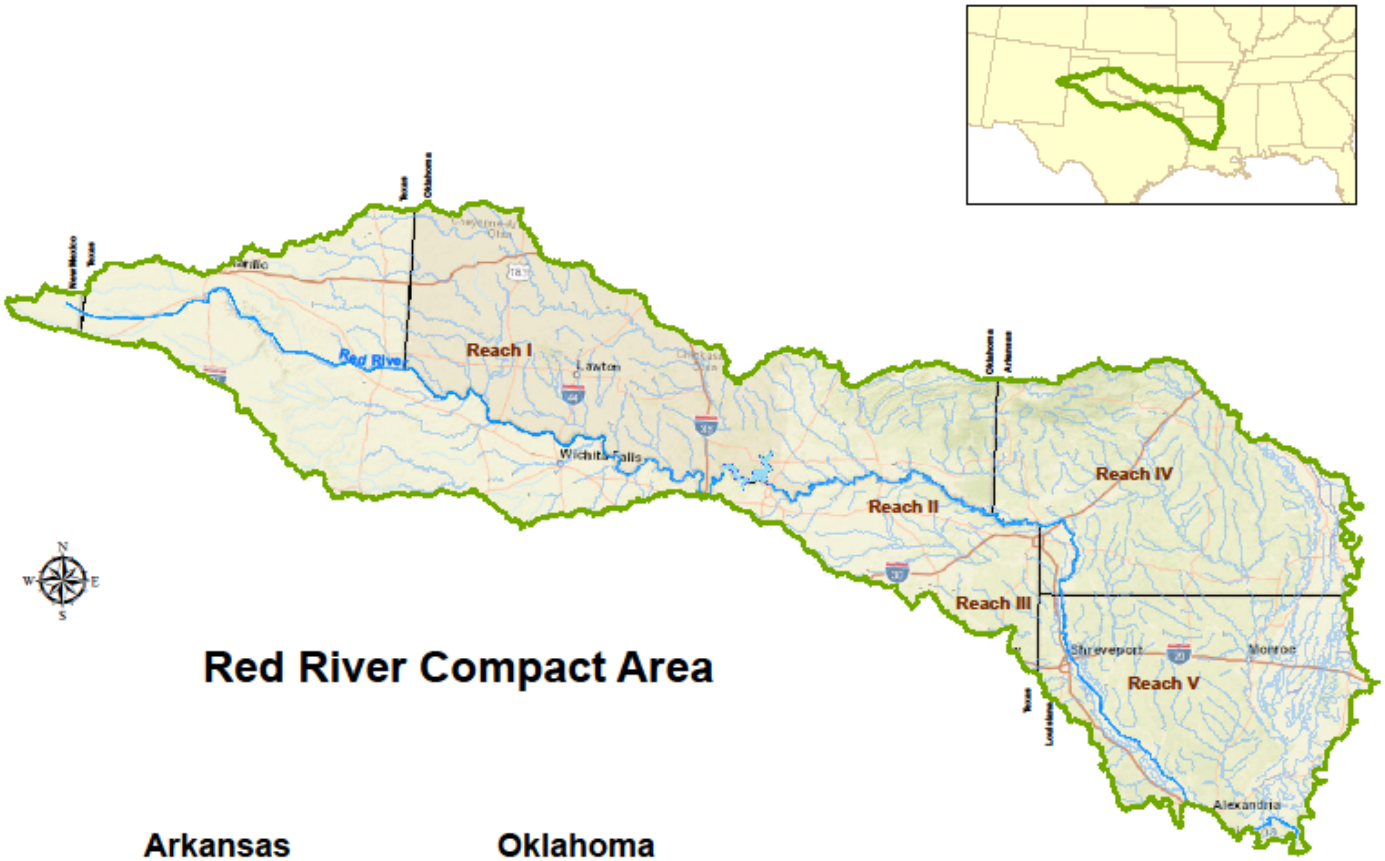
2023 REPORT

OF THE

RED RIVER COMPACT COMMISSION



Red River Compact Area

Arkansas **Oklahoma**
Louisiana **Texas**

PUBLISHED

2024

RED RIVER COMPACT COMMISSION

August 15, 2024

The President
United States of America

The Honorable Sarah Huckabee Sanders, Governor
State of Arkansas

The Honorable Jeff Landry, Governor
State of Louisiana

The Honorable J. Keven Stitt, Governor
State of Oklahoma

The Honorable Greg Abbott, Governor
State of Texas

Dear Mr. President and Governors:

The Red River Compact is an interstate agreement entered into by the States of Arkansas, Louisiana, Oklahoma, and Texas, with the consent of Congress, dealing with the water resources of the Red River Basin.

Pursuant to Section 10.02 paragraphs (d) and (e) of the Red River Compact and as directed by the Red River Compact Commission (RRCC), the interstate body overseeing the Compact, the Compact at its thirty-ninth annual meeting submitted the report of the RRCC, together with an account of all funds received and expended in the conduct of its work for FY 2022 and a budget covering the anticipated expenses of the Commission for Fiscal Year 2022-2023.

The State of Arkansas hosted the Forty-third Annual Meeting on April 26, 2023, in Hot Springs, Arkansas.

Pursuant to the previous agreements to rotate the office of Vice-Chairman and Secretary in connection with the rotation of the annual meeting host state, the State of Oklahoma accepted the responsibility for both offices for FY 2024. The Office of Treasurer remained with the State of Arkansas.

Sincerely,

Sue Lowry

Sue Lowry
Chairman and Federal Commissioner

2023 REPORT

OF THE

RED RIVER COMPACT COMMISSION

ARKANSAS

LOUISIANA

OKLAHOMA

TEXAS

PUBLISHED

2024

RED RIVER COMPACT COMMISSION
43rd ANNUAL MEETING
APRIL 26TH, 2023

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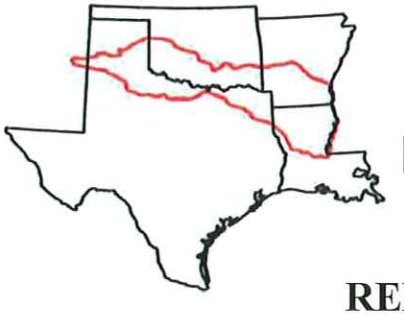


RED RIVER COMPACT COMMISSION

AGENDA
RED RIVER COMPACT COMMISSION
43rd ANNUAL MEETING

April 25-26, 2023

DoubleTree by Hilton Hot Springs
4813 Central Avenue, Hot Springs, Arkansas 71913

Tuesday, April 25, 2023 – DeGray Room

2:00 p.m. Red River Compact Commission Committee Meetings

I. Budget Committee – Ryan Benefield, Chair

II. Environmental Committee – Tate Wentz, Chair

III. Engineering Committee – Jay Whisker, Chair

IV. Legal Committee – Wade Hodge, Chair

Wednesday, April 26, 2023 – Trifecta Room

8:30 a.m. Red River Compact Commission Annual Meeting

V. Call to Order – Chair Sue Lowry

VI. Welcome and Introductions

VII. Approval of the Agenda

VIII. Approval of the Minutes of the April 27, 2022, RRCC Annual Meeting held in Shreveport, Louisiana.

IX. Report of the Chair – Chair Sue Lowry

a. Action on Resolution of Support for USGS Streamgaging

X. Report of the Treasurer Ryan Benefield, Arkansas

VII. Report of the Commissioners

A. Arkansas
B. Texas
C. Oklahoma
D. Louisiana

VIII. Report of the Committees

A. Budget Committee – Ryan Benefield
B. Environmental Committee – Tate Wentz
C. Engineering Committee – Jay Whisker
D. Legal Committee – Wade Hodge

IX. Federal Agency Reports

A. U.S. Army Corps of Engineers -
B. Bureau of Reclamation
C. U.S. Geological Survey
D. Natural Resources Conservation Service – Arkansas – Randy Childress

X. Discussion Topics

A. Administrative tracking for RRCC (mainly Directory upkeep)
B.
C.
D.

XI. New Business

A. Annual Report – Schedule and Assignments
B. Commission Assignments to Committees
C. Election of Officers
D. Appointments or Changes to Committees
E. 44th Annual Meeting – Oklahoma to host

XI. Public Comment
a. Red River Valley Association
b.

XIII. Adjournment

Red River Compact Commission
Officers and Committee Members
2023

CHAIRMAN/FEDERAL COMMISSIONER

Sue Lowry
Avocet Consult, LLC
5721 Syracuse Rd
Cheyenne, WY 82009
(307) 630-5804
avocetconsult@gmail.com

OKLAHOMA COMMISSIONERS

Julie Cunningham, Executive Director
Oklahoma Water Resources Board
3800 N. Classen Boulevard
Oklahoma City, OK 73118
(405) 530-8800
(405) 530-8900 FAX
julie.cunningham@owrb.ok.gov

Charles L Dobbs
Dobbs & Braddock Inc.
P.O. Box 1148
325 N Hudson
Altus, OK 73522
work (580) 482-3311
cell (580) 482-0307
charlesdobbs@sbcglobal.net

TEXAS COMMISSIONERS

Erin Chancellor, Interim Executive Director
Texas Commission on Environmental Quality
MC-109, P.O. Box 13087
Austin, TX 78711-3087
(512) 239-1000
dennise,braeutigam@tceq.texas.gov

Robin Phillips
1126 S Crockett
Sherman, TX 75090
(903) 814-7273
robin@robinphillipsrealtor.com

LOUISIANA COMMISSINOERS

John Michael Moore
Executive Vice-President
Haynesville Mercantile Company
2250 Hospital Drive, Suite 220
Bossier City, LA 71111
(318) 746-2805
jmmoore@haynesvillemercantile.com

Edward Knight, P.E.
Louisiana Department of Transportation & Development
P.O. Box 94245, Capitol Access Rd.
Baton Rouge, LA 70804-9245
(225) 379-3015
(225) 379-3002 FAX
edward.knight@la.gov

ARKANSAS COMMISSIONERS

Wes Ward, Arkansas Secretary of Agriculture
Natural Resources Drive
Little Rock, AR 72205
(501) 225-1598
wes.ward@agriculture.arkansas.gov

William Daniel York
2919 Highway 32 West
Foreman, AR 71836
(903) 276-3306 CELL
(870) 888-9972 OFFICE
dan@yorkpecans.com

TREASURER

Ryan Benefield, P.E., Deputy Director
Arkansas Department of Agriculture
Natural Resources Division
10421 W Markham St.
Little Rock, AR 72205
(501) 682-3962
(501) 682-3991 FAX
ryan.benefield@agriculture.arkansas.gov

SECRETARY

Linda Luebke
Arkansas Department of Agriculture
1 Natural Resources Drive
Little Rock, AR 72205
(501) 225-1598
linda.luebke@agriculture.arkansas.gov

BUDGET COMMITTEE

Ryan Benefield, P.E., Deputy Director
Arkansas Department of Agriculture
Natural Resources Division
10421 W Markham St.
Little Rock, AR 72205
(501) 682-3962
(501) 682-3991 FAX
ryan.benefield@agriculture.arkansas.gov

Chris Neel, Division Chief
Water Rights Administration Division
Oklahoma Water Resources Board
3800 N. Classen Blvd.
Oklahoma City, OK 73118
(405) 530-8800
(405) 530-8900 fax
chris.neel@owrb.ok.gov

Scott Van Winkle
Texas Comm. on Environmental Quality
P.O. Box 13087, Capitol Station, MC 160
Austin, Texas 78711-3087
(512) 239-4696
(512) 239-2214 FAX
scott.vanwinkle@tceq.texas.gov

Edward Knight, P.E.
Louisiana Department of Transportation & Development
P.O. Box 94245, Capitol Access Rd.
Baton Rouge, LA 70804-9245
(225) 379-3015
(225) 379-3002 FAX
edward.knight@la.gov

ENGINEERING COMMITTEE

Jay Whisker, P.E., Engineer Supervisor
Arkansas Department of Agriculture
Natural Resources Division
10421 W Markham St.
Little Rock, AR 72205
(501) 682-3979
(501) 682-3991 FAX
jay.whisker@agriculture.arkansas.gov

Yohanes Sugeng, P.E., CFM
Oklahoma Water Resources Board
3800 N. Classen Blvd.
Oklahoma City, OK 73118
(405) 530-8867
(405) 530-8900 FAX
yohanes.sugeng@owrb.ok.gov

Scott Van Winkle
Texas Comm. on Environmental Quality
P.O. Box 13087, Capitol Station, MC 160
Austin, Texas 78711-3087
(512) 239-4696
(512) 239-2214 FAX
scott.vanwinkle@tceq.texas.gov

Edward Knight, P.E.
Louisiana Department of Transportation & Development
P.O. Box 94245, Capitol Access Rd.
Baton Rouge, LA 70804-9245
(225) 379-3015
(225) 379-3002 FAX
edward.knight@la.gov

ENVIRONMENTAL AND NATURAL RESOURCES COMMITTEE

Tate Wentz, Water Quality Division Manager
Arkansas Department of Agriculture
Natural Resources Division
10421 W Markham St.
Little Rock, AR 72205
(501) 682-3979
(501) 682-3991 FAX
tate.wentz@agriculture.arkansas.gov

Bill Cauthron, Chief
Water Quality Programs Division
Oklahoma Water Resources Board
3800 N. Classen Blvd.
Oklahoma City, OK 73118
(405) 530-8800
(405) 530-8900 FAX
bill.cauthron@owrb.ok.gov

Scott Van Winkle
Texas Comm. on Environmental Quality
P.O. Box 13087, Capitol Station, MC 160
Austin, Texas 78711-3087
(512) 239-4696
(512) 239-2214 FAX
scott.vanwinkle@tceq.texas.gov

Edward Knight, P.E.
Louisiana Department of Transportation & Development
P.O. Box 94245, Capitol Access Rd.
Baton Rouge, LA 70804-9245
(225) 379-3015
(225) 379-3002 FAX
edward.knight@la.gov

LEGAL COMMITTEE

Kolton Jones, Attorney
Arkansas Department of Agriculture
1 Natural Resources Drive
Little Rock, AR 72205
(501) 225-1598
kolton.jones@agriculture.arkansas.gov

Sara Gibson, General Counsel
Oklahoma Water Resources Board
3800 N. Classen Boulevard
Oklahoma City, OK 73118
(405) 530-8800
sara.gibson@owrb.ok.gov

Wade Hodge, Chief Counsel
Arkansas Department of Agriculture
1 Natural Resources Drive
Little Rock, AR 72205
(501) 219-6361
(501) 454-3071 CELL
wade.hodge@agriculture.arkansas.gov

Morgan Rogers
Louisiana Attorney General's Office
P.O. Box 94005
Baton Rouge, LA 70804
(225) 326-6042
RogersM@ag.louisinna.gov

Carl Myers, Deputy Division Chief
Texas Office of the Attorney General
P. O. Box 12548
Austin, Texas 78711-2548
(512) 475-4089
(512) 596-8112 CELL
carl.myers@oag.texas.gov

Machelle Hall, Assistant Attorney General, Civil Division
Louisiana Attorney General's Office
P.O. Box 94005
Baton Rouge, LA 70804
(225) 326-6000
hallm@ag.louisiana.gov

FEDERAL AGENCIES

U.S. Geological Survey
Lower Mississippi-Gulf Water Science Center
401 Hardin Road
Little Rock, Arkansas 72211
(501) 228-3643/
(501) 516-6399 CELL
Drew Westerman dawester@usgs.gov

U.S. Geological Survey
Lower Mississippi-Gulf Water Science Center
3095 West California Ave
Ruston, LA 71270
(318) 251-9630
(318) 548-1637
Aub Ward anward@usgs.gov

U.S. Geological Survey
Oklahoma-Texas Water Science Center, Oklahoma Branch
202 NW 66th Building 7
Oklahoma City, OK 73116
(405) 810-4400
(405) 843-7712 FAX
Jason Lewis jmlewis@usgs.gov

U.S. Geological Survey
Oklahoma-Texas Water Science Center, North Texas Branch
8802 Urbana Ave
Lubbock, TX 79424
(806) 993-0233
(806) 993-0235 FAX
Gary Burke gfburke@usgs.gov
Marsha Gipson mgipson@usgs.gov

U.S. Bureau of Reclamation
5316 Hwy 290 West, Suite 110
Austin, TX 78735-8931
(512) 899-4164
(512) 899-4179 FAX
Mark Trevino mtrevino@usbr.gov

U.S. Bureau of Reclamation
5924 NW 2nd, Suite 200
Oklahoma City, OK 73127
(405) 470-4800
(405) 470-4807 FAX
Nathan Kuhnert nkuhnert@usbr.gov

Natural Resources Conservation Service
3737 Government Street
Alexandria, LA 71302
(318) 473-7751
(844) 325-6947 FAX
Chad Kacir richard.kacir@usda.gov

Natural Resources Conservation Service
100 USDA Suite 203
Stillwater, OK 74074-2655
(405) 742-1205
Richard Lane richard.lane@usda.gov

Natural Resources Conservation Service
WR Poage Federal Building
101 S. Main
Temple, TX 76501
(254) 742-9800
Kristy Oates kristy.oates@usda.gov

Natural Resources Conservation Service
WR Poage Federal Building
101 S. Main
Temple, TX 76501
(254) 742-9888
(254) 223-3681 CELL
Robert Ziehr robert.ziehr@usda.gov

Natural Resources Conservation Service
700 West Capitol Ave, Room 3416
Little Rock, AR 72201
(501) 301-3100
Mike Sullivan michael.sullivan2@usda.gov

U.S. Army Corps of Engineers - SW Division
Earle Cabell Federal Building
1100 Commerce Street, Suite 831
Dallas, TX 75242-0216
(469) 487-7007
ceswd-pa@usace.army.mil

U.S. Army Corps of Engineers
Mississippi Valley Division
4155 E. Clay Street
Vicksburg, MS 39183
(601) 631-5741
Katy Breaux, Red River Project Manager
katy.breaux@usace.army.mil

U.S. Army Corps of Engineers
Mississippi Valley Division
1400 Walnut Street
Vicksburg, MS 39180
(601) 634-5000
cemvd-pa@usace.army.mil

U.S. Army Corps of Engineers
Tulsa District
2488 E 81st Street
Tulsa, OK 74137

U.S. Army Corps of Engineers
Tulsa District
2488 E 81st Street
Tulsa, OK 74137

(918) 669-7074
(918) 605-2033 CELL
Loretta Turner, Chief of Civil Works Branch, PPMD
loretta.j.turner@usace.army.mil

(918) 669-7660
(918) 441-1736
Jeff Knack, Chief Natural Resources & Recreation Branch, Operations Division
jeff.knack@usace.army.mil

U.S. Army Corps of Engineers
Little Rock District
700 West Capital Ave.
Little Rock, AR 72203
(501) 340-1064
Craig Pierce, Chief DPPM
craig.r.pierce@usace.army.mil

U.S. Army Corps of Engineers
Fort Worth District
819 Taylor Street
Fort Worth, TX 76102
(817) 886-1306
Eric Verwers, DPPM
eric.w.verwers@usace.army.mil

U.S. Army Corps of Engineers
Louis W. Holstead
Red River Area OPM
Red River Area Office
351 Corps Road
Denison, TX 75020-6425
(903) 465-4990 ext. 7826
(903) 465-6571 FAX
louis.holstead@usace.army.mil

USDA Farm Service Agency
700 West Capitol Ave.
Room 3416
Little Rock, AR 72201-3225
(501) 301-3000

U.S. Fish and Wildlife
110 S. Amity Road, Suite 300
Conway, AR 72032-8975
(501) 513-4470

OTHER INTERESTED PARTIES

Arkansas Game & Fish Commission
2 Natural Resources Drive
Little Rock, AR 72205
(501) 223-6356
Jennifer Sheehan
jennifer.sheehan@agfc.ar.gov
Chelsea Gilliland, Large Rivers Biologist
(479) 223-1995
chelsea.gilliland@agfc.ar.gov

Red River Valley Association
629 Spring Street
P.O. Box 709
Shreveport, LA 71162-0709
(313) 393-6207 CELL
(318) 425-0516 FAX
Rich Brontoli, Consultant
Emily Mott, Executive Director
(318) 458-7922 CELL
rrva@rrva.org

Red River Authority
P.O. Box 240
Wichita Falls, TX 76307
(940) 723-2236
Randall W. Whiteman
randy.whiteman@rra.texas.gov

Lugert Altus Irrigation District
P.O. Box 520
Altus, OK 73522
(580) 482-4734
Tom Buchanan, Manager
lugertaltus@gmail.com

Oklahoma Farm Bureau
Marla Peek
2300 N. Stiles
Oklahoma City, OK 73105
(405) 523-2300
marlapeek@okfb.org

North Texas Municipal Water District
R.J. Muraski
501 E. Brown Street
Wylie, TX 75098
(469) 626-4332
rmuraski@ntmwd.com

North Texas Municipal Water District
Billy George, P.E.
Deputy Director – Water and Wastewater
501 E. Brown Street
Wylie, TX 75098
(469) 626-4330
(214) 587-7299 CELL
bgeorge@ntmwd.com

LA Department of Environmental Quality
Chuck Barger
602 N. Fifth Street
Baton Rouge, LA 70802
(225) 219-3217
max.forbes@la.gov

Tarrant Regional Water
800 E. North Side Drive
Fort Worth, TX 76102
(817) 335-2491
Wayne Owen
wayne.owen@trwd.com

Tarrant Regional Water District
800 E. North Side Drive
Fort Worth, TX 76102
(817) 335-2491
Robert P. Smith
rpowlsmith@sbcglobal.net

Bayou Meto Water Management District
1300 N. Center St., Suite 9
Lonoke, AR 72086
(501) 676-7420
Edward Swaim
edwardswaim@bayou-meto.org

Sulphur River Basin Authority
911 N. Bishop St. # C104
Wake Village, TX 75501
(469) 321-2180 CELL
Chris Hartung, Executive Director
chris@chcpublicsectorsolutions.com

Caddo Lake Institute
400 Edwards Street
Shreveport, LA 71101
(318) 541-6923
Laura Ashley Overdyke
lao@caddolakeinstitute.org

Riverbend Water Resources District
228 Texas Ave., Suite A
New Boston, TX 75570
(903) 831-0091
Kyle Dooley
kyledooley@rwrd.org

Herman Settemeyer, P.E.
RSAH20, LLC
16238 Ranch Road,
620 N. STE F364
Austin, TX 78717
(512) 507-4299
herman@rsah2o.com

Arkansas Association of Conservation Districts
4004 McCain Blvd, Ste. 201-B
North Little Rock, AR 72116
(501) 904-5775
Debbie Moreland
debbiepinreal@aol.com

The Nature Conservancy
601 North University Ave.
Little Rock, AR 72205
(501) 663-6699

The Nature Conservancy
10425 South 82nd E. Ave., Suite 104
Tulsa, OK 74133
(918) 585-1117

The Nature Conservancy
P.O. Box 4125
Baton Rouge, LA 70821
(225) 338-1040
lafo@tnc.org

The Nature Conservancy
3801 Kirby Drive, Suite 740
Houston, TX 77098
(281) 407-3251
texas@tnc.org

Arkansas Environmental Federation
12511 Cantrell Rd., Suite 103
Little Rock, AR 72223
Ava Roberts, Executive Director
aroberts@environmentark.org

Arkansas Farm Bureau Federation
P.O. Box 31
Little Rock, AR 72203
Evan Teague, M.S.P.E.
evan.teague@arfb.com

Russell Berry
Attorney at Law
P.O. Box 381
DeWitt, AR 72042

Bradley Hardin
American Electric Power
400 W. Capitol, Suite 1610
Little Rock, AR 72201

City of Fayetteville
Greg Boetcher, P.E., City Engineer
125 W. Mountain Street
Fayetteville, AR 72701

Chesapeake Energy Corporation
Mike Mathis, Water Planning Manager
P. O. Box 18496
Oklahoma City, OK 73154-0496

John Upton
P.O. Box 659
Lewisville, AR 72201

David Carruth
P.O. Box 91
Clarendon, AR 72029

LA. Department of Wildlife and Fisheries
Baton Rouge, LA
Matthew Weigel
mweigel@wlf.la.gov

Oklahoma Water Resources Board
3800 N. Classen Blvd.
Oklahoma City, OK 73118
Lance Phillips
Lance.phillips@owrb.ok.gov

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

February 10, 2023

Ms. Sue Lowry
Chairman and Federal Representative
Red River Compact Commission
Avocet Consulting LLC
5721 Syracuse Road
Cheyenne, Wyoming 82001

Dear Chairman Lowry,

I regret to inform you that I am unable to participate in the 2023 annual meeting of the Red River Compact Commission to be held April 25-26, 2023 in Arkansas due to previous commitments. In my absence, I grant my support and proxy vote as Commissioner to Mr. Richard Scott Van Winkle, Texas Commission on Environmental Quality, Engineer Advisor to the Red River Compact Commission, who plans to attend as representative for the TCEQ.

My best wishes to the Commission for a successful meeting.

Sincerely,

Erin E. Chancellor

Erin Chancellor
Interim Executive Director

Cc: Mr. Richard Scott Van Winkle, Texas Commission on Environmental Quality, Engineer Advisor to the Red River Compact Commission

RED RIVER COMPACT COMMISSION

43rd Annual Meeting

Minutes

April 26, 2023
8:30 a.m.

I. Call to Order

Chairperson Sue Lowry called the meeting to order at 8:30 a.m. at the DoubleTree by Hilton, Hot Springs, AR. Chairperson welcomed Ed Knight as a new Commission for Louisiana. Scott Van Winkle introduced himself as proxy for Erin Chancellor, from Texas. Chairperson Lowry asked members and guests to introduce themselves.

II. Welcome and Introductions

Members Present:
Sue Lowry, Chair, Federal Commissioner
Wes Ward, Arkansas Commissioner
Daniel York, Arkansas Commissioner
Edward Knight, Louisiana Commissioner
Julie Cunningham, Oklahoma Commissioner
Robin Phillips, Texas Commissioner
Scott Van Winkle (proxy for Erin Chancellor), Texas Commissioner
Ryan Benefield, Treasurer
Linda Luebke, Secretary

Members Absent:
John Michael Moore, Louisiana Commissioner
Charles L. Dobbs, Oklahoma Commissioner

III. Approval of the Agenda

Chairperson Lowry requested suggestions for changes to the agenda. None were made.

IV. Approval of the minutes of the April 27, 2022, Red River Compact Commission (RRCC) annual meeting held in Shreveport, LA.

Chairperson Lowry stated there are some changes and corrections to be made to the minutes and suggested to approve the minutes at this time and provide a May 15, 2023, deadline for members to forward any changes/corrections to the Louisiana Commissioner.

Moved by Ward, seconded by Van Winkle to tentatively approve the minutes with a May 15, 2023 deadline to make additional changes/corrections.

Motion carried.

V. Report of the Chair

Chairperson Lowry thanked Ryan Benefield, Engineering Committee, and the Legal Committee members for accepting and carrying out the challenge to be more active between meetings.

Chairperson Lowry discussed action to support a Resolution in support of USGS Streamgaging and to update the gaging list attached to the Resolution.

Moved by Cunningham, seconded by Knight to support the USGS Streamgaging Resolution.

Motion carried.

VI. Report of the Treasurer

Treasurer Ryan Benefield, Arkansas, presented the report of the treasurer. Benefield stated the account balance totals $39,036.10 to include the Centennial Bank balance and the Certificate of Deposit balance.

Due to the increase in the cost of audits, discussion was held on how often to perform an audit, which is currently every 2 years.

Moved by Van Winkle, seconded by Ward to change the recurrence of audits from every 2 years to every 5 years.

Motion carried.

Moved by Knight, seconded by York have the 5-year interval to begin now, with the next audit in 2027.

Motion carried.

VII. Report of the Commissioners

A. Secretary Wes Ward, Arkansas Commissioner, presented the Arkansas Commissioners report, highlighting the following:

- Red River monitoring
- Arkansas Nutrient Reduction Strategy (ANRS)
- Arkansas Groundwater Protection and Management
- Sparta aquifer water levels
- Arkansas Water-Use Registration Program
- Groundwater quality
- Arkansas Unpaved Road Program
- Arkansas Section 319 Nonpoint Source Pollution Management Program
- Water and wastewater infrastructure
- Arkansas Feral Hog Eradication Task Force
- Floodplain management

Ward stated Dan York, Arkansas Commissioner, Chairs the Arkansas Red River Commission. York reported on the Extension of Navigation through Southwest Arkansas from Shreveport.

B. Robin Phillips, Texas Commissioner, stated she appreciates the way the four states come together and work on problem solving.

Scott Van Winkle, Texas Commissioner (Proxy) presented the Texas Commissioners report. Van Winkle highlighted the following:

- Drought conditions are better than last year, moving from a La Nina condition to an El Nino condition, which will bring cooler and wetter weather.
- 2022 Texas Water Plan and the State Water Implementation Fund Program.

C. Julie Cunningham, Oklahoma Commissioner, presented the Oklahoma report. Cunningham highlighted the following:

- Climate and drought conditions
- 2025 Update of Oklahoma Comprehensive Water Plan
- Statewide Flood Resiliency Plan
- Water infrastructure investments

- Hydrologic investigations
- Well Driller and Pump Installer Program
- Water quality monitoring, mapping, and standards
- Legislation

D. Ed Knight, Louisiana Commissioner, presented the Louisiana report. Knight highlighted the following:

- Louisiana watershed initiative
- Status of stream flows at AR/LA Stateline with relation to the Specifications of the Red River Compact
- Environmental report

VIII. Report of the Committees

A. Budget Committee - Ryan Benefield, Arkansas Department of Agriculture, Natural Resources Division, presented a report of the Budget Committee of the Red River Compact Commission.

Moved by Knight, seconded by Ward to approve the proposed budget including the annual dues of $550 per state for a total of $2,200.00 and the proposed budget expenditures as presented.

Motion carried.

B. Environmental Committee - Tate Wentz, Arkansas Department of Agriculture, Natural Resource Division, presented the Environmental report.

Arkansas

- Completion of the Arkansas Nutrient Reduction Strategy (ARNS)
- Completion of the Sustainable Rivers Program (SRP)
- Bipartisan Infrastructure Law (BIL)

Louisiana

- 2022 Impaired Waterbodies list
- Total Maximum Daily Load (TMDL)

Oklahoma

- Oklahoma's new project with Oklahoma State and NOAA to evaluate stream gaging and flood forecasting

- Oklahoma's Beneficial Use Monitoring Program (BUMP)

Texas

- Texas partnerships with Commission on Environmental Quality (TCEQ) on the Clean Rivers Program

C. Engineering Committee - Jay Whisker, Arkansas Department of Agriculture, Natural Resources Division, presented the Engineering report.

- Varying drought conditions within each state and results of the condition

D. Legal Committee - Wade Hodge, Legal Counsel, Arkansas Department of Agriculture presented the Legal report.

- Arkansas/Louisiana discussions on compliance with the compact what is an equitable portion of water for each state by taking a broader view of water needs for the states.

Following a break, Chairperson Lowry resumed the meeting.

IX. Federal Agency Reports

A. U.S. Army Corps of Engineers - No speaker at this time.

B. Bureau of Reclamation – Nathan Kuhnert presented his report on current project activities.

C. U.S. Geological Survey – Roland Tollett presented his report on looking at data that is available to the four watersheds that are part of the Red River Compact agreement along the Louisiana state line.

D. Natural Resources Conservation Service – Arkansas – Bill Kinkaid presented his report on PL 83-566 project requested by the Arkansas Black Mayors Association (ABMA).

X. Discussion Topics

A. Administrative Tracking for RRCC directory will remain a duty of the Secretary.

XI. New Business

A. Annual Report- Schedule and Assignments.

- Have the minutes completed in a timely manner. Circulate the draft minutes to the members for review and approval in advance of the next meeting.

B. Commission Assignments to Committees.

- **Moved by Knight, seconded by Cunningham to assign the Legal Committee to do a review of the rules and/or bylaws.**

  Motion carried.

- **Moved by Van Winkle, seconded by York to charge the Engineering Committee to review the possibility of working with the USGS to develop an inset model to further inform water quantity in the Reach IV watersheds.**

  Motion carried.

C. Election of Officers - Cunningham assigned Tamara Lilly, as Secretary.

D. Appointments or Changes to Committees - Cunningham stated the Chairs will be the members on the Oklahoma Committee. Benefield will remain as Treasurer.

E. 44th Annual Meeting – Oklahoma will host the 44th annual meeting on April 23 and 24, 2024.

XII. Public Comments

Emily Mott, Executive Director, Red River Valley Association presented her comments.

Jennifer Sheehan, Chief Environmental Coordination Consultant, Arkansas Game and Fish Commission, presented her comments.

XIII. Adjournment

Chairman Lowry thanked all for attending and adjourned the meeting.

X

Sue Lowry
Chairman

X

Robin Phillips
Commissioner

X

Julie Cunningham
Commissioner

X

John Michael Moore
Commissioner

X

Charles Dobbs
Commissioner

X

William Daniel York
Commissioner

X

Eric Chancellor
Commissioner

X

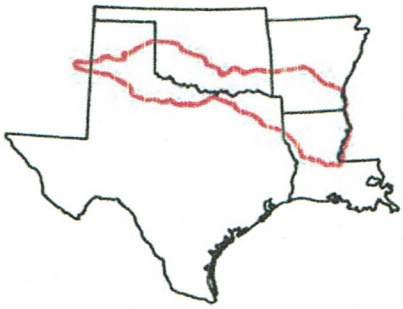
Scott Van Winkle
Commissioner (Proxy)

X

Wes Ward
Commissioner

X

Edward Knight
Commissioner



RED RIVER COMPACT COMMISSION

RESOLUTION
OF THE
RED RIVER COMPACT COMMISSION
REGARDING
THE FUNDING OF STREAMFLOW GAGES
April 26, 2023

WHEREAS, the Red River Compact, signed May 12, 1978, and approved by Congress, apportions the waters of the Red River basin between the States of Arkansas, Oklahoma, Texas and Louisiana;

WHEREAS, the four states have worked cooperatively together to develop and maintain the streamflow gaging network necessary to administer the provisions of the Compact;

WHEREAS, the cooperation and the establishment of this gaging network has resulted in the administration of this Compact with minimal controversy and no interstate litigation;

WHEREAS, the apportionment and calculations required to administer the Compact necessitate the maintenance of streamflow gages along the Red River and its tributaries at critical locations to measure the flow of water;

WHEREAS, it is critical for the administration of the Red River Compact that these streamflow gages be maintained;

WHEREAS, the U.S. Geological Survey (USGS) has historically entered into cost share agreements with cooperators to maintain a nationwide streamflow gaging network through the USGS Cooperative Water Program, now known as Federal Priority Streamgages (FPS), operating under the Groundwater and Streamflow Information Program (GWSIP);

WHEREAS, the USGS established goals to satisfy minimum national streamflow information needs with the intent to support these gages entirely with federal funds;

WHEREAS, a priority goal of the USGS GWSIP is to "meet legal and treaty obligations on interstate compacts and international waters;"

WHEREAS, the streamflow gages necessary to administer the Red River Compact qualify under this priority goal for full federal funding under the USGS GWSIP.

NOW, THEREFORE, BE IT RESOLVED that, the Red River Compact Commission requests that Congress fully fund the USGS GWSIP gages associated with the Red River basin and Red River Compact and the USGS place a priority on funding these gages under this program.

BE IT FURTHER RESOLVED that, federal funding for the USGS GWSIP be restored to ensure the 50/50 cost share for the jointly funded activities with localities and states and fully fund the high-priority federal streamflow gages (historically referred to as the National Streamflow Information Program).

BE IT FURTHER RESOLVED that, a copy of this resolution be sent to the members of the congressional delegations for the States of Arkansas, Oklahoma, Texas and Louisiana, the Secretary of the Interior, and the Director of the USGS.

Sue Lowry
Federal Commissioner and Chairman
Red River Compact Commission

Date Executed
April 26, 2023

Concurred to and supported by:

Scott Van Winkle
(Acting Commissioner for Texas)

Robin Phillips
Commissioner for Texas

Edward Knight
Commissioner for Louisiana

John Michael Moore
Commissioner for Louisiana

Charles Lynn Dobbs
Commissioner for Oklahoma

Julie Cunningham
Commissioner for Oklahoma

Wes Wade
Commissioner for Arkansas

Daniel York
Commissioner for Arkansas

RED RIVER BASIN STREAMFLOW AND WATER QUALITY GAGES

Number	Name
07300000	Salt Fork Red River near Wellington, TX*
07300500	Salt Fork Red River at Mangum, OK
07301300	North Fork Red River near Shamrock, TX
07301410	Sweetwater Creek near Kelton, TX
07301500	North Fork Red River near Carter, OK*
07303400	Elm Fork of North Fork Red River nr Carl, OK
07308500	Red River near Burkburnett, TX*
07315500	Red River near Terral, OK*
07316000	Red River near Gainesville, TX*
07316500	Washita River near Cheyenne, OK
07331000	Washita River near Dickson, OK*
07331600	Red River at Denison Dam nr Denison, TX*
07332500	Blue River near Blue, OK
07335300	Muddy Boggy Creek near Unger, OK
07335500	Red River at Arthur City, TX
07336820	Red River near De Kalb, TX
07337000	Red River at Index, AR*
07340000	Little River near Horatio, AR ·
07344210	Sulphur River near Texarkana, TX
07344370	Red River at Spring Bank, AR
07346310	(COE) Caddo Lake at Dam near Mooringsport, LA
07348000	Twelvemile Bayou near Dixie, LA
07348500	(COE) Red River at Shreveport, LA
07350500	Red River at Coushatta, LA*
07355500	Red River at Alexandria, LA*
07362000	Quachita River at Camden, AR*
07362100	Smackover Creek near Smackover, AR
07363500	Saline River near Rye, AR
07364100	Quachita River near Arkansas-Louisiana State Line
07364150	Bayou Bartholomew near McGehee, AR*
07369680	Bayou Macon at Eudora, AR
07367690	Boeuf River near Arkansas/Louisiana Stateline

* Indicates water quality monitoring station

For more information see:

http://waterwatch.usgs.gov/index.php?r=ar&m=real
http://waterwatch.usgs.gov/?m=real&r=la
http://waterwatch.usgs.gov/?m=real&r=ok
http://txpub.usgs.gov/public/BasinMap/BasinMap.html?basinselect=2

Report of the Treasurer

Red River Compact Commission

April 26, 2023

The 2022 Year-end Financial Report covering July 1, 2021 through June 30, 2022.

Centennial Bank Balance on July 1, 2021		$ 28,975.67
Total Income	$ 7,300.00*	
Total Expenses	$ 8,562.52**	
NET TOTAL	$ -1,262.52	
Centennial Bank Balance June 30, 2022		$ 27,713.15
Certificate of Deposit Balance August 17, 2020		$ 11,287.74
Total Income	$35.21	
Certificate of Deposit Balance April 15, 2022		$ 11,322.95

Account Balances as of June 30, 2022

Centennial Bank Balance	$ 27,713.15
Certificate of Deposit Balance	$ 11,322.95
TOTAL	**$ 39,036.10**

Assessments for all four states are current.

*The Red River Compact Commission received a payment of $5,100 from Texas to cover administrative costs associated with the 2021 meeting.

**The Red River Compact Commission paid $8,105 to Andrea Williams McCoy for administrative costs of the 2020 and 2021 meetings. Texas fully reimbursed the Commission for these expenses.

RED RIVER COMPACT COMMISSION
2022 BUDGET VERSUS ACTUALS
(7/1/2021 - 6/30/2022

	ACTUAL FY - 2022 7/1/2021 6/30/2022	BUDGET FY - 2022 7/1/2021 6/30/2022	OVER/UNDER BUDGET FY - 2022 7/1/2021 6/30/2022	% OF BUDGET FY - 2022 7/1/2021 6/30/2022
Income				
State Annual Dues	$2,200.00	$2,200.00	$0.00	100.00%
Interest on Checking	$0.00	$0.00	$0.00	
Interest on Certificate of Deposit	$35.21	$0.00	$35.21	
Texas Administrative Reimbursement	$5,100.00	$0.00	$5,100.00	
Total Income	$7,335.21	$2,200.00	$35.21	333.42%
Expenses				
Meeting Expenses	$80.00	$5,000.00	$4,920.00	1.60%
Office Supplies/Expenses	$377.52	$2,500.00	$2,122.48	15.10%
Contingency	$8,105.00	$16,000.00	$7,895.00	50.66%
Total Expenses	$8,562.52	$23,500.00	$14,937.48	36.44%

Balance in Checking	**$27,713.15**	**6/30/2022**
Balance of Certificate of Deposit	**$11,322.95**	**4/15/2022**
	$39,036.10	

RED RIVER COMPACT COMMISSION
TRANSACTION SUMMARY - CHECKING ACCOUNT
(7/1/2021 - 6/30/2022)

Date	Category	Payee	Purpose	Payment	Deposit	Balance
7/1/2021		Beginning Balance				$28,975.67
7/13/2021	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$8.22		$28,967.45
7/14/2021	Texas Admin. Reim.	Texas	Administrative Services Reim.		$5,100.00	$34,067.45
7/23/2021	Contingency	Andrea Williams McCoy	Administrative Services	$5,100.00		$28,967.45
8/6/2021	Contingency	Andrea Williams McCoy	Administrative Services	$3,005.00		$25,962.45
8/11/2021	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$7.67		$25,954.78
9/30/2021	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$8.06		$25,946.72
10/13/2021	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$8.16		$25,938.56
11/12/2021	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$8.03		$25,930.53
12/31/2021	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$8.16		$25,922.37
1/11/2022	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$8.04		$25,914.33
2/7/2022	Office Supplies/Expenses	The Bond Exchange	Crime Bond	$280.00		$25,634.33
2/11/2022	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$8.04		$25,626.29
3/11/2022	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$8.55		$25,617.74
4/5/2022	State Annual Dues	Arkansas/Louisianna	State Annual Dues		$1,100.00	$26,717.74
4/12/2022	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$8.08		$26,709.66
4/25/2022	State Annual Dues	Texas/Oklahoma	State Annual Dues		$1,100.00	$27,809.66
4/27/2022	Meeting Expenses	Caddo-Bossier Port Commision	Meeting Refreshments	$80.00		$27,729.66
5/11/2022	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$8.75		$27,720.91
6/13/2022	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$7.76		$27,713.15
		Ending Balance		$8,562.52	$7,300.00	$27,713.15

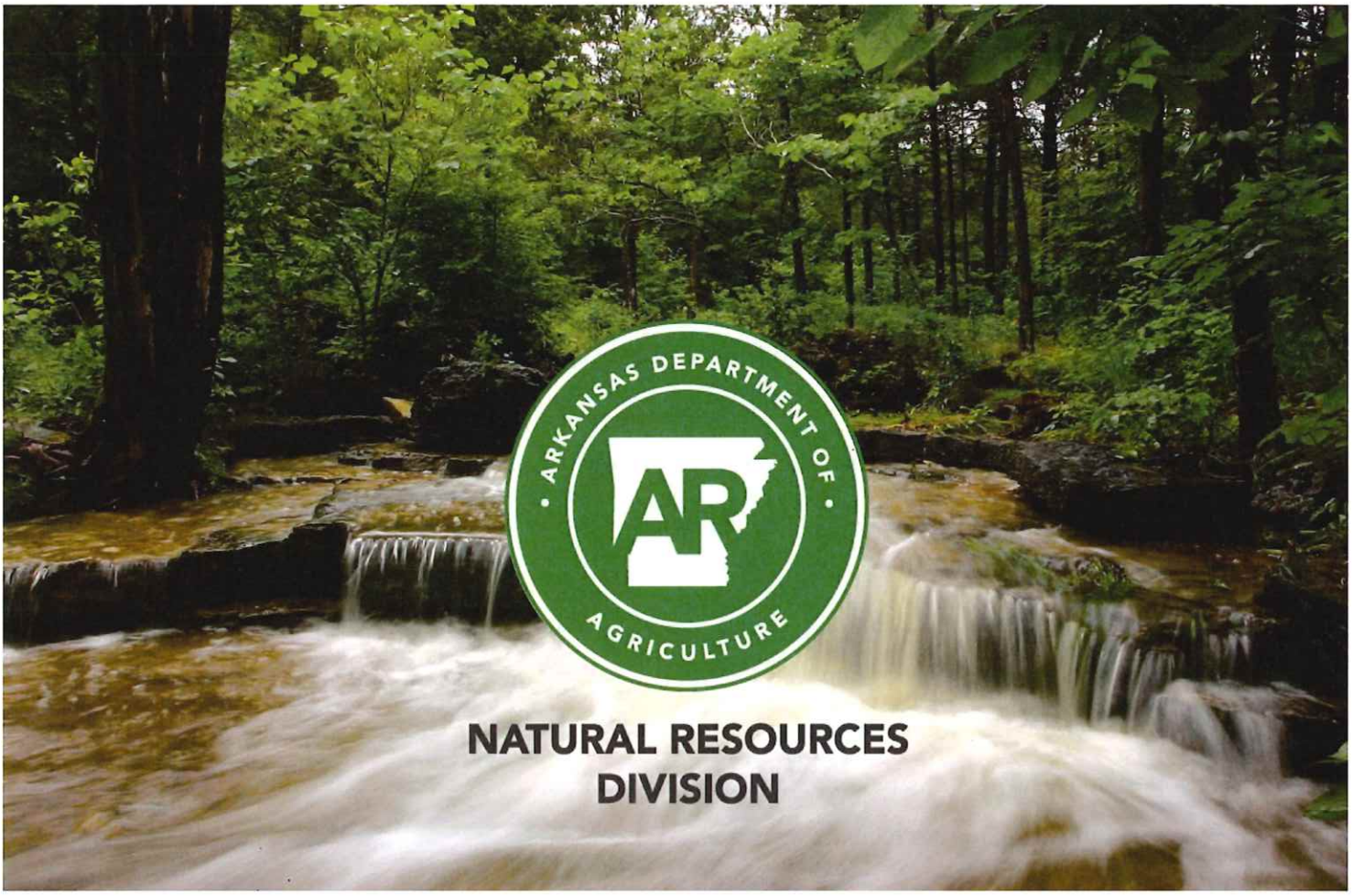
RED RIVER COMPACT COMMISSION
2023 BUDGET VERSUS ACTUALS
(7/1/2022 - 6/30/2023

	ACTUAL FY - 2023 7/1/2022 6/30/2023	BUDGET FY - 2023 7/1/2022 6/30/2023	OVER/UNDER BUDGET FY - 2023 7/1/2022 6/30/2023	% OF BUDGET FY - 2023 7/1/2022 6/30/2023
Income				
State Annual Dues	$2,200.00	$2,200.00	$0.00	100.00%
Interest on Checking	$0.00	$0.00	$0.00	
Interest on Certificate of Deposit	$7.61	$0.00	$7.61	
Total Income	$2,207.61	$2,200.00	$7.61	100.35%
Expenses				
Meeting Expenses	$1,197.76	$5,000.00	$3,802.24	23.96%
Office Supplies/Expenses	$1,101.21	$2,500.00	$1,398.79	44.05%
Contingency	$0.00	$16,000.00	$16,000.00	0.00%
Total Expenses	$2,298.97	$23,500.00	$21,201.03	9.78%

Balance in Checking	**$27,614.18**	**4/7/2023**
Balance of Certificate of Deposit	**$11,330.56**	**2/28/2023**
	$38,944.74	

RED RIVER COMPACT COMMISSION
TRANSACTION SUMMARY - CHECKING ACCOUNT
(7/1/2022 - 6/30/2023)

Date	Category	Payee	Purpose	Payment	Deposit	Balance
7/1/2021		Beginning Balance				$27,713.15
7/15/2022	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$7.90		$27,705.25
8/11/2021	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$4.59		$27,700.66
8/22/2022	Office Supplies/Expenses	Johnson-Jones Accounting	Audit	$900.00		$26,800.66
9/13/2022	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$4.77		$26,795.89
10/12/2022	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$2.09		$26,793.80
10/13/2022	Meeting Expenses	Degray State Lodge	Meeting Room/Refreshments	$297.76		$26,496.04
11/14/2022	Office Supplies/Expenses	Cenntennial Bank	Account Analysis Fee	$1.86		$26,494.18
2/9/2023	Office Supplies/Expenses	The Bond Exchange	Crime Bond	$180.00		$26,314.18
2/16/2023	State Annual Dues	Arkansas	State Annual Dues		$550.00	$26,864.18
3/1/2023	Meeting Expenses	Double Tree by Hilton - Hot Springs	Meeting Room/Refreshments	$900.00		$25,964.18
3/10/2023	State Annual Dues	Texas, Louisianna	State Annual Dues		$1,100.00	$27,064.18
4/7/2023	State Annual Dues	Oklahoma	State Annual Dues		$550.00	$27,614.18
						$27,614.18
						$27,614.18
						$27,614.18
						$27,614.18
						$27,614.18
		Ending Balance		$2,298.97	$2,200.00	$27,614.18



2022 Arkansas Commissioners Report

Prepared for the Red River Compact Annual Meeting

Arkansas Department of Agriculture's Natural Resources Division

April 26, 2023

Table of Contents

Figures and Tables

Reach IV of the Red River Monitoring Report

The State of Arkansas continues its efforts to monitor, evaluate, and report on the four (4) rivers making up the Red River Basin: Ouachita River, Boeuf River, Bayou Macon, and Bayou Bartholomew. The Boeuf River continues to be the most monitored of the four (4) rivers. Arkansas's interpretation and policy position on compliance in Reach IV, Subbasin 2 remains unchanged. Real-time monitoring of Boeuf River flows; evaluation of weekly, seasonal, and multi-year flow patterns; and annual reporting to the Red River Compact Commission is an acceptable approach and framework to identify flow anomalies and inform compliance decision-making in Reach IV, Subbasin 2. Reporting and analyses will continue to improve as new data and more accurate methods become available.

Summary conclusions from the 2022 Arkansas Engineering Report are listed below:

- Abnormally dry and drought conditions that existed for the majority of 2022 drastically reduced water flow in certain times of the year in all four subbasins due to very little precipitation.
- A review of the monitoring and assessment of flow and precipitation shows that the Ouachita River, Bayou Bartholomew, and Bayou Macon had no occurrences of seven consecutive days of flow below compact thresholds during the primary growing season. The Boeuf River had one (1) occurrence of seven consecutive days of 40 cubic feet per second (cfs) or less flow at the state boundary during the primary growing season (June 16-26) despite the abnormally dry conditions.
- Water-use registration data for 2019 shows that significant surface water use only occurs during the growing season (May to September), with limited withdrawals occurring outside this period.
- Despite very low flows that can be attributed to drought conditions, the four rivers consistently met or exceeded threshold discharge levels during the growing season.

Arkansas Nutrient Reduction Strategy (ANRS)

The Arkansas Nutrient Reduction Strategy (ANRS) was initiated by the 2014 Arkansas Water Plan update and is a response to federal initiatives to address the Gulf of Mexico Hypoxic Zone. The purpose of the ANRS is to reduce nutrient concentrations in Arkansas watersheds, providing local benefits, and helping to shrink the Gulf of Mexico Hypoxic Zone. This is accomplished by working closely with stakeholders to adaptively manage and aggressively implement relevant practices and programs to safeguard state and regional economic prosperity, environmental quality, and recreational opportunities for current and future generations.

In 2021, the Arkansas Department of Agriculture's Natural Resources Division (NRD), with the Arkansas Water Resource Center, conducted a water quality analysis of all subbasin level watersheds in the state. The goal was to prioritize watersheds based on extensive, statewide water quality monitoring data. All watersheds were classified into four tiers. Tier 1 had the greatest potential for both nitrogen and phosphorus reduction based on sufficient data. Tier 2 had the greatest need for future monitoring investments due to demonstrated nutrient reduction needs, data limitations, or both. Tier 3 and Tier 4 did not have high demonstrated nutrient reduction needs (see Figure 1 below).

The three main goals of the ANRS are:

- Goal 1: Increase or maintain downward trends for Tier 1 watersheds.
- Goal 2: Enhance water quality monitoring to inform nutrient trends for Tier 2 watersheds.
- Goal 3: Continue efforts in all watersheds.

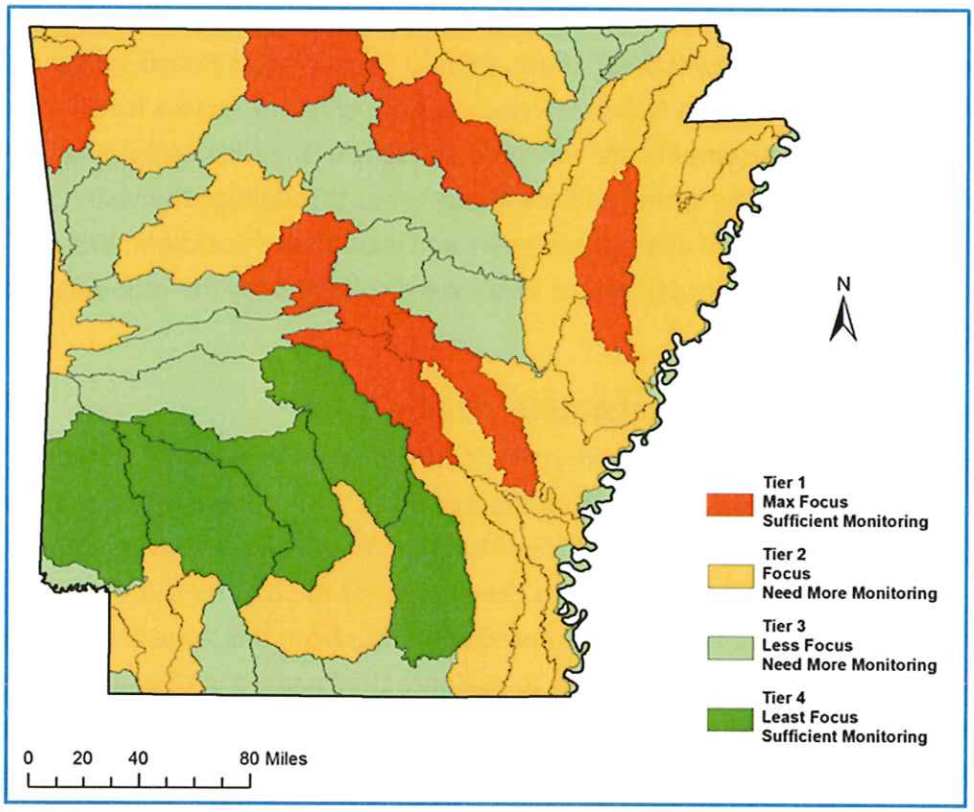


Figure 1: Arkansas Nutrient Reduction Strategy Priority Areas

In 2022, NRD completed a public participation and comment solicitation period for the ANRS. The final version of the ANRS was posted to NRD's website and submitted to the United States

Environmental Protection Agency (EPA) Region VI. Additionally, with support from a Walton Family Foundation grant, NRD and Great Lakes Observatory completed an interactive view and story map that outlines Arkansas's approach to developing nutrient priority areas and implementing their strategy. More information can be found at arkansas.greatlakestogulf.org/#/.

Since the passing of the Bipartisan Infrastructure Law in November 2021, which included new geographic funding for the Gulf Hypoxia Program for states to implement nutrient reduction strategies, Arkansas was awarded $1,733,333 in October 2022. Those dollars will fund direct project implementation to address nutrient reduction. An additional $3.6 million will be awarded in federal fiscal year 2024 through 2026.

Arkansas Groundwater Protection and Management

Groundwater Monitoring

Groundwater quantity data is collected for aquifers in the Red River Basin through a collective effort between the Arkansas Department of Agriculture's Natural Resources Division (NRD), United States Geological Survey (USGS), Union County Conservation Board, and the United States Department of Agriculture Natural Resources Conservation Service (USDA-NRCS). Synoptic water level measurements are collected annually in the Mississippi River Valley alluvial and Sparta aquifers during the spring and at various times throughout the year. Other aquifers in the watershed are measured every three years and include the Cockfield, Wilcox, Tokio, and Nacatoch aquifers. In 2022, synoptic water levels were collected for the Mississippi River Valley alluvial and Sparta aquifers.

Mississippi River Valley Alluvial Aquifer Water Levels

Synoptic water level measurements were collected from 60 wells in the Mississippi River Valley alluvial aquifer spring survey of 2022 within the Red River Basin. These measurements were used to calculate the potentiometric surface of the aquifer which is shown as depth to water in feet below ground surface (Figure 2), and as the percent of the aquifer thickness that is saturated (Figure 3). These data were compared with data from the same wells during previous years in one, five, and ten-year increments to evaluate the changes in the aquifer levels over time. These changes are best shown in our analysis of the Beouf-Tensas Study Area from the Arkansas Department of Agriculture's 2022 Groundwater Protection and Management Report. Overall trends in the study area reflect a positive average change value in the one, five, and ten-year comparisons, with no county having a declining average water level change in any of the periods. Wells that had declining water levels do not appear to reveal a pattern or concentrated area of significant water level decline in the alluvial aquifer. Water level change data from the Beouf-Tensas Study Area is presented as Figure 4 and Figure 5.

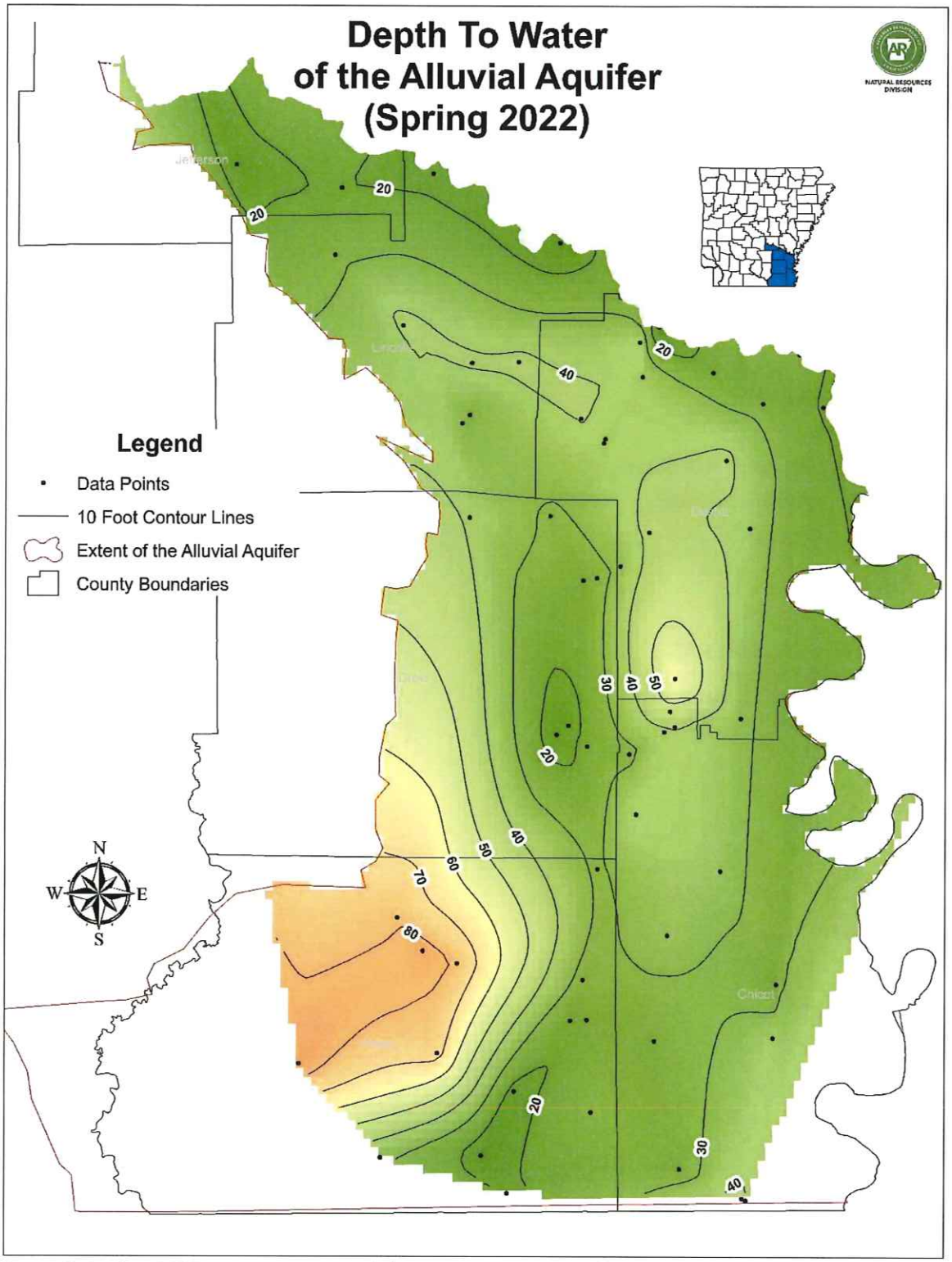


Figure 2: Spring 2022 measurements of the potentiometric surface of the Mississippi River Valley alluvial aquifer shown as depth to water in feet below ground surface

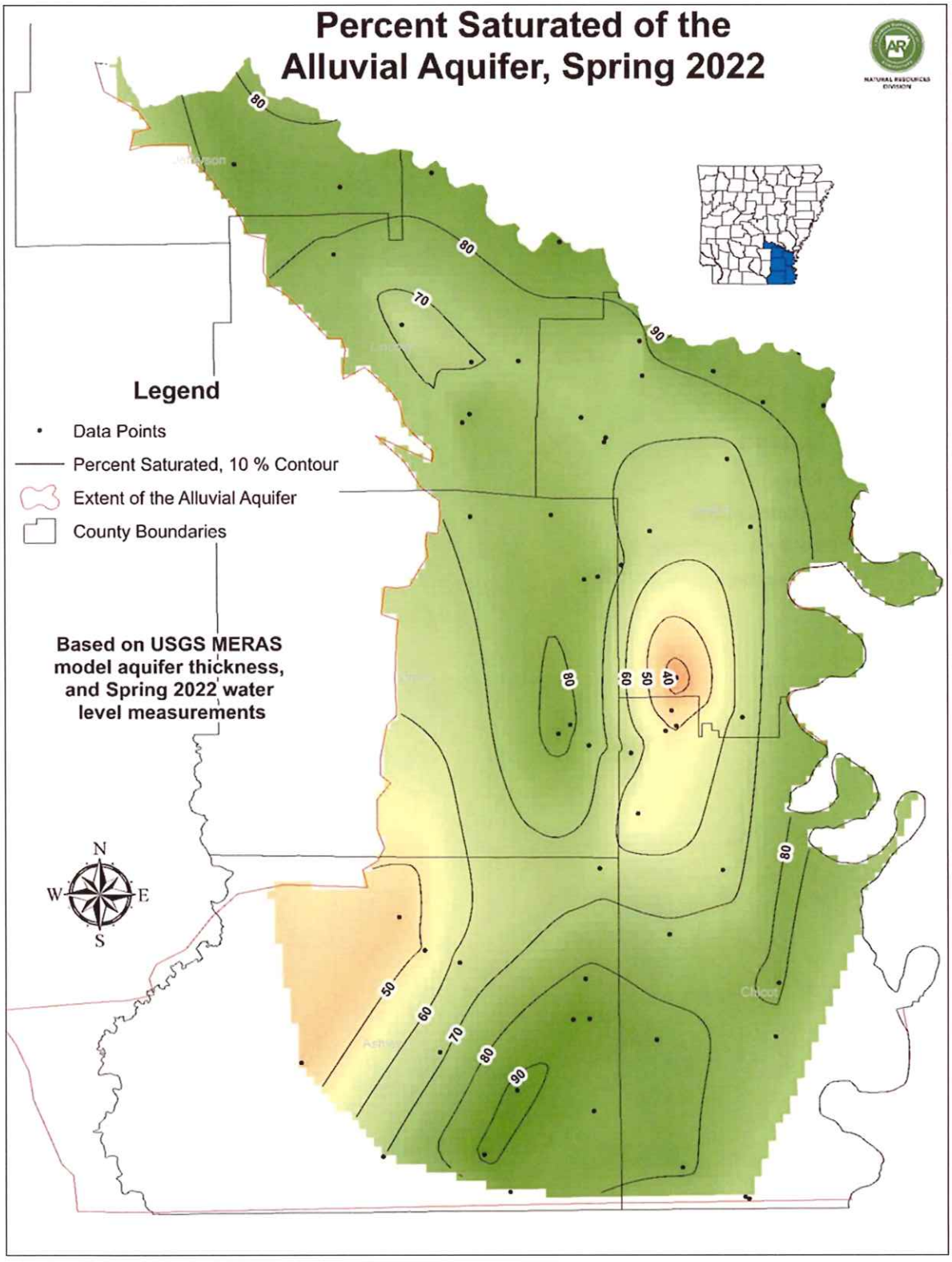


Figure 3: Spring 2022 measurements of the potentiometric surface of the Mississippi River Valley alluvial aquifer shown as the estimated percent of the aquifer that is saturated

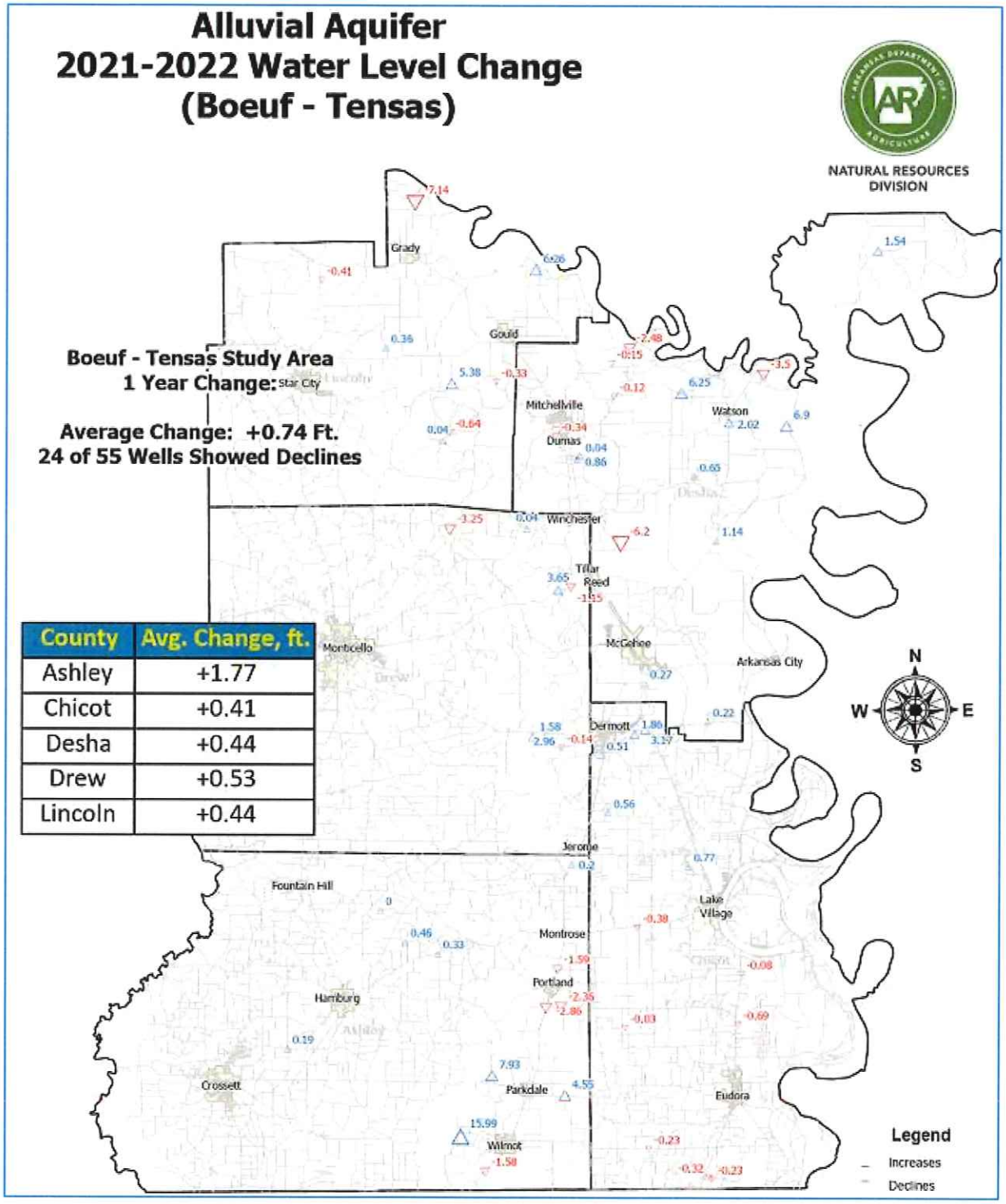


Figure 4: Feet of water level change in alluvial aquifer wells measured in 2022 compared with previous year measurements

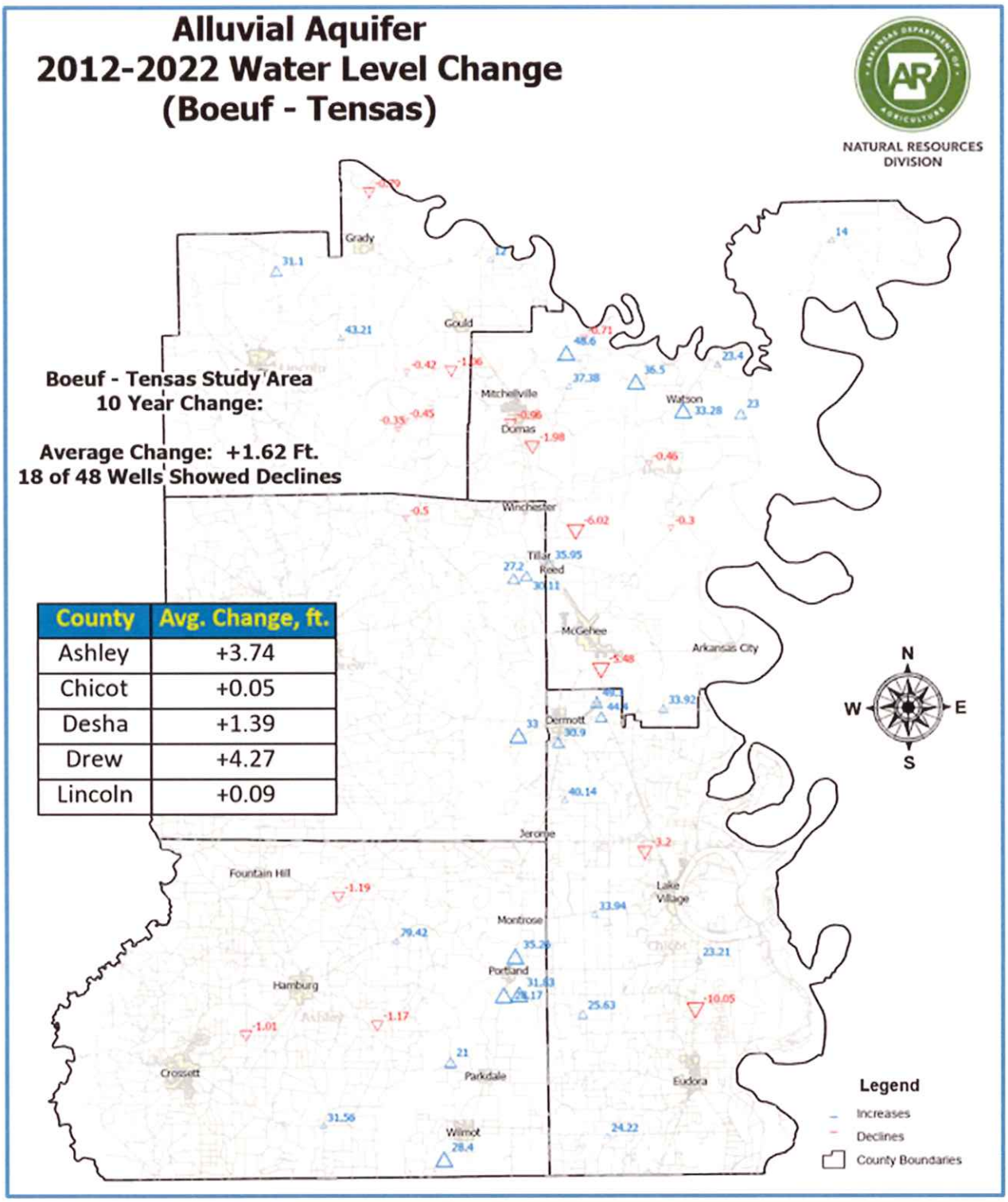


Figure 5: Feet of water level change in alluvial aquifer wells measured in 2022 compared with 2012

Sparta Aquifer Water Levels

The Sparta aquifer within the Red River Basin has experienced significant historical water level declines resulting in two prominent cones of depression, or areas where the potentiometric surface remains at a lower elevation than would exist in the aquifer under natural conditions. Due to aquifer depletion, Bradley, Calhoun, Columbia, Ouachita, and Union counties were designated as Critical Groundwater Areas by the State of Arkansas in 1996. In 2009, Jefferson County was designated as a Critical Groundwater Area for the Sparta aquifer. The adoption of surface water conversion projects, most notably the Ouachita River diversion project in Union County, and other groundwater conservation projects, has reduced the groundwater demand from the Sparta aquifer within the Red River Basin. Recent trends indicate notable aquifer recovery where aquifer depletion has been the most significant throughout the area.

In the spring of 2022, 91 wells in the Sparta aquifer were measured within the Red River Basin. The water level expressed as the altitude in feet above mean sea level is presented in Figure 6 and the depth to water in feet below ground surface is presented in Figure 7.

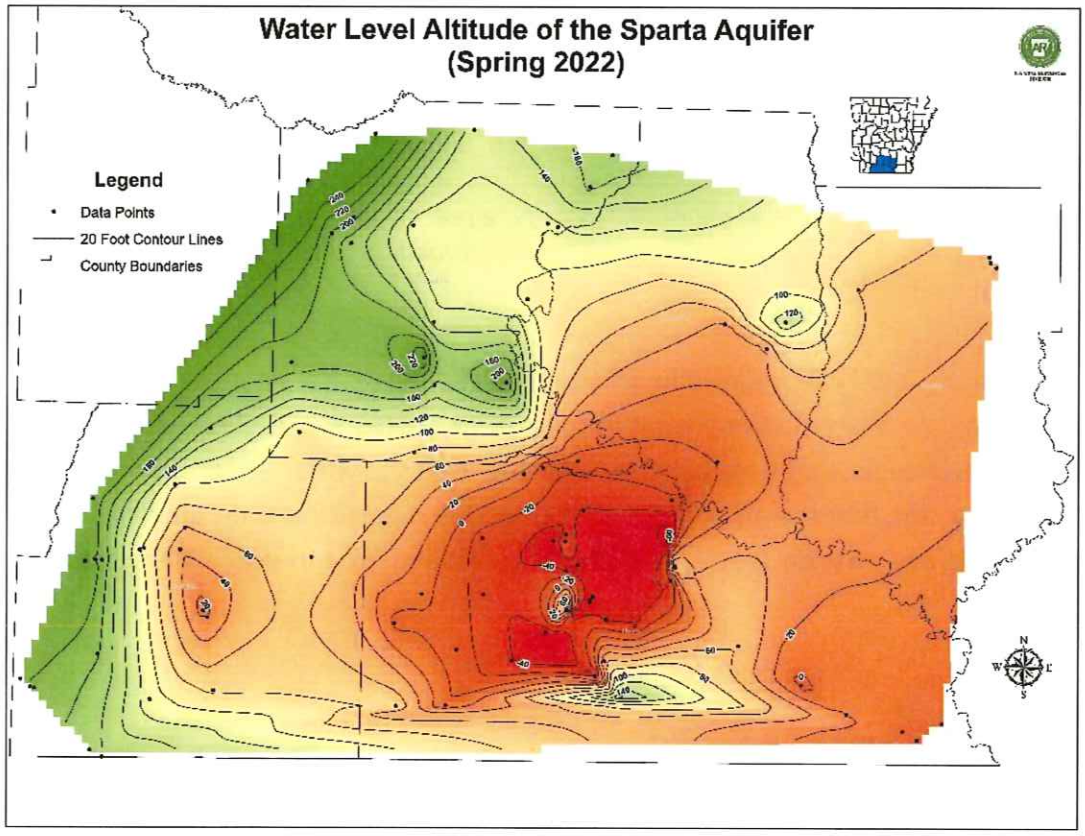


Figure 6: Spring 2022 water level measurements of the potentiometric surface of the Sparta aquifer presented and as water level altitude in feet above mean sea level

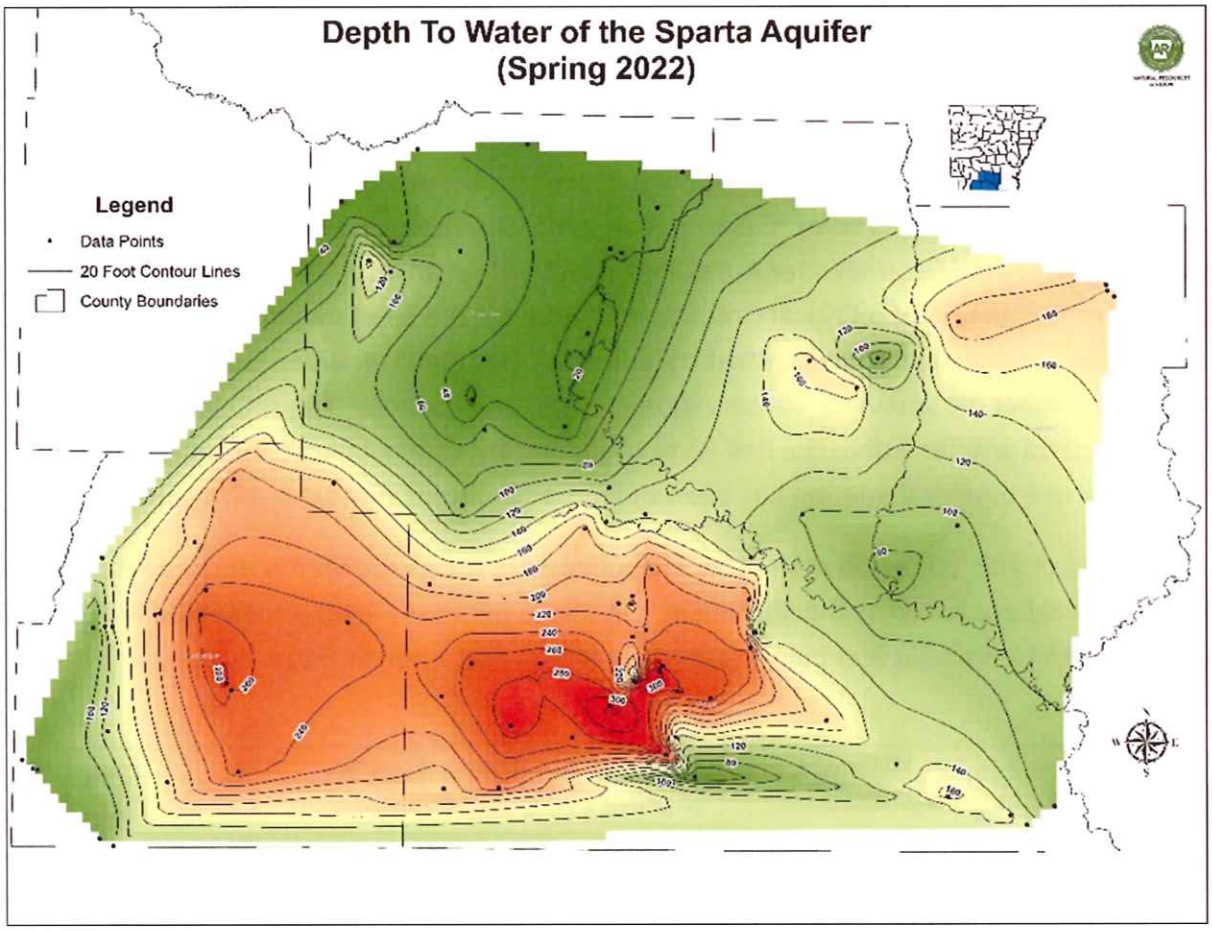
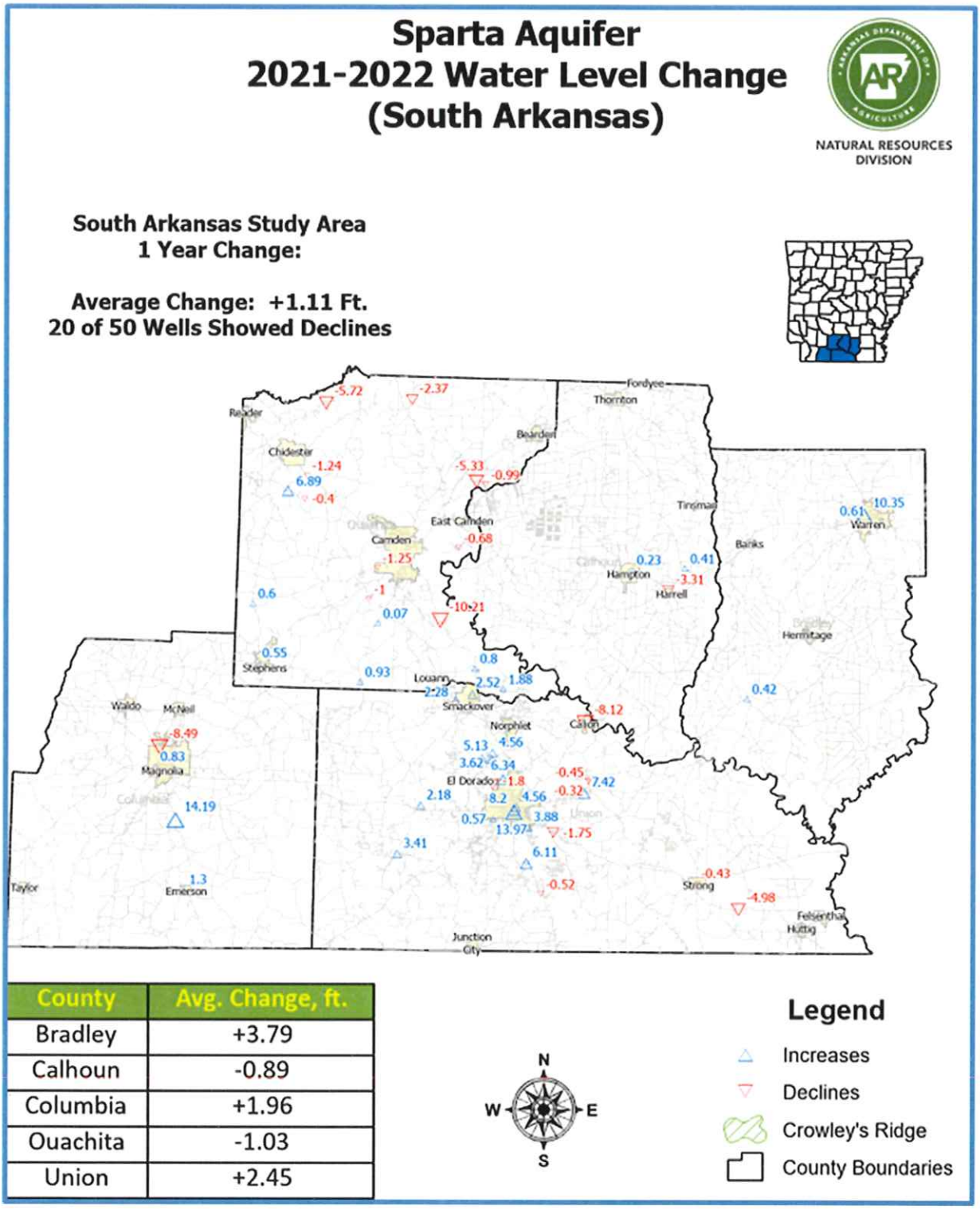


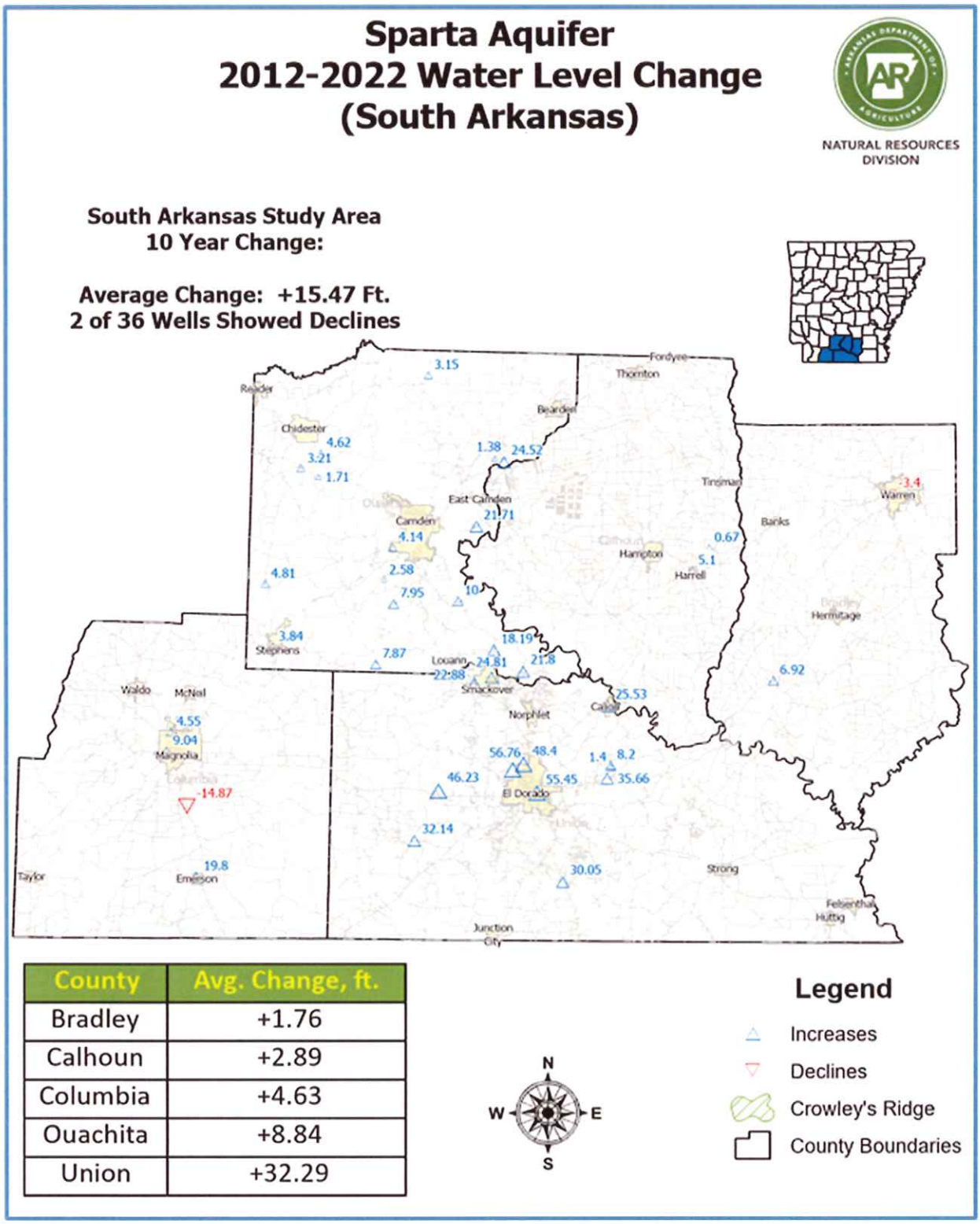
Figure 7: Spring 2022 water level measurements of the potentiometric surface of the Sparta aquifer presented as feet below ground surface

As with the Mississippi River Valley alluvial aquifer data, the Sparta aquifer data has been compared with data from the same wells in years prior in one, five, and ten-year comparisons. Overall average change values are positive indicating that the water levels are increasing over time in this area, and that the aquifer is recovering. This is particularly notable in the ten-year comparison. The one-year data is presented in Figure 8 and the ten-year data is presented in Figure 9.



County	Avg. Change, ft.
Bradley	+3.79
Calhoun	-0.89
Columbia	+1.96
Ouachita	-1.03
Union	+2.45

Figure 8: Feet of water level change in the Sparta aquifer wells measured in 2022 compared with previous year

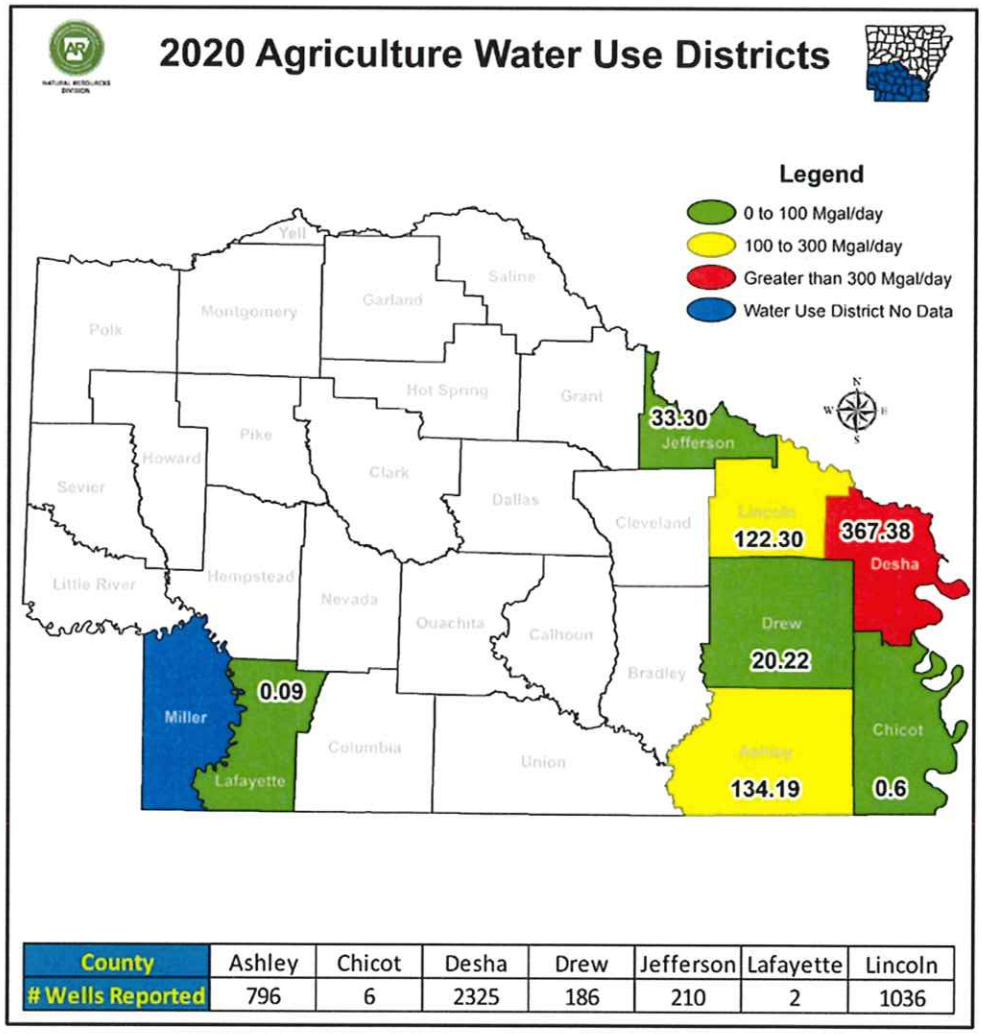


County	Avg. Change, ft.
Bradley	+1.76
Calhoun	+2.89
Columbia	+4.63
Ouachita	+8.84
Union	+32.29

Figure 9: Feet of water level change in the Sparta aquifer wells measured in 2022 compared with 2012

Arkansas Water-Use Registration Program

The Arkansas Water-Use Registration Program collects water-use data throughout the state on an annual basis. There are two main classifications of water-use data: agricultural and non-agricultural use. Agricultural water use is primarily water used for irrigating row crops and for watering livestock, while non-agricultural use includes municipal supply, commercial, and industrial uses. The counties with a great amount of agricultural water-use report through the local Arkansas Association of Conservation Districts office in their county. The water-use reporting period for 2022 data ended on March 1, 2023. The most recent water-use data that is entered and complete is agriculture data from 2020. Agriculture groundwater use from the counties within the Red River Basin for year 2020 is presented in Figure 10. 2020 non-agricultural use data has been collected but has not been entered or included in this report.



County	Ashley	Chicot	Desha	Drew	Jefferson	Lafayette	Lincoln
# Wells Reported	796	6	2325	186	210	2	1036

Figure 10: Agricultural water-use reported in water-use districts in the Red River Basin for year 2020

Groundwater Quality

Groundwater quality sampling throughout the Red River Basin is done through two partnership programs with the United States Geological Survey (USGS): the Groundwater Salinity Program and the Arkansas Masterwell Program. The Groundwater Salinity Program is an annual sampling program that conducts sampling on 25 wells annually in the Mississippi River Valley alluvial aquifer and the Sparta aquifer and is focused on chloride and bromide levels. The Arkansas Masterwell Program samples five different wells per year for various constituents in several different aquifers on a rotational basis throughout the state.

In 2022, four of the wells that were sampled as a part of the Groundwater Salinity Program were in the Red River Basin. All four of these wells are in the Mississippi River Valley alluvial aquifer. The results of the 2022 sampling are presented in the table below. No Arkansas Masterwell Program sampling was done in the Red River Basin in 2022.

Sampling Agency	Site Number	County	Sample Date	Specific Conductance	Hydrogen ion, mg/L	pH, water unfiltered, field	Chloride mg/L	Bromide mg/L
USGS	335603091233200	Desha	8/4/2022	442	0.00008	7.1	12	0.039
USGS	333205091304001	Drew	8/4/2022	810	0.00019	6.7	114	0.314
USGS	331034091153901	Chicot	8/4/2022	692	0.00006	7.3	63.2	0.381
USGS	331125091244001	Chicot	8/4/2022	438	0.00012	6.9	1034.5	4.55

Table 1: Groundwater Quality Sampling Results, Groundwater Salinity Program

Arkansas Unpaved Roads Program

The Arkansas Unpaved Roads Program (AURP) is administered by the Arkansas Department of Agriculture's Natural Resources Division (NRD). The AURP is funded annually at $300,000. Unpaved roads in the state are the transportation backbone for rural communities and provide access for hunting, fishing, boating, hiking, and recreational activities. Erosion of these unpaved roads has negative effects on the state's economy, tourism, and natural resources. The AURP provides incentives to counties for maintaining and improving select low-volume, unpaved public roads in Arkansas. Eligible activities include demonstration, training, promotion, and use of best management practices in construction and maintenance of unpaved roads near lakes, rivers, and streams.

Within the compact area for 2022, a total of four counties received $214,153 to improve unpaved roads. All projects elevated roadbeds and improved drainage by increasing size and

frequency of culverts to alleviate seasonal flooding. Proposed projects for 2023 include almost $180,000 worth of funding requests across three counties.

2022	State Award	Match	2023 (Proposed)	State Award	Match
Calhoun County	$75,000	$125,819	Calhoun County	$89,476.14	$170,981.88
Lincoln County	$36,371	$51,490	Dallas County	$18,750	$18,750
Jefferson County	$75,000	$75,000	Polk County	$71,089.32	$71,089.32
Grant County*	$27, 782	$27,918			
*Supported through EPA 319 Grants					

Table 2: 2022 approved and 2023 proposed unpaved roads projects in the Red River Basin

Arkansas Section 319 Nonpoint Source Pollution Management Program

The implementation of voluntary nonpoint source (NPS) best management practices has been effective in reducing pollutants entering Arkansas's portions of the Red and Ouachita rivers. Leading these efforts, the Arkansas Department of Agriculture's Natural Resources Division (NRD) has partnered with landowners in these watersheds to provide education, demonstration projects, technical assistance/expertise, and financial assistance to implement and install voluntary best management practices which improve water quality.

The 2018-2023 NPS Pollution Management Plan identifies several priority watersheds which lie within the Red River Compact Area in southern Arkansas.

Upper Saline River

NPS pollution efforts in the Upper Saline River watershed include an update of a 2006 watershed management plan in partnership with The Nature Conservancy (TNC) and the Saline River Watershed Alliance. The efforts will include organizing four stakeholder engagement opportunities and several landowner workshops to identify conservation practices that have the highest potential to improve water quality. The watershed management plan is slated for completion by 2025. A second project with TNC and Saline County is identifying and improving unpaved roads and aquatic organism passage, which will be completed by the end of calendar year 2023.

Lower Quachita-Smackover

A partnership with the Southwest Arkansas Planning and Development District will develop a new watershed-based management plan for the Lower Ouachita-Smackover 8-digit hydrologic unit code (HUC). Project partners will work to evaluate sub-watersheds at the 12-digit HUC scale for significant contributions of sediment, nutrients, and pathogens (E. coli). Additional

water quality monitoring is also being supported through a partnership with Equilibrium. Their efforts will continue to support on-going projects and development of the watershed-based plan. A new partnership with the Arkansas Department of Agriculture's Forestry Division will improve over 3,000 linear feet of unpaved roads and three aquatic organism barriers in Poison Springs State Forest.

Lower Little River

The Arkansas Department of Agriculture's Natural Resources Division (NRD) is excited about two new projects funded in October 2022 for the Lower Little River 8-digit HUC. The first project is a partnership with the University of Arkansas System Division of Agriculture Cooperative Extension Service, which will implement the 2016 watershed-based management plan. The project is scheduled for three years and will organize education and outreach events, water quality demonstration projects, and landowner field days. The second project is a partnership with the Arkansas Game and Fish Commission and Weyerhaeuser to inventory, assess, and improve unpaved roads to prevent sediment loss and improve aquatic organism passage from road crossings. The project will extend until 2025.

Cossatot River Sustainable Rivers Project Program (SRP)

The United States Army Corps of Engineers and The Nature Conservancy (TNC) along with several sponsors in the state, including the Arkansas Game and Fish Commission, Arkansas Natural Heritage Commission, Arkansas Department of Agriculture's Natural Resources Division, and the Arkansas Department of Energy and Environment Division of Environmental Quality, have joined efforts in order to recommend a dam reoperation plan for Gillham Dam through the Sustainable Rivers Project Program (SRP). In 2020, the Cossatot River was added to the SRP. During the 2021 calendar year, personnel across all partners worked to assimilate all available physical, chemical, and biological data for the Cossatot River. Additional data was collected including channel and bank stability, fish and mussel assemblage, and water quality.

In 2022, representatives from partner organizations devoted two days to parse out data availability and develop environmental flow recommendations for Species of Greatest Conservation Need (SGCN), federally threatened species, and their respective aquatic habitat needs. Recommendations included increased hydrologic peaks during traditionally low flow periods to reduce hydrograph stagnation. Additionally, recommendations included increased peak flows to allow floodplain connectivity during periods of higher precipitation.

Water and Wastewater Infrastructure

Water, sewer, and solid waste projects are supported by the Arkansas Department of Agriculture's Natural Resources Division (NRD) through federal capitalized and state low-interest loan and grant programs. In addition to these programs, American Rescue Plan Act

(ARPA) funding was made available by the Arkansas General Assembly. These programs support water, wastewater, infrastructure, and treatment facilities to protect human health and the environment. During 2022, NRD provided over $61 million in financial assistance for 13 water quality infrastructure projects in the compact area. Additionally, the NRD provided over $89 million for 61 projects in the compact area from ARPA. The following map details the location of the approved projects.

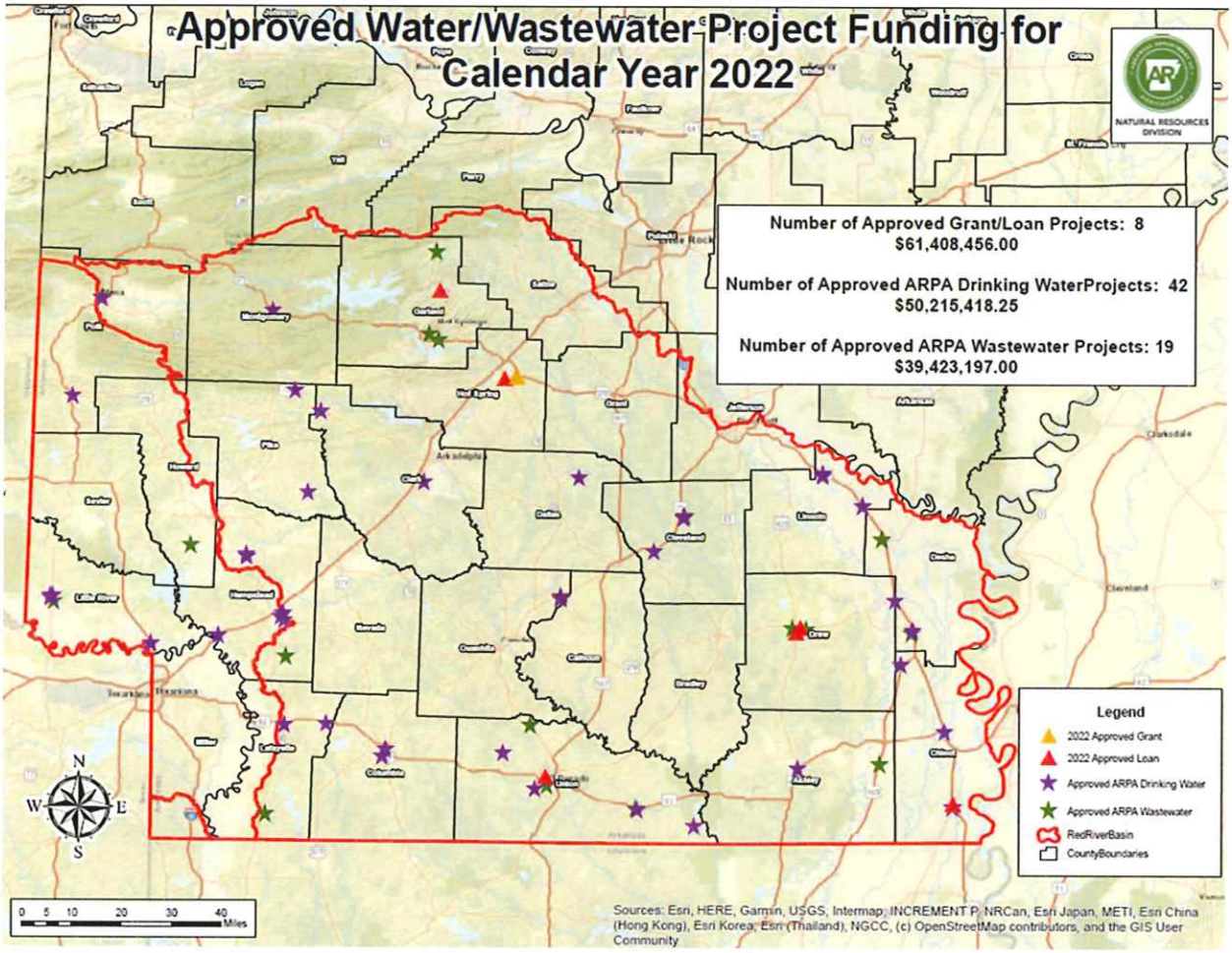


Figure 11: Approved water and wastewater projects funded in the Red River Basin for calendar year 2022

Arkansas Feral Hog Eradication Task Force

The Arkansas Feral Hog Eradication Task Force (Task Force) was established to develop and implement statewide feral hog control plans to reduce populations through the development and implementation of effective legislative, policy, management, control, and communication efforts. Furthermore, the feral hog program was also established to assist with development and implementation of United States Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) farm bill grants related to feral swine control projects. Two of the four USDA-NRCS feral swine control pilot projects are located within the compact area.

The map below details the feral hog removals across Arkansas and the compact area during 2022 which were accomplished by the Task Force.

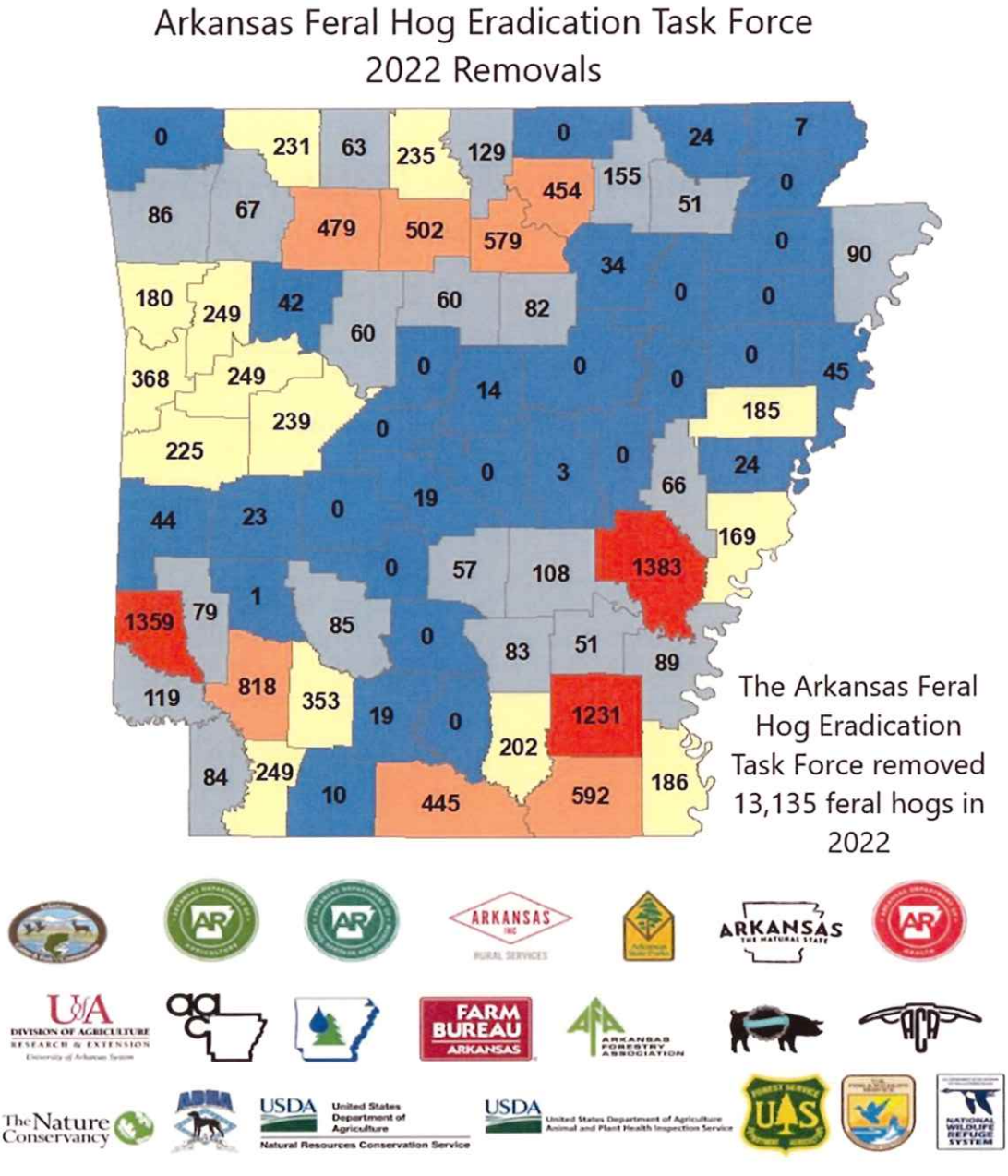


Figure 12: Arkansas Feral Hog Task Force 2022 removals

Southwest Arkansas Navigation Feasibility Study

The Arkansas Department of Agriculture's Arkansas Red River Commission has obtained the funding necessary to complete a study to determine the feasibility of extending navigation along the Red River above Shreveport and Bossier City into southwest Arkansas. The State of

Arkansas is partnering with the Red River Waterway Commission, Bossier Parish Police Jury, Caddo Parish, Caddo Levee District, Bossier Levee District, City of Shreveport, Bossier City, and the Caddo-Bossier Port Commission to complete the study.

A 2018 study concluded that completion of navigation on the Red River would generate a 1:8 benefit to cost ratio should two lock and dams be added extending navigation to Garland, Arkansas and a 1:2 benefit to cost ratio should three locks be added extending navigation to Index, Arkansas. Extension of navigation on the Red River from its current terminus at Shreveport, Louisiana into southwest Arkansas will enhance economic development within the region and will provide transportation costs savings to local businesses and the nation. Once completed, the project could potentially provide significant additional benefits to the region including additional water supply, power generation, flood control, and recreation.

The feasibility study will be completed using the process authorized by Section 203 of the Water Resources Development Act for submission to the Secretary of Army for review. It is estimated that the Section 203 Study will cost approximately $3 million dollars. The State of Arkansas has a signed Memorandum of Agreement with the Louisiana partners and has issued a Request for Qualifications to procure an engineering consultant to complete the study. A committee of the group has selected Freese and Nichols Engineering Firm. The contract is currently being completed.

Arkansas Dam Safety Section

The Arkansas Department of Agriculture's Natural Resources Division (NRD) regulates 413 dams statewide, 393 of which are in the Red River Basin. To meet regulatory status, a dam must have a height of 25 feet or greater and contain a volume of at least 50 acre-feet of water at normal pool. Regulation assures dams are both properly designed and constructed and assures continued maintenance and monitoring.

Each regulated dam is assigned a hazard classification based on damages that would occur if the dam failed:

- High - Habitable structures (potential loss of human life) or damages over $500,000
- Significant - Damages range from $100,000 to $500,000
- Low - Damages less than $100,000

Through its regulatory program, the NRD Dam Safety Section provides oversight and supervision for the health, safety, welfare, and economic well-being of the citizens of Arkansas.

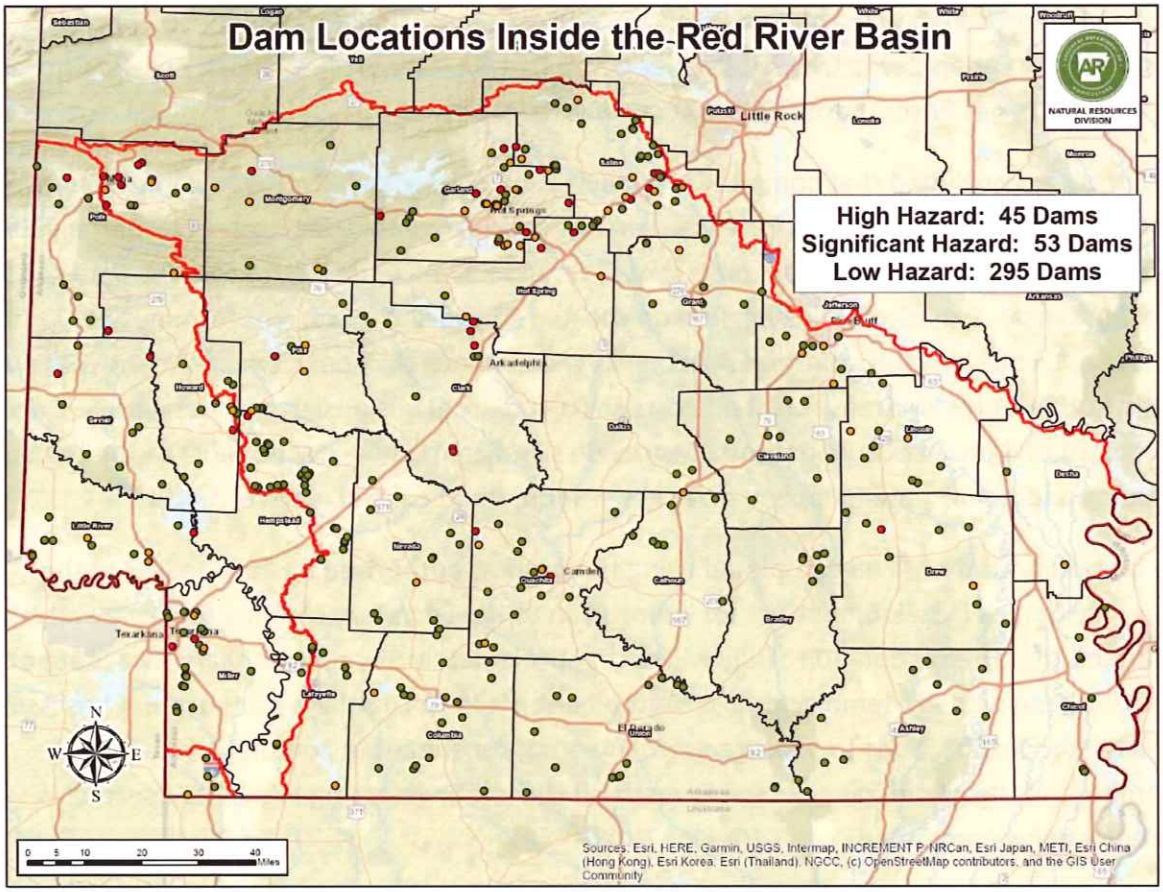


Figure 13: Regulated dams within the Red River Basin

Floodplain Management

The Arkansas Department of Agriculture's Natural Resources Division (NRD) supports more than 100 National Flood Insurance Program (NFIP) communities in the Red River Basin. The state provides ongoing technical floodplain management assistance, supporting communities as they reduce and minimize flood risk to people, property, and the environment through consistent and thoughtful implementation of NFIP floodplain development regulations.

This technical assistance includes:

- Model floodplain management ordinances, building codes, and zoning provisions;
- Annual floodplain management training workshops across the region;
- Flood risk conferences for residents and community officials, using state-of-art technology to provide in-depth and accessible assessments of exposure to flood hazards; and
- Flood recovery workshops for local officials and residents in communities impacted by catastrophic flooding.

While many of these communities have implemented standards above the NFIP minimum, Arkadelphia (Clark County) has been recognized by the state and the Federal Emergency Management Agency (FEMA) for consistently high standards and a holistic approach to flood risk reduction.

Additional support to Red River Basin communities is provided through FEMA's Cooperating Technical Partners Program (CTP). Specifically, the CTP has provided, or is in the process of developing, flood depth grids; mapped flood extent; and scalable models for the 10, 25, 50, 100, and 500-year events in the following watersheds:

- Bayou Bartholomew
- Bayou D'Arbonne
- Bayou Macon
- Bodcau Bayou
- Boeuf
- Little Missouri
- Loggy Bayou
- Lower Little
- Lower Ouachita - Smackover
- Lower Ouachita – Bayou De Loutre
- Lower Saline
- Lower Sulpher
- Mountain Fork
- McKinney Posten
- Ouachita Headwaters
- Pecan Waterhole
- Upper Ouachita
- Upper Saline

The Arkansas CTP Program has also provided updated flood maps, digital mapping, enhanced Light Detection and Ranging (LiDAR), elevation data, and enhanced technical training to approximately 70 percent of NFIP communities in the Arkansas portion of the Red River Basin.

The Arkansas Department of Agriculture's Natural Resources Division (NRD) also provides mitigation funding, supporting local community efforts to reduce or eliminate the risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. From 2012 through 2022, the Arkansas Flood Mitigation Assistance Program funded 27 flood mitigation projects, including creation of open green space via acquisition and demolition of flood prone structures; elevation of repetitively flooded structures to reduce damage potential; and large-scale drainage projects.

Red River Compact Commission Annual Meeting
State of Louisiana Report - 2022
April 26, 2023

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Louisiana in Review

Louisiana had a reprieve from hurricanes this year but have seen above average rain. Average yearly rainfall for Reach III and Reach IV within Louisiana is typically around 51 inches and 60 inches for the state in general. The upcoming hurricane season, which officially starts June 1st, and is predicted to be slightly above average this year, could change the rainfall forecast for 2023.

Louisiana Watershed Initiative

As a result of the catastrophic March and August floods from 2016 the Louisiana Watershed Initiative (LWI) was created by Gov. John Bel Edwards. The Office of Community Development received $1.2 Billion of HUD funding in 2020 that supports LWI programs. The LWI has nine Watershed Regions and seven modeling regions. LWI through DOTD, secured contracts with seven engineering consultant teams to model nearly all of our HUC 8 watersheds for flood mitigation purposes. Under the current task orders, consultants will develop calibrated and validated H&H models. The modeling teams are on track to complete all 47 HUC-8s this year. Specifically for the Red River Basin, Atkins North America was selected to model Region 1, which is the Shreveport-Bossier City area of the state. Freese and Nichols was selected to model Region 2 which is the north central part of the state and includes the area where the Red River ties into the Mississippi River at the Old River Control structure. Region 3 is located in the northeast portion of the state and includes the Ouachita River and its tributaries and is being modeled by WSP who purchased Wood Environmental. We are currently working to get Proof of Concept Model (PCM) efforts initiated by modeling at least one large watershed impactful project for each of the nine regions with the intent of identifying potential future large scale projects and showing end users how the models can be used. We hope to show how the models can work to effectively reduce flooding and maximize limited funding sources. A part of this effort will be the identification of existing and proposed projects as a way to start master plans for the watershed regions.

DOTD in conjunction with USGS/NRCS and CPRA completed the process of re-flying the LiDAR statewide it and will be publicly available through USGS once QA/QC checks are completed.

In addition to the modeling effort, the LWI is funding a major expansion of the statewide river and rain gauge network. Currently, over 100 new river and rain gauges, primarily in the northeastern and southwestern parts of the state, are being planned for and installed and will eventually be maintained by USGS once they are completed and online. Currently USGS is about halfway done and expects to complete installations in the next 12 months.

Through the LWI State Projects and Programs, DOTD has proposed several projects for funding that have been approved. Four projects are in the Red River Basin with one in Reach III and the remaining three in Reach IV. All of the projects in Reach III and IV are flood improvement projects to dams which includes: drawdown, hardening and current design standard upgrades. The engineering firms of Freese and Nichols and Michael Baker were selected as the consultants and are currently working their first task orders. Task Order 1 includes potential failure mode analysis, semi quantitative risk analysis, survey, H&H modeling evaluation and conceptual design report. The total cost for improvements to the four dams in the Red River Basin is estimated at $21M.

Status of Stream Flows at AR/LA Stateline with Relation to the Specifications of the Red River Compact

Louisiana remains concerned with flows below Compact standards lasting a minimum of seven days at the state line on some streams in Reach IV. These streams include the Bouef River, Bayou Bartholomew and Bayou Macon. Of the streams mentioned, each were below the actionable standards of the Compact for at least five continuous weeks. The Bouef River was below standards for six continuous weeks and Bayou Macon was below standards for a total of twelve weeks. The Red River did well only having experienced a single one week period between 1000-3000 cfs.

The 2020 report *Louisiana's Management of Water Resources* was updated in July of 2022 it identified that Louisiana does not have a statewide water management plan, which would help the state better regulate and value surface water. While Louisiana continues to track current compact standards we want to continue dialogue with Arkansas focusing more on watershed management focus. The Legal/Engineering Committee meetings this year were helpful in in furthering the conversation. At one of the meetings WSP presented on the LWI model development process and model concept. They also expressed the benefits of obtaining the physical features and terrain data used in the model prepared by USGS near the state line referenced in the Engineering committee meeting. Louisiana recommends Engineering and Legal meet at least one time between annual meetings or more as they feel is necessary to work towards acceptable watershed management practices and expectations.

Environmental Report

The Red River Basin in Louisiana is divided into 70 subsegments or management units. Ten of the subsegments represent the Red River or a direct tributary to the river. Based on the EPA approved 2022 Water Quality Integrated Report, among all 70 subsegments in the basin 11 are fully supporting all designated uses; an increase of one from the 2020 Integrated Report. The remaining 59 subsegments are impaired for one or more designated uses. The Red River from the Arkansas state line to Alexandria is fully supporting all uses except fish and wildlife propagation (FWP). The suspected cause of impairment is elevated sulfate, with the suspected sources being municipal point source discharges and sanitary sewer overflows. Downstream on the Red River from Alexandria to its terminus at Old River Control Structure, all three designated uses (primary contact recreation (PCR), secondary contact recreation (SCR) and FWP) are fully supported.

As is the case throughout Louisiana, dissolved oxygen and fecal coliform are the most frequently reported suspected causes of impairment with 36 and 20 subsegments, respectively. Mercury fish consumption advisories is third with 15 impairments, followed by total dissolved solids (9), and non-native aquatic plants (7). The remaining impairments are color (6), sulfate (5), temperature (4), turbidity (3), nitrate/nitrite, chlorides, and total phosphorus (all 2), and finally ammonia, high pH, and low pH (all 1).

A total of 41 subsegments out of 65 with the designated use of PCR are fully supporting the use. Sixty-seven of 70 subsegments are fully supporting the SCR use and 20 subsegments are fully supporting the FWP use. Eleven subsegments have the designated use of drinking water supply (DWS). Of these, five are fully supported. The remaining six DWS subsegments are impaired due to high color.

A total of 67 TMDLs have been completed for impairments in the Red River Basin. TMDLs have been completed for nine different parameters including dissolved oxygen (17), mercury (12), total dissolved solids (10), fecal coliform (9), turbidity/sedimentation/siltation, (6) sulfate (4), chloride (3), total nitrogen (3), and total phosphorus (3). In some cases the associated subsegment impairment for a TMDL may have been removed in subsequent Integrated Reports, however, the TMDL is still valid and must be taken into account for permitting and possible nonpoint source pollution reduction activities.

LDEQ and DOTD understands that some impairments may be linked to low flows regardless of the cause, but these low flows have not been specifically investigated as part of the assessments conducted in developing the 2022 Integrated Report.

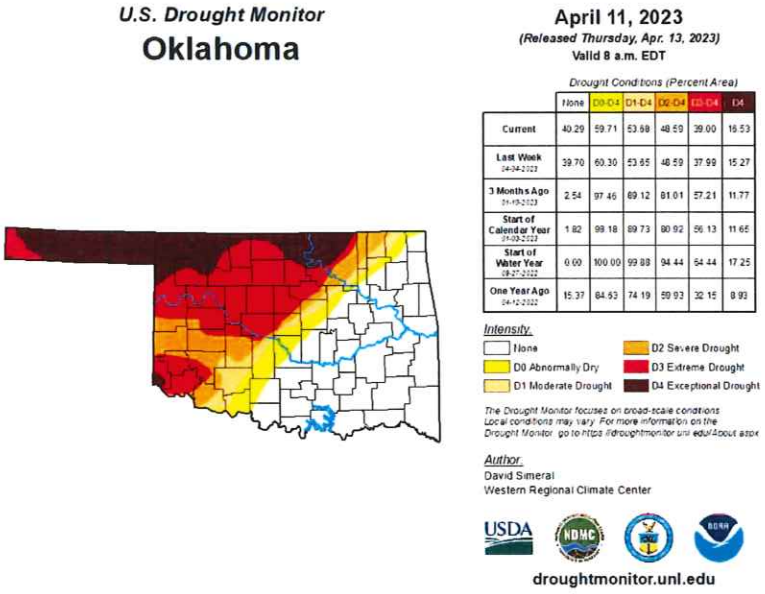
OKLAHOMA COMMISSIONERS' REPORT

Red River Compact Commission
April 25-26, 2023

CLIMATE

Almost 60% of the state is in drought with over 16% in Exceptional Drought across northwest and north central Oklahoma. It's now been over 230 days since Goodwell has received a quarter of an inch or more of rain. This comes after Goodwell set the record for all-time lowest annual precipitation in the entire State of Oklahoma total with 6.48 inches in 2022. Death Valley has had .96 inches of rain in 2023. Goodwell has had .63.

Drought-related conditions deteriorated in isolated areas of western Oklahoma in response to precipitation shortfalls at various time scales, low stream flows (<10th percentile), poor groundwater conditions, and impacts within the agricultural sector. According to the National Oceanic and Atmospheric Administration (NOAA) and National Centers for Enviromental Information (NCEI), the past 12-month period (April 2022-March 2023) was the 5th warmest and 33rd driest on record in the South Climate Region. For March 2023, the region saw its 35th warmest on record with a +3.0-degree F anomaly and its 51st driest on record. The U.S. Seasonal Drought Outlook for April 21 to July 31, 2022, indicates no drought conditions are expected along most of the Red River between Oklahoma and Texas, except for the areas composed of Southwestern Oklahoma throughout the Texas Panhandle.



2025 UPDATE OF OKLAHOMA COMPREHENSIVE WATER PLAN

OCWP current status:

- Infrastructure surveys have been sent to virtually every water and wastewater treatment plant in the state with responses currently being gathered and analyzed.
- Professional work groups on the following topics have developed goals and objectives and are currently investigating issues and working on the development of long-term plans:
    - Oklahoma's Water Reuse Action Plan,
    - Source Water Protection collaboration,
    - Water Workforce Development Strategies, and
    - Agriculture Water Needs & Initiatives.
    - Regional multi-sector planning groups: Seeking interested parties to begin this summer.

STATEWIDE FLOOD RESILIENCY PLAN

Oklahoma Senate Bill 1269, a request bill from the OWRB, directing the agency to develop a Statewide Flood Resiliency Plan. The Plan is now in Phase 2; data and engagements have been collected. Project areas have been identified including Tulsa County, Muskogee County and Moffett, OK.

The Oklahoma Water Resources Board (OWRB) also coordinates with the Federal Emergency Management Agency (FEMA) on new county-wide flood mapping projects in Haskell, Johnston, Murray and Coal Counties along with paper-to-digital map conversions in Choctaw, Harper, Latimer, Love and Pushmataha counties.

WATER INFRASTRUCTURE INVESTMENTS

Since 1983, the Oklahoma Water Resources Board has approved over $6.38 billion in loan and grants for water and wastewater infrastructure improvements throughout Oklahoma. These programs have provided communities the resources necessary to maintain and improve the infrastructure that protects valuable water resources statewide. OWRB continues to maintain AAA bond ratings while providing an estimated savings of over $1.66 billion to its borrowing entities. From April 2022 to present, the Board has completed two (2) bond issues totaling $224.5 million.

In 2022, through Oklahoma Senate Bills 429, 4, and 13, over $436.6 million was appropriated to the OWRB for administering American Rescue Plan Act (ARPA) grants for eligible water and sewer projects throughout the state. Last August, the Board approved rules for the competitive water/sewer, dam rehabilitation, and tribal ARPA grants. $50 million was designated for entities with a population of 7,000 or less or to rural water districts with less than 2,300 non-pasture taps and $40 million was made available for entities with a population greater than 7,000 or to rural water districts with more than 2,300 non-pasture taps and $10 million was designated for pre-selected dam rehabilitation, in addition to legislative designated ARPA grant funds for specific projects. OWRB's administration of almost $280 million for a group of 44 specific projects includes

Master Conservancy Districts, Central Oklahoma Habitat for Humanity, "mega" business industrial development sites, and historically underserved communities.

$57 million was made available through a 50/50 tribal matching program for the Chickasaw, Choctaw, Cherokee, Iowa, and Muscogee Creek Nations. These project lists were designated by the tribes with the Oklahoma Secretary of Energy and Environment's approval. Secretary Ken McQueen commented that the ARPA grants provide funding that likely would not otherwise have been available.

Overall, the OWRB anticipates bringing approximately 160 ARPA projects to the Board for consideration. It is estimated that these projects will benefit over 2.5 million Oklahomans and provide thousands of jobs. The agency has created an interactive, online, ARPA Grant Dashboard for Pending and Board-Approved ARPA projects. Searchable features include legislative district, county, and population served detail. The ARPA Grant Dashboard can be accessed at OWRB ARPA Grants (arcgis.com)

HYDROLOGIC INVESTIGATIONS

The OWRB conducts statutorily mandated hydrologic investigations to determine the amount of fresh groundwater available for appropriation. During the past year, a hydrologic investigation of the Elk City Sandstone aquifer was completed by the OWRB. Several additional investigations are underway in the Red River basin:

- The OWRB, United States Bureau of Reclamation (USBR), Lugert-Altus Irrigation District (Lugert-Altus Reservoir), and Mountain Park MCD (Tom Steed Reservoir) are nearing completion of the Upper Red River Basin Study. The goal of the study is to provide information on potential drought thresholds that could help better manage water within those watersheds. The study has potential to change water management strategies that are currently administered state-wide.

WATER RIGHTS PERMITTING

The OWRB currently administers 13,335 active long-term water right permits for 4 million acre-feet per year of groundwater and 2.9 million acre-feet per year of surface water. To support water rights administration, the agency conducts surface water allocation modeling and availability analyses, coordinates statewide water use reporting, and responds to interference and public complaints.

FLOODPLAIN MANAGEMENT

The OWRB acts as the State Floodplain Board and National Flood Insurance Program (NFIP) coordinating agency, as directed by the Oklahoma Floodplain Management Act. The agency partners with FEMA for the Community Assistance Program (CAP) and the Cooperating Technical Partners Program (CTP). Currently eight active floodplain mapping or Discovery projects are in progress with one additional project under way in 2023. Completed Phase II mapping projects are generally

referred to FEMA for Flood Insurance Rate Map updates. Information gathered by both the CAP and CTP Programs is used to guide decision making in the development of the state flood plan.

DAM SAFETY PROGRAM

Of the 4,778 regulated dams in the state, there are 2,451 in the Red River Compact Commission Area. There are 2,380 dams in the commission area that are regulated by Oklahoma; 1,434 of these are operated by local conservation districts through partnership with the U.S. Department of Agriculture (USDA) and the Natural Resources Conservation Service (NRCS) and 946 are directly regulated by OWRB. The remaining 71 dams are Federally operated.

There are 775 Oklahoma-regulated dams with normal storage of 100 acre-feet or more within the compact area. These dams create a total normal storage of almost 753,000 acre-feet, and nearly 1.2 million acre-feet of available flood storage.

Also, to utilize FEMA's High Hazard-Potential Dam Rehabilitation Grant (HHPD), OK Dam Safety Program has been working closely with owners of 7 eligible dams within the Red River Compact Commission Area. Two of these dams have met the full eligibility and selection criteria and have planning and engineering projects currently underway. In collaboration with the OWRB Financial Assistance Division, Dam Safety staff has assisted several other high hazard-potential dam owners to either obtain loans or pursue other funding opportunities to rehabilitate their dams and correct deficiencies that threaten public safety. Finally, through the US Treasury's American Rescue Plan Act, OWRB has allocated $1 million to one high hazard dam owner in the Red River Compact Commission Area for their dam rehabilitation project and is planning to allocate more funding to at least one other dam owner within the compact area.

WELL DRILLER AND PUMP INSTALLER PROGRAM

There are approximately 382 well drilling and pump contracting firms and 675 individual operators licensed and certified by the OWRB. The OWRB frequently provides technical assistance for water well drillers, pump contractors, and the public. The OWRB also assists drillers with required well log reporting, and to date, almost 220,000 well logs are available to the public online.

Every year, the OWRB cooperates with the Oklahoma Ground Water Association (OGWA) to provide continuing education training, which is required for water well and pump contractors to maintain their license. The OWRB continues to work with the Well Driller Advisory Council and stakeholders to develop, update, and advance water well drilling rules. Recently, the OWRB proposed and approved new rules to update the requirements for well completion reports to improve data collection and better appropriate groundwater in the state. This spring, based on recommendations from stakeholders and the Advisory Council, the OWRB launched a notice of intent to drill (pre-authorization) system for wells that require water use permits to ensure that non-domestic wells meet spacing and construction requirements.

The Program is continuing to work towards modernization by updating databases and providing online services for drilling contractors and the public.

WATER QUALITY MONITORING, MAPPING, AND STANDARDS

Lakes Monitoring & Assessment Programs: OWRB Lakes Monitoring and Assessment section has historically monitored 49 reservoirs from the Red River Basin. The agency will also be including 32 of these reservoirs as part of its redesigned long term trends program, which will be implemented this spring. Data collected through this monitoring is used to assess the overall health of these systems and can be found online in the agency's Lakes Beneficial Use Monitoring Program reports. The program redesign will also continue to utilize special studies to perform more in-depth evaluations of certain reservoirs. The OWRB's bathymetric programs have surveyed 23 lakes in the basin providing accurate volumes and contour maps all of which can be found and downloaded off the agency's website[1]. The agency also has multiple ongoing projects updating large regions of the current National Wetlands Maps[2], this data will be available through the U.S. Fish and Wildlife Service when the project is completed.

Streams Monitoring and Assessment Program: The OWRB has modified our streams Water Quality and Quantity Monitoring Programs to more effectively address our 21st century data needs. To this end, a program redesign has been implemented that moves the network toward a holistic trend and condition monitoring program. Using more advanced technology, the program will evaluate trends in loading and concentration at 55 sentinel stations through integrated data collection platforms. The program will also continue implementing a statewide network to evaluate long term changes in water quality condition. Finally, the program will continue to perform special studies.

LEGISLATION

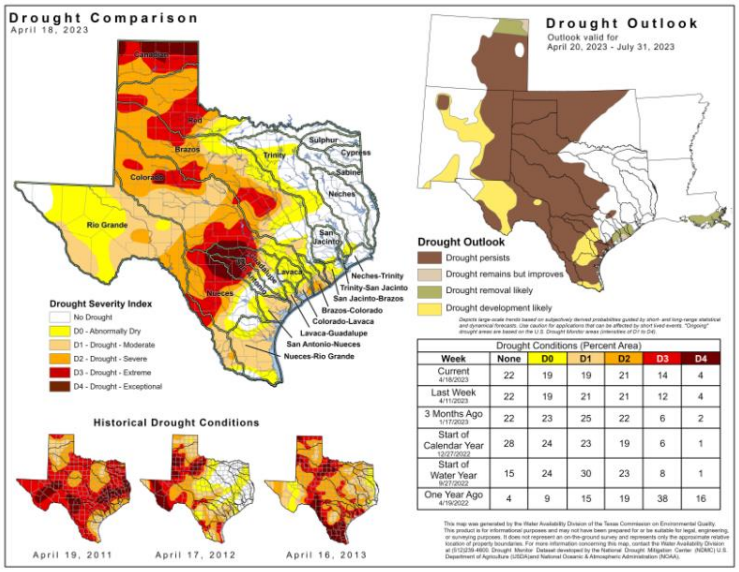
Several bills are currently making their way through the legislative process, including bills that would create a hazard mitigation fund, create a drought taskforce, set flat fees for water permits, adjust drought commission memberships and limit water permit protests to affected parties, among others.

[1] https://www.owrb.ok.gov/studies/surface/bathymetry.php

[2] https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper

Red River Compact Commission
Texas Commissioners' Report
April 26, 2023

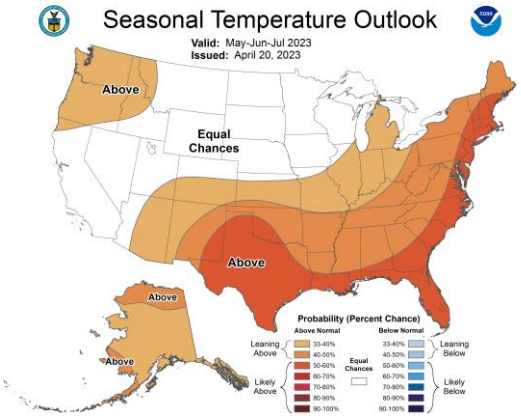
Drought Conditions

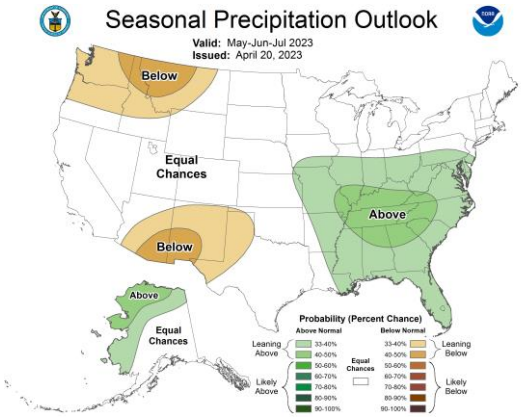


As of April 18, 2023, the United States Drought Monitor shows about 78% of Texas in some level of drought, with 35% experiencing severe or worse conditions. This is down from a year ago, when 96% of the state was experiencing drought and 73% was severe or worse.

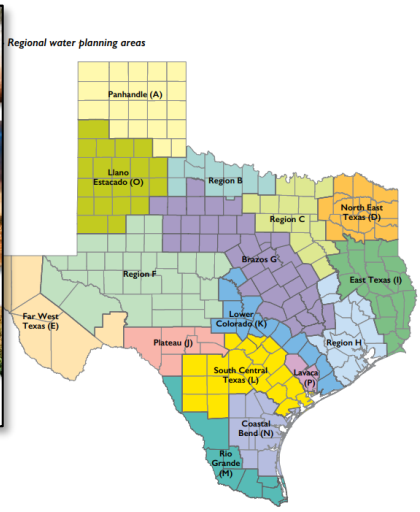
The extreme to exceptional drought conditions are occurring in the West Texas and Panhandle regions of the state. This includes the upper reaches of the Red River. Currently 21% of the Red River Basin is experiencing drought conditions, with 68% being severe to exceptional. The lower reaches of the Red River Basin are currently not experiencing drought.

The NOAA Climate Prediction Center's Seasonal Drought Outlook is predicting conditions will persists in the western half of the state and possibly improve in the eastern half though July. NOAA predicts a 40-60% chance of above average temperatures and equal chances of average precipitation through July for the Red River Basin.





Texas Water Plan of 2022



In July 2021, Texas adopted the 2022 Texas Water Plan. Texas' state water plans are based on future conditions that would exist in the event of a recurrence of the worst recorded drought in Texas' history—known as the "drought of record"—a time when, generally, water supplies are lowest and water demands are highest.

Texas' population is expected to increase more than 70 percent between 2022 and 2070, from 29.5 million to 51 million, with over half of this growth occurring in Regions C and H. However, Texas' existing water supplies—those that can already be relied on in the event of drought—are expected to decline by approximately 11 percent between 2022 and 2070, from 15.2 million to 13.6 million acre-feet per year.

Approximately 5,500 water management strategies recommended in this plan would provide 3.4 million acre-feet per year in additional water supplies to water user groups in 2022 and 8.5 million acre-feet per year in 2070. The estimated capital cost to design, construct, and implement the approximately 2,500 recommended water management strategy projects by 2070 is $63 billion. If strategies are not implemented, approximately one-third of Texas' population would have less than half the municipal water supplies they will require during a drought of record in 2070. In addition, if Texas does not implement the state water plan, estimated annual economic losses resulting from water shortages would range from approximately $73 billion in 2022 to $151 billion in 2070.

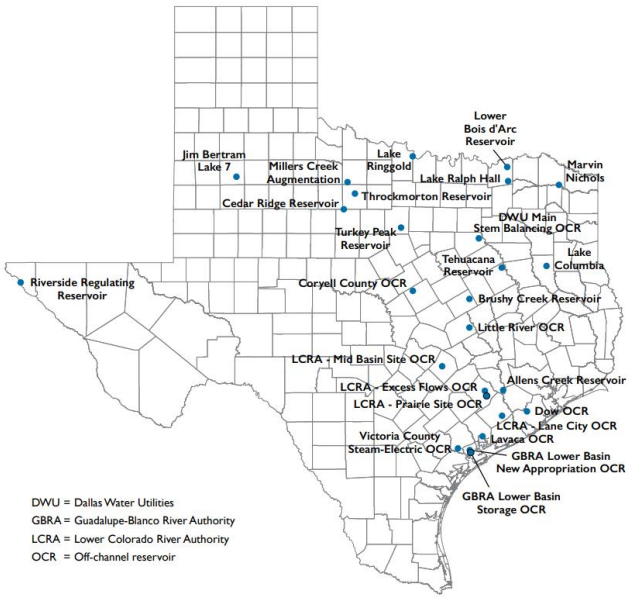
State Water Implementation Fund for Texas

The State Water Implementation Funds for Texas (SWIFT) program was enabled by the Texas Legislature and a State constitutional amendment in 2013, for $2 billion to help communities develop and optimize water supplies at cost-effective rates. The program provides low-interest loans, extended repayment terms, deferral of loan repayments, and incremental repurchase terms for projects contained in the most recently adopted State Water Plan. This original investment is designed to fund close to $27 billion in water supply projects over the next 50 years to help ensure that Texas communities have adequate supplies of water during drought.

The Texas Water Development Board (TWDB) manages the administration and disbursement of funds and ensures they are used to finance needed water supply projects as defined in the Texas Water Plan priority process. The applications for the 2022 funding cycle of the SWIFT program have been submitted. Through fiscal year 2022, SWIFT has committed over $9.9 billion for projects across Texas.

For more general information on the program, see:

Figure 8.4 - Recommended new major reservoirs



https://www.twdb.texas.gov/financial/programs/swift/index.asp

Report of the Budget Committee

Red River Compact Commission

April 26, 2023

The 2024 Proposed Budget covering July 1, 2023 through June 30, 2024.

Anticipated Cash Balance – July 1, 2023	**$ 27,614.18**
Certificate of Deposit – February 28,2023	**$ 11,330.56**

PROPOSED BUDGETED RECEIPTS

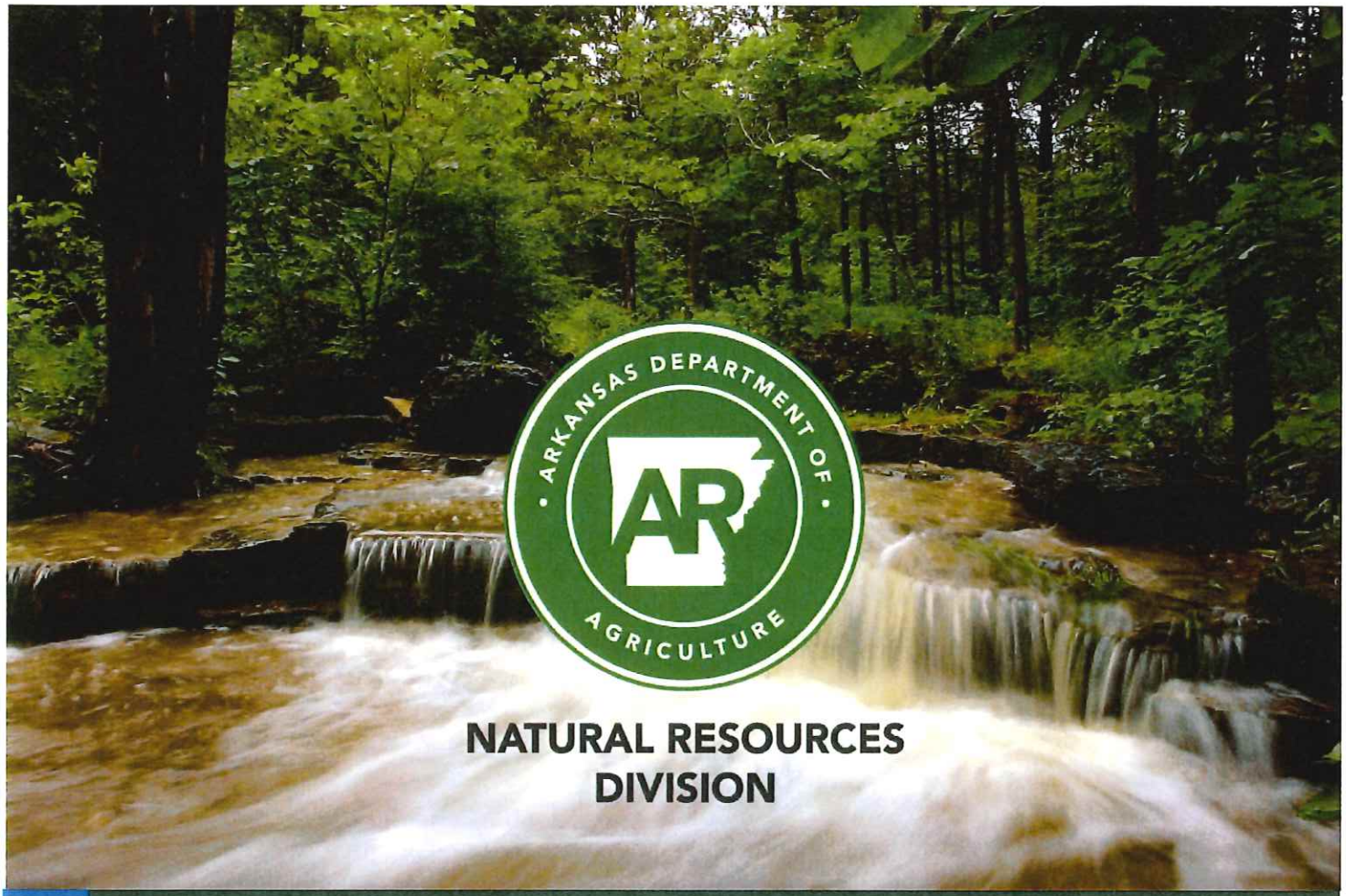
Annual Dues – Arkansas, Louisiana, Oklahoma, and Texas ($550/State)*	$ 2,200.00
Total Gross Receipts	**$ 2,200.00**
TOTAL FUNDS AVAILABLE	**$41,144.74**

PROPOSED BUDGETED EXPENDITURES

Meeting Expenses	$ 5,000.00
Office Supplies/Expenses**	$ 2,500.00
Contingency	$16,000.00
Total Expenditures	**$23,500.00**
TOTAL	**$17,644.74**

*In accordance with Article IX, Section 9.04.C, of the Compact the amount of such budget shall be borne equally by the signatory states in an equal amount. Therefore, the FY 2024 assessments are $550.00 per state.

**Includes Personnel Services, Office Expenses, Rent, Travel, and Audit items (4-22-2014).



2022 Arkansas Environmental Report

Prepared for the Red River Compact Annual Meeting

The Arkansas Department of Agriculture's Natural Resources Division

April 26-27, 2023

2022 Arkansas Environmental Report

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Tables and Figures

2022 Arkansas Environmental Report

Introduction

Water is an essential resource for Arkansas. Accurate information on water quality and quantity is necessary to ensure long-term availability and sustainability of water that is safe for drinking and recreation, and is suitable for industry, irrigation, and fish and wildlife. Abatement of degradation and improvement in water quality throughout the Red River Compact Area is a continuing effort and remains a priority for the state.

Clean Water Act Section 303(d) requires all states to identify waters which do not meet or are not expected to meet applicable water quality standards. The Arkansas Department of Energy and Environment Division of Environmental Quality (ADEQ) manages water quality monitoring networks for surface and groundwater; and conducts routine monitoring activities and intensive investigations of the physical, chemical, and biological characteristics of watersheds and/or aquifers. Data generated from these activities, as well as readily available data from other sources, such as the Arkansas Department of Agriculture's Natural Resources Division (NRD) Nonpoint Pollution Prevention and Abatement Program, are used to prepare the biennial Integrated Water Quality Monitoring and Assessment 305(b) Report, the Impaired Waterbodies 303(d) list, and to develop total maximum daily loads (TMDLs). This data is used to evaluate designated use attainment and to prioritize restoration and remediation activities. ADEQ develops the 305(b) report and 303(d) list every two years and submits to the United States Environmental Protection Agency (EPA) for acceptance and approval.

Water quality degradation, impairment, and improvement are influenced by both point and nonpoint pollution sources. While ADEQ is the state's primary authority to regulate point source discharge through the implementation of the National Pollutant Discharge Elimination System (NPDES) Program and to administer other regulatory responsibilities, the NRD is responsible for addressing nonpoint source pollution through implementation of voluntary conservation and best management practices which improve water quality and reduce degradation. The Natural Resources Division's (NRD) nonpoint source pollution management and reduction efforts are prioritized to:

- increase collaborative and innovative conservation partnerships,
- enhance cooperation among government agencies and non-governmental groups, and
- demonstrate effective nutrient management and reduction practices that best contribute to water quality improvement.

Some of NRD's collaborative partners include the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), Arkansas Department of Energy and Environment, University of Arkansas System Division of Agriculture Cooperative Extension Service, The Nature Conservancy, Arkansas Department of Commerce, Discovery Farms,

Arkansas Association of Conservation Districts, and many other entities which are involved in nonpoint source pollution reduction activities and stakeholder issues. These partnerships are longstanding and vital to sustaining successful nonpoint-nutrient reduction and water quality improvement.

Water Quality

Study Area

Arkansas's drainage area for the Red River Compact encompasses nearly half of the state and includes 20 individual 8-digit hydrologic units (HUC), which the Arkansas Division of Environmental Quality (ADEQ) aggregates into larger planning segments (Figure 1, Table 1). These areas overlap with the Red River Compact's Subbasin I and II.

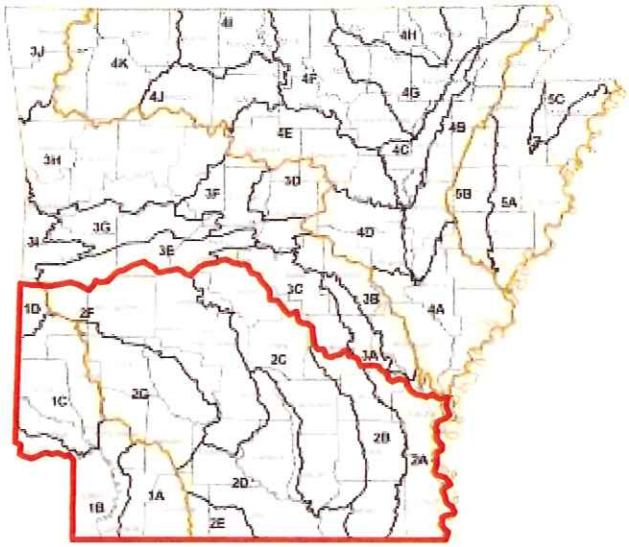


Figure 1: Red and Ouachita River Basins and ADEQ planning segments

Impaired Waterbody Updates

This report contains data and information from the ADEQ's 2016, 2018, and 2020 Integrated Water Quality Monitoring and Assessment Report and NRD's Nonpoint Source Pollution Management Plan. Included are summaries of ADEQ's 2016, 2018, and draft 2020 303(d) list of impairments within the Red River Compact Area in Arkansas and a description of NRD's voluntary conservation and nonpoint pollution efforts to combat these impairments.

The Integrated Water Quality Monitoring and Assessment Report identifies waterbody impairments into five categories: Category 1 (attains all water quality criteria and supports all designated uses and can be subsequently subcategorized by total maximum daily load (TMDL) existence or not for one or more constituents); Category 2 (available data indicate that some,

but not all designated uses are supported); Category 3 (insufficient data available to make a use support determination); Category 4 (water quality standards are not attained for one or more designated uses, the development of a TMDL is not required due to existing TMDL, alternative management plans, or non-support is not caused by a pollutant); and Category 5 (waterbody is impaired, or one or more water quality standards are not attained). Category 5 waterbodies are subsequently prioritized as high, medium, and low (Table 2). In the development of the 303(d) list, the unsupported designated use, identified criteria exceeded, source of contaminant (if known), and cause (if known) are published (Table 3).

The 2020 Integrated Water Quality Monitoring and Assessment Report and 303(d) list have not been approved by United States Environmental Protection Agency (EPA) and are still considered a draft. Therefore, an exhaustive table summary of 2018 to 2020 individual impaired waters was not established. Preliminary summaries of impaired miles and pollutant pairs were prepared comparing 2016, 2018, and the draft 2020 303(d) lists (Tables 5-6).

Table 1: List of ADEQ planning segments (PS) in the Red River Compact Area

PS	Red River Basin	PS	Ouachita River Basin
1A	Dorcheat Bayou & Bodcau Bayou	2A	Boeuf River & Tributaries
1B	Red River, Sulfur River, & McKinney Bayou	2B	Bayou Bartholomew & Tributaries
1C	Little River & Tributaries	2C	Saline River & Tributaries
1D	Mountain Fork & 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

Table 2: ADEQ Category 5 designations for prioritization of waterbody remediation

Category 5	The waterbody is impaired, or one or more water quality standard 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 the Arkansas Pollution Control & Ecology Commission's 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.

Table 3: Abbreviations used in Category 5 descriptions

Designated Use Not Supported		Sources of Contamination
AI = Agricultural/Industrial Water Supply	FSH = Fisheries	AG = Agriculture Activities
DW = Domestic Water Supply	PC = Primary Contact	HP = Hydropower
FC = Fish Consumption	SC = Secondary Contact	IP = Industrial Point Source
Water Quality Standard Non-Attainment		MP = Municipal Point Source
Al = Aluminum	PO = Priority Organics	SE= Surface Erosion
AM = Ammonia	Se = Selenium	UN = Unknown
Be = Beryllium	SO4 = Sulfates	UR = Urban Runoff
Cl = Chlorides	Tb = Turbidity	RE = Resource Extraction
Cu = Copper	TDS =Total Dissolved Solids	Cause
DO = Dissolved Oxygen	Tm = Temperature	HG = Mercury
NO3 = Nitrate Nitrogen	Tox = Toxicity	NU = Nutrients
PA = Pathogen Indicator Bacteria	TP = Total Phosphorus	SI = Siltation
pH = pH	UN = Unknown	
Pb = Lead	Zn = Zinc	
PCB = Polychlorinated Biphenyl	Hg = Mercury	

Table 4: Comparison of the 2016, 2018, and draft 2020 ADEQ 303(d) lists*

2020 Impaired No. of Segments and Miles by Pollutant

PS	DO	pH	Tm	Tb	Cl	SO4	TDS	Cu	Pb	Zn
1A	1 (26.5)	-	-	2 (21.4)	-	-	-	-	-	-
1B	2 (28.7)	-	-	6 (135.7)	-	-	-	-	-	-
1C	6 (96.5)	6 (75.0)	2 (11.7	-	-	-	-	3 (24.1)	-	-
1D	1 (11.7)	5 (71.3)	1 (11.3)	1 (11.7)	-	-	-	-	-	-
2A	-	-	-	-	2 (61.1)	-	-	-	-	-
2B	6 (149)	1 (5.3)	1 (97.0)	2 (36.3)	1 (8.3)	-	-	-	6 (198.3)	-
2C	9 (170.7)	6 (137.6)	1 (60.2)	2 (70.4)	-	-	-	-	1 (60.2)	-
2D	3 (94.1)	11 (157.0)	-	16 (310.1)	1 (3.3)	1 (3.3)	1 (3.3)	-	12 (262.1)	3 (23.0)
2E	1 (55.1)	1 (55.1)	-	1 (55.1)	-	-		-	5 (97.8)	-
2F	12 (172.3)	6 (78.4)	1 (17.5)	2 (23.2)	-	1 (0.7)	1 (0.7)	-	-	-
2G	1 (15.1)	2 (62.4)	-	1 (26.0)	-	-	-		-	-

2018 Impaired No. of Segments and Miles by Pollutant

PS	DO	pH	Tm	Tb	Cl	SO4	TDS	Cu	Pb	Zn
1A	1 (26.5)	-	-	1 (11.6)	-	-	-	-	-	-
1B	2 (28.7)	-	-	6 (135.7)	-	-	-	-	-	1 (17.6)
1C	2 (52.2)	2 (15.3)	1 (4.9)	-	-	-	-	-	1 (11.3)	-
1D	-	2 (24.0)	-	-	-	-	-	-	-	-
2A	-	-	-	-	2 (61.1)	-	-	-	-	-
2B	7 (185.4)	-	-	1 (28.0)	1 (8.3)	1 (8.3)	-	-	5 (163.9)	-
2C	4 (102.7)	3 (75.7)	1 (60.2)	1 (10.2)	-	-	-	-	1 (48.7)	-
2D	6 (217.9)	8 (137.9)	-	8 (208.4)	-	1 (3.3)	1 (3.3)	1 (8.5)	10 (221.5)	3 (23.0)
2E	-	1 (55.1)	-	1 (55.1)	-	-		-	5 (97.8)	-
2F	8 (86.4)	4 (54.9)	-	-	-	1 (0.7)	1 (0.7)	-	-	-
2G	-	2 (62.4)	-	1 (26.0)	-	-	-		-	-

2016 Impaired No. of Segments and Miles by Pollutant

PS	DO	pH	Tm	Tb	Cl	SO4	TDS	Cu	Pb	Zn
1A	1 (19.5)	-	-	-	-	-	-	-	-	-
1B	2 (29.3)	-	-	5 (93.1)	-	-	-	-	-	-
1C	1 (6.2)	-	1 (4.0)	-	-	2 (13.9)	1 (9.1)	-	-	-
1D	-	-	1 (11.0)	1 (11.0)	-	-	-	-	-	-
2A	-	-	-	-	2 (199.1)	-	-	-	-	-
2B	6 (100.7)	-	-	2 (24.5)	1 (9.9)	-	-	-	4 (96.4)	-
2C	-	1 (10.0)	-	2 (19.4)	-	-	-	-	-	-
2D	4 (64.7)	3 (47.2)	-	-	1 (3.3)	4 (53.2)	4 (53.2)	1 (5.2)	7 (163.7)	3 (49.9)
2E	-	-	-	1 (15.0)	-	-		-	-	-
2F	3 (15.1)	3 (8.3)	-	-	-	3 (6.2)	2 (4.0)	-	-	1 (2.5)
2G	-	2 (47.0)	-	1 (14.5)	-	-	-		-	-

Table 5: Total miles of impairments from the EPA approved 2016, 2018, and draft 2020 303(d) lists*

For each pollutant, dissolved oxygen (DO), pH, temperature (Tm), turbidity (Tb), chloride (Cl), sulfate (SO4), total dissolved solids (TDS), copper (Cu), lead (Pb), and zinc (Zn).

	DO	pH	Tm	Tb	Cl	SO4	TDS	Cu	Pb	Zn
2016	235.5	112.5	15.0	177.5	132.3	73.3	66.3	8.5	260.1	52.4
2018	699.8	425.3	65.1	484.8	69.4	12.3	4.0	5.2	543.2	40.6
2020	711.7	737.3	259.2	634.9	72.7	4.0	4.0	24.1	636.0	23.0

Table 6: Comparison of total miles per ADEQ planning segment

PS	Total Impaired Miles		
	2016	**2018**	**2020**
1A	19.5	205.0	47.9
1B	122.4	100.6	182.0
1C	33.2	38.1	73.2
1D	11.0	0.0	52.8
2A	119.1	56.0	61.1
2B	212.1	457.3	423.3
2C	29.4	167.6	393.3
2D	214.2	258.4	491.9
2E	15.0	0.0	100.2
2F	25.6	2.8	155.4
2G	61.5	0.0	105.3

*2020 303(d) listings are a draft and have not been approved by the EPA at the time of this report; therefore, a summary of the number and mileage of draft de-listings and new impairments is provided.

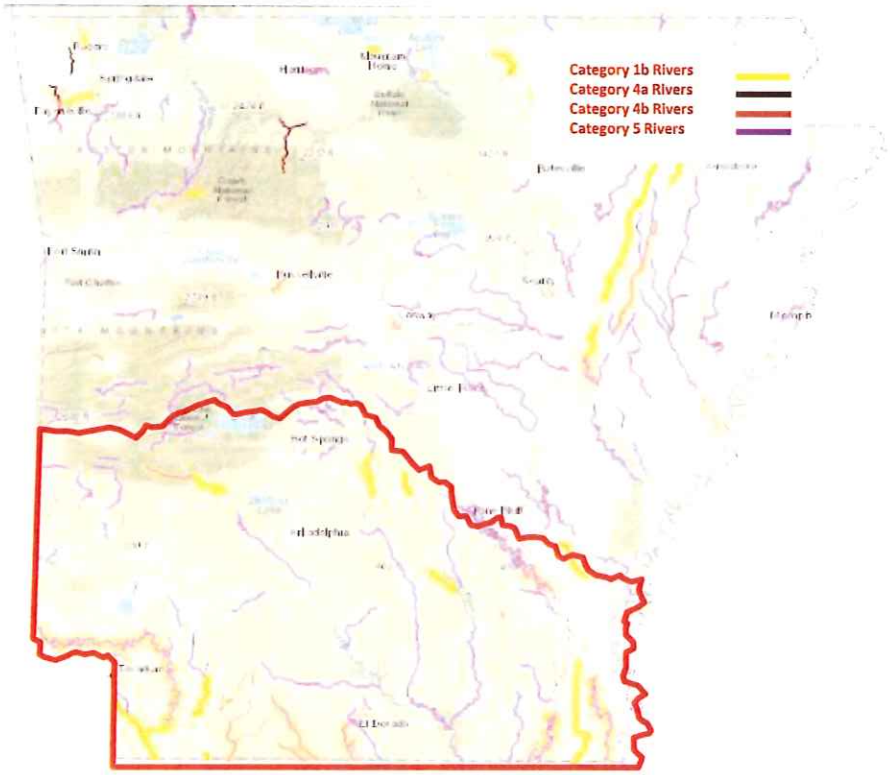


Figure 2: Map of 2018 303(d) impairment categories

Total Maximum Daily Load (TMDL) Prioritization

The Arkansas Department of Environmental Quality (ADEQ) has developed a "Long-Term Vision for Assessment, Restoration, and Protection" under the Clean Water Act 303(d) Program to comply with measures set forth by the EPA. ADEQ and NRD work cooperatively to direct available and limited resources to priority watersheds which are identified through stakeholder, risk, and science-based inclusive processes. Nine of ten watersheds identified through these processes were prioritized for TMDL development. ADEQ's long-term vision plan includes an update to these priorities by the year 2024.

Nonpoint Source Management Impacts

The implementation of voluntary nonpoint source best management practices are effective in reducing pollutants entering Arkansas's portions of the Red and Ouachita rivers. Leading these efforts, NRD has partnered with landowners in these watersheds to provide education, demonstration projects, technical assistance, expertise, and financial assistance to implement

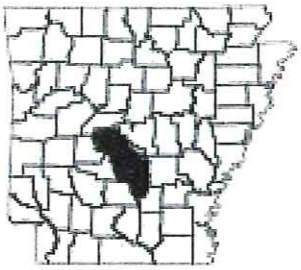
and install voluntary best management practices which improve water quality. Results from these activities has been a reduction in contaminant levels enough to remove the waterbodies from the 303(d) impaired waters list. Table 7 shows waterbodies that were removed from the 303(d) as a result of NRD nonpoint pollution efforts in these watersheds. Information on these projects can be viewed on EPA's website: epa.gov/nps/nonpoint-source-success-stories-arkansas.

Table 7: Success story example of waterbody attainment due to nonpoint source practices

Constituent	NRD Efforts	Waterbody Removed
Turbidity	Public education and outreach Financial assistance Demonstration projects Technical assistance Best management practices	Days Creek

Nonpoint Source Program Updates

The 2018-2023 Nonpoint Source Pollution Management Plan identifies several priority watersheds which lie within the Red River Compact Area in southern Arkansas. Projects ongoing during 2022 are described in the following sections.

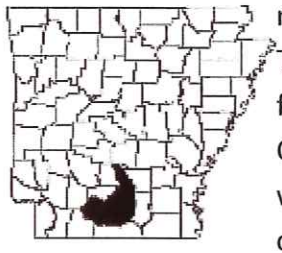


The Upper Saline River watershed is a priority for Arkansas's nonpoint pollution management effort in the Red River Compact Area. The Upper Saline River watershed has experienced significant increases in commercial, industrial, residential, and recreational development. Urban growth was identified by The Nature Conservancy (TNC) in 2008 as a major contributor to increases in nutrient and sediment loadings in the watershed. Nonpoint grant 20-100, initiated in October 2020 and continuing through December 2023, will include monitoring efforts in the Alum Fork, Big Creek, and Saline River to assess water quality impairment by turbidity and pH levels and determine the effectiveness of implemented management practices. Samples are being analyzed for total suspended solids,

turbidity, total phosphorus, total kjeldahl nitrogen, nitrate-nitrogen, ammonia-nitrogen, chloride, sulfate, dissolved oxygen, specific conductance, pH, and temperature. Trends in water quality parameter concentrations, monthly loading estimations, and unit area loading estimations will be based on water quality data collected at five water quality monitoring stations.

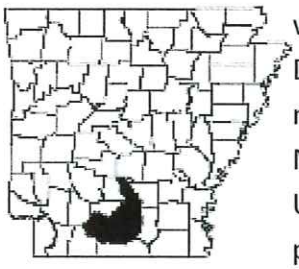
Also initiated in October 2020 was a new project (20-900) which will support improved road crossings, restore aquatic habitat, reduce sedimentation, and communicate water quality data results with partners, stakeholders, and local communities in the watershed. This project, "Restoring Aquatic Connectivity and Reducing Sedimentation in the Upper Saline River Watershed," is managed by TNC and will educate the general public on how and why to implement best management practices on stream barriers and riparian zones. In conjunction with the Saline County Road Department, TNC will develop three sites in the North Fork and Alum Fork sub-watersheds near Paron, Arkansas, to demonstrate road/stream crossing design, riparian zone planting, and other water quality improvement techniques. These sites will be used to engage and educate stakeholders, partners, and the public, and encourage adoption of best management practices to reduce sediment loading and other impairment in the Upper Saline River watershed.

TNC is seeking to restore aquatic connectivity and reduce sedimentation in the Upper Saline River. This will be completed by improving stream crossings restoring in-stream habitat. As these practices are sedimentation reduction projects the sites will serve as demonstration sites within the watershed and provide educational opportunities for local communities and stakeholders. The project's success will be based on the replacement of two high-priority road stream crossings and executing four volunteer events for the public. This project was initiated in October 2020 and is currently scheduled to conclude in December 2023.

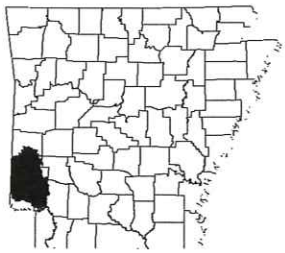


The Lower Ouachita-Smackover watershed is a priority for Arkansas's nonpoint pollution management effort in the Red River Compact Area. The watershed is generally rural and is predominately 83 percent forested. However, several urban areas, including the towns of Bearden, Camden, El Dorado, Fordyce, Hampton, and Smackover, are located within the watershed. Impairment exists on 16 streams due to ammonia, chloride, copper, lead, mercury, nitrogen (nitrates), pH, sulfates, total dissolved solids, and turbidity concentrations. The current project in HUC 08040201 (Lower Ouachita-Smackover watershed) was initiated in 2016 to collect, analyze, and report water quality and discharge data from 10 monitoring stations established at or near the outfalls of the following 12-digit HUCs: Bryant Creek, Lost Creek, Headwaters Lloyd Creek, Holmes Creek, Sandy Creek, Sloan Creek, Gum Creek, Cypress Creek, Cordell Creek, and Little Two Bayou. The

initial project was completed in 2020 and the final report was submitted in January 2021. Data from 2,532 samples showed decreasing total suspended solids, turbidity, and total nitrogen concentrations at several sites in the project area. Data was entered into the EPA Water Quality Portal data warehouse and was provided to ADEQ for evaluation and Clean Water Act assessment for the 2022 Integrated Water Quality Monitoring and Assessment Report. A second phase of this project was initiated in October 2022 and will expand monitoring in ten new 12-digit HUCs, including: Mill Creek, Sloan Creek, Beech Creek, Gum Creek, Holly Creek, Brushy Creek, Wolf Creek, Taylor Creek, Black Lake, and Dry Branch. Monitoring will be completed in 2025.



New nonpoint source projects in the Lower Ouachita-Smackover watershed include the Arkansas Department of Agriculture's Forestry Division nonpoint source grant to implement unpaved road best management practices in Poison Springs State Forest/Wildlife Management Area. The project area will primarily encompass the Upper White Oak Lake (080401030904). Sediment is the largest pollutant by volume to the waters of Arkansas. Unpaved roads are the second leading cause of nonpoint source pollution that impacts Arkansas's rivers, lakes, and municipal water sources (Arkansas Unpaved Roads Administrative Manual). Unpaved roads and their ditches generate sediment and collect dirt-laden runoff from adjacent land uses. It is estimated that the project will improve nearly 3,000 linear feet of unpaved roads and restore aquatic connectivity to 15 miles of stream network. The project was initiated in October 2021 and is anticipated to be completed by September 2024.



Two new nonpoint projects were initiated in 2022 for the Lower Little River watershed (11140109) in southwest Arkansas. The Lower Little River is an Arkansas Nonpoint Source Priority Watershed for 2018-2023. The first project is a partnership with the University of Arkansas System Division of Agriculture, which was awarded a project to implement the 2016 Lower Little River Watershed-Based Management Plan. Key watershed outreach activities include newsletters, water quality improvement programs, landowner site visits, and water quality demonstration projects. The project began in October 2022 and is scheduled for completion in 2025.

The second project is a partnership with the Arkansas Game and Fish Commission (AGFC) and Weyerhaeuser. As a significant landowner in the watershed, Weyerhaeuser expressed interest to the AGFC about improved aquatic connectivity and reduced sediment from unpaved road infrastructure. This project will inventory second through fourth order streams located on

Weyerhaeuser property, remove up to three aquatic organism passage barriers, and improve sediment loss from unpaved roads.

United States Army Corps of Engineers Projects

Sustainable Rivers Program

The United States Army Corps of Engineers (USACE) and The Nature Conservancy (TNC) and several sponsors in the state of Arkansas have joined efforts in order to recommend a dam reoperation plan for Gillham Dam, an impoundment of the Cossatot River in southwest Arkansas, through the Sustainable Rivers Project Program (SRP). Other parties include the Arkansas Game and Fish Commission (AGFC), Arkansas Natural Heritage Commission (ANHC), Arkansas Department of Agriculture's Natural Resources Division (NRD), and Arkansas Department of Energy and Environment Division of Environmental Quality (ADEQ).

In 2020, the Cossatot River was added to the SRP. This report details the current available data and literature for the Cossatot River to identify flow-dependent fish, mussels, and other species in the river; examine changes in these species over time; and look at alterations in the flow regime that potentially could have caused these changes. As with other SRP projects, once the degree of flow alterations has been determined and experts have developed recommendations to restore eco-hydrological function, the USACE will examine possibilities for reservoir management modifications, within the range of authorized reservoir releases, that would meet expert recommendations to benefit the Cossatot River ecosystem and biota.

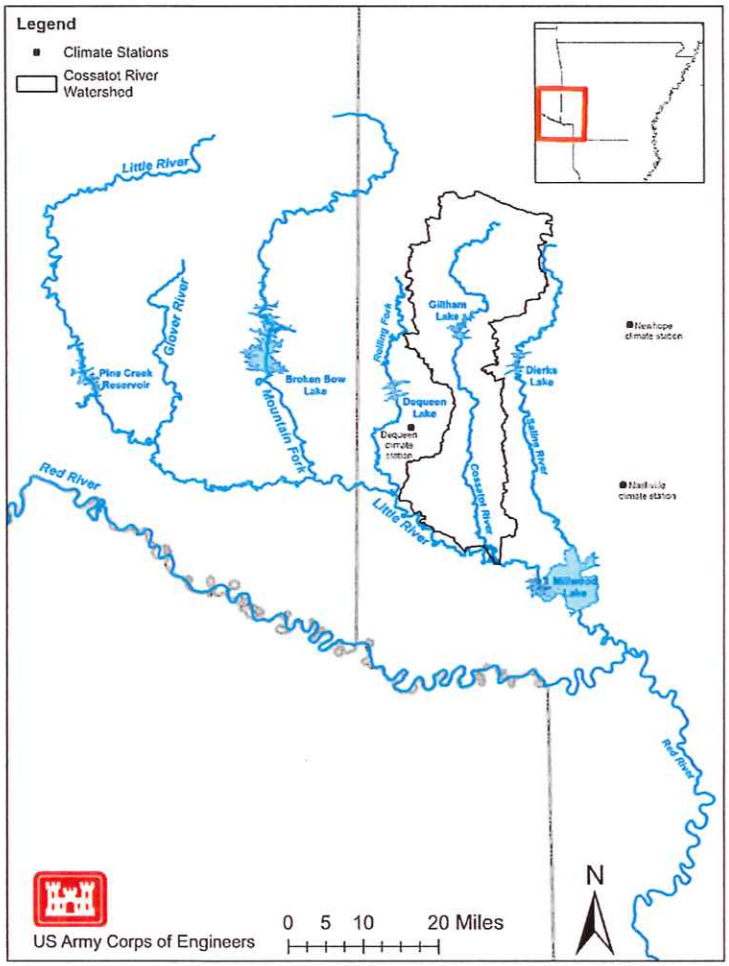


Figure 3: Map of study area and location of climate stations

During the 2022 calendar year, personnel across all partners worked to assimilate all available physical, chemical, and biological data for the Cossatot River. Additional data was collected including channel and bank

stability, fish and mussel assemblage data, and water quality data.

On June 7, 2022, representatives from interested parties met for two days to evaluate available data and discuss environmental flow recommendations. Flow recommendations included increased flow pulse variability during low flow periods. These pulses during typical summer months would increase thermal refugia and reduce hydrograph flatness. Recommendations also included timing and velocities to maximum fisheries assemblage benefits. Additionally, recommendations were included for oxbow and floodplain connectivity during winter and early spring, high flow months.

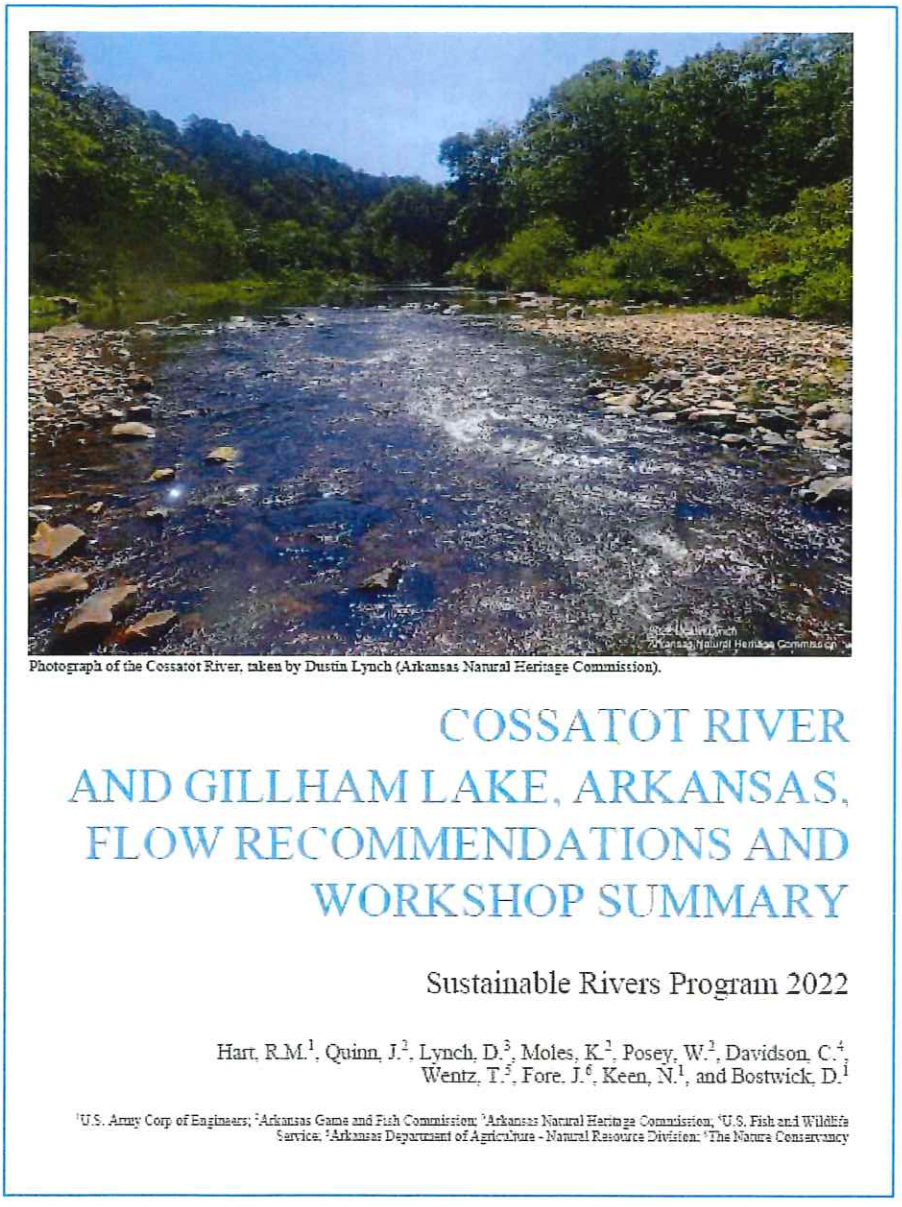


Figure 4: Cover page of the Cossatot River and Gillham Lake, Arkansas Sustainable River Program Report

Water Resources Development Act (WRDA) Projects

In the 2020 Water Resources Development Act (WRDA), the Sulphur River, located in Arkansas and Texas, was authorized for an ecosystem feasibility study pursuant to section 7001 of the Water Resources Reform and Development Act of 2014 (33 U.S.C. 2282d). In 2022, the AGFC notified the USACE-Vicksburg District that they would assume the non-federal sponsorship for this feasibility project from Wright Patman Dam to the Red River confluence.

In the 2022 WRDA, the Secretary of the Army, acting through the Chief of Engineers, was authorized funding for review of projects in the Ouachita River watershed in Arkansas and Louisiana under Section 216 of the Flood Control act of 1970 (33 U.S.C. 549a).

State of Oklahoma

OKLAHOMA Water Resources Board

the water agency

Red River Compact

Hot Springs Arkansas - 2023

Environmental and Natural Resources Committee Report

Red River Compact

April 25th and 26th 2023

EXECUTIVE SUMMARY

It is the intent of all Oklahoma Water Resources Board (OWRB) monitoring activities to advance concepts and principles of the Oklahoma Comprehensive Water Plan (OCWP). Consistent with a primary OCWP initiative, OWRB monitoring initiatives provide invaluable data crucial to the ongoing management of Oklahoma's water supplies as well as the future use and protection of the state's water resources. Oklahoma's decision-makers rely upon this information to address specific water supply, quality, infrastructure, and related concerns. Maintained by the OWRB and updated every 10 years, the OCWP serves as Oklahoma's official long-term water planning strategy. Recognizing the essential connection between sound science and effective public policy, incorporated in the Water Plan are a broad range of water resource development and protection strategies substantiated by hard data – such as that contained in this report – and supported by Oklahoma citizens.

The Beneficial Use Monitoring Program (BUMP) exists as a result of the vital economic and social importance of Oklahoma's lakes, streams, wetlands, and aquifers and the associated need for their protection and management. The data contained in this report is scientifically defensible and has been collected and analyzed following procedures outlined in Use Support Assessment Protocols (USAP), developed by OWRB with input and concurrence of Oklahoma's other environmental agencies. Specifically, USAPs establish a consistent method to determine if beneficial uses assigned for individual waters through Oklahoma Water Quality Standards (WQS) are being supported. If the OWRB BUMP report indicates that a designated beneficial use is impaired, threatened, or otherwise compromised, measures must be taken to mitigate or restore the water quality.

Traditionally, the State of Oklahoma has utilized numerous water monitoring programs conducted by individual state and federal agencies. In general, each environmental agency designs and implements its own program with only limited participation with other state, municipal, or federal entities. These programs collect information for a specific purpose or project (e.g., development of Total Maximum Daily Loads, WQS process, lake trophic status determination, water quality impact assessments from nonpoint and point source pollution, stream flow measurement, assessment of best management practices, etc.). Therefore, the information is specific to each project's data quality objectives (DQOs) and is often limited to a very small geographic area.

The specific objectives of BUMP are to detect and quantify water quality trends, document and quantify impairments of assigned beneficial uses, and identify pollution problems before they become a pollution crisis.

Beneficial Use Monitoring Program Components

Monitoring Rivers & Streams - The OWRB is currently monitoring approximately 84 stations on a 6-week rotation. Fixed station monitoring is based largely upon the 84 planning basins as outlined in the Oklahoma Comprehensive Water Plan (OCWP). In general, at least one sample station is located at the terminal end of each of the planning basins. The OWRB also conducts on-going special studies as well as 25-30 probabilistic monitoring stations annually.

Fixed Station Load Monitoring – The OWRB is currently working with several partners including the United States Geological Survey (USGS), US Army Corps of Engineers (USACE), Grand River Dam Authority (GRDA) and National Weather Service to conduct flow monitoring on all our fixed station sites that are not part of the State of Oklahoma/USGS Cooperative Gaging Network. This cooperative effort will allow for loadings to be calculated, trends to be assessed statewide and provide much needed data for the Use Support Assessment process.

Fixed Station Lakes Monitoring – As part of BUMP, the OWRB conducts sampling on lakes and reservoirs across the State of Oklahoma. To accomplish this task, the OWRB has taken a fixed station approach for the lakes monitoring program. This design allows the state's objectives to be met as well as ensure various sized waterbodies are represented adequately. The survey population includes all lakes above 50 surface acres, which encompasses approximately 206 different waterbodies. The population is then stratified into two groups – lakes greater than 500 surface acres and those below 500 surface acres. The greater than 500 surface acres group includes 68 lakes, of which approximately one-fifth are monitored annually (quarterly samples). They are then monitored again during a subsequent year in the 5-year rotation, so that each lake greater than 500 surface acres is sampled 2 non-consecutive years during each 5 year rotation. The lakes managed by our Federal partners, the USACE and Bureau of Reclamation (BOR) are included in the 68 large multipurpose lakes. Additionally, ten lakes of less than 500 surface acres are sampled annually (quarterly samples) over the 5 year sample frame. All lakes monitored have either the PPWS or SWS designation. Many of these smaller lakes have not been sampled historically through BUMP and include small municipal water supplies.

The OWRB works with other agencies, such as the USACE, for inclusion of additional information when possible on waterbodies managed by the Corps. Data collected consists primarily of water chemistry, nutrients, and chlorophyll-a information. In general, a minimum of three to five stations per reservoir are sampled depending on the size of the reservoir. Stations are located such that they represent the lacustrine, transitional, and riverine zones of the lake. On many reservoirs, additional sites are monitored, including major arms of the reservoir as appropriate. Water quality parameters have been added to the lakes sampling effort over the years to enhance program ability to make use support determinations.

Groundwater Monitoring (GMAP) – This program was made possible as result of the increase in funding received from the Oklahoma Legislature for water quality/quantity monitoring based on

recommendations of the 2012 Update of the Oklahoma Comprehensive Water Plan. These additional monies were utilized to restore funding levels of the Beneficial Use Monitoring Program as well as to implement the new groundwater program. The program prioritizes efforts on Oklahoma's 22 major groundwater aquifers, with the baseline phase completed at the conclusion of 2017 and long-term trend monitoring beginning in 2020. The baseline period focused on 4-6 aquifers per year, beginning in 2013, and assessed concentrations of nutrients, metals and major ion species. Sample size was predicated upon and proportional to the surface area of the aquifer with a general goal of 30 wells per aquifer. Some of the state's larger aquifers exceeded the goal and some of the smaller aquifers were represented by fewer wells (Table 1). At the conclusion of the baseline sampling period there were 695 wells sampled from major aquifers in the statewide groundwater quality network, with an additional 31 wells in minor aquifers. In addition, the OWRB's annual groundwater level measurement program nearly doubled in capacity from around 530 to 900 wells and has been spatially redistributed. Also over the 5-year baseline period, the OWRB installed 33 continuous water level recorders to obtain daily or hourly measurements that are more sensitive to detecting seasonal changes (brought on by drought or variable climate conditions) than can be obtained by annual measurements.

Table 1. Sample Networks Based on Aquifer Areal Extent.

Areal Extent Category	Sample Site Well Density	Sample Sizes Generated
> 5000 km^2	1 well per 150 km^2 (6 Aquifers)	37 – 89
3001 – 5000 km^2	1 well per 100 km^2 (5 aquifers)	33 – 48
1501 – 3000 km^2	1 well per 75 km^2 (6 aquifers)	25 – 33
751 – 1500 km^2	1 well per 50 km^2 (2 aquifers)	16 – 19
≤ 750 km^2	2 aquifers	6 – 10

Program History/Overview

Sampling of the numerous lakes, streams, and rivers across this state was initiated in the summer and fall of 1998. Lake sampling in connection with BUMP began in July of 1998. Sampling on numerous streams and rivers began in earnest in November of the same year. The two sampling programs, one for lakes and one for streams, had separate starting dates for a number of reasons. First, the OWRB had been conducting a lake-sampling program during the warmer summer months since 1990 as part of the Federal Clean Lakes Program. This historical lake sampling program was funded through federal dollars with the express purpose of determining lake trophic status. The trophic status of a lake can range from oligotrophic (low biological productivity) to hypereutrophic (excessive biological productivity). In general, the more productive a lake is the more water quality problems it is likely to experience. Federal dollars to fund this trophic state assessment of our state's lakes were discontinued in 1994. At that time, the OWRB

searched for other funding sources, and through working with the Secretary of the Environment and the Oklahoma Conservation Commission, the OWRB was able to obtain a one-time federal CWA 319 nonpoint source grant to continue the lake trophic state assessment program. The OWRB subsequently initiated a quarterly lake sampling program in the spring of 1998 and was able to roll the existing lake program into BUMP.

The OWRB has developed USAPs for lakes and streams, which are essential if the state is to be consistent in identifying waters that are not meeting their assigned beneficial uses or are threatened. The OWRB has incorporated the USAP into Oklahoma Administrative Code (OAC) 785:46 to ensure that consistent determinations for impairments are made by all of the monitoring agencies.

The state must follow consistent procedures for listing waters as impaired. Using the OWRB Use Support Assessment Protocols, it has been possible for OWRB staff to assess whether threats or impairments are present in our waterways. With continued funding, identification of impaired waters will be accomplished on additional waters.

Results of Sampling Efforts

Every two years, the OWRB analyzes data collected by BUMP and that data is used to identify if the waters of the state are meeting their assigned beneficial uses. If the stream/river segment is not meeting its beneficial use it is submitted for inclusion on the EPA's 303d list. The latest EPA approved 303d list of impaired waters can be found on the Oklahoma Department of Environmental Quality's website. Data Presented in this Report can be found at several links. Included in this report are the lakes and rivers monitored by the BUMP and the pertinent stream segments listed in the Oklahoma 303(d) List as not supporting their assigned beneficial uses. See the links below for additional information.

OWRB Beneficial Use Monitoring Program

Streams Monitoring - http://www.owrb.ok.gov/quality/monitoring/bumpstreams.php

Lakes Monitoring - http://www.owrb.ok.gov/quality/monitoring/bumplakes.php

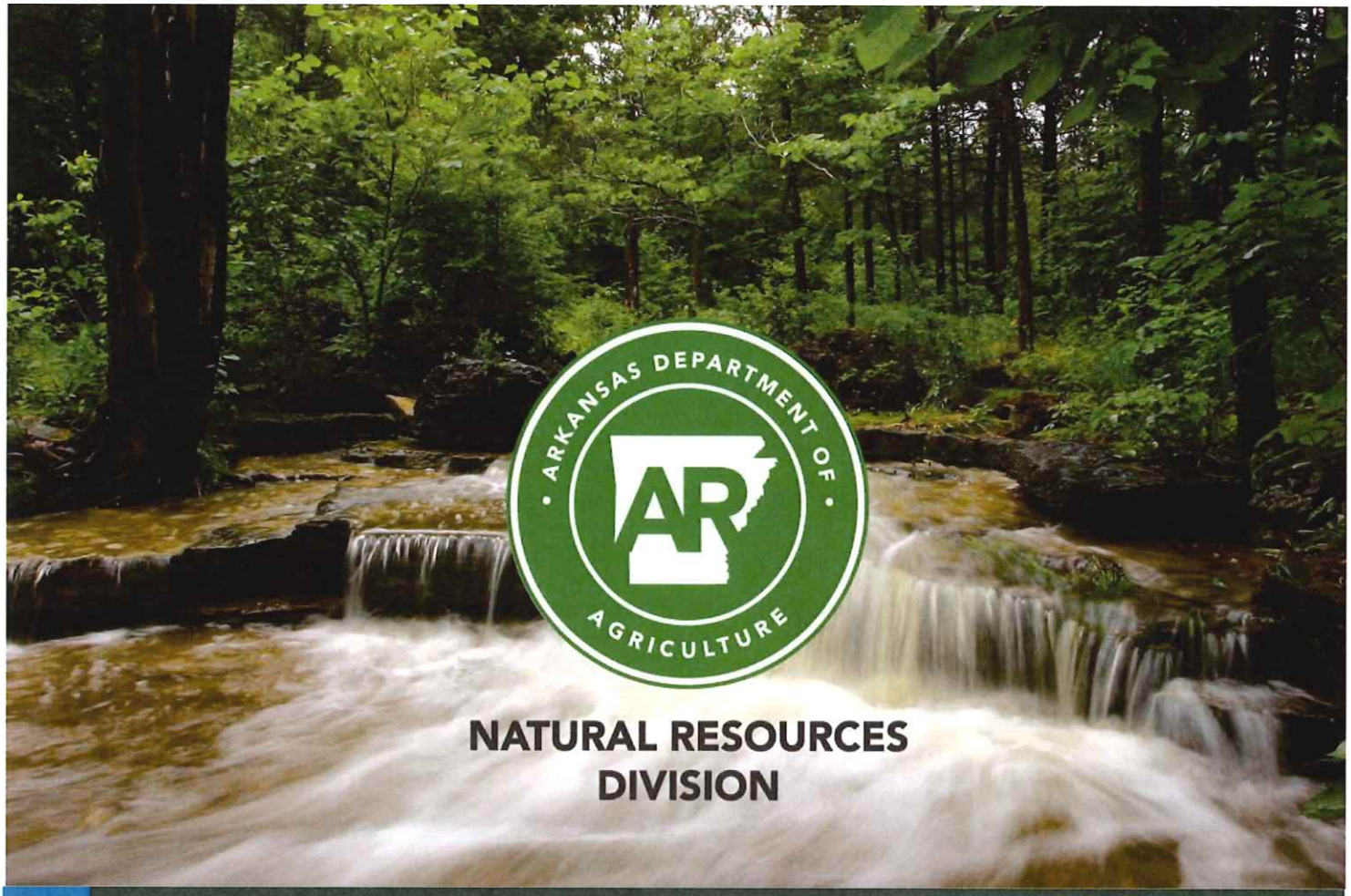
Groundwater Monitoring - http://www.owrb.ok.gov/quality/monitoring/GMAP.php

Oklahoma Department of Environmental Quality (ODEQ)

Oklahoma's 2022 Integrated Water Quality Report with Appendix C - Impaired Waterbodies 303(d) List -

https://www.deq.ok.gov/ok_2022-integrated-report_report-only-final/

https://www.deq.ok.gov/ok_2022-appendix-c-final/



2022 Arkansas Engineering Report

Prepared for the Red River Compact Annual Meeting

The Arkansas Department of Agriculture's Natural Resources Division

April 26-27, 2023

2022 Arkansas Engineering Report

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2022 Arkansas Engineering Report

Executive Summary

The Arkansas Department of Agriculture's Natural Resources Division (NRD) continues to annually evaluate streamflow in the Ouachita River, Bayou Bartholomew, Boeuf River, and Bayou Macon subbasins of the Red River Compact (Reach IV). The Red River Compact sets threshold flows for each of the subbasins. While Arkansas is allowed to freely use water in its streams, a quantity of water equal to 40 percent of the total weekly runoff is expected to be passed downstream to Louisiana when flow in the subbasins are below the threshold values.

As seen in 2022, seasonal low flow conditions historically occur during the nongrowing season in fall and winter months when surface water withdrawals are minimal. For compact considerations, we are most interested during periods when diversion is likely to occur, and flows are below the compact threshold values. Historically, this overlap of conditions can occur during the months of May and June.

A drought in April, May, and June in southeast Arkansas, as well as the last few months of 2022, drastically reduced water flow in all four subbasins due to very little precipitation; therefore, very little runoff of water occurred. Analysis of the daily water flow for the four basins, using set United States Geological Survey (USGS) Red River Compact gages, show that all four subbasins were below minimum (threshold) levels at some point in 2022. However, it is noted that for the most part during the growing season, even when the subbasin areas were in a drought, flows did not drop below the compact threshold values in the four subbasins for more than seven consecutive days, except for the period of June 16 to June 26 on the Boeuf River.

Water use registration data shows that most of the water is used during the growing season and not during the time that the four rivers historically drop below the compact threshold values for more than seven consecutive days. Despite very low flows that can be attributed to drought conditions, Arkansas managed to largely meet or exceed threshold discharge levels during the 2022 growing season.

Red River Compact Provisions

Provisions for apportionment of water in the Red River Reach IV, Sections 7.01-7.03, as contained in Article VII of the Red River Compact, are included below. Reach IV of the Red River is divided into topographic subbasins, and the water therein is allocated as follows:

Section 7.01 Subbasin I - Intrastate Streams - Arkansas

a) This subbasin includes those streams and their tributaries above last downstream major dam sites originating in Arkansas and crossing the Arkansas-Louisiana state boundary before flowing into the Red River in Louisiana. Those major last downstream dam sites are as follows: Lake Catherine (Ouachita River), DeGray Lake (Caddo River), Lake Greeson (Little Missouri River), and Lake Winona (Saline River).

b) Arkansas is apportioned the waters of this subbasin and shall have unrestricted use thereof.

Section 7.02 Subbasin II - Interstate Streams - Arkansas and Louisiana

a) This subbasin shall consist of Reach IV less subbasin I as defined in Section 7.0l (a).

b) The State of Arkansas shall have free and unrestricted use of the water of this reach subject to the limitation that Arkansas shall allow a quantity of water equal to forty (40) percent of the weekly runoff originating below or flowing from the last downstream major dam site to flow into Louisiana. Where there are no designated last downstream dam sites, Arkansas shall allow a quantity of water equal to forty (40) percent of the total weekly runoff originating above the state boundary to flow into Louisiana. Use of water in this subbasin is subject to low flow provisions of subparagraph 7.02 (b).

Section 7.03 Special Provisions

a) Arkansas may use the beds and banks of segments of Reach IV for the purpose of conveying its share of water to designated downstream diversions.

b) The State of Arkansas shall not guarantee to maintain a minimum low flow for Louisiana in Reach IV. However, on the following streams when the use of water in Arkansas reduces the flow at the Arkansas-Louisiana state boundary to the following amounts:

1) Ouachita River -780 cubic feet per second (cfs)
2) Bayou Bartholomew - 80 cfs
3) Boeuf River-40 cfs
4) Bayou Macon - 40 cfs

Red River Compact Gages

The gages utilized for the purpose of the Red River Compact are detailed below and shown on Figure 1. Compact gages are indicated by blue stars. A second United States Geological Survey (USGS) stream gage, monitored on the Boeuf River near Eudora, Arkansas, is also included for comparison purposes.

USGS 07364078—Ouachita River at Felsenthal Lock and Dam (Lower), Arkansas

- Period of Record: 10/01/2011-Current
- Latitude: 33.056111, Longitude: -92.120833 — NAD83 Union County, Arkansas
- Hydrologic Unit Code: 08040202
- Datum of Gage: 0.00 feet above NGVD29
- Arkansas-Louisiana State Boundary Flow: 780 cubic feet per second (cfs), Section 7.03 (b) (2)

USGS 07364200—Bayou Bartholomew near Jones, Louisiana

- Period of Record: 10/01/1995-Current
- Latitude: 33.990278, Longitude: -91.655556 – NAD27 Morehouse Parish, Louisiana
- Hydrologic Unit Code: 08040205
- Drainage Area: 1,187.00 square miles
- Datum of Gage: 79.21 feet above NGVD29
- Arkansas-Louisiana State Boundary Flow: 80 cfs, Section 7.03 (b) (2)

USGS 07367690—Boeuf River at Arkansas-Louisiana State Line

- Period of Record: 10/01/2011-Current
- Latitude: 33.001389, Longitude: -91.438056 – NAD83 Morehouse Parish, Louisiana
- Hydrologic Unit Code: 08050001
- Drainage Area: 721 square miles
- Datum of Gage: 79.75 feet above NAVD88
- Arkansas-Louisiana State Boundary Flow: 40 cfs, Section 7.03 (b) (2)

USGS 07369680—Bayou Macon at Eudora, Arkansas

- Chicot County, Arkansas
- Latitude: 33.101389, Longitude: -91.254444 – NAD83
- Hydrologic Unit Code: 08050002
- Datum of Gage: 80.92 feet above NGVD29
- Arkansas-Louisiana State Boundary Flow: 40 cfs, Section 7.03 (b) (2)

USGS 07367680—Boeuf River near Eudora, Arkansas (Non-Compact Gage)

- Period of Record: 8/01/2014-Current
- Latitude: 33.124167, Longitude: -91.347778 – NAD83
- Drainage Area: 623.00 square miles

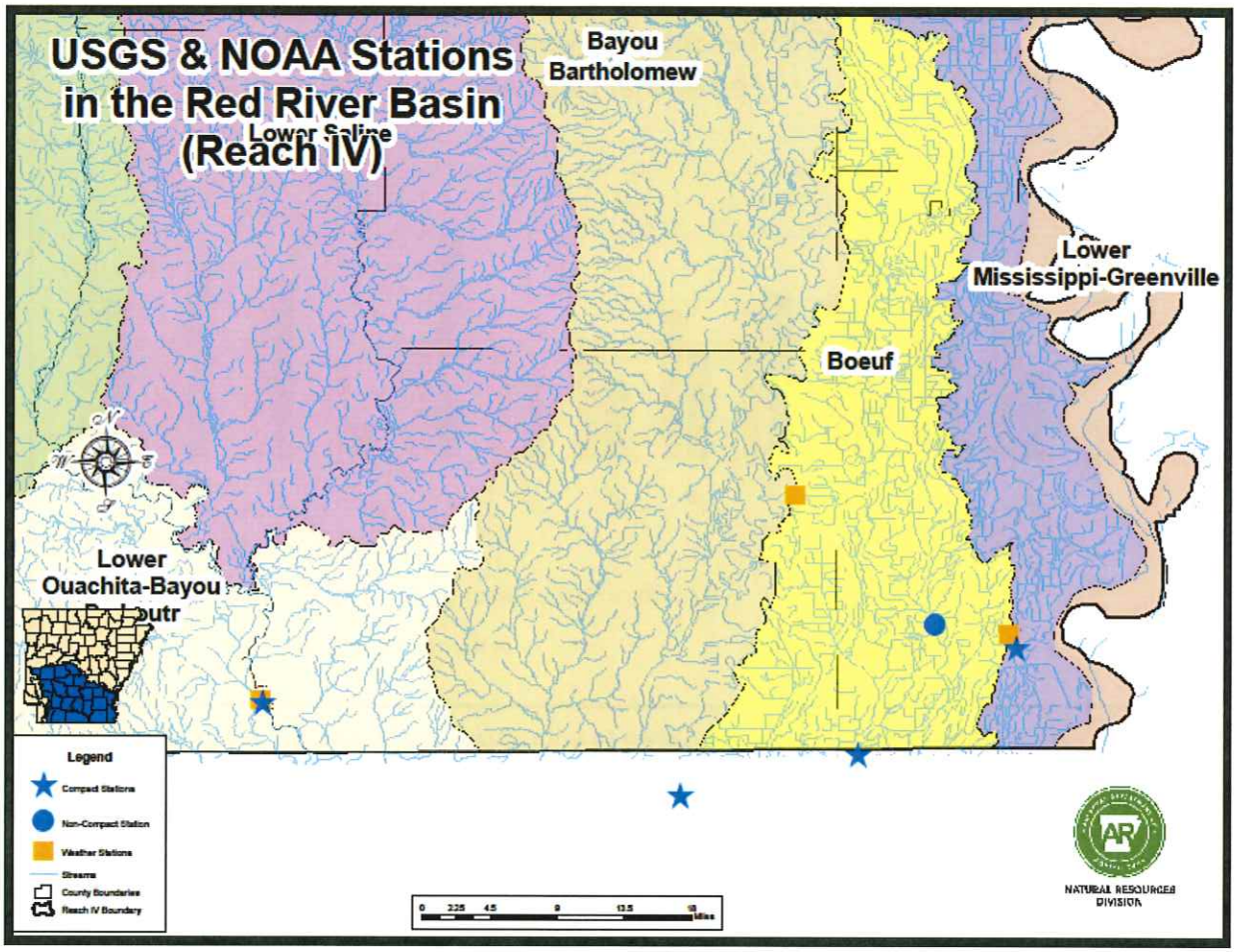


Figure 1: Location of compact and non-compact gages in the Red River Basin (Reach IV)

Precipitation Data

Quachita River Precipitation Data (Felsenthal Lock and Dam, Arkansas)

Figure 2 details the 2022 monthly precipitation data from the monitoring station on the Ouachita River at the Felsenthal Lock and Dam. Seven out of 12 months received below normal rainfall. The annual total rainfall was 0.36 inches more than normal. The summer months received less rainfall in 2022 than normal. March was the wettest month of the 2022 with over 9 inches. September was the driest month with 0.98 inches. May through July received very little precipitation as compared to the normal amount. Please note that the precipitation is what is reported. This station does not take readings on weekends.

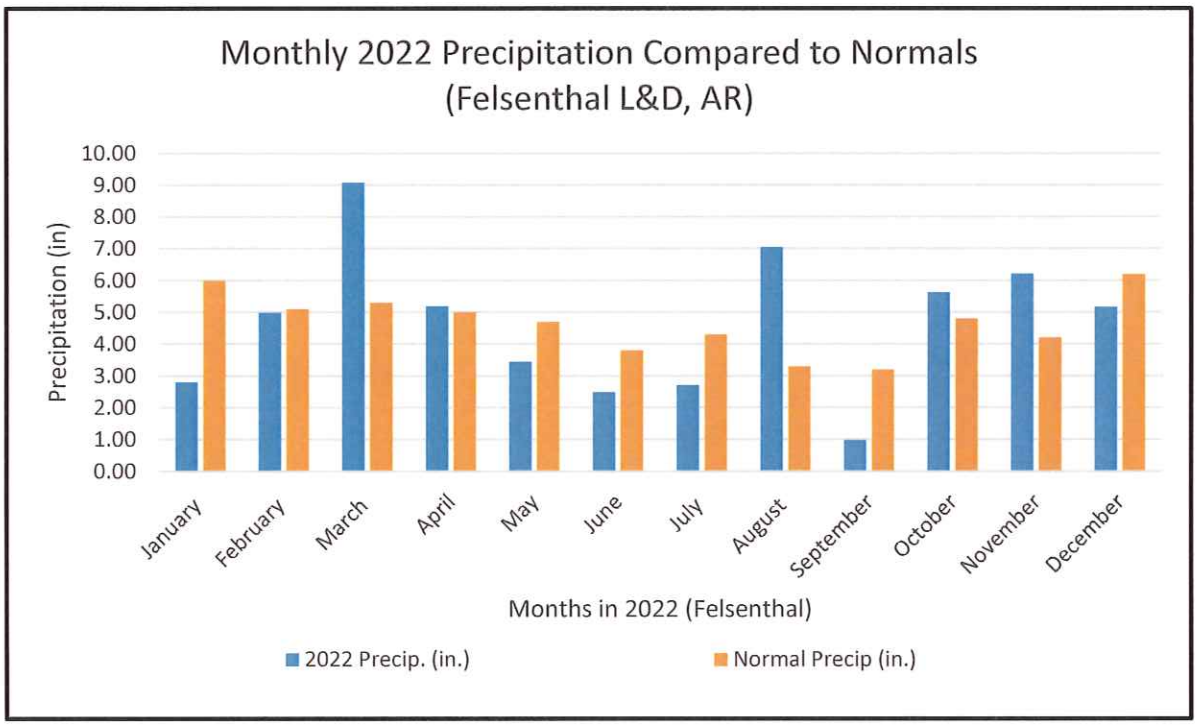


Figure 2: 2022 monthly precipitation compared to normal (Felsenthal Lock and Dam, Arkansas)

Bayou Bartholomew Precipitation Data (Portland, Arkansas)

Figure 3 details monthly precipitation and average temperature data at Bayou Bartholomew in Portland, Arkansas. The annual precipitation was 1.54 inches less than normal. Six out of 12 months received below normal rainfall. April was the wettest month of 2022 with 7.34 inches of rain. October was the driest month with 1.34 inches. September through October received very little precipitation as compared to the normal amount.

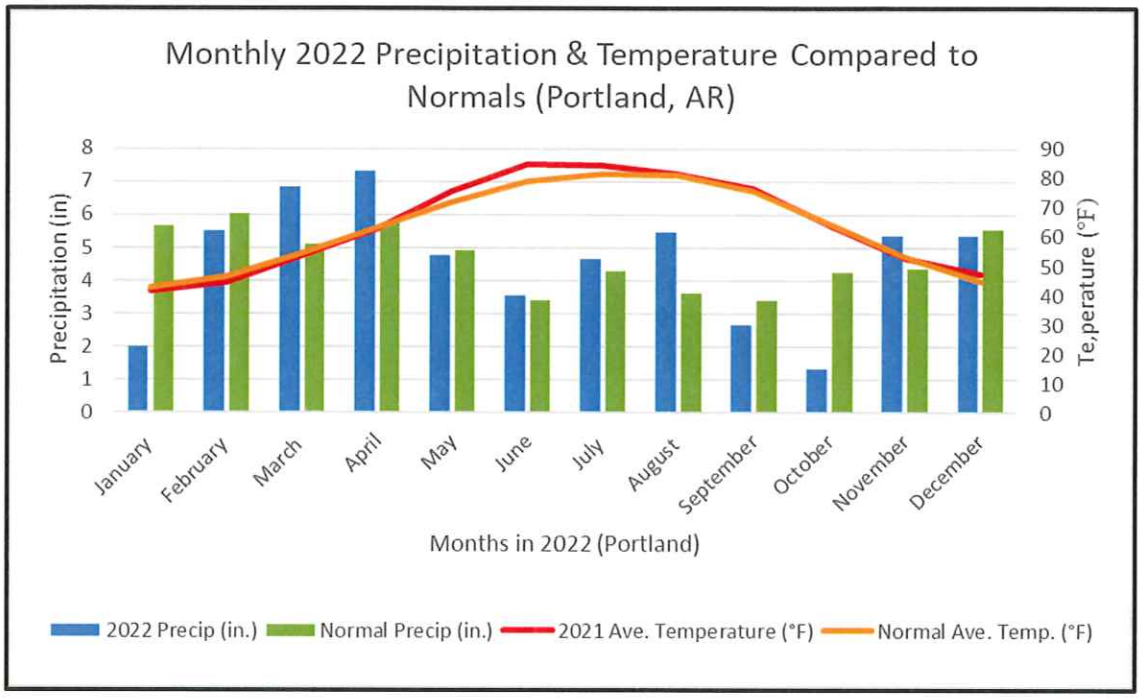


Figure 3: 2022 monthly precipitation and temperature compared to normal (Portland, Arkansas)

Boeuf River and Bayou Macon Precipitation Data (Eudora, Arkansas)

Figure 4 details monthly precipitation data from the monitoring station near the Boeuf River and Bayou Macon in Eudora, Arkansas. The annual precipitation was 5.63 less than normal. Eight out of 12 months received below normal rainfall. March was the wettest month of 2022 with 7.68 inches of rain. September was the driest month with 1.09 inches. April through June received very little precipitation as compared to the normal amount.

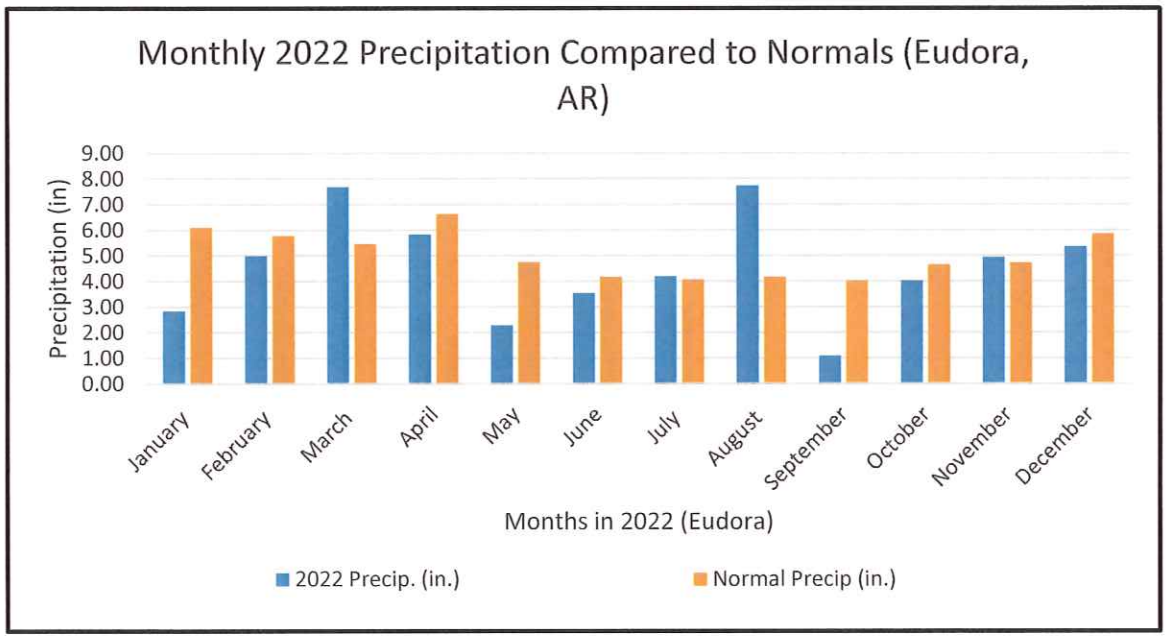


Figure 4: 2022 monthly precipitation compared to normal (Eudora, Arkansas)

2022 Drought Conditions

The majority of Arkansas experienced abnormally dry conditions variously throughout the year. From January through May approximately 30 percent of the state experienced a moderate to extreme drought. The majority of Arkansas experienced droughts ranging from moderate to extreme conditions from July through December with more than 50 percent of the state experiencing severe drought conditions during that time. All graphics for the 2022 drought conditions for Arkansas were obtained from the National Integrated Drought Information System (NIDIS) online.

Ouachita River Drought Monitoring Data (Felsenthal Lock and Dam, Arkansas)

Since the majority of the Lower Ouachita- Bayou De Loutre (Ouachita River) subbasin is in Union County, Union County was used to research 2022 drought data. Figure 5 shows the 2022 drought conditions for the Ouachita River at Felsenthal Lock and Dam. While at various times during 2022, Union County experienced dry conditions, the majority of January to May saw extreme to moderate drought conditions, and even some moderate drought conditions from October to December.

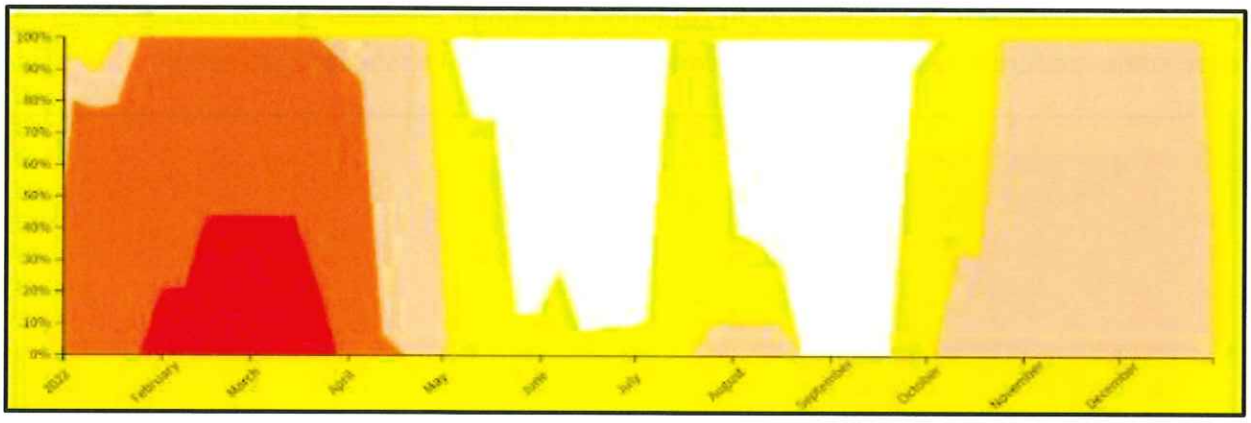


Figure 5: 2022 drought conditions for Ouachita River at Felsenthal Lock and Dam (Union County)

Bayou Bartholomew Drought Monitoring Data (Portland, Arkansas)

Bayou Bartholomew subbasin drought monitoring data was like the Ouachita River data (Figure 5). Since the United States Geological Survey (USGS) station for the subbasin is in Ashley County, Ashley County was used to research 2022 drought conditions. Figure 6 shows the 2022 drought conditions for Ashley County. While at various times during 2022, Ashley County experienced dry conditions, the majority of January to May saw extreme to moderate drought conditions, and even moderate to severe drought conditions from mid-October to December.

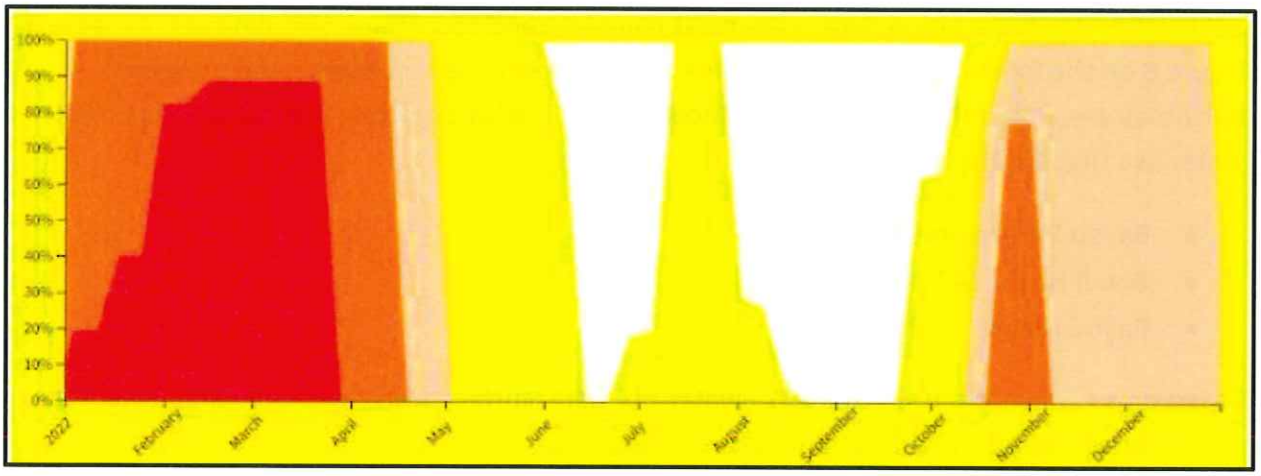


Figure 6: 2022 drought conditions for Bayou Bartholomew (Ashley County)

Boeuf River and Bayou Macon Drought Monitoring Data (Chicot County)

The Boeuf River and Bayou Macon drought monitoring data resembles the previous sets of data. Since the USGS station for the subbasin is in Chicot County, Chicot County was used to research 2022 drought condition. Figure 7 shows the 2022 drought conditions for Chicot County. While at various times during 2022, Chicot County experienced dry conditions, the

majority of January to April saw drought conditions ranging from moderate to extreme, and even some moderate to severe drought conditions from mid-October to December.

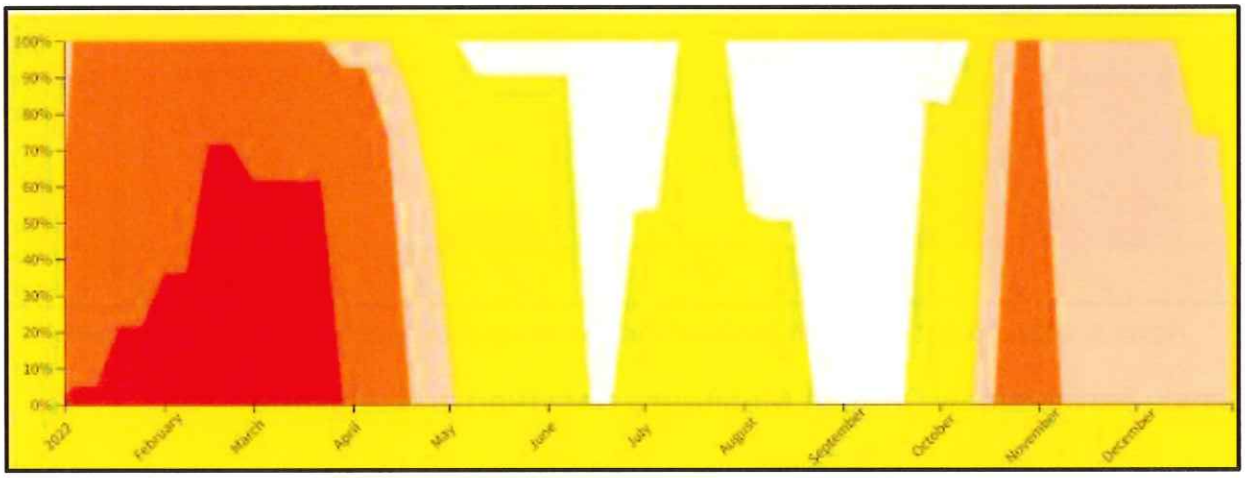


Figure 7: 2022 drought conditions for Boeuf and Bayou Macon (Chicot County)

Water Use Registration Data

The water use registration data from 2020 and 2021 was due in March 2022. Currently, the 2019 water use registration data is the most complete and comprehensive data set. As seen in Figure 8 on the following page, much of the surface water use is concentrated in Bayou Bartholomew, Boeuf River, and Bayou Macon. Below is a list depicting the number of surface water use sites for these areas:

- Bayou Bartholomew: 114 sites
- Boeuf River: 243 sites
- Bayou Macon: 245 sites

Based on a review of the specific 2019 water use data, surface water withdrawals primarily occur during the growing season (May to September).

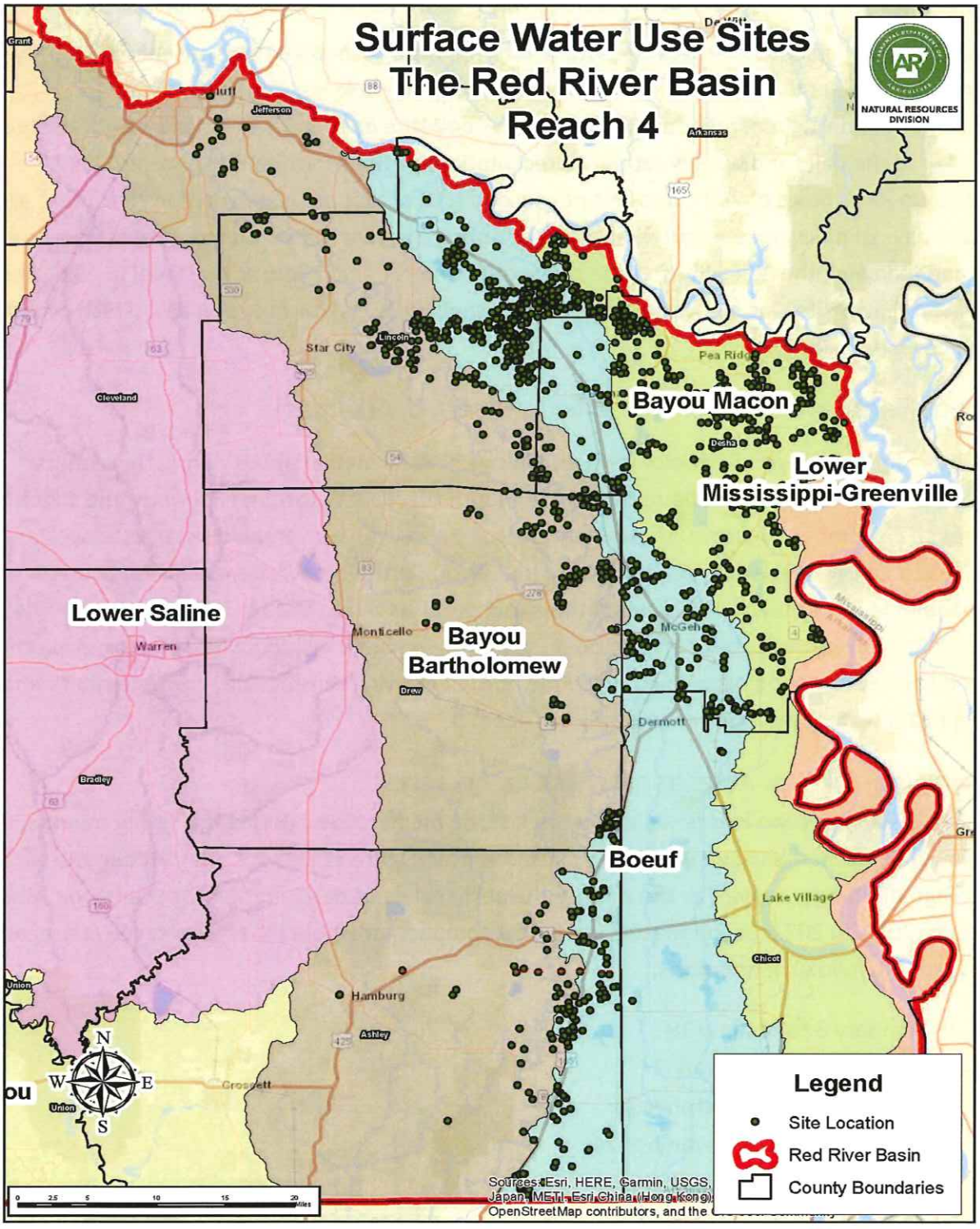


Figure 8: Surface water use sites in the Red River Basin (Reach IV)

River Flow Assessments

Ouachita River Flow Assessment (Felsenthal Lock and Dam, Arkansas)

In 2022, the Ouachita River was consistent with the historic median flows except for January through March and August through September, which were lower than normal due to documented drought conditions. Figure 9 shows both the daily and weekly average discharge, as well as the daily and weekly totals of precipitation for the Ouachita River site for 2022. Ouachita River flows of 780 cubic feet per second (cfs) or less are highlighted in red. There are many days of null values reported at the gage during the year. Based on a review of flow prior to and following the null values, these represent periods of high flow at the gage. In 2022, the Ouachita River site was below the compact threshold (780 cfs) for only one day, which occurred on February 1, 2022.

Bayou Bartholomew Flow Assessment (Portland, Arkansas)

In 2022, flows in Bayou Bartholomew were above historic median flows during the summer months, and below median flows during the months of January through February and October through November. Figure 10 shows both the daily and weekly average discharge, as well as the daily and weekly totals of precipitation for the Bayou Bartholomew site for 2022. Bayou Bartholomew was below the compact threshold of 80 cfs from October 26 to November 9 (45 days). The seven weeks between October 26 and November 9 included little or no precipitation. In addition, this period occurred outside the normal growing season (May to September) when significant water diversions are unlikely to occur.

Bayou Macon Flow Assessment (Eudora, Arkansas)

In 2022, Bayou Macon had flows above the historic median flows during the spring months, and below historic median flows during the fall and winter. Figure 11 shows both the daily and weekly average discharge, as well as the daily and weekly totals of precipitation for the Bayou Macon site for 2022. In 2022, Bayou Macon was below compact threshold (40 cfs) for seven consecutive days on the following occasions:

- January 3 to January 19
- January 23 to February 2
- September 24 to October 28
- November 15 to November 24
- December 6 to December 13

The periods noted above occurred during times of little or no precipitation. In addition, each period occurred outside the normal growing season (May to September) when significant water diversions are unlikely to occur.

Boeuf River Flow Assessment (Eudora, Arkansas)

In 2022, the Boeuf River, at the Arkansas-Louisiana state line compact gage and a United States Geological Survey (USGS) gage near Eudora, Arkansas, both had discharges above the historic median flows during the summer months except for June 16 to June 26, and below historic median flows during the winter. There are many days of null values reported at the Boeuf River at the Arkansas-Louisiana state line gage during the year. Based on a review of flow prior to and following the null values, these represent periods of high flow at the gage. Figure 12 shows both the daily and weekly average discharge, as well as the daily and weekly totals of precipitation for the Boeuf River at the Arkansas-Louisiana state line site for 2022.

In 2022, the Boeuf River at the Arkansas-Louisiana state line site was below compact threshold (40 cfs) for seven consecutive days on the following occasions:

- June 16 to June 26
- September 21 to November 5
- November 14 to November 24

For comparison purposes, Figure 13 shows both the daily and weekly average discharge, as well as the daily and weekly totals of precipitation for the Boeuf River near Eudora, Arkansas for 2022. In 2022, the flow of the Boeuf River near Eudora was below 40 cfs for seven consecutive days on the following occasions:

- June 16 to June 26
- September 17 to November 5
- November 18 to November 24
- December 22 to December 29

The periods noted for both gages detailed above occurred during times of little or no precipitation. In addition, each period except June 16 to June 26 occurred outside the normal growing season (May to September) when significant water diversions are unlikely to occur.

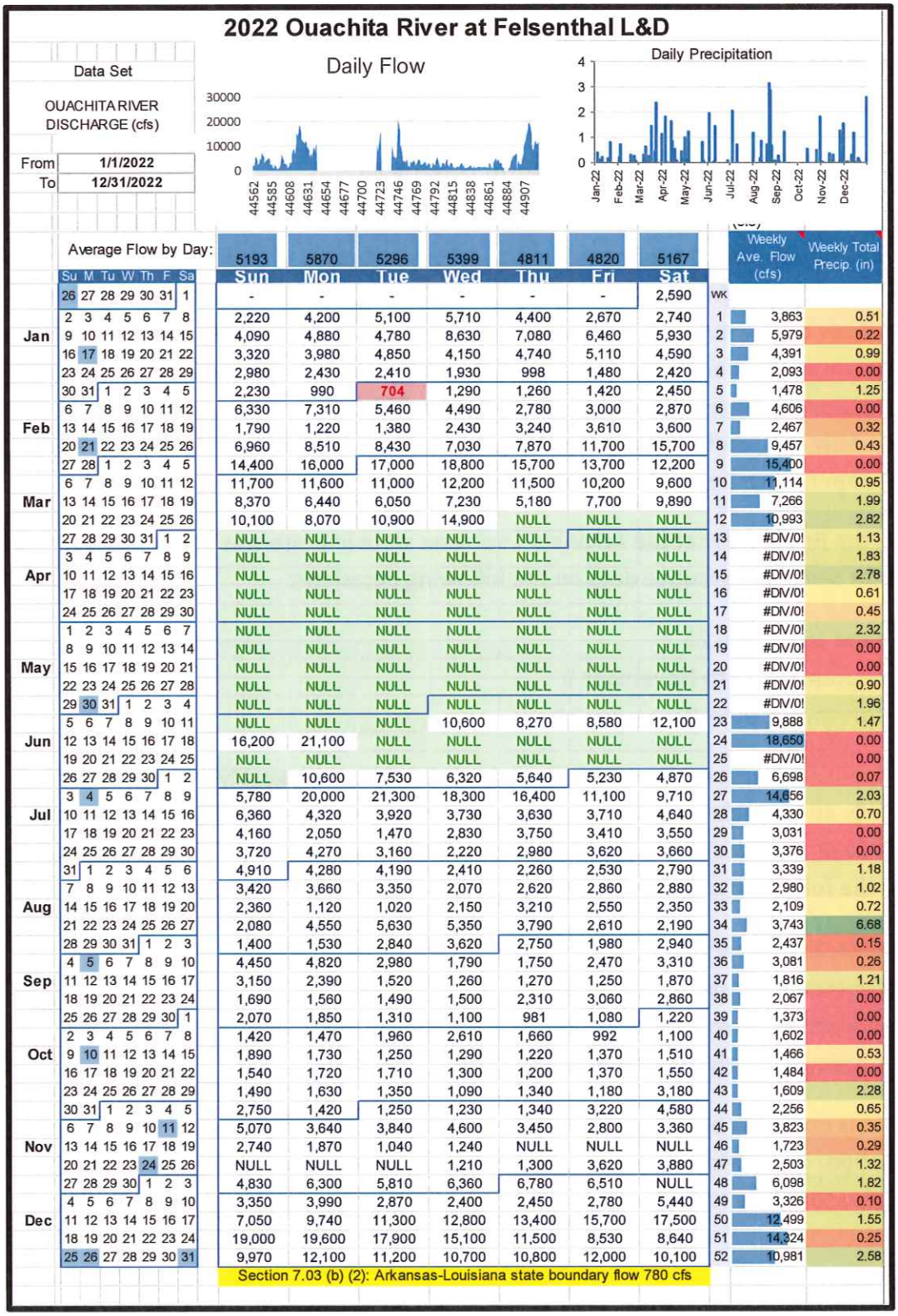


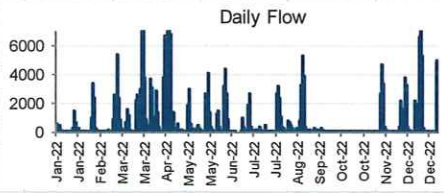
Figure 9: 2022 Ouachita River at Felsenthal Lock and Dam Streamflow/Precipitation

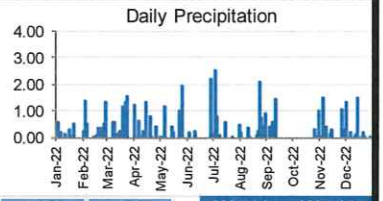
2022 Arkansas Engineering Report

2022 Bayou Bartholomew Near Jones, LA Site ID: 07364200

Data Set: BAYOU BART DISCHARGE (cfs)

From 1/1/2022
To 12/31/2022

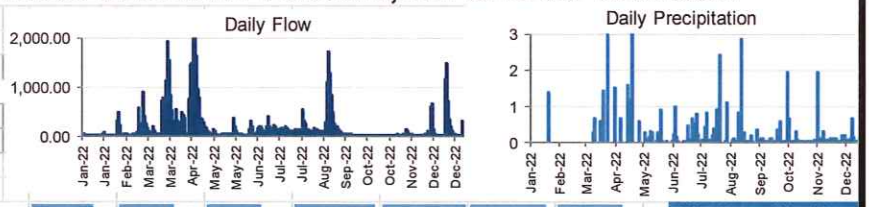




	Average Flow by Day:	1,883	1,880	1,878	1,886	1,885	1,887	1,855		Weekly	Weekly
Dec	Su M Tu W Th F Sa	Sun	Mon	Tue	Wed	Thu	Fri	Sat	wk	Ave. Flow	Total Precip.
Jan	26 27 28 29 30 31 1	-	-	-	-	-	-	156			
	2 3 4 5 6 7 8	202	246	286	323	356	376	384	1	156	1.02
	9 10 11 12 13 14 15	385	380	373	369	368	366	364	2	310	0.15
	16 17 18 19 20 21 22	360	352	341	327	319	299	276	3	372	0.82
	23 24 25 26 27 28 29	260	252	252	260	274	292	310	4	325	0.00
Feb	30 31 1 2 3 4 5	327	340	347	349	378	423	432	5	271	2.14
	6 7 8 9 10 11 12	451	467	475	500	511	528	553	6	371	0.00
	13 14 15 16 17 18 19	574	585	593	592	591	583	574	7	498	0.41
	20 21 22 23 24 25 26	571	579	585	609	608	601	595	8	585	2.76
Mar	27 28 1 2 3 4 5	657	718	782	874	976	1,080	1,180	9	593	0.20
	6 7 8 9 10 11 12	1,270	1,330	1,370	1,410	1,420	1,430	1,450	10	895	1.31
	13 14 15 16 17 18 19	1,460	1,470	1,480	1,480	1,460	1,480	1,480	11	1,383	1.39
	20 21 22 23 24 25 26	1,480	1,480	1,590	1,820	1,920	2,040	2,210	12	1,473	2.92
Apr	27 28 29 30 31 1 2	2,410	2,610	2,770	2,890	2,990	3,060	3,120	13	1,791	1.21
	3 4 5 6 7 8 9	3,190	3,260	3,340	3,400	3,490	3,600	3,700	14	2,836	0.65
	10 11 12 13 14 15 16	3,770	3,790	3,790	3,780	3,810	3,750	3,770	15	3,426	2.69
	17 18 19 20 21 22 23	3,970	3,960	3,910	3,900	3,910	3,910	3,900	16	3,780	0.79
	24 25 26 27 28 29 30	3,870	3,830	3,770	3,700	3,620	3,540	3,460	17	3,923	0.41
May	1 2 3 4 5 6 7	3,380	3,300	3,210	3,110	3,010	2,930	2,810	18	3,684	1.22
	8 9 10 11 12 13 14	2,700	2,590	2,490	2,380	2,290	2,190	2,090	19	3,107	0.43
	15 16 17 18 19 20 21	2,000	1,930	1,870	1,840	1,820	1,820	1,820	20	2,390	0.18
	22 23 24 25 26 27 28	1,850	1,860	1,870	1,980	1,980	1,970	1,960	21	1,871	2.93
Jun	29 30 31 1 2 3 4	1,960	1,940	1,900	1,860	1,810	1,790	1,720	22	1,924	0.26
	5 6 7 8 9 10 11	1,630	1,540	1,460	1,380	1,300	1,290	1,270	23	1,854	0.25
	12 13 14 15 16 17 18	1,260	1,280	1,330	1,430	1,540	1,660	1,790	24	1,410	0.00
	19 20 21 22 23 24 25	1,900	1,990	2,050	2,090	2,100	2,100	2,070	25	1,470	0.00
Jul	26 27 28 29 30 1 2	2,030	2,020	1,950	1,860	1,750	1,630	1,520	26	2,043	2.35
	3 4 5 6 7 8 9	1,400	1,300	1,210	1,130	1,090	1,080	1,050	27	1,823	3.36
	10 11 12 13 14 15 16	1,000	926	827	719	610	513	434	28	1,180	0.55
	17 18 19 20 21 22 23	370	325	271	223	194	174	156	29	718	0.01
	24 25 26 27 28 29 30	142	131	120	112	109	115	146	30	245	0.46
Aug	31 1 2 3 4 5 6	164	159	179	232	297	357	397	31	125	0.36
	7 8 9 10 11 12 13	422	434	445	451	454	455	451	32	255	0.40
	14 15 16 17 18 19 20	439	422	405	391	380	363	350	33	445	0.08
	21 22 23 24 25 26 27	339	353	481	699	724	720	714	34	393	3.53
Sep	28 29 30 31 1 2 3	704	683	647	600	552	498	443	35	576	1.69
	4 5 6 7 8 9 10	385	333	291	261	234	207	189	36	590	2.10
	11 12 13 14 15 16 17	183	190	210	232	242	233	213	37	271	0.16
	18 19 20 21 22 23 24	189	165	143	125	110	98	88	38	215	0.00
Oct	25 26 27 28 29 30 1	81	74	68	64	60	57	55	39	131	0.00
	2 3 4 5 6 7 8	53	52	51	51	50	49	48	40	66	0.00
	9 10 11 12 13 14 15	47	46	45	43	39	37	36	41	51	0.00
	16 17 18 19 20 21 22	36	35	34	32	29	26	26	42	42	0.00
	23 24 25 26 27 28 29	25	24	24	24	24	30	33	43	31	0.35
Nov	30 31 1 2 3 4 5	35	30	21	21	24	24	41	44	26	2.52
	6 7 8 9 10 11 12	48	50	50	51	87	209	330	45	28	0.78
	13 14 15 16 17 18 19	396	418	402	358	307	257	211	46	118	0.34
	20 21 22 23 24 25 26	176	150	136	135	141	157	162	47	336	1.08
Dec	27 28 29 30 1 2 3	163	157	148	160	190	223	282	48	151	1.62
	4 5 6 7 8 9 10	339	387	423	440	441	434	420	49	189	0.21
	11 12 13 14 15 16 17	407	397	404	555	594	618	666	50	412	1.67
	18 19 20 21 22 23 24	720	770	815	850	885	922	960	51	520	0.26
	25 26 27 28 29 30 31	996	1,030	1,060	1,090	1,110	1,160	1,250	52	846	0.02
		Section 7.03 (b) (2): Arkansas-Louisiana state boundary flow 80 cfs								1,099	0.00

Figure 10: 2022 Bayou Bartholomew Streamflow/Precipitation

2022 BAYOU MACON AT EUDORA, AR SITE ID: 07369680



Data Set: BAYOU MACON DISCHARGE (cfs)

From 1/1/2022
To 12/31/2022

Annual Flow by Day: 186 163 162 239 248 226 191

	Su	M	Tu	W	Th	F	Sa	Sun	Mon	Tue	Wed	Thu	Fri	Sat	WK	Weekly Ave. Flow	Weekly Total Precip.
Dec	26	27	28	29	30	31	1	-	-	-	-	-	-	17			
Jan	2	3	4	5	6	7	8	62	26	17	15	14	13	13	1	23	0.00
	9	10	11	12	13	14	15	12	12	12	12	12	11	11	2	12	0.00
	16	17	18	19	20	21	22	12	12	12	19	72	77	46	3	36	1.40
	23	24	25	26	27	28	29	23	18	15	14	13	11	11	4	15	0.00
	30	31	1	2	3	4	5	11	11	16	38	323	510	248	5	165	0.00
Feb	6	7	8	9	10	11	12	81	45	31	40	60	52	50	6	51	0.00
	13	14	15	16	17	18	19	38	21	14	13	20	50	38	7	28	0.00
	20	21	22	23	24	25	26	22	69	85	572	315	266	238	8	224	0.00
	27	28	1	2	3	4	5	898	736	411	250	196	161	121	9	396	0.00
Mar	6	7	8	9	10	11	12	89	85	93	192	122	80	70	10	104	1.00
	13	14	15	16	17	18	19	56	37	46	43	28	733	799	11	249	2.05
	20	21	22	23	24	25	26	677	612	1,140	1,920	1,560	1,150	851	12	1,130	3.00
	27	28	29	30	31	1	2	528	279	203	310	547	325	213	13	344	1.50
Apr	3	4	5	6	7	8	9	170	128	278	493	442	392	183	14	298	0.70
	10	11	12	13	14	15	16	66	52	61	755	1,450	1,190	1,490	15	723	2.80
	17	18	19	20	21	22	23	2,270	2,080	1,630	1,230	959	801	549	16	1,360	5.00
	24	25	26	27	28	29	30	385	345	306	252	215	168	114	17	255	1.00
	1	2	3	4	5	6	7	89	77	66	61	59	149	115	18	88	0.74
May	8	9	10	11	12	13	14	68	52	43	40	38	37	48	19	47	0.65
	15	16	17	18	19	20	21	48	48	50	47	45	46	47	20	47	1.39
	22	23	24	25	26	27	28	57	66	61	235	390	216	103	21	161	0.07
	29	30	31	1	2	3	4	72	60	52	44	44	43	43	22	51	1.57
Jun	5	6	7	8	9	10	11	43	37	24	24	37	160	327	23	93	0.00
	12	13	14	15	16	17	18	207	90	55	45	34	87	180	24	100	0.55
	19	20	21	22	23	24	25	197	202	177	148	121	116	128	25	156	1.78
	26	27	28	29	30	1	2	193	413	297	211	178	158	187	26	234	1.19
Jul	3	4	5	6	7	8	9	242	209	175	160	156	148	156	27	178	1.47
	10	11	12	13	14	15	16	172	164	131	159	200	166	137	28	161	1.63
	17	18	19	20	21	22	23	141	125	103	115	120	124	150	29	125	3.04
	24	25	26	27	28	29	30	152	139	110	121	141	113	287	30	152	1.44
	31	1	2	3	4	5	6	542	328	261	197	159	141	129	31	251	0.25
Aug	7	8	9	10	11	12	13	124	116	110	147	164	141	146	32	135	4.63
	14	15	16	17	18	19	20	130	127	115	114	103	102	117	33	115	0.56
	21	22	23	24	25	26	27	116	295	1,110	1,720	1,650	1,280	844	34	1,002	0.36
	28	29	30	31	1	2	3	511	354	267	217	196	176	152	35	268	0.79
Sep	4	5	6	7	8	9	10	125	97	82	72	65	60	60	36	80	0.08
	11	12	13	14	15	16	17	70	62	54	51	45	43	43	37	53	0.30
	18	19	20	21	22	23	24	43	41	40	40	42	42	39	38	41	1.36
	25	26	27	28	29	30	1	36	36	36	38	37	36	32	39	36	2.80
Oct	2	3	4	5	6	7	8	30	32	32	30	29	30	30	40	30	0.42
	9	10	11	12	13	14	15	31	29	27	26	29	32	33	41	30	0.16
	16	17	18	19	20	21	22	36	35	35	36	35	34	32	42	35	0.00
	23	24	25	26	27	28	29	31	31	33	36	36	35	40	43	35	0.23
	30	31	1	2	3	4	5	44	40	37	36	40	45	68	44	44	2.37
Nov	6	7	8	9	10	11	12	54	132	117	68	49	41	44	45	72	0.56
	13	14	15	16	17	18	19	43	40	38	30	26	24	24	46	32	0.46
	20	21	22	23	24	25	26	26	27	27	27	32	59	66	47	38	0.39
	27	28	29	30	1	2	3	117	79	51	619	667	366	157	48	294	0.86
Dec	4	5	6	7	8	9	10	73	46	34	33	32	29	25	49	39	1.31
	11	12	13	14	15	16	17	24	24	31	1,160	1,480	1,220	732	50	667	2.01
	18	19	20	21	22	23	24	341	210	157	109	66	53	37	51	139	3.26
	25	26	27	28	29	30	31	29	27	23	20	18	209	310	52	91	0.64

Section 7.03 (b) (2): Arkansas-Louisiana state boundary flow 40 cfs

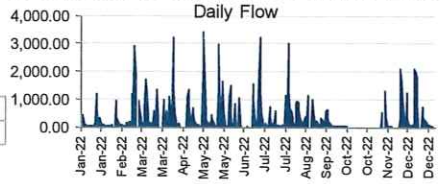
Figure 11: 2022 Bayou Macon at Eudora Streamflow/Precipitation

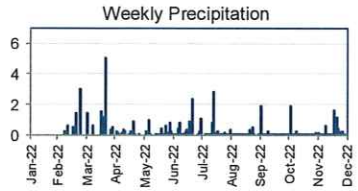
2022 Arkansas Engineering Report

2022 Boeuf River at AR/LA State Line Site ID: 07367690

Data Set
BOEUF RIVER (SL) DISCHARGE (cfs)

From 1/1/2022
To 12/31/2022





	Su	M	Tu	W	Th	F	Sa	Sun	Mon	Tue	Wed	Thu	Fri	Sat	wk	Weekly Ave. Flow	Weekly Total Precip.
Ave. Flow by Day:								1,317	1,373	1,307	1,377	1,349	1,421	1,390			
Dec	26	27	28	29	30	31	1	-	-	-	-	-	-	638			
Jan	2	3	4	5	6	7	8	291	449	264	130	81	57	51	1	189	0.00
	9	10	11	12	13	14	15	53	37	28	24	31	36	29	2	34	0.00
	16	17	18	19	20	21	22	129	1,180	680	257	322	354	190	3	445	1.40
	23	24	25	26	27	28	29	104	71	72	59	38	31	25	4	57	0.00
	30	31	1	2	3	4	5	23	24	62	110	null	null	null	5	55	0.00
Feb	6	7	8	9	10	11	12	947	408	230	163	103	86	78	6	288	0.00
	13	14	15	16	17	18	19	60	47	36	59	156	125	143	7	89	0.00
	20	21	22	23	24	25	26	203	181	195	1,190	977	2,900	1,980	8	1,089	0.00
	27	28	1	2	3	4	5	null	null	null	968	582	330	201	9	520	0.00
Mar	6	7	8	9	10	11	12	148	125	584	1,700	1,270	557	229	10	659	1.00
	13	14	15	16	17	18	19	140	104	124	160	610	null	null	11	228	2.05
	20	21	22	23	24	25	26	1,370	506	null	null	null	null	null	12	938	3.00
	27	28	29	30	31	1	2	1,020	494	293	569	null	null	1,110	13	697	1.50
Apr	3	4	5	6	7	8	9	427	225	999	3,240	1,520	482	227	14	1,017	0.70
	10	11	12	13	14	15	16	154	106	133	null	null	null	null	15	131	2.80
	17	18	19	20	21	22	23	null	null	null	null	1,090	1,370	799	16	1,086	5.00
	24	25	26	27	28	29	30	368	319	685	531	247	154	97	17	343	1.00
	1	2	3	4	5	6	7	99	76	44	33	38	2,010	3,400	18	814	0.74
May	8	9	10	11	12	13	14	2,310	724	277	164	149	145	118	19	555	0.65
	15	16	17	18	19	20	21	232	421	260	119	43	18	23	20	159	1.39
	22	23	24	25	26	27	28	1,190	2,950	1,410	null	null	1,630	542	21	1,544	0.07
	29	30	31	1	2	3	4	204	99	54	42	47	1,120	1,490	22	437	1.57
Jun	5	6	7	8	9	10	11	434	110	15	3	861	null	null	23	285	0.00
	12	13	14	15	16	17	18	0	1,050	279	76	9	0	0	24	202	0.55
	19	20	21	22	23	24	25	0	1	19	7	6	1	0	25	5	1.78
	26	27	28	29	30	1	2	7	1,530	1,070	480	102	32	217	26	491	1.19
Jul	3	4	5	6	7	8	9	2,110	3,230	1,340	479	212	90	52	27	1,073	1.47
	10	11	12	13	14	15	16	133	126	44	105	768	396	144	28	245	1.63
	17	18	19	20	21	22	23	72	38	234	573	127	51	41	29	162	3.04
	24	25	26	27	28	29	30	64	59	60	74	80	95	1,170	30	229	1.44
	31	1	2	3	4	5	6	null	null	3,000	1,360	702	600	412	31	1,215	0.25
Aug	7	8	9	10	11	12	13	184	116	91	822	939	880	704	32	534	4.63
	14	15	16	17	18	19	20	402	235	153	143	219	384	395	33	276	0.56
	21	22	23	24	25	26	27	407	1,160	null	null	null	null	1,020	34	862	0.36
	28	29	30	31	1	2	3	487	247	209	221	169	124	106	35	223	0.79
Sep	4	5	6	7	8	9	10	129	365	306	248	188	128	569	36	276	0.08
	11	12	13	14	15	16	17	642	357	205	126	87	71	59	37	221	0.30
	18	19	20	21	22	23	24	56	49	40	34	32	27	22	38	37	1.36
	25	26	27	28	29	30	1	19	19	18	17	15	14	13	39	16	2.80
Oct	2	3	4	5	6	7	8	12	11	11	10	9	9	9	40	10	0.42
	9	10	11	12	13	14	15	9	8	8	8	8	8	7	41	8	0.16
	16	17	18	19	20	21	22	6	6	5	4	3	3	3	42	4	0.00
	23	24	25	26	27	28	29	3	2	2	2	1	0	0	43	1	0.23
	30	31	1	2	3	4	5	0	0	0	0	0	0	0	44	0	2.37
Nov	6	7	8	9	10	11	12	560	null	null	null	1,300	320	110	45	573	0.56
	13	14	15	16	17	18	19	46	25	21	13	9	7	4	46	18	0.46
	20	21	22	23	24	25	26	4	4	4	3	4	284	2,120	47	346	0.39
	27	28	29	30	1	2	3	1,680	876	366	null	null	1,230	385	48	907	0.86
Dec	4	5	6	7	8	9	10	156	89	61	74	84	128	2,090	49	383	1.31
	11	12	13	14	15	16	17	2,000	1,790	919	null	null	null	null	50	1,570	2.01
	18	19	20	21	22	23	24	739	390	279	227	170	131	98	51	291	3.26
	25	26	27	28	29	30	31	76	63	59	55	56	null	null	52	62	0.64

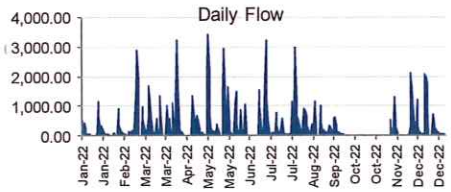
Section 7.03 (b) (2): Arkansas-Louisiana state boundary flow 40 cfs

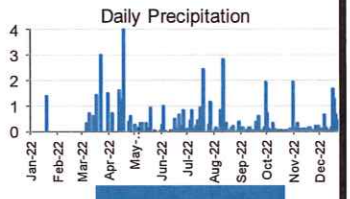
Figure 12: 2022 Boeuf River at Arkansas-Louisiana State Line Threshold Streamflow

2022 Boeuf River near Eudora, Arkansas Site ID:07367680

Data Set
UF RIVER (Eudora) DISCHARGE

From 1/1/2022
To 12/31/2022





	Su	M	Tu	W	Th	F	Sa	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Wk	Weekly Ave. Flow	Weekly Total Precip.
Dec	26	27	28	29	30	31	1	-	-	-	-	-	-	602			
Jan	2	3	4	5	6	7	8	348	531	322	177	97	85	83	1	235	0.00
	9	10	11	12	13	14	15	69	60	58	50	72	68	52	2	61	0.00
	16	17	18	19	20	21	22	265	1,480	690	264	274	329	206	3	501	1.40
	23	24	25	26	27	28	29	124	84	76	49	50	34	36	4	65	0.00
	30	31	1	2	3	4	5	34	31	60	90	998	3,360	2,400	5	996	0.00
Feb	6	7	8	9	10	11	12	845	318	194	132	84	70	58	6	243	0.00
	13	14	15	16	17	18	19	62	42	30	62	126	92	147	7	80	0.00
	20	21	22	23	24	25	26	154	127	124	552	865	2,540	1,790	8	879	0.00
	27	28	1	2	3	4	5	4,910	5,350	2,400	858	437	250	149	9	2,051	0.00
Mar	6	7	8	9	10	11	12	105	111	661	1,610	1,170	367	174	10	600	1.00
	13	14	15	16	17	18	19	117	89	89	103	449	2,200	2,620	11	810	2.05
	20	21	22	23	24	25	26	1,180	323	3,010	8,520	8,620	7,000	3,780	12	4,633	3.00
	27	28	29	30	31	1	2	858	361	209	487	3,740	3,130	958	13	1,392	1.50
Apr	3	4	5	6	7	8	9	297	163	1,040	2,890	1,390	365	187	14	905	0.70
	10	11	12	13	14	15	16	116	84	128	3,770	6,670	5,870	5,030	15	3,095	2.80
	17	18	19	20	21	22	23	8,370	8,210	6,780	3,050	733	1,390	660	16	4,170	5.00
	24	25	26	27	28	29	30	304	280	588	431	227	147	127	17	301	1.00
	1	2	3	4	5	6	7	156	110	71	53	82	1,880	3,040	18	770	0.74
May	8	9	10	11	12	13	14	2,150	633	270	200	181	168	147	19	536	0.65
	15	16	17	18	19	20	21	291	435	277	155	105	74	91	20	204	1.39
	22	23	24	25	26	27	28	1,350	2,690	1,290	2,880	4,110	1,430	423	21	2,025	0.07
	29	30	31	1	2	3	4	191	115	82	66	58	1,290	1,460	22	466	1.57
Jun	5	6	7	8	9	10	11	348	103	3	0	1,070	3,210	4,380	23	1,302	0.00
	12	13	14	15	16	17	18	2,660	890	216	86	38	0	0	24	556	0.55
	19	20	21	22	23	24	25	12	38	19	0	0	0	0	25	10	1.78
	26	27	28	29	30	1	2	5	1,020	865	363	100	17	210	26	369	1.19
Jul	3	4	5	6	7	8	9	1,910	2,640	1,160	351	170	74	56	27	909	1.47
	10	11	12	13	14	15	16	133	136	79	87	361	224	143	28	166	1.63
	17	18	19	20	21	22	23	115	92	323	448	112	49	28	29	167	3.04
	24	25	26	27	28	29	30	39	58	73	84	66	71	638	30	147	1.44
	31	1	2	3	4	5	6	2,640	3,220	2,400	1,100	442	381	244	31	1,490	0.25
Aug	7	8	9	10	11	12	13	109	79	110	680	783	685	463	32	416	4.63
	14	15	16	17	18	19	20	258	146	87	84	143	255	247	33	174	0.56
	21	22	23	24	25	26	27	259	807	3,260	5,320	3,900	1,320	350	34	2,174	0.36
	28	29	30	31	1	2	3	155	103	118	137	109	77	72	35	110	0.79
Sep	4	5	6	7	8	9	10	95	269	188	144	101	74	200	36	153	0.08
	11	12	13	14	15	16	17	285	198	126	75	52	42	37	37	116	0.30
	18	19	20	21	22	23	24	39	33	27	23	15	10	8	38	22	1.36
	25	26	27	28	29	30	1	8	8	9	7	6	7	8	39	8	2.80
Oct	2	3	4	5	6	7	8	7	8	9	9	10	9	8	40	9	0.42
	9	10	11	12	13	14	15	10	10	10	10	11	11	8	41	10	0.16
	16	17	18	19	20	21	22	9	6	6	6	6	4	2	42	6	0.00
	23	24	25	26	27	28	29	2	1	2	4	4	4	8	43	4	0.23
	30	31	1	2	3	4	5	11	11	11	10	8	3	32	44	12	2.37
Nov	6	7	8	9	10	11	12	832	2,690	4,730	3,440	1,310	381	177	45	1,937	0.56
	13	14	15	16	17	18	19	113	80	63	55	46	38	30	46	61	0.46
	20	21	22	23	24	25	26	29	34	28	22	21	370	2,190	47	385	0.39
	27	28	29	30	1	2	3	1,590	940	425	3,800	3,340	1,180	356	48	1,662	0.86
Dec	4	5	6	7	8	9	10	167	78	42	50	45	117	2,230	49	390	1.31
	11	12	13	14	15	16	17	2,020	1,880	815	6,620	7,660	5,250	1,340	50	3,655	2.01
	18	19	20	21	22	23	24	330	121	62	42	19	8	6	51	84	3.26
	25	26	27	28	29	30	31	3	1	1	0	5	3,110	5,010	52	1,161	0.64

Section 7.03 (b) (2): Arkansas-Louisiana state boundary flow 40 cfs

Figure 13: 2022 Boeuf River near Eudora Threshold Streamflow

2022 Arkansas Engineering Report

Report Conclusions

Abnormally dry and drought conditions that existed for the majority of 2022 drastically reduced water flow in certain times of the year in all four subbasins due to very little precipitation. A review of the monitoring and assessment of flow and precipitation shows that the Ouachita River, Bayou Bartholomew, and Bayou Macon had no occurrences of seven consecutive days of flow below compact thresholds during the primary growing season. The Boeuf River had one (1) occurrence of seven consecutive days of 40 cubic feet per second (cfs) or less flow at the state boundary during the primary growing season (June 16-26) despite the abnormally dry conditions.

Water use registration data for 2019 shows that significant surface water use only occurs during the growing season (May to September), with limited withdrawals occurring outside this period. Despite very low flows that can be attributed to drought conditions, the four rivers consistently met or exceeded threshold discharge levels during the growing season.

The State of Arkansas should continue its efforts to monitor, evaluate, and report on the four (4) rivers making up the subbasin: Ouachita River, Boeuf River, Bayou Macon, and Bayou Bartholomew. The Boeuf River continues to be the most monitored of the four (4) rivers. Arkansas's interpretation and policy position on compliance in Reach IV, Subbasin 2 remains unchanged. Real-time monitoring of river flows; evaluation of weekly, seasonal, and multi-year flow patterns; and annual reporting to the Red River Compact Commission is an acceptable approach and framework to identify flow anomalies and inform compliance decision-making in Reach IV, Subbasin 2. Reporting and analyses will continue to improve as new data and more accurate methods become available.

OKLAHOMA
Water Resources Board

Red River Compact Commission

Oklahoma Engineering Committee Report

April 25, 2023

Reservoir Levels

There are 18 major reservoirs in the Red River Basin in Oklahoma. Throughout the basin, reservoirs currently range from 21% to 121% full. Reservoirs with the lowest values of percent full are in the west-southwest portion of the basin and reservoirs at or above 100% current storage are in the eastern half of the basin. Mean percent full value in the 18 reservoirs is 89% and there are currently ~5,050,000 combined acre-feet of water stored in Oklahoma reservoirs in the Red River basin out of 5,153,093 combined acre-feet of water in normal pool stage of those reservoirs, for 97% of combined current storage. The largest reservoir in the basin, Lake Texoma, is currently at 102% full. The western half of Oklahoma is in severe to exceptional drought while much of the eastern half of the state is not under drought or dry conditions.

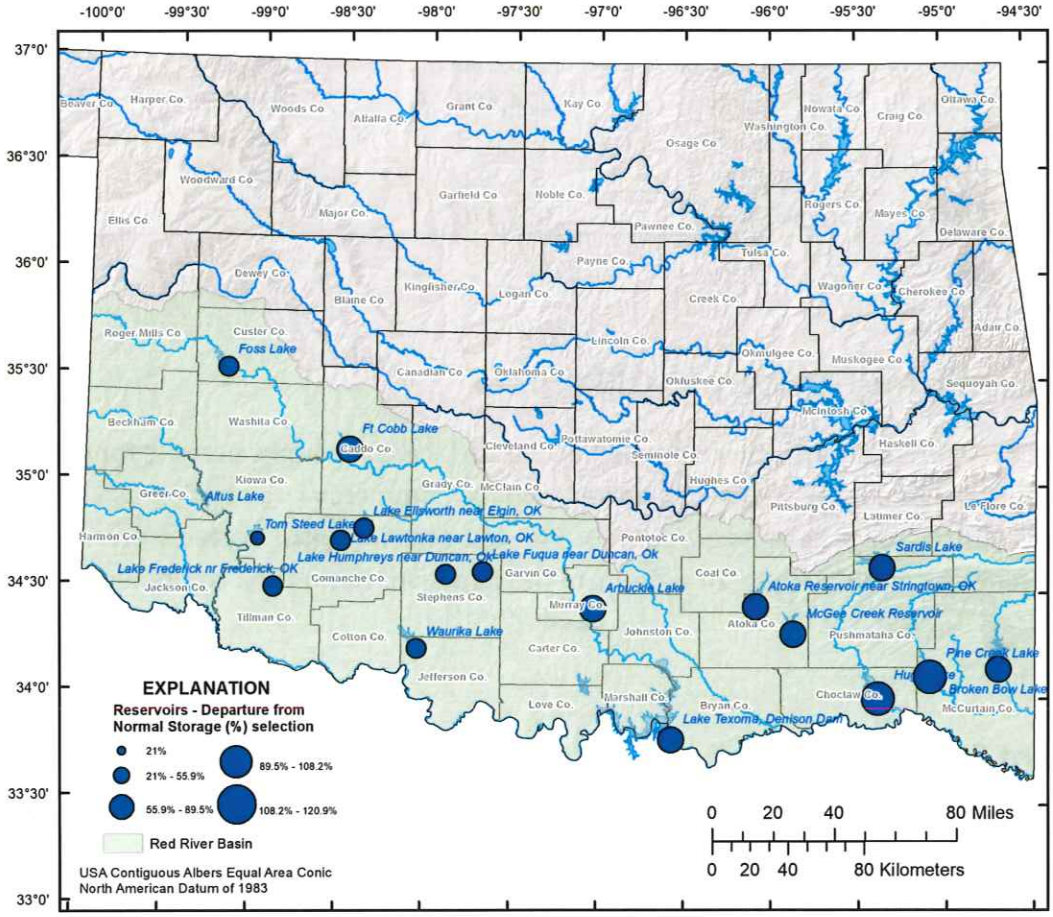


Table 1. Oklahoma reservoirs in the Red River Basin.

Reservoir	Percent Full	Current Storage (acre-feet)	Normal Pool Storage (acre-feet)	Conservation Storage (acre-feet)	Total Capacity (acre-feet)
Lugert-Altus	21%	27,376	128,918	132,832	154,092
Foss	79%	133,162	169,339	350,409	350,409
Tom Steed	53%	54,417	97,322	97,322	117,605
Frederick	79%	7,819	9,933	9,933	21,100
Lawtonka	88%	48,760	55,171	55,171	55,171
Fort Cobb	96%	68,505	71,696	135,912	135,912
Ellsworth	88%	52,700	60,000	60,000	60,000
Waurika	90%	169,038	188,760	188,760	324,802
Humphreys	81%	11,370	14,041	14,041	14,041
Fuqua	89%	18,840	21,100	21,100	21,100
Arbuckle	106%	77,066	72,400	72,400	108,830
Texoma	102%	2,697,189	2,644,133	2,341,444	5,427,299
Atoka	101%	125,200	123,650	123,650	123,650
McGee Creek	104%	118,591	113,966	199,388	199,388
Sardis	100%	274,349	274,189	397,019	397,019
Hugo	108%	155,066	143,313	945,949	1,053,350
Pine Creek	121%	62,656	51,792	458,629	458,629
Broken Bow	104%	947,416	913,370	1,350,349	1,350,349

Water Use Permitting Activity in Oklahoma

In the Red River Basin in Oklahoma, there are 964 active surface water-right permits for uses including irrigation, public supply, industrial, power, mining, commercial, recreation fish and wildlife, and agriculture. These permits account for 967,441 acre-feet of allocated water. From 2020 to the present, the OWRB issued 24 permits in the Red River Basin for a combined 16,027 acre-feet of allocated water.

OWRB's Dam Safety Program

Of the 4,778 regulated dams in the state, there are 2,451 in the Red River Compact Commission Area. There are 2,380 dams in the commission area that are regulated by Oklahoma; 1,434 of these are operated by local conservation districts through partnership with USDA-NRCS, and 946 are directly regulated by OWRB. The remaining 71 dams are Federally operated.

There are 775 Oklahoma-regulated dams with normal storage of 100 acre-feet or more within the compact area. These dams create a total normal storage of almost 753,000 acre-feet, and nearly 1.2M acre-feet of available flood storage.

Also, to utilize FEMA's High Hazard-Potential Dam Rehabilitation Grant (HHPD), OK Dam Safety Program has been working closely with owners of 7 eligible dams within the Red River Compact Commission Area. Two of these dams have met the full eligibility and selection criteria and have planning and engineering projects currently underway. In collaboration with the OWRB Financial Assistance Division, Dam Safety staff has assisted several other high hazard-potential dam owners to either obtain loans or pursue other funding opportunities to rehabilitate their dams and correct deficiencies that threaten public safety. Finally, through the US Treasury's American Rescue Plan Act, OWRB has allocated $1 million to one high hazard dam owner in the Red River Compact Commission Area for their dam rehabilitation project and is planning to allocate more fundings to at least one other dam owner within the compact area.

Streamflow Conditions

Streamflows in the Red River Basin in Oklahoma have been recently variable; the western portion of the state is experiencing significant drought conditions while the eastern portion of the state has recorded about average precipitation. Nine streamflow gauging stations on tributaries of the Red River in Oklahoma were selected for analysis of total flow in water years over their periods of record to compare with water year 2022; percentile rank for 2022 total flow is also provided. Total flow in water year 2022 was below the median value for all stations analyzed. Total streamflow in the Salt Fork Red River near Tipton, OK and at Pennington Creek near Reagan, OK were both in the 5th percentile and North Fork Red River was in the 10th percentile. Gauges in the eastern portion of Oklahoma's Red River Basin had a better rank, but still lower than normal with 2022 water year percentile ranks in the 20s. The highest percentile rank was at Muddy Boggy Creek near Unger, OK at the 27th percentile.

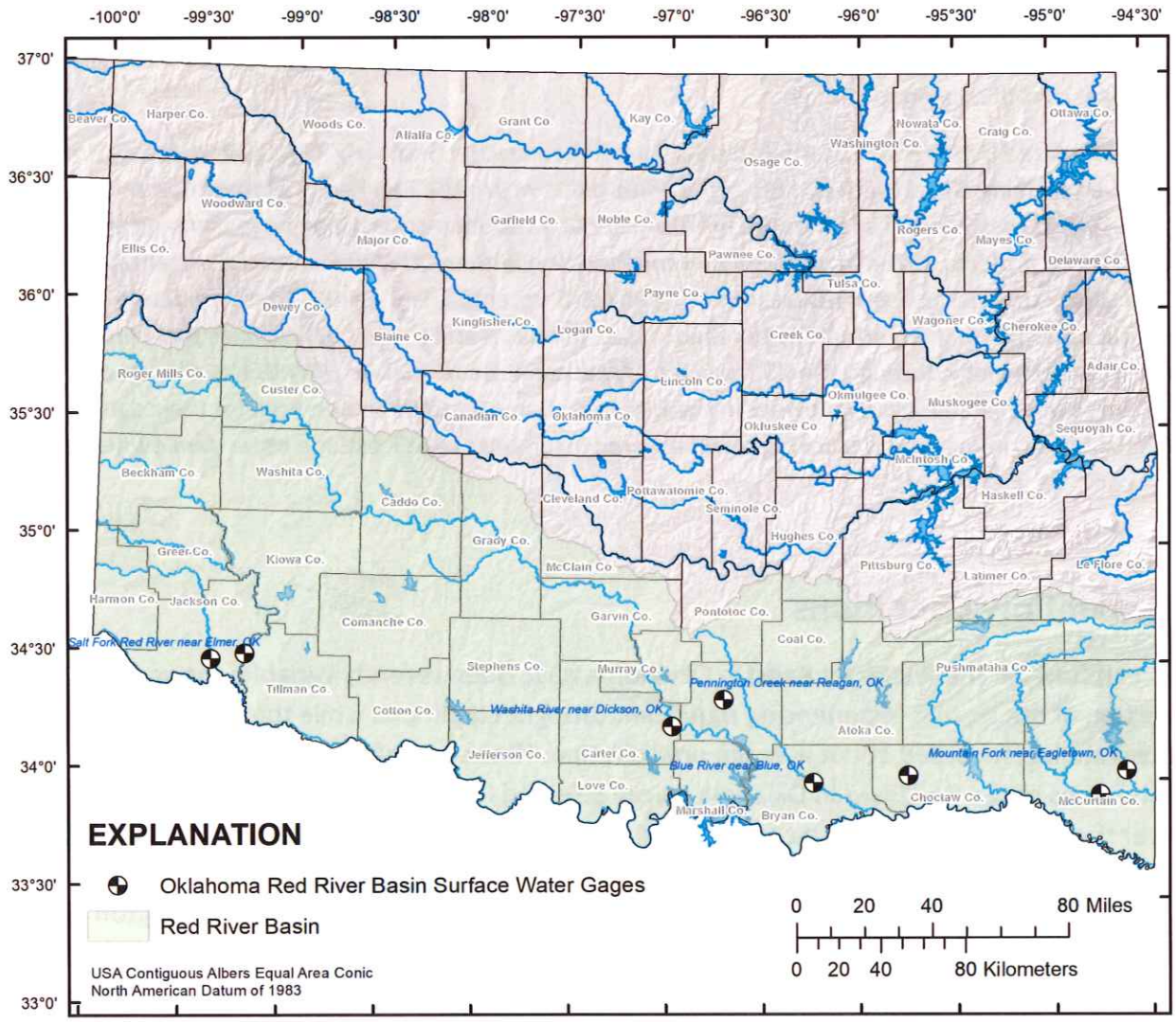


Figure 1. Location of selected streamflow gauging stations on Red River tributaries in Oklahoma.

Table 2. Selected USGS streamflow gauging stations in the Red River Basin in Oklahoma with total stream flow over their periods of record and water year 2022 percentile rank of total streamflow.

Station name	USGS identifier	Period of record	Median water year total streamflow (acre-feet/year)	Water Year 2022 total streamflow (acre-feet)	Water year 2022 total streamflow percentile rank
Salt Fork Red River near Elmer, OK	07301110	1979-current	106,862	19,982	5th
North Fork Red River near Tipton, OK	07307028	1983-current	227,083	41,920	10th
Washita River near Dickson, OK	07331000	1928-current	1,096,860	591,264	24th
Pennington Creek near Regan, OK	07331300	2003-current	28,019	6,704	5th
Blue River near Blue, OK	07332500	1936-current	183,462	89,848	16th
Muddy Boggy Creek near Unger, OK	07335300	1982-current	1,189,532	616,414	27th
Little River below Lukfata Creek near Idabel, OK	07338500	1947-current	1,325,644	707,276	21st
Mountain Fork near Eagletown, OK	07339000	1924-current	1,071,520	667,962	22nd
Little River near Horatio, AR	07340000	1931-current	3,006,410	1,850,544	24th

BUREAU OF
RECLAMATION

Summary of Current and Recently Completed Activities

Planning, Construction Assistance, and Grant Programs

Oklahoma-Texas Area Office

Mission Statements

The mission of the *Department of the Interior* is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the *Bureau of Reclamation* is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Table of Contents

Introduction

The Bureau of Reclamation (Reclamation) is an agency within the Department of the Interior with a primary mission designated to manage, develop, and protect water and related resources in an environmentally and economically sound manner within the 17 western states. The Oklahoma-Texas Area Office (OTAO) is responsible for administering 11 reservoir projects and associated water distribution systems in southern Kansas, Oklahoma, and Texas. The combined water delivery is more than 680,000 acre-feet (ac-ft) of Municipal and Industrial (M&I) water annually to approximately three million water users, providing additional fish and wildlife, recreation, and flood control benefits. The OTAO supports two Irrigation Districts, one in Oklahoma and one in Texas.

Reclamation works in conjunction with other Federal and state agencies, Indian Tribes, and local entities in performing these responsibilities. Significant areas of activity include providing oversight of operations and maintenance of existing facilities and water resources planning along with construction assistance.

The purpose of this activity report is to provide a summary of current and recently completed activities under the Planning, Construction Assistance, and Grant Programs.

Native American Affairs Program

The Native American Affairs Technical Assistance Program, which is a formal program funded through the Native American Affairs line item in Reclamation's budget, is small but integral part of the overall Native American Program. The Native American and International Affairs Office in the Commissioner's Office serve as the central coordination point for the Native American Affairs Program and lead for policy guidance for Native American issues in Reclamation.

Six projects were selected for funding in FY 22 totaling $1,626,505 in Federal Funding:

Wichita and Affiliated Tribes
Water transmission main installation.

Ponca Tribe, OK
Multiple components of water resources development.

Muscogee Creek Nation, OK
Dustin Farm Pond & Habitat Restoration Project improvements to the land to protect the water.

Chickasaw Nation, OK
Irrigation system improvements to the Chickasaw Cultural Center.

Choctaw Nation, OK
Construction of livestock watering and solar wells at livestock stations at two ranches in Southeast Oklahoma.

Kiowa Tribe, OK
Rush Springs groundwater investigation to meet water supply needs and associated infrastructure.

Five projects were awarded for funding in FY 21 totaling $1,376,568 in Federal Funding:

Cherokee Nation, OK
Study to address water resource development, management strategies and address drought and climate change, infrastructure deficiencies and develop long term capital improvement plans for water resources.

Choctaw Nation, OK
Additional drought monitoring in the Blue River basin and quantification of water use for the Arbuckle-Simpson aquifer for the Choctaw Nation.

Quapaw Tribe, OK
Optimization of an inefficient water distribution system that serves the Tar Creek Superfund area.

Choctaw Nation, OK
Assess the drought resiliency of City of Durant's Water Supply.

Chickasaw Nation, OK
Objective of the test well Study is to ultimately bring additional water supply to the City of Lone Grove.

WaterSMART Program

Reclamation's WaterSMART (Sustain and Manage America's Resources for Tomorrow) Program aims to leverage Federal (up to 50 percent cost-share) and non-Federal funds to improve water management, increase energy efficiency in water delivery, facilitate water marketing projects, protect threatened and endangered species, and carry out activities to address potential climate-related impacts on water resources. Eligible entities include irrigation and water districts, river authorities, tribes, states and other entities with water or power delivery authority.

Basin Study Program

This program addresses water needs on a basin-wide scale through development of future supply/demand projections that include state-of-the-art data on climate variability; an analysis of how infrastructure and operations will perform in the face of changing

realities; and development of mitigation strategies and management solutions. Studies are cost-shared on a 50/50 basis with willing state, tribal, and local partners and generally take two years to complete. Reclamation's share of study costs are used to support work done by Reclamation or its contractors.

Upper Washita Basin Study (UWBS)

An ongoing Basin Study on the Upper Washita Basin in Oklahoma partnering with the Oklahoma Water Resources Board (OWRB) and Fort Cobb and Foss Reservoir Master Conservancy Districts is set out to identify sustainable solutions to infrastructure issues and existing and projected imbalances between water supply and demand.

Substantial progress has been made on the UWBS, including but not limited to the development of five hydrologic models (two numerical groundwater models, two reservoir yield models, and a basin-wide network stream model), as well as supply and demand climate risk assessments. OWRB is in the process of completing review of the Washita River Alluvium groundwater model and the Rush Springs Aquifer groundwater model has been completed and publication is out for review. Also, the calibration for the Surface Water Allocation Model (SWAM) is complete. Completion of these models is critical toward being able to evaluate the reliability of existing infrastructure and options under current and future climate conditions, as well as evaluating adaptation and mitigation strategies. A legal review of adaptation strategies has recently concluded and can be downloaded for review at Basin Report & Legal Review (usbr.gov). The Fort Cobb Reservoir Master Conservancy District has been working closely with Reclamation to develop conveyance alternatives to address aging infrastructure issues. Designs and cost estimates have been completed. This study will resume after completion of the Upper Red River Basin Study which is discussed below.

Upper Red River Basin Study (URRBS)

An ongoing Basin Study on the Upper Red River Basin in Oklahoma partnering with the OWRB, Lugert-Altus Irrigation District, and Mountain Park Master Conservancy District is set out to identify sustainable solutions to infrastructure issues and existing and projected imbalances between water supply and demand. The study is evaluating infrastructure and permitting options complimented by a legal review of adaptation strategies that will help ensure long-term reliability of water supplies during critical drought periods. The final legal review can be found at the link provided above.

Substantial progress has been made on the URRBS, including the development of four hydrologic models (a numerical groundwater model, two reservoir yield models, and a basin-wide network stream model); supply and demand analyses; climate and hydrologic risk assessments; engineering design and costs of infrastructure alternatives; and modeling runs of various "status quo" scenarios evaluating a future under existing operations and management. Most recently, study partners completed an analysis of hydrologic thresholds that could be used to inform water management strategies that protect the yield of Reclamation's reservoirs. Modeling efforts are currently underway to evaluate the efficacy of those thresholds in improving water availability during drought

periods. Once the modeling is complete, the URRBS is expected to be finalized by the end of this year or early next year.

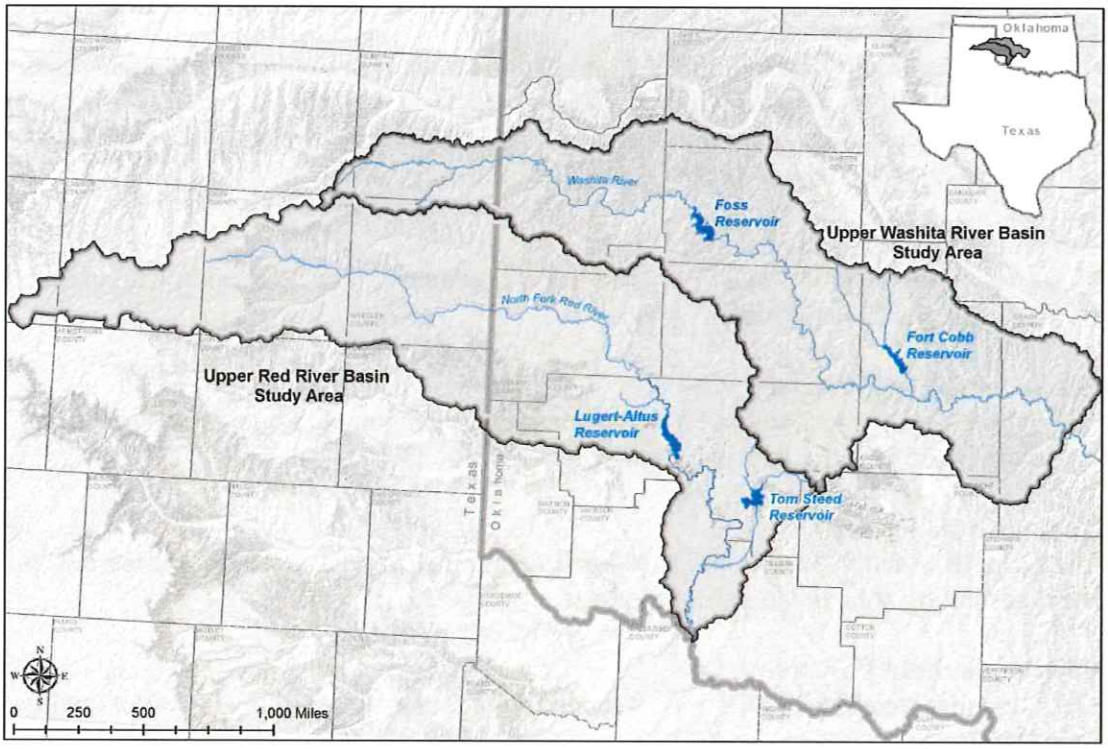


Figure 1: Upper Washita and Upper Red River Basin Study area map.

Applied Science Grants

This relatively new program, which is a component of Reclamation's WaterSMART Basin Study Program, seeks to develop tools and information that will inform and support water management decisions. Project results must be readily applicable by water managers and include tools and information that can be used to support water supply reliability, management of water deliveries, water marketing activities, drought management activities, conjunctive use of ground and surface water, water rights administration, ability to meet endangered species requirements, watershed health, conservation and efficiency and other water management objectives. Since the program's inception in FY 19, 14 projects in Texas and Oklahoma have been selected and awarded over $2 million including two recent internal awards.

Post Oak Savannah Groundwater Conservation District, TX
Post Oak Savannah GCD was awarded $200,000 in FY 22 to develop an operations and management model that will be used by the District to help establish a comprehensive set of rules, policies and strategies to address water resource management challenges in central Texas.

Oklahoma-Texas Area Office
OTAO was awarded $200,000 in FY 22 and will partner with Lugert-Altus Irrigation District, USGS and the OWRB in simulating impacts of groundwater withdrawals on

base flow and reservoir storage to inform conjunctive management strategies at Reclamation's W.C. Austin Project.

Oklahoma-Texas Area Office
OTAO was awarded $200,000 in FY 22 and will partner with Central Oklahoma Master Conservancy District, City of Norman, City of Midwest City, Del City and OWRB to evaluate risk exposure and drought response thresholds to improve water supply reliability as a case study at Reclamation's Lake Thunderbird.

Norman Utilities Authority, OK
NUA was awarded $154,781 in FY 21 to build a predictive lake level optimization tool to be used for Lake Thunderbird.

Oklahoma State University, OK
OSU was awarded $135,469 in FY 21 to quantify the amount and impact of agricultural water use in the Upper Red River Basin.

Texas Water Trade, TX
TWT was awarded $150,000 in FY 20 for studying the elucidating aquifer properties in the contributing zone of Comanche Springs.

Oklahoma State University, OK
OSU was awarded $150,000 in FY 19 for applying unmanned systems for water quality monitoring.

Oklahoma State University, OK
OSU was awarded $88,476 in FY 19 for improving seasonal streamflow forecasting for irrigation districts by incorporating soil moisture information derived from remote sensing.

Gulf Coast Water Authority, TX
GCWA was awarded $30,000 in FY 19 for the enhancement of water availability models of the Lower Brazos Basin.

Water and Energy Efficiency Grants

This program seeks to conserve and use water more efficiently, increase the use of renewable energy, improve energy efficiency, benefit endangered and threatened species, facilitate water markets, carry out activities to address climate-related impacts on water or prevent any water-related crisis or conflict. Since 2010, Reclamation has awarded over $45 million to 63 projects in Texas and Oklahoma with a cumulative project cost of over $136 million. The estimated total amount of water saved or better managed is about 61,000 acre-feet per year.

Lugert-Altus Irrigation District, OK
The Lugert-Altus Irrigation District was selected in FY 23 to receive $5,000,000 to convert four miles of the earthen open Ozark Canal to a buried 65-inch high-density

polyethylene pipeline. The project is expected to result in an annual water savings of 1,130 acre-feet.

City of McAlester, OK
The City of McAlester was selected in FY 23 to replace 1,797 outdated mechanical meters with Automatic Metering Infrastructure (AMI) meters on residential and commercial lines. The project is expected to result in annual water savings of 143 acre-feet.

City of Arlington, TX
The City of Arlington was selected in FY 23 to convert 17,678 existing meters to advanced metering infrastructure smart meters and implement customer portal system upgrades. The project is expected to result in annual water savings of 5,530 acre-feet.

Brownsville Public Utilities Board, TX
The Brownsville Public Utilities Board was selected in FY 23 to replace approximately 17,678 manual read meters with advanced metering infrastructure (AMI) smart meters. The Board will also retrofit approximately 39,773 existing meters with an AMI compatible register and endpoint. The project is expected to result in annual water savings of 2,103 acre-feet.

El Paso County Water Improvement District No. 1, TX
The El Paso County Water Improvement District No. 1 was selected in FY 23 to line 11,000 feet of the currently earthen Riverside Canal with steel-panel reinforced concrete. The project is expected to result in annual water savings of 1,637 acre-feet.

El Paso Water Utilities Public Service Board, TX
The El Paso Water Utilities Public Service Board was selected in FY 23 to replace 60,000 existing manual read meters with advanced metering infrastructure smart meters for residential and business customers and implement a customer portal for real-time tracking. The project is expected to result in annual water savings of 1,285 acre-feet.

Hidalgo County Irrigation District No. 1, TX
The Hidalgo County Irrigation District No. 1 was selected in FY 23 to line 3,900 feet of the earthen Main Canal with a geosynthetic composite liner and 4-inches of fiber reinforced concrete. The project also includes the installation of the new Rubicon gates and an automated solar-powered Supervisory Control and Date Acquisition system. The project is expected to result in annual water savings of 5,089 acre-feet.

La Feria Irrigation District Cameron County No. 3, TX
The La Feria Irrigation District Cameron County No. 3 was selected in FY 23 to install a solar powered Supervisory Control and Data Acquisition telemetry system at ten spillway sites to monitor water flow, manage discharges, and reduce water currently lost to operational spills.

Red River Authority of Texas
Red River Authority of Texas was selected in FY 23 to replace 2,650 existing manual read meters with new advanced metering infrastructure smart meters with additional

ancillary radio and computer reading equipment for residential and commercial customers. The project is expected to result in annual water savings of 105 acre-feet.

Donna Irrigation District, TX
The Donna Irrigation District was selected in FY 23 to receive $3,300,000 to convert 5,200 feet of the currently concrete lined South Crossover Lateral to a 60-inch polyvinyl chloride pipeline and 3,800 feet of the currently concrete lined Lateral 22 to a 48-inche polyvinyl chloride pipeline. The project is expected to result in annual water savings of 1,790 acre-feet.

Donna Irrigation District, TX
The Donna Irrigation District was awarded in FY 22 to receive $1,975,000 to line 12,255 feet of the currently concrete lined East Main Canal and 10,050 linear feet of the currently concrete lined North Crossover Main Canal with a geosynthetic composite canal liner protected with four inches of shotcrete. The project is expected to result in annual water savings of 4,620 acre-feet by reducing seepage losses.

City of Norman, OK
The City of Norman was awarded $2,000,000 in FY 22 to replace 40,973 existing water meters, the majority of which are manual read meters, with advanced metering infrastructure (AMI) meters. The project also includes an AMI network, Meter Data Management System software, and a customer portal to provide customers with near real-time water use data. The project is expected to result in annual water savings of 1,981 acre-feet.

El Paso County Water Improvement District No. 1, TX
El Paso County Water Improvement District No. 1 was awarded to receive $1,000,000 in FY22 to line 7,700 fee of the currently earthen Riverside Canal, resulting in annual water savings of 1,145 acre-feet.

Cameron County Irrigation District No. 2, TX
CCID2 was awarded $469,057 in FY 21 for the conversion of 9,185 feet of unlined open canal to buried pipeline, resulting in an annual water savings of 714 acre-feet.

Harlingen Irrigation District No. 2, TX
Harlingen Irrigation District No. 2 was awarded $300,000 in FY 21 to convert 3,225 feet of unlined open canal to buried pipeline, resulting in an annual water savings of 330 acre-feet.

Santa Cruz Irrigation District No. 15, TX
Santa Cruz Irrigation District No. 15 was awarded $250,000 in FY 21 to convert 4,515 feet of an open concrete lined canal to a 36-inch pipeline, resulting in an annual water savings of 335 acre-feet.

United Irrigation District, TX
United Irrigation District was selected to receive $500,000 in FY 21 to line 5,900 feet of the concrete-lined Mission Main Canal with a geosynthetic composite canal liner covered with shotcrete, resulting in an annual water savings of 660 acre-feet.

Wichita County Water Improvement District No. 2, TX
Wichita County Water Improvement District No. 2 was selected to receive $160,684 in FY 21 to convert three high-loss segments of a concrete-lined and earthen canals to 5,200 feet of 27-inch plastic irrigation pipe.

City of Eufaula, OK
The City of Eufaula was awarded $1,500,000 in FY 20 for major water system improvements comprised of installation and replacement of water lines, installation and replacement of service connections, installation and replacement of gate and pressure valves, and installation and replacement of fire hydrants. The improvements are expected to result in water savings of 265 acre-feet annually.

Cameron County Irrigation District #6, TX
CCID6 is selected was awarded $300,000 in FY 20 for multiple projects within the District. The project is expected to result in water savings of 1,040 acre-feet annually.

Harlingen Irrigation District Cameron County No. 1, TX
Harlingen Irrigation District No. 1 was awarded $300,000 in FY 20 for piping of portion of the Wyrick Canal. The project is expected to result in water savings of 92 acre-feet annually and energy savings of 2,733 kwh annually.

City of Wilmer, TX
City of Wilmer was awarded $198,802 in FY 20 for Smart Meter Conversion and SCADA System Implementation Project. The project is expected to result in water savings of 53 acre-feet annually.

City of Durant, OK
The City of Durant, OK was awarded $1,500,000 in FY 19 to replace 5,999 manual read meters with smart meters and associated advanced metering infrastructure network software. The project is expected to result in water savings of 1,003 acre-feet annually that is currently lost to leaks.

Bayview Irrigation District No. 11, TX
The Bayview Irrigation District #11 was awarded $300,000 in FY 19 to convert 2,550 feet of a concrete-lined open canal to a 48-inch pipeline. The project is expected to result in water savings of 120 acre-feet annually.

Cameron County Irrigation District No. 2, TX
CCID2 was awarded a total of $175,841 in FY 19 for the conversion of open an unlined open canal to a buried 36-inch pipeline and slip gate upgrades. Water savings of 3,440 ac-ft per year and energy savings of 55,950 kilowatt hours per year is expected.

Harlingen Irrigation District Cameron County No. 1, TX
Harlingen Irrigation Dist. No. 2 was awarded $300,000 in FY19 comprised of converting 6,750 feet of an open concrete canal to a 48-inch pipe. The project is expected to result in water savings of 112 acre-feet annually.

Small-Scale Water Efficiency Grants

Since 2017, Small-Scale Water Efficiency Projects (SWEP) have been awarded $2.22 million to 30 projects in Texas and Oklahoma totaling over $4.87 million in cumulative project costs. Eligible projects include installation of flow measurement or automation in a specific part of a water delivery system, lining of a section of canal to address seepage, small rebate programs that result in reduced residential water use, or other similar projects that are limited in scope.

City of Edinburg
City of Edinburg was selected to receive $100,000 in FY 22 for a water accountability efficient response project.

City of Universal City
City of Universal City was selected to receive $100,000 in FY 22 for Smart water meters for more accurate real-time usage data collection.

Edwards Aquifer Authority
Edwards Aquifer Authority was selected to receive $31,856 in FY 22 for municipal and industrial automatic meter upgrades.

Harlingen Irrigation District Cameron County No. 1 (HIDCC1)
HIDCC1 was selected to receive $100,000 in FY 22 for Phase 2 Adams Garden Reservoir improvements.

Town of Van Horn
Town of Van Horn was selected to receive $100,000 in FY 22 for water meters and automation for increased system-wide water use efficiency.

Coral Kreek Water District
Coral Kreek Water District was selected to receive $33,340 in FY 22 for an advanced metering infrastructure project.

Town of Calera
Town of Calera was selected to receive $85,149 in FY 22 for updating analog water meters with efficient smart meters.

West Siloam Springs
West Siloam Springs was selected to receive $99,000 in FY 22 for a water distribution system advanced metering infrastructure project.

Locust Grove Public Works Authority, OK
Locust Grove PWA was awarded $75,000 in FY 21 to upgrade water lines for increased resiliency and reduced water loss.

Red River Authority of Texas, TX
Red River Authority of Texas was awarded $75,000 in FY 21 to advance a metering infrastructure program for Red River Authority of Texas.

El Paso County Water Improvement District 1, TX
El Paso County Water Improvement Dist. 1 was awarded $75,000 in FY 21 for a lateral concrete lining project.

Chickasaw Nation, OK
The Chickasaw Nation was awarded $75,000 in FY 20 to install automatic meter reading (AMR) smart meters within Murray State College (MSC) water distribution system.

McCurtain County Rural Water District No. 2, OK
McCurtain County RWD No. 2 was awarded $75,000 in FY 20 to purchase and install 350 smart water meters and associated hardware and software to replace existing conventional meters.

City of Blue Ridge, OK
City of Blue Ridge was awarded $75,000 in FY 20 to upgrade approximately 500 water meters to automated meters allowing for real-time data collection.

El Paso County Water Improvement District No. 1, TX
The El Paso County Water Improvement District Number One, located in El Paso, Texas, was awarded $75,000 in FY 20 to install concrete lining along 3,700 linear feet of the earthen Isla Lateral.

Guadalupe-Blanco River Authority, TX
GBRA was awarded $75,000 in FY 20 to complete a reinforcement project to harden the east levee on Hog Bayou. A total of 250 linear feet will be repaired, preventing the loss of freshwater that has been diverted from the Guadalupe River.

Harlingen Irrigation District Cameron County No. 1, TX
Harlingen Irrigation District Cameron County No. 1 was awarded $74,767 in FY 20 to construct a fully automatic checkgate to improve the deliveries, system efficiency, and add storage capacity at the Adams Garden Reservoir.

City of Elk City Public Works Authority, OK
Elk City was awarded $75,000 in FY 19 to continue replacing existing water meters with AMR water meters as since 2016 Elk City has replaced 3,500 of their 5200 water meters and anticipates replacing 970 meters.

City of Tishomingo, OK
The City of Tishomingo was awarded $28,600 in FY 19 in install automated irrigation systems, including pipes, sprinkler heads and rain sensors, for three Murray State College athletic facilities to replace the portable water cannons that are currently being used in addition to installing a water meter on the City of Tishomingo water line.

Red River Authority of Texas, TX
Red River Authority was awarded $75,999 in FY 19 to install 550 new advanced metering infrastructure meters, including radio and computer reading equipment and a smart meter software system, for residential and commercial customers.

Sharyland Water Supply Corporation (SWSC), TX
SWSC was awarded $73,656 in FY 19 for an advanced metering infrastructure project where all SWSC service connections will have an AMI meter (approx. 18600).

Wichita County Water Improvement District No. 2, TX
Wichita County Water Improvement District No. 2 was awarded $74,924 in FY 19 for a project to replace 3,200 feet of open concrete ditches and canals with a 24-inch buried pipeline to reduce water losses from seepage and evaporation.

City of Durant, OK
The City of Durant in Oklahoma was awarded $75,000 in FY 18 for a project to purchase and install 300 Smart Meters that will serve subdivisions and an apartment complex, assisting in reducing significant water loss currently experienced within the distribution system.

Thomas Public Works Authority, OK
Thomas Public Works Authority in Oklahoma was awarded $75,000 in FY 18 for a project to purchase and install 12 Smart Meters at important city-owned locations.

City of Tishomingo, OK
The City of Tishomingo in Oklahoma was awarded $75,000 in FY 18 for a project to purchase and install 27 Automatic Meter Reading (AMR) water meters and the associated software throughout the distribution system in order to address the significant water loss.

Water Marketing

This program provides assistance to states, tribes, and local governments to conduct planning activities to develop water marketing strategies that establish or expand water markets or water marketing activities between willing participants, in compliance with state and Federal laws. Reclamation has awarded over $700,000 to projects in the Oklahoma-Texas Area Office jurisdiction million to three projects since the inception of this program.

McLennan County, TX
The City of McLennan County, TX was awarded $75,000 in FY 19 to develop a water marketing strategy focused on conjunctive use of groundwater and surface water to stem groundwater depletions and stabilize water supplies in a five-city area.

City of Garden City, KS
The City of Garden City was awarded $139,900 in FY 19 to establish a Water Marketing Strategy where the plan was designed to identify potential users of the wastewater effluent and develop a rate structure for the purchase of this new supply.

Chickasaw Nation, OK
The Chickasaw Nation was awarded $149,288 in FY 18 to establish a water bank framework for the Arbuckle-Simpson Aquifer (AS) that will allow for voluntary, market-based transfers of groundwater pumping rights across the region.

Cooperative Watershed Management Program

This program contributes to the WaterSMART strategy by providing funds to watershed groups to encourage diverse stakeholders to form local solutions to address their water management needs. Funding is provided on a competitive basis for: Watershed Group Development and Watershed Restoration Planning and Implementation of Watershed Management Projects. Twelve CWMPs totaling more than $953,900 have been awarded since 2016.

University of Texas at Austin
UT at Austin was selected to receive $141,026 in FY 22 to establish a watershed council that will serve as a permanent, binational forum for information exchange and collaboration.

Chickasaw Nation, OK
Chickasaw Nation was selected to receive $199,831 in FY 22 to establish the Lake Texoma Watershed Management Association to address water quality and quantity concerns in the Lake Texoma watershed.

Lake of the Arbuckles Watershed Association, Inc.
LAWA received an award over $136,00 in FY 21 to improve water quality and quantity through soil health improvements.

Devils River Conservancy, TX
Devils River Conservancy was selected to receive $99,805 in FY 21 for restoration and planning in the Lower Devils River Watershed.

City of Norman, OK
The City of Norman, OK received an award of $85,000 in FY 20 to collaboratively improve the water quality in the Lake Thunderbird Watershed.

Blue River Foundation, OK
Blue River Foundation received an award of $99,536 in FY 20 for watershed planning for the Blue River.

Rio Grande International Study Center, TX
Rio Grande International Study Center received an award of $100,000 in FY 20 for watershed restoration planning for Laredo and upstream affected stakeholders.

Texas A&M AgriLife Extension Service
Texas A&M AgriLife Extension Service received an award of $100,000 in FY 20 for Arroyo Colorado/Llano Grande restoration planning.

Lake of the Arbuckles Watershed Association Inc, OK
LAWA was awarded $89,000 in FY 19 to implement the Lake of the LAWA Plan that was developed through in earlier CWMP award.

Grand River Dam Authority (GRDA), OK
GRDA was awarded $100,000 in FY 18 to develop a stakeholder group and restore the Lake O' the Cherokees Sub-Watershed.

Environmental Water Resources Projects

This WaterSMART program is a new category of funding to support projects focused on environmental benefits that have been developed as part of a collaborative process to help carry out an established strategy to increase the reliability of water resources. Eight CWMPs totaling more than $863,935 have been awarded since 2016.

Cameron County Water Improvement District No. 10, TX
CCID2 was awarded $1,500,000 to improve efficiency within the District and provide a more consistent water supply to the Laguna Atascosa National Wildlife Refuge.

Title XVI and Desalination WINN Act Programs

The Water Infrastructure Improvements for the Nation Act (WIIN), P.L. 114-322, was enacted in 2016 to address water resources infrastructure that is critical to the Nation's economic growth, health, and competitiveness. Two important components of the WIIN Act affect the Title XVI Program:

Section 4009(c) of Subtitle J of WIIN amends Reclamation's Title XVI Water Reclamation and Reuse Program (Title XVI), originally established by P.L. 102-575 in 1992. Prior to the enactment of WIIN, funding for water recycling project construction could only be provided for congressionally authorized Title XVI projects. The WIIN amendments now provide Reclamation with blanket authority to fund any new eligible "WIIN Title XVI Project"

Section 4009(a) of Subtitle J of WIIN includes amendments to the Water Desalination Act of 1996 and authorizes Reclamation to provide funding for "Desalination Projects", both ocean and brackish.

To date, over $10 million has been awarded to 22 studies and projects within the Oklahoma-Texas Area Office (OTAO) comprised of Feasibility Study and Construction and Research studies. Below are three projects that have been selected for funding or have been awarded since FY 19.

El Paso Water Utilities Public Service Board, TX
El Paso Utilities Public Service Board was selected to be awarded $20 million in FY 22 for design and construction of a new Advanced Water Purification Facility to treat wastewater for potable reuse.

North Alamo Water Supply Corp (NAWSC)
NAWSC was awarded over $3.8 million for construction in FY21 construction of an energy-efficient brackish groundwater desalination project that includes three new brackish groundwater wells, two new energy-efficient desalination production trains and retrofitting seven existing reverse osmosis trains to energy-efficient trains.

City of Norman, OK
The City of Norman was awarded over $700,000 in FY 19 for a field research project on inland indirect potable reuse (IPR). By expanding its existing water reclamation and reuse with an IPR project, the City of Norman will address reliability concerns at Lake Thunderbird, trim the usage/demand placed on its marginal groundwater supply, and potentially eliminate a need to purchase water from Oklahoma City.

Drought Response Program

Reclamation's Drought Response Program aims to provide competitive grants for drought contingency planning, as well as mitigation actions that build long-term drought resiliency. This program focuses on leveraging Reclamation funds to avoid drought-related crises in the short term, while laying a foundation for climate resiliency in the long term. Since FY 15, over $4.4 million in funding was provided to support 18 drought contingency plans and drought resiliency projects primarily in Oklahoma and Texas.

Drought Resiliency

City of McAllen, TX
City of McAllen, TX was awarded $1,327,305 to expand its reclaimed water system by installing a one million gallon elevated reuse water storage tank to utilize recycled water as an alternate source for landscape irrigation. The project will provide an additional water supply of 1,120 acre-feet per year and reduce the demand on potable water supplies from the Rio Grande River.

City of Mercedes, TX
City of Mercedes, TX was selected to be awarded $442,612 to provide a well system to provide drought relief to the City. The well will supplement an approximately 25-year old production well, and will add approximately 2,220 acre-feet per year of local, high-quality water to the City's drinking water supply.

Little Elm, TX
Town of Little Elm, Texas was awarded $333,696 in FY 21 for a reuse water main infrastructure project. This project will convey treated effluent from the town's 100,000-gallon wastewater reuse storage tank for irrigation of public land.

Southwest Kansas Groundwater Management District (GMD) No. 3, KS
Southwest Kansas GMD No. 3 was awarded $92,026 in FY 21 improve management in 12 counties by building a database to provide annual water management reports to every irrigator in the District.

City of Celina, TX
City of Celina, TX was awarded $750,000 in FY 19 to build a six-million gallon ground storage tank at the Celina Pump Station.

Texas Water Development Board
TWDB was awarded for approximately $360,631 in FY 19 for development of a multi-prolonged approach to enhance surface water evaporation monitoring in Texas using start-of-the-art technology for measuring actual evaporation.

Mountain Park Master Conservancy District, OK
Mountain Park MCD was awarded $300,000 in FY 18 to build a well field and tie in directly to existing infrastructure to pipe directly to a water treatment plant.

Research and Development Program

Reclamation's R&D Program provides technical and financial assistance to internal and external research projects that help Reclamation accomplish its mission of developing water supplies in a sustainable manner.

Science and Technology Program

Internal research is funded under Reclamation's Science and Technology (S&T) Program. Through S&T, Reclamation can investigate new and innovative solutions on important issues where there may be a unique or unknown risk and for which capital investment may not occur otherwise. Recent research priorities have focused on addressing challenges associated with climate change, invasive zebra/quagga mussels, and advanced water treatment. Over the last seven years, the R&D program has awarded $50 million to more than 800 research projects. To date, over $1.2 million has been awarded to research activities in Texas and Oklahoma. Active projects are listed below:

Integrating Constructed Wetlands into Water Reuse and Stormwater Management to Enhance Water Supply and Multi-Purpose Benefits (City of Norman)
This project builds upon scoping project 21011 and is funded by S&T in FY 2022 totaling $209,824 in federal award money. Through the scoping efforts, a partnership between Federal, state, and local officials has been formed to evaluate how constructed wetlands can be designed, tested, and implemented to achieve dual water supply - stormwater treatment benefits at a Reclamation project (Norman Project, Lake Thunderbird) in central Oklahoma.

Investigating the use of GI to improve WQ and expand usable water supplies
This project funded by S&T in FY 2021 totaling $29,656 scoped the potential of using constructed wetlands into water reuse and stormwater management to enhance water

supply and multi-purpose benefits that ultimately led to the larger S&T conducting study above described.

Cost Modeling of Membrane Desalination Process (Foss Reservoir, OK)
This project will focus on improving Reclamation's Water Treatment Estimation Routine (WaTER) so that it can be used to better understand the costs associated with implementing water treatment technologies and to be able to quantify the cost/benefit of R&D advancements in the field of water treatment.

Investigating Biochar as a Water Treatment Filtration Media for Adsorption and Biological Reduction of Dissolved Metals and Fluoride
As climate change and drought continue to negatively impact freshwater availability and quality in the western US, impaired water sources are becoming more attractive to supplement existing freshwater supplies. Biochar is gaining attention as a less expensive and more sustainable alternative to granular activated carbon (GAC) for use as an adsorbent and biological filtration (biofilter) media. Please use the following link for additional information: https://www.usbr.gov/research/projects/detail.cfm?id=1785

Research Opportunities to Treat Impaired Water Sources Associated with Reclamation Projects: A Case Study in the Great Plains Region
By using a survey-based approach to gather information on water quantity and quality challenges associated with Reclamation projects, can we better inform future investments under programs such as the Title XVI and Research & Development that address core, mission-related needs involving treatment of impaired water sources? Please use the following link for additional information:
https://www.usbr.gov/research/projects/detail.cfm?id=1715

Beneficial Reuse and Waste Minimization of Hexavalent Chrome Ion Exchange Brine
Hexavalent chromium occurrence in potable water sources is of concern to water utilities due to undetermined human carcinogenicity and toxicological effect. EPA is currently reviewing health assessments to determine if new federal standards need to be set for chromium. Minimizing the brine waste generated by ion exchange processes for beneficial purposes through membrane filtration with and without additional chemical addition allows for simpler regeneration processes and decreased operator expertise requirements. Please use the following link for additional information:
https://www.usbr.gov/research/projects/detail.cfm?id=9085

Refining Interpretation Techniques for Determining Brackish Aquifer Water Quality
This project will define specific research areas required to support geophysical log interpretation for water quality in brackish aquifers. Please use the following link for additional information: https://www.usbr.gov/research/projects/detail.cfm?id=2924

Development of Methodologies to Evaluate the Environmental, Financial and Social Benefits of Water Reuse Projects
The TWDB's Texas Water Reuse Research Agenda (2011) identified "triple bottom line" analyses as a top priority research area for Texas. Both water providers and rate payers

alike often question whether reuse is worth the financial investment relative to other strategies. Please use the following link for additional information: http://www.usbr.gov/research/projects/detail.cfm?id=4180.

Concentrate Management Toolbox and Selected Case Studies
Concentrate management is an important component driving the cost and feasibility of desalination. The understanding necessary to optimize inland desalination facilities and associated concentrate management solutions is still being improved through detailed assessments, especially as technology advances and provides more flexibility in treatment. Please use the following link for additional information: http://www.usbr.gov/research/projects/detail.cfm?id=5239.

Desalination and Water Purification Research Program

External research is funded under Reclamation's Desalination and Water Purification Research (DWPR) Program. DWPR was established to facilitate partnerships with academia, private industry, and local communities to develop more cost-effective, technologically efficient means by which to desalinate water. Just over the past four fiscal cycles (FY 19-22), 10 new research projects totaling $1,844,545 dollars were funded within the Oklahoma-Texas Area Office jurisdiction.

Robust Electroconductive Laser-Induced Graphene (E-LIG) Membrane for Application in Membrane Distillation – FY 22
Tech Tech University proposes a robust Electroconductive Laser-Induced Graphene (E-LIG) membrane for application in membrane distillation.

Multi-Effect Nanophotonic Enabled Direct Solar Membrane Distillation to provide Distillation to High-Efficiency Lost-Cost Desalination – FY 21
John Allen Floyd, SolMem LLC proposes a direct, concentrated sunlight driven multi-effect membrane distillation process for desalination of high salinity water. The research consists of developing a 3-D mathematical model to describe the complex, coupled heat and mass transfer in the membrane process which will be used to determine the impact of feed water quality on performance. An evaluation and optimization process will be conducted as well as a technoeconomic analysis to determine commercial feasibility.

Contorted Polyamide Membranes for High Performance Desalination – FY 21
The proposed research aims to overcome the permeability-selectivity tradeoff that limits the performance of conventional polymeric desalination membranes by developing contorted polyamide membranes with improved permselectivity. Successful completion of the project is expected to achieve control over free volume and enhanced permselectivity in polyamide desalination membranes by incorporating contorted monomers in a scalable fabrication process.

Stimuli Responsive Block Copolymer Brush Grafted Carbon Nanotube Coating for Active Mineral Scaling Control – FY 21
The team proposes to develop membrane coatings consisting of stimuli-responsive block copolymer brush (SRBCB)-nanomaterial complexes for active control of mineral scaling

in membrane desalination systems using a periodic electrical signal. The proposed project will design and synthesize SRBCBs, evaluate the impact, and develop and optimize techniques to apply coatings of SRBCBs-nanomaterial complexes onto reverse osmosis and membrane distillation membranes.

Treatment of High Salinity Produced Water to Reduce Freshwater Utilization for Oil and Gas Operations Using a Novel Thermo Desalination – FY 20
Texas A&M Engineering Experiment Station has a goal develop and optimize low cost, efficient, scalable, and easily implementable processes to reuse some of the 300 million gallons of produced water generated daily in the Permian Basin. This project will look at combining aluminum chemical and electrocoagulation with polymers to induce extremely high rate sedimentation of suspended solids to produce clean brine for reuse in hydraulic fracturing and desalinate clean brine via novel humidification-dehumidification process.

Building a Multi-Level , Multi-State Modeling Framework for the Analysis and Design of Seawater Desalination Using Renewable Energy – FY 20
Texas A&M University-Kingsville expected outcomes of this research will include an expanded knowledge base of a technological field and an emerging industry as well as a modeling tool to improve the understanding and design of seawater desalination using renewable energy systems which may contribute to accelerated adoptions of technology.

Study of Enhanced Water Recovery by a Combination of Photobiological Process and Secondary RO Lifecycle Cost Analysis and Mini-Pilot Study – FY 20
Texas State University will test a new photobiological treatment method for RO concentrate has been developed to enable more water recovery using the secondary RO. This project proposes to demonstrate the continuous, long-term operation of diatom-based photobiological treatment of OR concentrate at full-scale and investigate the secondary RO desalination of photobiologically treated RO concentrate to determine proper pre-treatment requirements.

Forensic investigation of reverse osmosis membranes in potable reuse applications: fouling characterization and implications for cost and performance – FY 19
Texas A&M Engineering Experiment Station will focus on characterizing the surfaces of virgin, fouled, and cleaned membranes by state-of-the-art microscopy and spectroscopy techniques to determine major foulants and its mechanisms.

Solar Thermal Distillation Technology Development for Desalination and Produced Water Treatment Applications – FY 19
Oklahoma State University's primary objective of this research is to develop a cost-effective high-energy solar thermal distillation technology for desalination and produced water treatment applications.

Expanding Water Resources Through Efficient Waste Management in Arsenic Treatment Processes – FY 19
University of Colorado's objective of this project that will involve field activities with City of Norman, Oklahoma is to improve the economics of treating arsenic-impaired water using ion exchange by reducing the operating costs associated with on-site

treatment of spent brine and reusing recovered regenerant salt without adversely impacting treatment performance.

Summary of Programs and Funding Opportunities

All Reclamation program Funding Opportunity Announcements (FOAs) for Grants or Cooperative Agreements to utilize Reclamation funding are posted on the Grants.gov website: http://www.grants.gov/

The following is a list of specific weblinks for each of the Reclamation programs mentioned above:

Native American Affairs Program: http://www.usbr.gov/native/

WaterSMART Program:

- Drought Response Program: http://www.usbr.gov/drought/
- Water and Energy Efficiency Grants: http://www.usbr.gov/watersmart/weeg/
- Small-Scale Water Efficiency Grants: https://www.usbr.gov/watersmart/swep/index.html
- Environmental Water Resources Projects
- https://www.usbr.gov/watersmart/ewrp/index.html
- Aquatic Ecosystem Restoration Program
- https://www.usbr.gov/watersmart/aquatic/index.html
- Cooperative Watershed Management Program: https://www.usbr.gov/watersmart/cwmp/index.html
- Water Marketing Strategy Grants: https://www.usbr.gov/watersmart/watermarketing/index.html
- Title XVI: http://www.usbr.gov/watersmart/title/index.html
- Desalination
- https://www.usbr.gov/watersmart/desalination/index.html
- Large-Scale Water Recycling Program
- https://www.usbr.gov/watersmart/largescale/index.html
- Basin Studies: http://www.usbr.gov/watersmart/bsp/
- Applied Science Grants: https://www.usbr.gov/watersmart/appliedscience/index.html

Research and Development:

- Science and Technology Program: https://www.usbr.gov/research/st/index.html
- Desalination and Water Purification Research Program: https://www.usbr.gov/research/dwpr/
- Water Prize Challenges: http://www.usbr.gov/research/challenges/

Small Storage Program

- https://www.usbr.gov/smallstorage/

Contact Information

Collins K. Balcombe
Manager, Planning and Project Development
Bureau of Reclamation, Oklahoma-Texas Area Office
5316 Hwy 290 West, Suite 110
Austin, TX. 78735
Work: 512-899-4162
Cell: 512-922-0525
Email: cbalcombe@usbr.gov

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138

PL 83-566 Projects Requested by the Arkansas Black Mayors Association (ABMA)

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Authorized ABMA Watershed Project Purposes

- **Primary Purposes**
  - Flood Prevention/Reduction
  - Watershed Protection
    - Erosion and sedimentation
    - Water quality
    - Flood control

- **Secondary purposes**
  - Agricultural Water Management
  - Public Recreation Development or Public Fish and Wildlife

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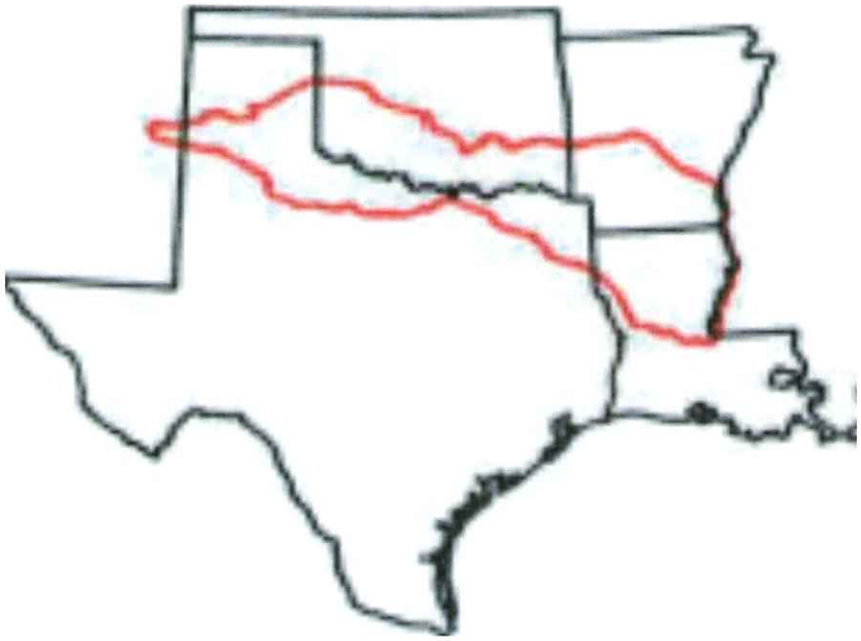
PL 83-566 Program



- **The Watershed Protection and Flood Prevention Act (PL 83-566) specifically focuses on small watersheds, up to 250,000 acres.**

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Why does NRCS work at a Watershed level through PL-566?

The PL 83-566 Program authorizes NRCS to partner with ***local*** *sponsors and communities* to investigate and address natural resource problems at the watershed scale.

- ABMA
- Cities – Mayors
- Counties – County Judges
- Conservation Districts
- Drainage Districts
- Levee Boards

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NRCS in cooperation with the ABMA requested funds for 19 projects in 2022 under the Bipartisan Infrastructure Law / Infrastructure and Jobs Act (BIL/IIJA)

- Projects were funded in various stages
  - 5 projects fully funded – (Planning, Design and Construction)
  - 9 projects funded for Planning only
  - 5 projects funded for Preliminary Findings and Investigations Report (PIFR) only

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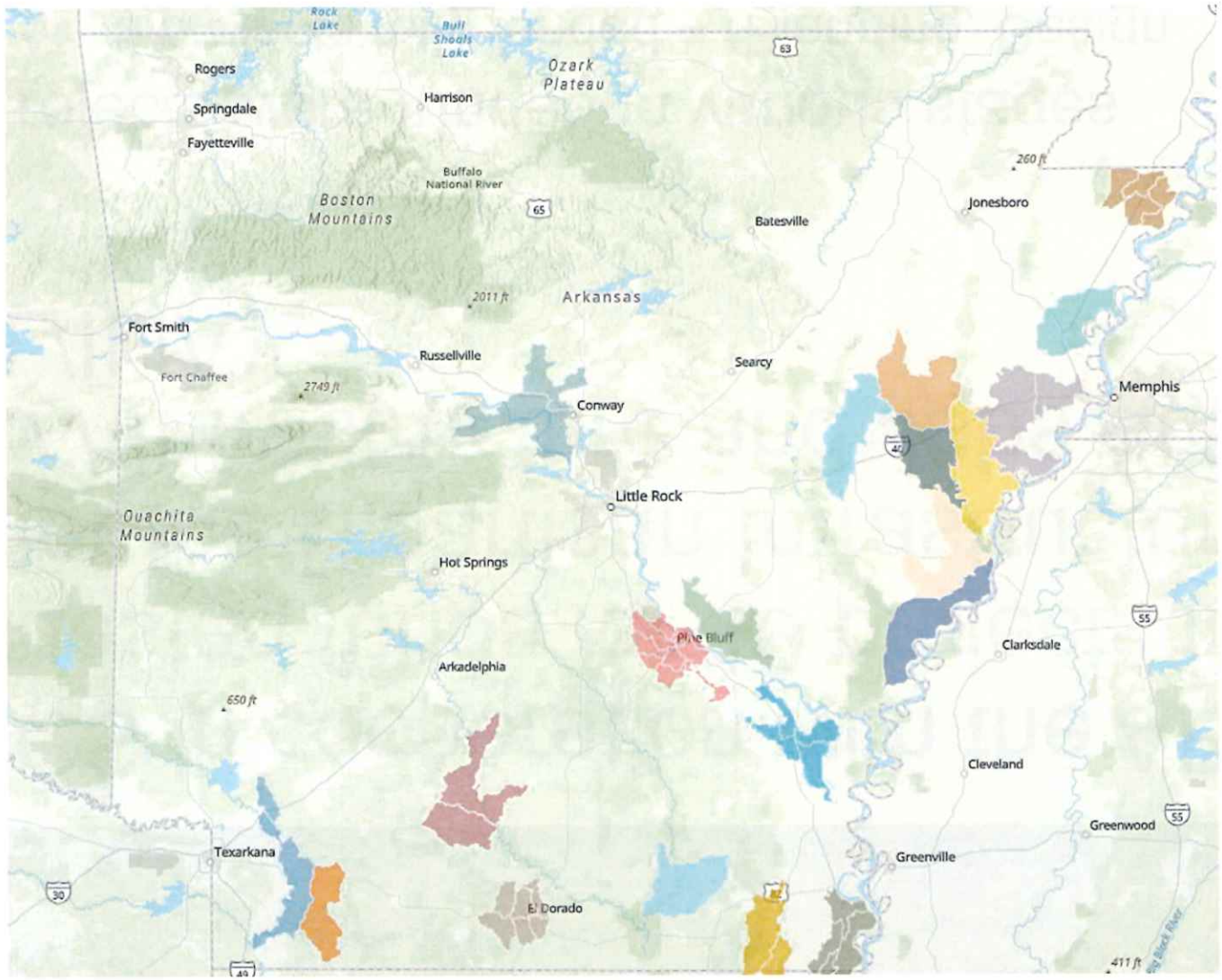
Watershed Projects Requested by ABMA in Arkansas



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AR-NRCS entered into two Cooperative Agreements with the ABMA in September of 2022

- All Phases Agreement (planning, design, & construction) covering 5 projects for $83,619,750.
- Planning only Agreement covering 9 projects for $3,890,000

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- **The ABMA is the responsible fiscal agent and will implement these projects with the assistance of other local sponsors in each watershed project**

- **Through these Agreements AR-NRCS will provide Federal Oversight and quality assurance at pre-determined milestones**

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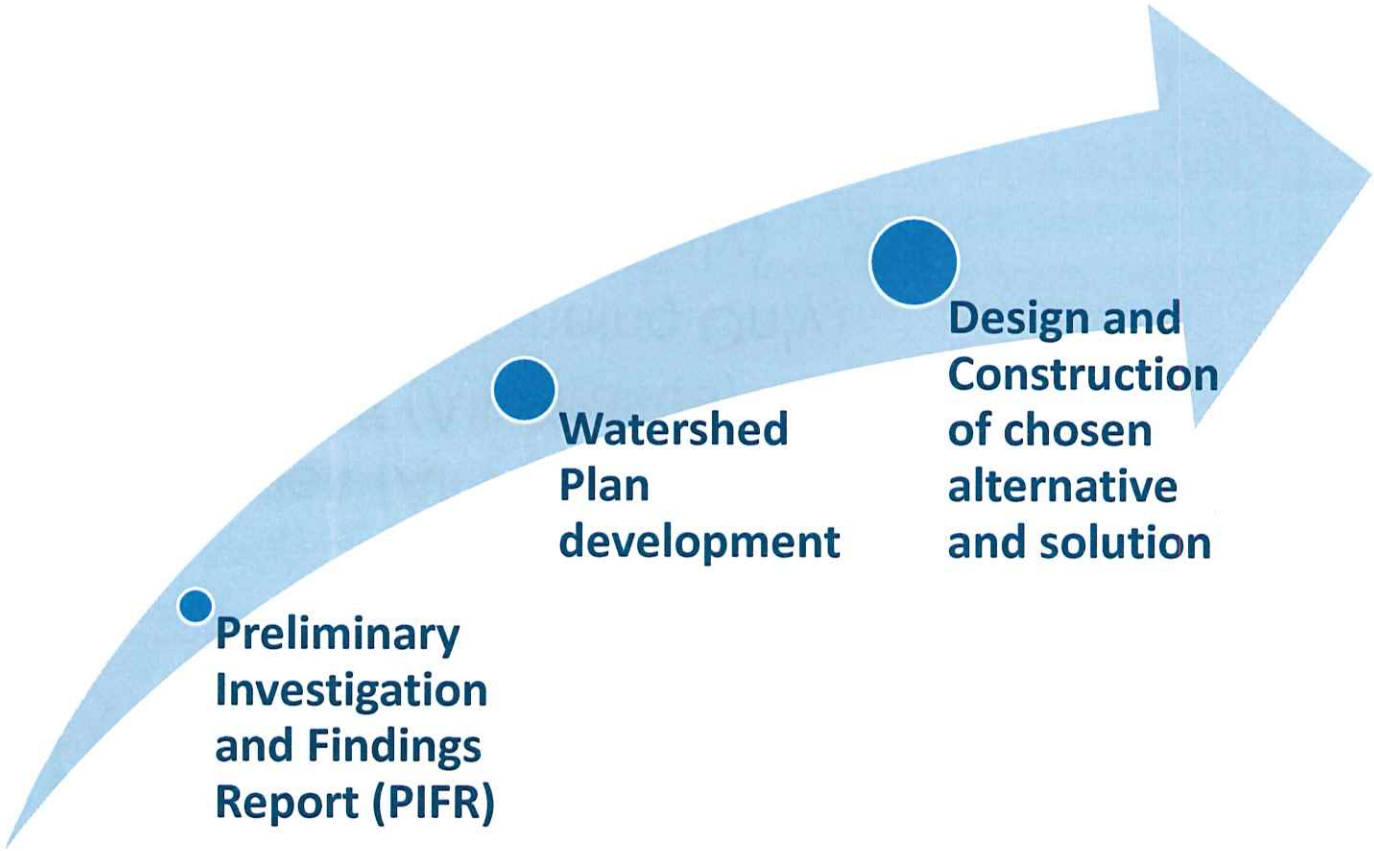
Phases of PL-566 Projects



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ABMA has 9 projects in the Ouachita and Red River Basins of Arkansas

- City of Camden (All Phases)
- City of Pine Bluff (All Phases)
- City of El Dorado (Planning Only)
- City of Dumas (Planning Only)
- City of Wilmot (Planning Only)
- Cities of Stamps & Lewisville (Planning Only)
- City of Eudora (Planning Only)
- City of Fountain Hill (PIFR only)
- Cities of Fulton & McNab (PIFR only)

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City of Camden

- **All Phases Funded**
  - Planning – $730,000
  - Design – $1,825,000
  - Construction – $7,300,000
  - Total: $9,855,000

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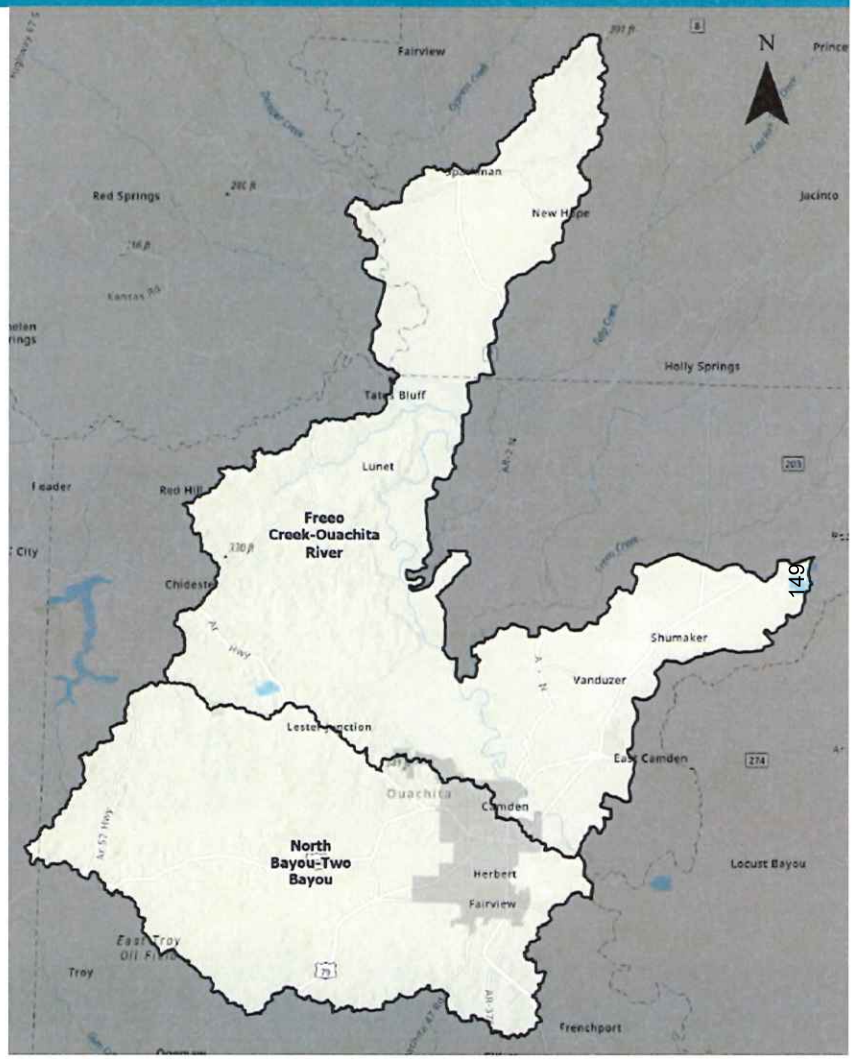
City of Camden

- **Freeo Creek – Ouachita River – 0804010209 (10 - digit HUC)**
- **North Bayou – Two Bayou – 0804020105 (10 - digit HUC)**



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City of Pine Bluff

- **All Phases Funded**

• Planning –	$2,200,000
• Design –	$5,500,000
• Construction –	$22,000,000
• Total:	$29,700,000

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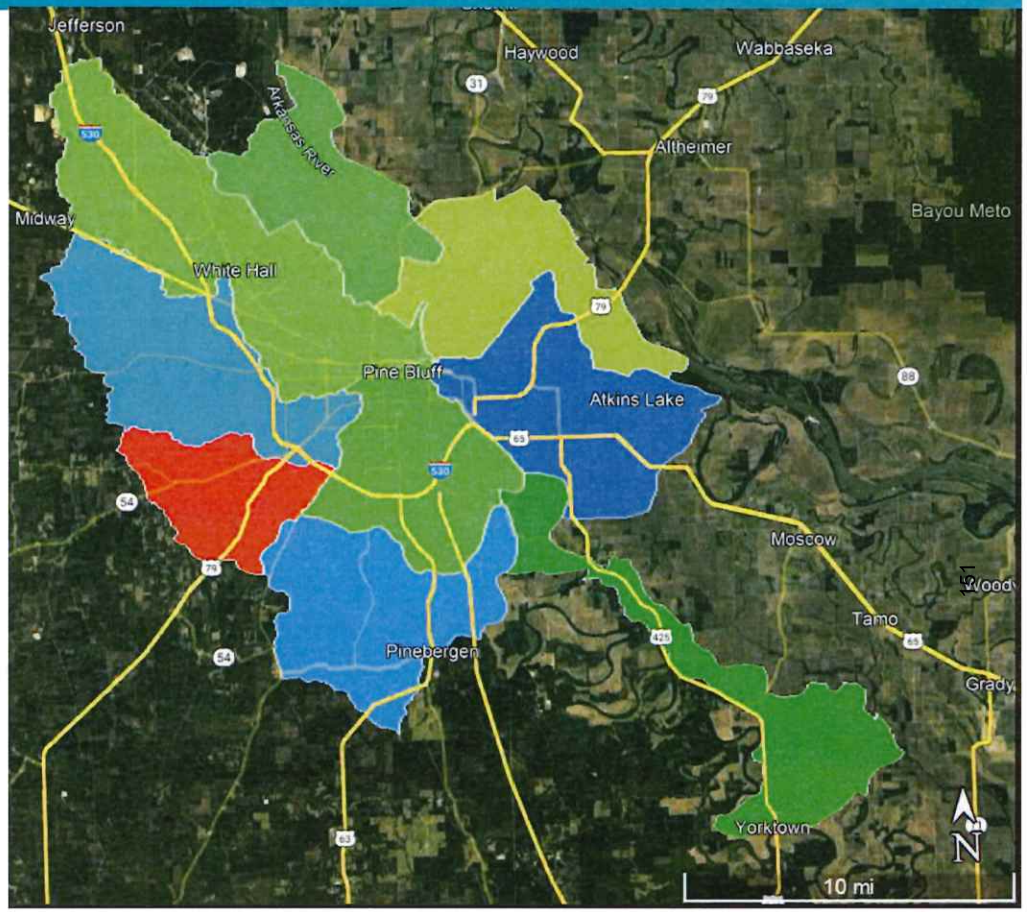
City of Pine Bluff

(9, 12-digit HUC's)

- **Bayou Bartholomew Headwaters (080402050101)**
- **Caney Creek – Caney Bayou (111102070605)**
- **Caney Creek-Arkansas River (111102070604)**
- **Plum Bayou-Arkansas River (111102070606)**
- **Cousart Bayou Headwaters-Lake Alice (080402050201)**
- **Imbeau Bayou (080402050103)**
- **Nevins Creek (080402050102)**
- **Upper Deep Bayou (080402050203)**
- **Boggy Bayou-Bayou Bartholomew (80402050104)**



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City of El Dorado

- **Planning Only**
  - Planning – $650,000

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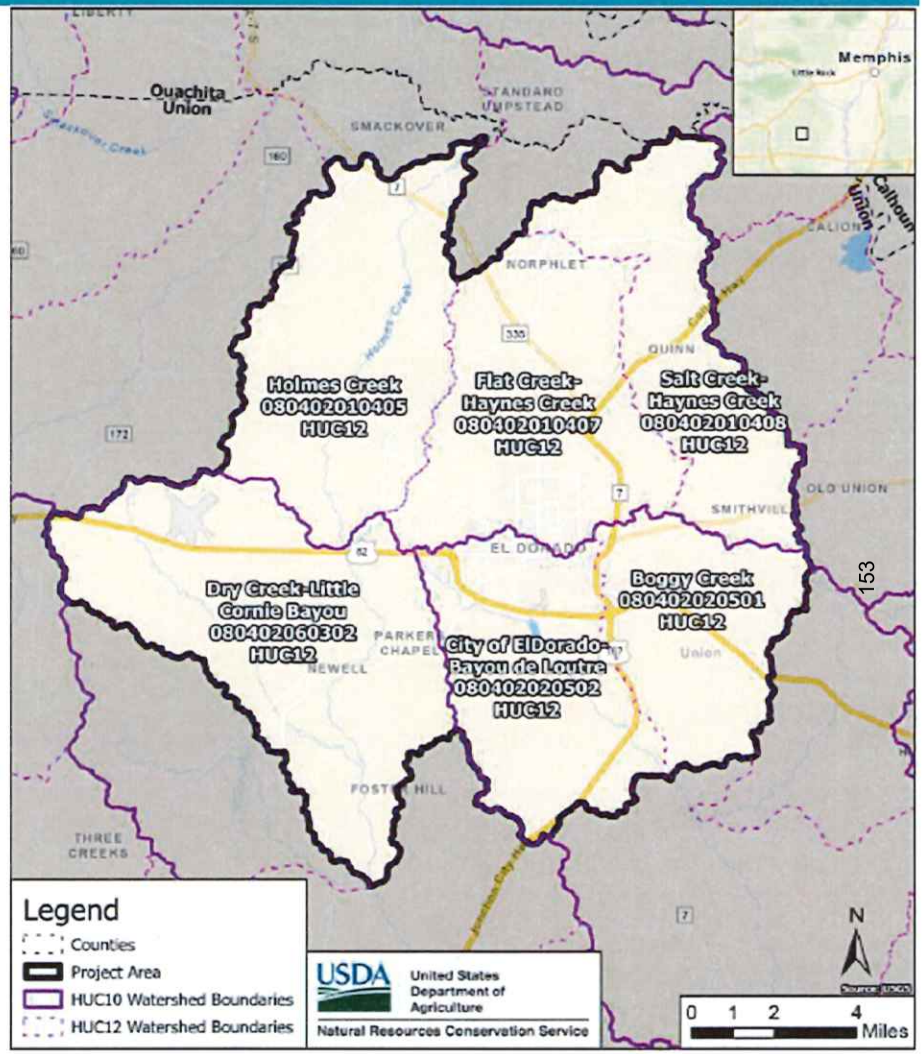
City of El Dorado

(6, 12-digit HUC's)

- **Haynes Creek 080402010407**
- **Salt Creek 080402010408**
- **Boggy Creek 080402020501**
- **City of El Dorado-Bayou de Loutre 080402020502**
- **Dry Creek-Little Cornie Bayou 080402060302**
- **Holmes Creek 080402010405**



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City of Dumas

- **Planning Only**
  - Planning – $360,000

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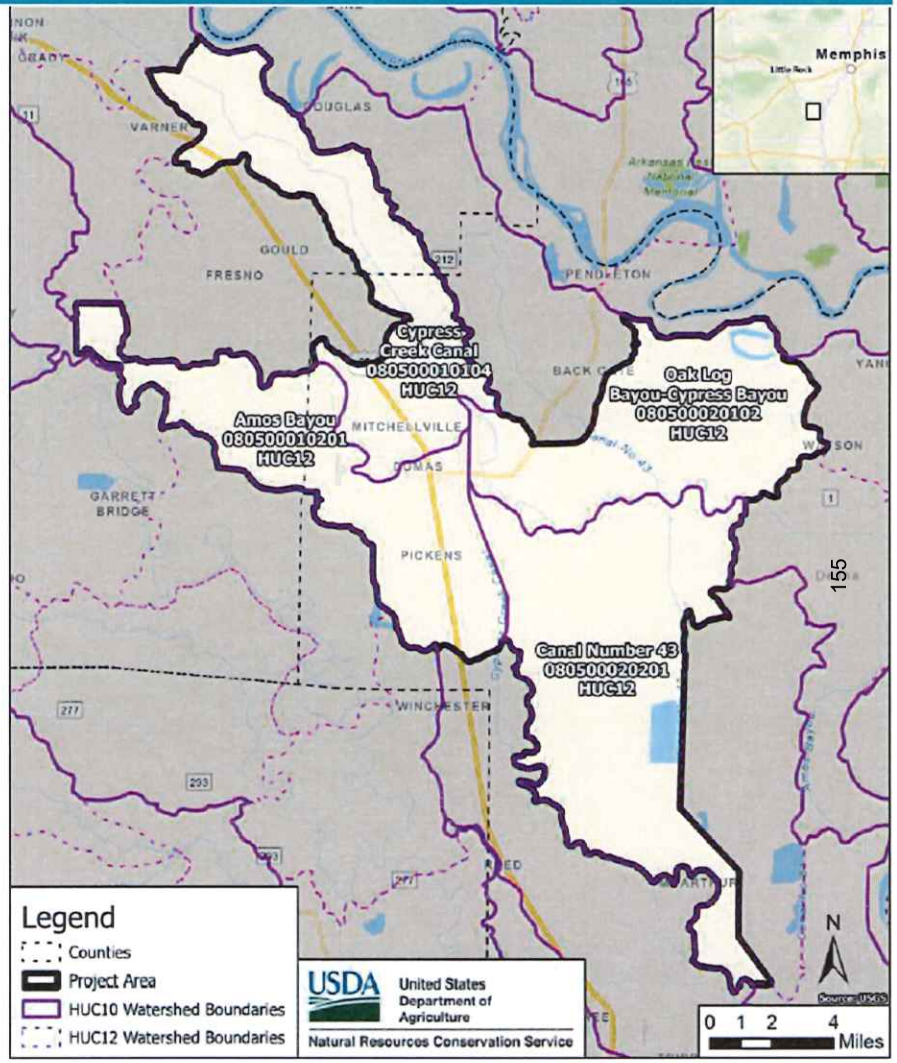
City of Dumas

(4, 12-digit HUC's)

- **Cypress Creek-Headwaters Boeuf River 080500010104**
- **Oak Log Bayou-Cypress Bayou 080500020102**
- **Canal No. 43 080500020201**
- **Amos Bayou 080500010201**



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City of Wilmot

- **Planning Only**
  - Planning – $360,000

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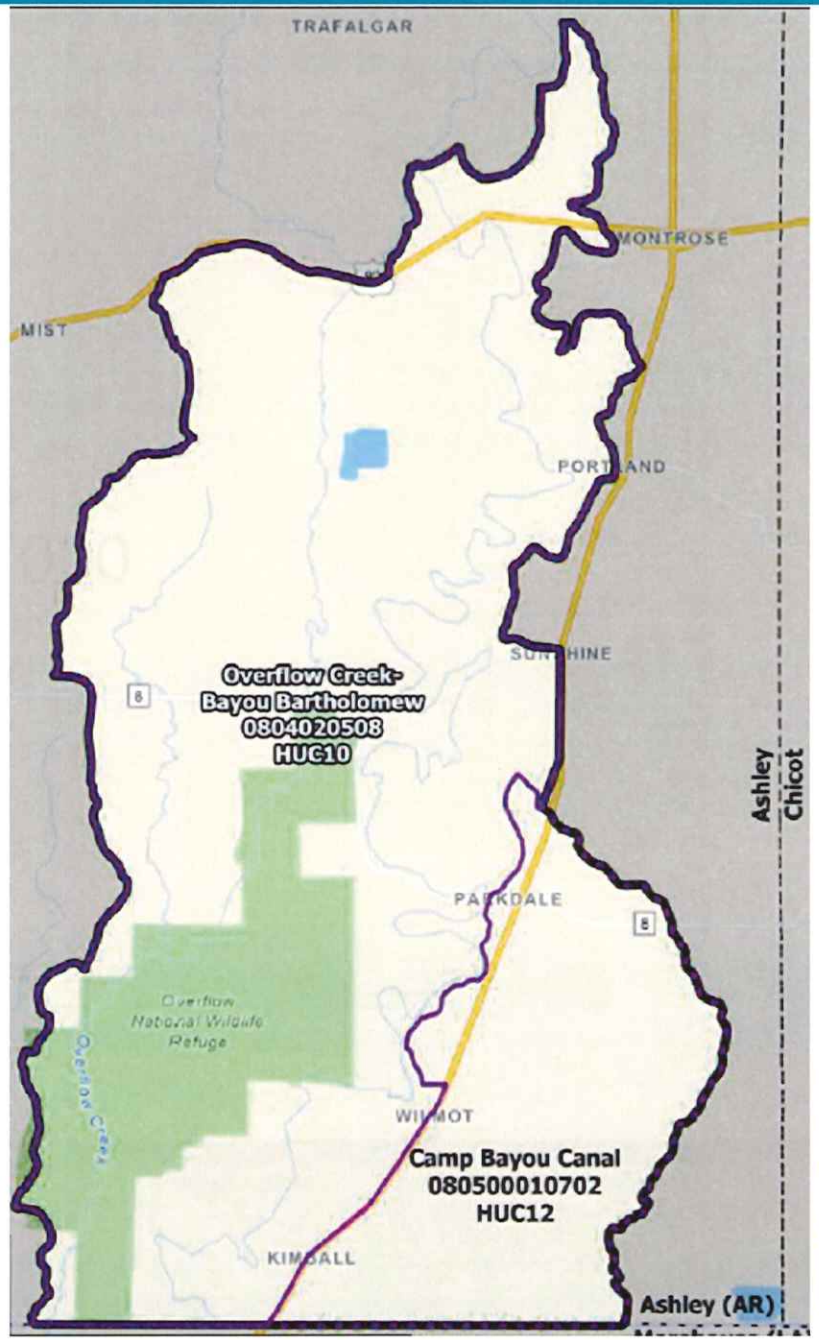
City of Wilmot

- **Overflow Creek – 0804020508 (10 - digit HUC)**
- **Camp Bayou – 080500010702 (12 – digit HUC)**



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Cities of Stamps & Lewisville

- **Planning Only**
  - Planning – $720,000

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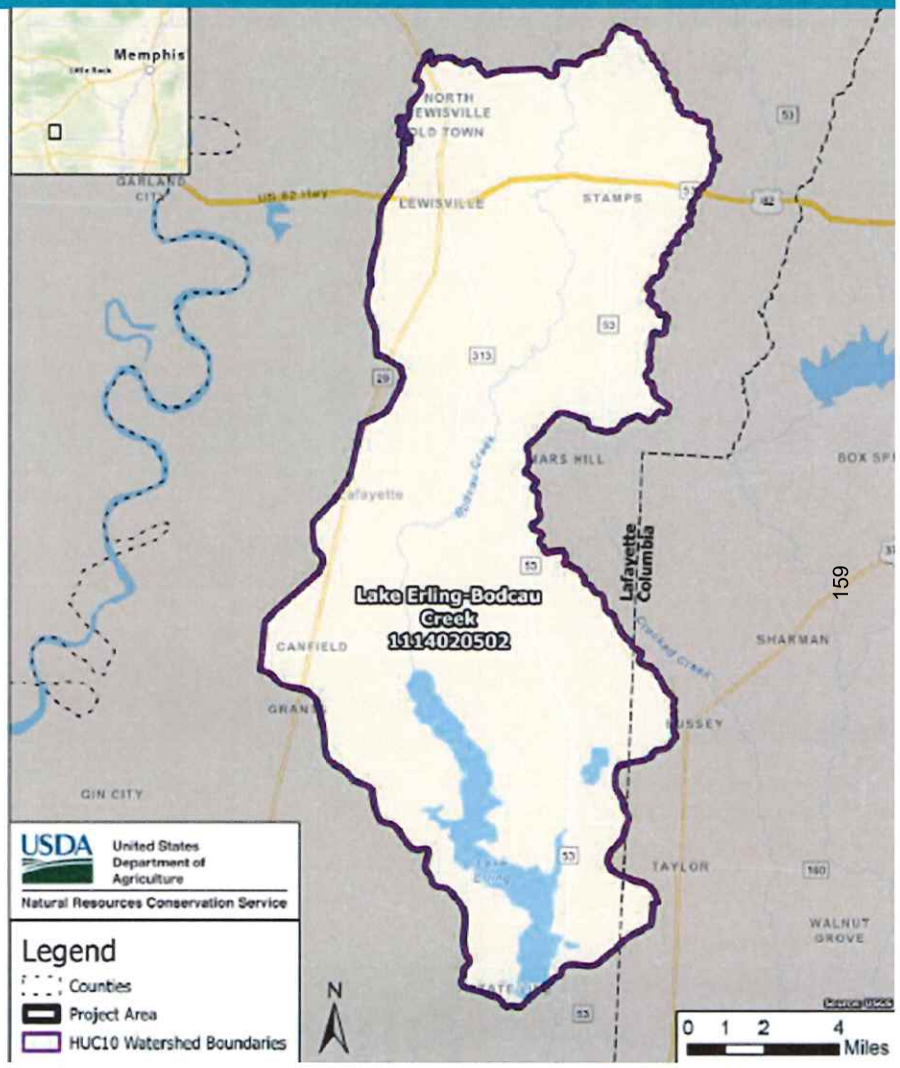
Cities of Stamps & Lewisville

- **Lake Erling – Bodcau Creek 1114020502 (10 - digit HUC)**



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City of Eudora

- **Planning Only**
  - Planning – $360,000

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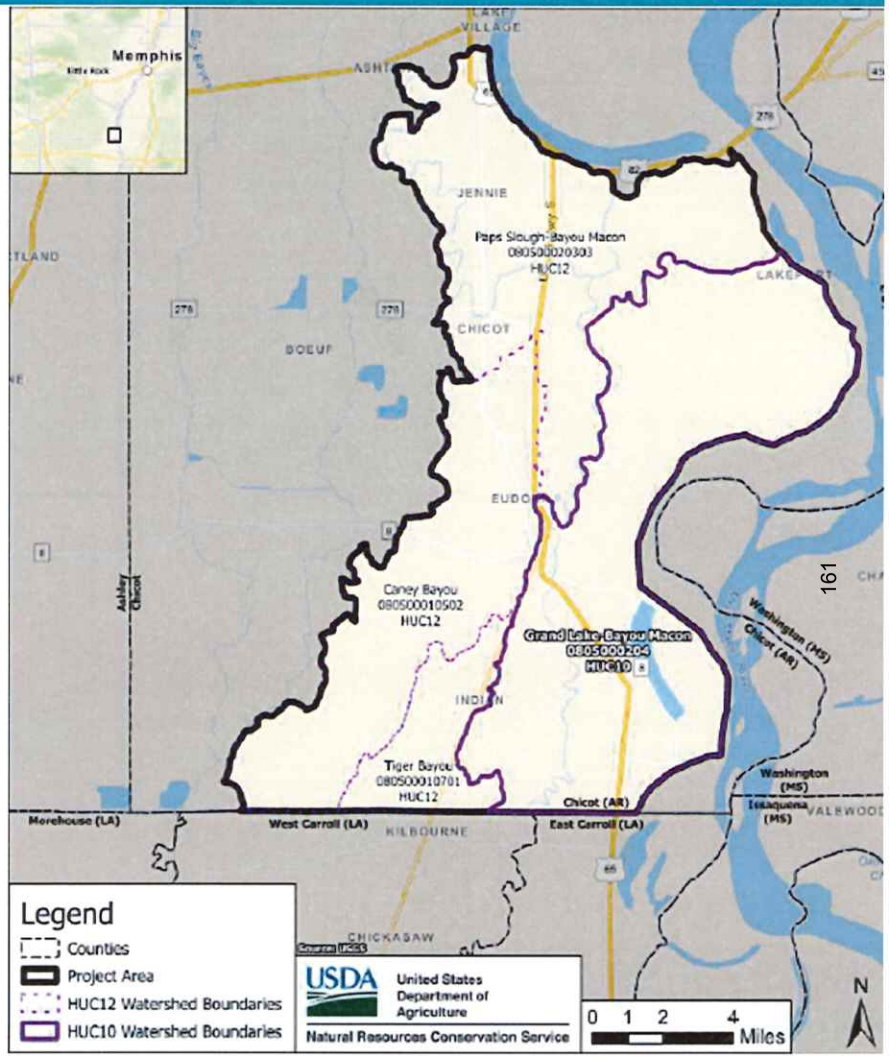
City of Eudora

- **Grand Lake-Bayou Macon 0805000204 (10 - digit HUC)**
- **Caney Bayou 080500010502 (12 – digit HUC)**
- **Tiger Bayou 080500010701 (12 – digit HUC)**
- **Paps Slough-Bayou Macon 080500020303 (12 – digit HUC)**



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City of Fountain Hill

- **PIFR Only**
  - PIFR – $55,000
  - Completed by IDIQ Contractor and then Approved by State Conservationist
    - Request Funds for Planning

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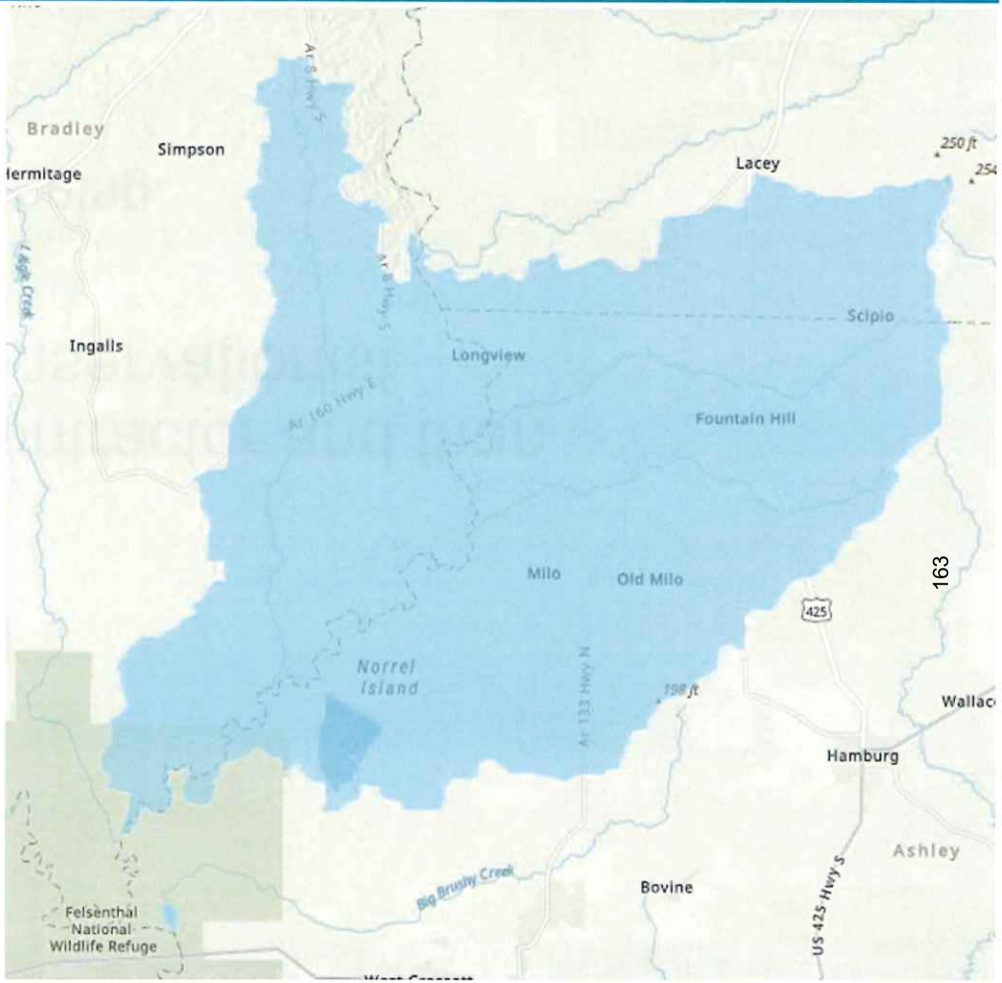
City of Fountain Hill

- **Snake River-Saline River 0804020405 (10 - digit HUC)**



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Cities of Fulton & McNab

- **PIFR Only**
  - PIFR – $55,000
  - Completed by IDIQ Contractor and then Approved by State Conservationist
    - Request Funds for Planning

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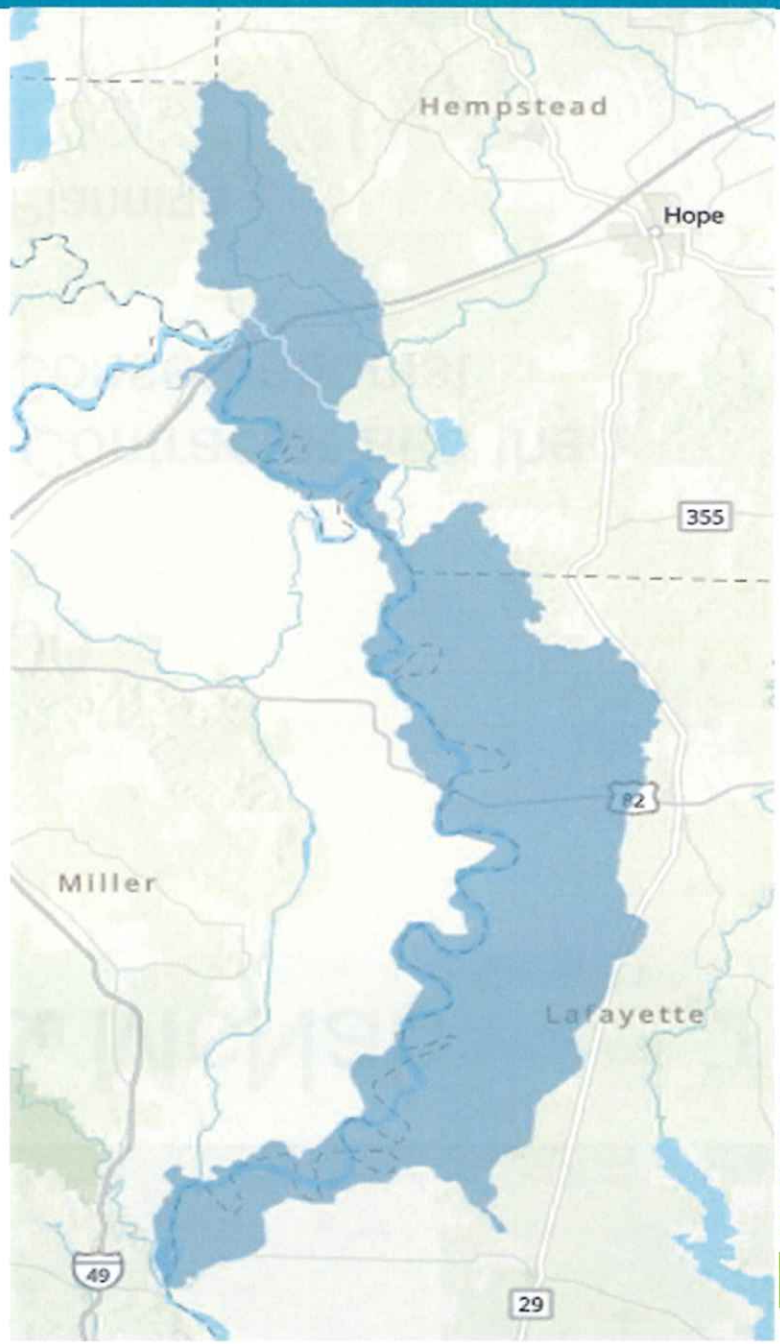
Cities of Fulton & McNab

- **McKinney Bayou-Red River 1114020104 (10 - digit HUC)**

- **Bridge Creek – 111402010105 (12 - digit HUC)**



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Thank You

Questions??

Bill Kinkaid – Resource Conservationist

NRCS Watershed Planning Team

Office: (501) 301-3127

E-mail: william.kinkaid@usda.gov

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RED RIVER COMPACT

ARKANSAS-LOUISIANA-OKLAHOMA-TEXAS

MAY 12, 1978

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PREAMBLE

The States of Arkansas, Louisiana, Oklahoma, and Texas, pursuant to the acts of their respective Governors or Legislatures, or both, being moved by considerations of interstate comity, have resolved to compact with respect to the water of the Red River and its tributaries. By Act of Congress, Public Law No. 346 (84th Congress, First Session), the consent of the United States has been granted for said states to negotiate and enter into a compact providing for an equitable apportionment of such water; and pursuant to that Act the President has designated the representative of the United States.

Further, the consent of Congress has been given for two or more states to negotiate and enter into agreements relating to water pollution control by the provisions of the Federal Water Pollution Control Act (P.L. 92-500, 33 U.S.C. §§ 1251 et seq.).

The Signatory States acting through their duly authorized Compact Commissioners, after several years of negotiations, have agreed to an equitable apportionment of the water of the Red River and its tributaries and do hereby submit and recommend that this Compact be adopted by the respective Legislatures and approved by Congress as hereinafter set forth:

RED RIVER COMPACT

ARTICLE I Purposes

SECTION 1.01. The principal purposes of this Compact are:

(a) To promote interstate comity and remove causes of controversy between each of the affected states by governing the use, control and distribution of the interstate water of the Red River and its tributaries;

(b) To provide an equitable apportionment among the Signatory States of the water of the Red River and its tributaries;

(c) To promote an active program for the control and alleviation of natural deterioration and pollution of the water of the Red River Basin and to provide for enforcement of the laws related thereto;

(d) To provide the means for an active program for the conservation of water, protection of lives and property from floods, improvement of water quality, development of navigation and regulation of flows in the Red River Basin; and

(e) To provide a basis for state or joint state planning and action by ascertaining and identifying each state's share in the interstate water of the Red River Basin and the apportionment thereof.

ARTICLE II General Provisions

SECTION 2.01. Each Signatory State may use the water allocated to it by this Compact in any manner deemed beneficial by that state. Each state may freely administer water rights and uses in accordance with the laws of that state, but such uses shall be subject to the availability of water in accordance with the apportionments made by this Compact.

SECTION 2.02. The use of water by the United States in connection with any individual Federal project shall be in accordance with the Act of Congress authorizing the project and the water shall be charged to the state or states receiving the benefit therefrom.

SECTION 2.03. Any Signatory State using the channel of Red River or its tributaries to convey stored water shall be subject to an appropriate reduction in the amount which may be withdrawn at the point of removal to account for transmission losses.

SECTION 2.04. The failure of any state to use any portion of the water allocated to it shall not constitute relinquishment or forfeiture of the right to such use.

SECTION 2.05. Each Signatory State shall have the right to:

(a) Construct conservation storage capacity for the impoundment of water allocated by this Compact;

(b) Replace within the same area any storage capacity recognized or authorized by this Compact made unusable by any cause, including losses due to sediment storage;

(c) Construct reservoir storage capacity for the purposes of flood and sediment control as well as storage of water which is either imported or is to be exported if such storage does not adversely affect the delivery of water apportioned to any other Signatory State; and

(d) Use the bed and banks of the Red River and its tributaries to convey stored water, imported or exported water, and water apportioned according to this Compact.

SECTION 2.06. Signatory States may cooperate to obtain construction of facilities of joint benefits to such states.

SECTION 2.07. Nothing in this Compact shall be deemed to impair or affect the powers, rights, or obligations of the United States, or those claiming under its authority, in, over and to water of the Red River Basin.

SECTION 2.08. Nothing in this Compact shall be construed to include within the water apportioned by this Compact any water consumed in each state by livestock or for domestic purposes; provided, however, the storage of such water is in accordance with the laws of the respective states but any such impoundment shall not exceed two hundred acre-feet, or such smaller quantity as may be provided for by the laws of each state.

SECTION 2.09. In the event any state shall import water into the Red River Basin from any other river basin, the Signatory State making the importation shall have the use of such imported water.

SECTION 2.10. Nothing in this Compact shall be deemed to:

(a) Interfere with or impair the right or power of any Signatory State to regulate within its boundaries the appropriation, use, and control of water, or quality of water, not inconsistent with its obligations under this Compact;

(b) Repeal or prevent the enactment of any legislation or the enforcement of any requirement by any Signatory State imposing any additional conditions or restrictions to further lessen or prevent the pollution or natural deterioration of water within its jurisdiction; provided nothing contained in this paragraph shall alter any provision of this Compact dealing with the apportionment of water or the rights thereto; or

(c) Waive any state's immunity under the Eleventh Amendment of the Constitution of the United States, or as constituting the consent of any state to be sued by its own citizens.

SECTION 2.11. Accounting for apportionment purposes on interstate streams shall not be mandatory under the terms of the Compact until one or more affected states deem the accounting necessary.

SECTION 2.12. For the purposes of apportionment of the water among the Signatory States, the Red River is hereby divided into the following major subdivisions:

(a) Reach I -- the Red River and tributaries from the New Mexico-Texas State boundary to Denison Dam;

(b) Reach II -- the Red River from Denison Dam to the point where it crosses the Arkansas-Louisiana state boundary and all tributaries which contribute to the flow of the River within this reach;

(c) Reach III -- the tributaries west of the Red River which cross the Texas-Louisiana state boundary, the Arkansas-Louisiana state boundary, and those which cross both the Texas-Arkansas state boundary and the Arkansas-Louisiana state boundary;

(d) Reach IV -- the tributaries east of the Red River in Arkansas which cross the Arkansas-Louisiana state boundary; and

(e) Reach V -- that portion of the Red River and tributaries in Louisiana not included in Reach III or in Reach IV.

SECTION 2.13. If any part or application of this Compact shall be declared invalid by a court of competent jurisdiction, all other severable provisions and applications of this Compact shall remain in full force and effect.

SECTION 2.14. Subject to the availability of water in accordance with this Compact, nothing in this Compact shall be held or construed to alter, impair or increase, validate, or prejudice any existing water right or right of water use that is legally recognized on the effective date of this Compact by either statutes or courts of the Signatory State within which it is located.

ARTICLE III Definitions

SECTION 3.01. In this Compact:

(a) The States of Arkansas, Louisiana, Oklahoma, and Texas are referred to as "Arkansas," "Louisiana," "Oklahoma," and "Texas," respectively, or individually as "State" or "Signatory State," or collectively as "States" or "Signatory States."

(b) The term "Red River" means the stream below the crossing of the Texas-Oklahoma state boundary at longitude 100 degrees west.

(c) The term "Red River Basin" means all of the natural drainage area of the Red River and its tributaries east of the New Mexico-Texas state boundary and above its junction with Atchafalaya and Old Rivers.

(d) The term "water of the Red River Basin" means the water originating in any part of the Red River Basin and flowing to or in the Red River or any of its tributaries.

(e) The term "tributary" means any stream which contributes to the flow of the Red River.

(f) The term "interstate tributary" means a tributary of the Red River, the drainage area of which includes portions of two or more Signatory States.

(g) The term "intrastate tributary" means a tributary of the Red River, the drainage area of which is entirely within a single Signatory State.

(h) The term "Commission" means the agency created by Article IX of this Compact for the administration thereof.

(i) The term "pollution" means the alteration of the physical, chemical, or biological characteristics of water by the acts or instrumentalities of man which create or are likely to result in a material and adverse effect upon human beings, domestic or wild animals, fish and other aquatic life, or adversely affect any other lawful use of such water; provided, that for the purposes of this Compact, "pollution" shall not mean or include "natural deterioration."

(j) The term "natural deterioration" means the material reduction in the quality of water resulting from the leaching of solubles from the soils and rocks through or over which the water flows naturally.

(k) The term "designated water" means water released from storage, paid for by non-Federal interests, for delivery to a specific point of use or diversion.

(l) The term "undesignated water" means all water released from storage other than "designated water."

(m) The term "conservation storage capacity" means that portion of the active capacity of reservoirs available for the storage of water for subsequent beneficial use, and it excludes any portion of the capacity of reservoirs allocated solely to flood control and sediment control, or either of them.

(n) The term "runoff" means both the portion of precipitation which runs off the surface of a drainage area and that portion of the precipitation that enters the streams after passing through the portions of the earth.

ARTICLE IV Apportionment of Water -- Reach I Oklahoma -- Texas Subdivision of Reach I and apportionment of water therein.

Reach I of the Red River is divided into topographical subbasins, with the water therein allocated as follows:

SECTION 4.01. Subbasin 1 -- Interstate streams -- Texas.

(a) This includes the Texas portion of Buck Creek, Sand (Lebos) Creek, Salt Fork Red River, Elm Creek, North Fork Red River, Sweetwater Creek, and Washita River, together with all their tributaries in Texas which lie west of the 100th Meridian.

(b) The annual flow within this subbasin is hereby apportioned sixty (60) percent to Texas and forty (40) percent to Oklahoma.

SECTION 4.02. Subbasin 2 -- Intrastate and interstate streams -- Oklahoma.

(a) This subbasin is composed of all tributaries of the Red River in Oklahoma and portions thereof upstream to the Texas-Oklahoma state boundary at longitude 100 degrees west, beginning from Denison Dam and upstream to and including Buck Creek.

(b) The State of Oklahoma shall have free and unrestricted use of the water of this subbasin.

SECTION 4.03. Subbasin 3 -- Intrastate streams -- Texas.

(a) This includes the tributaries of the Red River in Texas, beginning from Denison Dam and upstream to and including Prairie Dog Town Fork Red River.

(b) The State of Texas shall have free and unrestricted use of the water in this subbasin.

SECTION 4.04. Subbasin 4 -- Mainstem of the Red River and Lake Texoma.

(a) This subbasin includes all of Lake Texoma and the Red River beginning at Denison Dam and continuing upstream to the Texas-Oklahoma state boundary at longitude 100 degrees west.

(b) The storage of Lake Texoma and flow from the main stem of the Red River into Lake Texoma is apportioned as follows:

(1) Oklahoma 200,000 acre-feet and Texas 200,000 acre-feet, which quantities shall include existing allocations and uses; and

(2) Additional quantities in a ratio of fifty (50) percent to Oklahoma and fifty (50) percent to Texas.

SECTION 4.05. Special provisions.

(a) Texas and Oklahoma may construct, jointly or in cooperation with the United States, storage or other facilities for the conservation and use of water; provided that any facilities constructed on the Red River boundary between the two states shall not be inconsistent with the Federal legislation authorizing Denison Dam and Reservoir project.

(b) Texas shall not accept for filing, or grant a permit, for the construction of a dam to impound water solely for irrigation, flood control, soil conservation, mining and recovery of minerals, hydroelectric power, navigation, recreation and pleasure, or for any other purpose other than for domestic, municipal, and industrial water supply, on the main stem of the North Fork Red River or any of its tributaries within Texas above Lugert-Altus Reservoir until the date that imported water, sufficient to meet the municipal and irrigation needs of Western Oklahoma is provided, or until January 1, 2000, whichever occurs first.

ARTICLE V Apportionment of Water -- Reach II Arkansas, Oklahoma, Texas and Louisiana.

Subdivision of Reach II and allocation of water therein. Reach II of the Red River is divided into topographic subbasins, and the water therein is allocated as follows:

SECTION 5.01. Subbasin 1 -- Intrastate streams -- Oklahoma.

(a) This subbasin includes those streams and their tributaries above existing, authorized or proposed last downstream major damsites, wholly in Oklahoma and flowing into Red River below Denison Dam and above the Oklahoma-Arkansas state boundary. These streams and their tributaries with existing, authorized or proposed last downstream major damsites are as follows:

			Location	
Stream	Site	Ac-ft	Latitude	Longitude
Island-Bayou	Albany	85,200	33°51.5'N	96°11.4'W
Blue River	Durant	147,000	33°55.5'N	96°04.2'W
Boggy River	Boswell	1,243,800	34°01.6'N	95°45.0'W
Kiamichi River	Hugo	240,700	34°01.0'N	95°22.6'W

(b) Oklahoma is apportioned the water of this subbasin and shall have unrestricted use thereof.

SECTION 5.02. Subbasin 2 -- Intrastate streams -- Texas.

(a) This subbasin includes those streams and their tributaries above existing authorized or proposed last downstream major damsites, wholly in Texas and flowing into Red River below Denison Dam and above the Texas-Arkansas state boundary. These streams and their tributaries with existing, authorized or proposed last downstream major damsites are as follows:

Stream	Site	Ac-ft	Location Latitude	Longitude
Shawnee Creek	Randall Lake	5,400	33°48.1'N	96°34.8'W
Brushy Creek	Valley Lake	15,000	33°38.7'N	96°21.5'W
Bois d' Arc Creek	New Bonham Reservoir	130,600	33°42.9'N	95°58.2'W
Coffee Mill Creek	Coffee Mill Lake	8,000	33°44.1'N	95°58.0'W
Sandy Creek	Lake Crockett	3,900	33°44.5'N	95°55.5'W
Sanders Creek	Pat Mayse	124,500	33°51.2'N	95°32.9'W
Pine Creek	Lake Crook	11,011	33°43.7'N	95°34.0'W
Big Pine Creek	Big Pine Lake	138,600	33°52.0'N	95°11.7'W
Pecan Bayou	Pecan Bayou	625,000	33°41.1'N	94°58.7'W
Mud Creek	Liberty Hill	97,700	33°33.0'N	94°29.3'W
Mud Creek	KVW RanchLakes	3,440	33°34.8'N	94°27.3'W

(b) Texas is apportioned the water of this subbasin and shall have unrestricted use thereof.

SECTION 5.03. Subbasin 3 -- Interstate streams -- Oklahoma and Arkansas.

(a) This subbasin includes Little River and its tributaries above Millwood Dam.

(b) The States of Oklahoma and Arkansas shall have free and unrestricted use of the water of this subbasin within their respective states, subject, however, to the limitation that Oklahoma shall allow a quantity of water equal to 40 percent of the total runoff originating below the following existing, authorized or proposed last downstream major damsites in Oklahoma to flow into Arkansas:

Stream	Site	Ac-ft	Location Latitude	Longitude
Little River	Pine Creek	70,500	34°06.8'N	95°04.9'W
Glover Creek	Lukfata	258,600	34°08.5'N	94°55.4'W
Mountain ForkRiver	Broken Bow	470,100	34°08.9'N	94°41.2'W

(c) Accounting will be on an annual basis unless otherwise deemed necessary by the States of Arkansas and Oklahoma.

SECTION 5.04. Subbasin 4 -- Interstate streams -- Texas and Arkansas.

(a) This subbasin shall consist of those streams and their tributaries above existing, authorized or proposed last downstream major damsites, originating in Texas and crossing the Texas-Arkansas state boundary before flowing into the Red River in Arkansas. These streams

and their tributaries with existing, authorized or proposed last downstream major damsites are as follows:

Stream	Site	Ac-ft	Location Latitude	Longitude
McKinney BayouTrib.	Bringle Lake	3,052	33°30.6'N	94°06.2'W
Barkman Creek	Barkman Reservoir	15,900	33°29.7'N	94°10.3'W
Sulphur River	Texarkana	386,900	33°18.3'N	94°09.6'W

(b) The State of Texas shall have the free and unrestricted use of the water of this subbasin.

SECTION 5.05. Subbasin 5 -- Mainstem of the Red River and tributaries.

(a) This subbasin includes that portion of the Red River, together with its tributaries, from Denison Dam down to the Arkansas-Louisiana state boundary, excluding all tributaries included in the other four subbasins of Reach II.

(b) Water within this subbasin is allocated as follows:

(1) The Signatory States shall have equal rights to the use of runoff originating in subbasin 5 and undesignated water flowing into subbasin 5, so long as the flow of the Red River at the Arkansas-Louisiana state boundary is 3,000 cubic feet per second or more, provided no state is entitled to more than 25 percent of the water in excess of 3,000 cubic feet per second.

(2) Whenever the flow of the Red River at the Arkansas-Louisiana state boundary is less than 3,000 cubic feet per second, but more than 1,000 cubic feet per second, the States of Arkansas, Oklahoma, and Texas shall allow to flow into the Red River for delivery to the State of Louisiana a quantity of water equal to 40 percent of the total weekly runoff originating in subbasin 5 and 40 percent of undesignated water flowing into subbasin; provided, however, that this requirement shall not be interpreted to require any state to release stored water.

(3) Whenever the flow of the Red River at the Arkansas-Louisiana state boundary falls below 1,000 cubic feet per second, the States of Arkansas, Oklahoma, and Texas shall allow a quantity of water equal to all the weekly runoff originating in subbasin 5 and all undesignated water flowing into subbasin 5 within their respective states to flow into the Red River as required to maintain a 1,000 cubic foot per second flow at the Arkansas-Louisiana state boundary.

(c) Whenever the flow at Index, Arkansas, is less than 526 c.f.s., the states of Oklahoma and Texas shall each allow a quantity of water equal to 40 percent of the total weekly runoff originating in subbasin 5 within their respective states to flow into the Red River; provided however, this provision shall be invoked only at the request of Arkansas, only after Arkansas has ceased all diversions from the Red River itself in Arkansas above Index, and only if the provisions of Sub-sections 5.05 (b) (2) and (3) have not caused a limitation of diversions in subbasin 5.

(d) No state guarantees to maintain a minimum low flow to a downstream state.

SECTION 5.06. Special Provisions.

(a) Reservoirs within the limits of Reach II, subbasin 5, with a conservation storage capacity of 1,000 acre feet or less in existence or authorized on the date of the Compact pursuant to the rights and privileges granted by a Signatory State authorizing such reservoirs, shall be

exempt from the provisions of Section 5.05; provided, if any right to store water in, or use water from, an existing exempt reservoir expires or is cancelled after the effective date of the Compact the exemption for such rights provided by this section shall be lost.

(b) A Signatory State may authorize a change in the purpose or place of use of water from a reservoir exempted by subparagraph (a) of this section without losing that exemption, if the quantity of authorized use and storage is not increased.

(c) Additionally, exemptions from the provisions of Section 5.05 shall not apply to direct diversions from Red River to off-channel reservoirs or lands.

ARTICLE VI Apportionment of Water -- Reach III Arkansas, Louisiana, and Texas

Subdivision of Reach III and allocation of water therein. Reach III of the Red River is divided into topographic subbasins, and the water therein allocated, as follows:

SECTION 6.01. Subbasin 1 -- Interstate streams -- Arkansas and Texas.

(a) This subbasin includes the Texas portion of those streams crossing the Arkansas-Texas state boundary one or more times and flowing through Arkansas into Cypress Creek-Twelve Mile Bayou watershed in Louisiana.

(b) Texas is apportioned sixty (60) percent of the run-off of this subbasin and shall have unrestricted use thereof; Arkansas is entitled to forty (40) percent of the runoff of this subbasin.

SECTION 6.02. Subbasin 2 -- Interstate streams -- Arkansas and Louisiana.

(a) This subbasin includes the Arkansas portion of those streams flowing from Subbasin 1 into Arkansas, as well as other streams in Arkansas which cross the Arkansas-Louisiana state boundary one or more times and flow into Cypress Creek-Twelve Mile Bayou watershed in Louisiana.

(b) Arkansas is apportioned sixty (60) percent of the runoff of this subbasin and shall have unrestricted use thereof; Louisiana is entitled to forty (40) percent of the runoff of this subbasin.

SECTION 6.03. Subbasin 3 -- Interstate streams -- Texas and Louisiana.

(a) This subbasin includes the Texas portion of all tributaries crossing the Texas-Louisiana state boundary one or more times and flowing into Caddo Lake, Cypress Creek-Twelve Mile Bayou, or Cross Lake, as well as the Louisiana portion of such tributaries.

(b) Texas and Louisiana within their respective boundaries shall each have the unrestricted use of the water of this subbasin subject to the following allocation:

(1) Texas shall have the unrestricted right to all water above Marshall, Lake O' the Pines, and Black Cypress damsites; however, Texas shall not cause runoff to be depleted to a quantity less than that which would have occurred with the full operation of Franklin County, Titus County, Ellison Creek, Johnson Creek, Lake O' the Pines, Marshall, and Black Cypress Reservoirs constructed, and those other impoundments and diversions existing on the effective date of this Compact. Any depletions of runoff in excess of the depletions described above shall be charged against Texas' apportionment of the water in Caddo Reservoir.

(2) Texas and Louisiana shall each have the unrestricted right to use fifty (50) percent of the conservation storage capacity in the present Caddo Lake for the impoundment of water for

state use, subject to the provision that supplies for existing uses of water from Caddo Lake, on date of Compact, are not reduced.

(3) Texas and Louisiana shall each have the unrestricted right to fifty (50) percent of the conservation storage capacity of any future enlargement of Caddo Lake, provided, the two states may negotiate for the release of each state's share of the storage space on terms mutually agreed upon by the two states after the effective date of this Compact.

(4) Inflow to Caddo Lake from its drainage area downstream from Marshall, Lake O' the Pines, and Black Cypress damsites and downstream from other last downstream dams in existence on the date of the signing of the Compact document by the Compact Commissioners, will be allowed to continue flowing into Caddo Lake except that any man-made depletions to this inflow by Texas will be subtracted from the Texas share of the water in Caddo Lake.

(c) In regard to the water of interstate streams which do not contribute to the inflow to Cross Lake or Caddo Lake, Texas shall have the unrestricted right to divert and use this water on the basis of a division of runoff above the state boundary of sixty (60) percent to Texas and forty (40) percent to Louisiana.

(d) Texas and Louisiana will not construct improvements on the Cross Lake watershed in either state that will affect the yield of Cross Lake; provided, however, this subsection shall be subject to the provisions of Section 2.08.

SECTION 6.04. Subbasin 4 -- Intrastate streams -- Louisiana.

(a) This subbasin includes that area of Louisiana in Reach III not included within any other subbasin.

(b) Louisiana shall have free and unrestricted use of the water of this subbasin.

ARTICLE VII Apportionment of Water -- Reach IV Arkansas and Louisiana

Subdivision of Reach IV and allocation of water therein. Reach IV of the Red River is divided into topographic subbasins, and the water therein allocated as follows:

SECTION 7.01. Subbasin 1 -- Intrastate streams -- Arkansas.

(a) This subbasin includes those streams and their tributaries above last downstream major damsites originating in Arkansas and crossing the Arkansas-Louisiana state boundary before flowing into the Red River in Louisiana. Those major last downstream damsites are as follows:

			Location	
Stream	**Site**	**Ac-ft**	**Latitude**	**Longitude**
Ouachita River	LakeCatherine	19,000	34°26.6'N	93°01.6'W
Caddo River	DeGray Lake	1,377,000	34°13.2'N	93°06.6'W
Little Missouri River	Lake Greeson	600,000	34°08.9'N	93°42.9'W
Alum Fork, Saline River	Lake Winona	63,264	32°47.8'N	92°51.0'W

(b) Arkansas is apportioned the waters of this subbasin and shall have unrestricted use thereof.

SECTION 7.02. Subbasin 2 -- Interstate streams -- Arkansas and Louisiana.

(a) This subbasin shall consist of Reach IV less subbasin 1 as defined in Section 7.01 (a) above.

(b) The State of Arkansas shall have free and unrestricted use of the water of this reach subject to the limitation that Arkansas shall allow a quantity of water equal to forty (40) percent of the weekly runoff originating below or flowing from the last downstream major damsites to flow into Louisiana. Where there are no designated last downstream damsites, Arkansas shall allow a quantity of water equal to forty (40) percent of the total weekly runoff originating above the state boundary to flow into Louisiana. Use of water in this subbasin is subject to low flow provisions of subparagraph 7.02(b).

SECTION 7.03. Special Provisions.

(a) Arkansas may use the beds and banks of segments of Reach IV for the purpose of conveying its share of water to designated downstream diversions.

(b) The State of Arkansas does not guarantee to maintain a minimum low flow for Louisiana in Reach IV. However, on the following streams when the use of water in Arkansas reduces the flow at the Arkansas-Louisiana state boundary to the following amounts:

(1) Ouachita -- 780 cfs

(2) Bayou Bartholomew -- 80 cfs

(3) Boeuf River -- 40 cfs

(4) Bayou Macon -- 40 cfs

the State of Arkansas pledges to take affirmative steps to regulate the diversions of runoff originating or flowing into Reach IV in such a manner as to permit an equitable apportionment of the runoff as set out herein to flow into the State of Louisiana. In its control and regulation of the water of Reach IV any adjudication or order rendered by the State of Arkansas or any of its instrumentalities or agencies affecting the terms of this Compact shall not be effective against the State of Louisiana nor any of its citizens or inhabitants until approved by the Commission.

ARTICLE VIII Apportionment of Water -- Reach V

SECTION 8.01. Reach V of the Red River consists of the main stem Red River and all of its tributaries lying wholly within the State of Louisiana. The State of Louisiana shall have free and unrestricted use of the water of this subbasin.

ARTICLE IX Administration of the Compact

SECTION 9.01. There is hereby created an interstate administrative agency to be known as the "Red River Compact Commission," hereinafter called the "Commission." The Commission shall be composed of two representatives from each Signatory State who shall be designated or appointed in accordance with the laws of each state, and one Commissioner representing the United States, who shall be appointed by the President. The Federal Commissioner shall be the Chairman of the Commission but shall not have the right to vote. The failure of the President to appoint a Federal Commissioner will not prevent the operation or effect of this Compact, and the eight representatives from the Signatory States will elect a Chairman for the Commission.

SECTION 9.02. The Commission shall meet and organize within 60 days after the effective date of this Compact. Thereafter, meetings shall be held at such times and places as the Commission shall decide.

SECTION 9.03. Each of the two Commissioners from each state shall have one vote; provided, however, that if only one representative from a state attends he is authorized to vote on behalf of the absent Commissioner from that state. Representatives from three states shall constitute a quorum. Any action concerned with administration of this Compact or any action requiring compliance with specific terms of this Compact shall require six concurring votes. If a proposed action of the Commission affects existing water rights in a state, and that action is not expressly provided for in this Compact, eight concurring votes shall be required.

SECTION 9.04. (a) The salaries and personal expenses of each state's representative shall be paid by the government that it represents, and the salaries and personal expenses of the Federal Commissioner will be paid for by the United States.

(b) The Commission's expenses for any additional stream flow gauging stations shall be equitably apportioned among the states involved in the reach in which the stream flow gauging stations are located.

(c) All other expenses incurred by the Commission shall be borne equally by the Signatory States and shall be paid by the Commission out of the "Red River Compact Commission Fund." Such fund shall be initiated and maintained by equal payments of each state into the fund. Disbursement shall be made from the fund in such manner as may be authorized by the Commission. Such fund shall not be subject to audit and accounting procedures of the state; however, all receipts and disbursements of the fund by the Commission shall be audited by a qualified independent public accountant at regular intervals, and the report of such audits shall be included in and become a part of the annual report of the Commission. Each state shall have the right to make its own audit of the accounts of the Commission at any reasonable time.

ARTICLE X Powers and Duties of the Commission

SECTION 10.01. The Commission shall have the power to:

(a) Adopt rules and regulations governing its operation and enforcement of the terms of the Compact;

(b) Establish and maintain an office for the conduct of its affairs and, if desirable, from time to time, change its location;

(c) Employ or contract with such engineering, legal, clerical and other personnel as it may determine necessary for the exercise of its functions under this Compact without regard to the Civil Service Laws of any Signatory State; provided that such employees shall be paid by and be responsible to the Commission and shall not be considered employees of any Signatory State;

(d) Acquire, use and dispose of such real and personal property as it may consider necessary;

(e) Enter into contracts with appropriate State or Federal agencies for the collection, correlation and presentation of factual data, for the maintenance of records and for the preparation of reports;

(f) Secure from the head of any department or agency of the Federal or State government such information as it may need or deem to be useful for carrying out its functions and as may be available to or procurable by the department or agency to which the request is addressed; provided such information is not privileged and the department or agency is not precluded by law from releasing same;

(g) Make findings, recommendations or reports in connection with carrying out the purposes of this Compact, including, but not limited to, a finding that a Signatory State is or is not in violation of any of the provisions of this Compact. The Commission is authorized to make such investigations and studies, and to hold such hearings as it may deem necessary for said purposes. It is authorized to make and file official certified copies of any of its findings, recommendations or reports with such officers or agencies of any Signatory State, or the United States, as may have any interest in or jurisdiction over the subject matter. The making of findings, recommendations, or reports by the Commission shall not be a condition precedent to the instituting or maintaining of any action or proceeding of any kind by a Signatory State in any court or tribunal, or before any agency or officer, for the protection of any right under this Compact or for the enforcement of any of its provisions; and

(h) Print or otherwise reproduce and distribute its proceedings and reports.

SECTION 10.02. The Commission shall:

(a) Cause to be established, maintained, and operated such stream, reservoir and other gauging stations as are necessary for the proper administration of the Compact;

(b) Cause to be collected, analyzed and reported such information on stream flows, water quality, water storage and such other data as are necessary for the proper administration of the Compact;

(c) Perform all other functions required of it by the Compact and do all things necessary, proper and convenient in the performance of its duties thereunder;

(d) Prepare and submit to the governor of each of the Signatory States a budget covering the anticipated expenses of the Commission for the following fiscal biennium;

(e) Prepare and submit an annual report to the governor of each Signatory State and to the President of the United States covering the activities of the Commission for the preceding fiscal year, together with an accounting of all funds received and expended by it in the conduct of its work;

(f) Make available to the governor or to any official agency of a Signatory State or to any authorized representative of the United States, upon request, any information within its possession;

(g) Not incur any obligation in excess of the unencumbered balance of its funds, nor pledge the credit of any of the Signatory States; and

(h) Make available to a Signatory State or the United States in any action arising under this Compact, without subpoena, the testimony of any officer or employee of the Commission having knowledge of any relevant facts.

ARTICLE XI Pollution

SECTION 11.01. The Signatory States recognize that the increase in population and the growth of industrial, agricultural, mining and other activities combined with natural pollution sources may lead to a diminution of the quality of water in the Red River Basin which may render the water harmful or injurious to the health and welfare of the people and impair the usefulness or public enjoyment of the water for beneficial purposes, thereby resulting in adverse social, economic, and environmental impacts.

SECTION 11.02. Although affirming the primary duty and responsibility of each Signatory State to take appropriate action under its own laws to prevent, diminish, and regulate all pollution sources within its boundaries which adversely affect the water of the Red River Basin, the states recognize that the control and abatement of the naturally-occurring salinity sources as well as, under certain circumstances, the maintenance and enhancement of the quality of water in the Red River Basin may require the cooperative action of all states.

SECTION 11.03. The Signatory States agree to cooperate with agencies of the United States to devise and effectuate means of alleviating the natural deterioration of the water of the Red River Basin.

SECTION 11.04. The Commission shall have the power to cooperate with the United States, the Signatory States and other entities in programs for abating and controlling pollution and natural deterioration of the water of the Red River Basin, and to recommend reasonable water quality objectives to the states.

SECTION 11.05. Each Signatory State agrees to maintain current records of waste discharges into the Red River Basin and the type and quality of such discharges, which records shall be furnished to the Commission upon request.

SECTION 11.06. Upon receipt of a complaint from the governor of a Signatory State that the interstate waters of the Red River Basin in which it has an interest are being materially and adversely affected by pollution and that the state in which the pollution originates has failed after reasonable notice to take appropriate abatement measures, the Commission shall make such findings as are appropriate and thereafter provide such findings to the governor of the state in which such pollution originates and request appropriate corrective action. The Commission, however, shall not take any action with respect to pollution which adversely affects only the state in which such pollution originates.

SECTION 11.07. In addition to its other powers set forth under this Article, the Commission shall have the authority, upon receipt of six concurring votes, to utilize applicable Federal

statutes to institute legal action in its own name against the person or entity responsible for interstate pollution problems; provided, however, sixty (60) days before initiating legal action the Commission shall notify the Governor of the state in which the pollution source is located to allow that state an opportunity to initiate action in its own name.

SECTION 11.08. Without prejudice to any other remedy available to the Commission, or any Signatory State, any state which is materially and adversely affected by the pollution of the water of the Red River Basin by pollution originating in another Signatory State may institute a suit against any individual, corporation, partnership, or association, or against any Signatory State or political or governmental subdivision thereof, or against any officer, agency, department, bureau, district, or instrumentality of or in any Signatory State contributing to such pollution in accordance with applicable Federal statutes. Nothing herein shall be construed as depriving any persons of any rights of action relating to pollution which such person would have if this Compact had not been made.

ARTICLE XII Termination and Amendment of Compact

SECTION 12.01. This Compact may be terminated at any time by appropriate action of the legislatures of all of the four Signatory States. In the event of such termination, all rights established under it shall continue unimpaired.

SECTION 12.02. This Compact may be amended at any time by appropriate action of the legislatures of all Signatory States that are affected by such amendment. The consent of the United States Congress must be obtained before any such amendment is effective.

ARTICLE XIII Ratification and Effective Date of Compact

SECTION 13.01. Notice of ratification of this Compact by the legislature of each Signatory State shall be given by the governor thereof to the governors of each of the other Signatory States and to the President of the United States. The President is hereby requested to give notice to the governors of each of the Signatory States of the consent to this Compact by the Congress of the United States.

SECTION 13.02. This Compact shall become effective, binding and obligatory when, and only when:

(a) It has been duly ratified by each of the Signatory States; and

(b) It has been consented to by an Act of the Congress of the United States, which Act provides that:

Any other statute of the United States to the contrary notwithstanding, in any case or controversy:

which involves the construction or application of this Compact;

in which one or more of the Signatory States to this Compact is a plaintiff or plaintiffs; and which is within the judicial power of the United States as set forth in the Constitution of the United States;

and without any requirement, limitation or regard as to the sum or value of the matter in controversy, or of the place of residence or citizenship of, or of the nature, character or legal status of, any of the other proper parties plaintiff or defendant in such case or controversy;

The consent of Congress is given to name and join the United States as a party defendant or otherwise in any such case or controversy in the Supreme Court of the United States if the United States is an indispensable party thereto.

SECTION 13.03. The United States District Courts shall have original jurisdiction (concurrent with that of the Supreme Court of the United States, and concurrent with that of any other Federal or state court, in matters in which the Supreme Court, or other court has original jurisdiction) of any case or controversy involving the application or construction of this Compact; that said jurisdiction shall include, but not be limited to, suits between Signatory States; and that the venue of such case or controversy may be brought in any judicial district in which the acts complained of (or any portion thereof) occur."

RULES FOR THE INTERNAL ORGANIZATION
of the
RED RIVER COMPACT COMMISSION

(As Amended April 25, 1984, April 30, 1991, May 4, 1993, March 24, 1994, April 29, 2003, and April 13, 2006[1])

ARTICLE I
THE COMMISSION

1.1 The Commission is the "Red River Compact Commission," which is referred to in Article X of the Red River Compact.

1.2 The credentials of each Commissioner shall be filed with both the Chair and the Secretary of the Commission. When the credentials of a new Commissioner are received, the Secretary shall promptly notify each of the other Commissioners of the name and address of the new Commissioner.

1.3 Each Commissioner shall advise in writing the office of the Commission as to the address at which all official notices and other communications of the Commission shall be sent. Any change of address shall be promptly communicated in writing to the office of the Commission.

1.4 Persons designated to substitute for duly appointed Commissioners at meetings of the Compact Commission shall present the Commission with credentials of authority by letter, or other form of appointment acceptable to the Commission, which states the scope or limitations of the appointment together with a copy of the state or federal law or Attorney General's opinion which authorizes the appointment.

ARTICLE II
OFFICERS

2.1 The officers of the Commission shall be a Chair, a Vice-Chair, Secretary and a Treasurer.

2.2 The Commissioner representing the United States shall be the Chair of the Commission. The Chair or the designated representative of the Chair, shall preside at meetings of the Commission. The duties of the Chair shall be those usually imposed upon such officers and as may be assigned by these rules or by the Commission from time to time.

2.3 The Vice-Chair shall be elected at the annual meeting from the Commissioners of the host state for the coming year as reflected by the minutes, and shall hold office for a term of one year, beginning on July 1 following the election, or until a successor is elected. The Vice-Chair shall serve as Chair in the event the President of the United States fails to appoint a Federal

[1] In 2015, the Red River Compact Legal Committee presented this version of the rules as a comprehensive version containing all known amendments to the Internal Rules for Internal Organization adopted by the Commission. The Commission last amended these rules on April 13, 2006.

Commissioner, or in the absence of the Federal Commissioner or the designated representative of the Federal Commissioner.

2.4 The Secretary shall be selected at the annual meeting by the Commission from the state designated to host the next annual meeting as reflected in the minutes. The Secretary shall serve for the term of one year, beginning on July 1 following the selection, and perform the duties as the Commission shall direct. In case of a vacancy in the office of the Secretary, the Commission shall select a new Secretary as expeditiously as possible.

2.5 The Treasurer shall be selected by the Commission for a term of one year, beginning on July 1 following the selection. The Treasurer shall furnish a fidelity bond, the cost of which shall be paid by the Commission. The Treasurer shall receive, hold and disburse all funds which come into the hands of the Treasurer.

2.6 The Secretary and Treasurer may be members of the Commission, and their offices may be combined by the Commission. Any one person may hold both offices.

ARTICLE III
PRINCIPAL OFFICE

3.1 The principal office the Commission shall be either the office of the Chair or the Secretary, as the Commission shall direct.

3.2 Official books and records of the Commission shall be kept at the principal office.

ARTICLE IV
MEETINGS

4.1 The annual meeting of the Commission shall be held on the last Tuesday of April of each year.

4.2 (a) Special meetings of the Commission may be called by the Chair at any time. Upon the written request of each of the Commissioners of two states setting forth the matters to be considered at such meeting, the Chair shall call a special meeting.

(b) Individual members of the Commission, consistent with laws of the respective signatory state that may apply to the individual members, may participate in special meetings of the Commission by any means of electronic or telephonic communication through which all members and other participants may simultaneously hear one another during the meeting. Members who participate in a special meeting by such means shall be considered present for all purposes, including the presence of a quorum. Such meeting shall constitute a valid special meeting of the Commission even though members participate through electronic or telephonic means, provided:

(1) The Commission complies with other applicable provisions of these rules, including quorum and voting requirements.

(2) Arrangements are made so that any member of the public desiring to attend the meeting may attend at the same location as any Commission member attending the meeting by electronic or telephonic means, and the meeting notice informs the public of the arrangements.

(3) Arrangements are made so that a member of the public attending the meeting as set forth in subparagraph (2) above may simultaneously hear the members and other participants.

(4) The Commission may not meet in executive session by electronic or telephonic means.

4.3 Reasonable notice of all special meetings of the Commission shall be sent by the Chair, to all members of the Commission by ordinary mail at least ten days in advance of each meeting and notice shall state the purpose thereof.

4.4 Emergency meetings of the Commission may be called by the Chair at any time upon the concurrence of at least two states and such meetings may be conducted by long-distance telephone conference call or other electronic means. Any such long-distance telephone conference call or other electronic communication shall be recorded and made available for public inspection in accordance with the laws of the respective signatory states. Each of the signatory states shall be represented by at least one Commissioner during such an emergency conference and each state concur in any emergency action taken during an emergency meeting. An emergency is defined as a situation involving an eminent threat of injury to persons or damage to property or eminent financial loss when the time requirements for public notice and travel to a special meeting would make such procedure and travel impractical and increase the likelihood of injury or damage or eminent financial loss.

4.5 Notice to the public shall be given of all Commission meetings. Except as otherwise provided, the Chair shall furnish notice of all meetings to the Commissioners of each signatory state, whose responsibility it shall be to give said notice to the public in accordance with the laws of their respective states. In the event of an emergency meeting held by telephone or other electronic communication, no advance notice is required. All meetings of the Commission shall be held at the principal office unless another place shall be agreed upon by the Commissioners.

4.6 Minutes of the Commission shall be preserved in suitable manner. Minutes, until approved, shall not be official and shall be furnished only to members of the Commission, its employees and committees.

4.7 Commissioners from three of the signatory states shall constitute a quorum. However, if an emergency meeting is conducted as provided for in rule 4.4, or if a proposed action of the Commission affects existing water rights in a state, and that action is not expressly provided for in the Compact, eight concurring votes shall be required. Any other actions concerned with the administration of the Compact or requiring compliance with specific terms of the Compact shall require six concurring votes.

4.8 At each regular or annual meeting of the Commission, the order of business, unless agreed otherwise, shall be as follows:

Call to Order,
Approval of Agenda,
Approval of the minutes,
Report of Chairman,
Report of Secretary,
Report of the Treasurer,
Report of the Commissioners,
Report of Committees,
Unfinished business,
New business,
Adjournment.

4.9 All meetings of the Commission, except executive sessions and except as otherwise provided by law in each Signatory State as it may apply to the individual members, shall be open to the public. Executive sessions shall be open only to members of the Commission and such advisers as may be designated by each member and employees as permitted by the Commission; provided, however, that the Commission may call witnesses before it when in such sessions. The Commission may hold executive sessions only for the purposes of discussing:

(a) The employment, appointment, promotion, demotion, disciplining or resignation of a Commission employee or employees, members, advisers, or committee members;

(b) Pending or contemplated litigation, settlement offers, and matters where the duty of the Commission's counsel, pursuant to the Code of Professional Responsibility, clearly conflicts with the public's right to know; or

(c) The report, development, or course of action regarding security, personnel, plans, or devices.

No executive session may be held except on a vote, taken in public by a majority of a quorum of the members present. At least one Commissioner from each of the signatory states must agree to the holding of an executive session. Any motion or other decision considered or arrived at in executive session shall be voidable unless, following the executive session, the Commission reconvenes in public session and presents and votes on such motion or other decision.

4.10 In the absence of a Chair and Vice-Chair, all of the Commissioners from any two (2) states may call an emergency or a special meeting of the Compact Commission.

ARTICLE V
COMMITTEES

5.1 There may be the following standing committees:

(a) Budget Committee,
(b) Engineering Committee,
(c) Environmental and Natural Resources Committee, and
(d) Legal Committee.

5.2 The committees shall have the following duties:

(a) The Budget Committee shall prepare the annual budget and shall advise the Commission on all fiscal matters that may be referred to it.

(b) The Engineering Committee shall advise the Commission all engineering matters that may be referred to it.

(c) The Environmental and Natural Resources Committee shall advise the Commission on all environmental and natural resource matters that may be referred to it.

(d) The Legal Committee shall advise the Commission on all legal matters that may be referred to it.

5.3 Commissioners may be members of committees. The number of members of each committee shall be determined from time to time by the Commission. The Commissioners of each state shall designate the member or members on each committee representing the State, and each State shall have one vote.

5.4 The Chair may appoint a non-voting member of each committee.

5.5 The Chair of each committee shall be designated by the Commission from members of the committee; however, in the event a Chair is unable to perform assigned duties, the committee shall appoint an Interim Chair.

5.6 The Commission may from time to time create special committees and assign it tasks. The Commission may also determine the composition of the special committees.

5.7 Formal committee reports shall be made in writing and filed with the Commission.

ARTICLE VI
RULES AND REGULATIONS

6.1 So far as is consistent with the Compact, the Commission may adopt rules and regulations and amend them from time to time. Rules and regulations to be adopted shall be presented by resolution and approved by a quorum as set out in Rule 4.7. Copies of the proposed resolutions for rule adoption shall be presented in writing to each of the Commissioners at least thirty days before the meeting upon which they are to be voted. However, at its meeting, by unanimous vote, the Commission may waive this notice requirement.

6.2 Rules and regulations of the Commission may be compiled and copies may be prepared for distribution to the public under such terms and conditions as the Commission may prescribe.

ARTICLE VII
FISCAL

7.1 All funds of the Commission shall be deposited in a depository or depositories designated by the Commission under the name of the "Red River Compact Commission Fund".

7.2 Disbursement of funds in the hands of the Treasurer, for items included in the approved budget, shall be made by check signed by the Treasurer and the Vice-Chair or by such person as may be designated by the Commission. Disbursement of funds for non-budgeted items shall be made by check signed by the Treasurer and Vice-Chair upon voucher approved by at least six of the Commissioners, four of whom shall be from different signatory states.

7.3 At the annual meeting of each year, the Commission shall adopt a budget covering an estimate of its expenses for the following two fiscal years.

7.4 The payment of expenses of the Commission and of its employees shall not be subject to the audit and accounting procedures of the states.

7.5 All receipts and disbursements of the Commission shall be audited periodically as determined by the Commission by a qualified independent public accountant to be selected by the Commission and the report of the audit shall be included in and become a part of the annual report of the Commission.

7.6 The fiscal year of the Commission shall begin July 1 of each year and end June 30 of the next succeeding year.

ARTICLE VIII
ANNUAL REPORT

8.1 The Commission shall make an annual report and transmit it on or before the last day of May to the governors of the signatory states to the Red River Compact and to the President of the United States.

8.2 The annual report shall contain:

(a) Minutes of all regular, special or emergency meetings held during the year;

(b) All findings of facts made by the Commission during the preceding year;

(c) Recommendations for actions by the signatory states;

(d) Statements as to any cooperative studies made during the preceding year;

(e) All data which the Commission deems pertinent;

(f) The budget for current and future years;

(g) The most recent audit report or current financial statement of the Red River Compact Fund;

(h) Name, address and phone number of each Commissioner and each member of all standing committees; and

(i) Such other pertinent matters as the Commission may require.

HISTORICAL NOTES
RULES FOR THE INTERNAL ORGANIZATION OF THE RED RIVER COMPACT COMMISSION

April 13, 2006 amendments:

Section 4.2 amended:

"4.2 (a) Special meetings of the Commission may be called by the Chairman at any time. Upon the written request of each the Commissions of two states setting forth the matters to be considered at such meeting, the chairman shall call a special meeting.

(b) Individual members of the Commission, consistent with laws of the respective signatory state that may apply to the individual members, may participate in special meetings of the Commission by any means of electronic or telephonic communication through which all members and other participants may simultaneously hear one another during the meeting. Members who participate in a special meeting by such means shall be considered present for all purposes, including the presence of a quorum. Such meeting shall constitute a valid special meeting of the Commission even though members participate through electronic or telephonic means, provided:

(1) The Commission complies with other applicable provisions of these rules, including quorum and voting requirements.

(2) Arrangements are made so that any member of the public desiring to attend the meeting may attend at the same location as any Commission member attending the meeting by electronic or telephonic means, and the meeting notice informs the public of the arrangements.

(3) Arrangements are made so that a member of the public attending the meeting as set forth in subparagraph (2) above may simultaneously hear the members and other participants.

(4) The Commission may not meet in executive session by electronic or telephonic means."

April 29, 2003 amendments:

Section 2.7 deleted.

March 24, 1994 amendments:

Section 5.1 amended:

"5.1 There may be the following standing committees:

(a) Budget Committee.

(b) Engineering Committee.

(c) Environmental and Natural Resources Committee.

(d) Legal Committee"

Section 5.2 amended:

"5.2 The committees shall have the following duties:

~~(c)~~ (a) The Budget Committee shall prepare the annual budget and shall advise the Commission on all fiscal matters that may be referred to it.

~~(a)~~ (b) The Engineering Committee shall advise the Commission all engineering matters that may be referred to it.

(c) The Environmental and Natural Resources Committee shall advise the Commission on all environmental and natural resource matters that may be referred to it.

~~(b)~~ (d) The Legal Committee shall advise the Commission on all legal matters that may be referred to it."

Section 8.2 amended:

"8.2 The annual report shall ~~cover activities of the commission for the preceding year, and include, among other things, the following:~~ contain:

(a) ~~The estimated budget;~~ Minutes of all regular, special or emergency meetings held during the year;

(b) ~~Report of the last audit of Red River Compact Fund;~~ All findings of fact made by the Commission during the preceding year;

(c) ~~All hydrologic data which the commission deems pertinent;~~ Recommendations for actions by the signatory states;

(d) Statements as to cooperative studies of water supplies made during the preceding year;

(e) All data which the Commission deems pertinent;

(f) The budget for current and future years;

(g) The most recent audit report or current financial statement of the Red River Compact Fund;

(h) Name, address and phone number of each Commissioner and each member of all standing committees;

~~(e)~~ (i) Such other pertinent matters as the Commission may require."

May 4, 1993 amendments:

Section 1.4 amended:

"1.4 Persons designated to substitute for duly appointed Commissioners at meetings of the Compact Commission shall present the Commission with credentials of authority by letter, or other form of appointment acceptable to the Commission, which states the scope or limitations of the appointment together with a copy of the state or federal law or Attorney General's opinion which authorizes the appointment."

Section 2.2 amended:

"2.2 The Commissioner representing the United States shall be the Chairman of the Commission. The Chairman or the designated representative of the Chairman, shall preside at the meetings of the Commission. His duties shall be those usually imposed upon such officers as may be assigned by these rules or by the Commission from time to time."

Section 2.3 amended:

"2.3 The Vice-Chairman shall be elected at the annual meeting from the Commissioners of the host state for the coming year as reflected by the minutes, and shall hold office for a term of one year, beginning on July 1 following the election, or until a successor is elected. The Vice-Chairman shall serve as Chairman in the event the President of the United States fails to appoint a Federal Commissioner, or in the absence of the Federal Commissioner or the designated representative of the Federal Commissioner."

Section 2.4 amended:

"2.4 The Secretary shall be selected at the annual meeting by the Commission from the state designated to host the next annual meeting as reflected in the minutes. The Secretary shall serve for the term of one year, beginning on July 1 following the selection, and perform the duties as the Commission shall direct. In case of a vacancy in the office of the Secretary, the Commission shall select a new Secretary as expeditiously as possible."

Section 2.5 amended:

"2.5 The Treasurer shall be selected by the Commission for a term of one year, beginning on July 1 following the selection. The Treasurer shall furnish a fidelity bond, the cost of which shall be paid by the Commission. The Treasurer shall receive, hold and disburse all funds which come into his the hands of the Treasurer."

Section 2.7 added:

"2.7 Whenever there is a permanent change in the Commander of the Lower Mississippi Valley Division, Department of the Army Corps of Engineers, or its counterpart in any future reorganization of the Corps, the Vice-Chairman shall immediately request the President to appoint the new Commander as the U.S. Commissioner to the Compact Commission."

April 30, 1991 amendments:

Section 1.4 added:

"1.4 Persons designated to substitute for duly appointed Commissioners at meetings of the Compact Commission shall present the Commission with credentials of authority by letter, or other form of appointment acceptable to the Commission, which states the scope or limitations of the appointment together with a copy of the state law or Attorney General's opinion which authorizes the appointment."

Section 2.3 amended:

"2.3 The Vice-Chairman shall be elected at the annual meeting from ~~among~~ the Commissioners of the host state for the coming year as reflected by the minutes, and ~~. He~~ shall hold office for a term of one year, ~~but shall continue to serve~~ or until ~~his~~ a successor is elected. The Vice-Chairman shall serve as Chairman in the event the President of the United States fails to appoint a Federal Commissioner, or in the absence of the Federal Commissioner."

Section 2.4 amended:

"2.4 The Secretary shall be selected at the annual meeting by the Commission from the state designated to host the next annual meeting as reflected in the minutes. ~~He~~ The Secretary shall serve for ~~a~~ the term and perform the duties as the Commission shall direct. In case of a vacancy in the office of the Secretary, the Commission shall select a new Secretary as expeditiously as possible."

Section 4.10 added:

"4.10 In the absence of a Chairman and Vice-Chairman, all of the Commissioners from any two (2) states may call an emergency or a special meeting of the Compact Commission."

April 25, 1984 amendments:

Section 4.4 amended:

"~~4.4~~ 4.5 Notice to the public shall be given of all Commission meetings. Except as otherwise provided, the Chairman shall furnish notice of all meetings to the Commissioners of each signatory state, whose responsibility it shall be to give said notice to the public in accordance with the laws of their respective states. In the event of an emergency meeting held by telephone or other electronic communication, no advance notice is required.

"All meetings of the Commission shall be held at the principal office unless another place shall be agreed upon by the Commissioners."

Section 4.5 amended:

"~~4.5~~ 4.4 Emergency meetings of the Commission may be called by the Chairman at any time upon the concurrence of at least two states and such meetings may be conducted by long-distance telephone conference call or other electronic means. Any such long-distance telephone conference call or other electronic communication shall be recorded and made available for public inspection in accordance with the laws of the respective signatory states. Each of the signatory states shall be represented by at least one Commissioner during such an emergency conference and concur in the action.

"An emergency is defined as a situation involving an ~~imminent~~ eminent threat of injury to persons or damage to property or ~~imminent~~ eminent financial loss when the time requirements for public notice and travel to a special meeting would make such procedure and travel impractical and increase the likelihood of injury or damage or ~~imminent~~ eminent financial loss."

Section 4.6 is deleted (and added to new Section 4.5):

"4.6 All meetings of the Commission shall be held at the principal office unless another place be agreed upon by the Commissioners."

Section 4.7 is amended:

"~~4.7~~ 4.6 Minutes of the Commission shall be preserved in suitable manner. Minutes, until approved, shall not be official and shall be furnished only to members of the Commission, its employees and committees."

Section 4.8 is amended:

"~~4.8~~ 4.7 Commissioners from three of the signatory states shall constitute a quorum. However, if an emergency meeting is conducted as provided for in rule ~~4.5~~ 4.4, or if a proposed action of the Commission affects existing water rights in a state, and that action is not expressly provided for in the Compact, eight concurring votes shall be required. Any other action concerned with the administration of the Compact or requiring compliance with specific terms of the Compact shall require six concurring votes."

Section 4.9 is amended:

"~~4.9~~ 4.8 At each regular or annual meeting of the Commission, the order of business, unless agreed otherwise, shall be as follows:

Call to order;
Approval of Agenda;
Approval of the minutes;
Report of Chairman;
Report of Secretary;
Report of Treasurer;
Report of Commissioners;
Report of Committees;

Unfinished business;
New business;
Adjournment;

Section 4.10 is amended:

"~~4.10~~ 4.9 All meetings of the Commission, except executive sessions and ~~meetings called under rule 4.5~~ except as otherwise provided, shall be open to the public. Executive sessions shall be open only to members of the Commission and such advisers as may be designated by each member and employees as permitted by the Commission; provided, however, that the Commission may call witnesses before it when in such sessions.

"The Commission may hold executive sessions only for the purposes of discussing;

(a) The employment, appointment, promotion, demotion, disciplining or resignation of a Commission employee or employees, members, advisers, or committee members.

(b) Pending or contemplated litigation, settlement offers, and matters where the duty of the Commission's counsel to his client, pursuant to the Code of Professional Responsibility, clearly conflicts with the public's right to know.

(c) The report, development or course of action regarding security, personnel, plans, or devices.

"No executive session may be held except on a vote, taken in public, by a majority of a quorum of the members present. At least one Commissioner from each of the signatory states must agree to the holding of an executive session.

"Any motion or other decision considered or arrived at in executive session shall be voidable unless, following the executive session, the Commission reconvenes in public session and presents and votes on such motion or other decision."

Section 6.1 is amended:

"6.1 So far as is consistent with the Compact, the Commission may adopt rules and regulations and amend them from time to time. Rules and regulations to be adopted shall be presented by resolution and approved by a quorum as set out in Rule ~~4.8~~ 4.7. Copies of the proposed resolutions for rule adoption shall be presented in writing to each of the Commissioners at least thirty days before the meeting upon which they are to be voted. However, at its meeting, by unanimous vote, the Commission may waive this notice requirement."

RED RIVER COMPACT RULES AND REGULATIONS
To Compute and Enforce Compact Compliance
REACH I, SUBBASIN 1

(Adopted 4/30/87)

1. **General.** These rules and regulations to be used to compute and enforce Compact compliance within Subbasin I of Reach 1, Red River Compact, are adopted subject to the following conditions and assumptions.

   a. It is fully understood that these rules and regulations should be modified as new or improved gaging stations are constructed, whenever experience or detailed studies demonstrate the need for modification, and if the Commission should modify its interpretation of Compact provisions relating to this Subbasin.

2. **Management of Compact Compliance Computations.**

   a. **Management Using State Centers:**

      (1) Texas and Oklahoma representatives will establish State Computation and Control Centers.
         (a) State representatives will gather data, exchange data and meet prior to the annual Commission meeting to check on computation results.
         (b) The EAC will determine compliance with Compact.

   b. **Management Period for Compact Compliance Computations:**

      (1) Computation will be on the calendar year basis.
      (2) Water data for a calendar year should be exchanged prior to March 15 of the following year.
      (3) Compact Compliance Computation for a calendar year should be completed by April 15 of the following year.

3. **Enforcement of Compact Compliance Requirements.** Texas will be responsible for insuring that the sum of Texas uses does not exceed the total Texas water use authorized by the Red River Compact, and Texas will be responsible for establishing clear legal authority within Texas for enforcing the restrictions imposed by the Red River Compact.

4. **Data Reporting Procedures.**

   a. **Streamflow Gaging Station Records:** The EAC will make arrangements with federal and State agencies, as required, to collect calendar year data as needed, and forward to the Texas and Oklahoma Computation Control Centers.

b. Archived Records: Records will be archived by the Commission Chairman.

5. General Compliance Requirements of Section 4.01 Red River Compact.

a. SECTION 4.01. Subbasin 1 - Interstate Streams - Texas:

(1) **The Compact prescribes:**

"(a) This includes the Texas portion of Buck Creek, Sand (Lebos) Creek, Salt Fork Red River, Elm Creek, North Fork Red River, Sweetwater Creek and Washita River, together with all their tributaries in Texas which lie west of the 100th Meridian."

"(b) The annual flow within this subbasin is hereby apportioned sixty (60) percent to Texas and forty (40) percent to Oklahoma."

SECTION 4.01 is modified in part by SECTION 4.05. Special Provisions, as follows:

"(b) Texas shall not accept for filing, or grant a permit, for the construction of a dam to impound water solely for irrigation, flood control, soil conservation, mining and recovery of minerals, hydroelectric power, navigation, recreation and pleasure, or for any other purpose other than for domestic, municipal, and industrial water supply, on the mainstem of the North Fork Red River or any of its tributaries within Texas about Lugert-Altus Reservoir until the date that imported water, sufficient to meet the municipal and irrigation needs of Western Oklahoma is provided, or until January 1, 2000, which ever occurs first."

(2) Pertinent extracts from the Supplemental Interpretive Comments of Legal Advisory Committee, as approved by the Red River Compact Commission on the 19th day of September 1978, are as follows:

Pages 9 and 10 " * * * * * The flow of interstate tributaries is generally divided 60 percent to the upstream State and 40 percent to the downstream State. Because flows in Reach I are primarily from flood flows, an annual basis of accounting was adopted"

* * * * *

"Section 4.05(b) reflects the compromise of a long-standing dispute between Oklahoma and Texas over the water of the North Fork of the Red River and Sweetwater Creek. * * * * * *"

"Under the Compromise Texas will limit development on North Fork and Sweetwater Creek to projects justified on the basis of municipal, industrial,

and domestic needs until the year 2000. However, if sufficient imported water becomes available in Western Oklahoma before 2000, Texas will be free to pursue full development of its 60% of these interstate tributaries. * * * *"

(3) Until January 1, 2000 (assuming that imported water is not provided prior to that date in sufficient amounts to meet municipal and irrigation needs of Western Oklahoma) special restrictions apply to Texas water use in its North Fork Red River watershed upstream from the Lugert-Altus Reservoir. Therefore, some of the Compact compliance rules for the North Fork Red River watershed upstream from the Lugert-Altus Reservoir (para 5.f.(3) & (4) and g.(3) & (4) below) expire on January 1, 2000, if still in effect at that time.

b. **Buck Creek Watershed in Texas:** Buck Creek watershed covers about 300 square miles in Texas. There are no existing gaging stations on Buck Creek in Texas or in Oklahoma. Since neither the Texas nor Oklahoma use of flow from Buck Creek is significant at this time, it is not required to make an annual accounting of the flow in Buck Creek. It also appears that establishing gaging stations and channel loss values so that future annual accountings could be made is not economically justified at this time. Annual accounting procedures for this watershed should be developed to provide a 60:40 apportionment whenever requested by either Oklahoma or Texas.

c. **Sand (Lebos) Creek Watershed in Texas:** Sand Creek watershed covers about 65 square miles in Texas. There are no gaging stations on Sand Creek in Texas or in Oklahoma. Since neither Texas nor Oklahoma makes significant use of flow from Sand Creek, it is not necessary to make an annual accounting of the flow in Sand Creek, and it does not seem to be economically justified **at this time** to establish gaging stations and determine channel loss values so that future annual accountings could be made. Annual accounting procedures for this watershed should be developed to provide a 60:40 apportionment whenever requested by either Oklahoma or Texas.

d. **Salt Fork Red River Watershed in Texas:** Salt Fork Red River watershed in Texas covers about 1,380 square miles, of which 209 are non-contributing.

The USGS streamflow gage number 07300000, Salt Fork Red River near Wellington, Texas, is about 16 miles upstream from the Oklahoma-Texas State line and measures flow from a 1,222 sq. mi. drainage area, of which 209 is probably non-contributing. The average annual discharge (1953-1966) was 52,600 AF/yr, and the average annual discharge since Greenbelt Reservoir was completed (1967-1977) has been 33,250 AF/yr.

The USGS streamflow gage 07300500, Salt Fork Red River at Mangum, Oklahoma, is about 29 miles downstream from the Oklahoma-Texas State line and measures flow from a 1,566 sq. mile drainage area, of which 209 is probably non-contributing. The average annual discharge (1937-1977) has been 62,450 AF/yr.

(1) The actual annual delivery at the Oklahoma State line is computed as follows:

(a) The annual flow at the Wellington gage,
(b) Minus channel losses to Wellington gage flows between gage and State line (until this specific channel loss value is available, the Compact compliance calculations will be made ignoring this channel loss adjustment),
(c) Plus Texas' flow between Wellington gage and the State line. (This flow will be computed based on intervening drainage area between Wellington and Mangum gages adjusted for both Texas and Oklahoma man-made depletions.), and
(d) Minus Texas' man-made depletions downstream from the Wellington gage.

(2) The scheduled annual delivery at the Oklahoma State line is 40 percent of the natural flow at State line without diversions or impoundments, and would be computed as 40 percent of the following:

(a) The actual annual delivery (para 5.d.(1) above),
(b) Plus all man-made depletions in Texas, and
(c) Minus the increased channel losses in Texas which would have incurred had Texas depletions not occurred (until this specific channel loss value is available, the Compact compliance calculations will be made ignoring this channel loss adjustment).

(3) Compact compliance is achieved as long as actual delivery exceeds scheduled delivery.

e. **Elm Creek Watershed in Texas:** Elm Creek watershed covers about 360 square miles in Texas which includes the North Elm Creek tributary. There is no streamflow gage on Elm Creek in Texas. The USGS gage number 07303400, Elm Fork of North Fork Red River near Carl, Oklahoma, is about 6 miles downstream from the Oklahoma-Texas State line, and was used to measure flow from a 416 square mile drainage area but discharge measurements at this site were discontinued in 1980. The average annual discharge (20 years) was 30,280 AF/yr. No Compact compliance accounts can be made until the Gage near Carl has been reestablished.

(1) The actual annual delivery at State line is computed as follows:

(a) Flow at the State line. (This flow will be computed based on the drainage area and on the flow measured at Carl gage, adjusted for both Texas and Oklahoma depletions.), and Minus Texas' man-made depletions.

(2) The scheduled annual delivery at State line is 40 percent of the natural flow at State line without diversions or impoundments and would be computed as 40 percent of the following:
(a) The actual annual delivery (para 5.e.(1) above),
(b) Plus man-made depletions in Texas, and
(c) Minus the increased channel losses in Texas which would have been incurred if Texas had not depleted the flow (until this specific channel loss value is available, the Compact compliance calculations will be made ignoring this channel loss adjustment).

(3) Compact compliance is achieved as long as the actual delivery exceeds the scheduled delivery.

h. Washita River Watershed in Texas: There is no streamflow gage on the Washita River in Texas. The USGS streamflow gage number 07316500, Washita River near Cheyenne, Oklahoma, is over 21 miles downstream from the Oklahoma-Texas State line, and measures flow from a 794 square mile drainage area, of which about 441 square miles are in Texas. The average annual discharge at the Cheyenne gage (44 years) has been 20,720 AF/yr.

(1) The actual annual delivery at Oklahoma State line is computed as follows:

(a) The annual flow at the Cheyenne gage,
(b) Plus channel losses to the State line flow between the State line and the gage (until this specific channel loss value is available, the Compact compliance calculations will be made ignoring this channel loss adjustment),
(c) Minus Oklahoma's flow between the State line and Cheyenne gage. (This flow will be computed based on the drainage area upstream from the Cheyenne gage, adjusted for both Texas and Oklahoma man-made depletions.), and
(d) Minus Texas' man-made depletions.

(2) The annual scheduled delivery at State line is 40 percent of the natural flow at State line without diversions or impoundments, and would be computed as 40 percent of the following:
(a) The actual annual delivery at State line para 5.h.(1) above),
(b) Plus man-made depletions in Texas, and
(c) Minus the increased channel losses which would have occurred if Texas had not made any diversions (until this specific channel loss value is available, the Compact compliance

calculations will be made ignoring this channel loss adjustment).

(3) Compact compliance is achieved as long as the actual delivery exceeds the scheduled delivery.

RED RIVER COMPACT INTERIM RULES AND REGULATIONS
To Compute and Enforce Compact Compliance
REACH II, SUBBASIN 5

(Adopted 4/30/87)

1. These rules and regulations to be used to compute and enforce Compact compliance within Subbasin 5 of Reach II, Red River Compact, are adopted subject to the following conditions and assumptions.

   a. It is fully understood that these rules and regulations should be modified as new or improved gaging stations are constructed, whenever experience or detailed studies demonstrate the need for modification, and if the Commission should modify its interpretation of Compact provisions relating to this Subbasin.

   b. Definitions:

      (1) "Diversion" as used in these rules and regulations, is the net loss to a water source from use by a diverter, and is computed as the diversion from the water source minus the part of the diversion which is returned to the water source. Normally, return flows must be measured to be considered; however, the EAC may consider and recommend exceptions. As used herein, "diversion" is equivalent to "net diversion" from a water source and to "depletion" or "consumptive use" of a water source.

2. **Management of Compact Compliance Computations**
   a. Management Using State Centers
      (1) State EAC representatives will establish State Computation Control Center

         (a) State representatives will gather data, exchange data and meet via conference call to check on computation results, if necessary.

         (b) EAC will determine compliance with Compact.

   b. Management Period for Weekly Flow and Diversions:

      (1) Next week's State diversions will be allocated based on last week's compliance computations.
      (2) It is each State's responsibility to limit its total State diversion allocation among its State diverters.
      (3) The weekly period for use and flow data will start and end at 8:00 a.m. on Tuesday of each week.
      (4) Data collection and dissemination will be completed on Tuesday of each week.
      (5) Computation of Compliance will be completed on Wednesday of week.
      (6) Each State can request an update at any time.

c. **Management Improvement Studies:** The EAC will monitor the effect on accounting management of the following factors and will report thereon to the Commission whenever procedure changes appears desirable.

(1) Errors caused by travel time.
(2) Future restrictions computed from past week's data.
(3) Failure to consider channel loss.
(4) Failure to consider ungaged return flows.
(5) Failure to consider flow trends.
(6) Addition of needed gages.

3. **Enforcement of Compact Compliance Requirements.** Each State will be responsible for insuring that the sum of the diversions by State users does not exceed the total State diversion authorized by the Red River Compact. In this regard, each State will be responsible for establishing clear legal authority within its State for enforcing the restrictions imposed by the Red River Compact.

4. **Data Reporting Procedures.**

a. **Streamflow Gaging Station Records:** The EAC will make arrangements with the Corps of Engineers, the U.S. Geological Survey and with States as required to collect daily and/or weekly data, as needed, and forward to the State Computation and Control Centers.
b. **Diversion Records:** Each State will be responsible to collect daily and/or weekly data, as needed, and forward to the State Computation and Control Centers.
c. **Archived Records:** Records will be archived by Commission Chairman.

5. **General Compliance Requirements of Section 5.05, Red River Compact.**

a. **Section 5.05 (b) (1):**

(1) **Compact prescribes:** "The Signatory States shall have equal rights to the use of the runoff originating in subbasin 5 and undesignated water flowing into subbasin 5, so long as the flow of the Red River at the Arkansas-Louisiana state boundary is 3,000 cubic feet per second or more, provided no state is entitled to more than 25 percent of the water in excess of 3,000 cubic feet per second."
(2) In computing the Subbasin 5 water allocation, when the flow of the Red River at the Arkansas-Louisiana State Boundary is 3,000 cfs or more and the total runoff and undesignated flow of Subbasin 5 is greater than or equal to 7,500 cfs but less than or equal to 12,000 cfs, Louisiana's allocation shall be 3,000 cfs and each of the three upstream states will equally share the runoff and undesignated flow in excess of 3,000 cfs.
(3) When the total runoff and undesignated flow of Subbasin 5 is 12,000 cfs or more, each of the signatory states shall be entitled to 25% of the total runoff and undesignated flow.

(4) State compliance with Section 5.05 (b)(1) does not need to be determined except when specifically requested by a Compact State.

b. Section 5.05 (b)(2):

(1) **The Compact states:** "Whenever the flow of the Red River at the Arkansas-Louisiana state boundary is less than 3,000 cubic feet per second, but more than 1,000 cubic feet per second, the States of Arkansas, Oklahoma, and Texas shall allow to flow into the Red River for delivery to the State of Louisiana a quantity of water equal to 40 percent of the total weekly runoff originating in subbasin 5 and 40 percent of undesignated water flowing into subbasin 5; provided, however, that this requirement shall not be interpreted to require any state to release stored water"

(2) In computing the Subbasin 5 water allocation to Louisiana when flow of Red River at the Arkansas-Louisiana State boundary is less than 3,000 cfs but more than 1,000 cfs, the Subbasin 5 runoff for each of the three upstream States and the undesignated water flowing into Subbasin 5 from each upstream State totalled, and the three upstream States should allow to pass to Louisiana 40 percent of the total, or 1,000 cfs, whichever is greater.

(3) When the Subbasin 5 runoff plus undesignated water totals at least 2,500 cfs and not more than 7,500 cfs, each of the three upstream States are allocated 60 percent of its runoff plus undesignated inflow and the other 40 percent is to be allowed to flow into the Red River for delivery to Louisiana.

(4) When the Subbasin 5 runoff plus undesignated water totals at least 1,000 cfs but less than 2,500 cfs, the allocation to Louisiana is 1,000 cfs because of Compact Section 5.05 (b)(3). The total Subbasin 5 runoff plus undesignated water is compared to the Louisiana allocation of 1,000 cfs and a percentage is established. Each of the three upstream States will be entitled to divert and use a quantity computed using (100 percent minus the established percentage) times (the total of runoff from its Subbasin 5 areas plus undesignated water flowing into its Subbasin 5 areas).

(5) This Compact compliance determination should be made whenever the flow of the Red River at the Arkansas-Louisiana State boundary falls below 3,000 cfs and is more than 1,000 cfs.

c. Section 5.05 (b)(3):

(1) **The Compact states:** "Whenever the flow of the Red River at the Arkansas-Louisiana state boundary falls below 1,000 cubic feet per second, the States of Arkansas, Oklahoma, and Texas shall allow a quantity of water equal to all the weekly runoff originating in subbasin 5 and all undesignated

water flowing into subbasin 5 within their respective states to flow into the Red River as required to maintain a 1,000 cubic foot per second flow at the Arkansas-Louisiana state boundary."

(2) In computing the Subbasin 5 allocation when the flow of the Red River at the Arkansas-Louisiana State boundary falls below 1,000 cfs, and when the Subbasin 5 runoff and undesignated water flowing into Subbasin 5 total 1,000 cfs or less, all flow must be passed to Louisiana.

(3) When the Subbasin 5 runoff and undesignated water flowing into Subbasin 5 total more than 1,000 cfs but less than 2,500 cfs, Louisiana is allocated 1,000 cfs. This 1,000 cfs Louisiana entitlement is compared to the total runoff plus undesignated water and a percentage is established. Each of the three upstream States will be entitled to divert and use a quantity computed using (100 percent minus the established percentage) times (its total State runoff and undesignated water inflow).

(4) See rules for Compact Section 5.05 (b)(2) when the Subbasin 5 runoff and undesignated water flowing into Subbasin 5 total 2,500 cfs or more up to 7,500 cfs.

(5) This Compact compliance determination should be made whenever the flow of the Red River at the Arkansas-Louisiana State boundary falls below 1,000 cfs.

d. Section 5.05 (c):

(1) **The Compact states:** "Whenever the flow at Index, Arkansas, is less than 526 c.f.s., the states of Oklahoma and Texas shall each allow a quantity of water equal to 40 percent of the total weekly runoff originating in subbasin 5 within their respective states to flow into the Red River; provided however, this provision shall be invoked only at the request of Arkansas, only after Arkansas has ceased all diversions from the Red River itself in Arkansas above Index, and only if the provisions of Sub-sections 5.05 (b)(2) and (3) have not caused a limitation of diversions in subbasin 5."

(2) In computing the Subbasin 5 allocation when flow of Red River at Index Arkansas is less than 256 cfs, the States of Oklahoma and Texas are to pass 40 percent of weekly runoff from respective Subbasin 5 areas.

(3) This Compact compliance determination will be made only when requested by Arkansas, only after Arkansas has ceased all diversions from the Red River, and only if the provisions of subsections 5.05 (b)(2) and (3) have not caused a limitation of diversions in Subbasin 5.

6. Procedures (Disregarding Designated Flows) to Compute State Runoff, Runoff plus Undesignated Inflows, and Flow of Red River at Arkansas-Louisiana State Boundary.

a. Oklahoma.

(1) **Runoff plus Undesignated Inflows of Denison Dam to DeKalb Gage:**

(a) Kiamichi River near Hugo, OK, Gage flow, plus Muddy Boggy Creek near Unger, OK, Gage flow plus Blue River near Blue, OK Gage flow, plus

(b) Fifty percent of (DeKalb Gage flow, plus Texas and Oklahoma diversions, minus gaged flows at Kiamichi River near Hugo, Ok, Muddy Boggy Creek near Unger, OK, Blue River near Blue, OK, and Sanders Creek near Chicota, Texas, streamflow Gages).

(2) **Runoff plus Undesignated Inflows, DeKalb Gage to Oklahoma-Arkansas State line:** Fifteen and one-half (15.5) percent of (Index Gage flow, minus DeKalb Gage flow, plus Oklahoma, Texas and Arkansas diversions downstream from DeKalb Gage).

(3) **Runoff only, Denison Dam to Oklahoma-Arkansas State line.**

(a) Fifty percent of (DeKalb Gage flow, minus Red River at Denison Dam Gage flow, plus Texas and Oklahoma diversions upstream from DeKalb Gage, minus Blue River near Blue, OK, Gage flow, minus Muddy Boggy Creek near Unger-Okla. Gage flow, minus Kiamichi River near Hugo-Okla. Gage flow minus Gage flow), plus

(b) Fifteen and one-half (15.5) percent of (Index Gage flow, minus DeKalb Gage flow, plus Oklahoma, Texas and Arkansas diversions between DeKalb and Index Gages).

b. Texas.

(1) **Runoff plus Undesignated Inflows, DeKalb Gage to Index Gage:**

(a) Sanders Creek near Chicota Gage flow, plus

(b) Fifty percent of: (DeKalb Gage flow, plus Texas and Oklahoma diversions, minus gaged flows at Kiamichi River near Hugo, OK, Muddy Boggy Creek near Unger, OK, Blue River near Blue, OK, and Sanders Creek near Chicota, TX, streamflow Gages).

(2) **Runoff plus Undesignated Inflows, DeKalb Gage to Index Gage:** Fifty (50) percent of (Index Gage flow, minus DeKalb Gage flow, plus Oklahoma, Texas and Arkansas diversions downstream from DeKalb Gage).

(3) **Runoff plus Undesignated Inflows, Sulphur River Gage:** One hundred percent of (Sulphur River near Texarkana Gage flow) minus (Texas diversions from river below gage) plus (Texas diversions below Texarkana Dam).

(4) **Runoff Only, Denison Dam to Index Gage:** Fifty percent of (Index Gage flow, minus Red River at Denison Dam Gage flow, plus Oklahoma and Texas and Arkansas diversions upstream from the Index Gage, minus Blue River near Blue, OK, Gage flow, minus Muddy Boggy Creek near Unger-Okla. Gage flow, minus Kiamichi River near Hugo-Okla. flow, minus Sanders Creek near Chicota-Texas Gage flow).

c. Arkansas Runoff plus Undesignated Inflows.

(1) **Oklahoma-Arkansas State Line to Index Gage:** Thirty-four and one-half (34.5) percent of (Index Gage flow, minus DeKalb Gage flow, plus Oklahoma and Texas and Arkansas diversions between DeKalb and Index Gages).

(2) **Index Gage to Hosston Gage:**

(a) Hosston Gage flow, plus Louisiana diversions above Hosston Gage, minus Index Gage flow, minus (Sulphur River near Texarkana Gage flow less Texas diversions from river below gage), plus Arkansas diversions downstream from Index Gage.

d. Louisiana Streamflow at Arkansas-Louisiana State Boundary.

(1) **Red River flow at Arkansas-Louisiana State boundary** equals (Gage flow) plus (Louisiana diversions from Red River downstream from the State boundary and upstream from gage).

(2) **Data needed to make interim Louisiana calculations**

(a) **For Red River flows up to 5,000 cfs -** Hosston Gage flow, plus Louisiana diversions from Red River upstream from Hosston Gage.

(b) **For Red River flows of 5,000 cfs or larger -** Shreveport Gage flow, plus Louisiana diversions from Red River upstream from Shreveport Gage, minus Twelvemile Bayou near Dixie-La Gage flow, plus Louisiana diversions from Twelvemile Bayou below Twelvemile Bayou near Dixie-La Gage.

(3) **Effect of Flow Trends, Scheduled Change of Reservoir Releases and Other Events Certain to Significantly Change Flow at Arkansas-Louisiana State Boundary During Coming Week.**
In addition to the Arkansas-Louisiana State boundary flow estimated based on subparagraph (2) (a) or (b) above, the EAC will also advise the

Commission of probable significant changes in State boundary flow which should result from flow trends, scheduled change of reservoir releases, and other such known events.

7. **Procedures (Using Designated Flow Data) to Compute State Runoff plus Undesignated Inflows and Flow of Red River at Arkansas-Louisiana State boundary.** Procedures outlined in paragraph 6 above will be followed except that designated inflows, designated outflows and diversion of designated flows will be accounted for whenever appropriate.

RED RIVER COMPACT RULES AND REGULATIONS
To Compute and Enforce Compact Compliance
REACH III, SUBBASIN 3

(as amended 4/25/89)

1. These rules and regulations to be used to compute and enforce Compact compliance within Subbasin 3 of Reach III, Red River Compact, are adopted subject to the following conditions and assumptions.

   a. It is fully understood that these rules and regulations should be modified whenever experience or detailed studies demonstrate the need for modification, and if the Commission should modify its interpretation of Compact provisions relating to this Subbasin.

   b. **Definitions:**

      (1) "Diversion", as used in these rules and regulations, is the net loss to a water source from use by a diverter, and is computed as the diversion from the water source minus the part of the diversion which is returned to the water source. Normally, return flows must be measured to be considered; however, the Engineering Committee may consider and recommend exceptions. As used herein, "diversion" is equivalent to "net diversion" from a water source and to "depletion" or "consumptive use" of a water source.

      (2) "Drawdown", as used in these rules and regulations, means that period commencing on the first day water ceases spilling over the existing Caddo Lake spillway (or the raised spillway, if Caddo Lake is enlarged), and continuing so long as the Caddo Lake surface elevation continues to fall, until the day when appreciable inflow reaches Caddo Lake, causing the Caddo Lake surface elevation to rise leading to a spill from Caddo Lake.

2. **Management of Compact Compliance Computations.**

   a. **Management Using State Centers:**

      (1) State Engineering Committee representatives will establish State Computation Control Centers.

         (a) State representatives will gather data, exchange data and meet via conference call to check on computation results, if necessary.

         (b) The Engineering Committee will compute compliance with Compact.

   b. **Management Period for Compact Compliance Computations:**

      (1) Next week's State diversions will be allocated based on last week's compliance computations.

(2) It is each State's responsibility to limit its total State diversion allocation among its State diverters.
(3) The weekly period for use and flow data will start and end at 8:00 a.m. on Tuesday of each week.
(4) Data collection and dissemination will be completed on Tuesday of each week.
(5) Computation of Compliance will be completed on Wednesday of each week.
(6) Each State can request an update at any time.

c. **Management Improvements Studies:** The Engineering Committee will monitor the effect on accounting management of the following factors and will report thereon to the Commission whenever procedure changes appear desirable.

(1) Errors caused by travel time.
(2) Future restrictions computed from past week's data.
(3) Failure to consider channel loss.
(4) Failure to consider ungaged return flows.
(5) Failure to consider flow trends.
(6) Addition of needed gages.

3. **Enforcement of Compact Compliance Requirements.** Each State will be responsible for insuring that the sum of the diversions by State users does not exceed the total State diversion authorized by the Red River Compact Commission. In this regard, each State will be responsible for establishing clear legal authority within its State for enforcing the restrictions imposed by the Red River Compact.

4. **Data Reporting Procedures.**

a. **Streamflow Gaging Station Records:** The Engineering Committee will make arrangements with Corps of Engineers, the U.S. Geological Survey and with States as required to collect daily and/or weekly data, as needed, and forward to the State Computation and Control Centers.
b. **Diversion Records:** Each State will be responsible to collect weekly data, as needed, and forward to the State Computation and Control Centers.
c. **Archived Records:** Records will be archived by the Commission Chairman.

5. **General Compliance Requirements of Section 6.03 Red River Compact.**

a. **Section 6.03 (b)(1):**

(1) **The Compact states:** "Texas shall have the unrestricted right to all water above Marshall, Lake O' the Pines, and Black Cypress damsites; however, Texas shall not cause runoff to be depleted to a quantity less than that which would have occurred with the full operation of Franklin County, Titus County, Ellison Creek, Johnson Creek, Lake O' the Pines, Marshall, and Black Cypress Reservoirs constructed, and those other

impoundments and diversions existing on the effective date of this Compact. Any depletions of runoff in excess of the depletions described above shall be charged against Texas' apportionment of the water in Caddo Reservoir."

(2) Texas may use the bed and banks of the streams or tributaries available within this Subbasin to convey its developed water downstream from the aforesaid dam sites to specified authorized users. Such water would retain its identity and would not be subject to the Caddo Lake drawdown provisions of Section 5.b. of these rules until passing the designated point of diversion. Appropriate transportation losses will be approved by the Red River Compact Commission.

(3) Until both Marshall Reservoir (with an estimated capacity of 782,300 acre-feet and yield of 325,000 acre-feet annually) and Black Cypress Reservoir (with estimated capacity of 824,400 acre-feet and yield and 220,000 acre-feed annually) have been constructed, it will be virtually impossible for Texas to deplete runoff in excess of that authorized. In the future, whenever potential Texas depletions above Marshall, Lake O' the Pines, and Black Cypress damsites become a concern to Louisiana, procedures to compute Texas depletion of runoff in excess of that authorized by Section 6.03 (b)(1) of the Compact should be developed by the Engineering Committee and presented for Commission consideration.

b. Section 6.03 (b)(2):

(1) **The Compact states:** "Texas and Louisiana shall each have the unrestricted right to use fifty (50) percent of the conservation storage capacity in the present Caddo Lake for the impoundment of water for state use, subject to the provision that supplies for existing uses of water from Caddo Lake, on date of Compact, are not reduced."

(2) Whenever water is spilling over the existing spillway at 168.5 feet above mean sea level, each state may withdraw or divert water from Caddo Lake without restriction.

(3) Whenever Caddo Lake is not spilling over the existing spillway at 168.5 feet above mean sea level, the total consumptive use by each state shall not exceed 8,400 acre-feet during the drawdown period, provided that neither state shall divert more than 3,600 acre-feet during any one month or 4,800 acre-feet during any two consecutive months.

c. Section 6.03 (b)(3):

(1) **The Compact states:** "Texas and Louisiana shall each have the unrestricted right to fifty (50) percent of the conservation storage capacity of any future enlargement of Caddo Lake, provided the two states may negotiate for the release of each

state's share of the storage space on terms mutually agreed upon by the two states after the effective date of this Compact."

(2) This Compact provision requires no separate computation procedures but other rules may be changed if enlargement of Caddo Lake occurs. If enlargement of Caddo Lake is authorized in the future, the Engineering Committee should review and modify as necessary Rule 5 (b) and Rule 6.

d. Section 6.03 (b)(4):

(1) **The Compact states:** "Inflow to Caddo Lake from its drainage area downstream from Marshall, Lake O' the Pines, and Black Cypress damsites and downstream from other last downstream dams in existence on the date of the signing of the Compact document by the Compact Commissioners, will be allowed to continue flowing into Caddo Lake except that any manmade depletions to this inflow by Texas will be subtracted from the Texas share of the water in Caddo Lake."

(2) As indicated in paragraph 5 a. (2) above, it is virtually impossible for Texas at the present time to reduce inflow to Caddo Lake below that which would occur with both Marshall and Black Cypress Reservoirs constructed and operating. However potential Texas depletions become a concern to Louisiana, procedures to compute excess depletion by Texas of inflow to Caddo Lake should be develop by the Engineering Committee and presented for Commission Consideration.

e. Section 6.03 (c):

(1) **The Compact states:** "In regard to the water of interstate streams which do not contribute to the inflow to Cross Lake or Caddo Lake, Texas shall have the unrestricted right to Divert and use this water on the basis of a division of runoff above the state boundary of sixty (60) percent to Texas and forty (40) percent to Louisiana."

(2) The Engineering Committee will review known Texas diversion data for the previous year and report to the Commission any Texas non-compliance with Compact Section 6.03 (c).

f. Section 6.03 (d):

(1) **The Compact states:** "Texas and Louisiana will not construct improvements on the Cross Lake watershed in either state that will affect the yield of Cross Lake; provided, however, this subsection shall be subject to the provisions of Section 2.08."

(2) The Engineering Committee will renew any known improvements on the Cross Lake watershed and report to the Commission any non-compliance with Compact Section 6.03 (d).

6. Caddo Lake Content Accounting Procedure During Drawdown Periods.

a. Whenever water is spilled from Caddo Lake, both state's accounts are full and no accounting is necessary. Accounting shall start the first day of no-spill following each period of spilling and shall continue until the first day of spill in the next period of spilling. The accounting procedure for computing the quantity of water in Caddo Lake during periods of drawdown belonging to the States of Louisiana and Texas shall be as follows:

(1) At the beginning of the drawdown, the Caddo Lake contents belong 50 percent to each state. Otherwise, begin with water ownership on Caddo Lake as shown in the most recent previous report.
(2) Each State shall be credited with one-half of the inflow to Caddo Lake since the previous report.
(3) Each State's account shall be reduced by its share of Caddo Lake evaporation losses during the period since the previous report.
(4) Each State's account shall be reduced by its diversions from Caddo Lake since the previous report.
(5) A State's account shall not exceed 50 percent of the capacity of Caddo Lake. If these accounting procedures result in a greater State content than 50 percent of the total capacity of Caddo Lake, the excess computed quantity shall be "spilled" into the other State's account as needed to bring the other State's account up, but in no case shall either State's account exceed 50 percent of the total capacity of Caddo Lake.

b. Using a stage-area-capacity relationship concurred in by both States, the content of Caddo Lake at the end of each accounting period shall be determined and inflow for that period shall be computed as follows:

(1) From the present content, as determined above, subtract the content determined at the end of the previous period.
(2) Add to the figure resulting from Step (1) the total Texas and Louisiana diversions since the end of the previous period.
(3) Add to the figure resulting from Step (2) the computed gross evaporation since the end of the previous period as determined in c. (2) below. This results in total inflow.

c. Evaporation will be computed as follows:

(1) The Weather Bureau's pan evaporation data shall be used to compute gross lake evaporation using a standard conversion coefficient agreed to by the engineer advisors of each State.

(2) The average lake surface area for the accounting period shall be determined from the stage-area-capacity relationship concurred in by both States and multiplied by the gross lake evaporation as determined in Step (1) to determine the volume of evaporation for the period.

7. **Availability of Diversion Records.** Arrangements shall be made for all Texas and Louisiana diverters, during "drawdown" of Caddo Lake, to maintain daily diversion records open for inspection, and to provide weekly use data as required by Rule 2 b. (3).