

ARKANSAS DEPARTMENT OF POLLUTION  
CONTROL AND ECOLOGY

MINUTE ORDER NO. 77-17

LOCATION - SUBJECT: OUACHITA RIVER

BASIN PLAN

PAGE 1 OF 1 PAGES

Public hearings were held on the Section 303(e) Ouachita River Basin Plan at 7:00 p.m., October 19, 1976, in Hot Springs, Arkansas and at 7:00 p.m., October 21, 1976, in Crossett, Arkansas.

The Attached memorandum summarizes the staff recommendations for proposed revisions based on the comments received at those hearings.

The Commission hereby approves the Ouachita River Basin Plan as written, subject to the staff making the recommended changes as described in the attached summary.

COMMISSIONERS

Rec'd by SJE  
[Handwritten signatures and initials on a list of lines]

Billy Free

SUBMITTED BY: H. G. Hannah DATE PASSED: 3/25/77



STATE OF ARKANSAS  
DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY  
8001 NATIONAL DRIVE  
LITTLE ROCK, ARKANSAS 72209

501 371-1701 GEN. OFF.  
501 371-1136 AIR DIV.

MEMORANDUM

TO: All Commissioners

FROM: Everett Perrien, Chief  
Water Planning Section

DATE: March 3, 1977

SUBJECT: Recommended Changes to Ouachita River  
Basin Plan

Based upon comments received at and following public hearings in Hot Springs on October 19, 1976, and Crossett on October 21, 1976, the staff of the Arkansas Department of Pollution Control and Ecology recommend several changes. These changes have been made as a revised text and are attached. The staff's intent is to mail the revised pages to recipients of the Ouachita Plan and request that the new pages replace those pages that have been revised.

The following is a synopsis of the revisions recommended by the Department's staff.

At the hearing in Hot Springs three statements were made: Dr. Joe Nix felt that the plan had not given adequate treatment to the situation on Cove Creek. National Lead and the abandoned Dresser Minerals mining operation are the contributors to the problem on Cove Creek. Since the hearing Dr. Bob Blanz has written Dr. Nix explaining that National Lead is attempting to clean up their operation by reducing suspended solids concentrations to the receiving stream. Dr. Blanz has also informed EPA of the need to incorporate sulfate, manganese, zinc and nickel limitations in National Leads NPDES Permit. No changes were made in the plan as a result of Dr. Nix's statement.

Mr. James F. Gore gave a rather lengthy statement on the discussion in the plan of the Saline River turbidity problem and relating the problem only to Hot Springs Village. Since the hearing Mr. Gore met with members of the staff including Mr. Davies, to discuss needed changes. At the meeting the recommended changes were resolved and Mr. Gore promised to submit plans on the dam construction believed to be causing a part of the turbidity problems.

Pages requiring some revision as a result of Mr. Gore's statement were 141, 142, 143, 144, 148 and 149.

Mr. John Powell representing Union Carbide at Hot Springs, requested that the entire sentence on page 387 referring to Union Carbide as the most detrimental discharge to Lake Catherine be deleted, and that reference to a water quality classification of the stream due to their mineral discharge be deleted. Both these changes have been made on pages 387 and 388. Mr. Powell also objected to the word "numerous" on page 387 referring to reports to our Department on siltation in Lake Catherine. Since our files reflect 182 signatures on a petition requesting relief from siltation caused by Union Carbide, I see no reason to change the original wording in the plan. A note was added on the inventory sheet of Union Carbide, page 525 to indicate that their discharge from outfall 001 is a controlled discharge based upon an average increase in chloride concentration of no more than 25 mg/l. Mr. Powell also pointed out that the projected waste flow in the U.S.G.S. Wasteload Allocation Report was in error. A memorandum to this effect is being placed in the file and Charles Bryant of the U.S.G.S. is being sent a copy of the memorandum for appropriate action.

The State of Louisiana's comment at the hearing concerned specific plans for alleviating dissolved oxygen problems in the Ouachita below the Arkansas-Louisiana state line. No changes have been made in the plan as a result of their statement, however our Department has met with the Louisiana Stream Control Commission in an effort to resolve the problem. Another meeting is scheduled for March 22, 1977, with the State of Louisiana, the United States Corps of Engineers, the Environmental Protection Agency, Georgia Pacific Corporation at Crossett, and this Department.

Mr. John Wisart, Forestry Manager for Georgia Pacific Corporation, objected to the section on Silviculture on page 33, in that the section specified "best management practices" for forestry operations. This section has been completely re-written, to make it more objective.

Mr. Jack Lee, representing the Monsanto Chemical Company plant in El Dorado, requested a change in the last paragraph on page 59. The re-wording is to clarify appeals procedures for NPDES industrial permittees who have received permits on the basis of proposed EPA effluent limitations. This change was made.

Mr. Lee also requested re-wording the last line in paragraph 4 on page 230. EPA requirements were changed to "best practicable control technology".

Mr. Lee requested a change in the name of Mill Creek to Flat Creek on page 242.

On page 246, Mr. Lee requested a clarification in the table by referring to the Ammonia concentration which is an additional BOD load. This change has been reflected in a footnote.

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lies beneath the West Gulf Coastal Plain and Mississippi Alluvial Plain sections. Other than the Alluvial deposits of Quaternary age, the following aquifers of Tertiary age, proven or potential, are the most notable: Cockfield, Sparta, Carrizo, Cane River and Wilcox. Older rocks that supply water for industrial, public, and agricultural use are the Tokio and Nacatoch formations of the Cretaceous age, while the Brownstown and Ozan formations, also of the Cretaceous age, yield water that is usually highly mineralized.

### 3-D. CLIMATE

The climate in this humid subtropic planning basin can vary during any given season or during a single day due to the elevation changes encountered from the Louisiana state line to its source. The average annual rainfall varies from 46 to 55 inches with about 24 inches of this moisture occurring from April to September. The average annual runoff is about 17 inches with base flows generally low except in the Ouachita Mountain area. Many small streams go dry during the summer and fall months.

Mean January temperatures in the Ouachita River basin range from 42°F to 47°F while the mean July temperatures vary from 80°F to 82°F. The growing season normally ranges from 210 days to 230 days.

### 3-E. AGRICULTURE

A significant portion of the basin's economy is agriculturally oriented, however, the types of agricultural activity are predominantly related to the geological setting of the basin.

Harvestable crops such as cotton, soybeans, wheat, and rice predominate in the Alluvial portion of the basin. During 1971, there were 180,960 acres of cotton; 619,433 acres of soybeans; 50,540 acres of rice; and 52,850 acres of wheat grown in the entire basin. Table II provides a breakdown by county of these crops grown during 1971. Close inspection of the table will reveal that the major portion of these crops is grown in the southeastern portion of the basin. The specific counties included are Ashley, Chicot, Desha, Drew, Jefferson, and Lincoln. It is also in this region that the greatest percentage of irrigation water is used. Compared to the basin as a whole, cropland, excluding pastureland, comprised approximately 15% of the land use in the basin during 1971.

Another rather significant portion of the basin's agricultural economy is the raising of poultry. It is estimated that during 1971, some 63 million broilers, 4 million layers, and 88,000 turkeys were raised in the basin. Production figures by county for 1971 are provided in Table III. Poultry production is rather evenly distributed throughout the basin though very little poultry production is present in the extreme southeastern portion of the basin.

A significant number of cattle and swine are also produced in the basin. These production figures are given in Table III. Like the poultry industry, beef and swine production is rather evenly distributed over the basin. State permits for confined animal raising operations in this basin are given in Table IV.

### 3-F. WATER USE

The groundwater utilized within the basin is supplied by five major and five minor aquifers which underlie portions of the basin. In the northwestern section of the basin, where aquifer systems have poor yields, dependence shifts to the surface water sources of the Ouachita, Little Missouri, Caddo, and Saline Rivers. DeGray Lake also provides surface water supplies for the area.

In 1970, total water use in the basin from both ground and surface water sources was estimated at over one billion gallons per day. Of this total, the major use was for fuel-electric power, irrigation of crops, and industry. Future needs for water are expected to continue increasing in these areas as population and industrial production continue to grow.

Approximately 17 percent of the total groundwater used (322 MGD) was for fish and minnow farming, and economically important and fast-growing industry in several areas of the Ouachita Basin. Total usage by these farms during 1970 from both ground and surface water sources approximately was 64 MGD.

Table V provides a breakdown for use categories by county for water use in the basin.

### 3-G. COMMERCIAL FOREST

As of 1969, commercial forest accounted for approximately 69% of the total land area of the Ouachita River Basin. Table VI provides a listing of ownerships and acreages by county for the basin. Individual farmers and private interests accounted for the ownership of 91% of the commercial forest land in the basin.

Based upon total county acreage, the upland counties are forested to a greater extent than the southeastern counties. For example, Chicot county is composed of approximately 17% commercial forest land, while Clark county has 75% of the county land area in commercial forest. Table VII indicates an approximation of various land uses within the basin. Row crop agriculture predominates in counties having smaller acreages of commercial forest.

Loblolly and shortleaf pine make up over 30% of the timber types in the basin and this percentage is increasing due to silvicultural activities. A significant amount of forested acreage is in oak-hickory and oak-gum cypress associations scattered evenly throughout the Ouachita Basin. The number of acres of commercial forest land by forest type for each county is given in Table VIII.

#### 4-C-5 MINING

Within the central part of the Ouachita River Basin, runoff from bauxite and barite mining operations have caused a pH problem in receiving streams at times. Future lignite mining operations could conceivably have a detrimental impact on receiving streams if proper precautions are not made. Acid mine drainage from lignite mining operations could possibly be lessened if the companies involved would act quickly to reclaim mined areas by leveling grading, and revegetating after an area is exploited.

Turbidity problems have been investigated on the Saline River and the Little Missouri River. Evidence indicates that sand and gravel mining operations may lack sufficient facilities to prevent silt-laden and occasionally acid runoff from reaching streams during periods of heavy rainfall. In other cases, siltation is due to on-going mining operations. However, other factors including silvicultural and development practices also have increased turbidity on the Saline River.

#### 4-C-6 SILVICULTURE

Forestry workshops have pointed out needs for increased research in the area of forest practices and water quality. Forest related enterprises in the Ouachita River Basin are extremely important economically, as they are in other areas of the State. Forest management practices utilized in managing lands in Arkansas are as diverse as the physiography. Research is needed statewide and in the Ouachita River Basin to:

- (1) provide objective answers to questions relating to "forest management practices.
- (2) point out environmentally sensitive areas and identify forestry practices in these areas that are acceptable.
- (3) prevent burdensome and unnecessary restrictions of forest management practices on less sensitive areas.

#### 4-C-7 URBAN RUNOFF

Street litter, solid wastes, decaying vegetation, domestic pet waste, fallout from industrial combustion products, chemicals, applied to lawns and parks, and construction development practices and sources of contaminants in runoff from urban areas.

These pollutants eventually reach surface waters by natural drainage without receiving treatment. This runoff may result in a temporarily heavy BOD load that streams may not be able to assimilate.

With regard to construction development practices, turbidity problems have increased significantly in the upper Saline River drainage area.

Unusually high increases in turbidity on the Middle Fork and South Fork tributaries to the Saline River have been documented and there is no question that poor sediment and erosion control programs have caused deterioration of these streams.

Though there are few large urban areas in the Ouachita River Basin, the characteristics of urban runoff should be carefully considered and studies made with regard to its effects on stream quality in the basin. Urban areas where runoff may have a significant impact on water quality are Hot Springs, Hot Springs Village, Arkadelphia, Pine Bluff, Camden, El Dorado, and Benton.

STATE OF ARKANSAS  
DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

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Regulation No. 2, as amended  
REGULATION ESTABLISHING WATER QUALITY  
STANDARDS FOR SURFACE WATERS OF THE  
STATE OF ARKANSAS

Section 1. AUTHORITY, GENERAL PRINCIPLES, AND COVERAGE

- (a) Pursuant to the provisions of Section 3 of the Arkansas Water and Air Pollution Control Act (Act 472 of the Acts of Arkansas for 1949, as amended; Ark. Stata., Sec. 82-1904), and in compliance with the requirements of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500, 86 Stat. 816, 33 U.S.C. 1151), the Arkansas Commission on Pollution Control and Ecology, (hereinafter referred to as "Commission") hereby promulgates this Regulation No. 2, as amended establishing water quality standards for all surface waters, interstate and intrastate, of the State of Arkansas.
- (b) The water quality standards herein set forth are based upon present, future and potential uses of the waters of the State and a statistical evaluation of past water quality conditions. The standards are designed to enhance the quality, value and beneficial uses of the water resources of the State of Arkansas, to aid in the prevention, control and abatement of water pollution, to provide for the protection and propagation of fish and wildlife and to provide for recreation in and on the water. In establishing these standards, the Arkansas Commission on Pollution Control and Ecology has taken into consideration the use and value of the streams for public water supplies, commercial industrial, agricultural and other beneficial uses, aesthetics, recreational purposes and propagation of fish and wildlife, and the view expressed at public hearings. The State of Arkansas has an exceptionally large volume of high quality water. With few exceptions the streams and lakes of Arkansas contain waters of a quality suitable for all legitimate uses without the necessity of unreasonable water treatment. Where man-made pollution exists substantial progress has been and is being made in abatement. It is the purpose of these regulations to preserve and enhance the quality of this water so that it shall be reasonably available for all beneficial uses and thus promote the social welfare and economic well-being of the people of the State. It is further the purpose of these regulations to designate the

uses for which the various waters of the State shall be maintained and protected; to prescribe the water quality standards required to sustain the designated uses; and to prescribe regulations necessary for implementing, achieving and maintaining the prescribed water quality. The standards, therefore, are applicable to all surface waters within the state.

- (c) The water quality standards herein established will be reviewed by the Commission at least once each three year period beginning as of October 18, 1972, and revisions may be made to take into account changing technology of waste production, treatment and removal, advances in knowledge of water quality requirements, and other relevant factors.

## Section 2. NON-DEGRADATION POLICY

It is recognized that certain waters of the State possess an existing quality which is better than established standards. The quality of these waters will be maintained unless and until it has been affirmatively demonstrated to the Commission that any reduction in quality is justifiable as a result of necessary economic or social development. The water quality criteria herein contained shall not be construed as permitting any waste amenable to treatment or control to be discharged into any waters of the State of Arkansas without reasonable treatment or control. The Arkansas Water and Air Pollution Control Act provides, among other things, that it shall be unlawful for any person to discharge any waste into any waters of the State without having first obtained a written permit from the Department of Pollution Control and Ecology (hereinafter referred to as "Department"). A disposal permit may not be issued unless there is submitted to the Department, plans and specifications for a disposal system adequate to treat or control wastes so as not to cause water pollution as defined in the Act. Such treatment or control must be consistent with the state of the art and best practicable control technology, the minimum requirements being secondary treatment or equivalent, giving due regard to the quality and flow of the receiving waters, the present, future, and potential uses of such waters, economic feasibility, and other relevant factors. The Commission will cooperate with the U. S. Environmental Protection Agency in implementing the Arkansas Water Quality Standards in general and this non-degradation policy in particular, including the furnishing of relevant information and data.

## Section 3. USE CLASSIFICATIONS

- (a) Substantially all waters of the State are presently suitable for recreational uses in and/or on the water and for the preservation and propagation of desirable species of aquatic biota. The few exceptions noted in the use classifications established herein are of limited extent and are the result

where "best practicable technology guidelines" were not available and the industrial discharger contributed significant amounts of oxygen-demanding waste, 30 mg/l of BOD<sub>5</sub> was used in arriving at a projected loading. Five-year projected flows were assumed not to change unless specified otherwise in a draft NPDES permit.

Reference to the "wasteload allocation methodology" shows that two types of calculations were utilized in the study by the U.S.G.S. The steady-state model was used on all streams known to have an appreciable flow. These streams and the modeling results are given in the individual segment analyses. On small tributary streams, a simplified calculation was used in determining a loading necessary to maintain a minimum dissolved oxygen value.

Municipal permits were generally drafted in the planning area with final limitations of 10 mg/l BOD<sub>5</sub> for those streams determined to be "Water Quality Limited". This approach was taken without defining those streams having 7-day, 10-year low flow of zero, for which conventional secondary treatment or equivalent is a minimum requirement.

Results of these wasteload allocation studies are summarized in each segment analysis in Part 10.

Appeals procedures provide for the modifications of permits where apparent errors or misclassifications have been made. This modification can only be accomplished through written requests from the permittee to the EPA. Any approved modifications would then have to be certified by the State and go through the public notice procedure. This Department will assist any municipality in reviewing permit conditions, stream characteristics and applicable water quality standards and will advise any municipality of its course of action.

In addition to final effluent limitations, the federal permits are written so that monitoring is required of all dischargers. Frequency of reporting and analysis vary according to the quantity of discharge and type of pollutants. All NPDES permits have been written incorporating schedules of compliance for meeting final effluent limitations specified therein, and also contain interim limits to be maintained prior to expiration of the permit.

Industrial permits have all been written on the basis of effluent limitation guidelines, where such guidelines have been finalized by EPA. Since many industrial effluents contain other materials than those parameters considered in wasteload allocation studies, final limitations specified for other parameters in NPDES permits should be subjected to further study prior to development of final plans necessary to maintain applicable water quality standards. Those industrial permits issued on the basis of proposed guidelines later modified are subject to appeal as provided above.

PART 8. SEGMENT RANKING AND MUNICIPAL CONSTRUCTION GRANTS

8-A. SEGMENT RANKING

Section 303(e) of the Federal Water Pollution Control Act Amendments of 1972 requires that each state develop a continuing planning process. Interim guidelines for preparation of the process were published March 27, 1973. These guidelines required each state to submit a description of basin boundaries for planning purposes as well as division of each basin into smaller planning areas of "segments". These segments are shown in Figure 1.

The segments of the Ouachita River Basin in Arkansas may be described as follows:

<u>Basin Segment</u>	<u>Segment Description</u>
2A	Boeuf Bayou - Bayou Macon
2B	Bayou Bartholomew
2C	Saline River
2D	Ouachita River below confluence of Little Missouri to Ark-La state line
2E	Cornie Bayou - Bayou de Loutre
2F	Ouachita River to confluence with Little Missouri River
6A	Mississippi River - mouth of White to Ark-La line

The guidelines for the development of the continuing planning process also require a ranking of each segment. The following table gives the ranking of the segments in the Ouachita River Basin as well as their statewide ranking. Appendix 1 gives the methodology for the ranking of basin segments.

<u>Segment</u>	<u>Basin Ranking</u>	<u>Statewide Ranking</u>
2A	3	15
2B	5	22
2C	4	21
2D	1	4
2E	6	34
2F	2	5
6A	7	35

INDUSTRIAL DISCHARGE INVENTORY

Industrial Name Monticello Carpet Mills (Burlington Industries)

Address Post Office Box 120  
Monticello, Arkansas 71655

Outfall No. 1 of 3 St. Pmt. No. none Date \_\_\_\_\_

NPDES No. AR0000892 Eff. Date \_\_\_\_\_ Basin Ouachita

Segment 2B Fld. Ins. Green County Drew

Sec. 32 Twp. 12-S Rng. 6-W

Receiving Streams Tributary to Hurricane Creek to Sandy Creek to Seven Devils  
Lake to Cut-off Creek Use Class BW

Type Treatment \_\_\_\_\_

NPDES Effluent Limitations and Monitoring Requirements:

<u>Parameter</u>	<u>Existing* Conditions</u>	<u>Interim Limitations</u>	<u>Final Limitations</u>	<u>Monitoring Requirement: Frequency, Sample Type</u>
Flow, (MGD)				
BOD <sub>5</sub> , (lb/day)				
TSS, (lb/day)				

\*Source: \_\_\_\_\_

Remarks: Yarn spinning process wastes. Statement of no discharge 9-23-75. This  
discharge is now combined with discharge 002.

INDUSTRIAL DISCHARGE INVENTORY

Industrial Name Monticello Carpet Mills (Burlington Industries)

Address Post Office Box 120

Monticello, Arkansas 71655

Outfall No. 2 of 3 St. Pmt. No. none Date \_\_\_\_\_

NPDES No. AR0000892 Eff. Date \_\_\_\_\_ Basin Ouachita

Segment 2B Fld. Ins. Green County Drew

Sec. 32 Twp. 12-S Rng. 6-W

Receiving Streams Tributary to Hurricane Creek to Sandy Creek to Seven Devils Lake

to Cut-off Creek Use Class BW

Type Treatment \_\_\_\_\_

NPDES Effluent Limitations and Monitoring Requirements:

<u>Parameter</u>	<u>Existing* Conditions</u>	<u>Interim Limitations</u>	<u>Final Limitations</u>	<u>Monitoring Requirement: Frequency, Sample Type</u>
Flow, (MGD)	0.004			
BOD <sub>5</sub> , (lb/day)				
TSS, (lb/day)				

\*Source: \_\_\_\_\_

Remarks: Cooling water, boiler blowdown wastes, combined with discharge 001 and applied  
to four acres of company-owned land.

10-C. SEGMENT 2C - SALINE RIVER AND TRIBUTARIES

GENERAL

Basin Segment 2B encompasses the Saline River drainage system from its headwaters in the Ouachita Mountains to its confluence with the Ouachita River, a distance of some 250 miles. The total drainage area of this segment is approximately 2,841 square miles.

The Winona Wildlife Management Area lies within the Ouachita National Forest in Perry and Saline counties. This area contains the headwaters of the North Fork and Alum Fork of the Saline River. Lake Winona, formed on the Alum Fork, is the primary water supply for the Little Rock area.

The Saline River receives wastewater from some 45 known industrial dischargers, eight municipal dischargers, and 19 known sources of non-municipal domestic waste. Many of the industrial discharges are from the aluminum mining and processing industries in Saline county.

Non-point sources affecting the Saline watershed are those arising from mining, silvicultural, and development construction activities (See Part 4-C, Non-Point Sources).

Saline county, which lies mostly within Segment 2C, is included in the Little Rock 208 Study Area (See Part 9, IDENTIFICATION OF OTHER PLANS).

Streams, waste sources, and monitoring stations are represented in Figure IX.

WATER SUPPLIES

There are six surface drinking water intakes in Segment 2C. Lake Winona was constructed on the Alum Fork of the Saline River to serve as a water supply for the Little Rock - North Little Rock area. There are no discharges upstream from this lake.

The city of Benton utilizes water taken from the Saline River just below the confluence of Salt Creek. The towns of West Bauxite, Salem, and Tull obtain water from the Benton water system.

Approximately two miles downstream from the Benton water intake is the intake for the Arkansas State Hospital. This supply has been affected by the operations of a gravel washing operation immediately upstream, but recent improvements in the treatment of this gravel washing water have helped to alleviate this problem.

Approximately five miles downstream from the State Hospital water intake is the Alcoa water intake. This water is utilized for process water and is also used as a potable water supply for Alcoa employees.

Reynolds Metals Company obtains drinking water from Hurricane Lake, a company-owned lake.

Georgia-Pacific pumps water from the Saline River into Lake Georgia Pacific. This lake is used for both potable and industrial purposes.

Hot Springs Village obtains potable water from Lake Lago, a privately owned lake. Make-up water for that Lake is pumped from the Middle Fork of the Saline River approximately one-fourth mile above its confluence with Mill Creek.

All other incorporated towns in Segment 2C obtain potable water from wells except for the towns of Perla and Traskwood, which do not have public water supply systems.

#### MUNICIPAL WASTE TREATMENT SYSTEMS

The following table summarizes the sewered/unsewered status of incorporated towns in Segment 2C:

<u>TOWN</u>	<u>SEWERED</u>	<u>1970 POPULATION</u>
Bauxite	Yes	Unknown
Benton	Yes	16,499
Bryant	Yes	1,199
Fountain Hill	No	266
Haskell	No	239
Kingsland	No	304
Ladelle	No	35
Leola	No	390
Lonsdale	No	104
Monticello (Segment 2C)	Yes	4,700
Perla	No	227
Poyen	No	265
Prattsville	No	299
Rison	Yes	1,214
Sheridan	Yes	2,480
Traskwood	No	210
Tull	No	179
Warren	Yes	6,433
Wilmar	No	653

Benton is now served by two treatment plants, both discharging to Depot Creek near the confluence with the Saline River. The "old" plant, is a 1.3 MGD single-stage trickling filter. The new treatment plant, is a 1.5 MGD single-stage bio-disk plant (secondary treatment) began operation June 1, 1976. Interim and final effluent limitations for the new plant are 30 mg/l BOD and 30 mg/l TSS.

Wasteload assimilative capacity studies for the Saline River show that the Saline River is classified as "water quality limited" from the confluence with Depot Creek to a point six miles downstream. The studies also show that when the projected BOD load was reduced by fifty percent, the Saline River would become "effluent limited" in this reach.

Based upon an adjusted load of 188 pounds per day of BOD to be discharged to Depot Creek and the Saline River, and based upon the fact that the city's sewage will be approximately equally divided between the two plants, it appears that both plants should eventually be allowed to discharge 10 mg/l BOD and 15 mg/l TSS to the Saline River.

The town of Bryant is presently served by a single-cell oxidation lagoon. Bryant is on the FY-76 Construction Grants List for upgrading this facility. The proposed improvements will consist of an aerated lagoon, polishing pond, and sand filter.

Monticello has treatment plants in both Segment 2C and Segment 2B. The facilities in Segment 2C consist of a 70 acre lagoon followed by a 66 acre lagoon.

Rison has a treatment plant consisting of a 7 acre oxidation lagoon. According to the 1970 population figure, this plant has reached its design capacity.

Sheridan is served by two treatment plants, both discharging to Big Creek, a tributary of Hurricane Creek. These plants consist of an 8.6 acre oxidation lagoon and a 15.8 acre oxidation lagoon.

#### NON-MUNICIPAL DOMESTIC WASTE

There are 19 permitted sources of non-municipal domestic waste in Segment 2C. Descriptions of each of these discharges as to location, State and Federal permit status are provided in the following discharge inventories.

#### INDUSTRIAL WASTE TREATMENT SYSTEMS

ALUMINUM COMPANY OF AMERICA (Bauxite) mines bauxite and produces aluminum and alumina chemicals. Treatment facilities consist of several holding/settling ponds with lime dispensing units for neutralizing acid mine water.

Alcoa has submitted plans to this Department which, when completed, will allow all upstream drainage to be collected, stored, and treated at three locations. This should effectively neutralize all drainage from Alcoa's mining activities discharged to Holly Creek, Dry Lost Creek, and Hurricane Creek.

BELVEDERE SAND AND GRAVEL (Benton) is owned by Belvedere Country Club, Incorporated of Hot Springs. This plant has caused numerous violations of water quality standards in the past by discharging muddy water from its sand and gravel operation into the Saline River. In October, 1974, the management of this plant was fined in Saline County Chancery Court for causing this water pollution, with an additional fine for each day the wastewater is discharged into the river. The court did not rule, however, that Belvedere Sand and Gravel must submit plans to this Department and obtain a permit for the disposal of this wastewater. Consequently, the present system still does not adequately treat this wastewater during high rainfall conditions. This discharge is immediately upstream from the water supply intake for this Arkansas State Hospital and has caused the need for additional treatment of this water.

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STATION	DATE	pH	D.O. MG/L	BOD5 MG/L	TDS MG/L	CL MG/L	SO4 MG/L	TURB JTU	F.COLI. /100 ML
OUA 10A (cont'd)	75/03/01	-	-	-	-	-	-	-	0
	75/03/11	6.60	9.1	1.7	137	-	40	75.0	-
	75/04/14	6.50	7.5	1.0	62	-	-	9.5	-
	75/04/15	-	-	-	-	-	-	-	10
	75/05/05	6.19	6.3	2.3	70	-	-	16.0	-
	75/05/06	-	-	-	-	-	-	-	80
	75/07/09	7.43	5.5	-	84	-	-	18.0	117
	75/08/05	7.33	6.9	1.2	86	6	15	12.0	-
	75/09/08	7.08	5.3	2.4	94	8	37	13.0	533
	75/09/29	7.09	8.7	1.3	83	7	7	18.0	-
	75/10/28	7.20	8.4	1.8	88	7	48	8.5	27
	75/12/01	7.33	10.3	1.1	92	7	20	9.5	80
OUA 26	74/04/29	7.41	7.8	0.9	121	-	8	21.0	10K
	74/05/27	7.48	8.0	0.9	68	-	-	17.0	140
	74/06/24	7.52	7.4	0.3	74	-	-	7.8	22
	74/07/22	7.57	7.2	1.4	84	-	9	4.1	20
	74/08/19	7.05	6.5	2.6	78	-	-	23.0	4K
	74/09/16	7.49	8.0	0.7	80	-	-	10.0	16
	74/10/16	7.65	8.7	0.8	73	-	3	7.0	8
	74/11/13	7.41	9.7	0.6	51	-	-	11.0	-
	74/12/11	7.10	9.2	0.3	40	-	-	11.0	64
	75/01/27	-	-	-	76	-	-	-	52
	75/01/28	7.58	11.2	0.03	-	-	3	8.3	-
	75/02/24	-	-	-	-	-	-	-	370
	75/02/25	7.32	11.2	1.6	65	-	-	21.0	-
	75/03/24	7.39	-	0.7	-	-	-	23.0	300
	75/03/25	-	9.3	-	66	-	-	-	-
	75/04/28	-	-	-	-	-	-	-	800
	75/04/29	7.11	7.9	0.9	70	5	10	20.0	-
	75/05/22	7.38	7.4	0.3	76	-	-	11.0	324
	75/06/26	7.51	6.7	1.2	84	-	-	9.5	118
	75/07/23	7.60	6.2	1.3	87	-	-	7.1	240
	75/08/21	7.79	7.0	1.4	92	6	4	6.4	55
	75/09/17	-	-	-	-	-	-	-	5K
	75/10/15	7.51	7.3	0.8	92	5	6	5.0	90
75/11/19	7.71	-	0.6	-	5	4	18.0	150	
75/11/20	-	9.6	-	92	-	-	-	-	
OUA 31	74/04/30	5.90	8.1	0.6	327	-	-	50.0	10K
	74/05/28	3.60	7.2	1.1	646	-	478	16.0	-
	74/06/25	3.03	6.0	1.0	682	-	-	21.0	7K
	74/07/23	4.53	7.8	0.8	660	-	-	5.6	4K
	74/08/19	-	-	-	-	-	-	-	4K
	74/08/20	3.30	7.2	0.5	560	-	390	10.0	-
	74/09/17	4.31	8.7	0.6	643	-	-	15.0	4K
	74/10/15	4.10	7.7	1.1	662	-	-	15.0	4K
	74/11/11	5.11	9.2	0.6	151	-	130	28.0	-
74/12/10	6.49	11.5	1.3	108	-	-	18.0	4K	

STATION	DATE	pH	D.O. MG/L	BOD <sub>5</sub> MG/L	TDS MG/L	CL MG/L	SO <sub>4</sub> MG/L	TURB JTU	F.COLI. /100 ML.
OUA 31	75/01/28	-	-	-	-	-	-	-	4K
(cont'd)	75/02/25	8.83	11.2	1.9	211	-	79	27.0	15
	75/03/25	5.90	10.1	1.0	169	-	-	23.0	4K
	75/04/21	-	-	-	-	-	-	-	4K
	75/04/22	6.52	9.4	-	200	-	-	13.0	-
	75/05/20	6.51	8.0	0.4	180	-	-	17.0	24
	75/06/23	-	7.9	-	-	-	-	-	-
	75/06/24	4.33	-	0.6	414	6	345	17.0	4K
	75/08/19	3.84	7.2	0.4	561	7	500	8.0	-
	75/09/15	-	6.8	-	-	-	-	-	-
	75/09/16	3.76	-	2.2	989	7	300	110.0	20K
	75/12/08	5.80	11.0	1.3	41	5	10	5.2	20

Samples from station OUA 31, located on Hurricane Creek, show that low pH conditions are still occurring due to acid mine water being discharged without proper treatment. Although Hurricane Creek is an excepted stream for pH, with a range of 5 - 9 permitted, this station shows violations for pH in over 50 percent of the above samples.

The origin of this acid water may be attributed to two general sources. Many abandoned or temporarily abandoned bauxite pits exist which were mined prior to the 1971 Open Cut Land Reclamation Act (Act 236 of 1971). It is likely that some seepage and runoff is occurring from these pits which are not receiving any treatment. The second source of acid water is due to pumping water out of pits which are to be mined without neutralizing this water prior to discharge. This is in violation of both State and Federal water pollution control laws but apparently these violations are continuing to occur. A study should be made to assess the adequacy of treatment of all mining activities in this area. In addition to Alcoa and Reynolds Mining, some independent mining operations are active in this area. A better program of surveillance will be required of this Department to insure that all discharges in this area are permitted and adequately treated, that the potential for "accidental" discharges through negligence or faulty equipment is minimized, and to prevent any willful discharge of improperly treated acid water.

Data from station OUA 10A on the lower Saline River show that the pH and sulfates concentration fluctuate as compared to the samples from OUA 26. This may be partly attributed to the influence of Hurricane Creek upon the river, combined with a low buffering capacity. Two violations for pH can be noted in the above data. Other standards are being met at this location except for one D.O. violation, one turbidity violation, and one sulfate violation.

Station OUA 26 is located on the Saline River west of Benton, where the river is classified as a Class A smallmouth bass stream. The only violation evidenced by the above data are for turbidity, which occur in over 50 percent of the samples. Extensive development activities, and forest practices on the Southfork and Middlefork of the Saline River are major contributors to increased turbidity.

STREAM CLASSIFICATIONS AND ASSIMILATIVE CAPACITY

Wasteload assimilative capacity studies for Segment 2C were performed by this Department and the U. S. Geological Survey. Results of these studies show that under the specified conditions, the Saline River meets water quality standards for all parameters modeled except dissolved oxygen. Between river miles 188 and 196 the Saline River was shown to be deficient in dissolved oxygen, due to the Benton municipal treatment plant discharge.

When the BOD<sub>5</sub> wasteload from Benton was reduced by 50 percent, the Saline River was shown to meet water quality standards for dissolved oxygen. This allowable load is 188 lbs/day of BOD<sub>5</sub>.

Turbidity was not included as a parameter in the stream modeling studies.

The results for tributary streams are given below:

Reach or Tributary	5-year projected load (BOD <sub>5</sub> )		Target load (BOD <sub>5</sub> )		Stream Class	Use Class
	Pounds per day	Kilograms per day	Pounds per day	Kilograms per day		
North Fork Saline River	0	0	3	1	EL	AS
Alum Fork Saline River	0	0	15	7	EL	AS
Middle Fork Saline River	89	40	10	5	WQ	AS
South Fork Saline River	18	8.1	9	4	WQ	AS
Francois Creek	0	0	3	1	EL	BW
Big Creek (tributary to Francois Creek)	12	5.4	5	2	WQ	BW
Lost Creek	0	0	10	5	EL	B(Ex)W
Hurricane Creek	1,934	870	180	82	WQ	B(Ex)W
Big Creek (tributary to Hurricane Creek)	1,822	0	0	0	WQ	BW
Derrisseaux Creek	0	0	6	3	EL	AW
Harrison Creek	87	39	0	0	WQ	AW
Hudgin Creek	0	0	14	6	EL	AW
Bayou Branch	348	156	0	0	WQ	AW
Tenmile Creek	725	326	0	0	WQ	AW
L'aigle Creek	0	0	23	10	EL	AW
Cox Creek	0	0	2	1	EL	AW

\*EL - Effluent Limited

WQ - Water Quality Limited

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fuel, roofing asphalt, unfinished gasoline, and wax distillate. Wastewater is from desalters, crude oil tank drainage, condensor water, cooling tower blowdown, and boiler blowdown.

CELOTEX CORPORATION (Camden), a subsidiary of Jim Walter Corporation, Tampa, Florida, manufactures asphalt roofing products. Wastewater originates from a felt mill and from a roofing mill. A portion of the felt mill discharge goes to the Camden sewer system, but overflow is discharged to a tributary of West Two Bayou. Neither of these discharges had a State permit at the time of the survey, but an application has been received since that time.

CROSS REFINERY (Smackover), a subsidiary of Charles J. Wood Petroleum Company, Chicago, Illinois, produces lubricating oil, diesel fuel, black oil, asphalt, and fuel oil. Wastewater consists of process water, boiler blowdown, and steam condensate.

CORN BELT OF ARKANSAS (Hope), a subsidiary of the Kroger Company, Cincinnati, Ohio, operates four egg farms near Hope. These were not included in the 1974-1975 basin survey. According to an industry spokesman, these farms will be closed by Easter, 1978, at the latest.

ELK ROOFING COMPANY (Stephens), a subsidiary of Elcor Chemical Company, Midland, Texas, manufactures asphalt roofing products. Wastewater consists of process water from the pulping process, cooling water, boiler blowdown, and clean up water. The two ponds which treat this waste are in need of renovation and aerators. At the present time, these wastes are inadequately treated.

ELROD COMPANY (Fordyce) produces creosote and penta-treated utility poles and timbers. Wastewater from this process passes through two separation ponds and one polishing pond. Further treatment is needed to reduce phenols to an acceptable range.

GEORGIA-PACIFIC CORPORATION (Fordyce) manufactures plywood at this facility. Wastewater consists of vat soaking water overflow and wastewater from the glue line. The vat water is recycled although some of this flow did reach Jug Creek. The glue line effluent passes by ditch to a marshy pond before discharging to Jug Creek. It is planned to eliminate this discharge by recycling. No State permit has been issued for this discharge.

GEORGIA-PACIFIC CORPORATION (Crossett) operates a panel board plant and a particle board plant at this site. Discharge from both plants consists of cooling water, washup water, and surface runoff. Sanitary wastes at both plants are treated by a .01 MGD package treatment plant. State permit number 1471 has been issued for this discharge.

GEORGIA-PACIFIC CORPORATION (Crossett). This complex consists of a 1,500 TPD paper mill, a chemical plant, and a plywood mill. Discharge from this complex is to the Ouachita River via Coffee Creek. This discharge is the largest in the Ouachita River Basin with a daily average flow of 48.7 MGD and a recorded peak flow of 66 MGD measured

during the basin survey. Treatment facilities at this complex consist of a 300 foot clarifier, two small settling basins, a 625 million gallon aerated basin with twelve 50 HP and two 75 HP aerators. During the survey and during previous inspections, only six or eight of the aerators were in operation. Coffee Creek and Mossy Lake are also considered as part of the treatment system. Georgia-Pacific owns the entire watershed of Coffee Creek. When the Ouachita River is up, Mossy Lake is unundated. Due to the inaccessibility of Mossy Lake, composite sampling must be done above the lake. One grab sample taken at the mouth of Coffee Creek had a BOD of 24 mg/l and TSS of 35 mg/l. Color in this discharge was high.

This treatment system also additionally treats the effluent from the city of Crossett, which has two oxidation ponds.

INTERNATIONAL PAPER COMPANY (Camden). This 795 TPD paper mill is the second largest discharger in the Ouachita River Basin with 9.6 MGD average daily flow measured during the basin survey. Treatment facilities consist of two 125 foot clarifiers, a 132 million gallon aerated lagoon with twelve 100 HP aerators, and a 19 acre polishing pond. As was the case with Georgia-Pacific, only six to eight of the aerators were found to be in operation at the time of the survey. This discharge is to Two Bayou, approximately one mile upstream from the Camden sewage treatment plant discharge.

MACMILLAN REFINERY (Norphlet). This 3,100 barrel/day oil refinery produces lubricants, fuels, and asphalts. At the time of survey, the plant had two discharges. The east discharge consisted of process water from the asphalt plant, the acid plant, and washwater. The other discharge was to the south and consisted of process water from the crude plant and the desalter. At the present time, MacMillan is incorporating all flow into the south discharge and is installing additional control equipment. No State permit has been issued for this discharge.

MONSANTO CHEMICAL COMPANY (El Dorado). This plant manufactures ammonium nitrate, nitric acid, and sulfuric acid. Wastewater consists of process water from the ammonium nitrate plant, the acid plants, cooling water, and boiler blowdown. All wastewater except for the minor boiler blowdown flow passes through a 150 foot by 300 foot retention pond. Solids dredged from this pond were being discharged directly to the receiving stream around the time of the survey (2,000 GPM for twelve hours for two weeks). Reportedly, this was the first time this pond had been dredged. By in-plant control and changes, Monsanto has reduced their total nitrogen discharge since 1973 and it is expected that this plant will meet the 1977 EPA requirements for best practical control technology.

MURFREESBORO LUMBER COMPANY (Murfreesboro) operates a sawmill with a log spraying facility. This is supposed to be a closed system but there was some overflow (.027 MGD) at the time of the survey. A follow-up inspection revealed that most of this flow had been stopped.

OLINKRAFT, INCORPORATED (Huttig). Wastewater from this sawmill and plywood mill complex consisted primarily of log soaking vat overflow

upstream point.

Georgia-Pacific discharges an effluent at mile 4.5 on Jug Creek, which eliminates both plankton and benthic organisms. The downstream station shows an increase in the BOD to 113 mg/l and the COD to 1,209 mg/l; with the fecal coliform counts remaining high.

Elrod Company discharges into an unnamed ditch which flows into Jug Creek. The sample downstream from Elrod Company had a very low dissolved oxygen content and a high BOD, along with extremely high fecal coliform counts. There were no plankton or benthic organisms found below this discharge. The Fordyce North STP then empties into Jug Creek providing some dilution to the already degraded Jug Creek.

#### G. Champagnolle Creek sub-basin

Champagnolle Creek drains a 140 square mile area. Five sample stations were in use determining the water quality in this drainage. Two municipal dischargers are located in this drainage. The Thornton STP, located on Turner's Creek, did not have a discharge during the time of this survey. No effect was observed below the discharge point. The Hampton STP discharges directly into Champagnolle Creek. The only parameter which was noticeably affected was dissolved oxygen, which was lowered from 5 mg/l upstream to 4.2 mg/l downstream. Champagnolle Creek flows into a series of backwater sloughs before reaching the Ouachita River. The sample taken at the mouth reflects the sluggish nature of the stream at this point along with the high plankton counts.

#### H. Smackover Creek sub-basin

Smackover Creek drains a total of 526 square miles. A total of sixteen sample points were used in determining the water quality in this sub-basin. The headwaters of Smackover Creek receive the wastewater from Berry Refinery, Stephens STP and Elk Roofing, which contribute to the low dissolved oxygen content found below these three sources. Probably due to flow characteristics, the stream

never recovers from this low oxygen condition and for the next 40 stream miles, has a low oxygen saturation. The chloride content exhibits a gradual increase and the fecal coliform has reached approximately 900 colonies/100 ml. below the Smackover STP. The sample taken at the mouth of Smackover had a plankton count of over one million cells per liter. This would indicate a nutrient load being brought in by Haynes Creek. Even with the high plankton counts, there was an abundance of nitrates found; indicating a growth limiting factor, probably phosphate. The fact that there was no ammonia present, should indicate that at a temperature of 28° centigrade, the process of nitrification has been completed and no further oxygen demand would be exerted from the ammonia waste at Monsanto.

(1) Haynes Creek sub-basin

Haynes Creek was sampled near the mouth and found to contain 3.7 mg/l dissolved oxygen and a COD of 77 mg/l.

(a) Flat Creek sub-basin

Flat Creek sub-basin receives wastewater discharges from seven sources and is a tributary of Haynes Creek. The major flow in Flat Creek comes from the 1.2 million gallons a day discharged from the Monsanto Chemical Company. The El Dorado STP # 3 discharges to an unnamed ditch with a noted deterioration of the biological community. Another unnamed ditch which empties into Flat Creek receives the effluent from the El Dorado STP # 5, Monsanto Chemical Company, and the El Dorado SPT # 4. A minimal effect is observed at the mouth of this unnamed ditch, probably due to the amount of dilution (approximately 1.2 million gallons a day) coming from Monsanto Chemical Company.

(b) Salt Creek

A sample was collected near the mouth of Salt Creek, although there is no discharger in this drainage. The dissolved oxygen is low due to the flow conditions, while the chlorides ran about 2000 mg/l.

I. West Two Bayou Sub-basin

West Two Bayou drains a total of 137 square miles and receives wastewater from two industrial

be classified as effluent limited. Plots for D.O. resulting from 5-year wasteload projections and Q7-10 low flows are given for the Ouachita River in Figure XIII. Figure XIV shows plots for D.O. when these wasteloads were reduced 67 percent.

The accuracy of the wasteload allocation analyses is considered fair based on the following:

1. Calibration curves of computed dissolved oxygen and conservative minerals could not be made to follow the observed-data curves. These differences were either because all waste sources were not known or because waste-source data, which are averages of concentrations of 10-day periods, may have shown unusually high concentrations on given days. In addition, waste sources and receiving streams were not sampled on the same day.
2. Stream data were somewhat minimal and required coarse interpretation.

The results for tributary streams are summarized below:

Reach or Tributary	5-year projected load (BOD <sub>5</sub> )		Target load (BOD <sub>5</sub> )		Stream Class	Use Class
	Pounds per day	Kilograms per day	Pounds per day	Kilograms per day		
Foster Creek	0	0	0	0	EL	AW
Bear Creek	0	0	0	0	EL	AW
Muddy Fork Creek	0	0	2	1	EL	BW
Prairie Creek	598	269	1	0	WQ	BW
West Fork Prairie Creek	0	0	4	2	EL	BW
Saline Creek	0	0	3	1	EL	AW
Ozan Creek	0	0	6	3	EL	BW
Little Antoine Creek	39	18	1	0	WQ	AW
Wolf Creek	0	0	1	0	EL	AW
Antoine River	0	0	40	18	EL	AW
Brushy Creek	0	0	0	0	WQ <sup>1</sup>	BW
Wilson Creek	0	0	0	0	EL	BW
Garland Creek	0	0	0	0	WQ <sup>1</sup>	BW
Pate Creek	0	0	0	0	WQ <sup>1</sup>	BW
Unnamed tributary to Terre Rouge Creek (at Prescott)	869	391	0	0	WQ	BW
Terre Rouge Creek	869	391	26	12	WQ	BW
Caney Creek	0	0	4	2	EL	BW
White Oak Creek	0	0	14	6	EL	BW
Tulip Creek	0	0	0	0	WQ <sup>1</sup>	BW
Freeo Creek	0	0	0	0	WQ <sup>1</sup>	BW
Ecore Fabre Creek	0	0	0	0	WQ <sup>1</sup>	AW
East Two Bayou	189	85	0	0	WQ <sup>1</sup>	BW

Reach or Tributary	5-year projected load (BOD <sub>5</sub> )		Target load (BOD <sub>5</sub> )		Stream Class	Use Class
	Pounds	Kilograms	Pounds	Kilograms		
	per day	per day	per day	per day		
Mill Creek (tributary to Two Bayou)	0	0	3	1	EL	BW
Two Bayou	13,400	6,100	5	2	WQ	B(Ex)W
Unnamed Tributary to Smackover Creek downstream from Stephens)	1,679	305	0	0	WQ	BW
Gum Creek	0	0	2	1	EL	BW
Mill Creek (tributary to Smackover Creek)	0	0	0	0	WQ <sup>1</sup>	BW
Camp Creek	0	0	0	0	WQ <sup>1</sup>	BW
Northfork Creek	0	0	0	0	WQ <sup>1</sup>	BW
Holmes Creek	0	0	21	10	EL	BW
Salt Creek	0	0	0	0	WQ <sup>1</sup>	BW
Unnamed tributary to Flat Creek (downstream from Norphlet)	27	12	1	0	WQ	BW
Flat Creek	712 <sup>2</sup>	324	13	6	WQ	BW
Haynes Creek	0	0	0	0	WQ <sup>1</sup>	BW
Champagnolle Creek	98	44	4	2	WQ <sup>1</sup>	BW
Jug Creek	2,000	902	0	0	WQ <sup>1</sup>	BW
Moro Creek	2,070	941	8	3	WQ	BW
Big Brushy Creek	1,370	617	0	0	WQ <sup>1</sup>	BW
Lapile Creek	16	7	78	36	EL	BW
Lapoile Creek	0	0	0	0	WQ <sup>1</sup>	BW
Coffee Creek Ditch	14,000	6,300	0	0	WQ <sup>1</sup>	B(Ex)W

<sup>1</sup>Observed dissolved oxygen less than 5 mg/l.

<sup>2</sup>Plus an additional BOD<sub>5</sub> load generated from the discharge of ammonia by Monsanto, some of which is absorbed.

\*W - Water Quality Limited

EL - Effluent Limited

MUNICIPAL DISCHARGE INVENTORY

City of Murfreesboro

Outfall No. 1 of 1 St. Pmt. No. 57-W Date 11-18-69

NPDES No. AR0033481 Eff. Date 11-28-74 Basin Ouachita

Segment 2D Fld. Ins. Hays County Pike

Sec. 16 & 17 Twp. 8-S Rng. 25-W

Receiving Streams Prairie Creek to Little Missouri River

Type of Treatment Aerated lagoon, 40 acre polishing lagoon

Design Population 7,000 1970 Pop. 1,350

No. Sewer Connections 810 Date 1974

No. Water Connections 610 Date 1974

Effluent Data: 1975 survey

Flow (MGD) .561

BOD<sub>5</sub> (mg/l) 51

TSS (mg/l) 112

Other Remarks \_\_\_\_\_

MUNICIPAL N.P.D.E.S. PERMIT INFORMATION

Treatment Facility Name Murfreeboro Permit No. AR0033871  
 Effective Date 11-28-74 Expiration Date 5-1-77

Effluent Limitations

A. Interim Effluent Limitations

Beginning 11-28-74 and lasting through 180 days  
 Maximum Average Monthly Flow 1.05 MGD  
 Maximum Daily Flow 2.6 MGD

<u>Parameter</u>	<u>Unit</u>	<u>Effluent Concentrations</u>		<u>Effluent Loadings</u>
		<u>30-day Average</u>	<u>7-day Average</u>	<u>30-day Average</u>
Biochemical Oxygen Demand (5-day)...	mg/l	<u>50</u>	<u>75</u>	<u>199</u> kg/day
Suspended Solids..	mg/l	<u>75</u>	<u>112</u>	<u>298</u> kg/day
Fecal Coliform Bacteria.....	#/100ml	<u>5X10<sup>4</sup></u>	<u>1X10<sup>5</sup></u>	

B. Final Effluent Limitations

Beginning 181st day and lasting through 5-1-77  
 Maximum Average Monthly Flow 1.05 MGD  
 Maximum Daily Flow 2.6 MGD

<u>Parameter</u>	<u>Unit</u>	<u>Effluent Concentrations</u>		<u>Effluent Loadings</u>
		<u>30-day Average</u>	<u>7-day Average</u>	<u>30-day Average</u>
Biochemical Oxygen Demand (5-day)...	mg/l	<u>45</u>	<u>68</u>	<u>179</u> kg/day
Suspended Solids..	mg/l	<u>68</u>	<u>102</u>	<u>270</u> kg/day
Fecal Coliform Bacteria.....	#/100ml	<u>200</u>	<u>400</u>	

C. In order that Water Quality Standards be maintained in the receiving stream, it has been determined that the following effluent limits shall apply and, upon issuance of this permit, the permittee shall commence studies and preparation of plans to attain these limits at the earliest possible date:

<u>Parameter</u>	<u>Unit</u>	<u>Effluent Concentrations</u>		<u>Effluent Loadings</u>
		<u>30-day Average</u>	<u>7-day Average</u>	<u>30-day Average</u>
Biochemical Oxygen Demand (5-day)...	mg/l	<u>10</u>	<u>15</u>	<u>39.8</u> kg/day
Suspended Solids..	mg/l	<u>15</u>	<u>22</u>	<u>59.6</u> kg/day
Fecal Coliform Bacteria.....	#/100ml	<u>200</u>	<u>400</u>	

INDUSTRIAL DISCHARGE INVENTORY

Industrial Name Georgia-Pacific Corporation (paper mill)

Address Post Office Box 520

Crossett, Arkansas 71635

Outfall No. 1 of 1 St. Pmt. No. 46-W Date 10-30-56

NPDES No. AR0001210 Eff. Date 12-2-74 Basin Ouachita

Segment 2D Fld. Ins. Green County Ashley

Sec. 18 Twp. 18-S Rng. 8-W

Receiving Streams Coffee Creek to Ouachita River

Use Class B(Ex)W

Type Treatment 300' primary clarifier, aerated lagoon (14 aerators)

Coffee Creek and Mossy Lake utilized in treatment process

NPDES Effluent Limitations and Monitoring Requirements:

<u>Parameter</u>	<u>Existing* Conditions</u>	<u>Interim Limitations</u>	<u>Final Limitations</u>	<u>Monitoring Requirement: Frequency, Sample Type</u>
Flow, (MGD)	51.9	-	-	Composite, N/A
BOD <sub>5</sub> , (lb/day)	16,193	25,000	12,480	3/week, composite
TSS, (lb/day)	21,949	30,000	29,040	3/week, composite
Ammonia Nitrogen (lb/day)			400	3/week, Grab

\*Source: Self-monitoring Data 3-1-76

Remarks: Effluent from city of Crossett discharged to this system. Only 7

aerators in operation during the survey. Coffee Creek is excepted for D.O.  
limitations ( 2 mg/l).

INDUSTRIAL DISCHARGE INVENTORY

Industrial Name Georgia-Pacific Corporation (plywood mill)

Address Post Office Box 660

Fordyce, Arkansas 71742

Outfall No. 002 of 2 St. Pmt. No. none Date \_\_\_\_\_

NPDES No. AR0036064 Eff. Date March 1977 Basin Ouachita

Segment 2D Fld. Ins. Hill County Ouachita

Sec. 27 Twp. 10-S Rng. 13-W

Receiving Streams Jug Creek to Moro Creek

Use Class BW

Type Treatment Settling pond

NPDES Effluent Limitations and Monitoring Requirements:

<u>Parameter</u>	<u>Existing* Conditions</u>	<u>Interim ** Limitations</u>	<u>Final Limitations</u>	<u>Monitoring Requirement: Frequency, Sample Type</u>
Flow, (MGD)	0.158			
BOD <sub>5</sub> , (lb/day)	51	8.34	16.7	1/Day, Grab
TSS, (lb/day)	304	12.5	25.0	1/Day, Grab
COD (lb/day)	1,764	-	-	
Phenols (lb/day)	3.9	-	-	

\*Source: 1975 survey; Glue line wastewater eliminated.

Remarks: It is planned to eliminate this discharge by recycling.

\*\* 12-1-79 outfall 002, boiler blowdown, wash water clean up.

INDUSTRIAL DISCHARGE INVENTORY

Industrial Name Arkansas Chemicals, Incorporated

Address Route 6 Box 98

El Dorado, Arkansas 71730

Outfall No. 1 of 1 St. Pmt. No. \_\_\_\_\_ Date \_\_\_\_\_

NPDES No. AR0000981 Eff. Date 2-28-75 Basin Quachita

Segment 2E Fld. Ins. Hill County Union

Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ Rng. \_\_\_\_\_

Receiving Streams Unnamed branch to Cornie Bayou

Use Class BW

Type Treatment Cooling water

NPDES Effluent Limitations and Monitoring Requirements:

<u>Parameter</u>	<u>Existing* Conditions</u>	<u>Interim Limitations</u>	<u>Final Limitations</u>	<u>Monitoring Requirement: Frequency, Sample Type</u>
Flow, (MGD)				Daily, Estimate
Chlorides (lbs/day)		2393	654	Daily, Grab
BOD <sub>5</sub> , (lb/day)				
Oil & Grease		N/A	N/A	Daily, Grab
TSS, (lb/day)				
Bromides		N/A	N/A	Weekly, Grab

\*Source: \_\_\_\_\_

Remarks: \_\_\_\_\_

INDUSTRIAL DISCHARGE INVENTORY

Industrial Name El Dorado Poultry Feed Mill/Truck Shop

Address South Field Road

El Dorado, Arkansas 71730

Outfall No. 1 of 1 St. Pmt. No. \_\_\_\_\_ Date \_\_\_\_\_

NPDES No. AR0034435 Eff. Date 11-16-75 Basin Ouachita

Segment 2E Fld. Ins. Hill County Union

Sec. 11 Twp. 17-S Rng. 15-W

Receiving Streams Unnamed Creek to Morgan Branch to Little Cornie Bayou to Cornie

Creek Use Class BW

Type Treatment Washwater from truck shop and feed mill and boiler condensate

discharged to small lagoon

NPDES Effluent Limitations and Monitoring Requirements:

<u>Parameter</u>	<u>Existing* Conditions</u>	<u>Interim Limitations</u>	<u>Final Limitations</u>	<u>Monitoring Requirement: Frequency, Sample Type</u>
Flow, (MGD)	0.008			
BOD <sub>5</sub> , (lb/day)	23			
TSS, (lb/day)	12			
COD (lb/day)	82			

\*Source: \_\_\_\_\_

Remarks: \_\_\_\_\_

INDUSTRIAL DISCHARGE INVENTORY

Industrial Name Great Lakes Chemical Corporation (Bromine Plant)

Address Post Office Box 1878

El Dorado, Arkansas 71730

Outfall No. 1 of 2 St. Pmt. No. 635-W Date 2-8-66

NPDES No. AR0001171 Eff. Date 2-28-75 Basin Ouachita

Segment 2E Fld. Ins. Hill County Union

Sec. 1 Twp. 18-S Rng. 16-W

Receiving Streams Bayou deLoutre to Ouachita River

Use Class B(Ex)W

Type Treatment Two holding ponds with pumpage to Bayou deLoutre

NPDES Effluent Limitations and Monitoring Requirements:

<u>Parameter</u>	<u>Existing* Conditions</u>	<u>Interim Limitations</u>	<u>Final Limitations</u>	<u>Monitoring Requirement: Frequency, Sample Type</u>
Flow, (MGD)	3			Continuous, Record
Bromide	99 mg/l	-	-	1/week, Grab
BOD <sub>5</sub> , (lb/day)		.9574	73	1/day, 24-hour comp.
Chlorides (lb/day)	27,400	53,062	2052	1/day, 24-hour comp.
TSS, (lb/day)			73	1/day, 24-hour comp.
TOC (lb/day)		957	(60)	1/week, 24-hour comp.

\*Source: 1974 survey

Remarks: State permit for discharge of cooling water.

of Pollution Control and Ecology's regulations on water quality are violated in terms of total coliform bacteria counts, as well as Pollution Control and Ecology's criteria for intrastate and interstate streams for fecal coliform levels. Although classified as a Class B water, the Lake Hamilton sample points exceeded the 1,000 organisms per 100 ml minimum level established for Class B waters. In fact, some of the samples taken around Hot Springs Creek had counts comparable to those found in diluted sewage. Sewage treatment plants operated by the city of Hot Springs are located on both Gulpha Creek and Hot Springs Creek. The Gulpha plant, which serves 15-20 percent of the city's population, is located on Gulpha Creek four miles upstream from Lake Catherine and the Hot Springs Creek plant which serves the remaining 80-85 percent, is on Hot Springs Creek one and one half miles upstream from Lake Hamilton. For many years both of these plants have been bypassed during periods of heavy stormwater runoff, dumping raw sewage into the receiving streams that flow into these two lakes. The results of this survey definitely indicate that both Lakes Hamilton and Catherine are being contaminated by inadequately treated sewage from these treatment plants. Upon completion of the new 12 MGD tertiary treatment plant, both these plants will be abandoned.

There is a substantial flow from Union Carbide's effluent ponds containing large amounts of total dissolved solids, chlorides, sulfates and nitrogenous ammonia. Other problems are created by this industry in that during periods of heavy rain there have been numerous reports of siltation from the spoil banks of their location. Another significant effluent into Lake Catherine is from Red Diamond Battery Manufacturers. Especially noteworthy is the 1,600 milligrams per liter ammonia nitrogen in this effluent. It is obvious that these effluents mentioned here as well as the others have a detrimental effect on the water quality of these lakes and subsequently on the Ouachita River.

#### STREAM CLASSIFICATIONS AND ASSIMILATIVE CAPACITY

Wasteload assimilative capacity studies for Segment 2F were performed by this Department and the United States Geological Survey. Results of this study show that, under the specified conditions, the Caddo River will meet water quality standards and is therefore classified as "effluent limited".

Figure XVIII is a plot of computed D.O. values versus distance for the Ouachita River in Segment 2F. The plots show that this stream does not meet water quality standards for D.O. between about miles 456 and 438. Therefore, the Ouachita River is of effluent-limited classification upstream from mile 456 and is classified as "water quality limited" downstream from mile 456.

Figure XIX is a plot of computed D.O. values versus distance for the Ouachita River in Segment 2F after projected BOD<sub>5</sub> wasteloads were reduced by 17 percent for all discharges. Under these conditions, the river would meet water quality standards for D.O.

The results for tributary streams are given below:

Reach or Tributary	5-year projected load (BOD <sub>5</sub> )		Target load (BOD <sub>5</sub> )		Stream Class	Use Class
	Pounds per day	Kilograms per day	Pounds per day	Kilograms per day		
Lewis Creek	0	0	0	0	EL	AS
Ward Creek	272	122	1	1	WQ	AS
Brier Creek	0	0	2	1	EL	AS
Prairie Creek	285	128	1	0	WQ	AS
Irons Fork	0	0	1	1	EL	AS
Carter Creek	0	0	2	1	EL	AS
Cedar Creek	0	0	1	0	EL	AS
Macks Creek	0	0	5	2	EL	AS
Board Camp Creek	0	0	72	33	EL	AS
Loftis Creek	0	0	7	3	EL	AS
Sulfur Creek	0	0	2	1	EL	AS
Southern Creek	0	0	1	0	EL	AS
Robinson Creek	0	0	1	0	EL	AS
Mill Creek	0	0	12	6	EL	AS
Big Fork Creek	0	0	22	10	EL	AS
Snake Creek	0	0	2	1	EL	AS
Kate's Creek	0	0	6	3	EL	AS
Hole in the Ground Creek	0	0	1	0	EL	AS
Shirley Creek	0	0	1	0	EL	AS
Brushy Creek	0	0	6	3	EL	AS
Polk Creek	0	0	0	0	WQ <sup>1</sup>	AS
Deer Creek	0	0	1	0	EL	AS
Muddy Creek	0	0	3	1	EL	AW
Iron Fork Creek	0	0	8	4	EL	AW
North Fork Creek	0	0	4	2	EL	AW
South Fork Ouachita River	29	13	10	5	WQ	AW
Williams Creek	0	0	4	2	EL	AW
Twin Creek	0	0	1	1	EL	AW
Walnut Creek	0	0	1	0	EL	AW
Blocker Creek	0	0	1	0	EL	AW
Big Blakely Creek	0	0	4	2	EL	AW
Little Blakely Creek	0	0	1	0	EL	AW
Glazypeau Creek	225	101	45	20	WQ	AS,BS
Clear Creek	0	0	0	0	EL	AW
Hallmans Creek	0	0	3	1	EL	AW

INDUSTRIAL DISCHARGE INVENTORY

Industrial Name Reynolds Metal Company (Malvern Cable Plant)

Address P. O. Box 430

Malvern, Arkansas 72104

Outfall No. \_\_\_\_\_ of \_\_\_\_\_ St. Pmt. No. 1688-W Date 11-1-74

NPDES No. AR0001201 Eff. Date 7-26-75 Basin Ouachita

Segment 2F Fld. Ins. Hill County Hot Springs

Sec. 25 Twp. 3-S Rng. 18-W

Receiving Streams Cove Creek to Ouachita River

Use Class AW

Type Treatment Oil catchment basin with gravity separators for oil spill control prevention and countermeasure plan only.

NPDES Effluent Limitations and Monitoring Requirements:

<u>Parameter</u>	<u>Existing* Conditions</u>	<u>Interim Limitations</u>	<u>Final Limitations</u>	<u>Monitoring Requirement: Frequency, Sample Type</u>
Flow, (MGD)				
BOD <sub>5</sub> , (lb/day)				
TSS, (lb/day)				
Chromium		N/A	0.5 mg/l	1/month, Grab
Zinc		N/A	0.5 mg/l	1/month, Grab

\*Source: \_\_\_\_\_

Remarks: \_\_\_\_\_

INDUSTRIAL DISCHARGE INVENTORY

Industrial Name Reynolds Metal Company (Reduction Plant)

Address P. O. Box 128

Malvern, Arkansas 72104

Outfall No. 1&2 of 2 St. Pmt. No. 1379-W Date \_\_\_\_\_

NPDES No. AR0000868 Eff. Date 11-1-74 Basin Ouachita

Segment 2F Fld. Ins. Hill County Hot Springs

Sec. 25 Twp. 3S Rng. 18-W

Receiving Streams Cove Creek to Ouachita River

Use Class AW

Type Treatment Tertiary treatment for sanitary sewage.

2½ million gallon settling basin.

NPDES Effluent Limitations and Monitoring Requirements:

<u>Parameter</u>	<u>Existing* Conditions</u>	<u>Interim Limitations</u>	<u>Final Limitations</u>	<u>Monitoring Requirement: Frequency, Sample Type</u>
Flow, (MGD)				
BOD <sub>5</sub> , (lb/day)		72	72	1/week, Comp.
TSS, (lb/day)		72	72	1/week, Comp.
Fecal Coliform, (/100 ml)		200	200	1/week, Grab
Discharge 002:				
Fluoride, (lb/day)		700	700	1/week, Comp.
TSS, (lb/day)		1050	1050	1/week, Comp.

\*Source: \_\_\_\_\_

Remarks: \_\_\_\_\_

INDUSTRIAL DISCHARGE INVENTORY

Industrial Name Union Carbide (east and west ponds)  
 Address Route 6, Box 943  
Hot Springs, Arkansas 71901  
 Outfall No. 1 of 5 St. Pmt. No. 691-W Date 3-15-67  
 NPDES No. AR0000523 Eff. Date 12-16-74 Basin Ouachita  
 Segment 2F Fld. Ins. Hill County Garland  
 Sec. 16 Twp. 3-S Rng. 18-W  
 Receiving Streams Lake Catherine and intermittent tributaries to Lake Catherine  
 Use Class AW  
 Type Treatment Retention basin

NPDES Effluent Limitations and Monitoring Requirements:

Parameter	Existing* Conditions	Interim Limitations	Final Limitations	Monitoring Requirement: Frequency, Sample Type
Flow, (MGD)				Continuous, N/A
Ammonia N				
BOD <sub>5</sub> , (lb/day)				2/week, 24-hour composite
Total Cadmium		0.6	0.1	2/week, 24-hour composite
TSS, mg/l		200	25	2/week, 24-hour composite
Total Manganese		100	2.5	2/week, 24-hour composite
Total Nickel		1.5	0.4	2/week, 24-hour composite
Total Zinc		18	0.25	2/week, 24-hour composite
Sulfate (as SO <sub>4</sub> )		20,000	2,000	2/week, 24-hour composite
Chloride		N/A	N/A	2/wweek, 24-hour composite

\*Source: \_\_\_\_\_  
 Remarks: Outfall 001 is a controlled discharge based upon an average increase in  
chloride concentration in the Ouachita River of no more than 25 mg/l.

INDUSTRIAL DISCHARGE INVENTORY

Industrial Name Weyerhaeuser Company, Dierks Division (Mt. Pine, Arkansas)

Address P. O. Box 7

Mountain Pine, Arkansas 71956

Outfall No. 1 of 1 St. Pmt. No. 986 Date 4-23-71

NPDES No. AR0000833 Eff. Date \_\_\_\_\_ Basin Ouachita

Segment 2F Fld. Ins. Hill County Garland

Sec. 34 Twp. 1-S Rng. 20-W

Receiving Streams Glawypeau

Use Class A S

Type Treatment Activated sludge package plant to serve Mt. Pine Timberlands

Truck Shop. Collection pond and oil recovery system for truck washing

area.

NPDES Effluent Limitations and Monitoring Requirements:

<u>Parameter</u>	<u>Existing* Conditions</u>	<u>Interim Limitations</u>	<u>Final Limitations</u>	<u>Monitoring Requirement: Frequency, Sample Type</u>
Flow, (MGD)				
BOD <sub>5</sub> , (lb/day)				
TSS, (lb/day)				

\*Source: \_\_\_\_\_

Remarks: This industry has applied for an NPDES permit.

10-G. SEGMENT 6C - MISSISSIPPI RIVER FROM CONFLUENCE ARKANSAS RIVER  
TO ARKANSAS-LOUISIANA STATE LINE

GENERAL

Basin Segment 6C consists of a 82-mile reach of the Mississippi River. No surface drainage enters this reach below the Arkansas River. There is only one proposed discharge in this segment.

Potlatch Corporation is presently constructing a 16.1 MGD bleached kraft board mill which will have a discharge to the Mississippi River approximately 10 miles below the mouth of the Arkansas River. This proposed discharge will utilize borrow pits along the river as settling basins.

STREAM CLASSIFICATION AND ASSIMILATIVE CAPACITY

No wasteload allocation studies were performed on the Mississippi River. With a 7-day, 10-year low flow of approximately 100,000 cfs, the Mississippi River is capable of assimilating great quantities of waste with little or no effect being detectable downstream. Because of its tremendous assimilative capability, the Mississippi River has been classified as "effluent limited".

INDUSTRIAL DISCHARGE INVENTORY

Industrial Name Potlatch Corporation (Bleached kraft board mill)

Address P. O. Box 6877 - Station B

Greenville, South Carolina 29606

Outfall No. 1 of 1 St. Pmt. No. 1826-W Date 2-27-76

NPDES No. \_\_\_\_\_ Eff. Date \_\_\_\_\_ Basin Mississippi

Segment 6A Fld. Ins. Green County Desha

Sec. 31 Twp. 11-S Rng. 1-W

Receiving Streams Mississippi River (borrow pits)

Use Class BW

Type Treatment Primary clarifier 55 acre extended aeration basin, 55 acre

inorganic solids basin, emergency primary clarifier basin,

sludge dewatering facility

NPDES Effluent Limitations and Monitoring Requirements:

<u>Parameter</u>	<u>Existing* Conditions</u>	<u>Interim Limitations</u>	<u>Final Limitations</u>	<u>Monitoring Requirement: Frequency, Sample Type</u>
Flow, (MGD)	16.1			
BOD <sub>5</sub> , (lb/day)				
TSS, (lb/day)				

\*Source: State permit summary sheet

Remarks: Sanitary wastes treated by 0.01 MGD package plant discharging to

process waste sewer. No surface runoff allowed from contaminated plant areas.