY CONTACT	626.2	0
M.Fk.Ill.Bayou.	11110202	-014	19.8	ARK0149	M	S	S	S	S	S	S									1				DRINKING SUPPLY	626.2	0
N.Fk.Ill.Bayou.	11110202	-015	24.0		E	S	S	S	S	S	S									1				AGRI & INDUSTRY	626.2	0
Piney Creek	11110202	-018	5.8	ARK0105	M	S	S	S	S	S	S									1						
Piney Creek	11110202	-019	26.3	ARK0043	M	S	S	S	S	S	S									1						
Mill Creek	11110202	-901	8.6	ARK0110	M	S	S	S	S	S	S									1						
Indian Creek	11110202	-020	12.2	ARK0114	M	S	S	S	S	S	S									1						
Piney Creek	11110202	-021	11.9		E	S	S	S	S	S	S									1						
Hurricane Creek	11110202	-022	15.4	ARK0119	M	S	S	S	S	S	S									1						
Piney Creek	11110202	-023	19.0	ARK0124	M	S	S	S	S	S	S									1						
Walnut Creek	11110202	-902	5.1	ARK0125	M	S	S	S	S	S	S									1						
Little Piney	11110202	-024	6.2	ARK0104	M	S	S	S	S	S	S									1						
Minnow Creek	11110202	-026	9.5	ARK0129	M	S	S	S	S	S	S									1						
Little Piney	11110202	-025	27.2	ARK0126	M	S	S	S	S	S	S									1						
Spadra Creek	11110202	-030	15.1	ARK0148	M	S	S	S	S	S	S									1						
Arkansas River	11110202	-033	2.5		E	S	S	S	S	S	S									1						
Horsehead Cr.	11110202	-034	7.9		E	S	S	S	S	S	S									1						
Horsehead Cr.	11110202	-035	11.2	ARK0137	M	S	S	S	S	S	S									1						
McKinney Cr.	11110202	-036	11.8		E	S	S	S	S	S	S									1						
Arkansas River	11110202	-037	3.2		E	S	S	S	S	S	S									1						
Arkansas River	11110202	-038	16.2		E	S	S	S	S	S	S									1						
Sixmile Creek	11110202	-039	14.6		U															3						
Sixmile Creek	11110202	-040	3.0		U															3						
Hurricane Creek	11110202	-041	11.6		U															3						
Sixmile Creek	11110202	-042	10.7		U															3						
Short Mountain	11110202	-043	14.9	ARK0011B	M	S	N	S	S	S	S	MP				Cu				5						
Cane Creek	11110202	-045	12.3		U															3						
Big Shoal Cr.	11110202	-047	15.4		U															3						
Arkansas River	11110201	-001	12.4	ARK0033	M	S	S	S	S	S	S									1						
White Oak	11110201	-002	9.2		U															3						
S. Fork White Oak Cr.	11110201	-003	13.9		U															3						
N. Fork White Oak Cr.	11110201	-004	8.8		U															3						
Arkansas River	11110201	-005	4.5		U															3						
Mulberry River	11110201	-006	10.4	ARK0042	M	S	S	S	S	S	S									1						
Mulberry River	11110201	-007	6.4		E	S	S	S	S	S	S									1						
Mulberry River	11110201	-008	27.2	ARK0139	M	S	S	S	S	S	S									1						
Mulberry River	11110201	-009	9.1	ARK0138	M	S	S	S	S	S	S	UN				pH				4a						
Mulberry River	11110201	-010	5.1		E	S	S	S	S	S	S									1						
Panther Creek	11110201	-011	7.4		E	S	S	S	S	S	S									1						
Little Mulberry	11110201	-012	17.4		M	S	S	S	S	S	S									1						
Hurricane Creek	11110201	-013	14.8		E	S	S	S	S	S	S									1						
Mill Creek	11110201	-014	7.0		E	S	S	S	S	S	S									1						
Arkansas River	11110201	-015	3.9		E	S	S	S	S	S	S									1						
Arkansas River	11110201	-016	2.9		E	S	S	S	S	S	S									1						
Frog Bayou	11110201	-017	15.7		E	S	S	S	S	S	S									1						
Frog Bayou	11110201	-018	20.4	ARK0047	M	S	S	S	S	S	S									1						
Cedar Creek	11110201	-019	17.0		E	S	S	S	S	S	S									1						
Arkansas River	11110201	-020	3.5		E	S	S	S	S	S	S									1						
Arkansas River	11110201	-021	7.0		E	S	S	S	S	S	S									1						
Arkansas River	11110201	-022	3.0		E	S	S	S	S	S	S									1						
L. Vache Grass	11110201	-023	20.5		U															3						
Doctors Creek	11110201	-024	1.5		U															3						
Big Creek	11110201	-025	20.9		U															3						
Doctors Creek	11110201	-026	9.1		U															3						
Mill Creek	11110201	-027	11.9		U															3						

Table A-37 cont.: Planning Section 3H Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	FC	AL	PC	SC	DW	AI	1	2	3	4	1	2	3	4	1	2	3	4	USE	SUPPORT	NOT SUPPORT
Arkansas River	11110104	-001	11.0	ARK0038	M	S	S	S	S	S	S									1						
Arkansas River	11110104	-013	17.0	ARK0146	M	S	S	S	S	S	S									1						
Lee Creek	11110104	-002	10.5	ARK0008	M	S	S	S	S	S	S									1						
Lee Creek	11110104	-005	11.4		E	S	S	S	S	S	S									1						
Lee Creek	11110104	-006	4.4	UWLCK01	M	S	S	S	S	S	S									1						
Lee Creek	11110104	-007	1.8		E	S	S	S	S	S	S									1						
Lee Creek	11110104	-008	12.3		E	S	S	S	S	S	S									1						
Fall Creek	11110104	-009	15.2		E	S	S	S	S	S	S									1						
Cove Creek	11110104	-010	13.3		E	S	S	S	S	S	S									1						
Mt. Fork Creek	11110104	-011	18.9		E	S	S	S	S	S	S									1						
TOTAL MILES	794.1																									
MILES UNASSESSED	167.9																									
MILES EVALUATED	261.0																									
MILES MONITORED	365.2																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
ARK0044	Illinois Bayou northwest of Dover	7257690	1	A
ARK0149	North Fork Illinois Bayou on county road north of Scottsville		2	R
ARK0150	Illinois Bayou at Highway 27 north of Hector		2	R
ARK0105	Big Piney Creek at Highway 359, 6 miles east of Lamar		2	S
ARK0043	Big Piney Creek at Highway 164	7257006	1	A
ARK0110	Mill Creek at county road 0.4 miles south of Highway 164 near Twin Bridges		2	S
ARK0114	Indian Creek at FAS road 1808 near Treat		2	S
ARK0119	Hurricane Creek at FAS road 1003 near Ft. Douglas		2	S
ARK0124	Big Piney Creek at FAS road 1458 south of Edwards Junction		2	S
ARK0125	Walnut Creek as FAS road 1217 south of Edwards Junction		2	S
ARK0104	Little Piney Creek at Highway 359 east of Lamar		2	R
ARK0129	Minnow Creek at county road 50 bridge, south of Hagarville		2	S
ARK0109	Unnamed tributary at Highway 164 bridge		2	S
ARK0126	Little Piney Creek at Highway 123 bridge near Hagarville		2	S
ARK0148	Spadra Creek at US 64 near Clarksville		2	R
ARK0137	Horsehead Creek at Highway 64 east of Hartman		2	R
ARK0011B	Short Mountain Creek below Paris		1	A
ARK0033	Arkansas River at Ozark Lock and Dam	7252406	1	A
ARK0042	Mulberry River at I-40	7252030	1	A
ARK0138	Mulberry River at Highway 103 west of Oark		2	R
ARK0139	Mulberry River 4.3 miles east of Highway 23 near Cass		2	R
ARK0047	Frog Bayou at Highway 282		2	A
ARK0038	Arkansas River near Fort Smith, AR.	7250500	1	A
ARK0146	Arkansas River below Mayo Lock and Dam		1	A
ARK0008	Lee Creek at Highway 59 near Natural Dam		2	R
UWLCK01	Lee Creek at Highway 220, 10 miles north of Cedarville		2	R

Table A-38: Active NPDES permits for Planning Segment 3H

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0001341	APAC-CENTRAL, INC. - D/B/A VAN BUREN SAND	ARKANSAS R	001	11110104	Crawford	1
AR0001392	ENTERGY ARKANSAS-RUSSELLVILLE	LK DARDANELLE,AR R	004	11110202	Pope	2
AR0001511	GERBER PRODUCTS COMPANY	ARKANSAS R	001	11110104	Sebastian	3
AR0001759	AECC-T.B. FITZHUGH GENERATING	TRIB,ARKANSAS R	038	11110202	Franklin	4
AR0001791	DIXIE CONSUMER PRODUCTS, LLC	UNNAMED DIT,6TH ST DIT,ARKANSAS R	001	11110104	Sebastian	5
AR0020648	USDA/US FOREST SERVICE-CASS CIVILIAN CONSERVATION CENTER	MULBERRY R,ARKANSAS R	008	11110201	Franklin	6
AR0021466	ALMA, CITY OF	ARKANSAS R	016	11110201	Crawford	7
AR0021482	VAN BUREN, CITY OF-MAIN PLANT	ARKANSAS R	001	11110104	Crawford	8
AR0021512	MOUNTAINBURG WW TREATMENT PLNT	TRIB,HWY 282 DITCH,FROG BU,AR R	018	11110201	Crawford	9
AR0021563	OZARK, CITY OF-STP	ARKANSAS R	001	11110201	Franklin	10
AR0021750	FORT SMITH, CITY OF-MASSARD	ARKANSAS R	001	11110104	Sebastian	11
AR0021857	PARIS, CITY OF-WWTP	SHORT MOUNTAIN CR,6-MILE CR	043	11110202	Logan	12
AR0022187	CLARKSVILLE CITY OF	LK DARDANELLE (1) & SPADRE CR (2)	006	11110202	Johnson	13
AR0022454	GREENWOOD, CITY OF	TRIB,VACHE GRASSE CR,ARKANSAS R	023	11110201	Sebastian	14
AR0033278	FORT SMITH, CITY OF - "P" STREET WWTP	ARKANSAS R	013	11110104	Sebastian	15
AR0033791	CHARLESTON, CITY OF	DOCTORS CR,BIG CR,AR R	026	11110201	Franklin	16
AR0034070	LAVACA, CITY OF - WWTP	ARKANSAS R	021	11110201	Sebastian	17
AR0034592	WIEDERKEHR WINE CELLARS, INC.	WATERSHED LK,DIRTY CR,HORSEHEAD CR	034	11110202	Franklin	18
AR0034932	MULBERRY, CITY OF	ARKANSAS R	015	11110201	Crawford	19
AR0035491	LAMAR, CITY OF	TRIB,CABIN CR,ARKANSAS R	008	11110202	Johnson	20
AR0036552	BEKAERT CORPORATION	ARKANSAS R	013	11110104	Crawford	21

Table A-38: Active NPDES permits for Planning Segment 3H

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0037567	VAN BUREN - LEE CREEK INDUSTRIAL PARK	ARKANSAS R	013	11110104	Crawford	22
AR0037851	SGL CARBON, LLC	TRIB,WEST CR,ARKANSAS R	038	11110201	Franklin	23
AR0037940	ARKANSAS DEPT OF PARKS & TOURISM -DEVILS DEN STATE PARK	TRIB,LEE CR,ARKANSAS R	009	11110104	Washington	24
AR0039268	TYSON FOODS, INC - CLARKSVILLE	BLUE CR,SPADRA CR, AR R	030	11110202	Johnson	25
AR0039730	GERDAU MACSTEEL	TRIB,MASSARD CR,ARKANSAS R	001	11110104	Sebastian	26
AR0040720	VAN BUREN PUBLIC SCHOOLS - TATE ELEMENTARY SCHOOL	TRIB,MAYS BRANCH,ARKANSAS R	021	11110201	Crawford	27
AR0040967	VAN BUREN, CITY OF-NORTH WWTP	LEE CR,ARKANSAS R	002	11110104	Crawford	28
AR0040991	SUBIACO,CITY OF	TRIB,CANE CR,ARKANSAS R	045	11110202	Logan	29
AR0041289	CEDARVILLE PUBLIC SCHOOLS	TRIB,LTL WEBER CR,WEBBER CR,ARKANSAS R	003	11110104	Crawford	30
AR0042455	TYSON FOODS, INC. - D/B/A RIVER VALLEY ANIMAL FOODS	ARKANSAS R	033	11110202	Logan	31
AR0044636	COUNTY LINE SCHOOL DISTRICT	N FRK/LTL CR,LTL CR,6-MILE CR,ARKANSAS R	042	11110202	Franklin	32
AR0044725	ALTUS, CITY OF	ARKANSAS R	038	11110202	Franklin	33
AR0044938	EMI-FORT SMITH WWTF	ARKANSAS R	001	11110104	Sebastian	34
AR0045063	APAC-CENTRAL, INC. - D/B/A PRESTON QUARRY	TRIB,FLAT ROCK CR,ARKANSAS R	022	11110201	Crawford	35
AR0045365	APAC-CENTRAL, INC/JENNY LIND QUARRY	TRIB,BEAR CR,VACHE GRASSE CR,AR R	023	11110201	Sebastian	36
AR0045691	ARKANSAS STATE HWY AND TRANSPORTATION DEPT DISTRICT 8 - BIG PINEY REST AREA-WEST	TRIB,LK DARDENELLE,ARKANSAS R	004	11110202	Pope	37
AR0046396	PLEASANT VIEW ESTATES	TRIB,LK DARDANELLE, ARKANSAS R	003	11110202	Pope	38
AR0047686	COAL HILL, CITY OF-WWTP	ARKANSAS R	038	11110202	Johnson	39
AR0048267	BUTTERBALL, LLC.	ARKANSAS R	001	11110201	Franklin	40

Table A-38: Active NPDES permits for Planning Segment 3H

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0048801	BARLING, CITY OF	ARKANSAS R	022	11110201	Sebastian	41
AR0049212	BUTTERBALL, LLC - ALIX FEED MILL	TRIB,CEDAR CR,ARKANSAS R	038	11110202	Franklin	42
AR0049808	SAINT-GOBAIN PROPPANTS, INC.	DIT,CLAYTON EXPRESSWAY,ARKANSAS R	001	11110104	Sebastian	43
AR0050431	SEBASTIAN COUNTY & BLACKSTONE RANCH WWT BOARD	CEDAR CR,POTEAU R,ARKANSAS R	018	11110105	Sebastian	44
AR0050938	CONCORD WATER AND SEWER WASTEWATER TREATMENT PLANT	TRIB,FLAT ROCK CR,HOLLIS LK,FLAT ROCK CR, ARKANSAS R	001	11110104	Van Buren	45
AR0050946	LONDON POLLUTION CONTROL FAC.	LK DARDANELLE	013	11110202	Pope	46
AR0051012	MARS PETCARE U.S., INC.	TRIB,LTL VACHE GRASSE CR,ARKANSAS R	023	11110201	Sebastian	47
AR0051471	PAUL J. DEAN D/B/A - PORKY'S ONE STOP	TRIB CANE CR, CANE CR,ARKANSAS R	045	11110202	Logan	48

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SEGMENT 3I POTEAU RIVER

Segment 3I is located on the western edge of Arkansas, just south of the Arkansas River. This segment includes large portions of Scott and Sebastian Counties and a small part of northwestern Polk County. The waters of this segment include the Poteau River from its headwaters to the Oklahoma state line, as well as the tributary streams. Major tributaries include Jones Creek and James Fork.

Summary of Water Quality Conditions

Waters within this segment have been designated as suitable for the propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supplies. Recreation in this segment is mainly hunting, fishing and canoeing.

A short section of the Poteau River below the city of Waldron was listed as not supporting the fisheries designated use due to elevated metals, total phosphorus, and minerals. Both a municipal and industrial discharge occurs in this segment. In addition, a short section of the Poteau River just above its confluence with the Arkansas River was listed as not supporting the fisheries designated use because of excessive turbidity. A TMDL to address some of these issues was completed in 2006.

Figure A-27: Planning Segment 3I

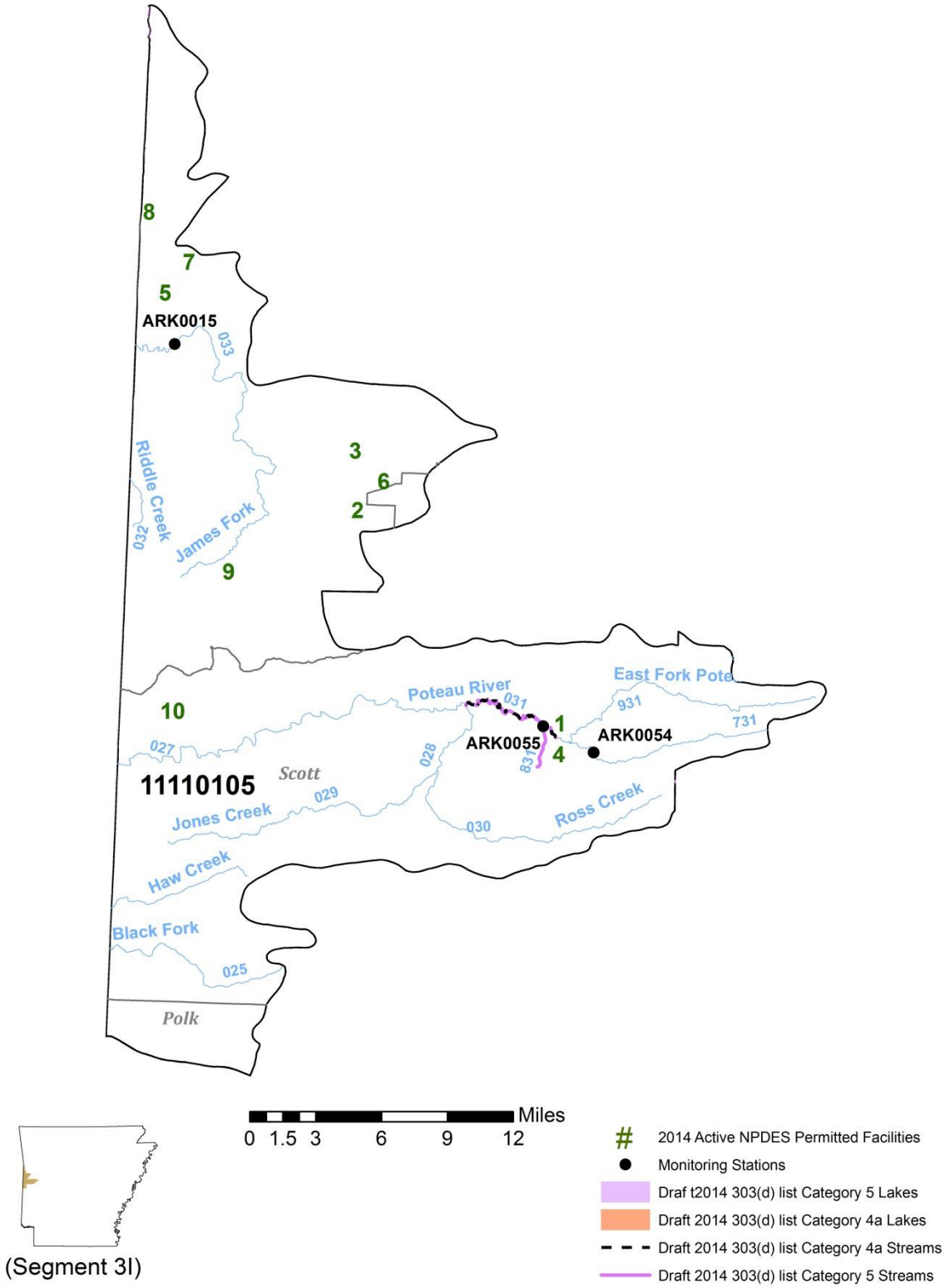


Table A-39: Planning Section 3I Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4
SEG-3I	SEG-3I																						
Poteau River	11110105	-001	2.0	ARK0014	M	S	N	S	S	S	S	UN	SE			DO	Tb			5	4a		
Black Fork	11110105	-025	8.0		U															3			
Poteau River	11110105	-027	16.0	USGS	M	S	S	S	S	R	S									1			
Hawes Creek	11110105	-026	11.6		U															3			
Jones Creek	11110105	-028	4.0		U															3			
Jones Creek	11110105	-029	11.6		U															3			
Ross Creek	11110105	-030	14.3		U															3			
Poteau River	11110105	-931	12.8	ARK0054	M	S	S	S	S	S	S									3			
Poteau River	11110105	-031	6.6	ARK0055/UA/	M	S	N	S	S	R	N	MP/IP				1	Tb	2		5	5	4a	
Unnamed Tributary	11110105	-831	1.9	UAA	M	S	N	S	S	R	N	MP/IP				Cl	TDS			5	5		
James Fork	11110105	-033	18.4	ARK0015	M	S	S	S	S	S	S									1			
TOTAL MILES	107.2															1 = Cl, SO4, TDS							
MILES UNASSESSED	49.5															2 = CU, Zn, & TP							
MILES EVALUATED	0.0																						
MILES MONITORED	57.7																						

USE	SUPPORT	NON-SUPPORT
FISH CONSUMPTION	57.7	0
FISHERIES	47.2	10.5
PRIMARY CONTACT	57.7	0
SECONDARY CONTACT	57.7	0
DRINKING SUPPLY	33.2	0
AGRI & INDUSTRY	49.2	8.5

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
ARK0154	Poteau River near Fort Smith		1	A
ARK0014	Poteau River near Fort Smith		1	A
ARK0054	Poteau River above Waldron	7246940	1	A
ARK0055	Poteau River below Waldron	7246950	1	A
ARK0015	James Fork near Hacket	7249400	1	A

Table A-40: Active NPDES permits for Planning Segment 3I

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0035769	WALDRON, CITY OF	TRIB,POTEAU R,ARKANSAS R	031	11110105	Scott	1
AR0036293	MANSFIELD, CITY OF	COOP CR,CHEROKEE CR,PRAIRIE CR,JAMES FORK R,POTEAU	033	11110105	Sebastian	2
AR0037419	HUNTINGTON, CITY OF-WWTP	CHEROKEE CR,PRAIRIE CR,JAMES FRK R	033	11110105	Sebastian	3
AR0038482	TYSON FOODS, INC. - WALDRON COMPLEX	TRIB,POTEAU R,ARKANSAS R	031	11110105	Scott	4
AR0039781	HACKETT, CITY OF	BIG BRANCH OF HACKETT CREEK,ARKANSAS R	033	11110105	Sebastian	5
AR0048232	TRAVIS LUMBER COMPANY, INC.	TRIB,COOP CR,CHEROKEE CR,PRAIRIE CR,JAMES FORK	033	11110105	Sebastian	6
AR0051039	SEBASTIAN LAKE PUBLIC WATER AUTHORITY OF ARKANSAS	TRIB, HACKET CR, JAMES FORK CR, POTEAU R, ARKANSAS R	027	11110105	Sebastian	7
AR0051080	BONANZA, TOWN OF	TRIB,WELLS CR,POTEAU R,ARKANSAS R		11110104	Sebastian	8
AR0051853	SEBASTIAN MINE	TRIB, WEST CR, JAMES FORK, ARKANSAS R	033	11110105	Sebastian	9
AR0051900	OURO MINING, INC. - BATES MINE	SCOTT BR,POTEAU R,ARKANSAS R	027	11110105	Scott	10
AR0051926	COMER MINING CORPORATION - COMER MINE NO. 2	MACRENNAY CR,JAMES FORK,ARKANSAS	033	11110105	Sebastian	11

SEGMENT 3J GRAND NEOSHO BASIN

Segment 3J occupies the northwestern corner of Arkansas and covers most of Benton County and a large part of Washington County. This segment includes the Illinois River and its tributaries within Arkansas. The main tributaries are Osage Creek, Spavinaw Creek, Little Sugar Creek, Flint Creek, and Spring Creek.

Summary of Water Quality Conditions

Waters within this segment have been designated as suitable for the propagation of fish and wildlife; primary and secondary contact recreation; and public, industrial, and agricultural water supplies. Waterbodies in this segment are heavily used for fishing, boating, and canoeing year-round, and primary contact recreation activities in the warmer months.

Nonpoint source impacts affecting waters in this segment are primarily from urban development, pasture lands which receive applications of poultry waste products, and surface erosion. Instream gravel removal destabilizes the streambed and causes excessive bank erosion. Road construction and maintenance also contributes to siltation problems. Animal agriculture practices contribute to pathogen impairments as well as stream bank destabilization.

Three major municipal, point source discharges enter the Illinois River via Osage Creek and Clear Creek, and a minor municipal discharge enters the Illinois River from Muddy Fork of the Illinois River. Several of these facilities have upgraded their processes for advanced phosphorus removal.

Upgrades to the treatment facility on Town Branch Creek has corrected earlier problems and restored the fisheries designated use.

Figure A-28: Planning Segment 3J

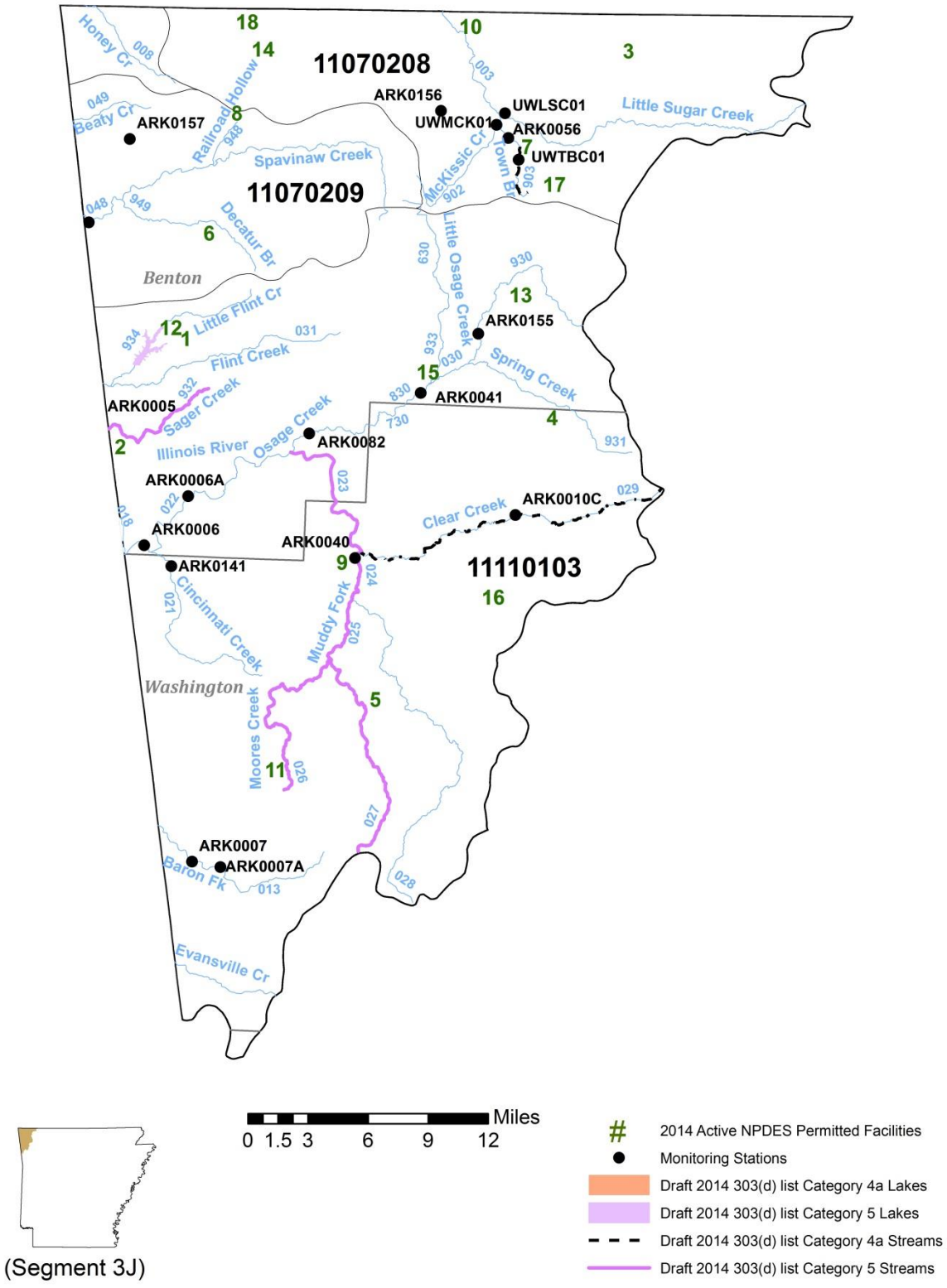


Table A-41: Planning Section 3J Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-3J																										
Evansville Cr.	11110103	-012	9.0		U															3				FISH CONSUMPTION	209	0
Baron Fork	11110103	-013	10.0	ARK0007A+	M	S	S	S	S	S	S									1				FISHERIES	209	0
Illinois River	11110103	-020	1.6	ARK0006	M	S	S	S	S	S	S									1				PRIMARY CONTACT	181.7	27.3
Cincinnati Cr.	11110103	-021	9.0	ARK0141	M	S	S	S	S	S	S									1				SECONDARY CONTAC	209	0
Illinois River	11110103	-022	10.8	ARK0006A	M	S	S	S	S	S	S									1				DRINKING SUPPLY	201	8
Illinois River	11110103	-023	8.1	ILL04	M	S	S	N	S	S	S	AG				PA				5				AGRI & INDUSTRY	209	0
Illinois River	11110103	-024	2.5	ARK0040	M	S	S	N	S	S	S	UN	AG			SO4	PA			5	5					
Muddy Fork.	11110103	-025	3.2	MFI04+	M	S	S	N	S	S	S	AG				PA				5						
Moores Creek	11110103	-026	9.8		E	S	S	S	S	S	S	AG				PA	SO4			5	5					
Muddy Fork	11110103	-027	11.0	MFI02B+	M	S	S	S	S	S	S	AG				PA	SO4			5	5					
Illinois River	11110103	-028	19.9	ILL01	M	S	S	S	S	S	S									1						
Clear Creek	11110103	-029	13.5	ARK0010C	M	S	S	N	S	S	S	UR				PA				4a						
Osage Creek	11110103	-030	15.0	ARK0041	M	S	S	S	S	S	S									1						
Osage Creek	11110103	-930	10.2	OSC03+	M	S	S	S	S	S	S									1						
L. Osage Creek	11110103	-933	11.9	ARK0155	M	S	S	S	S	S	S									1						
Spring Creek	11110103	-931	8.4	SPG03+	M	S	S	S	S	S	S									1						
Flint Creek	11110103	-031	9.6	ARK0004A	M	S	S	S	S	S	S									1						
Sager Creek	11110103	-932	8.0	ARK0005	M	S	S	S	S	N	S	MP				NO3				5						
Spavinaw Cr.	11070209	-048	19.3	ARK0003	M	S	S	S	S	S	S									1						
Beaty Creek	11070209	-049	5.2		U															3						
Little Sugar	11070208	-003	24.2	ARK0001	M	S	S	S	S	S	S									1						
Town Branch	11070208	-903	3.0	ARK0056	M	S	S	S	S	S	S									1						
TOTAL MILES	223.2																									
MILES UNASSESSED	14.2																									
MILES EVALUATED	9.8																									
MILES MONITORED	199.2																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
ARK0007A	Barren Fork at county road 11 near Dutch Mills	07196900	1	A
ARK0006	Illinois River at Highway 59	07195430	1	A
ARK0141	Cincinnati Creek at Highway 244		1	A
ARK0040	Illinois River near Savoy	07194800	1	A
MFI04+	Muddy Fork Illinois River at Highway 156 north of Viney Grove		2	S
MFI02B+	Muddy Fork Illinois River on county road west of Viney Grove		2	S
ILL01	Illinois River east of Highway 156 north of Viney Grove		2	S
ARK0010C	Clear Creek below Fayetteville		1	A
ARK0041	Osage Creek near Elm Springs	07195000	1	A
OSC03+	Osage Creek off of Highway 112 south of Cave Springs near Elm Springs		2	S
SPG03+	Spring Creek Highway 112 south of Cave Springs		2	S
ARK0004A	Flint Creek near Siloam Springs	07195855	1	A
ARK0005	Sager Creek near Siloam Springs		1	A
ARK0003	Spavinaw Creek north of Cherokee	07191179	1	A
ARK0001	Little Sugar Creek near Bella Vista	NR 07188820	1	A
ARK0056	Town Branch below Bentonville		1	A

Table A-42: Active NPDES permits for Planning Segment 3J

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0020184	GENTRY, CITY OF - WWTP	ASH POND,SWEPCO RSR,LTL FLINT CR,ARKANSAS R	031	11110103	Benton	1
AR0020273	SILOAM SPRINGS, CITY OF	SAGER CR,FLINT CR,ILLINOIS R	032	11110103	Benton	2
AR0020672	PEA RIDGE, CITY OF	OTTER CR,BIG SUGAR CR,ELK R	004	11070208	Benton	3
AR0022063	SPRINGDALE WW TREATMENT PLANT	SPRING CR,OSAGE CR,ILLINOIS R	931	11110103	Washington	4
AR0022098	PRAIRIE GROVE, CITY OF	MUDDY FRK/ILLINOIS R	027	11110103	Washington	5
AR0022292	DECATUR, CITY OF-STP	COLUMBIA HOLLOW CR,SPAVINAW CR	048	11070209	Benton	6
AR0022403	BENTONVILLE WW TREATMENT PLANT	TOWN BR,LTL SUGAR CR	903	11070208	Benton	7
AR0023833	GRAVETTE, CITY OF	RR HOLLOW,SPAVINAW CR,ARKANSAS R	048	11070209	Benton	8
AR0033910	USDAFS-WEDINGTON RECREATION AREA	TRIB, ILLINOIS R, ARKANSAS R	024	11110103	Washington	9
AR0034258	VILLAGE WASTEWATER COMPANY, INC.	LTL SUGAR CR,ARKANSAS R	003	11070208	Benton	10
AR0035246	LINCOLN, CITY OF	TRIB,BUSH CR,BARON FORK CR,ARKANSAS R	013	11110103	Washington	11
AR0037842	SWEPCO - FLINT CREEK POWER PLANT	SWEPCO RSRR,LT FLINT CR,FLINT CR	031	11110103	Benton	12
AR0043397	ROGERS, CITY OF	1-OSAGE CR,IL R; 2-PINNACLE GOLF	930	11110103	Benton	13
AR0046639	BENTON COUNTY STONE CO., INC.	TRIB,BUTLER CR,ELK R		11070208	Benton	14
AR0050024	NORTHWEST ARKANSAS CONSERVATION AUTHORITY -REGIONAL WWTP	OSAGE CR, ILLINOIS R	030	11110103	Benton	15
AR0050288	FAYETTEVILLE/WEST SIDE WWTP	GOOSE CR,ILLINOIS R,ARKANSAS R	028	11110103	Washington	16
AR0050652	WAL- MART STORES, INC. - EAST DATA CENTER	TRIB,OSAGE CR,ILLINOIS R,ARKANSAS R	930	11110103	Benton	17
AR0051179	SULPHUR SPRINGS, CITY OF	BUTTER CR		11070208	Benton	18

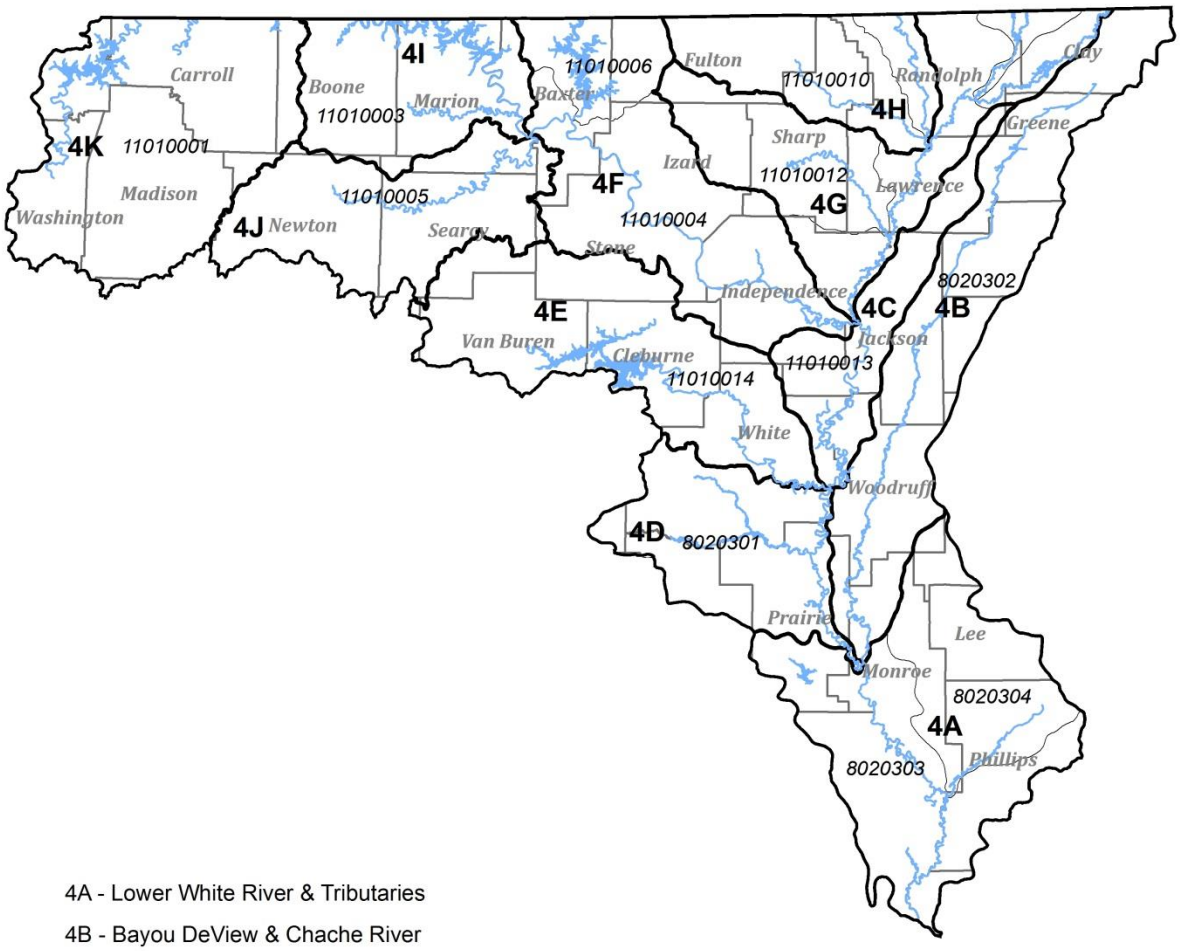
WHITE RIVER BASIN

The White River basin stretches, within Arkansas, from the northern border of the state south-southeast to the Arkansas River. The White River originates in the western part of the state, flows north into Missouri, and then reenters north central Arkansas.

This basin is comprised of 11 ADEQ planning segments and spans 31 counties: Benton, Washington, Carroll, Madison, Boone, Newton, Marion, Searcy, Van Buren, Baxter, Fulton, Izard, Stone, Cleburne, Randolph, Clay, Sharp, Lawrence, Independence, Jackson, White, Woodruff, Prairie, Lee, Monroe, Phillips, Greene, Craighead, Poinsett, Cross, and Desha.

Additionally, this basin spans parts of the Ozark Mountain, Boston Mountain, Arkansas River Valley, and Delta ecoregions.

Figure A-29: White River Basin



4A - Lower White River & Tributaries

4B - Bayou DeView & Chache River

4C - Village Creek & Tributaries

4D - White River, Wattensaw Bayou, & Bayou Des Arc

4E - Little Red River: Headwaters to Mouth

4F - White River from Mouth of Black River to Mouth of Buffalo River

4G - Black River, Strawberry River, & Tributaries

4H - Spring River, South Fork Spring River, & Eleven Point River

4I - White River from Crooked Creek to Long Creek

4J - Buffalo River & Tributaries

4K - Upper White River & Kings River

White River Basin

SEGMENT 4A LOWER WHITE RIVER AND TRIBUTARIES

Segment 4A, located on the east central edge of Arkansas, includes most of the drainage from Monroe and Phillips Counties. It also drains portions of Arkansas, Prairie, Woodruff, St. Francis, Lee, and Desha Counties. This segment is drained by the lower 133-mile reach of the White River from Wattensaw Bayou to its mouth. Principal tributaries include Big Creek, La Grue Bayou, Lick Creek, and Cypress Bayou.

Summary of Water Quality Conditions

All waters within this segment have been designated for propagation of fish and wildlife; primary and secondary contact recreation; and domestic, agricultural, and industrial water supply. These waters are heavily used for hunting, fishing and boating activities year-round. The streams in this segment are also used for irrigation water supply.

A segment of Big Creek was listed as not meeting the chloride and total dissolved solids water quality standards. The source is suspected to be from row crop agriculture activities.

Prairie Cypress Creek and Boat Gunwale Slash were both listed because of low dissolved oxygen concentrations. This is a naturally occurring condition throughout the Delta ecoregion during the critical season when flows are diminished and water temperatures are elevated. This issue will need to be addressed either through a standards change or an assessment methodology change.

Figure A-30: Planning Segment 4A

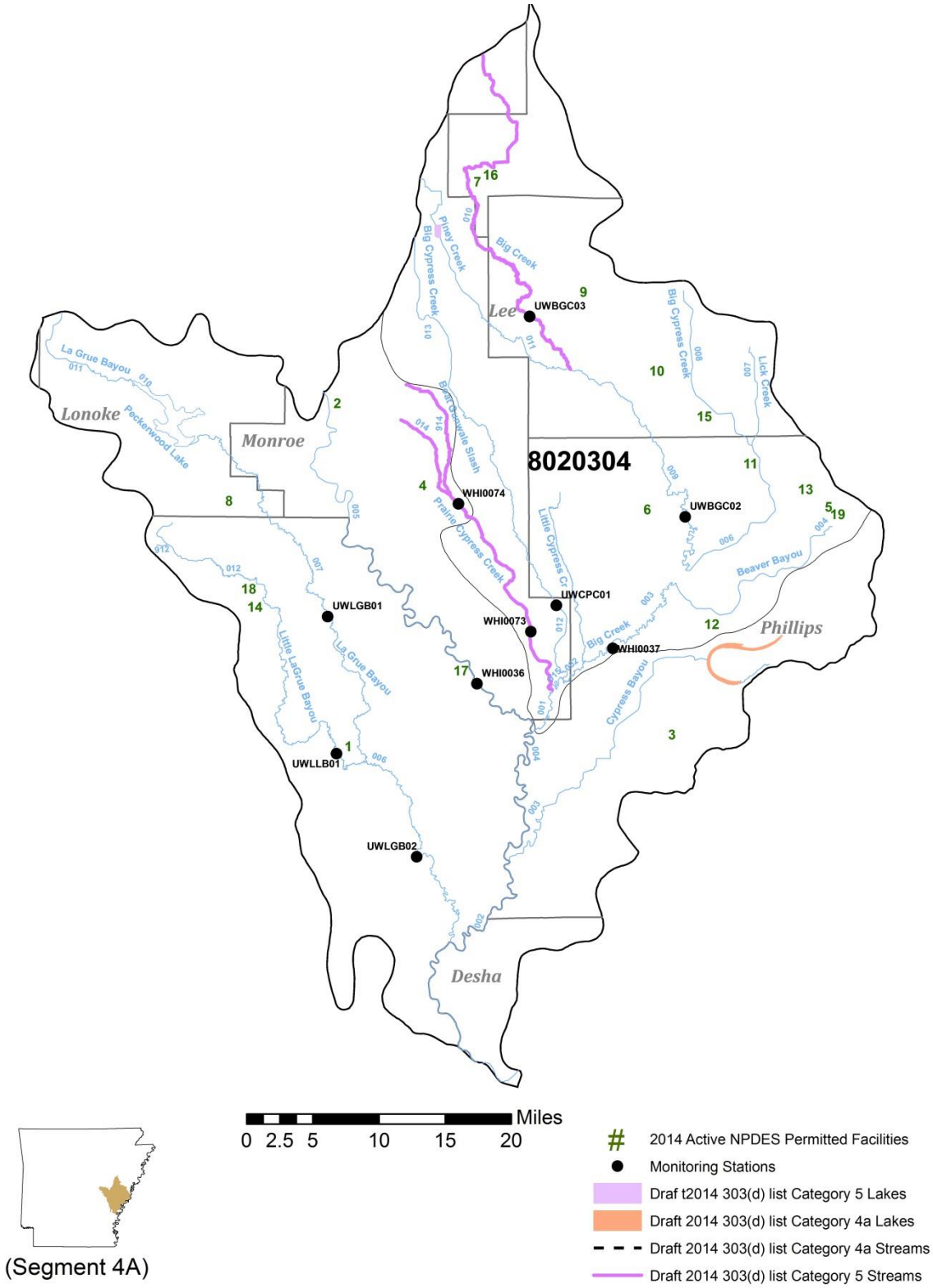


Table A-43: Planning Section 4A Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-4A																										
White River	8020303	-001	16.2		E	S	S	S	S	S	S									1				FISH CONSUMPTION	403.9	0
White River	8020303	-002	11.3		E	S	S	S	S	S	S									1				FISHERIES	403.9	0
Cypress Bayou	8020303	-003	30.0		U															3				PRIMARY CONTACT	403.9	0
White River	8020303	-004	14.8		E	S	S	S	S	S	S									1				SECONDARY CONTACT	403.9	0
White River	8020303	-005	46.6	WHI0036	M	S	S	S	S	S	S									1				DRINKING SUPPLY	403.9	0
La Grue Bayou	8020303	-006	20.1	UWLGB02	M	S	S	S	S	S	S									1				AGRI&INDUSTRY	403.9	0
La Grue Bayou	8020303	-007	36.1	UWLGB01	M	S	S	S	S	S	S									1						
La Grue Bayou	8020303	-011	11.7		U															3						
L.La Grue Bayou	8020303	-012	37.0	UWLLB01	M	S	S	S	S	S	S									1						
Big Creek	8020304	-001	4.1		E	S	S	S	S	S	S									1						
Big Creek	8020304	-002	2.7		E	S	S	S	S	S	S									1						
Big Creek	8020304	-003	12.4	WHI0037	M	S	S	S	S	S	S									1						
Beaver Bayou	8020304	-004	17.4		E	S	S	S	S	S	S									1						
Big Creek	8020304	-005	1.7		E	S	S	S	S	S	S									1						
Lick Creek	8020304	-006	15.5		E	S	S	S	S	S	S									1						
Lick Creek	8020304	-007	6.8		E	S	S	S	S	S	S									1						
Big Cypress Cr.	8020304	-008	14.9		E	S	S	S	S	S	S									1						
Big Creek	8020304	-009	25.2	UWBGC02	M	S	S	S	S	S	S									1						
Big Creek	8020304	-010	34.3	UWBGC03	M	S	S	S	S	S	S	AG				Cl	TDS			5	5					
Piney Creek	8020304	-011	14.9		E	S	S	S	S	S	S									1						
Little Cypress	8020304	-012	19.3		U															3						
Big Cypress Cr.	8020304	-013	40.8	UWCPC01	M	S	S	S	S	S	S									1						
Prairie Cypress	8020304	-014	26.1	WHI0073	M	S	S	S	S	S	S	UN	UN			DO	Cu			5	5					
Big Creek	8020304	-015	1.2		U															1						
Boat Gunwale Slash	8020304	-914	5.0	WHI0074	M	S	S	S	S	S	S	UN				DO				5						
TOTAL MILES	466.1																									
MILES UNASSESSED	62.2																									
MILES EVALUATED	120.3																									
MILES MONITORED	283.6																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
WHI0036	White River at Highway 1 near St. Charles	7077820	1	A
UWLGB02	LaGrue Bayou at Highway 17 at LaGrue Springs		2	R
UWLGB01	LaGrue Bayou at Highway 33 near LaGrue		2	R
UWLLB01	Little LaGrue Bayou at Highway 1 near Dewitt		2	R
WHI0037	Big Creek at Highway 318 near Watkins Corner		2	R
UWBGC02	Big Creek at Highway 49 near Poplar Bluff		2	R
UWBGC03	Big Creek at Highway 79, 3 miles west of Moro		2	R
UWCPC01	Big Cypress Creek at Highway 1, 4 miles northeast of Cross Roads		2	R
WHI0073	Prairie Cypress Creek at Highway 1 near Cross Roads		1	A
WHI0074	Boat Gunwale Slash at Highway 146 near Holly Grove		1	A

Table A-44: Active NPDES permits for Planning Segment 4A

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0021431	DEWITT, CITY OF	LTL LAGURE BU,LAGRUE BU,WHITE R	007	8020303	Arkansas	1
AR0021644	CLARENDON, CITY OF	WHITE R	005	8020303	Monroe	2
AR0022420	ELAINE, CITY OF	GOVAN SLU,GAUZLEY BU,CYPRESS BU	003	8020303	Phillips	3
AR0022438	HOLLY GROVE, CITY OF	DIAL CR,CUT BLUFF SLU,WHITE R	005	8020303	Monroe	4
AR0022756	HELENA INDUSTRIES, INC.	DIT,CROOKED CR,LICK CR,BIG CR,WHITE R	004	8020304	Phillips	5
AR0035840	MARVELL, CITY OF	BIG CR,WHITE R	009	8020304	Phillips	6
AR0036315	WHEATLEY, CITY OF	FLAT FORK CR,BIG CR,WHITE R	010	8020304	St. Francis	7
AR0038008	ULM, CITY OF-STP	TRIB,SHERRIL CR,LAGRUE BU	007	8020303	Prairie	8
AR0038237	MORO, CITY OF	HOG TUSK CR,BIG CR,WHITE R	010	8020304	Lee	9
AR0038784	AUBREY, CITY OF	TRIB,CAT CR,SPRING CR,WHITE R	009	8020304	Lee	10
AR0041092	LEXA, CITY OF	TRIB,LICK CR,BIG CR,WHITE R	006	8020303	Phillips	11
AR0041327	LAKE VIEW SEWER PLANT	JOHNSON BU,BIG CR,WHITE R	003	8020304	Phillips	12
AR0042404	SOUTHLAND IMPROVEMENT DISTRICT	CROOKED CR,LICK CR,BIG CR,WHITE R	006	8020304	Phillips	13
AR0044415	UNIVERSITY OF ARKANSAS RICE RESEARCH & EXTENSION CENTER	DITCH, LTL LAGRUE BU,WHITE R	012	8020303	Arkansas	14
AR0045373	RONDO, CITY OF-WWTF	TRIB,BIG CYPRESS CR,LICK CR,BIG CR,WHITE R	008	8020304	Lee	15
AR0046752	MAPCO EXPRESS STORE #3154	TRIB,FLAT FORK CR,FLAT FORK,LTL R	010	8020304	St. Francis	16
AR0049310	ST. CHARLES, CITY OF	WHITE R	005	8020303	Arkansas	17
AR0049352	U.S.DEPARTMENT OF AGRICULTURE - AQUACULTURE RESEARCH SERVICE USDA-ARS	UNNAMED DITCH,LTL LAGRUE BU, WHITE R	012	8020303	Arkansas	18
AR0051276	DELTA LUMBER, LLC	TRIB,CANEY CR,BEAVER BU DIT,BIG CR,WHITE R	004	8020304	Phillips	19

SEGMENT 4B BAYOU DE VIEW AND CACHE RIVER

Segment 4B, located in the northeastern part of Arkansas, is a long, narrow segment that includes parts of Greene, Craighead, Poinsett, Jackson, Woodruff, Monroe, Prairie, Lawrence, and Clay Counties. The segment includes Bayou DeView and Cache River and their major tributaries including Cow Ditch, Buffalo Creek and Flag Slough.

Summary of Water Quality Conditions

Waters in this segment are designated for propagation of fish and wildlife; primary and secondary contact recreation; and domestic, agricultural, and industrial water supplies. The greatest use of waters in this segment is for irrigation water supply. However, local wetlands offer excellent hunting and fishing opportunities.

The upper section of Bayou DeView and Lost Creek Ditch are not meeting the fisheries designated use because of elevated levels of chlorides and total dissolved solids. Potential sources include point source discharges and row crop agriculture activities.

Several segments of the Cache River and Bayou DeView have been listed because of lead contamination. It is possible elevated metals detections are associated with the large winter and spring storm events that carry large amounts of clay particles into the waterbodies. Additional investigation is needed to more accurately assess this problem.

Figure A-31: Planning Segment 4B

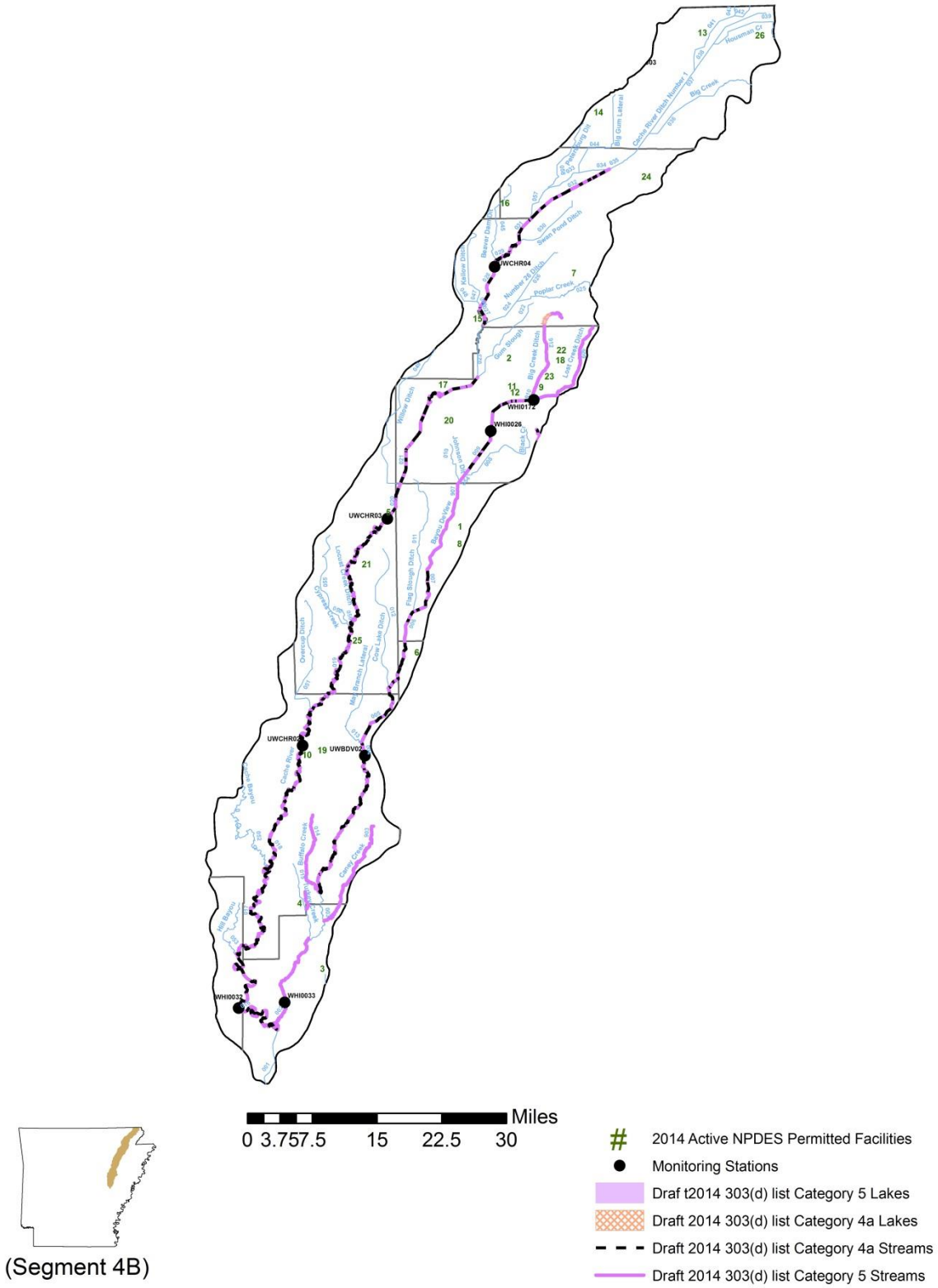


Table A-45: Planning Section 4B Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use						SOURCE				CAUSE				STATUS			
						FC	FSH	PC	SC	DW	AI	1	2	3	4	1	2	3	4	1	2	3	4
SEG-4B																							
Cache River	8020302	-001	8.6		E	S	S	S	S	S	S									1			
Bayou De View	8020302	-002	13.7	WHI0033	M	S	S	S	S	S	S	AG				DO				5			
Bayou De View	8020302	-003	7.1		E	S	S	S	S	S	S									1			
Caney Creek	8020302	-903	16.8	ANRC	M	S	S	S	S	S	S	AG				DO				5			
Bayou De View	8020302	-004	21.2	UWBDV02	M	S	N	S	S	S	S	UN	SE			SO4	DO	Tb		5	5	4a	
Bayou De View	8020302	-005	8.6		E	S	N	S	S	S	S	UN	SE			SO4	Tb			5	4a		
Bayou De View	8020302	-006	10.2		E	S	N	S	S	S	S	UN	SE			SO4	Tb			5	4a		
Bayou De View	8020302	-007	18.2		E	S	N	S	S	S	S	UN	SE			SO4	Tb			5	4a		
Big Creek Ditch	8020302	-910	13.0	WHI0196	M	S	N	S	S	S	S	UN				Cu				5			
Lost Creek Ditch	8020302	-909	7.9	WHI0172	M	S	N	S	S	S	S	IP/MP	UN	UN		Cl	DO	Cu		5	5	5	
Bayou De View	8020302	-009	11.7	WHI0026	M	S	S	S	S	S	S	IP	MP			Cu	Tb			5	4a		
Black Creek	8020302	-008	13.0		U															3			
Johnson Ditch	8020302	-010	6.5		U															3			
Flag Slough	8020302	-011	14.7		U															3			
Cow Ditch	8020302	-012	19.2		U															3			
May Br. Lateral	8020302	-013	12.6		U															3			
Buffalo Creek	8020302	-014	13.1	ANRC	M	S	S	S	S	S	S	AG				DO				5			
Gum Flat	8020302	-015	8.8		U															3			
Unnamed Tributary	8020302	-915	2.3	ANRC	M	S	S	S	S	S	S	AG				DO				5			
Cache River	8020302	-016	21.8	WHI0032	M	S	N	S	S	S	S	AG	SE	UN		Pb	Tb	DO		5	4a	5	
Cache River	8020302	-017	15.8		E	S	N	S	S	S	S	AG	SE			Pb	Tb			5	4a		
Cache River	8020302	-018	25.0	UWCHR02	M	S	N	S	S	S	S	AG	SE			Pb	Tb			5	4a		
Cache River	8020302	-019	13.7		E	S	N	S	S	S	S	AG	SE			Pb	Tb			5	4a		
Cache River	8020302	-020	22.6	UWCHR03	M	S	N	S	S	S	S	AG	SE			Pb	Tb			5	4a		
Cache River	8020302	-021	18.4		E	S	N	S	S	S	S	AG	SE			Pb	Tb			5	4a		
Gum Slough	8020302	-022	9.5		U															3			
Cache River	8020302	-023	7.9		U															3			
Ditch 26	8020302	-024	5.4		U															3			
Poplar Creek	8020302	-025	9.2		U															3			
Ditch 26	8020302	-026	7.8		U															3			
Cache River	8020302	-027	3.9		E	S	N	S	S	S	N	AG	SE			SO4	Tb			5	4a		
Cache River	8020302	-028	5.9	UWCHR04	M	S	N	S	S	S	N	AG	SE			SO4	Tb			5	4a		
Cache River	8020302	-029	3.9		E	S	N	S	S	S	N	AG	SE			SO4	Tb			5	4a		
Swan Ditch	8020302	-030	9.1		U															3			
Cache River	8020302	-031	3.4		E	S	N	S	S	S	N	AG	SE			SO4	Tb			5	4a		
Cache River	8020302	-032	11.4		E	S	N	S	S	S	N	AG	SE			SO4	Tb			5	4a		
Cache River	8020302	-033	4.3		U															3			
Cache River	8020302	-034	3.7		U															3			
Cache River	8020302	-035	4.6		U															3			
Big Creek	8020302	-036	16.2		U															3			
Cache River	8020302	-037	12.3		U															3			
Little Cache	8020302	-038	4.4		U															3			
Housman Creek	8020302	-039	6.7		U															3			
Little Cache	8020302	-040	8.1		U															3			
Cache River	8020302	-041	8.7		U															3			
Big Gum Lateral	8020302	-044	11.2		U															3			
Beaver Dam Cr.	8020302	-045	11.8		U															3			
Kello Ditch	8020302	-046	0.6		U															3			
Kello Ditch	8020302	-047	8.5		U															3			
Fry Ditch	8020302	-048	8.0		U															3			
Willow Ditch	8020302	-049	17.6		U															3			

USE	SUPPORT	NON-SUPPORT
FISH CONSUMPTION	298.2	0
FISHERIES	73.3	224.9
PRIMARY CONTACT	298.2	0
SECONDARY CONTACT	298.2	0
DRINKING SUPPLY	298.2	0
AGRI & INDUSTRY	269.7	28.5

Table A-45 cont.: Planning Section 4B Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	FC	FSH	PC	SC	DW	AI	1	2	3	4	1	2	3	4	1	2	3	4	USE SUPPORT	NON-SUPPORT
Locust Creek	8020302	-050	18.8		U															3					
Overcup Creek	8020302	-051	15.7		U															3					
Cache Bayou	8020302	-052	18.7		U															3					
Hill Bayou	8020302	-053	8.1		U															3					
Locust Bayou	8020302	-055	0.4		U															3					
Cypress Creek	8020302	-056	6.5		U															3					
Cache River	8020302	-057	4.7		U															3					
Petersburg Ditch	8020302	-058	9.7		U															3					
TOTAL MILES	631.2																								
MILES UNASSESSEI	333																								
MILES EVALUATED	123.2																								
MILES MONITORED	175																								

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
WHI0033	Bayou DeView at Highway 70 near Brinkley		2	R
UWBDV02	Bayou DeView at Highway 64 east of McCrory		1	R
WHI0172	Lost Creek Ditch at Lacy Drive near Jonesboro	7077652	1	A
WHI0026	Bayou DeView on Highway 226 west of Gibson	7077660	1	A
WHI0032	Cache River at Highway 70 near Brinkley	7077555	2	R
UWCHR02	Cache River at Highway 64 at Peterson	7077500	1	R
UWCHR03	Cache River at Highway 18 near Gruggs	7077380	1	R
UWCHR04	Cache River at Highway 412 east of Walnut Ridge		1	R

Table A-46: Active NPDES permits for Planning Segment 4B

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0020354	WEINER, CITY OF	TRIB, BU DEVIEW, CACHE R, WHITE R	007	8020302	Poinsett	1
AR0020699	BONO, CITY OF	TRIB/WHALEY SLU DIT, EAST CACHE R, WHITE R	021	8020302	Craighead	2
AR0021890	BRINKLEY, CITY OF	CANEY SLASH,TRIB,BIG CYPRESS CR,BIG CR,WHITE R	013	8020302	Monroe	3
AR0033391	COTTON PLANT, CITY OF	TRIB,TURKEY CR,BU DEVIEW,CACHE R,WHITE R	002	8020302	Woodruff	4
AR0034614	GRUBBS, CITY OF	CACHE R,WHITE R	020	8020302	Jackson	5
AR0034720	HICKORY RIDGE, CITY OF	BU DEVIEW,CACHE R,WHITE R	006	8020302	Cross	6
AR0035947	ARKANSAS DEPT OF PARKS & TOURISM - CROWLEY'S RIDGE STATE PARK	TRIB,MAIN LATERAL DIT,CACHE R,WHITE R	026	8020302	Greene	7
AR0037834	RICELAND-WALDENBURG RICE DIV.	TRIB,BU DEVIEW,CACHE R,WHITE R	007	8020302	Poinsett	8
AR0037907	JONESBORO, CITY WATER AND LIGHT (CWL) - WESTSIDE WWTP	UNNAMED TRIB,BIG CR,BU DEVIEW,CACHE R	909	8020302	Craighead	9
AR0039837	PATTERSON, CITY OF	CACHE R, WHITE R	018	8020302	Woodruff	10
AR0041629	WESTSIDE CONSOLIDATED SCHOOL DISTRICT #5	TRIB,BIG CR DIT,BU DEVIEW,CACHE R	009	8020302	Craighead	11
AR0042188	NORTHERN MOBILE HOME PARK	TRIB,BIG CR,BU DEVIEW,CACHE R,WHITE R	009	8020302	Craighead	12
AR0042781	MCDOUGAL MUNICIPAL WATER/SEWER	CACHE R DIT #1,OLD CACHE R DIT #1,CACHE R,WHITE R	041	8020302	Clay	13
AR0043290	KNOBEL, CITY OF	TRIB,BIG GUM LATERAL,CACHE R,WHITE R	044	8020302	Clay	14
AR0043443	SEDGWICK, CITY OF	W CACHE R DIT,CACHE R,WHITE R	027	8020302	Lawrence	15
AR0043486	TRI-CITY UTILITIES, INC.	TRIB,BEAVER DAM DIT,CACHE R,WHITE R	045	8020302	Randolph	16
AR0043524	EGYPT SEWER SYSTEM	W CACHE R DIT,CACHE R,WHITE R	021	8020302	Craighead	17
AR0044211	OLIVETAN BENEDICTINE SISTERS, HOLY ANGELS COVENANT	TRIB,LOST CR,BIG CR DIT	909	8020302	Craighead	18
AR0044954	MCCRORY, CITY OF	CACHE R,WHITE R	018	8020302	Woodruff	19

Table A-46: Active NPDES permits for Planning Segment 4B

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0045284	CASH, CITY OF	TRIB,CACHE R,WHITE R	021	8020302	Craighead	20
AR0046604	AMAGON, CITY OF	TRIB,CACHE R,WHITE R	020	8020302	Jackson	21
AR0046981	HEDGER AGGREGATE, INC.	UNNAMED TRIB,MUD CR,BIG CR DIT,BYU DEVIEW,CACHE R	909	8020302	Craighead	22
AR0048402	LMJ TRAILER PARK	TRIB,BIG CREEK DIT,BU DEVIEW,CACHE R,WHITE R	909	8020302	Craighead	23
AR0048909	LAFE, TOWN OF	BIG CR, CACHE R, WHITE R	036	8020302	Greene	24
AR0049603	BEEDEVILLE, CITY OF	CACHE R,WHITE R	019	8020302	Jackson	25
AR0045489	POLLARD, CITY OF	HORSE CR,DIT#2,LTL CACHE R DIT#1,CACHE R,WHITE R	039	8020302	Clay	26

SEGMENT 4C VILLAGE CREEK AND TRIBUTARIES

Segment 4C includes portions of Randolph, Green, Lawrence, Jackson, Woodruff, and White Counties. This segment contains Village Creek and its tributaries, sections of the White River and its tributaries, Departee, and Glaise Creeks.

Summary of Water Quality Conditions

Propagation of fish and wildlife, primary and secondary contact recreation, domestic, agricultural, and industrial water supply are the designated uses for all waters within this segment. The primary use of waters in this segment is for irrigation water supply. However, local wetlands offer excellent hunting and fishing opportunities.

Three reaches of Village Creek and one segment of Glaise Creek have been listed because of low dissolved oxygen concentrations. This is a naturally occurring condition throughout the Delta ecoregion during the critical season when flows are diminished and water temperatures are elevated.

One segment of Departee Creek was listed as not supporting the fisheries designated use because of low dissolved oxygen levels and high turbidity concentrations. The source is suspected to be from row-crop agriculture practices in the watershed.

Figure A-32: Planning Segment 4C

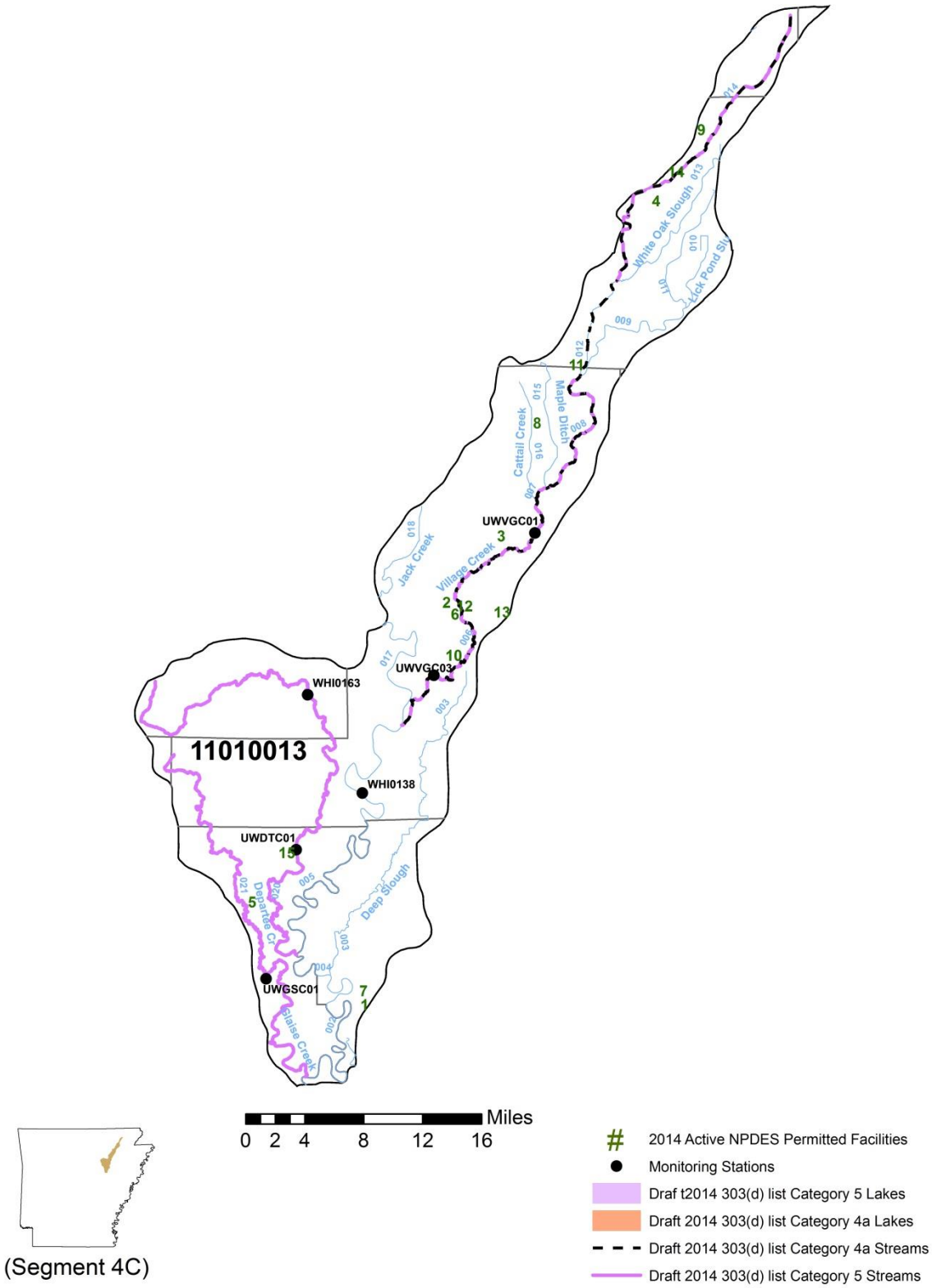


Table A-47: Planning Section 4C Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-4C																										
White River	11010013	-001	0.8		E	S	S	S	S	S	S									1				FISH CONSUMPTION	208.5	0
White River	11010013	-002	20.8		E	S	S	S	S	S	S									1				FISHERIES	132.3	76.2
Deep Slough	11010013	-003	12.7		U															3				PRIMARY CONTACT	208.5	0
White River	11010013	-004	4.4		E	S	S	S	S	S	S									1				SECONDARY CONTACT	208.5	0
White River	11010013	-005	36.7	WH10138	M	S	S	S	S	S	S									1				DRINKING SUPPLY	208.5	0
Village Cr	11010013	-006	25.2	UWVGC01,3	M	S	S	S	S	S	S	UN	SE			DO	Tb			5	4a			AGRI & INDUSTRY	208.5	0
Village Cr	11010013	-007	1.2		E	S	S	S	S	S	S	UN	SE			DO	Tb			5	4a					
Village Cr	11010013	-008	13.0		E	S	S	S	S	S	S	UN	SE			DO	Tb			5	4a					
Lick Pond Slough	11010013	-009	10.9		U															3						
Lick Pond Slough	11010013	-011	10.4		U															3						
Village Cr	11010013	-012	7.4		E	S	S	S	S	S	S		SE				Tb				4a					
Village Cr	11010013	-014	22.8	UWVGC02	M	S	S	S	S	S	S	UN	SE			Tm	Tb			5	4a					
Maple Ditch	11010013	-015	9.5		U															3						
Cattail Cr	11010013	-016	9.3		U															3						
White River	11010013	-017	13.7		U															3						
Jack Creek	11010013	-018	9.6		U															3						
White River	11010013	-019	0.4		U															3						
Departee Creek	11010013	-020	46.1	UWDTC01	M	S	N	S	S	S	S	AG	AG			DO	Tb			5	5					
Glaise Creek	11010013	-021	30.1	UWGSC01	M	S	N	S	S	S	S	AG				DO				5						
TOTAL MILES	285.0																									
MILES UNASSESSED	76.5																									
MILES EVALUATED	47.6																									
MILES MONITORED	160.9																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
WH10138	White River at Highway 67 near Newport	7074500	1	A
UWVGC01	Village Creek at Highway 37 near Tuckerman		1	R
UWVGC03	Village Creek at Highway 24 near Newport		1	R
UWVGC02	Village Creek at Highway 228 near Miniturn		1	R
UWDTC01	Departee Creek east of Bradford		1	R
UWGSG01	Glaise Creek at Highway 64 east of Bald Knob		1	R

Table A-48: Active NPDES permits for Planning Segment 4C

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0000400	AECC-CARL BAILEY GENERATING STATION	WHITE R (001) & OLD CANEY CR (002)	002	11010013	Woodruff	1
AR0001481	NORANDAL USA, INC.	DITCH,VILLAGE CR,WHITE R	006	11010013	Jackson	2
AR0020001	TUCKERMAN, CITY OF	TUCKERMAN DITCH CR,VILLAGE CR,WHITE R	006	11010013	Jackson	3
AR0020141	HOXIE, CITY OF	TRIB,TURKEY CR,VILLAGE CR	014	11010013	Lawrence	4
AR0022217	RUSSELL, CITY OF-WASTEWATER TREATMENT	UNNAMED TRIB/GLAISE CR,WHITE R	021	11010013	White	5
AR0034550	ARKANSAS STEEL ASSOCIATES, LLC	TRIB,VILLAGE CR,WHITE R	006	11010013	Jackson	6
AR0034738	AUGUSTA, CITY OF	WHITE R	002	11010013	Woodruff	7
AR0034860	SWIFTON, CITY OF-WWTP	CATTAIL CR,VILLAGE CR,WHITE R	016	11010013	Jackson	8
AR0036668	FRIT INDUSTRIES, INC.	TRIB,COON CR,VILLAGE CR,WHITE R	014	11010013	Lawrence	9
AR0037044	NEWPORT, CITY OF-WASTEWATER FACILITY	VILLAGE CR,WHITE R	006	11010013	Jackson	10
AR0039675	ALICIA, CITY OF	BLACK SPICE DIT,VILLAGE CR, WHITE R	008	11010013	Lawrence	11
AR0041033	DIAZ, CITY OF	TRIB,VILLAGE CR,WHITE R	006	11010013	Jackson	12
AR0045225	NEWPORT, CITY OF - AIRPORT/INDUSTRIAL PARK	TRIB,LOCUST CR,VILLAGE CR,WHITE R	014	11010013	Jackson	13
AR0046566	WALNUT RIDGE WW TREATMENT PLNT	VILLAGE CR,WHITE R	014	11010013	Lawrence	14
AR0050911	BRADFORD, CITY OF	BUTTER CR,DEPARTEE CR,WHITE R,AR R	020	11010013	White	15

SEGMENT 4D WHITE RIVER, WATTENSAW BAYOU, AND BAYOU DES ARC

Segment 4D includes portions of White, Prairie, Faulkner, Pulaski, Lonoke, and Monroe Counties in central Arkansas. The segment encompasses a 67-mile stretch of the White River, and its tributaries, Wattensaw and Des Arc Bayous.

Summary of Water Quality Conditions

Waters in this segment are designated for propagation of fish and wildlife; primary and secondary contact recreation; and domestic, agricultural, and industrial water supplies. The primary use of waters in this segment is irrigation water supply.

Several stream segments were listed because of low dissolved oxygen concentrations. This is a naturally occurring condition throughout the Delta ecoregion during the critical season when flows are diminished and water temperatures are elevated. This issue will need to be addressed either through a standards change or an assessment methodology change.

Figure A-33: Planning Segment 4D

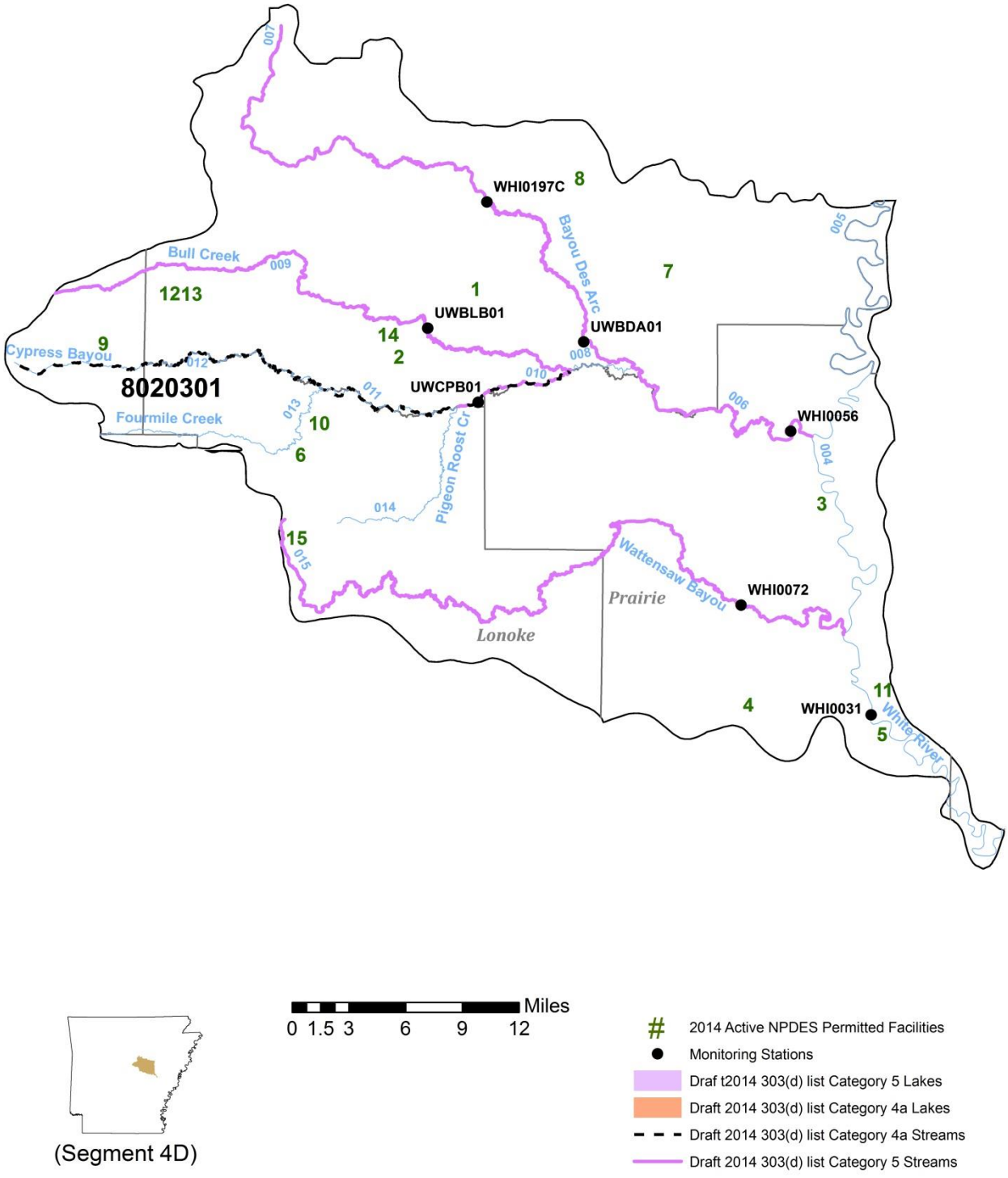


Table A-49: Planning Section 4D Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-4D																										
White River	8020301	-001	24.3	WHI0031	M	S	S	S	S	S	S									1				FISH CONSUMPTION	203.7	0
White River	8020301	-004	14.8		E	S	S	S	S	S	S									1				FISHERIES	115.5	88.2
White River	8020301	-005	28.2		E	S	S	S	S	S	S									1				PRIMARY CONTACT	203.7	0
Bayou Des Arc	8020301	-006	17.8	WHI0056	M	S	N	S	S	S	S	AG	AG			DO	Tb			5	5			SECONDARY CONTACT	203.7	0
Bayou Des Arc	8020301	-007	36.4	UWBDA01	M	S	N	S	S	S	S	AG				Zn				5				DRINKING SUPPLY	203.7	0
Cypress Bayou	8020301	-008	3.2		U															3				AGRI & INDUSTRY	203.7	0
Bull Bayou	8020301	-009	29.0	UWBLB01	M	S	N	S	S	S	S	AG				DO				5						
Cypress Bayou	8020301	-010	5.0	UWCPB01	M	S	N	S	S	S	S	AG				DO				5						
Cypress Bayou	8020301	-011	9.5		U															3						
Cypress Bayou	8020301	-012	17.5		U															3						
Fourmile Creek	8020301	-013	12.8		U															3						
Pigeon Roost	8020301	-014	11.0		U															3						
Wattensaw Bayou	8020301	-015	48.2	WHI0072	M	S	S	S	S	S	S	UN				DO				5						
TOTAL MILES	257.7																									
MILES UNASSESSED	54.0																									
MILES EVALUATED	43.0																									
MILES MONITORED	160.7																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
WHI0031	White River at DeValls Bluff	7077000	1	A
WHI0056	Bayou Des Arc at Highway 11 near Walker		1	R
UWBDA01	Bayou Des Arc at county road above Cypress Creek		1	R
UWBLB01	Bull Bayou at Highway 367 near Beebe		1	R
UWCPB01	Cypress Creek at Highway 13 southeast of Beebe		1	R
WHI0072	Wattensaw Bayou north of Hazen	7076950	1	A

Table A-50: Active NPDES permits for Planning Segment 4D

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0021504	MCRAE, CITY OF	DRY BRANCH CR,CANE CR,BU DES ARC	006	8020301	White	1
AR0022101	BEEBE, CITY OF	CYPRESS BU,BU DES ARC,WHITE R	011	8020301	White	2
AR0022225	DES ARC, CITY OF	WHITE R	004	8020301	Prairie	3
AR0022411	HAZEN WW TREATMENY PLANT	LTL HURRICANE CR,WATTENSAW BU-CR,WHITE	015	8020301	Prairie	4
AR0035611	DEVALLS BLUFF, CITY OF	DIT,WHITE R	001	8020301	Prairie	5
AR0038369	AUSTIN, CITY OF	4-MILE CR,MGNESS CR,CYPRESS BU, B DES ARC,WHITE R	013	8020301	Lonoke	6
AR0042803	GRIFFITHVILLE, CITY OF	TRB,DOGWOOD CR,BU DES ARK,WHITE R	006	8020301	White	7
AR0044822	HIGGINSON, TOWN OF	GUM SPRINGS CR,GLADE CR,BU DES ARC,CYPRESS CR	012	8020301	White	8
AR0047121	VILONIA, CITY OF	CYPRESS BU,BU DES ARC,WHITE R	013	8020301	Faulkner	9
AR0047554	WARD, CITY OF	4-MILE CR,CYPRESS BU,DES ARC BU,WHITE R	013	8020301	Lonoke	10
AR0047589	BISCOE, CITY OF - WWTF	WHITE R	001	8020303	Prairie	11
AR0049301	NEW NEPTUNE, LLC D/B/A MAX MART #1026	TRIB,LTL CYPRESS CR,CYPRESS BU,BU DES ARC, WHITE R	012	8020301	White	12
AR0050156	B-H-T INVESTMENT COMPANY, INC. - DOUBLEBEES STORE	TRIB,LTL CYPRESS CR,CYPRESS BU,BU DES ARC,WHITE R	012	8020301	White	13
AR0051390	J.C. WARNER, INC.	BULL CR, CYPRESS BU, BU DES ARC, WHITE R	009	8020301	White	14
AR0052001	GERALD HUNTER	TRIB,WATTENSAW BU, WHITE R	015	8020301	Lonoke	15

SEGMENT 4E LITTLE RED RIVER: HEADWATERS TO MOUTH

Segment 4E includes portions of Searcy, Pope, Van Buren, Stone, Cleburne, White, and Independence Counties. The segment contains the entire 81 mile length of the Little Red River and its tributaries: Middle, South, North, Archey Fork, Devil's Fork, and Big Creek.

Summary of Water Quality Conditions

Waters in this segment are designated for propagation of fish and wildlife; primary and secondary contact recreation; and domestic, agricultural, and industrial water supplies. Additionally, 158.1 miles, approximately one-third of the stream miles, are designated as outstanding state or national resource waters. Waters within this segment, which includes Greer's Ferry reservoir, offer excellent fishing, canoeing, and boating opportunities. Primary contact recreation activities are prevalent during the warmer months.

Approximately two miles of the South Fork of the Little Red River at the upper end of Greers Ferry Reservoir was found to have mercury contamination of certain predator fishes and was placed under a fish consumption advisory.

The Middle Fork Little Red River near Shirley is currently assessed as not attaining the primary contact recreation use because of pathogen contamination.

Two segments of Overflow Creek were listed as not supporting the Fisheries Designated use because of zinc toxicity. It is thought that most of the elevated metals detections are associated with the large winter and spring storm events that carry large amounts of clay particles into the creek. Additional investigation is needed to more accurately assess this problem.

Figure A-34: Planning Segment 4E

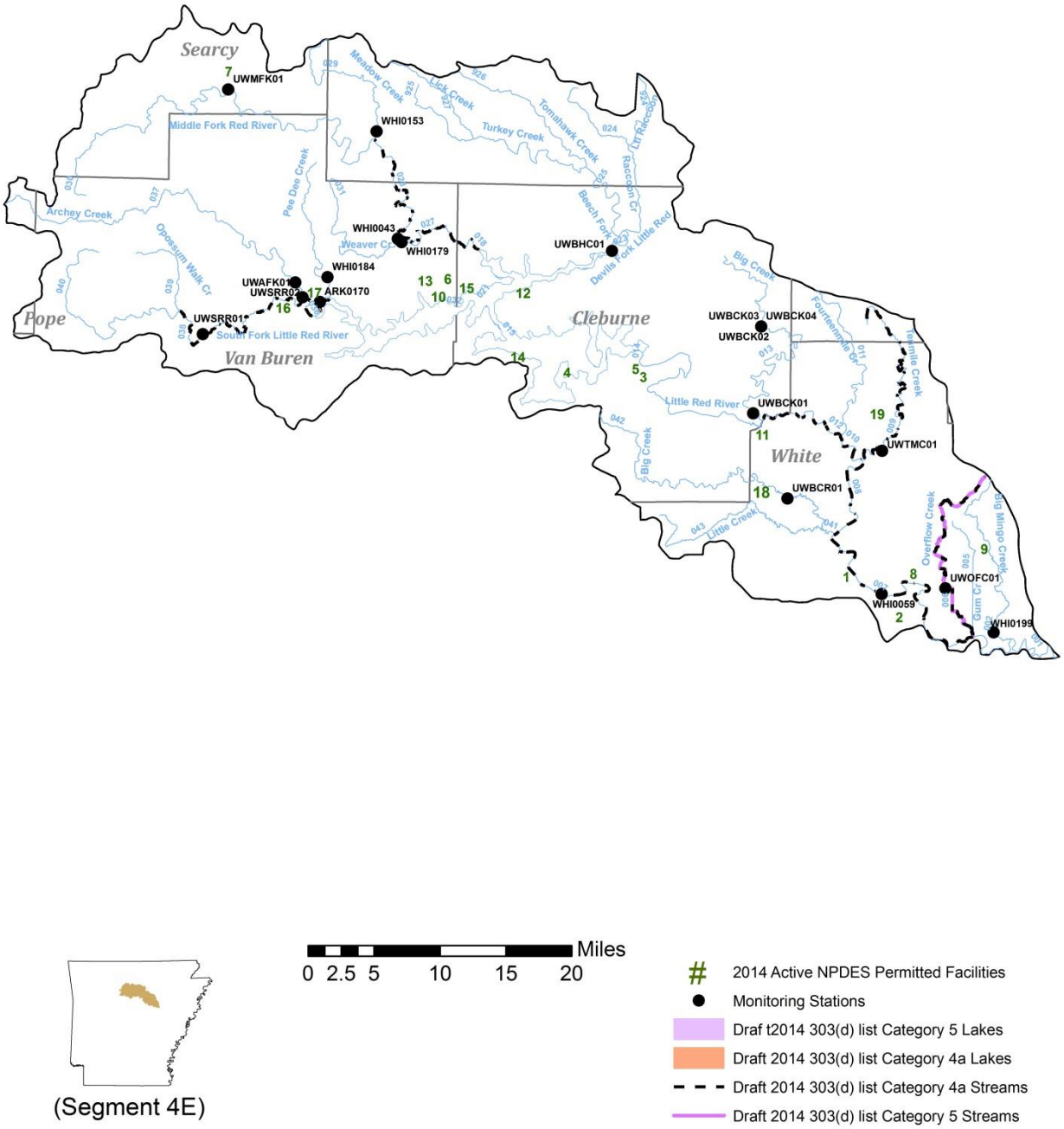


Table A-51: Planning Section 4E Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-4E																										
Little Red R.	11010014	-001	7.5		U															3				FISH CONSUMPTION	284.9	2
Big Mingo Cr.	11010014	-002	14.4		U															3				FISHERIES	256.2	21.7
Little Red R.	11010014	-003	5.4		U															3				PRIMARY CONTACT	230.5	47.4
Overflow Creek	11010014	-004	0.6		E	S	S	S	S	S	S	AG				Zn	PA			5	4a			SECONDARY CONTACT	277.9	0
Unnamed	11010014	-005	9.5		U															3				DRINKING SUPPLY	277.9	0
Overflow Cr.	11010014	-006	21.7	UWOFC01	M	S	N	S	S	S	S	AG				Zn	PA			5	4a			AGRI&INDUSTRY	277.9	0
Little Red R.	11010014	-007	21.4	WHI0059	M	S	S	S	S	S	S					PA				4a						
Little Red R.	11010014	-008	9.0		U	S										PA				4a						
Ten Mile Creek	11010014	-009	18.6	UWTMC01	M	S	S	N	S	S	S	UN	SE			PA	Tb			4a	4a					
Little Red R.	11010014	-010	2.9		U											PA				4a						
Fourteen Mile	11010014	-011	13.9		U															3						
Little Red R.	11010014	-012	8.0		E	S	S	N	S	S	S	UN				PA				4a						
Big Creek	11010014	-013	26.9	UWBCK01	M	S	S	S	S	S	S									1						
Little Red R.	11010014	-014	22.0		U															3						
Devils Fork	11010014	-023	2.9		U															3						
Raccoon Creek	11010014	-024	15.7		U															3						
Beech Creek	11010014	-025	28.4		U															3						
Middle Fork	11010014	-027	8.8	WHI0043	M	S	S	N	S	S	S	UN				PA				4a						
Middle Fork	11010014	-028	12.0		E	S	S	N	S	S	S	UN				PA				4a						
Middle Fork	11010014	-030	44.2	UWMFK01	M	S	S	S	S	S	S									1						
Meadow Creek	11010014	-029	10.3	WHI0153	M	S	S	S	S	S	S									1						
Sugar Cane Cr.	11010014	-031	10.8		U															3						
Pee Dee Creek	11010014	-034	12.9		U															3						
Archey Creek	11010014	-037	27.3	UWAFK01	M	S	S	S	S	S	S									1						
South Fork	11010014	-036	2.0		E	N	S	S	S	S	S	UN				Hg				4a						
South Fork	11010014	-038	14.7	UWSRR01&2	M	S	S	S	S	S	S									1						
Opossum Walk	11010014	-039	7.0		U															1						
South Fork	11010014	-040	17.7		E	S	S	S	S	S	S									3						
Big Creek	11010014	-041	1.2		E	S	S	S	S	S	S									1						
Big Creek	11010014	-042	27.5	UWBCR01	M	S	S	S	S	S	S									1						
Little Creek	11010014	-043	15.0		E	S	S	S	S	S	S									1						
TOTAL MILES	440.2																									
MILES UNASSESSED	162.3																									
MILES EVALUATED	56.5																									
MILES MONITORED	221.4																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
UWOFC01	Overflow Creek 1.5 miles southeast of Judsonia		2	R
WHI0059	Little Red River at Highway 367 below Searcy	7076517	1	A
UWTMC01	Ten Mile Creek at Highway 157 north of Providence		2	R
UWBCK01	Big Creek off Highway 110 near Hiram		2	R
WHI0043	Middle Fork Little Red River at Highway 9 near Shirley	7075000	1	A
UWMFK01	Middle Fork Little Red River at US 65 near Leslie		2	R
WHI0153	Meadow Creek at county road northeast of Old Lexington		2	R
UWAFK01	Archey Fork Little Red River at Highway 65 near Clinton		2	R
UWSRR01	South Fork Little Red River at Highway 95 near Scotland	7075270	2	R
UWSRR02	South Fork Little Red River at US 65 near Clinton	7075300	2	R
UWBCR01	Big Creek at Highway 16 neat Letona	7076530	2	R

Table A-52: Active NPDES permits for Planning Segment 4E

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0021601	SEARCY, CITY OF (WATER)	LTL RED R,WHITE R	007	11010014	White	1
AR0022322	KENSETT, CITY OF-WWTP	BLACK CR,LTL RED R,WHITE R	007	11010014	White	2
AR0022381	HEBER SPRINGS WASTEWATER TREATMENT PLANT	LTL RED R,WHITE R	014	11010014	Cleburne	3
AR0024066	EDEN ISLE CORP-WWTP	GREERS FERRY RSVR,LTL RED R,WHITE R	015	11010014	Cleburne	4
AR0029181	USDIFWS-GREERS FERRY FISH HATCHERY	LTL RED R	014	11010014	Cleburne	5
AR0034401	FAIRFIELD BAY WASTEWATER CORPORATION - DAVE CREEK WWTP	DAVE CR,GREERS FERRY LK,LTL RED R,WHITE R	032	11010014	Van Buren	6
AR0034657	LESLIE, CITY OF	COVE CR, MID FORK LTL RED R, GREERS FERRY LK	030	11010014	Searcy	7
AR0035742	JUDSONIA, CITY OF	LTL RED R	007	11010014	White	8
AR0035807	BALD KNOB, CITY OF - WASTEWATER TREATMENT FACILITY	BIG MINGO CR,LTL RED R,WHITE R	002	11010014	White	9
AR0037303	FAIRFIELD BAY WASTEWATER CORP. - HAMILTON HILLS WWTP	TRIB,LYNN CR,GREERS FERRY LK	032	11010014	Van Buren	10
AR0039233	PANGBURN, CITY OF - WWTF	LTL RED R,WHITE R	014	11010014	White	11
AR0043940	WEST SIDE SCHOOL DISTRICT #4	TRIB,GREERS FERRY RSR	015	11010014	Cleburne	12
AR0044580	FAIRFIELD BAY-LYNN CREEK WWTP	LYNN CR,GREERS FERRY LK,LTL RED R,WHITE R	032	11010014	Van Buren	13
AR0044920	DIAMOND BLUFF PROPERTY OWNERS IMPROVEMENT DISTRICT NO. 1	GREERS FERRY LK	015	11010014	Cleburne	14
AR0046078	FAIRFIELD BAY-COMM.CLUB,INC	HOOTN.HOL.CR,GREERS FRY LK,LTL RED	032	11010014	Van Buren	15
AR0048747	CLINTON WEST WW TREATMENT FACILITY	TRIB,S FK LTL RED R,GREERS FERRY LK, LTL RED R	038	11010014	Van Buren	16
AR0048836	CLINTON EAST WW TREATMENT FACILITY	TRIB,S FRK LTL RED R,GREERS FERRY LK,LTL RED R.	036	11010014	Van Buren	17
AR0049859	LETONA SANITARY SEWER	TRB,BIG CR,LTL RED R,WHITE R	042	11010014	White	18
AR0052051	SEECO, INC.-JUDSONIA WATER REUSE RECYCLING FACILITY	TRIB, HOLCOMB BT, FOURTEEN MILE CR, LTL RED R, WHITE R	002	11010014	White	19

SEGMENT 4F WHITE RIVER FROM MOUTH OF BLACK RIVER TO MOUTH OF BUFFALO RIVER

Segment 4F includes Baxter, Fulton, Izard, Searcy, Stone, Sharp, Cleburne, Independence, and Jackson Counties. The segment encompasses a 125-mile reach of the White River and its tributaries: Polk Bayou, Sylamore Creek, Salado Creek, Hicks Creek, North Fork River, Bennett's River, and others.

Summary of Water Quality Conditions

Waters within this segment have been designated for fish and wildlife propagation, primary and secondary contact recreation, and domestic, agricultural, and industrial water supply uses. Kayaking, canoeing, wade fishing, and primary contact recreation activities are prevalent in the waters of this segment.

The stream segment of the North Fork River below Lake Norfork was listed because of low dissolved oxygen concentrations. The source is from the hydropower facility located at the dam. A Total Maximum Daily Load was developed in 2009. In addition, changes in the operational plan, modifications to the turbines, and direct injection of oxygen into the receiving stream have all been implemented and funded by the hydropower facility to address this issue.

Figure A-35: Planning Segment 4F

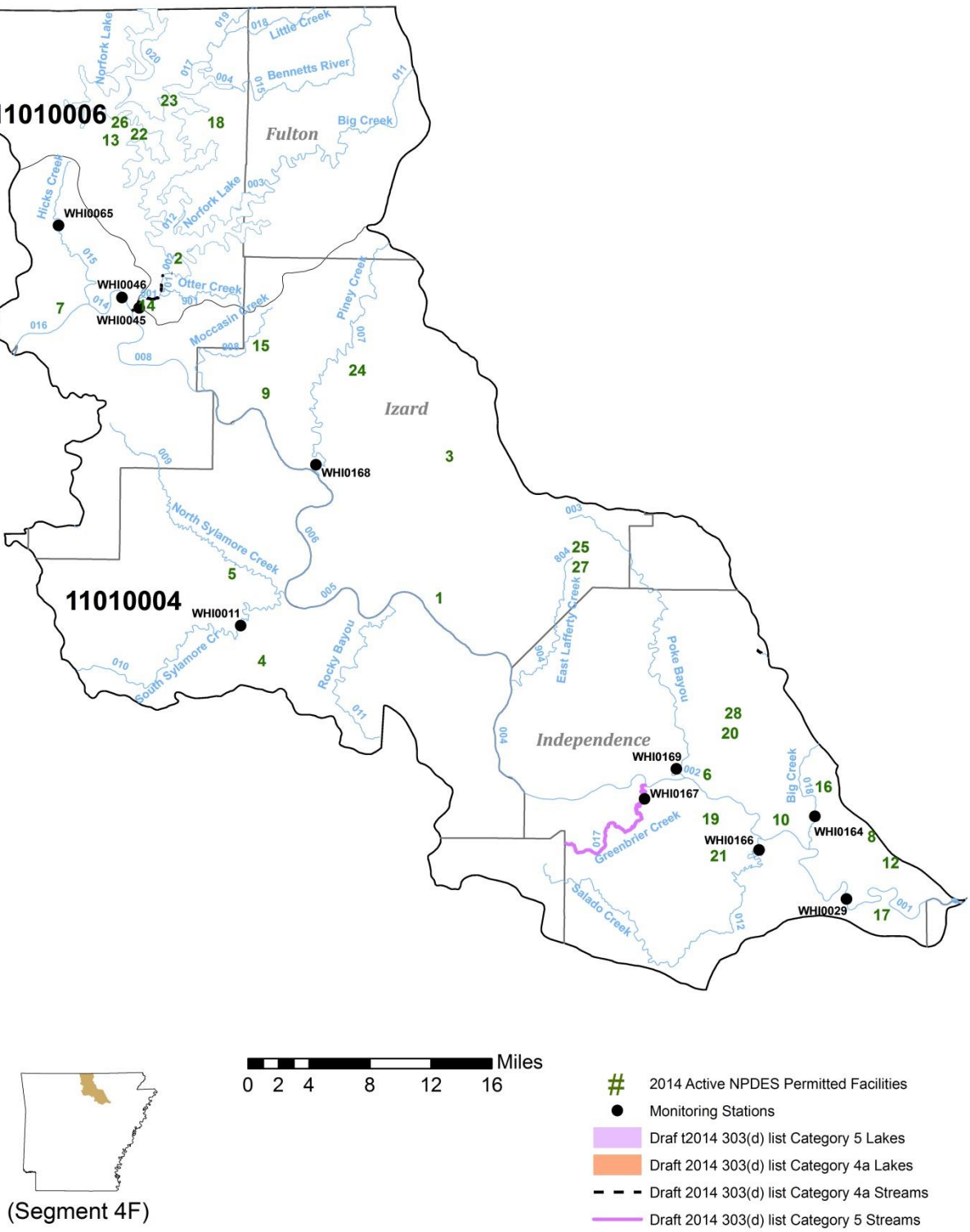


Table A-53: Planning Section 4F Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-4F																										
White River	11010004	-001	26.7	WHI0029	M	S	S	S	S	S	S									1				FISH CONSUMPTION	277.1	0.0
White River	11010004	-002	8.2		E	S	S	S	S	S	S									1				FISHERIES	266.5	10.6
Poke Bayou	11010004	-003	23.4	WHI0169	M	S	S	S	S	S	S									1				PRIMARY CONTACT	266.5	10.6
White River	11010004	-004	32.6		E	S	S	S	S	S	S									1				SECONDARY CONTACT	277.1	0.0
White River	11010004	-005	9.6		E	S	S	S	S	S	S									1				DRINKING SUPPLY	277.1	0.0
White River	11010004	-006	12.5		E	S	S	S	S	S	S									1				AGRI & INDUSTRY	277.1	0.0
White River	11010004	-008	23.6		E	S	S	S	S	S	S									1						
Piney Creek	11010004	-007	19.7	WHI0168	M	S	S	S	S	S	S									1						
North Sylamore	11010004	-009	18.4		E	S	S	S	S	S	S									1						
South Sylamore	11010004	-010	16.0	WHI0011	M	S	S	S	S	S	S									1						
Rocky Bayou	11010004	-011	13.5		E	S	S	S	S	S	S									1						
Salado Creek	11010004	-012	27.4	WHI0166	M	S	S	S	S	S	S									1						
North Sylamore	11010004	-013	0.7		E	S	S	S	S	S	S									1						
White River	11010004	-014	4.7	WHI0046	M	S	S	S	S	S	S									1						
Hicks Creek	11010004	-015	9.1	WHI0065	M	S	S	S	S	S	S	MP				PA				5						
White River	11010004	-016	6.8		E	S	S	S	S	S	S									1						
Greenbrier Creek	11010004	-017	10.6	WHI0167	M	S	N	N	S	S	S	UN	UN			DO	PA			5	5					
Big Creek	11010004	-018	9.4	WHI0164	M	S	S	S	S	S	S									1						
North Fork River	11010006	-001	4.2	WHI0045	M	S	S	S	S	S	S	HP				DO				4a						
Big Creek	11010006	-011	18.4		U															3						
Bennetts River	11010006	-015	15.3		U															3						
Bennetts River	11010006	-017	3.0		U															3						
Bennetts River	11010006	-019	12.7		U															3						
Little Creek	11010006	-018	7.8		U															3						
TOTAL MILES	334.3																									
MILES UNASSESSED	57.2																									
MILES EVALUATED	125.9																									
MILES MONITORED	151.2																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
WHI0029	White River at Oil Trough	7061000	1	A
WHI0169	Poke Bayou near Batesville		2	R
WHI0168	Piney Creek on county road near Boswell		2	R
WHI0011	South Sylamore Creek below Lick Fork Creek		1	A
WHI0166	Salado Creek at Highway 14 near Salado		2	R
WHI0046	White River near Norfork	7057370	1	A
WHI0065	Hicks Creek below Mountain Home		1	A
WHI0167	Greenbrier Creek at Highway 25 near Batesville		2	R
WHI0164	Big Creek at Highway 394 near Magness		2	R
WHI0045	North Fork White River near Norfork		1	A

Table A-54: Active NPDES permits for Planning Segment 4F

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0001899	UNIMIN CORPORATION - GUION FACILITY	ROCKY BU (1) & BACKWATER SLU (9)	004	11010004	Izard	1
AR0002437	U.S. FISH AND WILDLIFE SERVICE - NORFORK NATL FISH HATCHERY	DRY RUN CR,N FORK R,WHITE R	002	11010006	Baxter	2
AR0020036	MELBOURNE, CITY OF-WWTP	MILL CR,PINEY CR,WHITE R	007	11010004	Izard	3
AR0020117	MOUNTAIN VIEW, CITY OF	HUGHES CR,TUBBS CR,LICK FRK CR,S SYLAMORE CR,WHITE	005	11010004	Stone	4
AR0020664	USDAFS - BLANCHARD SPRINGS CAVERN	N SYLAMORE CR,WHITE R	009	11010004	Stone	5
AR0020702	BATESVILLE WW TREATMENT PLANT	WHITE R	002	11010004	Independence	6
AR0021211	MOUNTAIN HOME, CITY OF-WWTP	HICKS CR,BIG CR,WHITE R	015	11010004	Baxter	7
AR0021229	CITY OF NEWARK	WHITE R	001	11010004	Independence	8
AR0034606	CALICO ROCK, CITY OF	CALICO CR, WHITE R	008	11010004	Izard	9
AR0035386	FUTUREFUEL CHEMICAL COMPANY	DIT,WHITE R	001	11010004	Independence	10
AR0036081	HOLIDAY MOUTAIN RESORT	TRIB,S SYLAMORE CR,WHITE R	010	11010004	Stone	11
AR0037451	ENTERGY ARKANSAS, INC. - INDEPENDENCE PLANT	WHITE R	001	11010004	Independence	12
AR0042226	ROLLING MEADOWS MOBILE HOME ESTATES	TRIB,PANTHER CR,NORFORK LK,WHITE R	012	11010004	Baxter	13
AR0043036	NORFORK WW TREATMENT PLANT	TOWN CR,WHITE R	008	11010004	Baxter	14
AR0044016	AR DEPT OF CORRECTION-NCU-IZARD COUNTY FACILITY	UNNAMED TRIB,MOCCASIN CR,WHITE R	008	11010004	Izard	15
AR0046680	SULPHUR ROCK, CITY OF	BIG CR,WHITE R BASIN	018	11010004	Independence	16
AR0047597	OIL TROUGH, CITY OF	WHITE R	001	11010004	Independence	17
AR0048798	HENDERSON CAR WASH/LAUNDROMAT	TRIB, LK NORFORK	012	11010006	Baxter	18
AR0048992	AHTD-DISTRICT 5 HEADQUARTERS	DOUBLE BR,CANEY CR,SALADO CR	012	11010004	Independence	19
AR0049069	CUSHMAN SAW MILL INC	TRIB PFEIFER CR,PFEIFER CR,MILLER CR,POKE BU	002	11010004	Independence	20

Table A-54: Active NPDES permits for Planning Segment 4F

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0050784	SOUTHSIDE PUBLIC WATER/WTP	CANEY CR,SALADO CR,WHITE R	012	11010004	Independence	21
AR0051209	ROYAL VIEW PROPERTIES, LLC	UNNAMED TRIB LK NORFORK, NORTH FORK R, WHITE R	012	11010006	Baxter	22
AR0051225	LAKE NORFORK QUICK STOP	TRIB, TO NORFORK LK, NORFORK LK, N FORK R, WHITE	020	11010006	Baxter	23
AR0051748	EVERGREEN PROCESSING, LLC - D/B/A TWIN MOUNTAIN QUARRY	UNNAMED TRIB, PINEY CR, WHITE R	007	11010004	Izard	24
AR0051772	BLUEBIRD SAND, LLC D/B/A BLUEBIRD SAND PROCESSING PLANT	TRIB, EAST LAFFERTY CR, WHITE R	004	11010004	Izard	25
AR0051837	CHIP & SHONNA SMITH - D/B/A THE CHAPARRAL AT CRANFIELD	TRIB, NORFORK LK, NORTH FORK R, WHITE R	020	11010006	Baxter	26
AR0051969	BLUEBIRD SAND, LLC D/B/A BLUEBIRD SAND PROCESSING PLANT	TRIB,EAST LAFFERTY CR,WHITE R	004	11010004	Izard	27
AR0052060	T MART #11 LAUNDROMAT	TRIB,PFEIFFER CR,MILLER CR,POKE BU,WHITE R	003	11010004	Independence	28

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SEGMENT 4G BLACK RIVER, STRAWBERRY RIVER, AND TRIBUTARIES

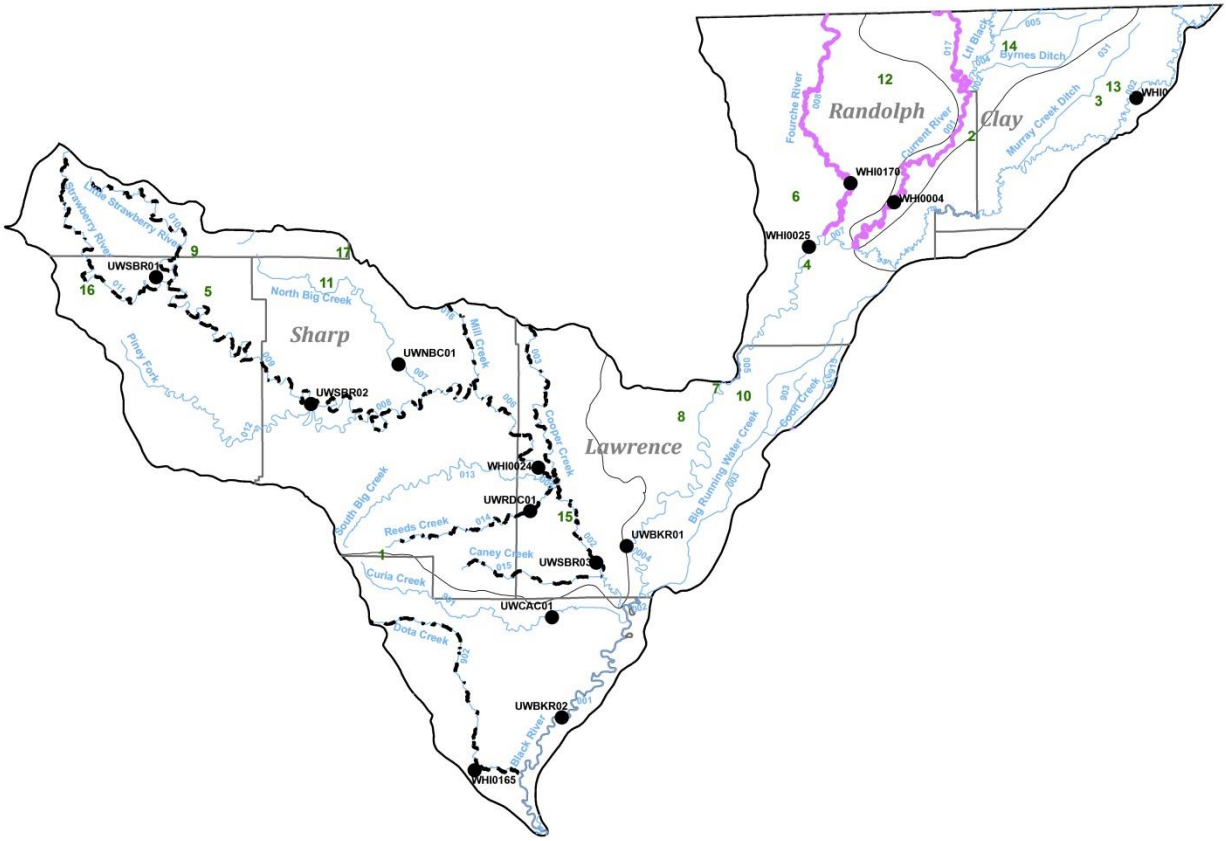
Segment 4G includes portions of Fulton, Izard, Sharp, Independence, Jackson, Lawrence, Randolph, Clay, and Greene Counties in the northeast corner of the State. This segment encompasses a 121-mile reach of the Black River to the Missouri state line, and its tributaries; the Strawberry River and Current River.

Summary of Water Quality Conditions

Waters in this segment are designated for propagation of fish and wildlife; primary and secondary contact recreation; and domestic, agricultural, and industrial water supplies. Additionally, 112.2 miles of these streams are designated as outstanding state or national resource waters. The waters of this segment are routinely used for canoeing, fishing and primary contact recreation activities.

Almost 40 miles of Extraordinary Resource Waters in this segment were assessed as not supporting the Fisheries Designated use due to excessive turbidity levels. The total suspended solids and total phosphorus levels show peaking values much above normal. This is most likely from agriculture activities probably associated with pasturing and animal grazing to the edge of the stream bank. A TMDL was developed in 2006 addressing the silt issue.

Figure A-36: Planning Segment 4G



(Segment 4G)

0 2.5 5 10 15 20 Miles

2014 Active NPDES Permitted Facilities

● Monitoring Stations

Draf t2014 303(d) list Category 5 Lakes

Draft 2014 303(d) list Category 4a Lakes

Draft 2014 303(d) list Category 4a Streams

Draft 2014 303(d) list Category 5 Streams

Table A-55: Planning Section 4G Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use						SOURCE				CAUSE				STATUS				USE	SUPPORT	NON-SUPPORT
						FC	FSH	PC	SC	DW	AI	1	2	3	4	1	2	3	4	1	2	3	4			
SEG-4G																										
Black River	11010007	-001	24.2		E	S	S	S	S	S	S									1				FISH CONSUMPTION	440.7	0
Black River	11010007	-002	22.7	WH10003	M	S	S	S	S	S	S									1				FISHERIES	313.1	127.6
Murray Creek	11010007	-031	15.2		U															3				PRIMARY CONTACT	440.7	0
Current River	11010008	-001	23.6	WH10004	M	S	S	S	S	S	S	SE				Tb				5				SECONDARY CONTACT	440.7	0
Current River	11010008	-017	12.0		E	S	S	S	S	S	S	SE				Tb				5				DRINKING SUPPLY	440.7	0
Little Black	11010008	-002	2.5		U															3				AGRI & INDUSTRY	440.7	0
Byrnes Ditch	11010008	-003	16.2		U															3						
Little Black	11010008	-004	3.7		U															3						
Indian Creek	11010008	-005	4.1		U															3						
Black River	11010009	-001	25.8	UWBKR02	M	S	S	S	S	S	S									1						
Black River	11010009	-002	1.2		E	S	S	S	S	S	S									1						
Black River	11010009	-004	27.4	UWBKR01	M	S	S	S	S	S	S									1						
Black River	11010009	-005	17.5	WH10025	M	S	S	S	S	S	S									1						
Black River	11010009	-007	3.8		U															3						
Big Running C.	11010009	-003	36.0		U															3						
Fourche River	11010009	-008	25.0	WH10170	M	S	N	S	S	S	S	SE				Tb				5						
Strawberry R.	11010012	-001	4.4		E	S	S	S	S	S	S									1						
Strawberry R.	11010012	-002	9.4	UWSBR03	M	S	N	S	S	S	S	SE				Tb				4a						
Coopers Creek	11010012	-003	11.8	WH10143S	M	S	S	S	S	S	S									1						
Strawberry R.	11010012	-004	0.3		E	S	N	S	S	S	S	SE				Tb				4a						
Strawberry R.	11010012	-005	0.7		E	S	N	S	S	S	S	SE				Tb				4a						
Strawberry R.	11010012	-006	19.0	WH10024	M	S	N	S	S	S	S	SE				Tb				4a						
N. Big Creek	11010012	-007	20.8	UWNBC01	M	S	S	S	S	S	S									1						
Strawberry R.	11010012	-008	8.4		E	S	N	S	S	S	S	SE				Tb				4a						
Strawberry R.	11010012	-009	28.4	UWSBR02	M	S	N	S	S	S	S	SE				Tb				4a						
L. Strawberry R.	11010012	-010	16.0	WH10143H+	M	S	N	S	S	S	S	SE				Tb				4a						
Strawberry R.	11010012	-011	20.4	UWSBR01	M	S	N	S	S	S	S	SE				Tb				4a						
Piney Fork	11010012	-012	26.1	WH10143L+	M	S	S	S	S	S	S									1						
S. Big Creek	11010012	-013	19.3	WH10143J+	M	S	S	S	S	S	S									1						
Reeds Creek	11010012	-014	15.0	UWRDC01	M	S	S	S	S	S	S									1						
Mill Creek	11010012	-016	9.9	WH10143N	M	S	S	S	S	S	S									1						
Caney Creek	11010012	-015	11.6	WH10143Q&R	M	S	S	S	S	S	S									1						
Curia Creek	11010009	-901	18.0	UWCAC01	M	S	S	S	S	S	S									1						
Data Creek	11010009	-902	21.8	WH10165	M	S	S	S	S	S	S									1						
TOTAL MILES	522.2																									
MILES UNASSESSED	81.5																									
MILES EVALUATED	51.2																									
MILES MONITORED	389.5																									

Table A-55 cont.: Planning Section 4G Designated Use Attainment and Water Quality Status

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
WHI0003	Black River at Highway 63 east of Corning	7064000	1	A
WHI0004	Current River near Pocahontas	7068850	1	A
UWBKR02	Black River at Highway 37 east of Cord	7074420	1	R
UWBKR01	Black River east of Highway 361 north of Strawberry		1	R
WHI0025	Black River at Pocahontas	7069000	1	A
WHI0170	Fourche Creek at Highway 166 north of Pocahontas		2	R
UWSBR03	Strawberry River at Highway 361 near Saffell		1	R
WHI0143S	Cooper Creek at county road east of Highway 115 south of Smithville		2	S
WHI0024	Strawberry River south of Smithville	7074100	1	A
UWNBC01	North Big Creek off Highway 354 east of Center		2	R
UWSBR02	Strawberry River at Highway 167 at Evening Shade	7074000	1	R
WHI0143H+	Little Strawberry River at Highway 354 east of Wiseman		1	S
UWSBR01	Strawberry River off Highway 354 near Wiseman		1	R
WHI0143L+	Piney Fork Creek at county road west of Zion		2	S
WHI0143J+	South Big Creek at Highway 117 near Jesup		2	S
UWRDC01	Reeds Creek at Highway 117 north of Strawberry		2	R
WHI0143N	Mill Creek on Strawberry Road south of Sitka		2	S
WHI0143Q+	Caney Creek on county road 346 near Saffell		2	S
UWCAC01	Curia Creek at Highway 25 north of Dowdy		1	R
WHI0165	Data Creek on Highway 25 near Mt. Zion		2	S

Table A-56: Active NPDES permits for Planning Segment 4G

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0022110	CAVE CITY, CITY OF-WASTEWATER TREATMENT PLANT	CURIA CR,BLACK R,WHITE R	901	11010009	Sharp	1
AR0022209	REYNO, CITY OF	MURRAY CR,GAR SLU,BLACK R,WHITE R	001	11010007	Randolph	2
AR0033979	CORNING, CITY OF-WWTP	BLACK R	002	11010007	Clay	3
AR0034835	POCAHONTAS, CITY OF-WWTP	BLACK R,WHITE R	005	11010009	Randolph	4
AR0035254	HORSESHOE BEND, CITY OF - WHITE OAK WWTF	TRB,STRAWBERRY R,BLACK R,WHITE R	009	11010012	Izard	5
AR0036820	MACLEAN-ESNA	TRIB,MANSKER CR TRIB,BLACK R,WHITE R	005	11010009	Randolph	6
AR0037508	BLACK ROCK WW TREATMENT FAC.	TRIB,BLACK R,WHITE R	004	11010009	Lawrence	7
AR0038199	AR PARKS & TOUR-LAKE CHARLES STATE PARK	LK CHARLES, FLAT CR, BLACK R, WHITE R	004	11010009	Lawrence	8
AR0039608	HORSESHOE BEND, CITY-PARADISE ACRES	TRB,HUBBLE BR,LTL STRWB R,STRWB R,	010	11010012	Izard	9
AR0040355	PORTIA, CITY OF	BLACK R,BLACK & SPRING RS,WHITE R	004	11010009	Lawrence	10
AR0041742	ASH FLAT, CITY OF - WASTEWATER TREATMENT FACILITY	N BIG CR,STRWBERRY R,BLACK R,WHITE R	007	11010012	Sharp	11
AR0043834	MAYNARD WASTEWATER FACILITY	LEMMONS CR,BIG CR,FOURCHE R,BLACK	008	11010009	Randolph	12
AR0047911	J. W. BLACK LUMBER COMPANY	TRIB,CORNING LK,BLACK R	031	11010007	Clay	13
AR0048071	SUCCESS, CITY OF	TRIB,LTL BLACK R,CURRENT R,BLACK R,WHITE R	003	11010008	Clay	14
AR0048488	WESTERN LAWRENCE CO WWT DIST	STRAWBERRY R TRIB,STRAWBERRY R	002	11010012	Lawrence	15
AR0049701	OXFORD, CITY OF	SANDY CR,STRAWBERRY R,BLACK R,WHITE R	011	11010012	Izard	16
AR0050261	HIGHLAND WW TREATMENT FACILITY	TRIB,WORTHINGTON CR, WHITE R	007	11010012	Sharp	17

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SEGMENT 4H SPRING RIVER, SOUTH FORK SPRING RIVER, AND ELEVEN POINT RIVER

Segment 4H, in north central Arkansas, includes portions of Fulton, Sharp, and Randolph Counties. The segment encompasses the entire 46-mile length of the Spring River and its tributaries; the South Fork Spring River, the Eleven Point River, Myatt Creek, and Martin's Creek.

Summary of Water Quality Conditions

Waters in this segment are designated for propagation of fish and wildlife; primary and secondary contact recreation; and domestic, agricultural, and industrial water supplies. Additionally, about 74 percent of these waters are designated as outstanding state or national resource waters. The waters in this segment are routinely used for canoeing, kayaking, wade fishing, and primary contact recreation activities.

One reach of the Eleven Point River was listed as not attaining the turbidity standard. Rainfall the past five years has been well above normal and has included an exceptionally high number of storm events and record runoffs during the normally low flow period.

Figure A-37: Planning Segment 4H

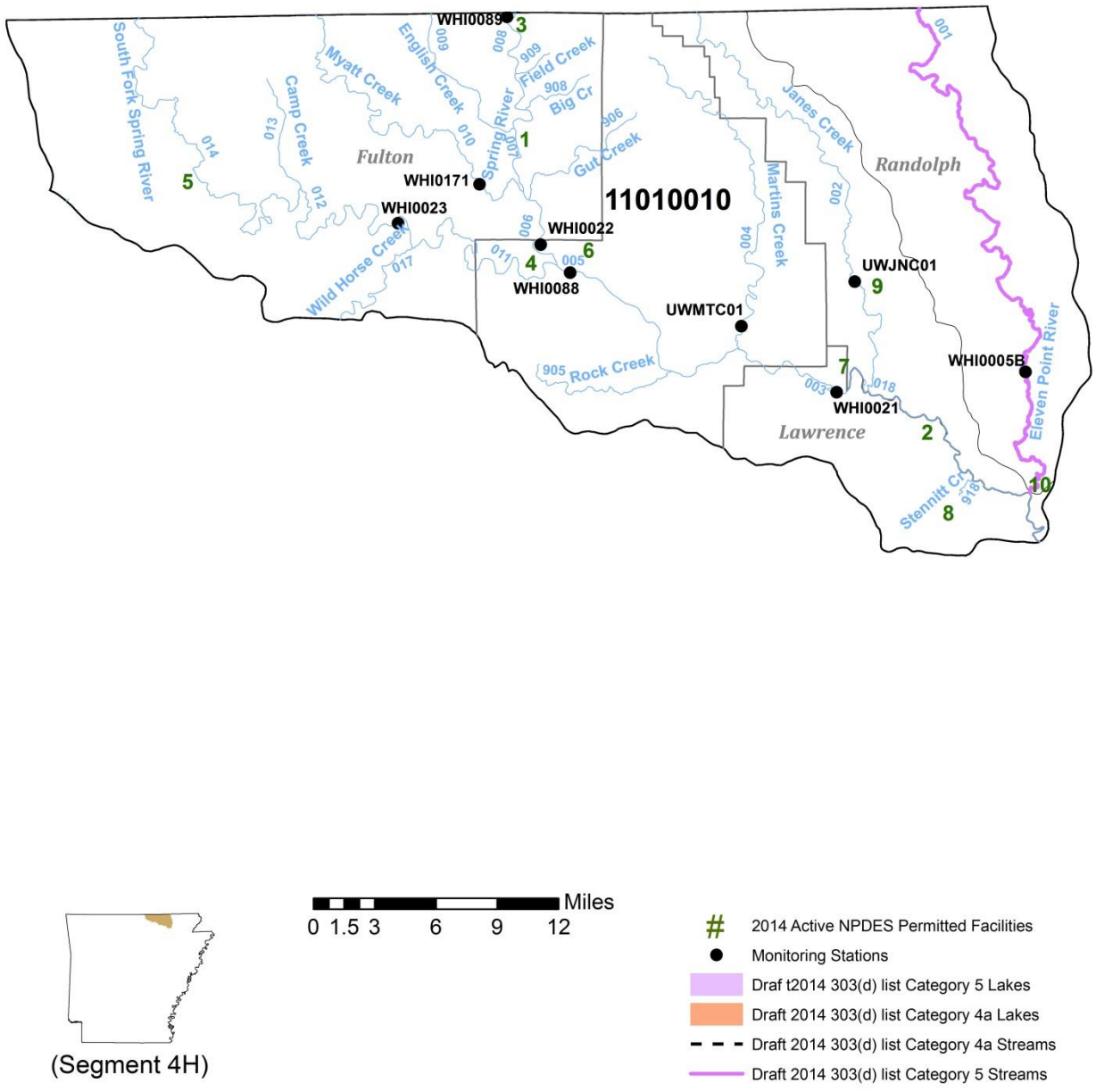

Table A-57: Planning Section 4H Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-4H																				1						
Spring River	11010010	-001	3.3		E	S	S	S	S	S	S									1				FISH CONSUMPTION	238.1	0
Spring River	11010010	-018	12.0		E	S	S	S	S	S	S									1				FISHERIES	238.1	0
Janes Creek	11010010	-002	26.7	UWJNC01	M	S	S	S	S	S	S									1				PRIMARY CONTACT	238.1	0
Spring River	11010010	-003	9.4	WHI0021	M	S	S	S	S	S	S									1				SECONDARY CONTACT	238.1	0
Martins Creek	11010010	-004	19.0	UWMTC01	M	S	S	S	S	S	S									1				DRINKING SUPPLY	238.1	0
Spring River	11010010	-005	13.2	WHI0088	M	S	S	S	S	S	S									1				AGRI & INDUSTRY	238.1	0
Spring River	11010010	-006	5.3	WHI0022	M	S	S	S	S	S	S									1						
Spring River	11010010	-007	4.0		E	S	S	S	S	S	S									1						
Warm Fork Spring R.	11010010	-008t	3.1	WHI006A	M	S	S	S	S	S	S									1						
Spring River	11010010	-008	8.8	WHI0089	M	S	S	S	S	S	S									1						
English Creek	11010010	-009	6.5	WHI0143H	M	S	S	S	S	S	S									1						
Myatt Creek	11010010	-010	26.0	WHI0171	M	S	S	S	S	S	S									1						
S. Fork Spring	11010010	-011	13.4		E	S	S	S	S	S	S									1						
S. Fork Spring	11010010	-012	15.6	WHI0023	M	S	S	S	S	S	S									1						
S. Fork Spring	11010010	-014	24.0		E	S	S	S	S	S	S									1						
Camp Creek	11010010	-013	7.0		E	S	S	S	S	S	S									1						
Wild Horse C.	11010010	-017	7.7		E	S	S	S	S	S	S									1						
Eleven Point	11010011	-001	33.1	WHI0005B	M	S	S	S	S	S	S	SE				Tb				5						
TOTAL MILES	238.1																									
MILES UNASSESSED	0																									
MILES EVALUATED	71.4																									
MILES MONITORED	166.7																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
UWJNC01	Janes Creek at Highway 90 near Ravenden Springs		2	R
WHI0021	Spring River south of Ravenden	7069370	1	A
UWMTC01	Martins Creek at Highway 63 near Williford		2	R
WHI0088	White River at Town Bridge in Hardy		1	A
WHI0022	Spring River at low water crossing near Hardy	7069266/7069305	1	A
WHI0006A	Warm Fork Spring River near Thayer, Mo	7069170	1	A
WHI0089	Mammoth Spring east bridge at spillway		1	A
WHI0171	Myatt Creek at Bakers Ford road near Saddle		1	R
WHI0023	South Fork of Spring River near Saddle	7069295	1	A
WHI0005B	Eleven Point River near Pocahontas	7072000	1	A

Table A-58: Active NPDES permits for Planning Segment 4H

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0002879	JIM HINKLE/SPRING RIVER FISH HATCHERY	SPRING R, BLACK R, WHITE R	008	11010010	Fulton	1
AR0021628	IMBODEN, CITY OF-WWTF	WAYLAND CR,SPRING R,BLACK R,WHITE R	015	11010010	Lawrence	2
AR0023850	MAMMOTH SPRING WWTP	TRIB,SPRING R	008	11010010	Fulton	3
AR0034282	CHEROKEE VILLAGE SEWER, INC	S FRK SPRING R, SPRING R	011	11010010	Sharp	4
AR0034789	SALEM, CITY OF	S FRK SPRING R,BLACK R,WHITE R	014	11010010	Fulton	5
AR0037991	HARDY, CITY OF	SPRING R,BLACK R,WHITE R	005	11010010	Sharp	6
AR0041254	RAVENDEN, CITY OF	TRIB,SPRING R,BLACK R	003	11010010	Lawrence	7
AR0046922	BLACK ROCK QUARRY	TRIB,BRUSHY CR,STENNITT CR,SPRING R,BLACK R	018	11010010	Lawrence	8
AR0048712	RAVENDEN SPRINGS, TOWN OF	JOHNS CR TRIB,JOHNSS CR,SPRING R,BLACK R	002	11010010	Randolph	9
AR0051616	NORTHEAST ARKANSAS PUBLIC WATER AUTHORITY - WATER TREATMENT PLANT	SPRING R, BLACK R, WHITE R	001	11010011	Randolph	10

SEGMENT 4I WHITE RIVER: CROOKED CREEK TO LONG CREEK

Segment 4I, located in north central Arkansas, includes portions of Boone and Marion Counties, and small portions of Baxter, Searcy, and Newton Counties. This segment encompasses a 31 mile reach of the White River and Crooked Creek and its tributaries.

Summary of Water Quality Conditions

Waters in this segment are designated for propagation of fish and wildlife; primary and secondary contact recreation; and domestic, agricultural, and industrial water supplies. Bull Shoals Reservoir is designated as an Arkansas Extraordinary Resource Water. The waters in this segment offer outstanding fishing, boating, canoeing, and primary contact water recreation opportunities.

Data from Crooked Creek above and below the City of Harrison sewage treatment plant demonstrate elevated parameters from this discharge and also reflects urban area runoff during storm events. In addition, both segments are listed for elevated total dissolved solids concentrations.

Figure A-38: Planning Segment 4I

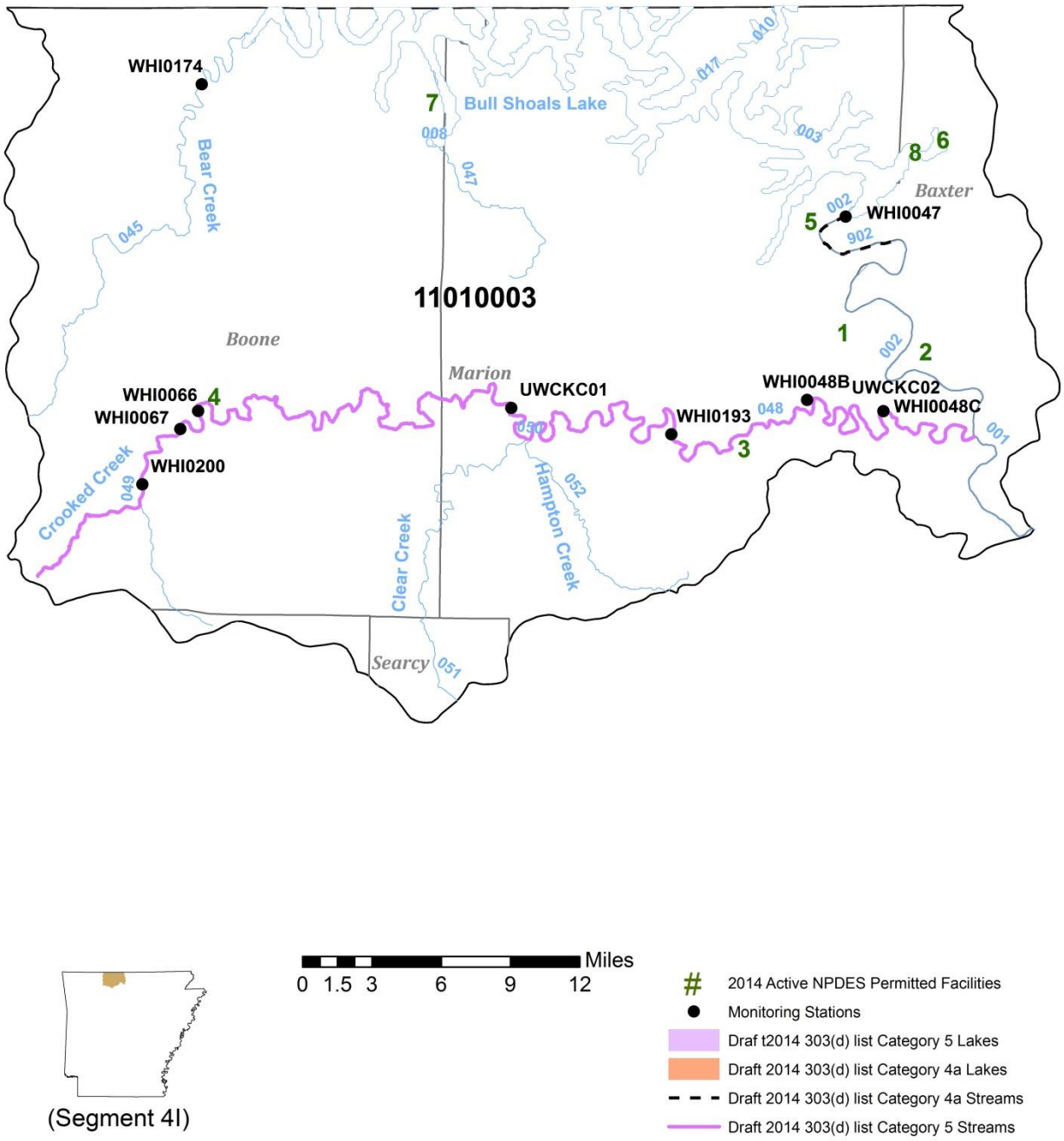

Table A-59: Planning Section 4I Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-4I																										
White River	11010003	-001	7.6		E	S	N	S	S	S	S	HP				DO				4a				FISH CONSUMPTION	124.8	0
White River[1]	11010003	-902	3.0	USGS	M	S	N	S	S	S	S	HP				DO				4a				FISHERIES	78	46.8
White River[2]	11010003	-002	20.4	USGS	M	S	S	S	S	S	S									1				PRIMARY CONTACT	124.8	0
Bear Creek	11010003	-045	25.9	WH10174	M	S	S	S	S	S	S									1				SECONDARY CONTACT	124.8	0
E. Horizon C.	11010003	-047	8.9		U															3				DRINKING SUPPLY	124.8	0
Crooked Creek	11010003	-048	31.7	WH00148A+	M	S	S	S	S	S	S	UN				TDS				5				AGRI & INDUSTRY	124.8	0
Crooked Creek	11010003	-049	36.2	WH10066+	M	S	N	S	S	S	S	UN				TDS				5						
Clear Creek	11010003	-050	0.4		U															3						
Clear Creek	11010003	-051	17.6		U															3						
Hampton Creek	11010003	-052	9.1		U															3						
TOTAL MILES	160.8																									
MILES UNASSESSED	36.0																									
MILES EVALUATED	7.6																									
MILES MONITORED	117.2																									

1 Reach formally -002U

2 Reach formally -002L

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
WH10174	Bear Creek at Highway 14 east of New Hope	7054410	2	R
WH10193	Crooked Creek at Highway 14 near Yellville	7055608	1	A
WH10148B	Crooked Creek south of Flippin	7055607	1	A
WH10148C	Crooked Creek at Highway 101 near Rea Valley		1	A
WH10066	Crooked Creek below Harrison		1	A
WH10067	Crooked Creek above Harrison		1	A

Table A-60: Active NPDES permits for Planning Segment 4I

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0021717	FLIPPIN, CITY OF	FALLEN ASH CR,WHITE R	002	11010003	Marion	1
AR0033545	COTTER-GASSVILLE, CITIES OF	UNNAMED TRIB WHITE R, WHITE R	002	11010003	Baxter	2
AR0034037	YELLVILLE, CITY OF	CROOKED CR,WHITE R	048	11010003	Marion	3
AR0034321	HARRISON, CITY OF	CROOKED CR,WHITE R	049	11010003	Boone	4
AR0037028	BULL SHOALS, CITY OF	WHITE R	902	11010003	Marion	5
AR0037435	HOLIDAY SHORE RESORT	BULL SHOALS LK,WHITE R	003	11010003	Baxter	6
AR0043753	SUGARLOAF WASTEWATER TREATMENT DISTRICT	E SUGAR LOAF CR,BULL SHOALS LK, WHITE R	020	11010003	Boone	7
AR0050865	CEDAR OAKS HOMEOWNERS ASSOC.	BULL SHOALS LK,WHITE R	004	11010003	Garland	8

SEGMENT 4J BUFFALO RIVER AND TRIBUTARIES

Segment 4J includes portions of Newton, Searcy, and Marion Counties, and small portions of Boone, Pope, Baxter, Stone, and Van Buren Counties in north central Arkansas. This segment contains the entire 113-mile length of the Buffalo River and its tributaries; Big Creek, Little Buffalo River, Richland Creek, Water Creek, Bear Creek, and others.

Summary of Water Quality Conditions

Waters in this segment are designated for propagation of fish and wildlife; primary and secondary contact recreation; and domestic, agricultural, and industrial water supplies. Approximately 48 percent of the stream miles are designated as outstanding state or national resource waters. In cooperation with the U.S. Parks Service, approximately 60 monitoring stations on the Buffalo River, its tributaries, and watershed springs are routinely monitored.

Waters in this segment are highly prized for, and heavily used for primary contact recreation activities, canoeing, kayaking, and fishing.

Bear Creek below the city of Harrison is listed as not attaining the drinking water designated use because of elevated total dissolved solids. The source is thought to be from a municipal point source discharge.

Figure A-39: Planning Segment 4J

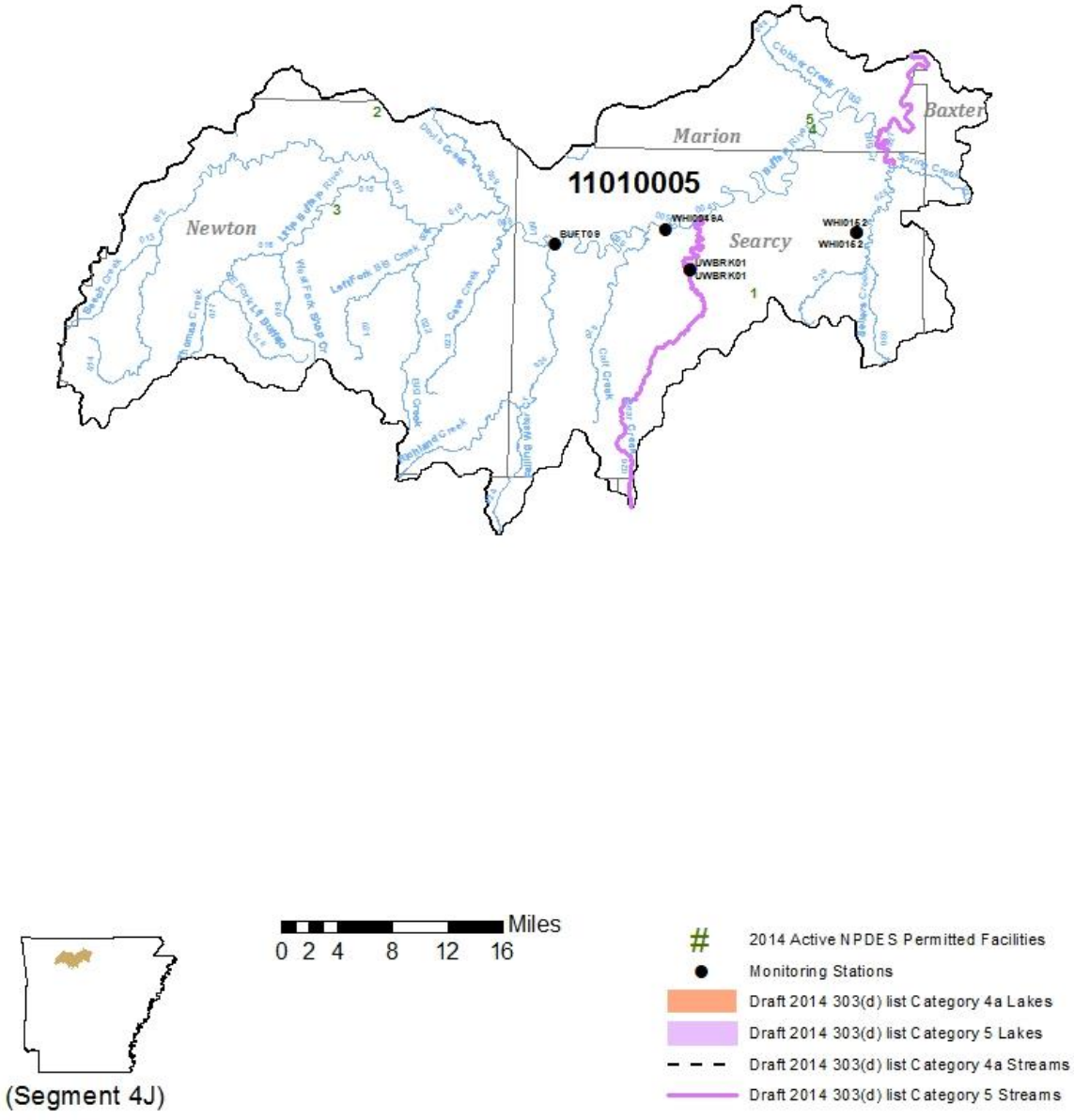

Table A-61: Planning Section 4J Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-4J																										
Buffalo River	11010005	-001	11.3	BUFR09	M	S	S	S	S	S	S					Tm				5				FISH CONSUMPTION	317.1	0
Buffalo River	11010005	-002	8.7		M	S	S	S	S	S	S									1				FISHERIES	314.5	2.6
Clabber Creek	11010005	-003	7.3	BUFT17	M	S	S	S	S	S	S									1				PRIMARY CONTACT	317.1	0
Buffalo River	11010005	-004	27.8	BUFR07&08	M	S	S	S	S	S	S									1				SECONDARY CONTACT	317.1	0
Buffalo River	11010005	-005	6.9	WHI0049A	M	S	S	S	S	S	S									1				DRINKING SUPPLY	293.2	23.9
Buffalo River	11010005	-006	13.7		M	S	S	S	S	S	S									1				AGRI & INDUSTRY	317.1	0
Buffalo River	11010005	-007	5.9	BUFR05	M	S	S	S	S	S	S									1						
Buffalo River	11010005	-008	2.6		M	S	S	S	S	S	S									1						
Davis Creek	11010005	-009	7.3	BUFT07	M	S	S	S	S	S	S									1						
Buffalo River	11010005	-010	6.2		M	S	S	S	S	S	S									1						
Buffalo River	11010005	-011	6.0	BUFR04	M	S	S	S	S	S	S									1						
Buffalo River	11010005	-012	25.8	BUFR02&03	M	S	S	S	S	S	S									1						
Sams Creek	11010005	-013	9.0		M	S	S	S	S	S	S									1						
Buffalo River	11010005	-014	18.2	BUFR01	M	S	S	S	S	S	S									1						
Little Buffalo	11010005	-015	11.6	BUFT05	M	S	S	S	S	S	S									1						
Little Buffalo	11010005	-016	6.6		E	S	S	S	S	S	S									1						
Thomas Creek	11010005	-017	5.2		U															3						
East Fork	11010005	-018	8.9		U															3						
Shop Creek	11010005	-019	8.6		U															3						
Big Creek	11010005	-020	3.2	BUFT06	M	S	S	S	S	S	S									1						
Big Creek Left Fk.	11010005	-021	11.7		E	S	S	S	S	S	S									1						
Big Creek	11010005	-022	13.7		E	S	S	S	S	S	S									1						
Big Cave Cr.	11010005	-023	13.0	BUFT08	M	S	S	S	S	S	S									1						
Richland Creek	11010005	-024	28.7	BUFT09	M	S	S	S	S	S	S									1						
Calf Creek	11010005	-025	15.0	BUFT10	M	S	S	S	S	S	S									1						
Bear Creek	11010005	-026	23.9	UWBRK01,+	M	S	S	S	S	N	S	MP				TDS				5						
Big Creek	11010005	-027	2.6	BUFT18	M	S	N	S	S	S	S	UN				DO				5						
Big Creek	11010005	-028	9.4	WHI0152	M	S	S	S	S	S	S									1						
Big Creek	11010005	-029	7.1		E	S	S	S	S	S	S									1						
Sellers Creek	11010005	-030	8.1		E	S	S	S	S	S	S									1						
Spring Creek	11010005	-031	5.8		E	S	S	S	S	S	S									1						
TOTAL MILES	339.8																									
MILES UNASSESSED	22.7																									
MILES EVALUATED	53.0																									
MILES MONITORED	264.1																									

Table A-61cont.: Planning Section 4J Designated Use Attainment and Water Quality Status

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
BFR09	Buffalo River near its mouth		1	USNPS
BUFT7	Clabber Creek near mouth		1	USNPS
BFR07	Buffalo River at Highway 14	7056700	1	USNPS
BFR08	Buffalo River at Rush		1	USNPS
WHI0049A	Buffalo River at Highway 65 near St. Joe	7056000	1	A
BFR05	Buffalo River at Woolum		1	USNPS
BUFT07	Davis Creek		1	USNPS
BUFR04	Buffalo River at Hasty	7055780	1	USNPS
BUFR02	Buffalo River at Ponca	7055660	1	USNPS
BUFR03	Buffalo River near Pruitt	7055680	1	USNPS
BUFR01	Buffalo River at Wilderness Boundary	7055646	1	USNPS
BUFT05	Little Buffalo River		1	USNPS
BUFT06	Big Creek - Newton County		1	USNPS
BUFT08	Cave Creek		1	USNPS
BUFT09	Richland Creek	7055875	1	USNPS
BUFT10	Calf Creek		1	USNPS
UWBRK01	Bear Creek at Highway 65, 4 miles west of Marshall	7056515	1	R
BUFT18	Big Creek - Marion County		1	USNPS
WHI0152	Big Creek at Highway 14, west of Big Flat		2	R

Table A-62: Active NPDES permits for Planning Segment 4J

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0034011	MARSHALL, CITY OF-WWTP	TRIB,FOREST CR,BEAR CR,BUFFALO R	026	11010005	Searcy	1
AR0034088	MARBLE FALLS SID NO. 1 - WWTP	TRIB,MILL CR,BUFFALO R,WHITE R	012	11010005	Newton	2
AR0034584	JASPER, CITY OF	LTL BUFFALO R,BUFFALO R, WHITE R	015	11010005	Newton	3
AR0034941	USDINPS-BUFFALO NATL RIVER-BUFFALO POINT WWTP (U2-B)	BUFFALO R, WHITE R	004	11010005	Marion	4
AR0034959	USDINPS-BUFFALO NATK RIVER-BUFFALO POINT WWTP (U2-A)	PANTHER CR,BUFFALO R	004	11010005	Marion	5

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SEGMENT 4K UPPER WHITE RIVER AND KINGS RIVER

Segment 4K includes portions of Washington, Benton, Madison, Carroll, Boone, Newton, and Franklin Counties in northwest Arkansas. This segment encompasses a 66-mile reach of the White River and its tributaries and an 85-mile reach of the Kings River and its tributaries. It also includes Long Creek and Yocum Creek.

Summary of Water Quality Conditions

Waters in this segment are designated for propagation of fish and wildlife; primary and secondary contact recreation; and domestic, agricultural, and industrial water supplies. Approximately 20 percent of these waters are designated as outstanding state or national resource waters. Waters in this segment, Including Beaver Reservoir, are highly prized for canoeing and fishing. Primary contact recreation is also prevalent.

The fisheries designated use was assessed as not supported in the West Fork of the White River and the White River downstream of the West Fork. The major cause was high turbidity levels and excessive silt loads. A TMDL to address this issue was completed in 2006.

A point source discharge to Holman Creek has impaired the drinking water use of the lower section of this stream by discharges of excessive levels of total dissolved solids. Additional investigation into this issue is ongoing.

Figure A-40: Planning Segment 4K

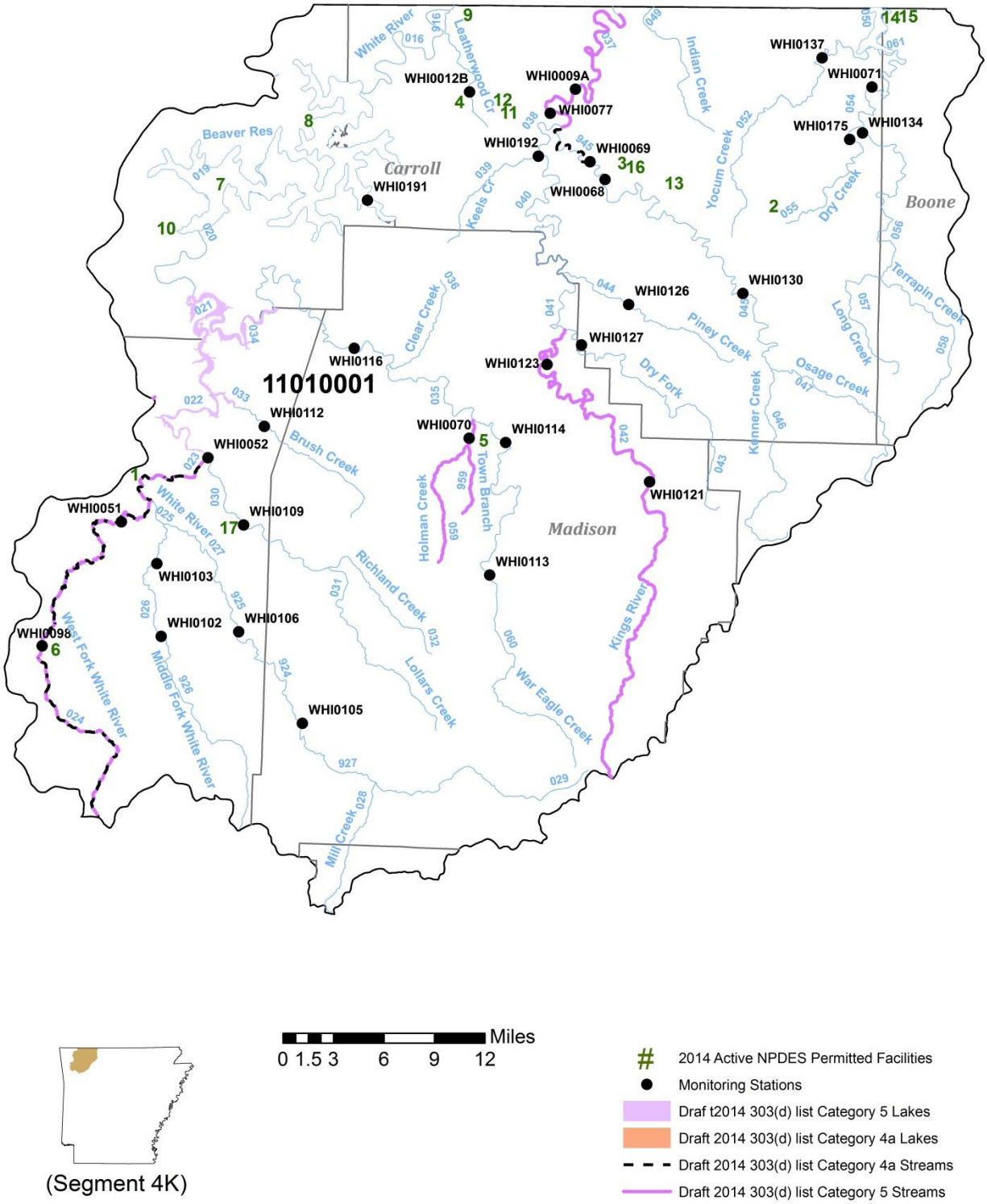

Table A-63: Planning Section 4K Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use						SOURCE				CAUSE				STATUS				USE	SUPPORT	NON-SUPPORT
						FC	FSH	PC	SC	DW	AI	1	2	3	4	1	2	3	4	1	2	3	4			
SEG-4K																										
White River	11010001	-022	8.3		U															3				FISH CONSUMPTION	478.1	0
White River	11010001	-023	6.2	WHI0052	M	S	N	S	S	S	S	UN		UN	SE	SO4		Tb	Tm	5		4a	5	FISHERIES	435.6	42.5
West Fork	11010001	-024	27.2	WHI0051+	M	S	N	S	S	S	S	UN	UN	SE		SO4	TDS	Tb	Tm	5	5	4a	5	PRIMARY CONTACT	478.1	0
White River	11010001	-025	2.4		U															3				SECONDARY CONTACT	478.1	0
Middle Fork[1]	11010001	-926	13.8	WHI0102	M	S	S	S	S	S	S									1				DRINKING SUPPLY	464.5	13.6
Middle Fork[2]	11010001	-026	8.1	WHI0103	M	S	S	S	S	S	S									1				AGRI & INDUSTRY	464.5	13.6
White River[3]	11010001	-927	6.6	WHI0105	M	S	S	S	S	S	S									1						
White River[4]	11010001	-027	17.2	WHI0106+	M	S	S	S	S	S	S									1						
Mill Creek	11010001	-028	6.1		E	S	S	S	S	S	S									1						
White River	11010001	-029	13.5		E	S	S	S	S	S	S									1						
Richland Cr.	11010001	-030	12.1	WHI0109	M	S	S	S	S	S	S									1						
Lollar Creek	11010001	-031	12.5		E	S	S	S	S	S	S									1						
Richland Cr.	11010001	-032	7.1		E	S	S	S	S	S	S									1						
Brush Creek	11010001	-033	13.5	WHI0112	M	S	S	S	S	S	S									1						
War Eagle Cr.	11010001	-034	22.2	WHI0116	M	S	S	S	S	S	S									1						
War Eagle Cr.	11010001	-035	8.6		E	S	S	S	S	S	S									1						
Leatherwood Creek	11010001	-916	7.6	WHI0012B	M	S	S	S	S	S	S									1						
Clear Creek	11010001	-036	6.7		E	S	S	S	S	S	S									1						
Kings River	11010001	-037	19.1	WHI0009A	M	S	S	S	S	S	S	UN				TDS				5						
Kings River	11010001	-038	3.4	WHI0077	M	S	S	S	S	S	S									1						
Kings River	11010001	-040	17.9		E	S	S	S	S	S	S									1						
Kings River	11010001	-041	4.8	WHI0121	M	S	S	S	S	S	S									1						
Kings River	11010001	-042	39.5	WHI0123	M	S	S	S	S	S	S	UN				TDS				5						
Keels Creek	11010001	-039	7.3		E	S	S	S	S	S	S									1						
Dry Fork	11010001	-043	16.5	WHI0127	M	S	S	S	S	S	S									1						
Piney Creek	11010001	-044	10.2	WHI0126	M	S	S	S	S	S	S									1						
Osage Creek[5]	11010001	-945	25.6	WHI0068+	M	S	S	S	S	S	S	MP				TP				4a						
Osage Creek[6]	11010001	-045	5.0	WHI0069	M	S	S	S	S	S	S									1						
South Fork	11010001	-046	13.8		E	S	S	S	S	S	S									1						
Osage Creek	11010001	-047	13.4		E	S	S	S	S	S	S									1						
Yocum Creek	11010001	-052	16.2	WHI0137	M	S	S	S	S	S	S									1						
Long Creek	11010001	-054	8.4	WHI0071	M	S	S	S	S	S	S									1						
Dry Creek	11010001	-055	12.0		E	S	S	S	S	S	S									1						
Long Creek	11010001	-056	14.3	WHI0134+	M	S	S	S	S	S	S									1						
Long Creek	11010001	-057	8.6		E	S	S	S	S	S	S									1						
Terrapin Cr.	11010001	-058	11.2		E	S	S	S	S	S	S									1						
Town Branch	11010001	-959	4.5	UAA	M	S	S	S	S	N	N	MP				TDS				5						
Holman Creek	11010001	-059	9.1	WHI0070	M	S	N	S	S	N	N	MP	SE			TDS	NO3			5	4a					
War Eagle Cr.	11010001	-060	28.3	WHI0114	M	S	S	S	S	S	S									1						

TOTAL MILES	488.8
MILES UNASSESSED	10.7
MILES EVALUATED	138.7
MILES MONITORED	339.4

1 Reach formally -026U
2 Reach formally -026L
3 Reach formally -027U
4 Reach formally -027L
5 Reach formally -045U
6 Reach formally -045L

Table A-63: Planning Section 4K Designated Use Attainment and Water Quality Status

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
WHI0052	White River near Goshen	7048600	1	A
WHI0098	West Fork White River at county road bridge below Dye Creek near West Fork		1	R
WHI0051	West Fork White River near Fayetteville	7048550	1	A
WHI0102	Middle Fork White River at county road 32, 1 mile south of Sulphur City		2	R
WHI0103	Middle Fork White River west of Elkins	7047985	1	A
WHI0106	White River near Durham		1	A
WHI0105	White River near Crosses		2	R
WHI0109	Richland Creek 1 mile north of Tuttle	7048800	2	R
WHI0112	Brush Creek north of Highway 45 off Highway 303		2	R
WHI0116	War Eagle Creek at Highway 45, north of Hindsville	7049000	1	A
WHI0012B	Leatherwood Creek near Eureka Springs		1	A
WHI009A	Kings River north of Berryville	7050500	1	A
WHI0077	Kings River below Berryville		1	R
WHI0121	Kings River at Highway 21		1	R
WHI0123	Kings River northeast of Alabam	7050206	1	A
WHI0127	Dry Fork Creek west of Metalton		2	R
WHI0126	Piney Creek northwest of Metalton		2	R
WHI0068	Osage Creek above Berryville	7050390	1	A
WHI0130	Osage Creek northeast of Metalton		1	R
WHI0069	Osage Creek below Berryville		1	A
WHI0137	Yocum Creek on county road 1.25 miles northwest of Highway 311	7053250	1	R
WHI0071	Long Creek below Denver	7053230	1	A
WHI0134	Long Creek near Denver	7053207	2	R
WHI0175	Callens Branch near Denver		2	R
WHI0070	Holman Creek below Huntsville		1	A
WHI0113	War Eagle Creek at county road bridge west of Highway 23		2	R
WHI0114	War Eagle Creek at Highway 412		2	R

Table A-64: Active NPDES permits for Planning Segment 4K

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0020010	FAYETTEVILLE, CITY OF-PAUL NOLAND WWTP	WHITE R,BEAVER RESEROIR	012	11010001	Washington	1
AR0021741	GREEN FOREST, CITY OF-WWTP	TRIB,DRY CR,LONG CR,WHITE R	055	11010001	Carroll	2
AR0021792	BERRYVILLE WW TREATMENT PLANT	MILL BR,FREEMAN BR,OSAGE CR,KINGS R	045	11010001	Carroll	3
AR0021865	EUREKA SPRINGS, CITY OF	LEATHERWOOD CR,TABLE ROCK LK,WHITE	916	11010001	Carroll	4
AR0022004	HUNTSVILLE, CITY OF	TOWN BR,HOLMAN CR,WAR EAGLE CR,WHITE R	959	11010001	Madison	5
AR0022373	WEST FORK, CITY OF	W FK/WHITE R,WHITE R,BEAVER LK	024	11010001	Washington	6
AR0033197	HERITAGE BAY HORIZONTAL PROPERTY REGIME UNIT ONE, INC.	BEAVER LK,WHITE R	017	11010001	Benton	7
AR0036676	LOST BRIDGE VILLAGE W&S DIST	BEAVER LK, WHITE R	017	11010001	Benton	8
AR0037249	HOLIDAY ISLAND WASTEWATER TREATMENT FACILITY	TABLE ROCK LK, WHITE R	016	11010001	Carroll	9
AR0037320	MOUNT NE BEAVER LAKE CAMP	MONTE NE COVE,BEAVER LK,WHITE R	020	11010001	Benton	10
AR0040118	COUNTRY MOUNTAIN INN, INC	TRIB,KEELS CR,KINGS R	039	11010001	Carroll	11
AR0044300	VPG PARTNERS II, LLC - D/B/A STATUE ROAD INN	TRIB,LEATHERWOOD CR,TABLE ROCK LK,WHITE R	016	11010001	Carroll	12
AR0047619	CARROLL COUNTY STONE, INC.	UNNAMED TRIB,WARDEN BR,OSAGE CR,KINGS R	045	11010001	Carroll	13
AR0048844	OUTDOOR RESORTS OF THE OZARKS, INC.	TABLE ROCK LK ,IMPD/WHITE R	006	11010001	Carroll	14
AR0049191	CRICKET CREEK RIVER ESTATES	UNNAMED TRIB INTO TABLE ROCK LK, WHITE R	006	11010001	Boone	15
AR0049867	BEDFORD FALLS MOBILE HOME PARK	TRIB,OSAGE CR,KINGS R,TABLE ROCK LK	045	11010001	Carroll	16
AR0051501	WASHINGTON COUNTY ROAD DEPARTMENT - GOSHEN TUTTLE QUARRY	TRIB RICHLAND CR, RICHLAND CR, WHITE R	030	11010001	Washington	17

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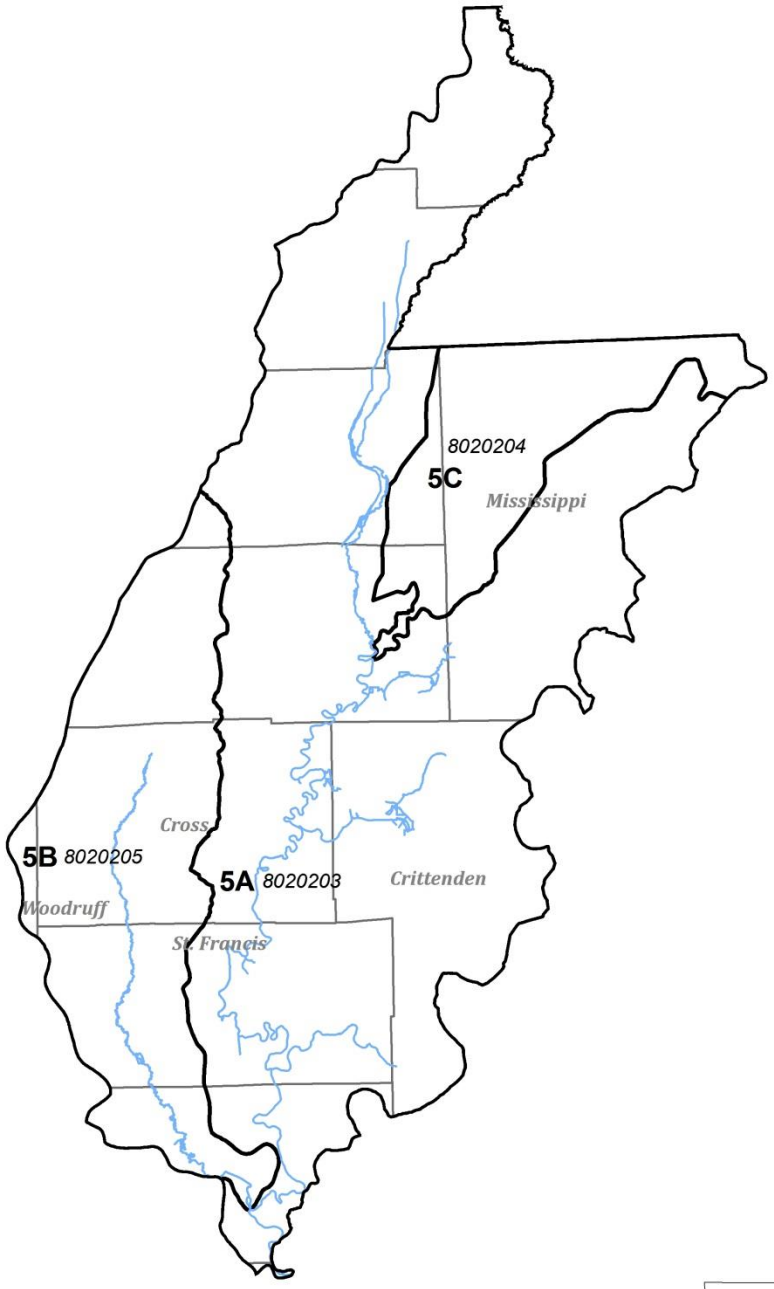
St. Francis River Basin

The St. Francis River Basin is located in the extreme north east corner of Arkansas and covers all, or part, of Clay, Greene, Craighead, Poinsett, Mississippi, Woodruff, Cross, Crittenden, St. Francis, and Lee Counties.

This basin is divided into three ADEQ planning segments and three major watersheds (8 digit HUCs): St. Francis River, L'Anguille River, and Little River. The major waterbodies in this basin flow south and ultimately empty into the Mississippi River.

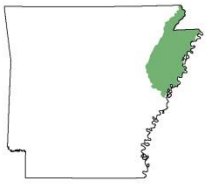
Figure A-41: St. Francis River Basin



5A - St. Francis River Basin

5B - St. Francis River Basin

5C - St. Francis River Basin



St. Francis River Basin

SEGMENT 5A, 5B, AND 5C ST. FRANCIS RIVER BASIN

Segment 5A is located on the east central edge of Arkansas and covers parts of Crittenden, St. Francis, Lee, Poinsett, Craighead, Greene, Mississippi, Clay, and Cross Counties. This segment contains the St. Francis River and its tributaries; Fifteen Mile Bayou, Blackfish Bayou, and Tyronza River.

Segment 5B is located in northeast Arkansas and covers parts of Craighead, Poinsett, Cross, St. Francis, Woodruff, and Lee. This segment includes the entire 98-mile length of the L'Anguille River. The principal tributaries are Brushy Creek, First Creek, Second Creek, and Larkin Creek.

Segment 5C is located in the northeast corner of Arkansas and covers parts of Craighead, Mississippi, and Poinsett. This segment includes the Little River Basin and Pemiscot Bayou.

Summary of Water Quality Conditions

Waters in this basin are designated for propagation of fish and wildlife; primary and secondary contact recreation; and domestic, agricultural, and industrial water supplies. These three segments are discussed as one unit due to the consistent nature of the water quality. The overriding impact of land use on water quality can be seen in this segment. This basin contains 933.1 stream miles of which approximately 14 percent are designated as outstanding resources. The assessment concludes that essentially all of the streams within these segments have high turbidity and silt loads carried into the streams from row crop agriculture activities. This condition was encouraged by the drainage of lowland areas and by ditching and the channelization of streams to facilitate the runoff. The continuation of such activities and the continuous maintenance dredging of the ditches and streams aggravates and further deteriorates the conditions.

Because of the elevated levels of turbidity during high flows and consistently elevated values during other flows, the entire length of the L'Anguille River was assessed as not supporting the Fisheries designated use. A TMDL has been completed for siltation/turbidity in the L'Anguille River basin in 2002. Numerous stream segments are listed because of low dissolved oxygen concentrations. As discussed earlier, delta streams naturally have lower dissolved oxygen concentrations during the critical season.

Figure A-42: Planning Segment 5A

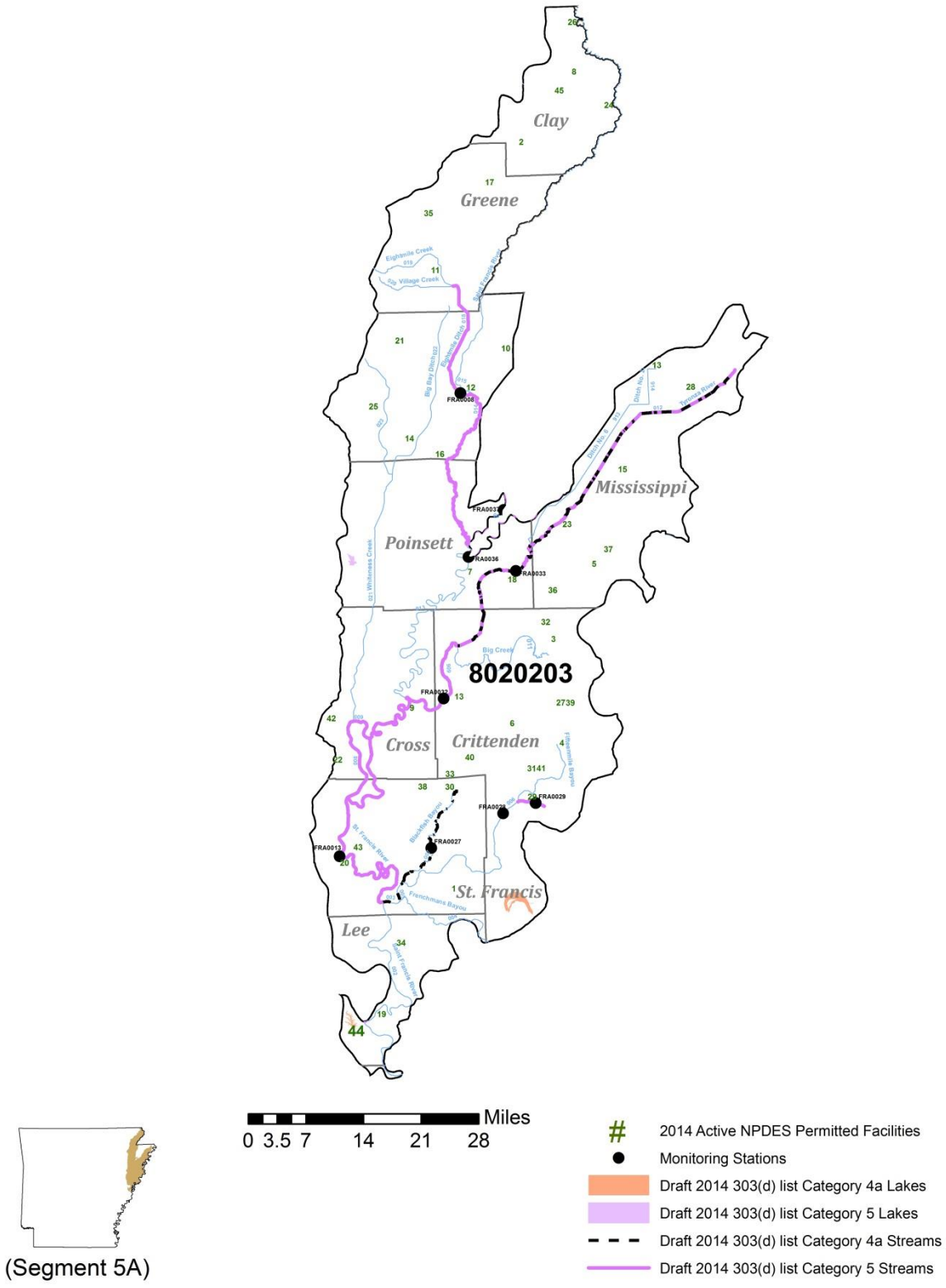


Table A-65: Planning Section 5A Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-5A																										
St. Francis R.	8020203	-001	11.9		E	S	S	S	S	S	S									1				FISH CONSUMPTION	389.9	0
St. Francis R.	8020203	-002	25.5		E	S	S	S	S	S	S									1				FISHERIES	372.6	17.3
Blackfish Bayou	8020203	-003	2.4		E	S	S	S	S	S	S	AG				Tb				4a				PRIMARY CONTACT	389.9	0
Frenchmans B.	8020203	-004	14.5		E	S	S	S	S	S	S									1				SECONDARY CONTACT	389.9	0
Blackfish Bayou	8020203	-005	2.6		E	S	S	S	S	S	S	AG				Tb				4a				DRINKING SUPPLY	389.9	0
Fifteen Mile B.	8020203	-006	38.4	FRA0028	M	S	S	S	S	S	S									1				AGRI & INDUSTRY	389.9	0
Ten Mile Bayou[1]	8020203	-906	17.3	FRA0029	M	S	N	S	S	S	S	UN				DO				5						
Blackfish Bayou	8020203	-007	16.1	FRA0027	M	S	S	S	S	S	S	AG				Tb				4a						
St. Francis R.	8020203	-008	55.9	FRA0013	M	S	S	S	S	S	S	AG	UN			Cl	DO			5	5					
St. Francis R.	8020203	-009	17.1		E	S	S	S	S	S	S	AG	UN			Cl	DO			5	5					
Tyronza River	8020203	-909	34.3	FRA0032	M	S	S	S	S	S	S					Tb				5						
Big Creek	8020203	-011	15.8		E	S	S	S	S	S	S									1						
Tyronza River	8020203	-012	50	FRA0033	M	S	S	S	S	S	S	AG	AG	AG		Tm	SO4	Tb		5	5	4a				
St. Francis R.	8020203	-013	47.5	FRA0036	M	S	S	S	S	S	S									1						
St. Francis R.	8020203	-014	22.8		E	S	S	S	S	S	S	AG				Cl	Cu			5	5					
St. Francis R.	8020203	-015	90.8		U															3						
Eightmile Ditch	8020203	-018	17.8	FRA0008	M	S	S	S	S	S	S	AG	AG			Cl	Cu			5	5					
Eightmile Ditch	8020203	-019	12.8		U															3						
Village Creek	8020203	-020	9.0		U															3						
Whiteness Cr.	8020203	-021	33.6		U															3						
Big Boy Creek	8020203	-022	24.2		U															3						
Whiteness Cr.	8020203	-023	15.0		U															3						
TOTAL MILES	575.3																									
MILES UNASSESSED	185.4																									
MILES EVALUATED	112.6																									
MILES MONITORED	277.3																									

1 Reach formally -006t

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
FRA0028	15 Mile Bayou at Simsboro Road near Proctor		1	R
FRA0029	10 Mile Bayou at Highway 147 near Edmondson		1	R
FRA0027	Blackfish Bayou at Highway 50 near Woldwood		1	R
FRA0013	St. Francis River at Highway 50 near Forrest City	7047907	1	A
FRA0032	Tyronza River at Highway 184 near Earl		1	R
FRA0033	Tyronza River at Highway 133 near Tyronza		1	R
FRA0036	St. Francis River at Highway 140 at Marked Tree		1	R
FRA0008	St. Francis River at Highway 18 near Lake City	7040450	1	A

Table A-66: Active NPDES permits for Planning Segment 5A

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0021547	HUGHES, CITY OF	CROOKED BU,MILLSEED LK,FRENCHMAN BU	004	8020203	St. Francis	1
AR0021911	RECTOR, CITY OF - SEWAGE TREATMENT FACILITY	UNNAMED TRIB,POST OAK CR,BIG SLU,ST FRANCIS R	015	8020203	Clay	2
AR0021954	TURRELL, CITY OF	BIG CR, TYRONZA R, ST FRANCIS R	011	8020203	Crittenden	3
AR0021971	MARION, CITY OF	15-MILE BU,BLACK FISH BU,ST FRANCIS	006	8020203	Crittenden	4
AR0022152	JOINER, CITY OF-WWTP	DIT #4,FRENCHMAN'S BU,DIT #11,BELL HAMMER SLU	004	8020203	Mississippi	5
AR0022195	CRAWFORDSVILLE, CITY OF-STP	ALLIGATOR BU,DTCH 19, 15 MI BU,BLACKFSH BU,	006	8020203	Crittenden	6
AR0033430	MARKED TREE, CITY OF	ST FRANCIS R	013	8020203	Poinsett	7
AR0033472	PIGGOTT, CITY OF	BIG SLU DIT,ST FRANCIS R	014	8020203	Clay	8
AR0033588	PARKIN, CITY OF-WWTF	ST FRANCIS R	009	8020203	Cross	9
AR0033651	MONETTE, CITY OF	LTL DIT #3,COCKLE BURR SL, ST FRANC R	014	8020203	Craighead	10
AR0033766	PARAGOULD CITY LIGHT AND WATER	TRIB,EIGHT MILE CR,ST FRANCIS R	019	8020203	Greene	11
AR0034134	LAKE CITY, CITY OF	PURCELL SLU DIT #9, ST FRANCIS R	014	8020203	Craighead	12
AR0034304	EARLE, CITY OF-WATER WORKS	TYRONZA R,ST FRANCIS R	010	8020203	Crittenden	13
AR0034312	BAY, CITY OF	DIT #6,GUM SLU DIT,MAIN DIT #10,ST.FRANCIS R	022	8020203	Craighead	14
AR0034754	KEISER, CITY OF	DIT #31,TYRONZA R,ST FRANCIS R	012	8020203	Mississippi	15
AR0035602	TRUMANN WASTEWATER FACILITY	DIT #60,ST FRANCIS R	014	8020203	Poinsett	16
AR0035629	MARMADUKE, CITY OF	BIG SLU DIT,ST. FRANCIS R	015	8020203	Greene	17
AR0035637	TYRONZA, CITY OF	TYRONZA R	012	8020203	Poinsett	18
AR0036897	U.S. ARMY CORPS OF ENGINEERS - W.G. HUXTABLE PUMPING PLANT	ST FRANCIS R	002	8020203	Lee	19
AR0037893	MADISON, CITY OF-WWTP	ST FRANCIS R	008	8020203	St. Francis	20
AR0037974	BROOKLAND, CITY OF-WWTP	TRIB,MAPLE SLU DIT,GUM SLU DIT,BIG BAY DIT,DIT #10	022	8020203	Craighead	21
AR0038202	ARKANSAS DEPT OF PARKS & TOURISM - VILLAGE CREEK STATE PARK	VILLAGE CR,CLARK CORNER CUTOFF,ST FRANCIS R	008	8020203	Cross	22
AR0039047	DYESS, CITY OF	TYRONZA R,ST FRANCIS R	012	8020203	Mississippi	23

Table A-66: Active NPDES permits for Planning Segment 5A

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0042196	NIMMONS, CITY OF-SEWER SYSTEM	DIT,HAMPTON SLU,MAYO DIT,BIG SLU DIT,ST. FRANCI	015	8020203	Clay	24
AR0043401	JONESBORO, CITY OF - CITY WATER & LIGHT EASTSIDE WWTP	WHITEMAN CR,LTL BAY DIT,DIT #9,#10,#23	023	8020203	Craighead	25
AR0043591	ST. FRANCIS, CITY OF	ST FRANCIS R	015	8020203	Clay	26
AR0044024	RECREATIONAL ADVENTURE CO. - MEMPHIS KOA	DIT,15-MILE BU,ST FRANCIS R	006	8020203	Crittenden	27
AR0044237	TOWN OF BURDETTE - BURDETTE WATER SYSTEM	DIT #24,#31,#6,TYRONZA R,ST FRANCIS R	012	8020203	Mississippi	28
AR0044661	EDMONDSON, CITY OF	15-MILE BU,BLACKFISH BU,ST FRANCIS R	006	8020203	Crittenden	29
AR0044695	HANUMANTA, LLC - SUPER 8 MOTEL	SHELL LK,BLACKFISH BU,ST. FRANCIS R	007	8020203	St. Francis	30
AR0044890	NIMOCKS OIL COMPANY, INC.	TRIB,15-MILE BU,BLACKFISH BU,ST FRANCIS R	006	8020203	Crittenden	31
AR0045021	GILMORE, CITY OF	LTL CYPRESS DIT,BIG CR,TYRONZA R,ST FRANCIS R	011	8020203	Crittenden	32
AR0045403	TA OPERATING LLC - WEST MEMPHIS TRAVEL CENTER	DITCH 22,BLACKFISH BU,ST FRANCIS R	007	8020203	Crittenden	33
AR0045578	ARKANSAS DEPT OF CORRECTIONS - EAST ARKANSAS REGIONAL UNIT	ST. FRANCIS R	002	8020203	Lee	34
AR0045837	OAK GROVE HEIGHTS, CITY OF - WASTEWATER TREATMENT FACILITY	TRIB,LOCUST CR,8-MILE DIT,ST FRANCIS R	019	8020203	Greene	35
AR0045934	BIRDSONG, CITY OF SEWAGE TREATMENT	SNAKE LK,LAMB BU,DIT#1,DIT#7, LTL CYPRESS DIT	011	8020203	Mississippi	36
AR0046272	BASSETT, CITY OF	TRB,DIT#5,FRCHMN BU,DIT#11,BELLHAMMER SLU	012	8020203	Mississippi	37
AR0046761	MAPCO EXPRESS #3155	TRIB,BLAKFISH BU,ST FRANCIS R	007	8020203	St. Francis	38
AR0047490	FAST MARKET	DIT,15-MILE BU,BLACKFISH BU, ST FRANCIS R	006	8020203	Crittenden	39
AR0048151	JENNETTE, TOWN OF-WW POND	BLACKFISH BU,ST FRANCIS R	007	8020203	Crittenden	40
AR0050121	PJ'S COUNTRY STORE	DIT,DIT #11,15-MILE BU,ST FRANCIS R	006	8020203	Crittenden	41
AR0050423	CROSS COUNTY BANK D/B/A POND-A-ROSE TRAILER PARK	TRIB,COPPERAS CR,ST FRANCIS R	008	8020203	Cross	42
AR0051063	WIDENER, TOWN OF	ST FRANCIS R DIV DIT, ST FRANCIS R	008	8020203	St. Francis	43

Table A-66: Active NPDES permits for Planning Segment 5A

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0051845	ARKANSAS DEPT OF PARKS & TOURISM - MISSISSIPPI RIVER STATE PARK	BEAR CR,ST FRANCIS R	001	8020203	Lee	44
AR0051047	GREENWAY SEWAGE TREATMENT PLT	TRIB,BIG SLU DITCH,ST FRANCIS R	015	8020203	Clay	45

Figure A-43: Planning Segment 5B

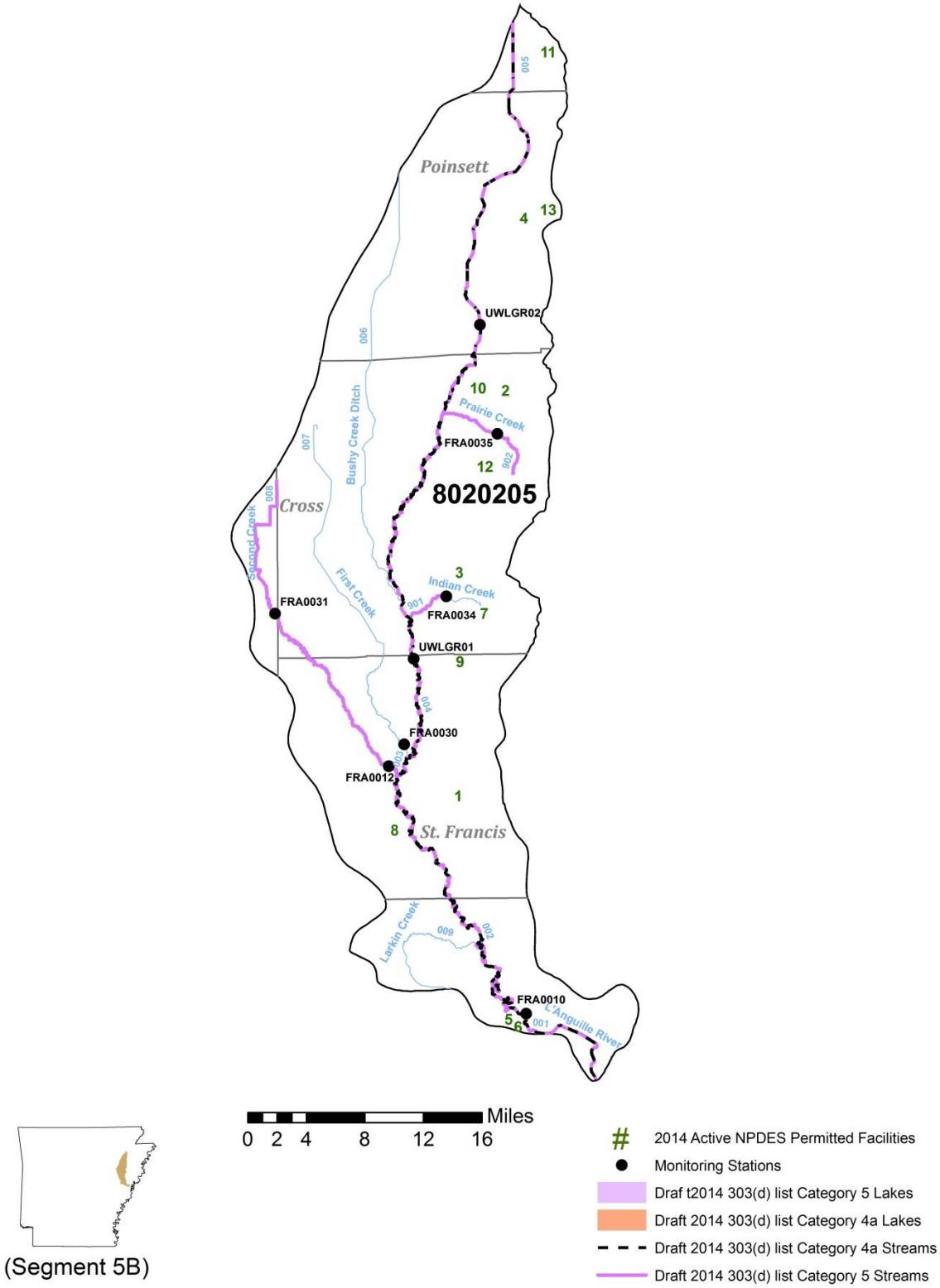


Table A-67: Planning Section 5B Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-5B																										
L'Anguille R.	8020205	-001	19.7	FRA0010	M	S	N	S	S	S	S	AG	AG	AG	SE	DO	Cl	TDS	Tb	5	5	5	4a	FISH CONSUMPTION	165.1	0
L'Anguille R.	8020205	-002	16.8		E	S	N	S	S	S	S	AG	AG	AG	SE	DO	Cl	TDS	Tb	5	5	5	4a	FISHERIES	50.3	114.8
L'Anguille R.	8020205	-003	1.8		E	S	N	S	S	S	S	AG	AG	AG	SE	DO	Cl	TDS	Tb	5	5	5	4a	PRIMARY CONTACT	105	60.1
Caney Creek	8020205	-901	9.0	FRA0034	M	S	S	S	S	S	S	MP				Cu				5				SECONDARY CONTACT	165.1	0
L'Anguille R.	8020205	-004	16.0	UWLGR01	M	S	N	N	S	S	S	AG	AG	SE	AG	DO	1	Cu	2	5	5	5	4a	DRINKING SUPPLY	165.1	0
L'Anguille R.	8020205	-005	44.1	UWLGR02	M	S	N	N	S	S	S	AG	AG	SE	AG	DO	3	Tb	PA	5	5	4a	4a	AGRI & INDUSTRY	165.1	0
Prairie Creek	8020205	-902	13.4	FRA0035	M	S	S	S	S	S	S	AG				3				5						
Brushy Creek	8020205	-006	30.7		U															3						
First Creek	8020205	-007	27.9	FRA0030	M	S	S	S	S	S	S									1						
Second Creek	8020205	-008	16.4	FRA0012+	M	S	N	S	S	S	S	AG				DO				5						
Larkin Creek	8020205	-009	12.3		U															3						
TOTAL MILES	208.1															1 = Cl, TDS										
MILES UNASSESSED	43.0															2 = Tb, PA										
MILES EVALUATED	18.6															3 = Cl, SO4, TDS										
MILES MONITORED	146.5																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
FRA0010	L'Anguille River at Highway 50 near Marianna	7047964	1	A
FRA0034	Caney Creek at Highway 305 near Wynne		1	R
UWLGR01	L'Anguille River at Highway 306 near Wynne		1	A
UWLGR02	L'Anguille River at Highway 214 west of Whitehall		1	R
FRA0035	Prairie Creek at Highway 1 north of Vanndale		2	R
FRA0030	First Creek near Horton		1	R
FRA0012	Second Creek on county road north of Palestine	7047947	1	A
FRA0031	Second Creek at Highway 284 near Penrose		1	R

Table A-68: Active NPDES permits for Planning Segment 5B

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0020087	FORREST CITY, CITY OF	TRIB,L'ANGUILLE R,ST FRANCIS R	002	8020205	St. Francis	1
AR0021393	CHERRY VALLEY, CITY OF - CHERRY VALLEY SEWAGE TREATMENT PLANT	COPPER CR,WOLF CR,L'ANGUILLE R,ST FRANCIS R	005	8020205	Cross	2
AR0021903	WYNNE, CITY OF	DIT,CANEY CR,L'ANGUILLE R,ST FRANCIS R	004	8020205	Cross	3
AR0033863	HARRISBURG, CITY OF	TOWN CR,LTRL T,HOLLOW BR,L'ANGUILLE	005	8020205	Poinsett	4
AR0034142	MARIANNA, CITY OF (POND B)	L'ANGUILLE R,ST FRANCIS R	001	8020205	Lee	5
AR0034169	MARIANNA, CITY OF (POND A)	L'ANGUILLE R,ST FRANCIS R	001	8020205	Lee	6
AR0038679	SHADY OAKS TRAILER PARK	TRIB,BEAR CR,CANEY CR,L'ANGUILLE R,ST FRANCIS R	901	8020205	Cross	7
AR0039365	PALESTINE, CITY OF-WWTF	L'ANGUILLE R, ST. FRANCIS R	002	8020205	St. Francis	8
AR0043192	COLT, CITY OF	TAYLOR CR DIT,L'ANGUILLE R;ST FRANCIS R	001	8020205	St. Francis	9
AR0044041	CROSS COUNTY HIGH SCHOOL	COOPER CR,L'ANGUILLE R,ST FRANCIS R	005	8020205	Cross	10
AR0048658	HUNTERS GLEN OWNERS ASSOC.	CR,DIT #1,MULLIGAN LTRL,L'ANGUILLE R,ST FRANCIS	005	8020205	Craighead	11
AR0049409	VANNDALE - BIRDEYE WATER	L'ANGUILLE R,ST FRANCIS R	012	8020205	Cross	12
AR0051918	POINSETT COUNTY CLASS IV LANDFILL	TRIB,L'ANGUILLE R,ST FRANCIS R	005	8020205	Poinsett	13

Figure A-44: Planning Segment 5C

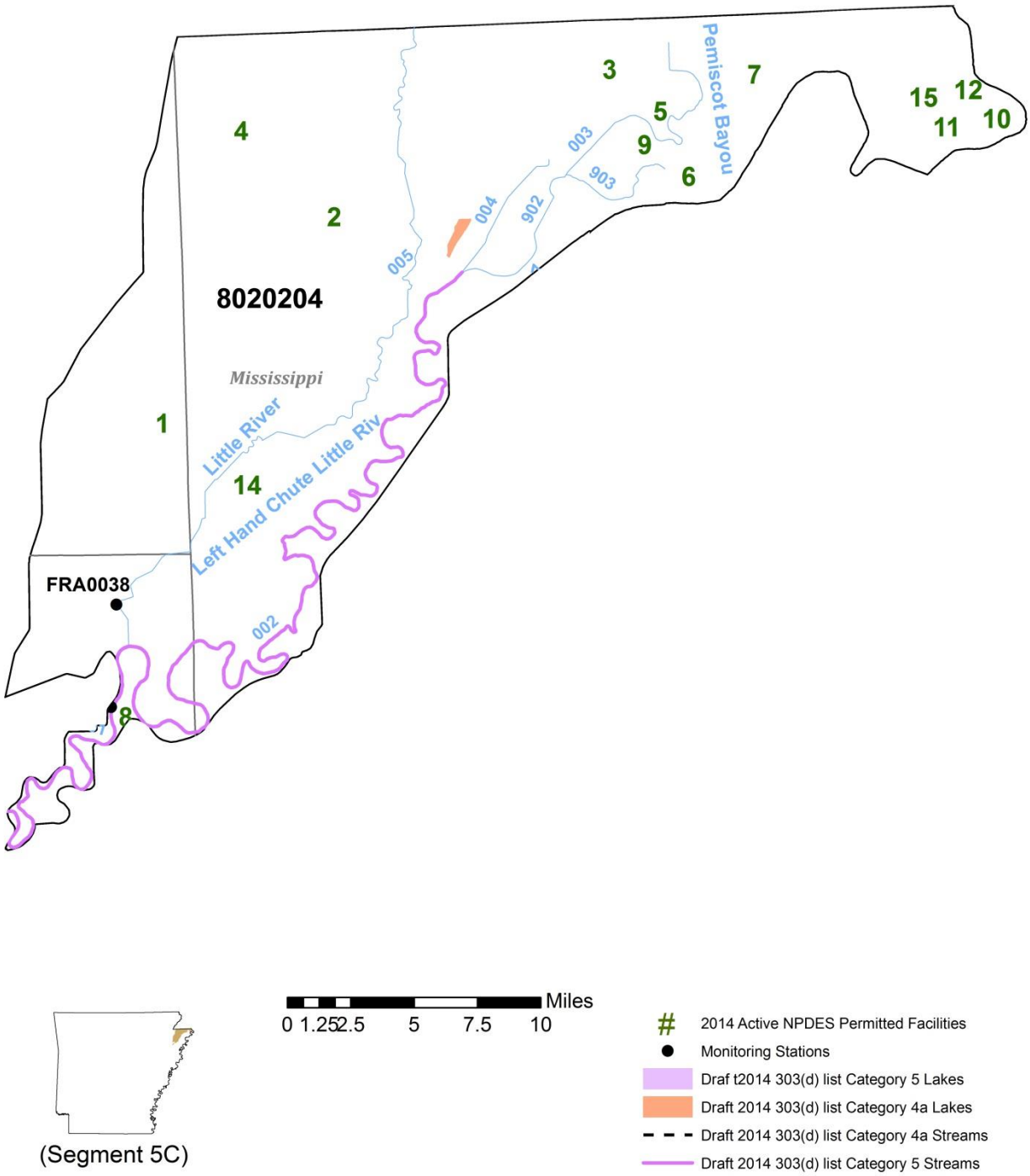


Table A-69: Planning Section 5C Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-5C																								FISH CONSUMPTION	153.0	0.0
Little River Left	8020204	-001	20.3	FRA0037	M	S	S	S	S	S	S	UN				DO				5				FISHERIES	153.0	0.0
Little River	8020204	-002	61.7		E	S	S	S	S	S	S	UN				DO				5				PRIMARY CONTACT	153.0	0.0
Pemiscot Bayou	8020204	-003	28.0		E	S	S	S	S	S	S									1				SECONDARY CONTACT	153.0	0.0
Little River	8020204	-004	6.0		E	S	S	S	S	S	S									1				DRINKING SUPPLY	153.0	0.0
Little River Right	8020204	-005	37.0	FRA0038	M	S	S	S	S	S	S									1				AGRI & INDUSTRY	153.0	0.0
TOTAL MILES	153.0																									
MILES UNASSESSED	0.0																									
MILES EVALUATED	95.7																									
MILES MONITORED	57.3																									

Station Name	Station Location	Flow Gauge	Data Period	Monitoring Network
FRA00037	Left Hand Chute of Little River at Highway 140 near Lepanto		1	R
FRA00038	Right Hand Chute of Little River at Highway 135 at Riverdale		1	R

Table A-70: Active NPDES permits for Planning Segment 5C

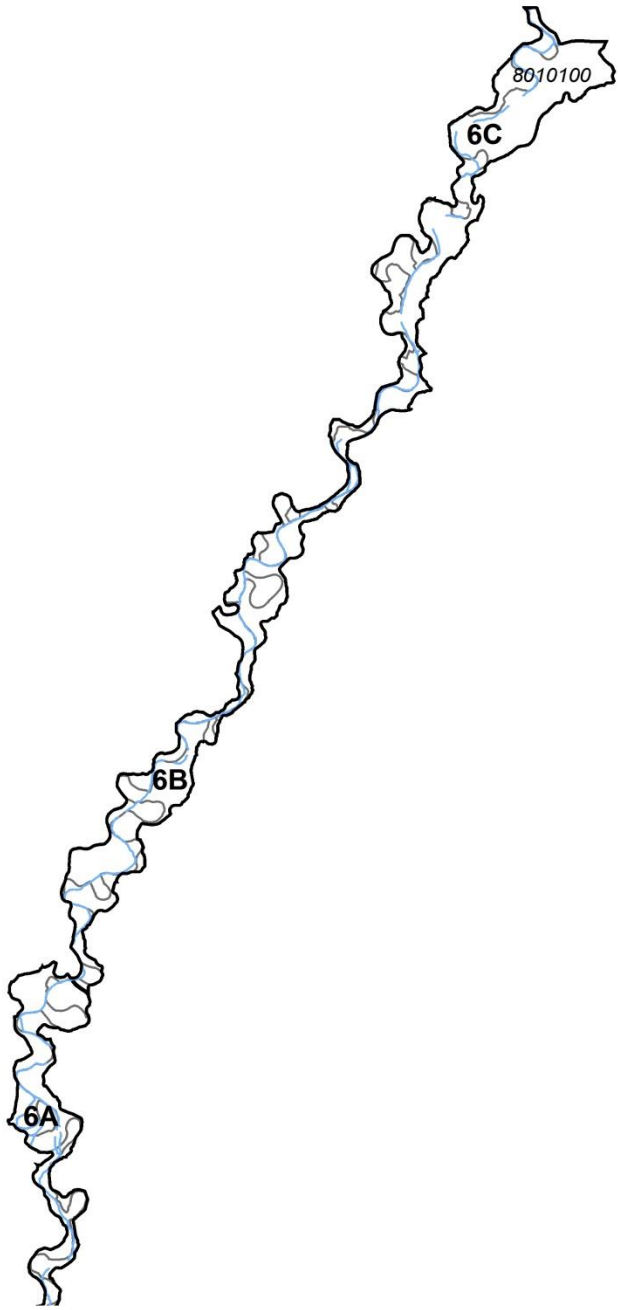
Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0020028	CARAWAY, CITY OF	TRIB, ASHER DIT, BUFFALO CR DIT, RIGHT HAND CHUTE LTL R, ST FRANCIS R	005	8020204	Craighead	1
AR0021881	MANILA, CITY OF	DIT #81,LTL R,ST. FRANCIS R	005	8020204	Mississippi	2
AR0021962	GOSNELL, CITY OF	DIT 29,BIG LK RELIEF DIT,DIT 3,DIT 1,ST FRANCIS R	003	8020204	Mississippi	3
AR0022012	LEACHVILLE WW TREATMENT PLANT	HONEY CYPRESS DIT,BUFFALO CR DIT	005	8020204	Mississippi	4
AR0022560	BLYTHEVILLE, CITY OF-WEST WWTF	DIT #27,LEFTHAND CHUTE/LTL R,ST FRANCIS R	003	8020204	Mississippi	5
AR0022578	BLYTHEVILLE, CITY OF-SOUTH	TRIB,DIT #17,DIT #6,DIT #1,ST FRANCIS R	003	8020204	Mississippi	6
AR0022586	BLYTHEVILLE, CITY OF - NORTH TREATMENT FACILITY	TRIB,DIT #30,DIT #27,L CHUTE,LTL R,ST FRANCIS R	003	8020204	Mississippi	7
AR0023841	LEPANTO, CITY OF - ARKANSAS SEWAGE TREATMENT FACILITY	LEFT HAND CHUTE,LTL R,ST FRANCIS R	001	8020204	Poinsett	8
AR0044181	WHEEL ACRES	DIT #36 TRIB,PEMISCOT BU,ST FRANCIS R	003	8020204	Mississippi	9
AR0045977	NUCOR STEEL - ARKANSAS, DIVISION OF NUCOR CORPORTION HICKMAN MILL	DIT,CROOKED LK BU,PEMISCOT BU	003	8020204	Mississippi	10
AR0046523	MAVERICK TUBE CORPORATION	DIT #38,CROOKED BU,PEMISCOT BU,LTL ST FRANCIS.R,	003	8020204	Mississippi	11
AR0049166	TMK - IPSCO TUBULARS, INC. - BLYTHEVILLE WORKS	DIT,DIT #42,CROOKED LK BU, PEMISCOT BU	003	8020204	Mississippi	12
AR0049425	ASSOC.ELEC.CO-OP,INC.AECI/DELL	DIT #27,DIT #6,TYRONZA R,ST FRANCIS R	914	8020204	Mississippi	13
AR0050741	ETOWAH, CITY OF - WASTEWATER TREATMENT SYSTEM	RIGHT HAND CHUTE/LTL R FLOODWAY DIT,ST FRANCIS R	005	8020204	Mississippi	14
AR0050776	PRECOAT METALS CORP.	DIT 49,CROOKED LK BU,PEMISCOT BU,ST.FRANCIS R	003	8020204	Mississippi	15

MISSISSIPPI RIVER BASIN

The Mississippi River Basin runs along the eastern border of Arkansas within the Delta Ecoregion and is split into three ADEQ planning segments: Upper, Middle, and Lower. The upper segment runs from the Arkansas/Missouri state line to the confluence of the St. Francis River. The middle segment runs from the confluence with the St. Francis to the confluence with the Arkansas River. And the lower segment runs from the confluence of the Arkansas River to the Arkansas/Louisiana border.

The Mississippi River is levied throughout its total length of the State.

Figure A-45: Mississippi River Basin



6A - Mississippi River Basin

6B - Mississippi River Basin

6C - Mississippi River Basin

Mississippi River Basin

SEGMENT 6A, 6B, AND 6C LOWER MISSISSIPPI RIVER BASIN

These three segments comprise the Mississippi River Basin, which consists of a 437-mile reach of the Mississippi River. It is levied throughout its total length within the State.

Segment 6A contains a 129.9-mile reach of the Mississippi from its confluence with the Arkansas River to the Arkansas-Louisiana state line. No surface drainage enters this reach below the Arkansas River except from the Lake Chicot pumping plant on Macon Bayou.

Segment 6B consists of a 137.2-mile reach of the Mississippi from its confluence with the St. Francis River to the confluence with the Arkansas River. All drainage from the Arkansas and the White River Basins reaches the Mississippi River at the lower end of this reach.

Segment 6C is a 174.4-mile reach of the Mississippi from the Arkansas/Missouri state line to its confluence with the St. Francis River. All surface drainage from the St. Francis River Basin within Arkansas enters the Mississippi River via the St. Francis River at the end of this reach.

Summary of Water Quality Conditions

Waters in these segments are designated for propagation of fish and wildlife; primary and secondary contact recreation; and domestic, agricultural, and industrial water supplies. These three segments include 437 miles of the Mississippi River. No recent data were available to assess the Mississippi River; however, USGS Circular 1133 provides an extensive review of the Mississippi River water quality from 1987-92. For this report all waters of the Mississippi River adjacent to Arkansas are listed as unassessed. However, most of the water contributed to the Mississippi River from Arkansas is from the White and Arkansas River Basins, both of which are assessed as meeting all designated uses in their lower segments prior to flowing into the Mississippi River.

Through a combined effort of the US Corps of Engineers, The Nature Conservancy, Audubon, the Lower Mississippi River Conservation Committee, and many other entities, a Lower Mississippi River Resource Assessment survey has been initiated. When completed, the survey will identify the ecological, economical, navigational, and recreational resources of the Mississippi River from Cairo, Illinois to the Gulf of Mexico. The report will function as the blueprint for future economic development of the Mississippi River delta by implementing ecological based development.

Figure A-46: Planning Segment 6A

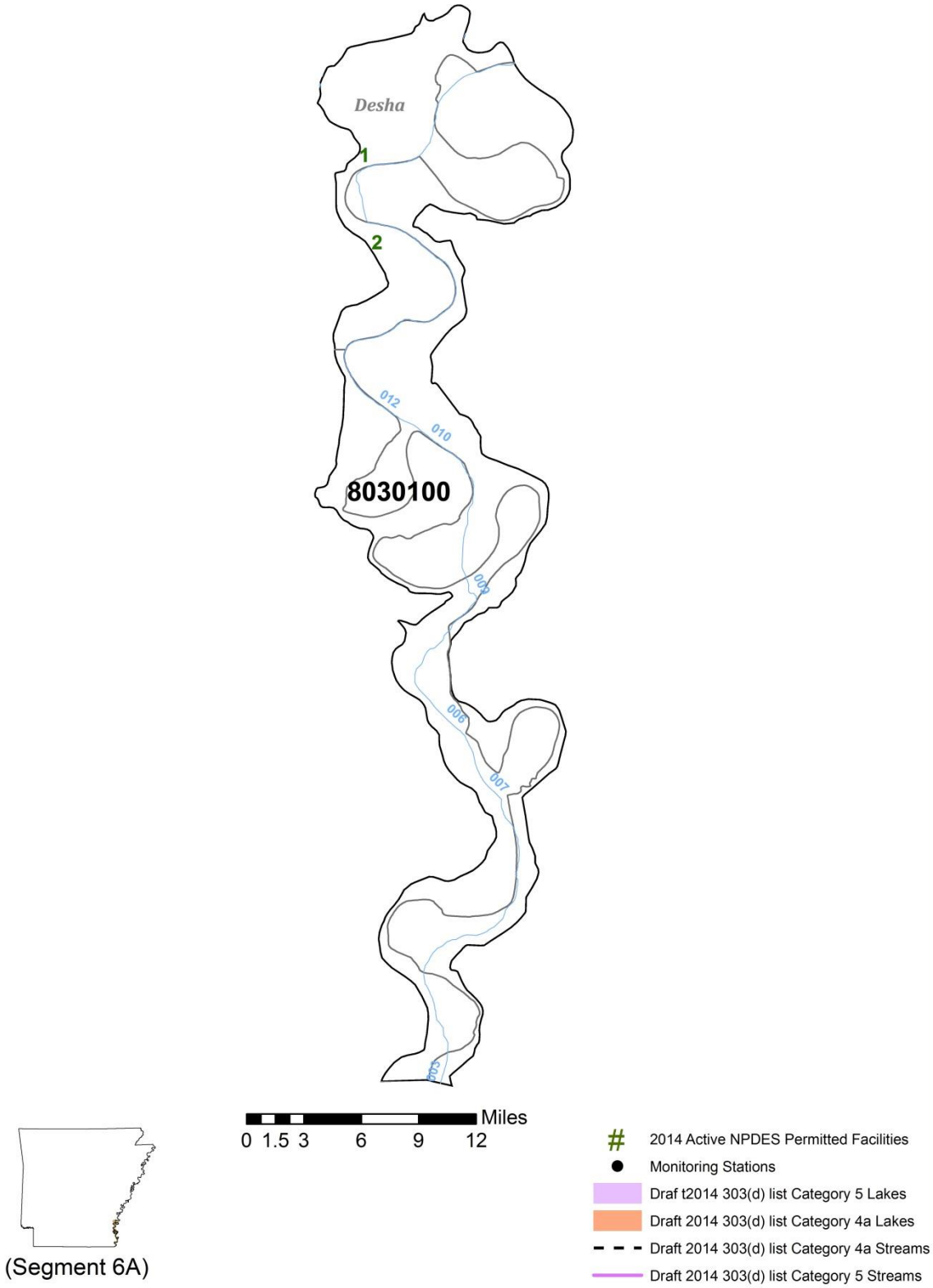


Figure A-47: Planning Segment 6B

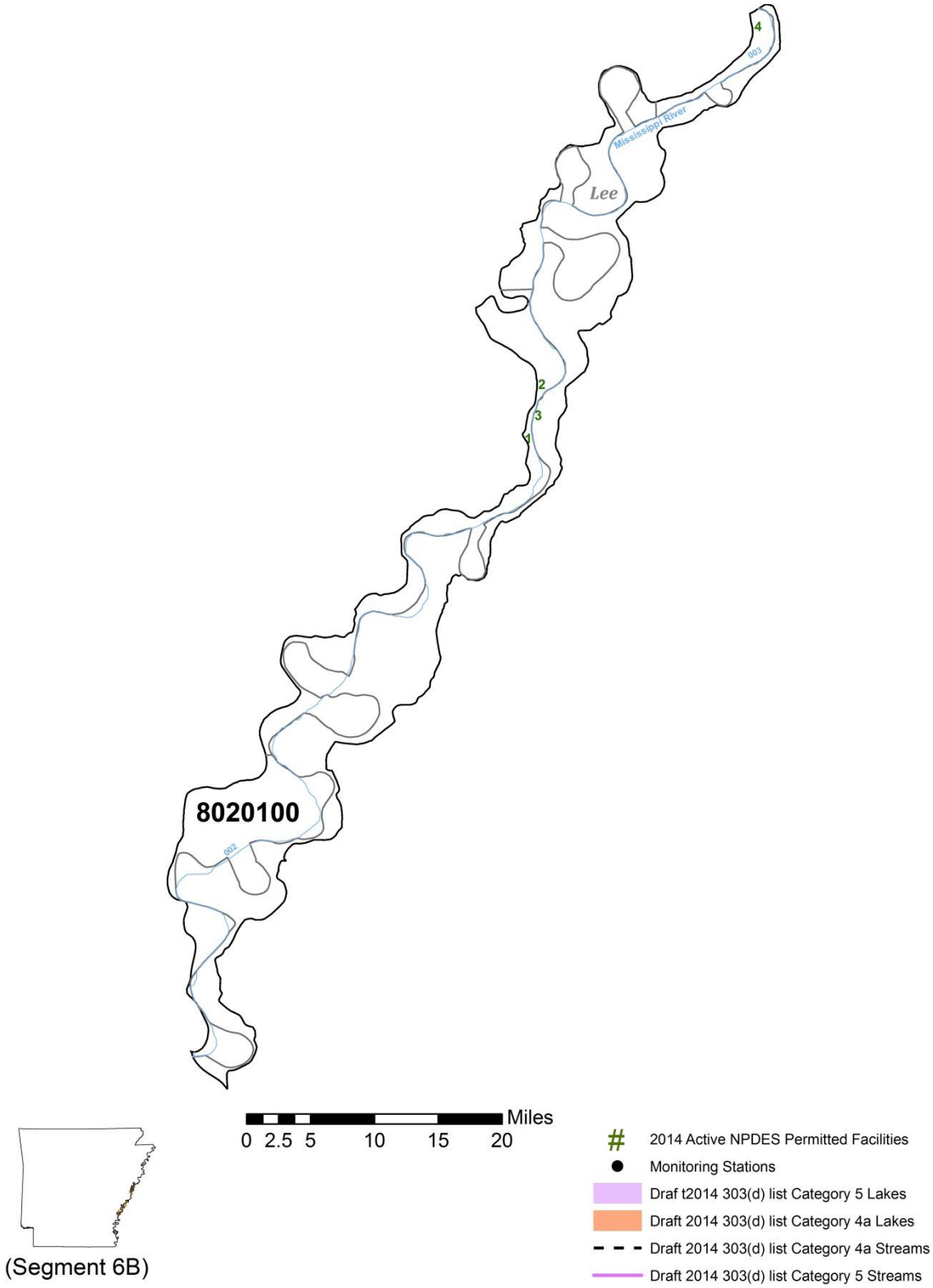


Figure A-48: Planning Segment 6C

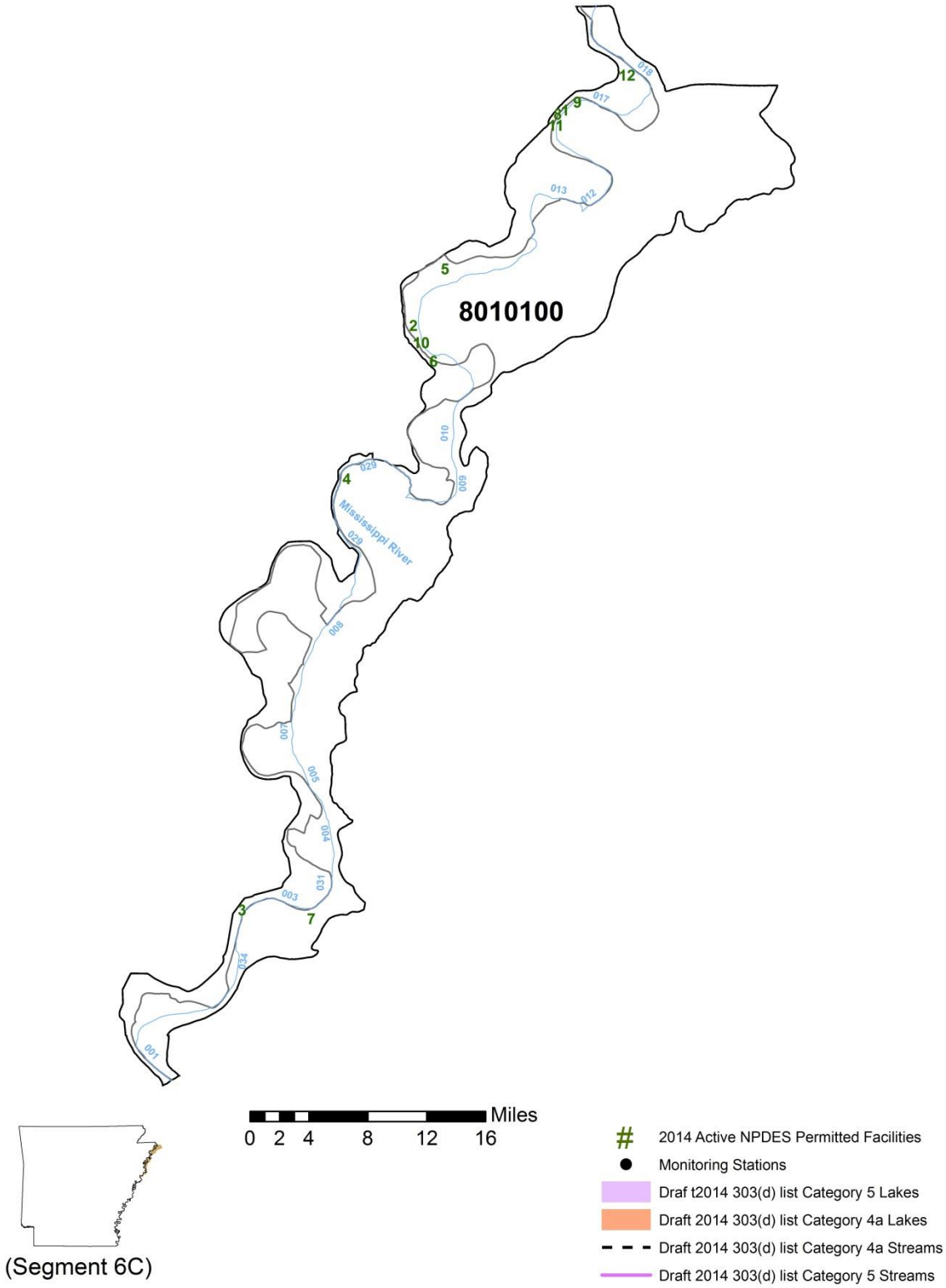


Table A-71: Planning Section 6A-C Designated Use Attainment and Water Quality Status

STREAM NAME	H.U.C.	RCH	MILES	STATION	ASSESS	Designated Use FC	FSH	PC	SC	DW	AI	SOURCE 1	2	3	4	CAUSE 1	2	3	4	STATUS 1	2	3	4	USE	SUPPORT	NON-SUPPORT
SEG-6																										
Mississippi R.	8010100	-001	6.2		U															3				FISH CONSUMPTION	0	0
Mississippi R.	8010100	-002	7.8		U															3				FISHERIES	0	0
Mississippi R.	8010100	-003	8.6		U															3				PRIMARY CONTACT	0	0
Mississippi R.	8010100	-004	4.8		U															3				SECONDARY CONTACT	0	0
Mississippi R.	8010100	-005	4.8		U															3				DRINKING SUPPLY	0	0
Mississippi R.	8010100	-007	2.3		U															3				AGRI & INDUSTRY	0	0
Mississippi R.	8010100	-008	10.1		U															3						
Mississippi R.	8010100	-009	19.4		U															3						
Mississippi R.	8010100	-010	24.3		U															3						
Mississippi R.	8010100	-011	4.8		U															3						
Mississippi R.	8010100	-012	4.0		U															3						
Mississippi R.	8010100	-013	5.8		U															3						
Mississippi R.	8010100	-017	16.8		U															3						
Mississippi R.	8010100	-018	43.6		U															3						
Mississippi R.	8010100	-034	6.6		U															3						
Mississippi R.	8020100	-001	18.0		U															3						
Mississippi R.	8020100	-002	76.1		U															3						
Mississippi R.	8020100	-003	43.1		U															3						
Mississippi R.	8030100	-003	56.6		U															3						
Mississippi R.	8030100	-005	4.7		U															3						
Mississippi R.	8030100	-006	8.9		U															3						
Mississippi R.	8030100	-007	3.8		U															3						
Mississippi R.	8030100	-009	2.6		U															3						
Mississippi R.	8030100	-011	19.2		U															3						
Mississippi R.	8030100	-012	34.1		U															3						
TOTAL MILES	437.0																									
MILES UNASSESSED	437.0																									
MILES EVALUATED	0.0																									
MILES MONITORED	0.0																									

Table A-72: Active NPDES permits for Planning Segment 6A, 6B, and 6C

Permit Number	Facility Name	Receiving Waters	Reach	USGS H.U.C.	County	Map No.
AR0035823	CLEARWATER PAPER CORPORATION - CYPRESS BEND	MISSISSIPPI R	012	8030100	Desha	1
AR0035751	ARKANSAS CITY, CITY OF-WWTF	MISSISSIPPI R	012	8030100	Desha	2
AR0000388	ENTERGY ARKANSAS-RITCHIE PLANT	MISSISSIPPI R (1,2,3)-6B/LONG LK BU(4,5)-4A	002	8020100	Phillips	1
AR0022021	WEST HELENA, CITY OF	MISSISSIPPI R	002	8020100	Phillips	2
AR0043389	HELENA MUNICIPAL WATER AND SEWER	MISSISSIPPI R	002	8020100	Phillips	3
AR0049531	HORSESHOE LAKE WWT FACILITY	MISSISSIPPI R	003	8020100	Crittenden	4
AR0000361	KINDER MORGAN OPERATING L.P.-C	MISSISSIPPI R (1) & DIT #47 (2)	017	8010100	Mississippi	1
AR0021580	OSCEOLA WW TREATMENT PLANT	MISSISSIPPI R	010	8010100	Mississippi	2
AR0022039	WEST MEMPHIS, CITY OF - WWTF	MISSISSIPPI R	003	8010100	Crittenden	3
AR0022314	WILSON, CITY OF	SLU,ISLAND #35 CHUTE,MISSISSIPPI R	029	8020203	Mississippi	4
AR0033782	LUXORA, CITY OF	MISSISSIPPI R	010	8010100	Mississippi	5
AR0036544	VISKASE COMPANIES, INC.	MISSISSIPPI R	010	8010100	Mississippi	6
AR0037770	BASF CORPORATION	MISSISSIPPI R	031	8010100	Crittenden	7
AR0043117	NUCOR-YAMATO STEEL	MISSISSIPPI-6C (1,3)/DIT #14A-5A(2)	017	8010100	Mississippi	8
AR0046663	AIR LIQUIDE	DIT,DIT 14A,DIT 13,DIT 31,TYRONZA R	017	8020204	Mississippi	9
AR0049557	PLUM POINT ENERGY STATION	MISSISSIPPI R	010	8010100	Mississippi	10
AR0050083	KINDER-MORGAN BULK TERMINALS-BARFIELD FACILITY	MISSISSIPPI R	017	8010100	Mississippi	11
AR0051128	KINDER MORGAN-HICKMAN FACILITY	MISSISSIPPI R	018	8010100	Mississippi	12

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