ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY

Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program

For Arkansas

4/17/2015

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Introduction

The Arkansas Department of Environmental Quality (ADEQ) created this long-term Vision plan for Arkansas' Clean Water Act (CWA) 303(d) Program in accordance with the new measures set forth by the United States Environmental Protection Agency (EPA). Under Section 303(d) of the CWA, states are required to develop a list of waters that do not meet the water quality standards set forth by the state. The law requires that states establish priority rankings for waters on the 303(d) list and develop Total Maximum Daily Loads (TMDL) for these waters. A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet designated uses and water quality standards. These new measures incorporate elements of prioritization, assessment, protection, alternatives, engagement, and integration as well as a different way to account for progress in the state's CWA 303(d) Program with the goal of effective integration of implementation efforts to restore and protect aquatic resources.

Selecting Priority Areas

States are encouraged to use integration and public engagement strategies when selecting priority areas that better define the overall water quality goals of their CWA 303(d) Program. ADEQ has been working in conjunction with the Arkansas Natural Resources Commission (ANRC) to target resources for water quality improvements within the state.

Integration

The ANRC is responsible for developing and implementing Arkansas' Nonpoint Source Pollution Management Program. This program receives federal monies to fund projects associated with the abatement or control of nonpoint source pollutants. ANRC identified ten 8-digit HUC basins for targeted Nonpoint Source Pollution 319(h) funding. These basins were chosen through a qualitative risk assessment-based matrix developed by the Nonpoint Task Force (University of Arkansas, 2015). Nine of the ten basins chosen by ANRC for targeted 319(h) funding have been selected by ADEQ as basins in which to focus continued efforts to remove waters from the 303(d) impaired waterbodies list. These basins targeted for 319(h) funding will have on-going projects through ANRC aimed at improving water quality. Collaboration between ANRC and ADEQ should lead to better resource allocation to improve water quality within these areas (Arkansas Natural Resources Commision, 2012). The selected basins are:

Beaver Reservoir (11010001)
Illinois River (11110103)
Lake Conway-Point Remove (11110203)
Poteau River (11110105)
Upper Saline (08040203)
Lower Ouachita-Smackover (08040201)
Bayou Bartholomew (08040205)
Cache River (08020302)
L'Anguille River (08020205)

Nine of the ten ANRC basins were chosen because they have impairments that carry from ADEQ's 2008 303(d) list to the Draft 2014 303(d) list.

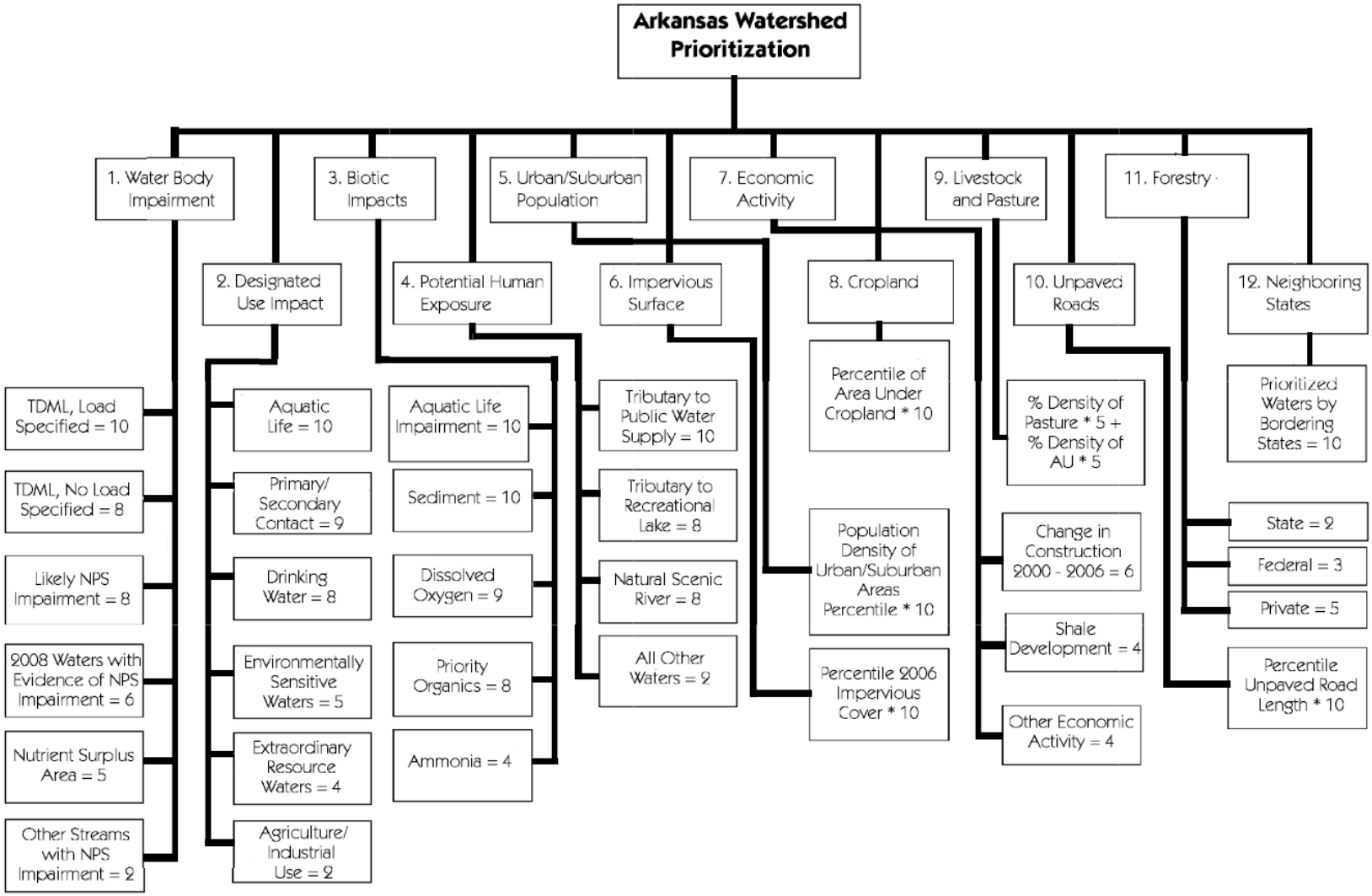
Engagement

ANRC prioritized basins in Arkansas using stakeholder involvement coupled with a science-based process. The Nonpoint Task Force consisted of representatives from state agencies, federal agencies, commodity & industry trade groups, environmental organizations, soil & water conservation districts, as well as other interested individuals (University of Arkansas, 2015). The Nonpoint Task Force determined the risk assessment categories and category weights were determined through Nonpoint Task Force discussions (University of Arkansas, 2015). The result was a qualitative risk assessment matrix that could be used to designate Arkansas' priority basins.

Risk Assessment Categories

The Nonpoint Task Force selected 12 risk categories based on readily available data or information that could be derived from other available datasets (University of Arkansas, 2015). The categories are as follows: water body impairment, designated use impact, biotic impact, human exposure, urban/suburban population, impervious surface, economic activity, cropland, livestock & pasture, unpaved roads, forestry, and priority of neighboring states.
Figure 1 shows the categories with their subcategories and assigned weights.

Figure 1: Flow chart of categories and assigned weights used to prioritize basins



TMDLs and Alternative Plans

A Total Maximum Daily Load (TMDL) is the amount of pollutant a waterbody can receive and still meet designated uses and water quality standards. TMDL documents are written for waters on the 303(d) List of Impaired Waters. TMDL documents are a repository of information concerning a waterbody and the surrounding watershed that can be used by local concerned citizens groups to guide restoration efforts aimed at achieving designated use and water quality standards attainment of an impaired waterbody. Upon EPA approval of a TMDL, the waterbody/impairment pair with the approved TMDL will be moved from the 303(d) list (Category 5) into Category 4a.

Alternative plans are short-term plans designed for impaired waters to attain designated uses and water quality standards. These plans can sometimes achieve the desired goals faster than a TMDL; however, if the waterbody has not attained designated uses and water quality standards, a TMDL will still need to be written.

Prioritization Process

Identification of impairments within ANRC's 8-digit HUC priority basins will determine the CWA 303(d) Program's "universe." Once the streams needing TMDLs or alternative plans are identified, the catchments can be identified. Catchments are small areas of land and water that drain to a particular point. A subwatershed is composed of several catchments. These catchments needing TMDLs or alternative plans will constitute the universe. The schedule to complete TMDLs or alternative plans will be based off the 8-digit priority basin in which they occur.

Impairment Identification

Within the nine selected priority basins, it was determined which waterbodies were on ADEQ's 2008 303(d) list that carried over onto the Draft 2014 303(d) list and which waterbodies were new on the Draft 2014 303(d) list (Appendix A). Each impairment was then examined to determine whether it carried over from the 2008 303(d) list to the Draft 2014 303(d) list or whether the impairment was new. Combined, these investigations yielded 76 assessment units and 116 waterbody/impairment pairs. The impairments are broken down in Table 1.

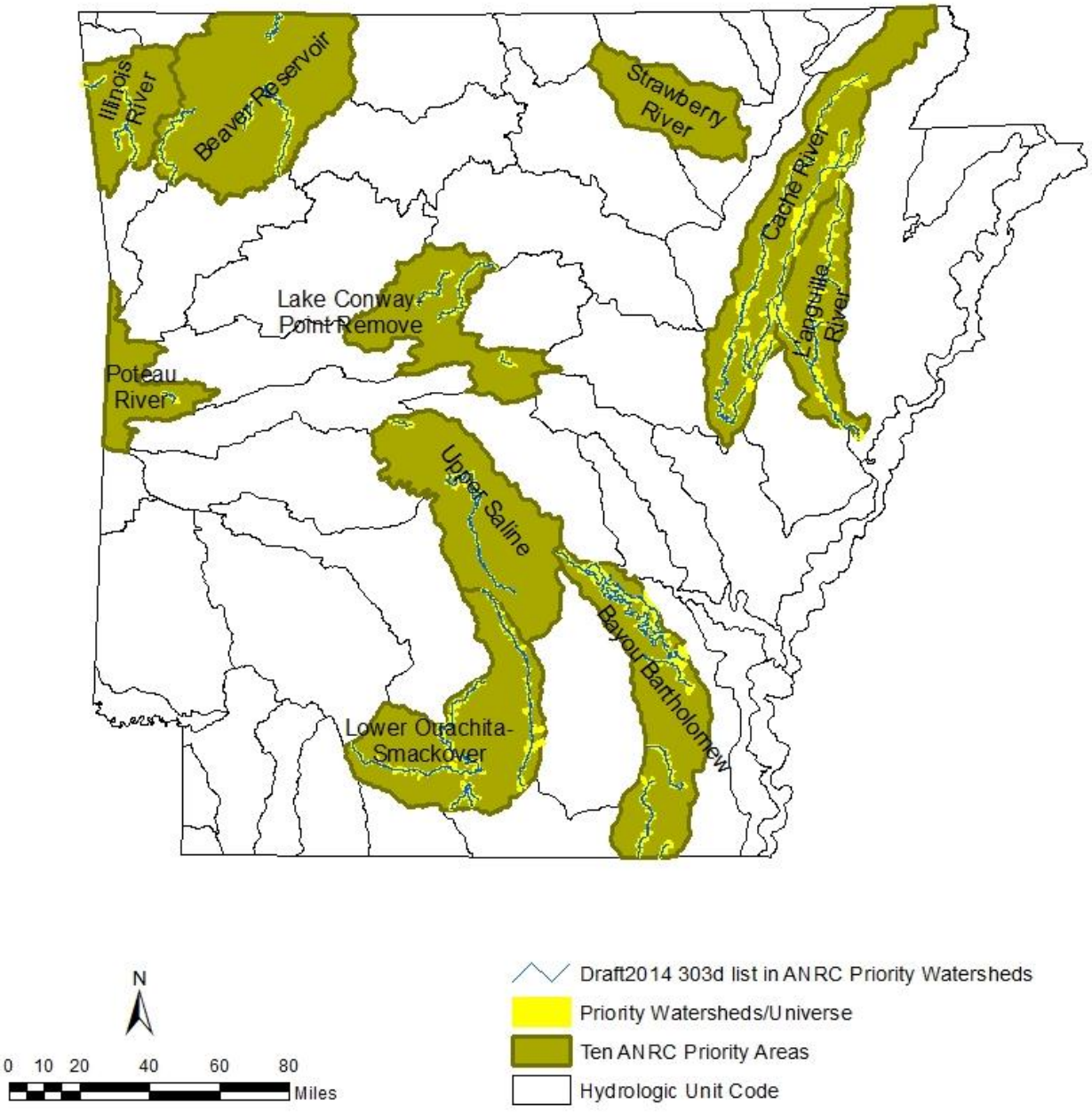
Table 1: Number of each type of impairment

DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	NO_3	Total
22	3	2	12	12	18	13	7	12	13	2	**116**

Defining the Universe

Within each of ANRC's priority basins, waters listed on the 303(d) list were identified (Figure 2). This information was used to determine the number of TMDLs or alternative plans that need to be completed for each basin.

Figure 2: ANRC priority areas with chosen priority basins highlighted



Based upon the location of the impaired waters, the approximate area of each catchment was tallied; 626,631.6773 acres make up Arkansas' CWA 303(d) Program universe. The number of waterbody/impairment pairs needing to be addressed was tallied within each basin and the percent of total priority catchment area was calculated within each 8-digit HUC basin (Table 2).

Table 2: Basin areas and number of waterbody/impairment pairs to be addressed

Basin/HUC	Number of Waterbody/Impairment Pairs Addressed	Area (acres)	Percent
Beaver Reservoir 11010001	9	52584.16227	8.39%
Lake Conway-Point Remove 11110203	4	26699.72926	4.26%
Upper Saline 08040203	7	27666.25341	4.42%
Cache River 08020302	26	173400.793	27.67%
L'Anguille River 08020205	22	87408.83246	13.95%
Bayou Bartholomew 08040205	19	133692.3514	21.34%
Lower Ouachita-Smackover 08040201	13	95106.10981	15.18%
Poteau River 11110105	7	3201.805842	0.51%
Illinois River 11110103	9	26871.63979	4.29%
Total:	**116**	**626631.6773**	**100.00%**

Plan Development

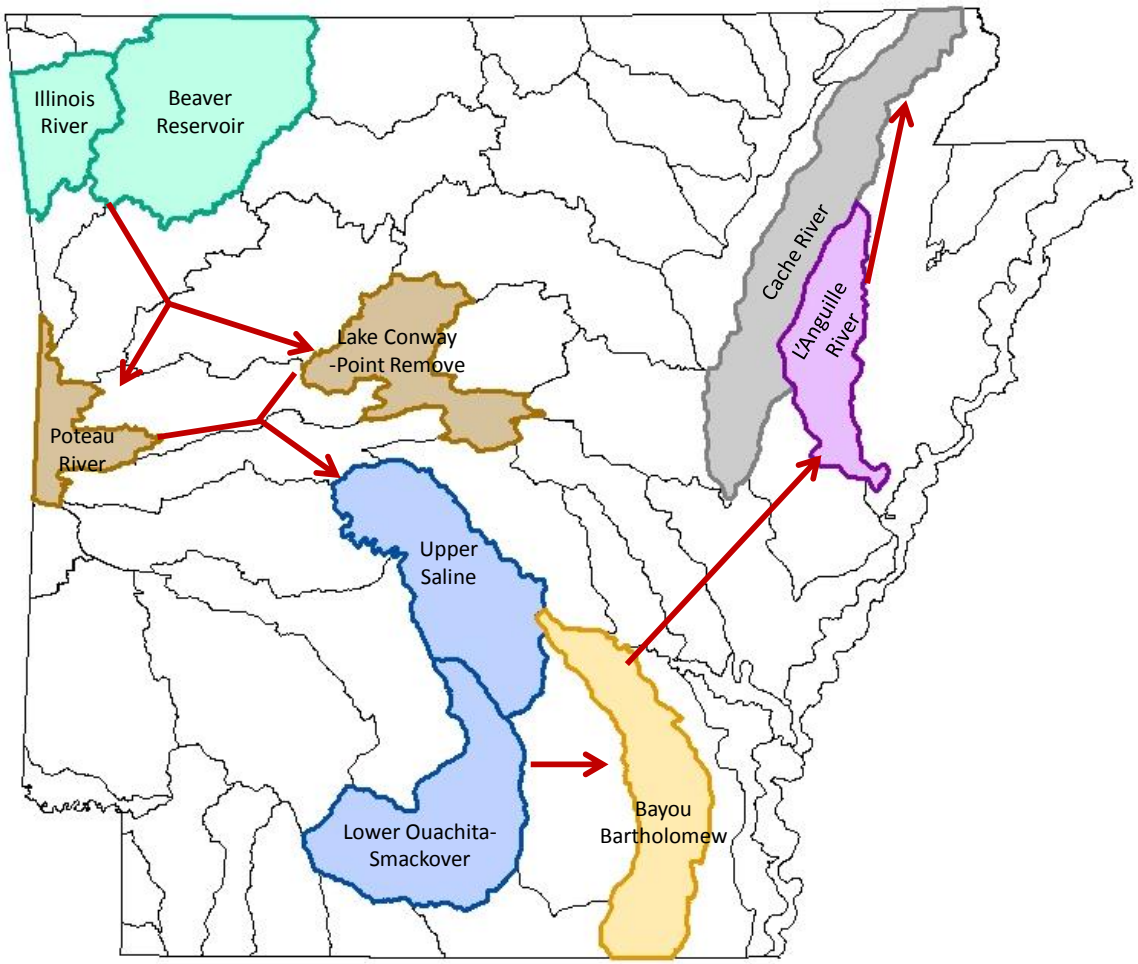
Development of TMDLs or alternative plans will require several steps. A gap determination (GAP) or an analysis of the data needed prior to beginning a plan should be completed. Monitoring to gather missing data will need to be completed. Then data assessment will need to occur before the report can be written. Once the report is written, implementation will need to occur. A basin may be in one stage of development while another basin is in another stage of development. See the development plan schedule in Table 3 below.

Table 3: Anticipated development plan

HUC	2014	2015	2016	2017	2018	2019	2020	2021	2022
11010001 & 11110103	GAP	Monitor	Assess	Plan	Implement				
11110203 & 11110105		GAP	Monitor	Assess	Plan	Implement			
08040203 & 08040201			GAP	Monitor	Assess	Plan	Implement		
08040205				GAP	Monitor	Assess	Plan	Implement	
08020302					GAP	Monitor	Assess	Plan	Implement
08020205						GAP	Monitor	Assess	Plan

Currently, ADEQ's targeted sampling activities are focused in the northwest region of the state. As this area of the state will produce the most recent data, the TMDL or alternative plan efforts will start in this area. ANRC's priority basins were then geographically grouped. Development of TMDLs or alternative plans will take place in a counter-clockwise fashion around the state (Figure 3).

Figure 3: Progression of plan development through the state



Gap Determination

Data were gathered for the waterbodies and impairments identified in Appendix A. Data sources include ADEQ, ANRC, United State Geological Survey, and Use Attainability Analyses. It was determined that the majority of the assessment units have sufficient data available with which to write a TMDL or alternative plan (Appendix B) for the specific segment with the identified impairment; however, more data need to be collected in order to write more comprehensive reports. After additional data have been collected and assessed, ADEQ may adjust the universe to encompass new catchment areas to be identified for protection plans as part of a TMDL report.

Completion Schedule

There is substantial lag time involved in developing TMDLs or alternative plans (see Table 3). Currently, there are two TMDL reports in progress within the priority areas. It is anticipated that the Cache River TMDL will be completed in 2015 and the Bayou Bartholomew TMDL will be completed in 2016. These TMDL reports that are in progress will allow ADEQ to show progress towards the final goal while working on the initial steps to compile reports

in the basins in other parts of the state. Based on the approximated catchment areas, the schedule for completion is shown in

Figure 4.

Figure 4: Basin completion schedule

ADEQ will work towards 100% TMDL or alternative plan development for the currently selected universe by 2022 (Assessment
Assessment of waters within Arkansas' CWA 303(d) Program's currently defined universe will occur as a process of working towards TMDLs and alternative plans in conjunction with the 303(d) lists submitted on a biennial basis, in even years. Waters targeted for protection will be identified further as ADEQ works through the entire process of completing TMDLs and alternative plans.

Table 4). The TMDL reports in progress listed above will account for progress in 2015 and 2016 (shaded areas in

Figure 4). In 2017, TMDLs should be submitted for the Illinois River and Beaver Reservoir basins. In 2018, TMDLs should be submitted for the Lake Conway-Point Remove and Poteau River basins. In 2019, TMDLs should be submitted for the Upper Saline and Lower Ouachita-Smackover basins. In 2020, TMDLs should be submitted for the remaining listed waters in Bayou Bartholomew. In 2021, TMDLs should be submitted for the L'Anguille River basin. In 2022, TMDLs should be submitted for the remaining listed waters in the Cache River basin.

Assessment

Assessment of waters within Arkansas' CWA 303(d) Program's currently defined universe will occur as a process of working towards TMDLs and alternative plans in conjunction with the 303(d) lists submitted on a biennial basis, in even years. Waters targeted for protection will be identified further as ADEQ works through the entire process of completing TMDLs and alternative plans.

Table 4: Number of waterbody/impairment pairs and percent area completed

Year	Project	Number of Waterbody/Impairment Pairs Addressed	Added Percent Area	Percent Completed
2015	In progress TMDLs 08020302	6	8.43%	8.43%
2016	In progress TMDLs 08040205	12	13.65%	22.08%
2017	11010001 & 11110103	18	12.66%	34.74%
2018	11110203 & 11110105	11	4.77%	39.51%
2019	08040203 & 08040201	20	19.57%	59.08%
2020	08040205	7	7.66%	66.74%
2021	08020205	22	19.16%	85.89%
2022	08020302	20	14.11%	100.00%

Conclusion

Priority basins have been designated by ANRC for targeted funding through a public engagement process that identified risk categories to aid in prioritizing basins for targeted 319(h) funding. The ANRC priority basins were analyzed for assessment units with impairments identified on the 2008 303(d) list that carry through to the Draft 2014 303(d) list as well as newly listed assessment units and impairments on the Draft 2014 303(d) list. The universe outlined for Arkansas' CWA 303(d) Program includes 76 assessment units, 116 waterbody/impairment pairs, and addresses 626,631.6773 catchment acres. Arkansas will work towards 100% completion of TMDLs or alternative plans by addressing, on average, 12.50% of the universe per year through 2022. Integration of ADEQ and ANRC priorities will lead to targeted distribution of resources allocated to improving water quality.

Works Cited

Arkansas Natural Resources Commision. (2012). *2011-2016 Nonpoint Source Pollution Management Plan.* Little Rock: Arkansas Natural Resources Commision.

University of Arkansas Division of Agriculture Reserarch & Extension. (n.d.). *Cooperative Extension Service.* Retrieved January 12, 2015, from Extension Publications: http://www.uaex.edu/publications/pdf/FSPPC116.pdf

Appendix A: Impairments identified within ANRC Priority Basins

Appendix A: Impairments identified within ANRC priority basins

STREAM NAME	HUC	RCH	PLNG SEG	MILES	MONITORING STATIONS	Designated Use Not Supported						Water Quality Standard Non-Attainment												SOURCE						
						FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	Priority
Chemin-A-Haut Cr.	8040205	-907	2B	30.5	OUA0012							x																	UN	L
Bearhouse Creek	8040205	-901	2B	24.4	OUA0155		x					x									x								UN	M
Overflow Creek	8040205	-908	2B	9.9	OUA0012A		x								x	x										x			UN	M
Main Street Ditch	8040205	-909	2B	2.0	OUA0146		x					x								x	x							x		M
Harding Creek	8040205	-902	2B	4.6	OUA0145		x													x	x							x		M
Bayou Imbeau	8040205	-910	2B	7.5	OUA0147		x					x							x		x							x		M
Deep Bayou	8040205	-005	2B	28.9	OUA0151															x										
Able's Creek	8040205	-911	2B	14.6	OUA0158										x														UN	M
Bayou Bartholomew	8040205	-013	2B	33.9	UWBYB03							x								x							x			M
Bayou Bartholomew	8040205	-006	2B	82.3	OUA0033																x								UN	L
Cross Bayou	8040205	-905	2B	2.4	OUA0152							x																	UN	
Saline River	8040203	-007	2C	3.8	OUA0042										x															
Saline River	8040203	-009	2C	15.6	e										x															
Saline River	8040203	-010	2C	29.8	OUA0026,41										x											x			UN	H
Saline River	8040203	-012	2C	10.2	e										x															
Saline River	8040203	-013	2C	4.0	e										x															
Saline River	8040203	-913	2C	9.3	e										x															
Alum Fk. Saline River	8040203	-018	2C	10	USGS								x																	
Moro Creek	8040201	-001	2D	12.0	OUA0028		x														x								UN	L
Ouachita River	8040201	-005	2D	34.2	OUA0037		x													x									UN	L
Moro Creek	8040201	-901	2D	57.9	e		x													x	x								UN	L
E. Two Bayou	8040201	-905	2D	30.7	OUA0052B			x					x						x										UN	
Smackover Creek	8040201	-007	2D	29.1	e		x					x																	UN	M
Smackover	8040201	-006	2D	14.8	OUA0027		x					x																	UN	M

STREAM NAME	HUC	RCH	PLNG SEG	MILES	MONITORING STATIONS	Designated Use Not Supported						Water Quality Standard Non-Attainment												SOURCE						
						FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	Priority
Creek																														
Flat Creek	8040201	-706	2D	16.0	OUA0137C		x									x														
Salt Creek	8040201	-806	2D	8.0	OUA0137D		x						x			**x**													UN	H
Elcc Tributary	8040201	-606	2D	8.5	OUA0137A+		x													x			NO_3	x						H
W. Fk.Point Remove	11110203	-017	3F	14.4	ANRC										x															
E. Fk Point Remove	11110203	-014	3F	20.9	ANRC										x															
Stone Dam Creek	11110203	-904	3F	3.0	ARK0051												x													
W. Fk. Point Remove	11110203	-016	3F	3.3	ANRC										x															
Poteau River	11110105	-031	3I	6.6	ARK0055, UAA										**x**	x	x	x						x	x					M
Unnamed Tributary to Poteau	11110105	-831	3I	1.9	UAA											x		x													
Poteau River	11110105	-001	3I	2.0	ARK0014		x					x																	UN	L
Sager Creek	11110103	-932	3J	8.0	ARK0005																		NO_3		x					H
Illinois River	11110103	-023	3J	8.1	ILL04			x											x								x			L
Muddy Fork Illinois River	11110103	-025	3J	3.2	MFI0004			x											x								x			L
Moores Creek	11110103	-026	3J	9.8	e												x		x											
Muddy Creek	11110103	-027	3J	11.0	e												x		x											
Illinois River	11110103	-024	3J	2.5	ARK0040			x									**x**		x							x	x			L
Cache River	8020302	-021	4B	18.4	e		x														x						x			L
Bayou DeView	8020302	-009	4B	20.3	WHI0026		x													x									UN	H
Big Creek Ditch	8020302	-910	4B	13.0	WHI0196		x													x									UN	L
Lost Creek Ditch	8020302	-909	4B	7.9	WHI0172		x					**x**				x				x				x	x					M
Cache River Ditch	8020302	-032	4B	11.4	e		x										x										x			L
Cache River	8020302	-028	4B	5.9	UWCHR04		x										x										x			L
Cache River	8020302	-029	4B	3.9	e		x										x										x			L
Cache River	8020302	-020	4B	22.6	UWCHR03		x														x						x			L

STREAM NAME	HUC	RCH	PLNG SEG	MILES	MONITORING STATIONS	Designated Use Not Supported						Water Quality Standard Non-Attainment												SOURCE						
						FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	Priority
Cache River	8020302	-019	4B	13.7	e		x														x						x			L
Bayou DeView	8020302	-002	4B	19.2	ANRC							x																		
Cache River	8020302	-027	4B	3.9	e		x										x										x			L
Cache River	8020302	-031	4B	3.4	e		x										x										x			L
Cache River	8020302	-016	4B	21.8	WHI0032, ANRC		x					x									x						x			L
Caney Creek	8020302	-903	4B	16.8	ANRC							x																		
Bayou DeView	8020302	-007	4B	18.2	e		x										x										x			L
Bayou DeView	8020302	-006	4B	10.2	e		x										x										x			L
Cache River	8020302	-018	4B	25.0	UWCHR02		x														x						x			L
Cache River	8020302	-017	4B	15.8	e		x														x						x			L
Bayou DeView	8020302	-005	4B	8.6	e		x										x										x			L
Bayou DeView	8020302	-004	4B	21.2	UWBDV02		x					x					x										x			L
Buffalo Creek	8020302	-014	4B	13.1	ANRC							x																		
Unnamed Trib to Turkey Creek	8020302	-915	4B	2.3	ANRC							x																		
Kings River	11010001	-037	4K	19.1	WHI0009A													x											UN	L
Kings River	11010001	-042	4K	39.5	WHI0123													x											UN	L
Town Branch	11010001	-959	4K	4.5	UAA													x												
Holman Creek	11010001	-059	4K	9.1	WHI0070, UAA													x												
White River	11010001	-023	4K	6.2	WHI0052, UAA									x			x												UN	H
West Fork	11010001	-024	4K	27.2	WHI0051, UAA		x							x			x	x											UN	H
Caney Creek	8020205	-901	5B	9.0	FRA0034		x													x					x					L
L' Anguille River	8020205	-005	5B	44.1	UWLGR02		x					x				x	x	x									x			L
Prairie Creek	8020205	-902	5B	12.8	FRA0035											x	x	x									x			L
L' Anguille River	8020205	-004	5B	16.0	UWLGR01		x					x				x		x		x							x			L

STREAM NAME	HUC	RCH	PLNG SEG	MILES	MONITORING STATIONS	Designated Use Not Supported						Water Quality Standard Non-Attainment												SOURCE						
						FC	FSH	PC	SC	DW	AI	DO	pH	Tm	Tb	Cl	SO4	TDS	PA	Cu	Pb	Zn	Other	IP	MP	SE	AG	UR	Other	Priority
Second Creek	8020205	-008	5B	16.4	FRA0012		x					x															x			L
L' Anguille River	8020205	-001	5B	19.7	FRA0010		x					x				x		x									x			L
L' Anguille River	8020205	-002	5B	1.8	e		x					x				x		x									x			L
L' Anguille River	8020205	-003	5B	16.8	e		x					x				x		x									x			L

2008 Waters & Parameters in ANRC Priority Areas that carry through to 2014

2014 Waters in ANRC Priority Areas with different impairments than on the 2008 list

New 2014 streams listed in the Priority Areas

Appendix B: Data collected for Gap Determination

Appendix B: Data collected for Gap Determination: See Excel file.