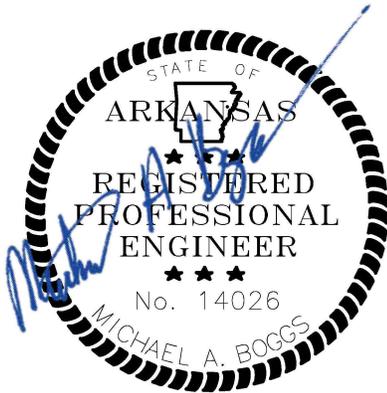


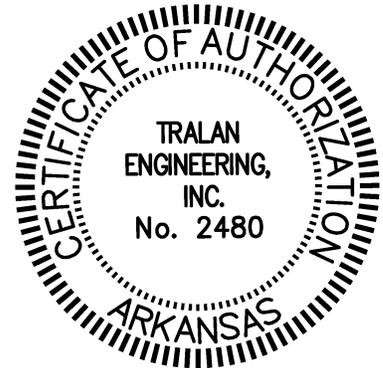
**Stormwater Pollution Prevention Plan (SWPPP) for Construction
Activity for Large Construction Sites**

National Pollutant Discharge Elimination System (NPDES)
General Permit # ARR150000



Prepared for:
No REST, LLC

Date:
January 17, 2019



Prepared by:

TRALAN
ENGINEERING
2916 Wood Street
Jonesboro, AR 72404

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Appendix D:	ADEQ-303(d) List of Impaired Waterbodies 2016
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Project Name and Location: The Orchard; Intersection of Flemon Road and Wilkinson Drive

Property Parcel Number (Optional): _____

Operator Name and Address: No REST, LLC

2916 Wood St, Jonesboro, AR 72404

A. Site Description

- a. Project description, intended use after NOI is filed: Subdivision
- b. Sequence of major activities which disturb soils: Installation of BMP's, strip topsoil, Rough Grade Roads, Install Utilities, Complete Roads, Final Stabilization, Removal of BMP's. Construction will take place in phase so no more than 20 or 2 phases will be disturbed at one time
- c. Total Area: 52 Acres Disturbed Area: 52 Acres (Total) 19.50 Acres (phase 1)
- d. Soils Information:
 - i. Runoff Coefficient Pre-Construction : 0.25
 - ii. Runoff Coefficient Post-Construction : 0.35
 - iii. Describe the soil or the quality of any discharge from the site: Calloway Silt Loam, Falaya Silt Loam and Hillemann Silt Loam; Hydrologic soil Groups D.

B. Responsible Parties

Individual/Company	Phone Number	Service Provided for SWPPP (i.e., Inspector, SWPPP revisions, Stabilization Activities, BMP Maintenance, etc.)
Travis Fischer, Member No REST, LLC	(870)-897-0248	Inspector/Revisions/ BMP Installation/Stabilization/ and Maintenance

C. Receiving Waters

- a. The following waterbody (or waterbodies) receives stormwater from this construction site: Black Fork Creek, thence Big Creek, thence Bayou De View, thence Cache River and ultimately into the White River.
- b. Is the project located within the jurisdiction of an MS4? Yes No
 - i. If yes, Name of MS4: City of Jonesboro
- c. Ultimate Receiving Water:

<input type="checkbox"/> Red River	<input checked="" type="checkbox"/> White River
<input type="checkbox"/> Ouachita River	<input type="checkbox"/> St. Francis River
<input type="checkbox"/> Arkansas River	<input type="checkbox"/> Mississippi River

D. Documentation of Permit Eligibility Related to the 303(d) list and Total Maximum Daily Loads (TMDL) (http://www.adeg.state.ar.us/water/branch_planning/default.htm)

a. Does the stormwater enter a waterbody on the 303(d) list or with an approved TMDL?

Yes No

b. If yes:

i. Waterbody identified on 303(d) list: Bayou De View, Cache River, White River

ii. Pollutant addressed on 303(d) list or TMDL: Tb, DO

iii. This specific project or generally construction activity is identified on 303(d) list or associated assumptions and allocations identified in the TMDL for the discharge: Yes No

iv. Additional controls implement None

E. Attainment of Water Quality Standards After Authorization

a. The permittee must select, install, implement, and maintain BMPs at the construction site that minimize pollutants in the discharge as necessary to meet applicable water quality standards. In general, except in situations explained below, the SWPPP developed, implemented, and updated to be considered as stringent as necessary to ensure that the discharges do not cause or contribute to an excursion above any applicable water quality standard.

b. At any time after authorization, the Department may determine that the stormwater discharges may cause, have reasonable potential to cause, or contribute to an excursion above any applicable water quality standard. If such a determination is made, the Department will require the permittee to:

i. Develop a supplemental BMP action plan describing SWPPP modifications to address adequately the identified water quality concerns and submit valid and verifiable data and information that are representative of ambient conditions and indicate that the receiving water is attaining water quality standards; or

ii. Cease discharges of pollutants from construction activity and submit an individual permit application.

I understand and agree to follow the above text regarding the attainment of water quality standards after authorization. Yes No

F. Site Map Requirements (Attach Site Map):

a. Pre-construction topographic view;

b. Direction of stormwater flow (i.e., use arrows to show which direction stormwater will flow) and approximate slopes anticipated after grading activities;

c. Delineate on the site map areas of soil disturbance and areas that will not be disturbed under the coverage of this permit;

d. Location of major structural and nonstructural controls identified in the plan;

e. Location of main construction entrance and exit;

f. Location where stabilization practices are expected to occur;

- g. Locations of off-site materials, waste, borrow area, or equipment storage area;
- h. Location of areas used for concrete wash-out;
- i. Location of all surface water bodies (including wetlands);
- j. Locations where stormwater is discharged to a surface water and/or municipal separate storm sewer system if applicable,
- k. Locations where stormwater is discharged off-site (should be continuously updated);
- l. Areas where final stabilization has been accomplished and no further construction phase permit requirements apply.

G. Stormwater Controls

- a. Initial Site Stabilization, Erosion and Sediment Controls, and Best Management Practices:

- i. Initial Site Stabilization: Preserve existing ground cover where attainable, install construction exit, and install perimeter controls
- ii. Erosion and Sediment Controls: Silt Fence, construction exit, and check dams
- iii. If periodic inspections or other information indicates a control has been used inappropriately or incorrectly, the operator will replace or modify the control for site situations: Yes No
If No, explain: _____

- iv. Off-site accumulations of sediment will be removed at a frequency sufficient to minimize off-site impacts: Yes No
If No, explain: _____

- v. Sediment will be removed from sediment traps or sedimentation ponds when design capacity has been reduced by 50%: Yes No
If No, explain: _____

- vi. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges: Yes No
If No, explain: _____

- vii. Off-site material storage areas used solely by the permitted project are being covered by this SWPPP: Yes No
If Yes, explain additional BMPs implemented at off-site material storage area: _____

b. Stabilization Practices

i. Description and Schedule: All disturbed areas will be temporarily seeded if construction activity ceases for longer than 14 days. All finish grade work will be permanently seeded upon completion.

ii. Are buffer areas required? Yes No

If Yes, are buffer areas being used? Yes No

If No, explain why not: _____

If Yes, describe natural buffer areas: _____

iii. A record of the dates when grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be included with the plan.

Yes No

If No, explain: _____

iv. Deadlines for stabilization:

1. Stabilization procedures will be initiated 14 days after construction activity temporarily ceases on a portion of the site.
2. All finish grade work will be permanently seeded upon completion.

c. Structural Practices

i. Describe any structural practices to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site: Silt Fencing, rock check dams, and construction exits will be utilized as needed

ii. Sediment Basins:

Are 10 or more acres draining to a common point? Yes No

Is a sediment basin included in the project? Yes No

If Yes, what is the designed capacity for the storage?

3600 cubic feet per acre = : 72,000 cu. ft.

or

10 year, 24 hour storm = : _____

Other criteria were used to design basin: _____

If No, explain why no sedimentation basin was included and describe required natural buffer areas and other controls implemented instead:

- iii. Describe Velocity Dissipation Devices: Rip-rap check dams will used at all concentrated flow locations developed during construction

H. Other Controls

- a. Solid materials, including building materials, shall be prevented from being discharged to Waters of the State: Yes No
- b. Off-site vehicle tracking of sediments and the generation of dust shall be minimized through the use of:
- A stabilized construction entrance and exit
 - Vehicle tire washing
 - Other controls, describe: _____
- c. Temporary Sanitary Facilities: A portable sanitary receptacle will be placed onsite and any waste will be removed by a licensed sanitary waste contractor
- d. Concrete Waste Area Provided:
- Yes
 - No. Concrete is used on the site, but no concrete washout is provided.
Explain why: _____
 - N/A, no concrete will be used with this project
- e. Fuel Storage Areas, Hazardous Waste Storage, and Truck Wash Areas: There are no anticipated fuel storage, hazardous waste storage, or truck wash areas for this site

I. Non-Stormwater Discharges

- a. The following allowable non-stormwater discharges comingled with stormwater are present or anticipated at the site:
- Fire-fighting activities;
 - Fire hydrant flushings;
 - Water used to wash vehicles (where detergents or other chemicals are not used) or control dust in accordance with Part II.A.4.H.2;
 - Potable water sources including uncontaminated waterline flushings;
 - Landscape Irrigation;
 - Routine external building wash down which does not use detergents or other chemicals;
 - Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled materials have been removed) and where detergents or other chemicals are not used;
 - Uncontaminated air conditioning, compressor condensate (See Part I.B.12.C of the permit);,
 - Uncontaminated springs, excavation dewatering and groundwater (See Part I.B.12.C of the permit);
 - Foundation or footing drains where flows are not contaminated with process materials such as solvents (See Part I.B.12.C of the permit);
- b. Describe any controls associated with non-stormwater discharges present at the site: No additional controls needed, non-stormwater discharges will be routed through the existing controls.

J. Post-Construction Stormwater Management:

Describe measures installed during the construction process to control pollutants in stormwater discharges that will occur after construction operations have been completed:

Vegetated swales and vegetated perimeter buffers will be used as post construction storm water management measures.

K. Applicable State or Local Programs: The SWPPP will be updated as necessary to reflect any revisions to applicable federal, state, or local requirements that affect the stormwater controls implemented at the site. Yes No

L. Inspections

a. Inspection frequency:

Every 7 calendar days

or

At least once every 14 calendar days and within 24 hours of the end of a storm even 0.5 inches or greater (a rain gauge must be maintained on-site)

b. Inspections:

Completed inspection forms will be kept with the SWPPP.

ADEQ's inspection form will be used (See Appendix B)

or

A form other than ADEQ's inspection form will be used and is attached (See inspection form requirements Part II.A.4.L.2)

c. Inspection records will be retained as part of the SWPPP for at least 3 years from the date of termination.

d. It is understood that the following sections describe waivers of site inspection requirements. All applicable documentation requirements will be followed in accordance with the referenced sections.

i. Winter Conditions (Part II.A.4.L.3)

ii. Adverse Weather Conditions (Part II.A.4.L.4)

M. Maintenance:

The following procedures to maintain vegetation, erosion and sediment control measures and other protective measures in good, effective operating condition will be followed: The site contractor will execute a maintenance program to ensure that all structural measures and controls operate effectively throughout the duration of all construction related activities. Any necessary repairs will be completed, when practicable, before the next storm event, but not to exceed a period of 3 business days of discovery, or as otherwise directed by state or local officials.

N. Employee Training:

The following is a description of the training plan for personnel (including contractors and subcontractors) on this project: The owner or his/her designated representative will hold a meeting before the commencement of any construction activity to discuss the construction techniques, implementation, maintenance, and repair of all site BMPS with all appropriate parties. Only the owner or qualified personnel hired by the owner will be in charge of implementing, constructing, maintaining, or inspecting any measure of this SWPPP.

**Note, Formal training classes given by Universities or other third-party organizations are not required, but recommended for qualified trainers; the permittee is responsible for the content of the training being adequate for personnel to implement the requirements of the permit.

O. Certification

"I certify under penalty of law that this document and all attachments such as Inspection Form were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

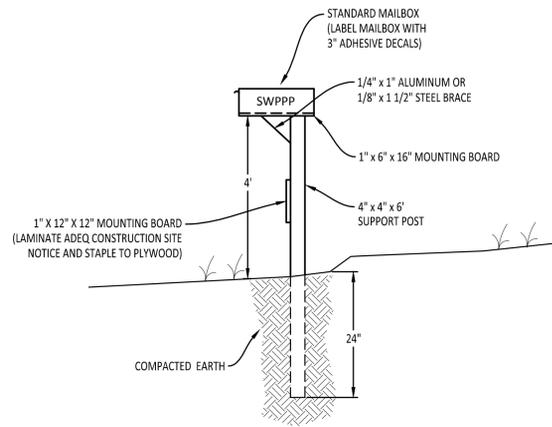
Signature of Responsible or Cognizant Official: Travis Fischer

Title: Member

Date: 1/18/19

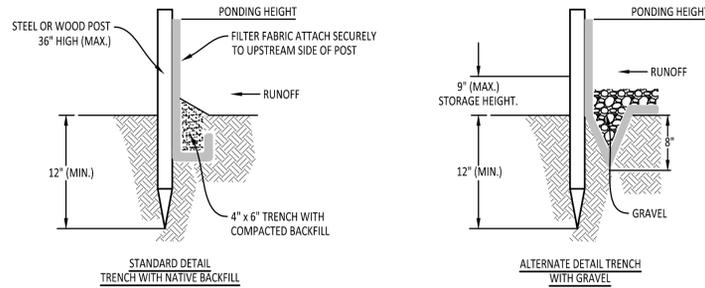
Appendix A

Erosion and Sediment Control Plan and BMP Details



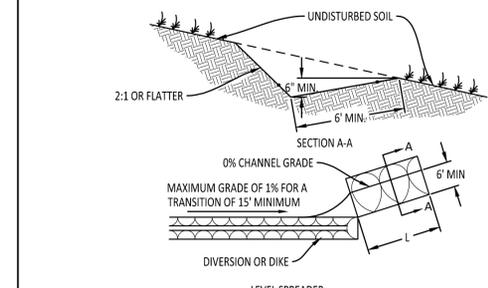
SWPPP MAILBOX

1



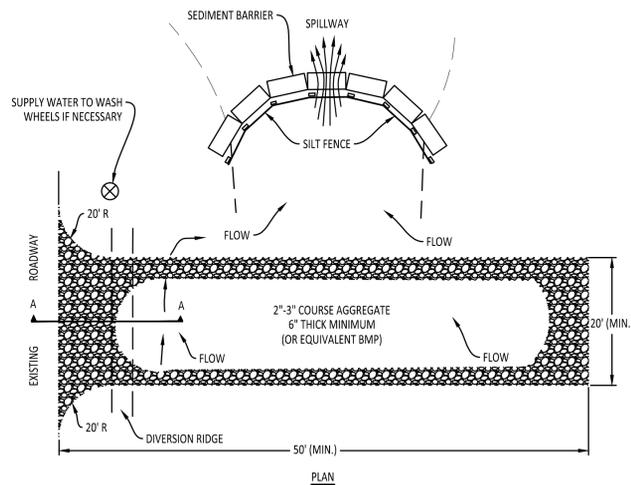
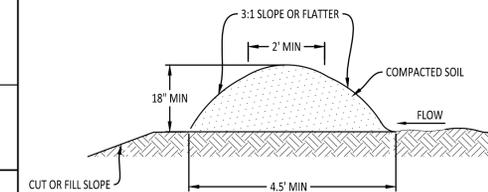
RIP RAP CHECK DAM

5



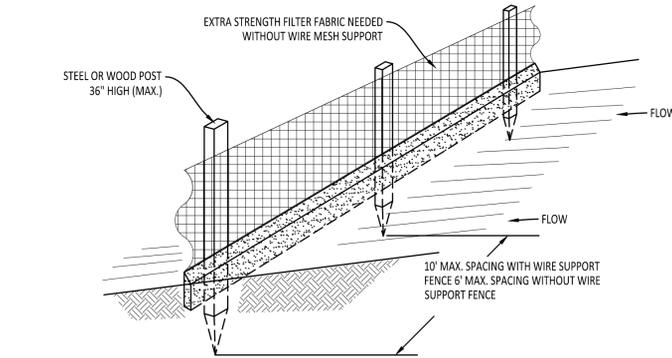
TEMPORARY DIVERSION DIKE

8



CONSTRUCTION EXIT W/ DIVERSION BERM

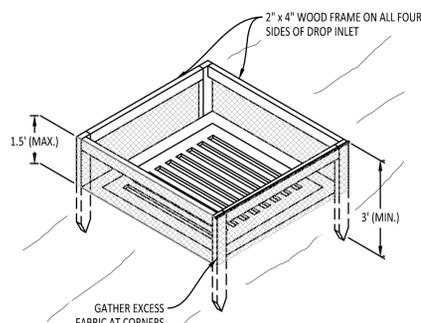
2



SILT FENCE

3

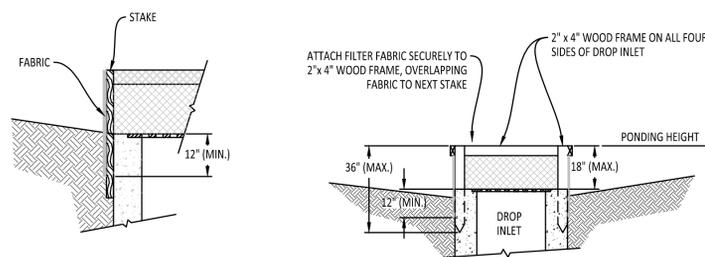
- NOTES:
1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
 2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
 3. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.



CONCRETE WASHOUT

6

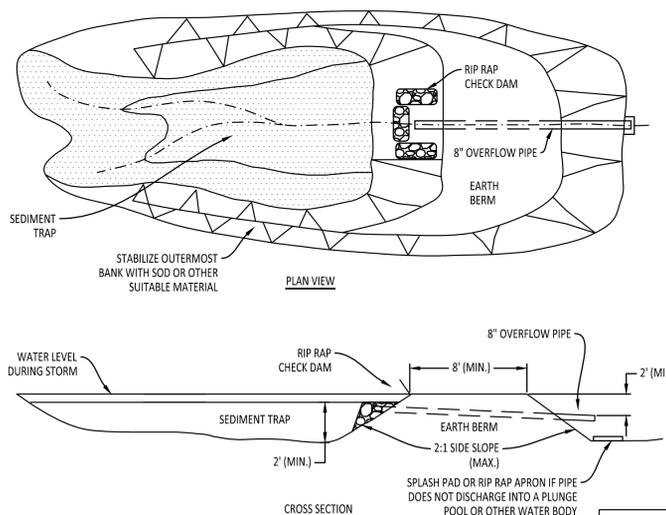
- NOTES:
1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
 2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
 3. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
 4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
 5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., RIPPED OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET-VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.



SEDIMENT BARRIER AT DROP INLET

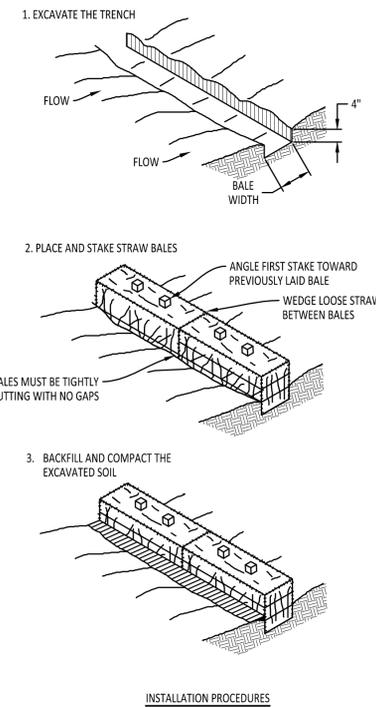
4

- NOTES:
1. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)
 2. USE 2" X 4" WOOD OR EQUIVALENT METAL STAKES. (3 FT. MIN. LENGTH)
 3. INSTALL 2" X 4" WOOD TOP FRAME TO INSURE STABILITY.
 4. THE TOP OF THE FRAME (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BYPASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.



EROSION CONTROL SEDIMENT BASIN

7



STRAW BALE BARRIER

9

REVISIONS		
DATE	BY	DESCRIPTION
DRAWING INFO.		
DRAWN BY:		GTF
DATE:		
SCALE:		
JOB NO.:		
CAD NO.:		
SWPPP DETAILS		
SHEET NUMBER: 1 of 1		

COMPANY INFO:
2916 WOOD STREET
JONESBORO, AR 72404
PH: 1-870-203-9939
WWW.TRALANENG.COM

Appendix B

Site Inspection Form

ARR150000 Inspection Form

Appendix B

Inspector Name: _____

Date of Inspection: _____

Inspector Title: _____

Date of Rainfall: _____

Duration of Rainfall: _____

Days Since Last Rain Event: _____ days

Rainfall Since Last Rain Event: _____ inches

Description of any Discharges During Inspection: _____

Location of Discharges of Sediment/Other Pollutant (specify pollutant & location): _____

Locations in Need of Additional BMPs: _____

Information on Location of Construction Activities

Location	Activity Begin Date	Activity Occuring Now (y/n)?	Activity Ceased Date	Stabilization Initiated Date	Stabilization Complete Date

Information on BMPs in Need of Maintenance

Location	In Working Order?	Maintenance Scheduled Date	Maintenance Completed Date	Maintenance to be Performed By

Changes required to the SWPPP: _____

Reasons for changes: _____

SWPPP changes completed (date): _____

"I certify under penalty of law that this document and all attachments such as Inspection Form were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

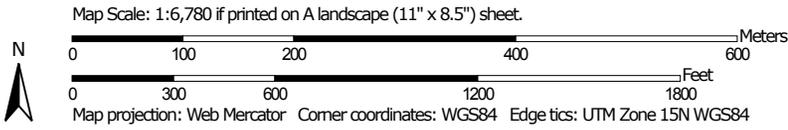
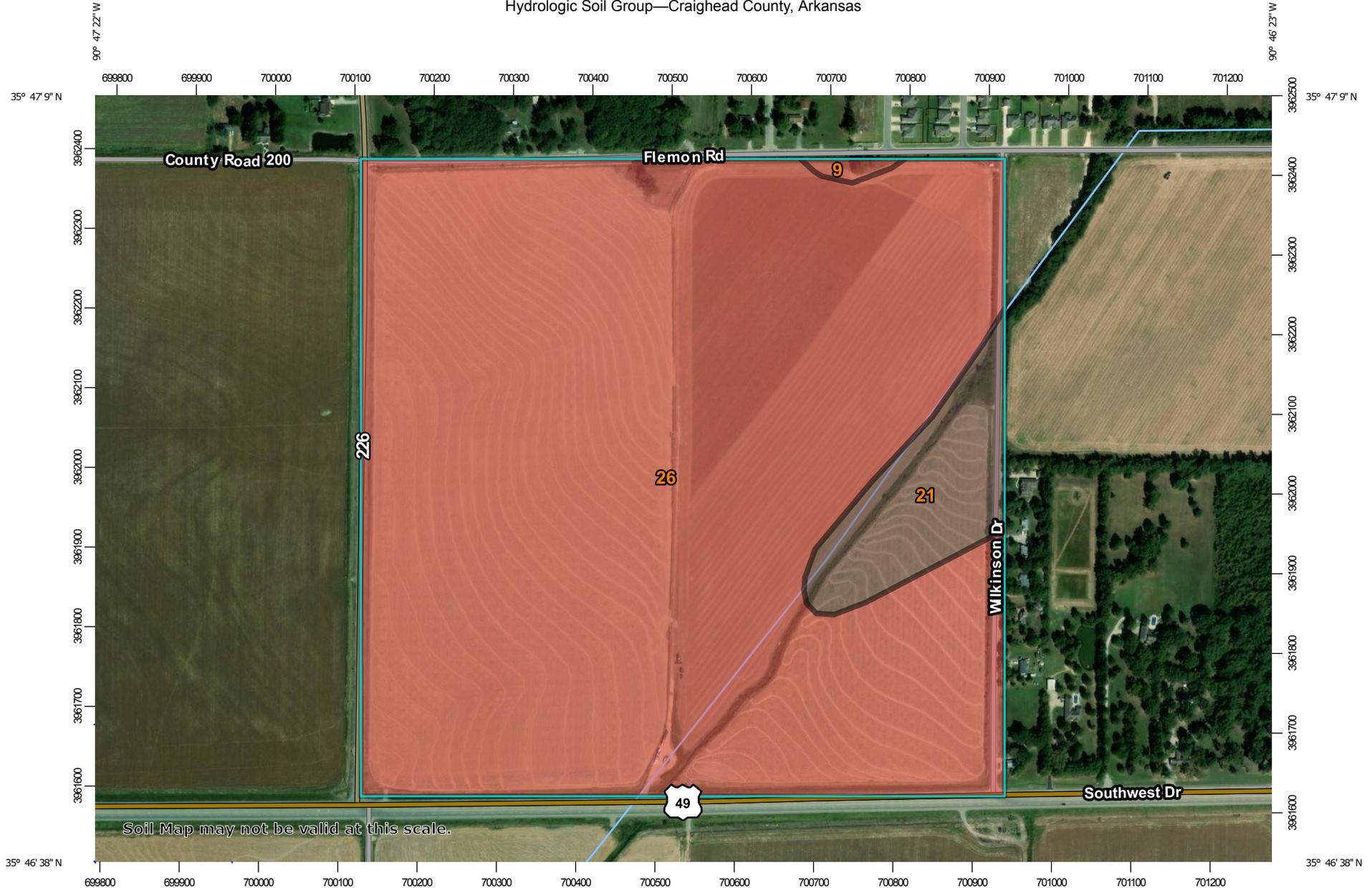
Signature of Responsible or Cognizant Official: _____ Date: _____

Title: _____

Appendix C

NRCS-Soils Map and Properties

Hydrologic Soil Group—Craighead County, Arkansas



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Craighead County, Arkansas
 Survey Area Data: Version 18, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 12, 2011—May 5, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Calloway silt loam, 0 to 1 percent slopes	D	0.6	0.4%
21	Falaya silt loam, 0 to 1 percent slopes, occasionally flooded, brief duration	B/D	10.7	6.6%
26	Hillemann silt loam, 0 to 1 percent slopes	D	149.8	93.0%
Totals for Area of Interest			161.1	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk "*" denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties—Craighead County, Arkansas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
9—Calloway silt loam, 0 to 1 percent slopes														
Calloway	90	D	0-3	Silt loam	CL	A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	94-99-100	85-92-100	22-31-40	6-12-18
			3-13	Silt loam	CL	A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	94-100-100	85-94-100	22-35-41	6-16-21
			13-19	Silt loam	CL	A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	93-99-100	82-91-100	21-26-37	6-9 -18
			19-30	Silt loam, silty clay loam	CL	A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	93-100-100	84-94-100	20-33-40	6-16-22
			30-79	Silt loam, silty clay loam	CL	A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	95-100-100	86-94-100	25-33-40	10-16-22

Engineering Properties--Craighead County, Arkansas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
21--Falaya silt loam, 0 to 1 percent slopes, occasionally flooded, brief duration														
Falaya	95	B/D	0-6	Silt loam	CL-ML	A-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	95-99-1 00	80-87- 91	18-26 -34	3-7 -12
			6-14	Silt loam	CL-ML	A-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	95-99-1 00	80-87- 91	18-24 -31	3-7 -12
			14-56	Silt loam	CL-ML	A-4	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	95-99-1 00	80-87- 91	17-23 -30	3-7 -12
			56-80	Silt loam, silty clay loam	CL	A-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	93-99-1 00	82-92-1 00	18-29 -41	3-12-22
26--Hillemann silt loam, 0 to 1 percent slopes														
Hillemann	88	D	0-8	Silt loam	CL, CL- ML	A-4, A-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	92-99-1 00	80-91-1 00	23-28 -34	7-9 -13
			8-15	Silt loam	CL, CL- ML	A-4, A-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	92-99-1 00	80-91-1 00	23-27 -32	7-9 -13
			15-28	Silty clay loam, silty clay	CL, CH	A-7-6, A-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	93-100- 100	84-94-1 00	36-46 -55	19-25-3 2
			28-70	Silt loam, silty clay loam	CL, CL- ML	A-6, A-4, A-7-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	92-99-1 00	80-91-1 00	23-36 -41	7-18-21
			70-79	Silty clay loam, silty clay	CH, CL	A-7-6, A-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	93-100- 100	84-94-1 00	36-45 -54	19-25-3 2

Data Source Information

Soil Survey Area: Craighead County, Arkansas
Survey Area Data: Version 18, Sep 12, 2018

Appendix D

ADEQ-303(d) List of Impaired Waterbodies 2016

Final 2016 303(d) List

Category 4a

Lakes with TMDLs

LAKE NAME	HUC	LAKE TYPE	PLNG SEG	ACRES	COUNTY	ASSESSMENT METHOD	Designated Use Not Supported						SOURCE			CAUSE			TMDL DATE	Year Listed
							FC	FSH	PC	SC	DW	AI	1	2	3	1	2	3		
Columbia	11140203	E	1A	3000	Columbia	M	x						UN			HG			2002	2002
First Old River	11140201	D	1B	240	Miller	M		x					UN			NU			2007	2004
Grand	8050002	E	2A	900	Chicot	M		x					UN			NU			2007	2004
Grays	8040204	NC	2C	36	Cleveland	M	x						UN			HG			2004	2002
Monticello	8040204	B	2C	1520	Drew	M	x						UN			HG			2004	2002
Winona	8040203	A	2C	715	Saline	M	x						UN			HG			2002	2002
Ouachita River Oxbows below Camden	8040202		2D		Ashley Calhoun Union Bradley Ouachita	M	x						UN			HG			2002	2002
Big Johnson	8040201	NC	2D	49	Calhoun	M	x						UN			HG			2004	2002
Felsenthal	8040202	E	2D	14,000	Union Ashley	M	x						UN			HG			2004	2002
Cove Creek	11110202	B	3H	42	Perry	M	x						UN			HG			2002	2002
Nimrod	11110206	E	3E	3550	Yell	M	x						UN			HG			2002	2002
Dry Fork	11110206		3E	90	Perry	M	x						UN			HG			2002	2002
Horseshoe	8020203	E	5A	1200	Crittenden	M		x					UN			NU			2007	2004
Frierson	8020302	C	4B	335	Greene	M		x					UN			SI			2007	2004
Johnson Hole	11010014	A	4E	26	Van Buren	M	x						UN			HG			2002	2002
Spring	11110204	B	3G	82	Yell	M	x						UN			HG			2004	2002
Old Town	8020302	D	4A	900	Phillips	M		x					UN			NU			2007	2004
Bear Creek	8020203	C	5A	625	Lee	M		x					UN			NU			2007	2004
Mallard	8020204	D	5C	300	Mississippi	M		x					UN			NU			2007	2004

HUC – Hydrologic Unit Code. Eight-digit HUCs identify in which hydrologic unit a waterbody is located. For some eight digit HUCs, the “0” at the beginning is dropped. For example HUC 08040102 will appear as 8040102.

Reach - a numerical identifier of a specific stream segment

Lake Type – Lakes are classified into Types using lake morphology, ecoregion, and purpose of construction. Information describing Lake Type is located in Part III Chapter Five of this report.

Planning Segment – Two-digit alpha-numeric code to identify in which ADEQ Planning Segment a waterbody is located. Figure II-3 is a map of ADEQ’s Planning Segments. ADEQ’s 38 water quality planning segments are based on hydrological characteristics, human activities, geographic characteristics, and other factors.

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

Acres – total surface acreage for lake.

Monitoring Station:

ADEQ surface water monitoring stations are named in a variety of ways as shown in the following examples:

RED0015A = ADEQ stream monitoring stations in the ambient and roving networks typically follow this format where the first three letters represent the drainage basin (RED = Red River, WHI = White River, FRA = St. Francis River, OUA = Ouachita River, and ARK = Arkansas River) and the numbers, sometimes followed by a letter, represent the unique station ID within that basin.

UWAFK01 = ADEQ stream monitoring stations not on the ambient network. These stations were named when initially established, before being used for assessments. UW = Unassessed Waters. The next series of letters represents the stream (AFK = Archey Fork Creek) and the numbers are a unique identifier for that stream.

MIN0001 = ADEQ stream monitoring stations that are originally used in special studies.

LRED002A = ADEQ lake monitoring station. These typically start with “L” and the next three letters represent the drainage basin like with streams. The three digit numeric code, sometimes followed by a letter, represents the unique identifier for that lake.

e = evaluated assessment. Used when there is not a station on the actual reach but a monitoring station on an adjacent segment may be used for assessment. The “e” may be stand alone in the cell or may precede a monitoring station ID.

ANRC = Data received from the Arkansas Natural Resource Commission.

UAA = Use Attainability Analysis. Data for this assessment was attained via a UAA, not a monitoring station.

USGS = Data received from U. S. Geological Society.

Ark G&F = Data received from Arkansas Game and Fish Commission.

BWD = Data received from Beaver Water District.

Report = Data received from third party report.

Toxicity Samples = ADEQ data from ambient toxicity project.

Assessment Method

M = monitored assessment

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

FC = fish consumption

PC = primary contact

DW = domestic water supply

FSH = fisheries

SC = secondary contact

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

Al = aluminum

Be = beryllium

Cu = copper

Hg = mercury

PA = pathogen indicator bacteria

PCB = Polychlorinated biphenyl

PO = priority organics

SO4 = sulfates

TDS = total dissolved solids

Tox = Toxicity

UN = Unknown

AM = ammonia

Cl = chlorides

DO = dissolved oxygen

NO3 = nitrate nitrogen

Pb = lead

pH = pH

Se = Selenium

Tb = turbidity

Tm = temperature

TP = total phosphorus

Zn = zinc

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

AG = agriculture activities

IP = industrial point source

SE¹ = surface erosion

UR = urban runoff

RE = resource extraction (mining; oil and gas extraction)

HP = hydropower

MP = municipal point source

UN = unknown

Cause:

HG = Mercury

NU = nutrients²

SI = Siltation

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.

Appendix E

Individual Lot Certification and Lot Transfer Log

