



ARKANSAS
Department of Environmental Quality

RESPONSE TO COMMENTS FINAL PERMIT DECISION

This is our response to comments received on the subject draft permit in accordance with regulations promulgated at 40 CFR Part 124.17.

Permit No. : AR0022063
Applicant : City of Springdale
Prepared by : Loretta Reiber, P.E.
Permit Action : Final permit decision and response to comments received on the draft permit publicly noticed on January 15, 2004.
Date Prepared : June 30, 2004

The following comments have been received on the draft permit.

I. Response to issues raised

Letter from the State of Oklahoma Office of the Secretary of the Environment dated February 13, 2004

ISSUE #1

The monitoring frequency for phosphorous is twice per month, the least stringent frequency in the permit. The City of Tahlequah has a required monitoring frequency of once per week for phosphorous. The commentor requests a frequency of at least once per week to allow for a more comprehensive assessment of phosphorous loading to the river and a more thorough evaluation of new process and plant operations. Since Spring Creek is currently included on the Arkansas Section of the 303(d) list as impaired by nutrients, increased monitoring would help in the development of a TMDL for the watershed. As actual performance data accumulates in the future, this frequency could be considered for a performance-based reduction at that time.

RESPONSE #1

Staff disagrees.

Spring Creek is not on the Arkansas 303(d) list developed by this Department. Rather, it is on the Arkansas list which was prepared and approved by the EPA.

ADEQ determines monitoring frequency on a case-by-case basis and does not take into account the monitoring frequency required by another state for the same pollutant. A thorough evaluation was done in order to determine the proper monitoring frequency for phosphorous at Springdale's POTW. Additionally, there is no state or federal regulation regarding monitoring frequency for phosphorous.

It is important to keep in mind that Springdale is currently making many improvements to the POTW's treatment system under Construction Permit 22063C which was issued on January 21, 2003. These improvements include the following items:

New equipment: 2 grit and scum removal basins, grit classifier building, influent pump station, primary effluent pump station, 2 activated sludge process trains, booster pump station (return and waste activated sludge pumping), 6 polishing filters, sludge process building, ferric chloride storage and feed system, influent flow meter, and peak flow meter vault.

Modified and/or replaced equipment: final clarifier pumping station (replace return activated sludge pumps and piping), expand chlorine contact basin, replace aerated sludge storage tank aeration equipment, replace 2 primary and secondary anaerobic digester covers, mixers, 2 boilers, and 2 heat exchangers, modify liquid alum storage and feed system, replace chlorinator and dechlorinator with 2 new chlorinators and 2 new dechlorinators, replace process water pumps and piping, replace 2 digested sludge pumps and sludge transfer pump, install 4 effluent launder brushes in final clarifiers, and replace 8 recycle pump suction valves.

These improvements are scheduled to be completed in full working order by 11/30/2007. Any data collected prior to this date will not be considered usable after the improvements are finished as the effluent will likely have different pollutant concentrations due to the extensive work being done at the facility. Therefore, the data collected during the interim period will not be of assistance in developing a TMDL.

The Department will review the monitoring frequency for each of the pollutants in the permit at the time of the next permit renewal.

ISSUE #2

As drafted, the permit does not explain why phosphorous is treated differently than all of the other parameters with discharge limits. The final limits, effective December 1, 2007, contain a monthly average of 1 mg/l for phosphorous with no weekly average, which is a deviation from the standard practice in NPDES permitting. It is worth noting that all other parameters in the Springdale permit contain both monthly and weekly averages, with the exception of D.O., which is expressed as an instantaneous minimum. Furthermore, the existing permit for the City of Fayetteville contains both a monthly and a weekly average phosphorous limit, just as Tahlequah's NPDES permit does.

RESPONSE #2

Staff disagrees.

The receiving streams, Spring Creek and Osage Creek (Illinois River Basin) were intentionally not listed on the ADEQ 303 (d) list. Since Arkansas does not have numeric criteria for phosphorus, and a previous intensive two year scientific study conducted by ADEQ (ADEQ publication WQ97-03-1) showed that all designated uses and applicable numeric criteria were being met, as well as compliance with Arkansas' narrative nutrient criteria, there was no basis for listing these streams on the impaired water body list (303(d) list). However, EPA did add these streams onto their official impaired water body list, against Arkansas' concurrence.

There is no technology-based effluent limit found in 40 CFR § 122.44(a)(1), nor is there an Arkansas water quality numerical standard for phosphorous in APC&EC Regulation No. 2 or 40 CFR § 122.44(d). However, on December 18, 2003, ADEQ entered into an agreement with Oklahoma titled "Statement of Joint Principles and Action" which calls for Springdale to reduce the concentration of phosphorus in its effluent to 1 ppm, based on a 30-day average, by December 1, 2007. ADEQ has included a phosphorus limit in Springdale's permit, effective December 1, 2007, to conform to this agreement with Oklahoma.

It should be noted that the City of Fayetteville is operating under a permit which expired in 1997. Therefore, it should not be considered as an example of what the Department is currently requiring in the NPDES permits.

ISSUE #3

It was requested that the Department review all Oklahoma water quality standards and all other PPS calculations using the increased design flow.

RESPONSE #3

Staff disagrees.

The permit limits are based on Arkansas' water quality standards and the agreement "Statement of Joint Principles and Action" entered into on December 18, 2004, between Arkansas and Oklahoma. PPS calculations at 24 MGD have been included as Attachment 1A and Attachment 6A.

ISSUE #4

The commentor is concerned with the lack of adequate controls regarding phosphorous loading from land application of sludge within the Illinois River watershed. The permit proposes to limit sludge application rates based on the annual nitrogen uptake of the crop. Because the receiving stream is listed as impaired by phosphorous, the phosphorous of

the crop should also be evaluated and the limiting nutrient should govern the allowable application rate. Further, adding a provision to require that all land applied sludge be incorporated into the soil before the end of each working day that sludge is applied would minimize opportunity for runoff.

RESPONSE #4

Staff disagrees.

At this time, the Arkansas Department of Environmental Quality (ADEQ) does not have any authority to regulated phosphorus loading rate for land application of any waste. Therefore, ADEQ cannot include any limits for phosphorus loading rate in the permits. Most of the land application permits have a loading rate limit based on the annual nitrogen uptake of the crop.

Additionally, it is also important to note that the City of Springdale is currently, and in the future intends, to have the biosolids hauled to an approved landfill. The land application provisions included in the permit will only be used in an emergency situation, i.e., in the event that the City of Springdale is unable to use an approved landfill.

The Arkansas legislature recently passed new legislation in 2003 which comes under the jurisdiction of the Arkansas Soil & Water Conservation Commission (Acts 1059, 1060 and 1061), and which includes the Arkansas Poultry Feeding Operations Act, 15-20-901 et seq; the Arkansas Soil Nutrient Management Planner and Applicator Certification Act, 15-20-1001 et seq; and the Arkansas Soil Nutrient Application and Poultry Utilization Act, 15-20-1101 et seq. What all of this means is that the application of biosolids or any other waste in "nutrient surplus areas" in Arkansas--which includes Washington and Benton County--are now under several new regulations. These new regulations will address the phosphorus issue in Northwest Arkansas.

It is important to note that the conditions under which the sewage sludge may be applied are set forth in the permit which includes a provision that states "...in no way will biosolids be allowed to enter the waters of the State." (Item 8.A.7 of Part III of the permit.) Also, all other applicable state laws must be met when and if sludge is land applied under the permit in question.

Letter from the Department of Arkansas Heritage dated February 12, 2004

ISSUE #5

After review of the sample list of sites where the permittee may land apply sludge, it was noted that three sites, specifically fields 64, 66, and 70, potential fall within or touch the recharge area for Cave Springs Cave. This waterbody is known to support the federally threatened Ozark cavefish (*Amblyopsis rosae*). It is the commentors recommendation that sites within these recharge areas be removed from the list of sites available to the permittee for the land application of sludge.

RESPONSE #5

Staff agrees.

The City of Springdale currently hauls all biosolids produced at the POTW to an approved landfill. Use of the land application provisions contained in the permit is only intended in the event that the City of Springdale is unable to use an approved landfill. Several land application sites are available to the City of Springdale. Therefore, the Department will remove the three sites from the permit as recommended.

Letter from Ed Brocksmith Dated January 19, 2004

ISSUE #6

The commentor requested that the Department disapprove the land application of sludge to sites within the Illinois River basin. Sewage sludge should be taken to approved landfills outside of the Illinois River basin.

RESPONSE #6

Please see Response #4 above.

ISSUE #7

The commentor asked if any of the land application sites listed in the draft permit are located in the White River, Grand River (Elk River), or Spavinaw Creek basins?

RESPONSE #7

None of the land application sites listed in the permit are in any of the river basins listed in the comment.

ADEQ Comments and Changes

ADEQ has made the following changes to the permit based upon its review during the public comment period.

1. A ceiling concentration for molybdenum (75 mg/kg, dry weight basis) was added to Part III.8.A.4 of the permit. This was added based upon requirements of 40 CFR Part 503.
2. Units for pH (SU) and Cation Exchange Capacity (C.E.C.) (milliequivalent/ 100 grams) were added in Part III.8.B.1.b.(1) of the permit for clarification purposes.
3. In Part III.8.B.1.b.(1) of the permit, electrical conductivity was changed to Salt Content (micro mohs/ cm) for clarification purposes.
4. Tenkiller Reservoir and the Arkansas River have been removed from the receiving stream description.

RESPONSE TO COMMENTS

PERMIT NAME	City of Springdale		
PERMIT NUMBER	AR0022063		
	DATE DUE	INITIALS	DATE INITIALED
LORETTA REIBER, P.E. REVIEWING ENGINEER			
MO SHAFII PERMITS SECTION CHIEF			
MARTIN MANER, P.E. CHIEF, WATER DIVISION			
LIST PEOPLE WHO SUBMITTED COMMENTS*	Ed Brocksmith 24369 E 757 Rd. Tahlequah, OK 74464 Cindy Osbourne, Data Manager The Dept. of Arkansas Heritage 1500 Tower Building 323 Center Street Little Rock, AR 72201 Miles Tolbert Secretary of the Environment State of Oklahoma 3800 North Classen Boulevard Oklahoma City, OK 73118		
FILE NAME	e:\2004 Permits\22063rtc.doc		

*** SEND COPIES OF FINAL PERMIT AND RESPONSE TO COMMENTS TO ALL PEOPLE WHO SUBMITTED COMMENTS**

ARE THERE ANY CHANGES IN THE FINAL PERMIT?

YES _____ NO _____

CALL EPA (IF DRAFT PERMIT HAD BEEN SENT TO EPA AND MAJOR CHANGES ARE PROPOSED IN FINAL PERMIT)

YES _____ NO _____

REMARKS: _____

Permit number: AR0022063

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM AND THE ARKANSAS WATER AND AIR POLLUTION CONTROL ACT

In accordance with the provisions of the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended, Ark. Code Ann. 8-4-101 et seq.), and the Clean Water Act (33 U.S.C. 1251 et seq.),

City of Springdale
P.O. Box 769
Springdale, AR 72765-0769

is authorized to discharge from a facility located in Northwest Springdale, on Spring Creek, at 2910 Silent Grove Road, in Section 22, Township 18 North, Range 30 West in Benton County, Arkansas.

Latitude: 36° 12' 49"; Longitude: 94° 09'48"

to receiving waters named:

Spring Creek, then to Osage Creek, then to the Illinois River in Segment 3J of the Arkansas River Basin.

The outfall is located at the following coordinates:


Outfall 001: Latitude: 36° 12' 49"; Longitude: 94° 09'48"

in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, III, and IV hereof.

This permit shall become effective on April 1, 2004. P6099

This permit and the authorization to discharge shall expire at midnight, March 31, 2009.

Signed this 29th day of February, 2004. P5099



Martin Maner, P.E.
Chief, Water Division
Arkansas Department of Environmental Quality

P4099
20099

**PART I
PERMIT REQUIREMENTS**

SECTION A. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS: OUTFALL 001 - treated municipal wastewater

During the period beginning on effective date and lasting until 11/30/2007, the permittee is authorized to discharge from outfall serial number 001 - treated municipal wastewater. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
		Monthly Avg.	Monthly Avg.		
Flow ¹	N/A	N/A	N/A	once/day	totalizing meter
Carbonaceous Biochemical Oxygen Demand (CBOD5) (March – December)	1301	10	15	once/week	24-hr composite
(January – February)	3253	25	38	once/week	24-hr composite
Total Suspended Solids (TSS) (March – December)	1952	15	23	once/week	24-hr composite
(January – February)	3903	30	45	once/week	24-hr composite
Ammonia Nitrogen (NH3-N) (May – October)	195	1.5	2.3	once/day	24-hr composite
(November – April)	520	4	6	once/day	24-hr composite
Dissolved Oxygen (May – October)	N/A	7.9 (Min.)	N/A	four/week	Grab
(November, December, March, April)	N/A	9.5 (Min.)	N/A	four/week	Grab
(January – February)	N/A	7.5 (Min.)	N/A	four/week	Grab
Dissolved Oxygen ²	N/A	6.0 (Inst. Min.)		four/week	Grab
Fecal Coliform Bacteria (FCB) ³ (Apr-Sept)	N/A	200	400	once/week	Grab
(Oct-Mar)	N/A	1000	2000	once/week	Grab
Total Phosphorous ⁴	Report	Report	Report	twice/month	24-hr composite
Total Residual Chlorine (TRC) ⁵	N/A	<0.1 mg/l (Inst. Max.)		once/week	Grab
pH	N/A	<u>Minimum</u> 6 s.u.	<u>Maximum</u> 9 s.u.	six/week	Grab

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
		Monthly Avg.	Monthly Avg.		
Chronic Biomonitoring ⁶	N/A	N/A	N/A	once/quarter	24-hr composite
<u>Pimephales promelas (Chronic)</u> ⁶ Pass/Fail Growth (7-day NOEC)TGP6C Pass/Fail Lethality (7-day NOEC) TLP6C Survival (7-day NOEC) TOP6C Coefficient of Variation TQP6C Growth (7-day NOEC) TPP6C		<u>7-Day Average</u> Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report % Report % Report %		once/quarter once/quarter once/quarter once/quarter	24-hr composite 24-hr composite 24-hr composite 24-hr composite 24-hr composite
<u>Ceriodaphnia dubia (Chronic)</u> ⁶ Pass/Fail Growth (7-day NOEC)TGP3B Pass/Fail Lethality (7-day NOEC) TLP3B Survival (7-day NOEC) TOP3B Coefficient of Variation TQP3B Growth (7-day NOEC) TPP3B		<u>7-Day Average</u> Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report % Report % Report %		once/quarter once/quarter once/quarter once/quarter	24-hr composite 24-hr composite 24-hr composite 24-hr composite 24-hr composite

1 Report monthly average and daily maximum as MGD.

2 Instantaneous Minimum. Dissolved Oxygen must be equal to or exceed this permit limit at all times.

3 See Condition No. 2 of Part III.

4 See Condition No. 13 of Part III.

5 See Condition No. 10 of Part III.

6 See Condition No. 9 of Part III.

There shall be no discharge of distinctly visible solids, scum or foam of a persistent nature, nor shall there be any formation of slime, bottom deposits or sludge banks. No visible sheen (Sheen means an iridescent appearance on the surface of the water).

Samples taken in compliance with the monitoring requirements specified above shall be taken at the discharge from the final treatment unit.

**PART I
PERMIT REQUIREMENTS**

SECTION A. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS: OUTFALL 001 - treated municipal wastewater

During the period beginning on 12/01/2007 and lasting until date of expiration, the permittee is authorized to discharge from outfall serial number 001 -treated municipal wastewater. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
		Monthly Avg.	Monthly Avg.		
Flow ¹	N/A	N/A	N/A	once/day	totalizing meter
Carbonaceous Biochemical Oxygen Demand (CBOD5) (March – December)	2002	10	15	once/week	24-hr composite
(January – February)	5004	25	38	once/week	24-hr composite
Total Suspended Solids (TSS) (March – December)	3003	15	23	once/week	24-hr composite
(January – February)	6005	30	45	once/week	24-hr composite
Ammonia Nitrogen (NH3-N) (May – October)	301	1.5	2.3	once/day	24-hr composite
(November – April)	801	4	6	once/day	24-hr composite
Dissolved Oxygen (May – October)	N/A	7.9 (Min.)	N/A	four/week	Grab
(November, December, March, April)	N/A	9.5 (Min.)	N/A	four/week	Grab
(January – February)	N/A	7.5 (Min.)	N/A	four/week	Grab
Dissolved Oxygen ²	N/A	6.0 (Inst. Min.)		four/week	Grab
Fecal Coliform Bacteria (FCB) ³ (Apr-Sept)	N/A	200	400	once/week	Grab
(Oct-Mar)	N/A	1000	2000	once/week	Grab
Total Phosphorous ⁴	201	1	1.5	twice/month	24-hr composite
Total Residual Chlorine (TRC) ⁵	N/A	<0.1 mg/l (Inst. Max.)		once/week	Grab
pH	N/A	<u>Minimum</u> 6 s.u.	<u>Maximum</u> 9 s.u.	six/week	Grab

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
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		<u>7-Day Average</u> Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report % Report % Report %		once/quarter once/quarter once/quarter once/quarter once/quarter	24-hr composite 24-hr composite 24-hr composite 24-hr composite 24-hr composite

- 1 Report monthly average and daily maximum as MGD.
- 2 Instantaneous Minimum. Dissolved Oxygen must be equal to or exceed this permit limit at all times.
- 3 See Condition No. 2 of Part III.
- 4 See Condition No. 13 of Part III.
- 5 See Condition No. 10 of Part III.
- 6 See Condition No. 9 of Part III.

There shall be no discharge of distinctly visible solids, scum or foam of a persistent nature, nor shall there be any formation of slime, bottom deposits or sludge banks. No visible sheen (Sheen means an iridescent appearance on the surface of the water).

Samples taken in compliance with the monitoring requirements specified above shall be taken at the discharge from the final treatment unit.

SECTION B. SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

Compliance is required on the effective date of the permit with all interim permit limits.

Compliance with all final permit limits is required on 12/01/07. The permittee is required to submit quarterly progress reports detailing the progress toward achieving compliance with the final Phosphorous limits.

Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the federal Clean Water Act and the Arkansas Water and Air Pollution Control Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. Any values reported in the required discharge Monitoring Report which are in excess of an effluent limitation specified in Part I shall constitute evidence of violation of such effluent limitation and of this permit.

Penalties for Violations of Permit Conditions

The Arkansas Water and Air Pollution Control Act provides that any person who violates any provisions of a permit issued under the Act shall be guilty of a misdemeanor and upon conviction thereof shall be subject to imprisonment for not more than one (1) year, or a fine of not more than ten thousand dollars (\$10,000) or both such fine and imprisonment for each day of such violation. Any person who violates any provision of a permit issued under the Act may also be subject to civil liability in such amount as the court shall find appropriate, not to exceed five thousand dollars (\$5,000) for each day of such violation. The fact that any such violation may constitute a misdemeanor shall not be a bar to the maintenance of such civil action.

Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to the following:

- Violation of any terms or conditions of this permit; or
 - Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
 - A change in any conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
 - A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.
- Failure of the permittee to comply with the provisions of ADPCE Regulation No. 9 (Permit fees) as required by condition II A.10 herein.

The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

Toxic Pollutants

Notwithstanding Part II A.3., if any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Regulation No. 2, as amended, (regulation establishing water quality standards for surface waters of the State of Arkansas) or Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitations on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standards or prohibition and the permittee so notified.

The permittee shall comply with effluent standards or prohibitions established under Regulation No. 2 (Arkansas Water Quality Standards), as amended, or Section 307 of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not been modified to incorporate the requirement.

Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" (Part II.B.4.a.), and "Circumvents" (Part II.B.5.b), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Any false or materially misleading representation or concealment of information required to be reported by the provisions of this permit or applicable state and federal statutes or regulations which defeats the regulatory purposes of the permit may be subject the permittee to criminal enforcement pursuant to the Arkansas Water and Air Pollution Control Act of 1949, as amended).

Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act.

State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties established pursuant to any applicable State law or regulation under authority exercised by Section 510 of the Clean Water Act.

8. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

9. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provisions of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Permit Fees

The permittee shall comply with all applicable permit fee requirements for wastewater discharge permits as described in ADPCE Regulation No. 9 (Regulation for the Fee System for Environmental Permits). Failure to promptly remit all required fees shall be grounds for the Director to initiate action to terminate this permit under the provisions of 40 CFR 122.64 and 124.5 (d), as adopted in ADPCE Regulation No. 6 and the provisions of ADPCE Regulation No. 8.

SECTION B - OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

- a. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
- b. The permittee shall provide an adequate operating staff which is duly qualified to carryout operation, maintenance and testing functions required to insure compliance with the conditions of this permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. Upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power for the treatment facility is reduced, is lost, or alternate power supply fails.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment, or the water receiving the discharge.

4. Bypass of Treatment Facilities

- a. **Bypass not exceeding limitation.** The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Part II.B 4.b. and 4.c.
- b. **Notice**
 - (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
 - (2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in part II.D.6 (24-hour notice).
- c. **Prohibition of bypass**
 - (1) Bypass is prohibited and the Director may take enforcement action against a permittee for bypass, unless:
 - (a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - (b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if the permittee could have installed adequate backup equipment to prevent a bypass which occurred during normal or preventive maintenance; and

(c) The permittee submitted notices as required by Part II.B.4.b.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in Part II.B.4.c(1).

Upset Conditions

a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology basepermit effluent limitations if the requirements of Part II.B.5.b of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

b. Conditions necessary for demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

- (1) An upset occurred and that the permittee can identify the specific cause(s) of the upset.
- (2) The permitted facility was at the time being properly operated.
- (3) The permittee submitted notice of the upset as required by Part II.D.6.: and
- (4) The permittee complied with any remedial measures required by Part II.B.3.

c. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of waste waters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering the waters of the State. Written approval for such disposal must be obtained from the ADEQ.

Power Failure

The permittee is responsible for maintaining adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failure either by means of alternate power sources, standby generators, or retention of inadequately treated effluent.

ACTION C: MONITORING AND RECORDS

Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge during the entire monitoring period. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director. Intermittent discharges shall be monitored.

Flow Measurement

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than +10% from true discharge rates throughout the range of expected discharge volumes and shall be installed at the monitoring point of the discharge.

Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals frequent enough to insure accuracy of measurements and shall insure that both calibration and maintenance activities will be conducted. An adequate analytical quality control program, including the analysis of sufficient standards, spikes, and duplicate samples to insure the accuracy of all required analytical results shall be maintained by the permittee or designated commercial laboratory. At a minimum, spikes and duplicate samples are to be analyzed on 10% of the samples.

4. Penalties for Tampering

The Arkansas Water and Air Pollution Control Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under the Act shall be guilty of a misdemeanor and upon conviction thereof shall be subject to imprisonment for not more than one (1) year or a fine of not more than ten thousand dollars (\$10,000) or by both such fine and imprisonment.

5. Reporting of Monitoring Results

Monitoring results must be reported on a Discharge Monitoring Report (DMR) form (EPA No. 3320-1). Permittees are required to use preprinted DMR forms provided by ADPCE, unless specific written authorization to use other reporting forms is obtained from ADPCE. Monitoring results obtained during the previous calendar month shall be summarized and reported on a DMR form postmarked no later than the 25th day of the month, following the completed reporting period to begin on the effective date of the permit. Duplicate copies of DMR's signed and certified as required by Part II.d.11 and all other reports required by Part II.D. (Reporting Requirements), shall be submitted to the Director at the following address:

Director
Arkansas Department of Environmental Quality
8001 National Drive
P.O. Box 8913
Little Rock, AR 72219-8913

If permittee uses outside laboratory facilities for sampling and/or analysis, the name and address of the contract laboratory shall be included on the DMR.

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated on the DMR.

7. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

8. Record Contents

Records and monitoring information shall include:

- a. The date, exact place, time and methods of sampling or measurements, and preservatives used, if any;
- b. The individuals(s) who performed the sampling or measurements;
- c. The date(s) analyses were formed;
- d. The individual(s) who performed the analyses;
- e. The analytical techniques or methods used; and
- f. The measurements and results of such analyses.

9. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and
- d. Sample, inspect or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

Planned Changes

The permittee shall give notice and provide plans and specification to the Director for review and approval prior to any planned physical alterations or additions to the permitted facility. Notice is required only when:

For Industrial Dischargers

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29(b).
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40CFR Part 122.42 (a)(1).

For POTW Dischargers:

- c. Any change in the facility discharge (including the introduction of any new source or significant discharge or significant changes in the quantity or quality of existing discharges of pollutants) must be reported to the permitting authority. In no case are any new connections, increased flows, or significant changes in influent quality permitted that cause violation of the effluent limitations specified herein.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

The permit is nontransferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Act.

4. Monitoring Reports

Monitoring results shall be reported at the intervals and in the form specified in Part II.C.5. (Reporting). Discharge Monitoring Reports must be submitted even when no discharge occurs during the reporting period.

5. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

6. Twenty-four Hour Report

- a. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain the following information:
 - (1) a description of the noncompliance and its cause;
 - (2) the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
 - (3) steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance.
- b. The following shall be included as information which must be reported within 24 hours:
 - (1) Any unanticipated bypass which exceeds any effluent limitation in the permit;
 - (2) Any upset which exceeds any effluent limitation in the permit and

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part III of the permit to be reported within 24 hours.

- c. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Part II.D.4,5 and 6, at the time monitoring reports are submitted. The reports shall contain the information listed at Part II.D.6.

8. Changes in Discharge of Toxic Substances for Industrial Dischargers

The permittee shall notify the Director as soon as he/she knows or has reason to believe:

- a. That any activity has occurred or will occur which would result in the discharge, in a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the "notification levels" described in 40 CFR Part 122.42(a)(2)(48 FR 14153, April 1983, as amended at 49 FR 38046, September 26, 1984).
- b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit if that discharge will exceed the highest of the "notification levels" described in 40 CFR Part 122.42(a)(2)(48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984).

9. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit. Information shall be submitted in the form, manner and time frame requested by the Director.

10. Duty to reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The complete application shall be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated in ADPCE Regulation No. 6.

11. Signatory Requirements

All applications, reports or information submitted to the Director shall be signed and certified

- a. All permit applications shall be signed as follows:
 - (1) For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
 - (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - (ii) The manager of one or more manufacturing, production, or operation facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship: by a general partner or proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency; by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

- (i) The chief executive officer of the agency, or
- (ii) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

b. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

- (1) The authorization is made in writing by a person described above.
- (2) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- (3) The written authorization is submitted to the Director.

c. Certification. Any person signing a document under this section shall make the following certification:

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

12. **Availability of Reports**

Except for data determined to be confidential under 40 CFR Part 2 and Regulation 6, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department of Pollution and Ecology. As required by the Regulations, the name and address of any permit applicant or permittee, permit applications, permits and effluent data shall not be considered confidential.

13. **Penalties for Falsification of Reports**

The Arkansas Air and Water Pollution Control Act provides that any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan or other document filed or required to be maintained under this permit shall be subject to civil penalties specified in Part II.A.2. and/or criminal penalties under the authority of the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended).

PART III
OTHER CONDITIONS

1. The operator of this wastewater treatment facility shall be licensed by the State of Arkansas in accordance with Act 211 of 1971, Act 1103 of 1991, Act 556 of 1993, and Regulation No. 3, as amended.
2. For Fecal Coliform Bacteria (FCB) report the monthly average as a 30-day geometric mean in colonies per 100 ml.
3. For publicly owned treatment works, the 30-day average percent removal for Biochemical Oxygen Demand and Total Suspended Solids shall not be less than 85 percent unless otherwise authorized by the permitting authority in accordance with 40 CFR 133.102, as adopted by reference in ADEQ Regulation No. 6.
4. Produced sludge shall be disposed of by land application only when meeting the following criteria:
 - a. Sewage sludge from treatment works treating domestic sewage (TWTDS) must meet the applicable provisions of 40 CFR Part 503; and
 - b. The sewage sludge has not been classified as a hazardous waste under state or federal regulations.
5. The permittee shall give at least 120 days prior notice to the Director of any change planned in the permittee's sludge disposal practice or land use applications, including types of crops grown (if applicable).
6. The permittee shall report all overflows with the Discharge Monitoring report (DMR) submittal. These reports shall be summarized and reported in tabular format. The summaries shall include: the date, time, duration, location, estimated volume, and cause of overflow; observed environmental impacts from the overflow; action taken to address the overflow; and ultimate discharge location if not contained (e.g., storm sewer system, ditch, tributary.) Overflows which endanger health or the environment shall be orally reported to this department (Enforcement Section of Water Division), within 24 hours from the time the permittee becomes aware of the circumstance. A written report of overflows which endanger health or the environment, shall be provided within 5 days of the time the permittee becomes aware of the circumstance.

7. Contributing Industries and Pretreatment Requirements

A. The permittee shall operate an industrial pretreatment program in accordance with Section 402(b)(8) of the Clean Water Act, the General Pretreatment Regulations (40 CFR Part 403) and the approved POTW pretreatment program submitted by the permittee. The pretreatment program was approved on January 1, 1984, was subsequently modified and approved on 5/16/00. The POTW pretreatment program is hereby incorporated by reference and shall be implemented in a manner consistent with the following requirements:

- (1) Industrial user information shall be updated at a frequency adequate to ensure that all IUs are properly characterized at all times.
- (2) The frequency and nature of industrial user compliance monitoring activities by the permittee shall be commensurate with the character, consistency and volume of waste. However, in keeping with the requirements of 40 CFR 403.8(f)(2)(v), the permittee must inspect and sample the effluent from each Significant Industrial User at least once a year. This is in addition to any industrial self-monitoring activities;
- (3) The permittee shall enforce and obtain remedies for noncompliance by any industrial users with applicable pretreatment standards and requirements.
- (4) The permittee shall control through permit, order, or similar means, the contribution to the POTW by each Industrial User to ensure compliance with applicable Pretreatment Standards and Requirements. In the case of Industrial Users identified as significant under 40 CFR 403.3(t), this control shall be achieved through permits or equivalent individual control mechanisms issued to each such user. Such control mechanisms must be enforceable and contain, at a minimum, the following conditions:
 - a. Statement of duration (in no case more than five years);
 - b. Statement of non-transferability without, at a minimum, prior notification to the POTW and provision of a copy of the existing control mechanism to the new owner or operator;
 - c. Effluent limits based on applicable general pretreatment standards, categorical pretreatment standards, local limits, and State and local law;
 - d. Self-monitoring, sampling, reporting, notification and recordkeeping requirements, including an identification of the pollutants to be monitored, sampling location, sampling frequency, and sample type, based on the applicable general pretreatment

standards in 40 CFR 403, categorical pretreatment standards, local limits, and State and local law;

- e. Statement of applicable civil and criminal penalties for violation of pretreatment standards and requirements, and any applicable compliance schedule. Such schedules may not extend the compliance date beyond federal deadlines.
- (5) The permittee shall evaluate, at least once every two years, whether each Significant Industrial User needs a plan to control slug discharges. If the POTW decides that a slug control plan is needed, the plan shall contain at least the minimum elements required in 40 CFR 403.8 (f)(2)(v).
 - (6) The permittee shall provide adequate staff, equipment, and support capabilities to carry out all elements of the pretreatment program; and,
 - (7) The approved program shall not be modified by the permittee without the prior approval of the Department.
- B. The permittee shall establish and enforce specific limits to implement the provisions of 40 CFR Parts 403.5(a) and (b), as required by 40 CFR Part 403.5(c). Each POTW with an approved pretreatment program shall continue to develop these limits as necessary and effectively enforce such limits.
- i. All specific prohibitions or limits developed under this requirement are deemed to be conditions of this permit. The specific prohibitions set out in 40 CFR Part 403.5(b) shall be enforced by the permittee unless modified under this provision.
- C. The permittee shall analyze the treatment facility influent and effluent for the presence of the toxic pollutants listed in 40 CFR 122 Appendix D (NPDES Application Testing Requirements) Table II at least once/year and the toxic pollutants in Table III at least four/year (quarterly). If, based upon information available to the permittee, there is reason to suspect the presence of any toxic or hazardous pollutant listed in Table V, or any other pollutant, known or suspected to adversely affect treatment plant operation, receiving water quality, or solids disposal procedures, analysis for those pollutants shall be performed at least four times per year on both the influent and effluent.
- (1) The influent and effluent samples collected shall be composite samples consisting of at least 12 aliquots collected at approximately equal intervals over a representative 24 hour period and composited according to flow. Sampling and analytical procedures shall be in accordance with guidelines established in 40 CFR 136. Where composite samples are inappropriate, due to sampling, holding time, or analytical constraints, at least four (4)

grab samples, taken at equal intervals over a representative 24 hour period, shall be taken.

- D. The permittee shall prepare annually a list of Industrial Users which during the preceding twelve months were in significant noncompliance with applicable pretreatment requirements. For the purposes of this Part, significant noncompliance shall be determined based upon the more stringent of either criteria established at 40 CFR Part 403.8(f)(2)(vii) [rev. 7/24/90] or criteria established in the approved POTW pretreatment program. This list is to be published annually in the largest daily newspaper in the municipality during the month of January.

In addition, during the month of January the permittee shall submit an updated pretreatment program status report to ADEQ containing the following information:

- (1) An updated list of all significant industrial users. For each industrial user listed, the following information shall be included:
 - a. Standard Industrial Classification (SIC) code and categorical determination.
 - b. Control document status. Whether the user has an effective control document, and the date such document was last issued, reissued, or modified, (indicate which industrial users were added to the system (or newly identified) within the previous 12 months).
 - c. A summary of all monitoring activities performed within the previous 12 months. The following information shall be reported:
 - i. total number of inspections performed; and
 - ii. total number of sampling visits made.
 - d. Status of compliance with both effluent limitations and reporting requirements. Compliance status shall be defined as follows:
 - i. Compliant (C) - no violations during the previous 12 month period;
 - ii. Non-compliant (NC) - one or more violations during the previous 12 months but does not meet the criteria for significant noncompliant industrial users.

- iii. Significant Noncompliance (SN) - in accordance with requirements described in d. above.
- e. For significantly noncompliant industrial users, indicate the nature of the violations, the type and number of actions taken (notice of violation, administrative order, criminal or civil suit, fines or penalties collected, etc.) and current compliance status. If ANY industrial user was on a schedule to attain compliance with effluent limits, indicate the date the schedule was issued and the date compliance is to be attained.
- (2) A list of all significant industrial users whose authorization to discharge was terminated or revoked during the preceding 12 month period and the reason for termination.
 - (3) A report on any interference, pass through, upset or POTW permit violations known or suspected to be caused by industrial contributors and actions taken by the permittee in response.
 - (4) The results of all influent, effluent analyses performed pursuant to paragraph (c) above;
 - (5) A copy of the newspaper publication of the significantly noncompliant industrial users giving the name of the newspaper and the date published; and
 - (6) The information requested may be submitted in tabular form as per the example tables provided for your convenience (See Attachments A, B and C); and
 - (7) The monthly average water quality based effluent concentration necessary to meet the state water quality standards as developed in the approved technically based local limits.
- E. The permittee shall provide adequate notice to the Department of the following:
- (1) Any new introduction of pollutants into the treatment works from an indirect discharger which would be subject to Section 301 and 306 of the Act if it were directly discharging those pollutants; and
 - (2) Any substantial change in the volume or character of pollutants being introduced into the treatment works by a source introducing pollutants into the treatment works at the time of issuance of the permit.
 - (3) Adequate notice shall include information on:

- (i) the quality and quantity of effluent to be introduced into the treatment works; and
- (ii) any anticipated impact of the change on the quality or quantity of effluent to be discharged from the POTW.

8. ADDITIONAL CONDITIONS FOR LAND APPLICATION OF BIOSOLIDS

A. GENERAL REQUIREMENTS:

- 1. Only biosolids which are not classified as a hazardous waste under state or federal regulations may be land applied.
- 2. Plant Available Nitrogen (PAN) will not be applied at a rate exceeding the annual nitrogen uptake of the crop. At no time will the nitrogen application rate (PAN/acre-year) be allowed to exceed the site specific rate approved by the Department.
- 3. Biosolids with Polychlorinated Biphenyls (PCB's) concentrations equal or greater than 50 mg/kg (dry basis) will not be land applied at any time.
- 4. CEILING CONCENTRATIONS (milligrams per kilogram, dry weight basis): If the biosolids to be land applied exceed any of the pollutant concentrations listed below, the biosolids **may not** be land applied.

<u>Pollutant</u>	<u>Ceiling Concentrations</u>
Arsenic	75
Cadmium	85
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7500

5. **CUMULATIVE CONCENTRATION LIMITS:** When the cumulative amount of any pollutant land applied to a specific site exceeds any of the loading rates listed below, no more biosolids may be land applied the specific site.

<u>Element</u>	<u>Cumulative Pollutant</u>		<u>Loading Rate</u>
			<u>kg/ha (lbs/ac)</u>
Arsenic	41		(37)
Cadmium	39		(35)
Copper	1500		(1350)
Lead	300		(270)
Mercury	17		(15)
Nickel	420		(378)
Selenium	100		(90)
Zinc	2800		(2520)

6. The biosolids generator must issue a signed certification stating that the Pathogen Reduction, Vector Attraction Reduction, and Pollutant Concentration limits have been met each time the biosolids are released for disposal. The State requirements on Pathogen Reduction, Vector Attraction and Pollutant Concentration limits are the same as those listed in the Federal Regulation 40 CFR Part 503, as amended. All the above information must be made available to the land-applicator, if different from the permittee, before the material is delivered. Concurrently, a signed copy of each certification must be also submitted to ADEQ's Water Division.
7. Proper containers shall be utilized to transport the biosolids. No biosolids material shall be allowed to be blown out of containers, truck beds, or spilled during transportation.
8. Transportation of the biosolids must be such that will prevent the attraction, harborage or breeding of insects or rodents. It must not produce conditions harmful to public health, the environment, odors, unsightliness, nuisances, or safety hazards.
9. Transportation equipment must be leak-proof and kept in a top sanitary conditions at all times. Biosolids must be enclosed or covered as to prevent littering, vector attraction, or any other nuisances.
10. The permittee will be responsible for assuring that the land owner, of any land application site not owned by the permittee, and the waste applicator, if different from the permittee, abide by the conditions of this permit.

11. Biosolids will be spread evenly over the application area and in no way biosolids will be allowed to enter the waters of the State.
12. Biosolids will not be applied to slopes with a gradient greater than 15%; or to soils that are saturated, frozen or covered with snow, during rain, or when precipitation is imminent.
13. The permittee will take all necessary measures to reduce obnoxious and offensive odors. Equipment will be maintained and operated to prevent spillage and leakage.
14. Disposal of biosolids in a floodplain will not restrict the flow of the base flood, reduce the temporary storage capacity of the floodplain, or result in a washout of solid waste, so as to pose a hazard to human life, wildlife or land and water uses.
15. Biosolids will not be spread within 25 feet of rock outcrops; 50 feet of property lines; 200 feet of drinking water well; 100 feet of lakes, ponds, springs, streams, wetlands, and sinkholes; 300 feet of occupied buildings and streams classified as an "extraordinary resource stream."
16. The permittee will give 120 days prior notice to the Director of any change planned in the biosolids disposal practice.
17. All new land application sites must have a waste management plan approved by the Department prior to land application of biosolids. This may require a permit modification.

B. MONITORING AND REPORTING REQUIREMENTS:

1. The permittee will be responsible for the biosolids analyses, soil analyses, and a reporting schedule that must include the following:
 - a. Biosolids Analysis
 - (1) Biosolids samples collected must be representative of the treated biosolids to be land applied. The samples are to be stored in appropriate glass or plastic containers and kept refrigerated or frozen to prevent any change in composition.
 - (2) Quarterly grab samples of the land applied biosolids will be analyzed and results expressed in dry basis in mg/kg, except as otherwise indicated:

Volatile Solids(%)	Total Kjeldahl Nitrogen
Total Solids(%)	Total Phosphorus
Nitrate Nitrogen	Total Potassium
Nitrite Nitrogen	Ammonia Nitrogen
Arsenic	Cadmium
Chromium	Copper
Lead	Mercury
Nickel	Selenium
Zinc	pH (SU)

b. Soils Analysis

- (1) Each land application site will be soil tested in the Spring prior to application for the following parameters:

Nitrate-Nitrogen	Potassium
Phosphorus	Magnesium
Arsenic	Cadmium
Copper	Lead
Selenium	Mercury
Nickel	pH (SU)
Zinc	C.E.C. (milliequivalent/100 grams)
Salt Content (micro mohs/cm)	

c. Reporting

- (1) Annual reports will be sent to the Department and to the owner of the land receiving biosolids **prior to May 1**, which must include the following:

The biosolids and soil analyses conducted under section above (including a statement that the analyses were performed in accordance with EPA Document SW-846, "Test Methods for Evaluation of Solid Waste," or other procedures approved by the Director), application dates and locations, volumes of biosolids applied (in dry tons/acre-year and gallons/acre-year of biosolids), methods of disposal, identity of hauler, and type of crop grown, amounts of nitrogen applied, total elements added that year (lbs/acre), total elements applied to date, and copies of soil analyses for each site.

- (2) The permittee will also maintain copies of the above records for Department personnel review at the biosolids generating facility.

9. WHOLE EFFLUENT TOXICITY TESTING (7-DAY CHRONIC NOEC FRESHWATER)

1. SCOPE AND METHODOLOGY

- a. The permittee shall test the effluent for toxicity in accordance with the provisions in this section.

APPLICABLE TO FINAL OUTFALL: 001

CRITICAL DILUTION (%): 97%

EFFLUENT DILUTION SERIES (%): 31%, 41%, 55%, 73%, & 97%

COMPOSITE SAMPLE TYPE: Defined at PART I

TEST SPECIES/METHODS: 40 CFR Part 136

Ceriodaphnia dubia chronic static renewal survival and reproduction test, Method 1002.0, EPA/600/4-91/002 or the most recent update thereof. This test should be terminated when 60% of the surviving females in the control produce three broods or at the end of eight days, whichever comes first.

Pimephales promelas (fathead minnow) chronic static renewal 7-day larval survival and growth test, Method 1000.0, EPA/600/4-91/002, or the most recent update thereof. A minimum of five (5) replicates with eight (8) organisms per replicate must be used in the control and in each effluent dilution of this test.

- b. The NOEC (No Observed Effect Concentration) is defined as the greatest effluent dilution at and below which lethality that is statistically different from the control (0% effluent) at the 95% confidence level does not occur. Chronic lethal test failure is defined as a demonstration of a statistically significant lethal effect at test completion to a test species at or below the critical dilution.
- c. This permit may be reopened to require whole effluent toxicity limits, chemical specific effluent limits, additional testing, and/or other appropriate actions to address toxicity.
- d. Test failure is defined as a demonstration of statistically significant sub-lethal or lethal effects to a test species at or below the effluent critical dilution.

2. **PERSISTENT LETHALITY** The requirements of this subsection apply only when a toxicity test demonstrates significant lethal effects at or below the critical dilution. Significant lethal effects are herein defined as a statistically significant difference at the 95% confidence level between the survival of the appropriate test organism in a specified effluent dilution and the control (0% effluent).

a. Part I Testing Frequency Other Than Monthly

- i. The permittee shall conduct a total of two (2) additional tests for any species that demonstrates significant lethal effects at or below the critical dilution. The two additional tests shall be conducted monthly during the next two consecutive months. The permittee shall not substitute either of the two additional tests in lieu of routine toxicity testing. The full report shall be prepared for each test required by this section in accordance with procedures outlined in Item 4 of this section and submitted with the period discharge monitoring report (DMR) to the permitting authority for review.
- ii. If one or both of the two additional tests demonstrates significant lethal effects at or below the critical dilution, the permittee shall initiate Toxicity Reduction Evaluation (TRE) requirements as specified in Item 5 of this section. The permittee shall notify ADEQ in writing within 5 days of the failure of any retest, and the TRE initiation date will be the test completion date of the first failed retest. A TRE may be also be required due to a demonstration of persistent significant sub-lethal effects or intermittent lethal effects at or below the critical dilution, or for failure to perform the required retests.
- iii. If one or both of the two additional tests demonstrates significant lethal effects at or below the critical dilution, the permittee shall henceforth increase the frequency of testing for this species to once per quarter for the life of the permit.
- iv. The provisions of Item 2.a are suspended upon submittal of the TRE Action Plan.

3. REQUIRED TOXICITY TESTING CONDITIONS

a. Test Acceptance

The permittee shall repeat a test, including the control and all effluent dilutions, if the procedures and quality assurance requirements defined in the test methods or in this permit are not satisfied, including the following additional criteria:

- i. The toxicity test control (0% effluent) must have survival equal to or greater than 80%.
- ii. The mean number of Ceriodaphnia dubia neonates produced per surviving female in the control (0% effluent) must be 15 or more.
- iii. 60% of the surviving control females must produce three broods.
- iv. The mean dry weight of surviving fathead minnow larvae at the end of the 7 days in the control (0% effluent) must be 0.25 mg per larva or greater.
- v. The percent coefficient of variation between replicates shall be 40% or less in the control (0% effluent) for: the young of surviving females in the Ceriodaphnia dubia reproduction test; the growth and survival endpoints of the fathead minnow test.
- vi. The percent coefficient of variation between replicates shall be 40% or less in the critical dilution, unless significant lethal or nonlethal effects are exhibited for: the young of surviving females in the Ceriodaphnia dubia reproduction test; the growth and survival endpoints of the fathead minnow test.

Test failure may not be construed or reported as invalid due to a coefficient of variation value of greater than 40%. A repeat test shall be conducted within the required reporting period of any test determined to be invalid.

b. Statistical Interpretation

- i. For the Ceriodaphnia dubia survival test, the statistical analyses used to determine if there is a significant difference between the control and the critical dilution shall be Fisher's Exact Test as described in EPA/600/4-91/002 or the most recent update thereof.
- ii. For the Ceriodaphnia dubia reproduction test and the fathead minnow larval survival and growth test, the statistical analyses used to determine if there is a significant difference between the control and the critical dilution shall be in accordance with the methods for determining the No Observed Effect Concentration (NOEC) as described in EPA/600/4-91/002 or the most recent update thereof.

- iii. If the conditions of Test Acceptability are met in Item 3.a above and the percent survival of the test organism is equal to or greater than 80% in the critical dilution concentration and all lower dilution concentrations, the test shall be considered to be a passing test, and the permittee shall report an NOEC of not less than the critical dilution for the DMR reporting requirements found in Item 4 below.

c. Dilution Water

- i. Dilution water used in the toxicity tests will be receiving water collected as close to the point of discharge as possible but unaffected by the discharge. The permittee shall substitute synthetic dilution water of similar pH, hardness, and alkalinity to the closest downstream perennial water for;
 - (A) toxicity tests conducted on effluent discharges to receiving water classified as intermittent streams; and
 - (B) toxicity tests conducted on effluent discharges where no receiving water is available due to zero flow conditions.
- ii. If the receiving water is unsatisfactory as a result of instream toxicity (fails to fulfill the test acceptance criteria of Item 3.a), the permittee may substitute synthetic dilution water for the receiving water in all subsequent tests provided the unacceptable receiving water test met the following stipulations:
 - (A) a synthetic dilution water control which fulfills the test acceptance requirements of Item 3.a was run concurrently with the receiving water control;
 - (B) the test indicating receiving water toxicity has been carried out to completion (i.e., 7 days);
 - (C) the permittee includes all test results indicating receiving water toxicity with the full report and information required by Item 4 below; and
 - (D) the synthetic dilution water shall have a pH, hardness, and alkalinity similar to that of the receiving water or closest downstream perennial water not adversely affected by the discharge, provided the magnitude of these parameters will not cause toxicity in the synthetic dilution water.

d. Samples and Composites

- i. The permittee shall collect a minimum of three flow-weighted composite samples from the outfall(s) listed at Item 1.a above.
- ii. The permittee shall collect second and third composite samples for use during 24-hour renewals of each dilution concentration for each test. The permittee must collect the composite samples such that the effluent samples are representative of any periodic episode of chlorination, biocide usage or other potentially toxic substance discharged on an intermittent basis.
- iii. The permittee must collect the composite samples so that the maximum holding time for any effluent sample shall not exceed 72 hours. The permittee must have initiated the toxicity test within 36 hours after the collection of the last portion of the first composite sample. Samples shall be chilled to 4 degrees Centigrade during collection, shipping, and/or storage.
- iv. If the flow from the outfall(s) being tested ceases during the collection of effluent samples, the requirements for the minimum number of effluent samples, the minimum number of effluent portions and the sample holding time are waived during that sampling period. However, the permittee must collect an effluent composite sample volume during the period of discharge that is sufficient to complete the required toxicity tests with daily renewal of effluent. When possible, the effluent samples used for the toxicity tests shall be collected on separate days if the discharge occurs over multiple days. The effluent composite sample collection duration and the static renewal protocol associated with the abbreviated sample collection must be documented in the full report required in Item 4 of this section.

4. REPORTING

- a. The permittee shall prepare a full report of the results of all tests conducted pursuant to this section in accordance with the Report Preparation Section of EPA/600/4-91/002, or the most current publication, for every valid or invalid toxicity test initiated whether carried to completion or not. The permittee shall retain each full report pursuant to the provisions of PART II.C.7 of this permit. The permittee shall submit full reports upon the specific request of the Department. For any test which fails, is considered invalid or which is terminated early for any reason, the full report must be submitted for review.

- b. A valid test for each species must be reported on the DMR during each reporting period specified in PART I of this permit unless the permittee is performing a TRE which may increase the frequency of testing and reporting. Only ONE set of biomonitoring data for each species is to be recorded on the DMR for each reporting period. The data submitted should reflect the LOWEST survival results for each species during the reporting period. All invalid tests, repeat tests (for invalid tests), and retests (for tests previously failed) performed during the reporting period must be attached to the DMR for ADEQ review.
- c. The permittee shall submit the results of each valid toxicity test on DMR for that reporting period in accordance with PART II.D.4 of this permit, as follows below. Submit retest information clearly marked as such with the following DMR. Only results of valid tests are to be reported on the DMR.
- i. Pimephales promelas (fathead minnow)
- (A) If the No Observed Effect Concentration (NOEC) for survival is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter No. TLP6C.
- (B) Report the NOEC value for survival, Parameter No. TOP6C.
- (C) Report the NOEC value for growth, Parameter No. TPP6C.
- (D) If the No Observed Effect Concentration (NOEC) for growth is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter No. TGP6C.
- (E) Report the highest (critical dilution or control) Coefficient of Variation, Parameter No. TQP6C.
- ii. Ceriodaphnia dubia
- (A) If the NOEC for survival is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter No. TLP3B.
- (B) Report the NOEC value for survival, Parameter No. TOP3B.

- (C) Report the NOEC value for reproduction, Parameter No. TPP3B.
- (D) If the No Observed Effect Concentration (NOEC) for reproduction is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter No. TGP3B.
- (E) Report the higher (critical dilution or control) Coefficient of Variation, Parameter No. TQP3B.

5. Monitoring Frequency Reduction

- a. The permittee may apply for a testing frequency reduction upon the successful completion of the first four consecutive quarters of testing for one or both test species, with no lethal or sub-lethal effects demonstrated at or below the critical dilution. If granted, the monitoring frequency for that test species may be reduced to not less than once per year for the less sensitive species (usually the fathead minnow) and not less than twice per year for the more sensitive test species (usually the Ceriodaphnia dubia).
- b. CERTIFICATION - The permittee must certify in writing that no test failures have occurred and that all tests meet all test acceptability criteria in item 3.a. above. In addition the permittee must provide a list with each test performed including test initiation date, species, NOECs for lethal and sub-lethal effects and the maximum coefficient of variation for the controls. Upon review and acceptance of this information the Department will issue a letter of confirmation of the monitoring frequency reduction. A copy of the letter will be forwarded to the Permit Compliance System section to update the permit reporting requirements.
- c. SUB-LETHAL FAILURES - If, during the first four quarters of testing, sub-lethal effects are demonstrated to a test species, two monthly retests are required. In addition, quarterly testing is required for that species until the effluent passes both the lethal and sub-lethal test endpoints for the affected species for four consecutive quarters. Monthly retesting is not required if the permittee is performing a TRE.
- d. SURVIVAL FAILURES - If any test fails the survival endpoint at any time during the life of this permit, two monthly retests are required and the monitoring frequency for the affected test species shall be increased to once per quarter until the permit is re-issued. Monthly retesting is not required if the permittee is performing a TRE.

- e. This monitoring frequency reduction applies only until the expiration date of this permit, at which time the monitoring frequency for both test species reverts to once per quarter until the permit is re-issued.

6. TOXICITY REDUCTION EVALUATION (TRE)

- a. Within ninety (90) days of confirming lethality in the retests, the permittee shall submit a Toxicity Reduction Evaluation (TRE) Action Plan and Schedule for conducting a TRE. The TRE Action Plan shall specify the approach and methodology to be used in performing the TRE. A Toxicity Reduction Evaluation is an investigation intended to determine those actions necessary to achieve compliance with water quality-based effluent limits by reducing an effluent's toxicity to an acceptable level. A TRE is defined as a step-wise process which combines toxicity testing and analyses of the physical and chemical characteristics of a toxic effluent to identify the constituents causing effluent toxicity and/or treatment methods which will reduce the effluent toxicity. The TRE Action Plan shall lead to the successful elimination of effluent toxicity at the critical dilution and include the following:
 - i. **Specific Activities.** The plan shall detail the specific approach the permittee intends to utilize in conducting the TRE. The approach may include toxicity characterizations, identifications and confirmation activities, source evaluation, treatability studies, or alternative approaches. When the permittee conducts Toxicity Characterization Procedures the permittee shall perform multiple characterizations and follow the procedures specified in the documents "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures" (EPA-600/6-91/003) and "Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA-600/6-91/005F), or alternate procedures. When the permittee conducts Toxicity Identification Evaluations and Confirmations, the permittee shall perform multiple identifications and follow the methods specified in the documents "Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/080) and "Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/081), as appropriate.

The documents referenced above may be obtained through the National Technical Information Service (NTIS) by phone at (800) 553-6847, or by writing:

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

- ii. Sampling Plan (e.g., locations, methods, holding times, chain of custody, preservation, etc.). The effluent sample volume collected for all tests shall be adequate to perform the toxicity test, toxicity characterization, identification and confirmation procedures, and conduct chemical specific analyses when a probable toxicant has been identified;

Where the permittee has identified or suspects specific pollutant(s) and/or source(s) of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical specific analyses for the identified and/or suspected pollutant(s) and/or source(s) of effluent toxicity. Where lethality was demonstrated within 48 hours of test initiation, each composite sample shall be analyzed independently. Otherwise the permittee may substitute a composite sample, comprised of equal portions of the individual composite samples, for the chemical specific analysis;

- iii. Quality Assurance Plan (e.g., QA/QC implementation, corrective actions, etc.); and
 - iv. Project Organization (e.g., project staff, project manager, consulting services, etc.).
- b. The permittee shall initiate the TRE Action Plan within thirty (30) days of plan and schedule submittal. The permittee shall assume all risks for failure to achieve the required toxicity reduction.
 - c. The permittee shall submit a quarterly TRE Activities Report, with the Discharge Monitoring Report in the months of January, April, July and October, containing information on toxicity reduction evaluation activities including:
 - i. any data and/or substantiating documentation which identifies the pollutant(s) and/or source(s) of effluent toxicity;

- ii. any studies/evaluations and results on the treatability of the facility's effluent toxicity; and
 - iii. any data which identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no significant lethality at the critical dilution.
- d. The permittee shall submit a Final Report on Toxicity Reduction Evaluation Activities no later than twenty-eight (28) months from confirming lethality in the retests, which provides information pertaining to the specific control mechanism selected that will, when implemented, result in reduction of effluent toxicity to no significant lethality at the critical dilution. The report will also provide a specific corrective action schedule for implementing the selected control mechanism.

Quarterly testing during the TRE is a minimum monitoring requirement. EPA recommends that permittees required to perform a TRE not rely on quarterly testing alone to ensure success in the TRE, and that additional screening tests be performed to capture toxic samples for identification of toxicants. Failure to identify the specific chemical compound causing toxicity test failure will normally result in a permit limit for whole effluent toxicity limits per federal regulations at 40 CFR 122.44(d)(1)(v).

10. If TRC test results are less than Detection Level Achieved (DL), a value of zero (0) may be used for the Discharge Monitoring Report (DMR) calculations and reporting requirements.
11. In accordance with 40 CFR Part 122.62 (a) (2), the permit may be modified if new information is received that was not available at the time of permit issuance that would have justified the application of different permit conditions at the time of permit issuance.
12. There is no technology-based effluent limit found in 40 CFR § 122.44(a)(1), nor is there an Arkansas water quality numerical standard for phosphorous in APC&EC Regulation No. 2 or 40 CFR § 122.44(d). However, on December 18, 2003, ADEQ entered into an agreement with Oklahoma which calls for Springdale to reduce the concentration of phosphorus in its effluent to 1 ppm, based on a 30-day average, by December 1, 2007. ADEQ has included a phosphorus limit in Springdale's permit, effective December 1, 2007, to conform to this agreement with Oklahoma.

ART IV

SECTION A - DEFINITIONS

Definitions contained in Section 502 of the Clean Water Act shall apply to this permit and are incorporated herein by reference. Additional definitions of words or phrases used in this permit are as follows:

"Act" means the Clean Water Act, Public Law 95-217 (33.U.S.C. 1251 et seq.) as amended.

"Administrator" means the Administrator of the U.S. Environmental Protection Agency.

"Applicable effluent standards and limitations" means all State and Federal effluent standards and limitations to which a discharge is subject under the Act, including, but not limited to, effluent limitations, standards of performance, toxic effluent standards and prohibitions, and pretreatment standards.

"Applicable water quality standards" means all water quality standards to which a discharge is subject under the federal Clean Water Act and which have been (a) approved or permitted to remain in effect by the Administrator following submission to the Administrator pursuant to Section 303 (a) of the Act, or (b) promulgated by the Director pursuant to Section 303(b) or 303(c) of the Act, and standards promulgated under regulation No. 2, as amended, (regulation establishing water quality standards for surface waters of the State of Arkansas.)

"Bypass" means the intentional diversion of waste streams from any portion of treatment facility.

"Daily Discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the "daily discharge" is calculated as the total mass of pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the sampling day. "Daily discharge" determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the "daily discharge" determination of concentration shall be the arithmetic average (weighted by flow rate) of all the samples collected during that sampling day.

"Daily Average" (also known as monthly average) discharge limitations means the highest allowable average of "daily discharges(s)" over a calendar month, calculated as the sum of all "daily discharges(s)" measured during a calendar month divided by the number of "daily discharges(s)" measured during that month. When the permit establishes daily average concentration effluent limitations or conditions, the daily average concentration means the arithmetic average (weighted by flow) of all "daily discharges(s)" of concentration determined during the calendar month where C=daily concentration, F=daily flow and n=number of daily samples; daily average discharge=

$$\frac{C1F1 + C2F2 + \dots + CnFn}{n}$$

$$F1 + F2 + \dots + Fn$$

1. "Daily Maximum" discharge limitation means the highest allowable "daily discharge" during the calendar month.

2. "Department" means the Arkansas Department of Pollution Control and Ecology (ADPCE).

3. "Director" means the Administrator of the U.S. Environmental Protection Agency and/or the Director of the Arkansas Department of Pollution Control and Ecology.

4. "Grab sample" means an individual sample collected in less than 15 minutes in conjunction with an instantaneous flow measurement.

5. "Industrial User" means a nondomestic discharger, as identified in 40 CFR 403, introducing pollutants to a publicly-owned treatment works.

6. "National Pollutant Discharge Elimination System" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318 and 405 of the Clean Water Act.

7. "POTW" means a Publicly Owned Treatment Works.

8. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in products.

9. "ADPCE" means the Arkansas Department of Pollution Control and Ecology.

10. "Sewage sludge" means the solids, residues, and precipitate separated from or created in sewage by the unit processes a publicly-owned treatment works. Sewage as used in this definition means any wastes, including wastes from humans, households, commercial establishments, industries, and storm water runoff that are discharged to or otherwise enter a publicly-owned treatment works.

11. "7-day average" discharge limitation, other than for fecal coliform bacteria, is the highest allowable arithmetic means of the values for all effluent samples collected during the calendar week. The 7-day average for fecal coliform bacteria is the geometric mean of the values of all effluent samples collected during the

calendar week. The DMR should report the highest 7-day average obtained during the calendar month. For reporting purposes, the 7-day average values should be reported as occurring in the month in which the Saturday of the calendar week falls in.

12. "30-day average", other than for fecal coliform bacteria, is the arithmetic mean of the daily values for all effluent samples collected during a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month. The 30-day average for fecal coliform bacteria is the geometric mean of the values for all effluent samples collected during a calendar month.

13. "24-hour composite sample" consists of a minimum of 12 effluent portions collected at equal time intervals over the 24-hour period and combined proportional to flow or a sample collected at frequent intervals proportional to flow over the 24-hour period.

14. "12-hour composite sample" consists of 12 effluent portions, collected no closer together than one hour and composited according to flow. The daily sampling intervals shall include the highest flow periods.

15. "6-hour composite sample" consists of six effluent portions collected no closer together than one hour (with the first portion collected no earlier than 10:00 a.m.) and composited according to flow.

16. "3-hour composite sample" consists of three effluent portions collected no closer together than one hour (with the first portion collected no earlier than 10:00 a.m.) and composited according to flow.

17. "Treatment works" means any devices and systems used in storage, treatment, recycling, and reclamation of municipal sewage and industrial wastes, of a liquid nature to implement section 201 of the Act, or necessary to recycle reuse water at the most economic cost over the estimated life of the works, including intercepting sewers, sewage collection systems, pumping, power and other equipment, and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities, and any works, including site acquisition of the land that will be an integral part of the treatment process or is used for ultimate disposal of residues resulting from such treatment.

18. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. Any upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventive maintenance, or careless of improper operations.

19. For "fecal coliform bacteria", a sample consists of one effluent grab portion collected during a 24-hour period at peak loads.

20. "Dissolved oxygen", shall be defined as follows:

a. When limited in the permit as a monthly minimum, shall mean the lowest acceptable monthly average value, determined by averaging all samples taken during the calendar month;

b. When limited in the permit as an instantaneous minimum value, shall mean that no value measured during the reporting period may fall below the stated value.

21. "The term "MGD" shall mean million gallons per day.

22. "The term "mg/l" shall mean milligrams per liter or parts million (ppm).

23. "The term "µg/l" shall mean micrograms per liter or parts per billion (ppb).

Final Fact Sheet

for renewal of NPDES Permit Number AR0022063 to discharge to Waters of the State

1. **PERMITTING AUTHORITY.**

The issuing office is:

Arkansas Department of Environmental Quality
8001 National Drive
Post Office Box 8913
Little Rock, Arkansas 72219-8913

2. **APPLICANT.**

The applicant is:

City of Springdale
P.O. Box 769
Springdale, AR 72765-0769

3. **PREPARED BY.**

The permit was prepared by:

Loretta Reiber, P.E.
NPDES Branch, Water Division

4. **DATE PREPARED.**

The final permit was prepared on 02/19/2004.

5. **PERMIT ACTIVITY.**

Effective Date: 03/01/1998
Modification Date: N/A
Expiration Date: 02/28/2003

The permittee submitted a permit renewal application on 08/27/2002. It is proposed that the current NPDES permit be reissued for a 5-year term in accordance with regulations promulgated at 40 CFR Part 122.46(a).

6. **RECEIVING STREAM SEGMENT AND DISCHARGE LOCATION.**

The outfall is located at the following coordinates:

Latitude: 36° 12' 49" Longitude: 94° 09' 48"

The receiving waters named:

Spring Creek, then to Osage Creek, then to the Illinois River, then to Tenkiller Reservoir, then to the Arkansas River in Segment 3J of the Arkansas River Basin. The receiving stream is a Water of the State classified for primary contact recreation, raw water source for public, industrial, and agricultural water supplies, propagation of desirable species of fish and other aquatic life, and other compatible uses.

7. **303d List and Endangered Species Considerations**

i. **303d List**

The receiving streams, Spring Creek and Osage Creek (Illinois River Basin) were intentionally not listed on the ADEQ 303 (d) list. Since Arkansas does not have numeric criteria for phosphorus, and a previous intensive two year scientific study conducted by ADEQ (ADEQ publication WQ97-03-1) showed that all designated uses and applicable numeric criteria were being met, as well as compliance with Arkansas' narrative nutrient criteria, there was no basis for listing these streams on the impaired water body list (303(d) list). However, EPA did add these streams onto their official impaired water body list, against Arkansas' concurrence.

There is no technology-based effluent limit found in 40 CFR § 122.44(a)(1), nor is there an Arkansas water quality numerical standard for phosphorous in APC&EC Regulation No. 2 or 40 CFR § 122.44(d). However, on December 18, 2003, ADEQ entered into an agreement with Oklahoma which calls for Springdale to reduce the concentration of phosphorus in its effluent to 1 ppm, based on a 30-day average, by December 1, 2007. ADEQ has included a phosphorus limit in Springdale's permit, effective December 1, 2007, to conform to this agreement with Oklahoma.

ii. **Endangered Species:**

No comments were received from the U.S. Fish and Wildlife Service (USF&WS). Therefore; no permit action is needed. Additionally, the discharge to the receiving stream is an existing outfall, so no consultation with the USF&WS is required.

8. OUTFALL AND TREATMENT PROCESS DESCRIPTION.

The following is a description of the facility described in the application:

Outfall 001:

- a. Design Flow: 15.6 MGD (from effective date of permit and lasting thru 11/30/2007)

24 MGD (from 12/01/2007 and lasting until permit expiration)
- b. Type of treatment: screening, vacuators, clarifiers, trickling filters, advanced biological treatment followed by final clarification, disinfection by chlorination, dechlorination, post aeration, and equalization basin
- c. Discharge Description: treated municipal wastewater

A quantitative and qualitative description of the discharge described in the NPDES Permit Application Forms received are available for review.

9. INDUSTRIAL WASTEWATER CONTRIBUTIONS.

a. INDUSTRIAL USERS

This facility does receive industrial wastewater. Based on the applicant's effluent compliance history and the type of industrial contributions, standard pretreatment conditions are deemed appropriate at this time.

10. SEWAGE SLUDGE PRACTICES.

Sludge will be disposed of in a landfill or will be land applied in accordance with the terms set forth in Part III of the permit. Land application may take place at the following locations: (Note: This list is a sample of the sites where the permittee may land apply sludge. A full list is on file at ADEQ and is available on request.)

Owner	Field #	Acres	Section	Township	Range
Warren Reid	3	90	17	18 North	30 West
George Smith	6	27	22	18 North	30 West
Gene Andrews	7	48	22/27	18 North	30 West
Gene Smith	10	13.5	17	18 North	30 West
Max Hall	14	42	28/33	18 North	30 West
Harold Whittle	19	28.2	8	17 North	30 West
Bruce Fink	25	10	24	18 North	30 West

Owner	Field #	Acres	Section	Township	Range
Gene Andrews & Dennis Malone	29	30.7	15	18 North	31 West
Minnie Beasley	30	54	24	18 North	30 West
Gene Andrews	34	41.5	21	18 North	30 West
Richard Finn	36	70	28/33	18 North	31 West
Jay Sharp	37	50	17/20	18 North	30 West
Clayton Simon	41	56	16	18 North	29 West
Randy Hollingsworth	42	9	21	18 North	30 West
Gene Andrews	43	38.8	20	18 North	30 West
Glenn Graham	44	44	29	18 North	29 West
Kerrie Campbell	44A	60	29	18 North	29 West
Jerry Hinshaw	45	84	24	17 North	31 West
Euel Pinkley	47	55	20	18 North	30 West
J.W. Tannahill	48	55	14	18 North	30 West
Ralph Pendergraft	49	26	15/22	17 North	31 West
Jess Harp	50	19	21	17 North	31 West
Dale Rouse	51	68	23/26	17 North	31 West
Jackie King	53	75.5	21	18 North	30 West
Marjorie Brooks	54	93.9	14	18 North	30 West
Glen Parsons	56	50.5	26	18 North	30 West
Carl Potter	58	33	17/18	18 North	29 West
Joe Claypool	60	20.9	9	17 North	30 West
Wade Jones	61	22	22	17 North	31 West
Roy Wells	62	32	21/22	18 North	31 West
Steve Geels, Jr.	62A	23	21/22	18 North	31 West
Joe Simco	63	69	22	17 North	31 West
Gene Andrews and Troy Rhine	65	54	22	19 North	30 West
Gretchen Adams	67	51.6	13	18 North	30 West
Bill Greenway	68	51.6	13	17 North	31 West
Gene Andrews	71	31.7	15	18 North	31 West

11. PERMIT CONDITIONS.

The Arkansas Department of Environmental Quality has made a determination to issue a permit for the discharge described in the application. Permit requirements are based on NPDES regulations (40 CFR Parts 122, 124, and Subchapter N) and regulations promulgated pursuant to the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended, Ark. Code Ann. 8-4-101 et. seq.).

a. Interim Effluent Limitations

Outfall 001- treated municipal wastewater

i. Conventional and/or Toxic Pollutants

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
		Monthly Avg.	Monthly Avg.		
Flow	N/A	N/A	N/A	once/day	totalizing meter
Carbonaceous Biochemical Oxygen Demand (CBOD5)					
(March – December)	1301	10	15	once/week	24-hr composite
(January – February)	3253	25	38	once/week	24-hr composite
Total Suspended Solids (TSS)					
(March – December)	1952	15	23	once/week	24-hr composite
(January – February)	3903	30	45	once/week	24-hr composite
Ammonia Nitrogen (NH3-N)					
(May – October)	195	1.5	2.3	once/day	24-hr composite
(November – April)	520	4	6	once/day	24-hr composite
Dissolved Oxygen					
(May – October)	N/A	7.9 (Min.)	N/A	four/week	Grab
(November, December, March, and April)	N/A	9.5 (Min.)	N/A	four/week	Grab
(January – February)	N/A	7.5 (Min.)	N/A	four/week	Grab
Dissolved Oxygen	N/A	6.0 (Inst. Min.)		four/week	Grab
Fecal Coliform Bacteria (FCB)		(colonies/100ml)			
(Apr-Sept)	N/A	200	400	once/week	Grab
(Oct-Mar)	N/A	1000	2000	once/week	Grab
Total Phosphorous	Report	Report	Report	twice/month	24-hr composite

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
		Monthly Avg.	Monthly Avg.		
Total Residual Chlorine (TRC)	N/A	<0.1 mg/l (Inst. Max.)		once/week	Grab
pH	N/A	<u>Minimum</u> 6 s.u.	<u>Maximum</u> 9 s.u.	six/week	Grab
Chronic Biomonitoring	N/A	See Page 12, #12g below		once/quarter	24-hr composite

- ii. **Solids and Foam:** There shall be no discharge of distinctly visible solids, scum or foam of a persistent nature, nor shall there be any formation of slime, bottom deposits or sludge banks.

b. Final Effluent Limitations

Outfall 001- treated municipal wastewater

i. Conventional and/or Toxic Pollutants

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
		Monthly Avg.	Monthly Avg.		
Flow	N/A	N/A	N/A	once/day	totalizing meter
Carbonaceous Biochemical Oxygen Demand (CBOD5) (March – December)	2002	10	15	once/week	24-hr composite
(January – February)	5004	25	38	once/week	24-hr composite
Total Suspended Solids (TSS) (March – December)	3003	15	23	once/week	24-hr composite
(January – February)	6005	30	45	once/week	24-hr composite
Ammonia Nitrogen (NH3-N) (May – October)	301	1.5	2.3	once/day	24-hr composite
(November – April)	801	4	6	once/day	24-hr composite
Dissolved Oxygen (May – October)	N/A	7.9 (Min.)	N/A	four/week	Grab
(November, December, March, and April)	N/A	9.5 (Min.)	N/A	four/week	Grab
(January – February)	N/A	7.5 (Min.)	N/A	four/week	Grab
Dissolved Oxygen	N/A	6.0 (Inst. Min.)		four/week	Grab
Fecal Coliform Bacteria (FCB) (Apr-Sept)	N/A	200	400	once/week	Grab
(Oct-Mar)	N/A	1000	2000	once/week	Grab
Total Phosphorous	201	1	N/A	twice/month	24-hr composite
Total Residual Chlorine (TRC)	N/A	<0.1 mg/l (Inst. Max.)		once/week	Grab
pH	N/A	<u>Minimum</u> 6 s.u.	<u>Maximum</u> 9 s.u.	six/ week	Grab
Chronic Biomonitoring	N/A	See Page 12, #12g below		once/quarter	24-hr composite

- ii. **Solids and Foam:** There shall be no discharge of distinctly visible solids, scum or foam of a persistent nature, nor shall there be any formation of slime, bottom deposits or sludge banks.

12. **BASIS FOR PERMIT CONDITIONS.**

The following is an explanation of the derivation of the conditions of the final permit and the reasons for them or, in the case of notices of intent to deny or terminate, reasons suggesting the tentative decisions as required under 40 CFR 124.7 (48 FR 1413, April 1, 1983).

a. **Technology-Based versus Water Quality-Based Effluent Limitations and Conditions**

Following regulations promulgated at 40 CFR Part 122.44 (1) (2) (ii), the final permit limits are based on either technology-based effluent limits pursuant to 40 CFR Part 122.44 (a) or on State water quality standards and requirements pursuant to 40 CFR Part 122.44 (d), whichever are more stringent.

b. **Technology-Based Effluent Limitations and/or Conditions**

i. **General Comments**

The permit must at least comply with 40 CFR 133 (Secondary Treatment Regulation) when applicable.

c. **Best Professional Judgment**

In response to EPA's concerns about the protection of Oklahoma's water quality standards, Springdale has voluntarily agreed to a monthly average effluent limitation of 1 mg/l total phosphorus upon the completion of the construction and process changes necessary to achieve this level of nutrient removal. Compliance with the phosphorous effluent limitations is required no later than December 1, 2007.

There is no technology-based effluent limit found in 40 CFR § 122.44(a)(1), nor is there an Arkansas water quality numerical standard for phosphorous in APC&EC Regulation No. 2 or 40 CFR § 122.44(d). However, on December 18, 2003, ADEQ entered into an agreement with Oklahoma which calls for Springdale to reduce the concentration of phosphorus in its effluent to 1 ppm, based on a 30-day average, by December 1, 2007. ADEQ has included a phosphorus limit in Springdale's permit, effective December 1, 2007, to conform to this agreement with Oklahoma.

d. **State Water Quality Numerical Standards Based Limitations**

i. **Conventional and Non-Conventional Pollutants**

The water quality-based limits for CBOD5, TSS, NH3-N, and DO (monthly average minimums) have been based on the current NPDES permit, and 40 CFR Part 122.44(l). The calculation of the loadings (lbs per day) uses a design flow of 15.6 MGD and the following equation (See below). These limitations are included in the updated Arkansas Water Quality management Plan (AWQMP). The limitations for FCB, pH, and DO (year-round instantaneous minimum) are based upon Sections 2.507, 2.504, and 2.505, respectively, of Regulation 2. (For additional information regarding the DO limits contained in this permit, please see #3 of the response to comments for the permit effective March 1, 1998.)

$$\text{lbs/day} = \text{Concentration (mg/l)} \times \text{Flow (MGD)} \times 8.34$$

e. **Toxics Pollutants-Priority Pollutant Scan (PPS)**

i. **General Comments**

Effluent limitations and/or conditions established in the draft permit are in compliance with the Arkansas Water Quality Standards and the applicable Water Quality Management Plan.

ii. **Post Third Round Policy and Strategy**

Section 101 of the Clean Water Act(CWA) states that "...it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited...". To insure that the CWA's prohibitions on toxic discharges are met, EPA has issued a "Policy for the Development of Water Quality-Based Permit Limitations by Toxic Pollutants"(49 FR 9016-9019,3/9/84). In support of the national policy, Region 6 adopted the "Policy for post Third Round NPDES Permitting" and the "Post Third Round NPDES Permit Implementation Strategy" on October 1, 1992. The Regional policy and strategy are designed to insure that no source will be allowed to discharge any wastewater which (1) results in instream aquatic toxicity; (2) causes a violation of an applicable narrative or numerical State water quality standard resulting in non-conformance with the provisions of 40 CFR Part 122.44(d); (3) results in the endangerment of a drinking water supply; or (4) results in aquatic bioaccumulation which threatens human health.

iii. **Implementation**

The State of Arkansas is currently implementing EPA's Post Third-Round Policy in conformance with the EPA Regional strategy. The 5-year NPDES permits contain technology-based effluent limitations reflecting the best controls available. Where these technology-based permit limits do not protect water quality or the designated uses, or where there are no applicable technology-based limits, additional water quality-based effluent limitations and/or conditions are included in the NPDES permits. State narrative and numerical water quality standards from the Regulation No. 2 are used in conjunction with EPA criteria and other available toxicity information to determine the adequacy of technology-based permit limits and the need for additional water quality-based controls.

iv. **Priority Pollutant Scan**

In accordance with the regional policy ADEQ has reviewed and evaluated the effluent in evaluating the potential toxicity of each analyzed pollutant:

- (a) The results were evaluated and compared to EPA's Minimum Quantification Levels (MQLs) to determine the potential presence of a respective toxic pollutant. Those pollutants which are greater than or equal to the MQLs are determined to be reasonably present in the effluent and an evaluation of their potential toxicity is necessary.
- (b) Those pollutants with one datum shown as "non-detect" (ND), providing the level of detection is equal to or lower than MQL are determined to be not potentially present in the effluent and eliminated from further evaluation.
- (c) Those pollutants with a detectable value even if below the MQL are determined to be reasonably present in the effluent and an evaluation of their potential toxicity is necessary.
- (d) For those pollutants with multiple data values and all values are determined to be non-detect, therefore, no further evaluation is necessary. However, where data set includes some detectable concentrations and some values as ND, one-half of the detection level is used for those values below the level of detection to calculate the geometric mean of the data set.

The concentration of each pollutant after mixing with the receiving stream was compared to the applicable water quality standards as established in the Arkansas Water Quality Standards, Reg. No. 2 and with the aquatic toxicity, human health, and drinking water criteria obtained from the "Quality Criteria for Water, 1986 (Gold Book)". The following expression was used to calculate the pollutant instream waste concentration(IWC):

$$IWC = ((C_e \times Q_e) + (C_b \times Q_b)) / (Q_e + Q_b)$$

where:

IWC = instream concentration of pollutant after mixing with receiving stream (Fg/l)

C_e = pollutant concentration in effluent (Fg/l)

Q_e = effluent flow of facility (cfs)

C_b = background concentration of pollutant in receiving stream (Fg/l)

Q_b = background flow of receiving stream (cfs)

The following values were used in the IWC calculations:

C_e = varies with pollutant. A single value from the Priority Pollutant Screen (PPS) submitted by the permittee as part of the NPDES permit application or the geometric mean of a group of data points (less than 20 data points) is multiplied by a factor of 2.13. This factor is based on EPA's Region VI procedure (See attachment IV of Continuing Planning Process (CPP)) to extrapolate limited data sets to better evaluate the potential toxicity for higher effluent concentrations to exceed water quality standards. This procedure employs a statistical approach which yields an estimate of a selected upper percentile value (the 95th percentile) of an effluent data set which would be expected to exceed 95% of effluent concentrations in a discharge. If 20 or more data points during the last two years are available, do not multiply by 2.13, but instead use the maximum reported values.

Q_e = 15.6 MGD = 24.10 cfs, the design flow of the POTW

C_b = 0 μ g/l

Q_b = (See below):

(e) Aquatic Toxicity

Chronic Toxicity: Flow = 0.80 cfs, for comparison with chronic aquatic toxicity. This flow is **67** percent of the 7-day, 10-year low-flow (7Q10) for the receiving stream. The 7Q10 of 1.2 cfs is based on "Identification and Classification of Perennial Stream of Arkansas", Arkansas Geological Commission Map.

Acute Toxicity: Flow = 0.4 cfs, for comparison with acute aquatic toxicity. This flow is 33 percent of the 7Q10 for the receiving stream.

(f) Bioaccumulation

Flow = 4 cfs, for comparison with bioaccumulation criteria. This flow is the long term average (LTA) of the receiving stream which is based on a memorandum dated March 10, 1993, for small stream (7Q10 < 100 cfs)

(g) Drinking Water

Flow = 1.2 cfs, for comparison with drinking water criteria. This flow is the 7Q10 for the receiving stream.

The following values were used to determine limits for the pollutants:

Hardness = 148 mg/l, based on attachment VI of CPP.

pH = 7.79 s.u., based on compliance data from "Arkansas Water Quality Inventory Report"305(b).

v. **Water Quality Standards for Metals and Cyanide**

Standards for Chromium (VI), Mercury, Selenium, and Cyanide are expressed as a function of the pollutant's water-effect ratio (WER), while standards for cadmium, chromium (III), copper, lead, nickel, silver, and zinc are expressed as a function of the pollutant's water-effect ratio, and as a function of hardness.

The **Water-effect ratio** (WER) is assigned a value of 1.0 unless scientifically defensible study clearly demonstrates that a value less than 1.0 is necessary or a value greater than 1.0 is sufficient to fully protect the

designated uses of the receiving stream from the toxic effects of the pollutant.

The WER approach compares bioavailability and toxicity of a specific pollutant in receiving water and in laboratory test water. It involves running toxicity tests for at least two species, measuring LC50 for the pollutant using the local receiving water collected from the site where the criterion is being implemented, and laboratory toxicity testing water made comparable to the site water in terms of chemical hardness. The ratio between site water and lab water LC50 is used to adjust the national acute and chronic criteria to site specific values.

vi. **Conversion of Dissolved Metals Criteria for Aquatic Life to Total Recoverable Metal**

Metals criteria established in Regulation No. 2 for aquatic life protection are based on dissolved metals concentrations and hardness values (See Page 6 of **Attachment 1**). However, Federal Regulations cited at 40 CFR 122.45(c) require that effluent limitations for metals in NPDES permits be expressed as total recoverable (See Pages 1 and 6 of **Attachment 1**). Therefore, a dissolved to the total recoverable metal conversion must be implemented. This involves determining a linear partition coefficient for the metal of concern and using this coefficient to determine the fraction of metal dissolved, so that the dissolved metal ambient criteria may be translated to a total effluent limit. The formula for converting dissolved metals to total recoverable metals for streams and lakes are provided in **Attachment 2** and Region 6 Implementation Guidance for Arkansas Water Quality Standards promulgated at 40 CFR 131.36.

vii. **Results of the comparison of the submitted information with the appropriate water quality standards and criteria**

The following pollutants were determined to be present in the effluent for each pollutant as reported by the permittee.

Pollutant	Concentration Reported, µg/l	MLL, µg/l*
Antimony	4.40	30
Arsenic	0.50	0.10
Nickel	48.0	10
Zinc	46.0	2

Pollutant	Concentration Reported, µg/l	MQL, µg/l*
Chloroform	6.40	1.6
Methylene Chloride	25.0	20
Gamma-BHC	0.009	0.004

*Detection levels achieved during testing. At or below the required MQL.

However, ADEQ has determined from the information submitted by the permittee that no Arkansas water quality standards or Gold Book criteria are exceeded. Therefore, no permit action is necessary to maintain these standards or criteria. (See **Attachment 1.**)

viii. **Oklahoma Water Quality Standards Evaluation**

The effluent from this facility flows into Spring Creek, then to Osage Creek, then to the Illinois River which is a Water of the State of Oklahoma. Therefore; ADEQ compared the IWC of the pollutants in Item 12.e.vii to the Oklahoma Water Quality Standards. (See Attachment 6 for calculations.)

A. **Effluent Analysis Summary for Aquatic Life Protection**

Pollutant	C _e , µg/l	C _e * 2.13, µg/l	IWC, µg/l	WQ Acute+, µg/l	WQ Chronic+, µg/l
Antimony	4.40	9.37	9.37	*	*
Arsenic	0.50	1.07	1.07	360	190
Nickel	48.0	102.24	102.24	1495.2	166.1
Zinc	46.0	97.98	97.98	120.9	110.4
Chloroform	6.40	13.63	13.63	*	*
Methylene Chloride	25.0	53.25	53.25	*	*
Gamma-BHC	0.009	0.02	0.02	2.0	0.08

* Oklahoma does not have any numerical criteria for these substances.

C_e Effluent concentration based on Priority Pollutant Scan (PPS) which are greater than or equal to the MQL.

C_e X 2.13 = Reasonable potential factor. (Referred to as C₉₅ in ODEQ's CPP)

Instream Waste Concentration (IWC). IWC (Referred to as C in ODEQ's CPP) is determined by first calculating the dilution capacity of the receiving stream, Q*. The value of Q* will determine which of three equations is to be used to calculate C, the concentration on the mixing zone boundary. (Following equations were taken from Part III of Chapter 2, page 114 in ODEQ's CPP)

$$Q^* = Q_e / Q_u = 24.10 / 1.2 = 20.08$$

$$Q_e = \text{design flow of facility} = 15.6 \text{ MGD} = 24.10 \text{ cfs}$$

$$Q_u = 7Q_{10} \text{ of receiving stream} = 1.2 \text{ cfs}$$

Since Q* is greater than 0.3333, the following equation from ODEQ's CPP will be used to determine the concentration on the mixing zone:

$$C = C_{95}$$

+ Based on Oklahoma Water Resource Board (OWRB) proposed 1994 and revised on 1995 numerical criteria. Oklahoma water quality standards (OWQS) for the numerical chronic and acute criteria for toxic substances-Fish and Wildlife Propagation (OAC 785:45-5-12(e)(6)(G), amended 1997. All hardness dependent criteria were calculated using a hardness value of 106.55 mg/l CaCO₃ for Segment No. 121700, as taken from Oklahoma's Continuing Planning Process (CPP) March 1997.

As seen in the above table, none of the calculated IWCs for which Oklahoma has numerical criteria are sufficiently high so as to pose a potential violation of Oklahoma water quality criteria. Therefore, no permit limits are necessary for aquatic life protection.

For the substances for which Oklahoma does not have numerical criteria, ADEQ has determined that these substances do not demonstrate reasonable potential under Arkansas criteria, no permit action is necessary to protect the aquatic life.

B. Effluent Analysis Summary for Human Health Protection

Pollutant	C _e , µg/l	C _e * 2.13, µg/l	IWC, µg/l	Human Health Standard+, µg/l
Antimony	4.40	9.37	8.04	*
Arsenic	0.50	1.07	0.91	205
Nickel	48.0	102.24	87.69	4583
Zinc	46.0	97.98	84.03	*
Chloroform	6.40	13.63	11.69	4708
Methylene Chloride	25.0	53.25	45.67	*
Gamma-BHC	0.009	0.02	0.02	0.4908

* Oklahoma does not have any numerical criteria for these substances.

C_e Effluent concentration based on Priority Pollutant Scan (PPS) which are greater than or equal to the MQL.

C_e X 2.13 = Reasonable potential factor.

IWC is computed using a mass balance model for complete mixing between the effluent and the receiving water. The equation is as follows:

$$IWC * (Q_e + Q_{lta}) = Q_e * (C_e * 2.13) + Q_{lta} * C_u$$

C_u = background concentration, assumed to be zero.

Q_e = design flow = 24.10 cfs

Q_{lta} = long term average flow = 4 cfs

+ Based on Oklahoma Water Resource Board (OWRB) proposed 1994 and revised on 1995 numerical criteria (OAC 785:45-5-12(e)(8)(B)).

As seen in the above table, none of the calculated IWCs for which Oklahoma has numerical criteria are sufficiently high so as to pose a potential violation of Oklahoma water quality criteria. Therefore, no permit limits are necessary for human health protection.

For the substances for which Oklahoma does not have numerical criteria, ADEQ has determined that these substances do not demonstrate reasonable potential under Arkansas criteria, no permit action is necessary to protect human health.

f. **Total Residual Chlorine (TRC) Requirements**

The TRC requirements are continued from the previous permit.

g. **Final Limitations**

The following effluent limitations or "report" requirements were placed in the permit based on the more stringent of the technology-based, water quality-based or previous NPDES permit limitations:

Parameter	Water Quality-Based		Technology-Based/BPJ		Previous NPDES Permit		Final Permit	
	Monthly Avg. mg/l	7-day Avg. mg/l	Monthly Avg. mg/l	7-day Avg. mg/l	Monthly Avg. mg/l	7-day Avg. mg/l	Monthly Avg. mg/l	7-day Avg. mg/l
CBOD5								
(May - Oct)	10	15	25	40	10	15	10	15
(Nov - Apr)	25	38	25	40	25	38	25	38
TSS								
(May - Oct)	15	23	30	45	15	23	15	23
(Nov - Apr)	30	45	30	45	30	45	30	45
NH3-N								
(May - Oct)	1.5	2.3	N/A	N/A	1.5	2.3	1.5	2.3
(Nov - Apr)	4	6	N/A	N/A	4	6	4	6
DO (inst. Min) (Year Round)	6.0		N/A		6.0		6.0	
DO (Minimum) (May - Oct.)	7.9	N/A	N/A	N/A	7.9	N/A	7.9	N/A
DO (Minimum) (Nov., Dec., Mar., & Apr.)	9.5	N/A	N/A	N/A	9.5	N/A	9.5	N/A
DO (Minimum) (Jan. and Feb.)	7.5	N/A	N/A	N/A	7.5	N/A	7.5	N/A
FCB (col/100ml)								

Parameter	Water Quality-Based		Technology-Based/BPJ		Previous NPDES Permit		Final Permit	
	Monthly Avg. mg/l	7-day Avg. mg/l	Monthly Avg. mg/l	7-day Avg. mg/l	Monthly Avg. mg/l	7-day Avg. mg/l	Monthly Avg. mg/l	7-day Avg. mg/l
(Apr - Sept)	200	400	N/A	N/A	200	400	200	400
(Oct - Mar)	1000	2000	N/A	N/A	1000	2000	1000	2000
Total Phosphorous	N/A	N/A	1	N/A	N/A	N/A	1	N/A
TRC (Inst. Max)	N/A		< 0.1 mg/l		<0.1 mg/l		<0.1 mg/l	
pH	6 - 9 s.u.		6 - 9 s.u.		6 - 9 s.u.		6 - 9 s.u.	

h. Biomonitoring

Section 101(a)(3) of the Clean Water Act states that ".....it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited." In addition, ADEQ is required under 40 CFR Part 122.44(d)(1), adopted by reference in Regulation 6, to include conditions as necessary to achieve water quality standards as established under Section 303 of the Clean Water Act. Arkansas has established a narrative criteria which states "toxic materials shall not be present in receiving waters in such quantities as to be toxic to human, animal, plant or aquatic life or to interfere with the normal propagation, growth and survival of aquatic biota."

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates the effects of synergism of effluent components and receiving stream water quality characteristics. It is the national policy of EPA to use bioassays as a measure of toxicity to allow evaluation of the effects of a discharge upon a receiving water (49 Federal Register 9016-9019, March 9, 1984). EPA Region 6 and the State of Arkansas are now implementing the Post Third Round Policy and Strategy established on September 9, 1992. Biomonitoring of the effluent is thereby required as a condition of this permit to assess potential toxicity. The biomonitoring procedures stipulated as a condition of this permit are as follows:

TOXICITY TESTS

FREQUENCY

Chronic Biomonitoring

Once/quarter

Requirements for measurement frequency are based on appendix D of CPP.

Since 7Q10 is less than 100 cfs (ft³/sec) and dilution ratio is less than 100:1, chronic biomonitoring requirements will be included in the permit.

The calculations for dilution used for chronic biomonitoring are as follows:

$$\text{Critical dilution (CD)} = (Q_d / (Q_d + Q_b)) \times 100$$

$$Q_d = \text{Design flow or Average flow} = 15.6 \text{ MGD} = 24.10 \text{ cfs}$$

$$7Q_{10} = 1.20 \text{ Cfs}$$

$$Q_b = \text{Background flow} = (0.67) \times 7Q_{10} = 0.804 \text{ cfs}$$

$$CD = (24.10) / (24.10 + 0.804) \times 100 = 97\%$$

Toxicity tests shall be performed in accordance with protocols described in "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-91/002, July 1994. A minimum of five effluent dilutions in addition to an appropriate control (0%) are to be used in the toxicity tests. These additional effluent concentrations are 31%, 41%, 55%, 73%, and 97% (See **Attachment I** of CPP). The low-flow effluent concentration (critical dilution) is defined as 97% effluent. The requirement for chronic biomonitoring tests is based on the magnitude of the facility's discharge with respect to receiving stream flow. The stipulated test species, *Ceriodaphnia dubia* and the Fathead Minnow (*Pimephales promelas*) are indigenous to the geographic area of the facility; the use of these is consistent with the requirements of the State water quality standards. The biomonitoring frequency has been established to provide data representative of the toxic potential of the facility's discharge, in accordance with the regulations promulgated at 40 CFR Part 122.48.

Results of all dilutions as well as the associated chemical monitoring of pH, temperature, hardness, dissolved oxygen conductivity, and alkalinity shall be reported according to EPA/600/4-91/002, July 1994 and shall be submitted as an attachment to the Discharge Monitoring Report (DMR).

This permit may be reopened to require further biomonitoring studies, Toxicity Reduction Evaluation (TRE) and/or effluent limits if biomonitoring data submitted to the Department shows toxicity in the permittee's discharge. Modification or revocation of this permit is subject to the provisions of 40 CFR 122.62, as adopted by reference in ADEQ Regulation No. 6. Increased or intensified toxicity testing may also be required in accordance with Section 308 of the Clean Water Act and Section 8-4-201 of the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended).

Administrative Records

The following information summarized toxicity test submitted by the permittee during the term of the current permit at outfall **001** (See **Attachment 4.**)

i. **Sample Type and Sampling Frequency**

Regulations promulgated at 40 CFR 122.44(i)(1) require permit to establish monitoring requirements which assure compliance with permit limitations. Requirements for sample type and sampling frequency for NH₃-N have been based on the current NPDES permit. Requirements for sampling frequency for CBOD₅, TSS, FCB, TRC, D.O., and pH were determined through the use of the last two years of monitoring data and the NPDES Performance Based Reduction Worksheet. Requirements for the sample type for these pollutants were based upon the current NPDES permit. Requirements for the sample type and frequency of phosphorous were based upon the judgement of the permit writer.

j. **Changes from the previously issued permit**

1. The chronic biomonitoring language has been modified in Parts IA and III of the permit.
2. Sludge language in Part III of the permit has been modified.
3. The odor language has been removed from Part III of the permit.
4. Overflow language has been added to Part III of the permit.
5. Monitoring frequencies for CBOD₅, TSS, FCB, TRC, D.O., and pH have been changed based upon the last two years of monitoring data and the NPDES Performance Based Reduction Worksheet.
6. A general reopener clause has been added to Part III of the permit.
7. The method for reporting FCB has been added to Part III of the permit.
8. The facility latitude and longitude have been added to the permit.
9. Total phosphorous effluent limitations have been added to the permit. Interim limits and a schedule of compliance have been included. The permittee will be required to comply with the final limits no later than December 1, 2007.
10. A ceiling concentration was for molybdenum (75 mg/kg, dry weight basis) was added to Part III.8.A.4 of the permit. This was added based upon requirements of 40 CFR Part 503.
11. Units for pH (SU) and C.E.C. (mequivalent/ 100 grams) were added in Part III.8.B.1.b.(1) of the permit for clarification purposes.
12. In Part III.8.B.1.b.(1) of the permit, electrical conductivity was changed to Salt Content (micro mohs/ cm) for clarification purposes.

k. **Storm Water Pollution Prevention Plan Requirements**

The permittee holds general stormwater permit ARR00C376. Therefore, stormwater pollution prevention plan requirements have not been included in this permit.

13. **SCHEDULE OF COMPLIANCE.**

Compliance with final effluent limitations is required by the following schedule:

1. Compliance is required on the effective date of the permit.
2. The permittee shall develop a plan to reduce the phosphorous in the effluent to 1 mg/l on a monthly average. Quarterly progress reports shall be made to the Department detailing the permittee's progress. This permit may be reopened and/or a construction permit may be required as part of the permittee's plan.

14. **OPERATION AND MONITORING.**

The applicant is at all times required to properly operate and maintain the treatment facility; to monitor the discharge on a regular basis; and report the results monthly. The monitoring results will be available to the public.

15. **SOURCES.**

The following sources were used to draft the permit:

- a. NPDES application No. AR0022063 received 08/27/2002.
- b. Arkansas Water Quality Management Plan(WQMP).
- c. Regulation No. 2.
- d. Regulation No. 6.
- e. 40 CFR 122, 125, 133.
- f. NPDES permit file AR0022063.
- g. Discharge Monitoring Reports (DMRs).
- h. "Arkansas Water Quality Inventory Report 2000 (305B)", ADEQ.
- i. "Identification and Classification of Perennial Streams of Arkansas", Arkansas Geological Commission.
- j. Continuing Planning Process (CPP).
- k. Technical Support Document For Water Quality-based Toxic Control.
- l. Region 6 Implementation Guidance for Arkansas Water Quality Standards promulgated at 40 CFR 131.36.
- m. Meeting between EPA, ADEQ, and the permittee dated 12/4/2003.

16. **NPDES POINT OF CONTACT.**

For additional information, contact:

Loretta Reiber, P.E.
NPDES Branch, Water Division
Arkansas Department of Environmental Quality
8001 National Drive
Post Office Box 8913
Little Rock, Arkansas 72219-8913
Telephone: (501) 682-0622

Arkansas Department of Environmental Quality NPDES authorization to discharge to Waters of the State, permit number AR0022063.

The applicant's mailing address is:

City of Springdale
P.O. Box 769
Springdale, AR 72765-0769

The discharge from this facility is made into Spring Creek, then to Osage Creek, then to the Illinois River, then to Tenkiller Reservoir, then to the Arkansas River in Segment 3J of the Arkansas River Basin. The receiving stream is a Water of the State classified for primary contact recreation, raw water source for public, industrial, and agricultural water supplies, propagation of desirable species of fish and other aquatic life, and other compatible uses. The facility is located as follows: in Northwest Springdale, on Spring Creek, at 2910 Silent Grove Road; Latitude: 36° 12' 49"; Longitude: 94° 09' 48" in Section 22, Township 18 North, Range 30 West in Benton County, Arkansas, and the outfall is located at the following coordinates: Latitude: 36° 12' 49" Longitude: 94° 09' 48"

Sludge will be disposed of in a landfill or will be land applied in accordance with the terms set forth in Part III of the permit. Land application may take place at the following locations: (Note: This list is a sample of the sites where the permittee may land apply sludge. A full list is on file at ADEQ and is available on request.)

Owner	Field #	Acres	Section	Township	Range
Warren Reid	3	90	17	18 North	30 West
George Smith	6	27	22	18 North	30 West
Gene Andrews	7	48	22/27	18 North	30 West
Gene Smith	10	13.5	17	18 North	30 West
Max Hall	14	42	28/33	18 North	30 West
Harold Whittle	19	28.2	8	17 North	30 West
Bruce Fink	25	10	24	18 North	30 West
Gene Andrews & Dennis Malone	29	30.7	15	18 North	31 West
Minnie Beasley	30	54	24	18 North	30 West
Gene Andrews	34	41.5	21	18 North	30 West
Richard Finn	36	70	28/33	18 North	31 West
Jay Sharp	37	50	17/20	18 North	30 West
Clayton Simon	41	56	16	18 North	29 West
Randy Hollingsworth	42	9	21	18 North	30 West
Gene Andrews	43	38.8	20	18 North	30 West
Glenn Graham	44	44	29	18 North	29 West
Kerrie Campbell	44A	60	29	18 North	29 West
Jerry Hinshaw	45	84	24	17 North	31 West
Euel Pinkley	47	55	20	18 North	30 West
J.W. Tannahill	48	55	14	18 North	30 West
Ralph Pendergraft	49	26	15/22	17 North	31 West

Owner	Field #	Acres	Section	Township	Range
Jess Harp	50	19	21	17 North	31 West
Dale Rouse	51	68	23/26	17 North	31 West
Jackie King	53	75.5	21	18 North	30 West
Marjorie Brooks	54	93.9	14	18 North	30 West
Glen Parsons	56	50.5	26	18 North	30 West
Carl Potter	58	33	17/18	18 North	29 West
Joe Claypool	60	20.9	9	17 North	30 West
Wade Jones	61	22	22	17 North	31 West
Roy Wells	62	32	21/22	18 North	31 West
Steve Geels, Jr.	62A	23	21/22	18 North	31 West
Joe Simco	63	69	22	17 North	31 West
Gene Andrews and Troy Rhine	65	54	22	19 North	30 West
Gretchen Adams	67	51.6	13	18 North	30 West
Bill Greenway	68	51.6	13	17 North	31 West
Gene Andrews	71	31.7	15	18 North	31 West

A Fact Sheet is available upon request. Under the standard industrial classification (SIC) code 4952 the applicant's activities are the operation of a municipal treatment plant.

Changes from the previously issued permit are as follows:

1. The chronic biomonitoring language has been modified in Parts IA and III of the permit.
2. Sludge language in Part III of the permit has been modified.
3. The odor language has been removed from Part III of the permit.
4. Overflow language has been added to Part III of the permit.
5. Monitoring frequencies for CBOD5, TSS, FCB, TRC, D.O., and pH have been changed based upon the last two years of monitoring data and the NPDES Performance Based Reduction Worksheet.
6. A general reopener clause has been added to Part III of the permit.
7. The method for reporting FCB has been added to Part III of the permit.
8. The facility latitude and longitude have been added to the permit.
9. Total phosphorous effluent limitations have been added to the permit. Interim limits and a schedule of compliance have been included. The permittee will be required to comply with the final limits no later than December 1, 2007.
10. A ceiling concentration was for molybdenum (75 mg/kg, dry weight basis) was added to Part III.8.A.4 of the permit. This was added based upon requirements of 40 CFR Part 503.
11. Units for pH (SU) and C.E.C. (mequivalent/ 100 grams) were added in Part III.8.B.1.b.(1) of the permit for clarification purposes.
12. In Part III.8.B.1.b.(1) of the permit, electrical conductivity was changed to Salt Content (micro mohs/ cm) for clarification purposes.

ARKANSAS Department of Environmental Quality NPDES AUTHORIZATION
TO DISCHARGE TO Waters of the State, PERMIT NUMBER AR0022063

This is to give notice that the Arkansas Department of Environmental Quality has developed Draft Permit for the following applicant under the National Pollutant Discharge Elimination System and the Arkansas Water and Air Pollution Control Act. Development of the draft permit(s) was based on a preliminary staff review.

Arkansas Department of Environmental Quality NPDES authorization to discharge to Waters of the State, permit number AR0022063 .

The applicant's mailing address is:

City of Springdale
P.O. Box 769
Springdale, AR 72765-0769

The discharge from this facility is made into Spring Creek, then to Osage Creek, then to the Illinois River, then to Tenkiller Reservoir, then to the Arkansas River in Segment 3J of the Arkansas River Basin. The receiving stream is a Water of the State classified for primary contact recreation, raw water source for public, industrial, and agricultural water supplies, propagation of desirable species of fish and other aquatic life, and other compatible uses. The facility is located as follows: in Northwest Springdale, on Spring Creek, at 2910 Silent Grove Road; Latitude: 36°12' 49"; Longitude: 94° 09' 48" in Section 22, Township 18 North, Range 30 West in Benton County, Arkansas, and the outfall is located at the following coordinates: Latitude: 36° 12' 49" Longitude: 94° 09' 48".

Sludge will be disposed of in a landfill or will be land applied in accordance with the terms set forth in Part III of the permit. Land application may take place at the following locations: (Note: This list is a sample of the sites where the permittee may land apply sludge. A full list is on file at ADEQ and is available on request.)

Owner	Field #	Acres	Section	Township	Range
Warren Reid	3	90	17	18 North	30 West
George Smith	6	27	22	18 North	30 West
Gene Andrews	7	48	22/27	18 North	30 West
Gene Smith	10	13.5	17	18 North	30 West
Max Hall	14	42	28/33	18 North	30 West
Harold Whittle	19	28.2	8	17 North	30 West
Bruce Fink	25	10	24	18 North	30 West
Gene Andrews & Dennis Malone	29	30.7	15	18 North	31 West
Minnie Beasley	30	54	24	18 North	30 West
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Jess Harp	50	19	21	17 North	31 West
Dale Rouse	51	68	23/26	17 North	31 West
Jackie King	53	75.5	21	18 North	30 West
Marjorie Brooks	54	93.9	14	18 North	30 West
Glen Parsons	56	50.5	26	18 North	30 West
Carl Potter	58	33	17/18	18 North	29 West
Joe Claypool	60	20.9	9	17 North	30 West
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11. Units for pH (SU) and C.E.C. (mequivalent/ 100 grams) were added in Part III.8.B.1.b.(1) of the permit for clarification purposes.
12. In Part III.8.B.1.b.(1) of the permit, electrical conductivity was changed to Salt Content (micro mohs/ cm) for clarification purposes.

The permit(s) will become effective on March 1, 2004, unless:

1. Comments are received prior to February 16, 2004, in which case the permit will be effective April 1, 2004.
2. A public hearing is held requiring delay of the effective date.

The ADEQ contact person for submitting written comments, requesting information regarding the draft permit, and/or obtaining copies of the permit and the Fact Sheet is:

Loretta Reiber, P.E.
 NPDES Branch, Water Division
 Arkansas Department of Environmental Quality
 Post Office Box 8913
 Little Rock, Arkansas 72219-8913
 (501) 682-0622

NPDES comments and public hearing procedures may be found at 40 CFR 124.10 and 124.12 (49 Federal Register 14264, April 1, 1983, as amended at 49 Federal Register 38051, September 26, 1984). The period during which written comments on the draft permit may be submitted extends for 30 days from the date of this notice. During the comment period, any interested person may request a public hearing by filing a written request which must state the issues to be raised. A public hearing will be held if ADEQ finds a significant degree of public interest.

ADEQ will notify the applicant, and each person who has submitted written comments or requested notice, of the final permit decision. A final permit decision means a final decision to issue, deny, modify, revoke and reissue, or terminate a permit. Any interested person who has submitted comments may appeal a final decision by ADEQ in accordance with the Arkansas Department of Environmental Quality Regulation No. 8 (Administrative Procedures).

ATTACHMENT 1

Priority Pollutant Scan Calculation

Permittee City of Springdale
 Receiving Stream Spring Creek
 Permit number AR0022063 Qe for:
 Flow (Qe) 15.60 MGD Municipalities = Design Flow
 Flow (Qe) 24.10 CFS Industrial Discharges = Highest monthly average flow of the last two years
 7Q10 = 1.20 CFS
 Long Term Average = 4.00 CFS TSS for:
 Using Diffusers No Yes/No Gulf Coastal 5.5 mg/l Ouach Mount = 2 mg/l
 pH = 7.79 S.U. Ark River Valley = 3 mg/l Ozark Highlands = 2.5 mg/l
 Total Hardness 148.00 mg/l Boston Mount = 1.3 mg/l Delta = 8 mg/l
 TSS 2.5 mg/l
 (% of 7Q10 for Chronic) 0.67 Total Hardness for:
 (% of 7Q10 for Acute) 0.33 Arkansas River = 125 mg/l Red River = 211 mg/l
 Ouachita River = 28 mg/l St. Francis River = 103 mg/l

For the following receiving enter 0.06 in cell "C17" White River = 116 mg/l

Mississippi, Arkansas, Red River. Gulf Coastal = 31 mg/l Ouachita Mount = 31 mg/l
 White (Below confluence with Black River) Ozark Highlands = 148 mg/l Ark River Valley = 25 mg/l
 Ouachita (below Confluence with Little Miss. River Boston Mount = 25 mg/l Delta = 81 mg/l

Upstream Flow (Qb) = 0.80 (Chronic) 0.40 (Acute)
 Pollutant Concentration Upstream (Cb) = 0 ug/l
 Water Effect Ratio(WER): 1.00
 Cancer Risk Level: 1.00E-05 (STATE); 1.00e-6 (EPA)

IWC = Instream concentration of pollutant after mixing with the receiving stream
 $IWC = (Ce \cdot Qe + Cb \cdot Qb) / (Qb + Qe)$
 Ce = Pollutant concentration in the effluent (ug/l) = Reported value as Total Recov

	Reported Value (Ce) (ug/l)	Ce*2.13 (ug/l)	EPA Acute (ug/l)	STATE Acute (ug/l)	IWC Acute (ug/l)	EPA Chronic (ug/l)	STATE Chronic (ug/l)	IWC Chronic (ug/l)	EPA Bioacc. (ug/l)	STATE Bioacc. (ug/l)	IWC Bioacc. (ug/l)	Violation of Acute	Chr	Bio
METALS and CYANIDE														
1. Antimony Total	4.40	9.37	9000	*****	9.22	1600	*****	9.07	4300	*****	8.04	NO	NO	NO
2. Arsenic Total	0.50	1.07	581.30	*****	1.05	306.80	*****	1.03	1.40	*****	0.91	NO	NO	NO
3. Beryllium Total	0.00	0.00	130.00	*****	0.00	5.30	*****	0.00	*****	0.076	0.00	NO	NO	NO
4. Cadmium Total*	0.00	0.00	*****	25.76	0.00	*****	6.27	0.00	*****	*****	0.00	NO	NO	NO
6. Chromium (Tri)*	0.00	0.00	*****	3466.72	0.00	*****	1124.57	0.00	*****	*****	0.00	NO	NO	NO
7. Chromium (hex)	0.00	0.00	*****	15.71	0.00	*****	10.58	0.00	*****	*****	0.00	NO	NO	NO
8. Copper Total*	0.00	0.00	*****	57.11	0.00	*****	36.81	0.00	*****	*****	0.00	NO	NO	NO
9. Lead Total*	0.00	0.00	*****	430.62	0.00	*****	16.78	0.00	*****	*****	0.00	NO	NO	NO
10. Mercury Total*	0.00	0.00	*****	7.24	0.00	*****	0.0120	0.00	0.15	*****	0.00	NO	NO	NO
12. Nickel Total*	48.00	102.24	*****	3405.03	100.59	*****	378.16	98.94	4600	*****	87.69	NO	NO	NO
13. Selenium Total	0.00	0.00	*****	20.00	0.00	*****	5.00	0.00	*****	*****	0.00	NO	NO	NO
14. Silver Total*	0.00	0.00	*****	22.5816	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
15. Thallium Total	0.00	0.00	*****	1400	0.00	40.00	*****	0.00	6.30	*****	0.00	NO	NO	NO
16. Zinc Total*	46.00	97.98	*****	422.06	96.40	*****	385.40	94.82	*****	*****	84.03	NO	NO	NO
129. Phenols, Total	0.00	0.00	*****	*****	*****	*****	*****	*****	*****	*****	0.00	NO	NO	NO
17. Cyanide Total	0.00	0.00	*****	22.36	0.00	*****	5.20	0.00	220000	*****	0.00	NO	NO	NO

* See linear partition coefficient (Page 6)

	Reported	Ce*2.13	EPA	STATE	IWC	EPA	STATE	IWC	EPA	STATE	IWC	Violation of
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	Value (Ce) (ug/l)	(ug/l)	Acute (ug/l)	Acute (ug/l)	Acute (ug/l)	Chronic (ug/l)	Chronic (ug/l)	Chronic (ug/l)	Bioacc. (ug/l)	Bioacc. (ug/l)	Bioacc. (ug/l)	Acute Chr	Bio	
DIOXIN														
18. 2-3-7-8-TCDD	0.00	0.00	0.01	*****	0.00	*****	*****	0.00	1.40E-07	1.00E-09	0.00	NO	NO	NO
VOLATILE COMPOUNDS														
19. Acrolein	0.00	0.00	68.00	*****	0.00	21.00	*****	0.00	780.00	*****	0.00	NO	NO	NO
20. Acrylonitrile	0.00	0.00	7550	*****	0.00	2600	*****	0.00	6.60	*****	0.00	NO	NO	NO
21. Benzene	0.00	0.00	5300	*****	0.00	*****	*****	0.00	710.00	*****	0.00	NO	NO	NO
22. Bromoform	0.00	0.00	*****	*****	0.00	*****	*****	0.00	3600.00	*****	0.00	NO	NO	NO
23. Carbon T Tet	0.00	0.00	35200	*****	0.00	*****	*****	0.00	44.00	*****	0.00	NO	NO	NO
24. Chlorobenzene	0.00	0.00	250.00	*****	0.00	50.00	*****	0.00	2.10E+04	*****	0.00	NO	NO	NO
25. Chlorodibromomethane	0.00	0.00	*****	*****	0.00	*****	*****	0.00	340.00	*****	0.00	NO	NO	NO
26. Chloroethane	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
27. 2-Chloroethylvinyl ether	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
28. Chloroform	6.40	13.63	28900	*****	13.41	1240	*****	13.19	4700.00	*****	11.69	NO	NO	NO
29. Dichlorobromomethane	0.00	0.00	*****	*****	0.00	*****	*****	0.00	220.00	*****	0.00	NO	NO	NO
30. 1-1-Dichloroethane	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
31. 1-2-Dichloroethane	0.00	0.00	118000	*****	0.00	20000	*****	0.00	990.00	*****	0.00	NO	NO	NO
32. 1-1-Dichloroethylene	0.00	0.00	11600	*****	0.00	*****	*****	0.00	32.00	*****	0.00	NO	NO	NO
33. 1,2 Dichloropropane	0.00	0.00	23000	*****	0.00	5700	*****	0.00	*****	*****	0.00	NO	NO	NO
34. 1,3 Dichloropropylene	0.00	0.00	6060	*****	0.00	244.00	*****	0.00	1700.00	*****	0.00	NO	NO	NO
35. Ethylbenzene	0.00	0.00	32000	*****	0.00	*****	*****	0.00	29000.00	*****	0.00	NO	NO	NO
37. Methyl Chloride	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
36. Methyl bromide	0.00	0.00	*****	*****	0.00	*****	*****	0.00	4000.00	*****	0.00	NO	NO	NO
38. Methylene chloride	25.00	53.25	*****	*****	52.39	*****	*****	51.53	16000.00	*****	45.67	NO	NO	NO
39. 1-1-2-2-Tetrachloroethane	0.00	0.00	9320	*****	0.00	2400	*****	0.00	110.00	*****	0.00	NO	NO	NO
40. Tetrachloroethylene	0.00	0.00	5280	*****	0.00	840	*****	0.00	88.50	*****	0.00	NO	NO	NO
41. Toluene	0.00	0.00	17500	*****	0.00	*****	*****	0.00	2.0E+05	*****	0.00	NO	NO	NO
42. 1,2-trans-dichloroethylene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
44. 1-1-2-Trichloroethane	0.00	0.00	18000	*****	0.00	9400	*****	0.00	420.00	*****	0.00	NO	NO	NO
43. 1-1-1-Trichloroethane	0.00	0.00	18000	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
45. Trichloroethylene	0.00	0.00	45000	*****	0.00	21900	*****	0.00	810.00	*****	0.00	NO	NO	NO
46. Vinyl Chloride	0.00	0.00	*****	*****	0.00	*****	*****	0.00	5250.00	*****	0.00	NO	NO	NO

	Reported Value (Ce) (ug/l)	Ce*2.13 (ug/l)	EPA Acute (ug/l)	STATE Acute (ug/l)	IWC Acute (ug/l)	EPA Chronic (ug/l)	STATE Chronic (ug/l)	IWC Chronic (ug/l)	EPA Bioacc. (ug/l)	STATE Bioacc. (ug/l)	IWC Bioacc. (ug/l)	Violation of Acute Chr	Bio	
ACID COMPOUNDS														
47. 2-Chlorophenol	0.00	0.00	4380	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
48. 2-4-Dichlorophenol	0.00	0.00	2020	*****	0.00	365	*****	0.00	*****	*****	0.00	NO	NO	NO
49. 2-4 Dimethylphenol	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
50. 4,6-Dinitro-o-Cresol	0.00	0.00	*****	*****	0.00	*****	*****	0.00	765.00	*****	0.00	NO	NO	NO
51. 2,4-Dinitrophenol	0.00	0.00	*****	*****	0.00	*****	*****	0.00	14000	*****	0.00	NO	NO	NO
52.-53. Nitrophenols	0.00	0.00	230	*****	0.00	150	*****	0.00	*****	*****	0.00	NO	NO	NO
54. 4 Chloro-3-methylphenol	0.00	0.00	30.00	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
55. Pentachlorophenol	0.00	0.00	20.06	20.06	0.00	12.67	12.67	0.00	82.00	*****	0.00	NO	NO	NO
56. Phenol	0.00	0.00	10200	*****	0.00	2560	*****	0.00	4600000	*****	0.00	NO	NO	NO
57. 2-4-6-Trichlorophenol	0.00	0.00	*****	*****	0.00	*****	*****	0.00	65.00	*****	0.00	NO	NO	NO
BASE/NEUTRAL COMPOUNDS														
58. Acenaphthene	0.00	0.00	1700	*****	0.00	520	*****	0.00	*****	*****	0.00	NO	NO	NO
59. Acenaphthylene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
60. Anthracene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	110000.00	*****	0.00	NO	NO	NO
61. Benzidine	0.00	0.00	2500	*****	0.00	*****	*****	0.00	5.4E-03	*****	0.00	NO	NO	NO
62. Benzo(a) anthracene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.310	*****	0.00	NO	NO	NO
63. Benzo(a) pyrene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.310	*****	0.00	NO	NO	NO
64. 3,4-benzoflouranthene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.310	*****	0.00	NO	NO	NO
65. Benzo(g,h,i)perylene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
66. Benzo(k) fluoranthene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.310	*****	0.00	NO	NO	NO
67. Bis(2-chloroethoxy)methane	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
68. Bis(2-cloroethyl) Ether	0.00	0.00	*****	*****	0.00	*****	*****	0.00	14.00	*****	0.00	NO	NO	NO
69. Bis(2-Chloroisopropyl) eth	0.00	0.00	*****	*****	0.00	*****	*****	0.00	1.7E+05	*****	0.00	NO	NO	NO
70. Bis(2-ethylhexyl)phthalate	0.00	0.00	*****	*****	0.00	*****	*****	0.00	59.00	*****	0.00	NO	NO	NO
71. 4-Bromophenyl phenyl ether	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
72. Butylbenzy phthalate	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
73. 2-chloronaphthalene	0.00	0.00	1600	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
74. 4-chlorophenyl phenyl ether	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
75. Chrysene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.310	*****	0.00	NO	NO	NO
76. Dibenzo(a,h)anthracene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.310	*****	0.00	NO	NO	NO
77-79. Dichlorobenzene(1,2-1,3-1,4)	0.00	0.00	1120	*****	0.00	763	*****	0.00	2600.0	*****	0.00	NO	NO	NO
80. 3,3' Dichlorobenzidine	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.770	*****	0.00	NO	NO	NO
81. Diethyl Phthalate	0.00	0.00	*****	*****	0.00	*****	*****	0.00	1.2E+05	*****	0.00	NO	NO	NO
82. Dimethyl phthalate	0.00	0.00	*****	*****	0.00	*****	*****	0.00	2.9E+06	*****	0.00	NO	NO	NO
83. Di-n-Butyl phthalate	0.00	0.00	*****	*****	0.00	*****	*****	0.00	1.2E+04	*****	0.00	NO	NO	NO
84. 2-4-Dinitrotoluene	0.00	0.00	330	*****	0.00	230	*****	0.00	91.00	*****	0.00	NO	NO	NO
85. 2-6-Dinitrotoluene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
86. Di-n-octyl phthalate	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
87. 1,2-diphenylhydrazine	0.00	0.00	270	*****	0.00	*****	*****	0.00	5.400	*****	0.00	NO	NO	NO
88. Fluoranthene	0.00	0.00	3980	*****	0.00	*****	*****	0.00	370.00	*****	0.00	NO	NO	NO
89. Fluorene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	14000.000	*****	0.00	NO	NO	NO
90. Hexachlorobenzene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.00770	*****	0.00	NO	NO	NO
91. Hexachlorobutadiene	0.00	0.00	90.00	*****	0.00	9.30	*****	0.00	500.000	*****	0.00	NO	NO	NO
92. Hexachlorocyclopentadiene	0.00	0.00	7.00	*****	0.00	5.20	*****	0.00	1.70E+04	*****	0.00	NO	NO	NO
93. Hexachloroethane	0.00	0.00	980	*****	0.00	540	*****	0.00	89.00	*****	0.00	NO	NO	NO
Hexachlorocyclohexane	0.00	0.00	2.00	2.00	0.00	0.08	0.08	0.00	*****	*****	0.00	NO	NO	NO
94. Indeno(1,2,3-cd)pyrene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.31000	*****	0.00	NO	NO	NO
95. Isophorone	0.00	0.00	117000	*****	0.00	*****	*****	0.00	6000	*****	0.00	NO	NO	NO
96. Naphthalene	0.00	0.00	2300	*****	0.00	620	*****	0.00	*****	*****	0.00	NO	NO	NO
97. Nitrobenzene	0.00	0.00	27000	*****	0.00	*****	*****	0.00	1900.00	*****	0.00	NO	NO	NO
98. N-nitrosodimethylamine	0.00	0.00	*****	*****	0.00	*****	*****	0.00	81.00	*****	0.00	NO	NO	NO
99. N-nitrosodi-n-propylamine	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
100. N-nitrosodiphenylamine	0.00	0.00	*****	*****	0.00	*****	*****	0.00	160.00	*****	0.00	NO	NO	NO
101. Phenanthrene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
103. 1,2,4-trichlorobenzene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO

	Reported Value (Ce) (ug/l)	Ce*2.13 (ug/l)	EPA Acute (ug/l)	STATE Acute (ug/l)	IWC Acute (ug/l)	EPA Chronic (ug/l)	STATE Chronic (ug/l)	IWC Chronic (ug/l)	EPA Bioacc. (ug/l)	STATE Bioacc. (ug/l)	IWC Bioacc. (ug/l)	Violation of Acute	Chr	Bio
PESTICIDES														
104. Aldrin	0.00	0.00	3.00	3.00	0.00	*****	*****	0.00	0.00140	*****	0.00	NO	NO	NO
105. Alpha-BHC	0.00	0.00	*****	2.00	0.00	*****	0.08	0.00	1.300E-01	0.0373	0.00	NO	NO	NO
106. Beta-BHC	0.00	0.00	*****	2.00	0.00	*****	0.08	0.00	0.4600	*****	0.00	NO	NO	NO
107. Gamma-BHC	0.01	0.02	2.00	2.00	0.02	0.08	0.08	0.02	0.6300	*****	0.02	NO	NO	NO
108. Delta-BHC	0.00	0.00	*****	2.00	0.00	*****	0.08	0.00	*****	*****	0.00	NO	NO	NO
109. Chlordane	0.00	0.00	2.40	2.40	0.00	0.0043	0.0043	0.00	5.900E-03	0.0050	0.00	NO	NO	NO
110. 4,4'-DDT	0.00	0.00	1.10	1.10	0.00	0.0010	0.0010	0.00	0.0059	*****	0.00	NO	NO	NO
111. 4,4'-DDE	0.00	0.00	*****	1.10	0.00	*****	0.0010	0.00	0.0059	*****	0.00	NO	NO	NO
112. 4,4'-DDD	0.00	0.00	*****	1.10	0.00	*****	0.0010	0.00	0.0084	*****	0.00	NO	NO	NO
113. Dieldrin	0.00	0.00	2.50	2.50	0.00	0.0019	0.0019	0.00	1.400E-03	0.0012	0.00	NO	NO	NO
114. Alpha-endosulfan	0.00	0.00	0.22	0.22	0.00	0.0560	0.0560	0.00	2.00	*****	0.00	NO	NO	NO
115. Beta-endosulfan	0.00	0.00	0.22	0.22	0.00	0.0560	0.0560	0.00	2.00	*****	0.00	NO	NO	NO
116. Endosulfan sulfate	0.00	0.00	*****	0.22	0.00	*****	0.0560	0.00	2.00	*****	0.00	NO	NO	NO
117. Endrin	0.00	0.00	0.18	0.18	0.00	0.0023	0.0023	0.00	8.100E-01	*****	0.00	NO	NO	NO
118. Endrin aldehyde	0.00	0.00	*****	0.18	0.00	*****	0.0023	0.00	8.100E-01	*****	0.00	NO	NO	NO
119. Heptachlor	0.00	0.00	0.52	0.52	0.00	0.0038	0.0038	0.00	0.0021	*****	0.00	NO	NO	NO
120. Heptachlor epoxide	0.00	0.00	0.52	0.52	0.00	0.0038	0.0038	0.00	0.0011	*****	0.00	NO	NO	NO
121. PCB-1242	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
122. PCB-1254	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
123. PCB-1221	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
124. PCB-1232	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
125. PCB-1248	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
126. PCB-1260	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
127. PCB-1016	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
128. Toxaphene	0.00	0.00	0.73	0.73	0.00	0.00020	0.0002	0.00	4.500E-04	0.0063	0.00	NO	NO	NO
130. Chlorpyrifos	0.00	0.00	0.083	0.083	0.00	0.041	0.041	0.00	*****	*****	0.00	NO	NO	NO

	Reported Value (Ce) (ug/l)	Ce*2.13 (ug/l)	STATE Acute (ug/l)	IWC Acute (ug/l)	STATE Chronic (ug/l)	IWC Chronic (ug/l)	STATE Bioacc. (ug/l)	IWC Bioacc. (ug/l)	Violation of Acute	Chr	Bio
AWQ, Reg. No. 2											
Alpha-BHC	0.00	0.00	2.00	0.00	0.08	0.00	0.0373	0.00	NO	NO	NO
Beta-BHC	0.00	0.00	2.00	0.00	0.08	0.00			NO	NO	
Gamma-BHC	0.01	0.02	2.00	0.02	0.08	0.02			NO	NO	
Delta-BHC	0.00	0.00	2.00	0.00	0.08	0.00			NO	NO	
Pentachlorophenol	0.00	0.00	20.06	0.00	12.67	0.00			NO	NO	
Aldrin	0.00	0.00	3.00	0.00					NO		
Chlordane	0.00	0.00	2.40	0.00	0.0043	0.00	0.005	0.00	NO	NO	NO
4,4'-DDT	0.00	0.00	1.10	0.00	0.0010	0.00			NO	NO	
4,4'-DDE	0.00	0.00	1.10	0.00	0.0010	0.00			NO	NO	
4,4'-DDD	0.00	0.00	1.10	0.00	0.0010	0.00			NO	NO	
Dieldrin	0.00	0.00	2.50	0.00	0.0019	0.00	0.0012	0.00	NO	NO	NO
Alpha-endosulfan	0.00	0.00	0.22	0.00	0.0560	0.00			NO	NO	
Beta-endosulfan	0.00	0.00	0.22	0.00	0.0560	0.00			NO	NO	
Endosulfan sulfate	0.00	0.00	0.22	0.00	0.0560	0.00			NO	NO	
Endrin	0.00	0.00	0.18	0.00	0.0023	0.00			NO	NO	
Endrin aldehyde	0.00	0.00	0.18	0.00	0.0023	0.00			NO	NO	
Heptachlor	0.00	0.00	0.52	0.00	0.0038	0.00			NO	NO	
Heptachlor epoxide	0.00	0.00	0.52	0.00	0.0038	0.00			NO	NO	
Toxaphene	0.00	0.00	0.73	0.00	0.0002	0.00	0.0063	0.00	NO	NO	NO
Chlorpyrifos	0.00	0.00	0.083	0.00	0.0410	0.00			NO	NO	
Cadmium Total*	0.00	0.00	25.76	0.00	6.27	0.00			NO	NO	
Chromium (hex)	0.00	0.00	15.71	0.00	10.58	0.00			NO	NO	
Copper Total*	0.00	0.00	57.11	0.00	36.81	0.00			NO	NO	
Lead Total*	0.00	0.00	430.62	0.00	16.78	0.00			NO	NO	
Mercury Total*	0.00	0.00	7.24	0.00	0.0120	0.00			NO	NO	
Nickel Total*	48.00	102.24	3405.03	100.59	378.16	98.94			NO	NO	
Selenium Total	0.00	0.00	20.00	0.00	5.00	0.00			NO	NO	
Silver Total*	0.00	0.00	22.5816	0.00					NO		
Zinc Total*	46.00	97.98	422.06	96.40	385.40	94.82			NO	NO	
Chromium (Tri)*	0.00	0.00	3466.72	0.00	1124.57	0.00			NO	NO	
Cyanide Total	0.00	0.00	22.36	0.00	5.20	0.00			NO	NO	
Beryllium Total	0.00	0.00					0.076	0.00			NO
PCB-1242	0.00	0.00			0.0140	0.00	4.00E-04	0.00	NO	NO	
PCB-1254	0.00	0.00			0.0140	0.00	4.00E-04	0.00	NO	NO	
PCB-1221	0.00	0.00			0.0140	0.00	4.00E-04	0.00	NO	NO	
PCB-1232	0.00	0.00			0.0140	0.00	4.00E-04	0.00	NO	NO	
PCB-1248	0.00	0.00			0.0140	0.00	4.00E-04	0.00	NO	NO	
PCB-1260	0.00	0.00			0.0140	0.00	4.00E-04	0.00	NO	NO	
PCB-1016	0.00	0.00			0.0140	0.00	4.00E-04	0.00	NO	NO	
2-3-7-8-TCDD	0.00	0.00					1E-06	0.00			NO

* See Linear Partition Coefficient (Page 6)

Linear Partition Coefficients

AQUATIC LIFE CRITERIA (DISSOLVED ACUTE VALUES)

Metals	Streams	a
	K _{po}	
Arsenic	*****	-0.73
Cadmium	*****	-1.13
Chromium(3)	*****	-0.93
Copper	*****	-0.74
Lead	*****	-0.80
Mercury	*****	-1.14
Nickel	*****	-0.57
Zinc	*****	-0.70
Silver	*****	-1.03

Pollutant	Dissolved(ug/l)	Formula
Cadmium	5.66	WER X Conversion Factor* X e[1.128ln(hardness)]-3.828
Chromium(III)	756.50	WER X 0.316 X e[0.819ln(hardness)]+3.688
Chromium(V)	15.71	WER X 0.982 X 16
Copper	24.62	WER X 0.96 X e[0.9422ln(hardness)]-1.464
Lead	98.70	WER X Conversion Factor** X e[1.273ln(hardness)]-1.460
Mercury	2.04	WER X 0.85 X 2.4
Nickel	1972.07	WER X 0.998 X e[0.8460ln(hardness)]+3.3612
Silver	6.7713	WER X 0.85 X e[1.72ln(hardness)]-6.52
Zinc	159.54	WER X 0.978 X e[0.8473ln(hardness)]+0.8604

* 1.136672 - [(ln hardness)(0.041838)]
 ** 1.46203 - [(ln hardness)(0.145712)]

AQUATIC LIFE CRITERIA (DISSOLVED CHRONIC VALUES)

Pollutant	Dissolved(ug/l)	Formula
Cadmium	1.38	WER X Conversion Factor* X e[0.7852ln(hardness)]-3.490
Chromium(III)	245.40	WER X 0.86 X e[0.819ln(hardness)]+1.561
Chromium(V)	10.58	WER X 10
Copper	15.87	WER X 0.96 X e[0.8545ln(hardness)]-1.465
Lead	3.85	WER X Conversion Factor** X e[1.273ln(hardness)]-4.705
Nickel	219.23	WER X 0.997 X e[0.8460ln(hardness)]+1.1645
Zinc	145.68	WER X 0.986 X e[0.8473ln(hardness)]+0.7614

* 1.101672 - [(ln hardness)(0.041838)]
 ** 1.46203 - [(ln hardness)(0.145712)]

K_p = K_{po} X TSS^a

K_p = Linear Partition Coefficient
 TSS = Total Suspended Solids (mg/l)
 K_{po} = found from above table
 a = found from above table

C/Ct = 1 / (1 + K_p X TSS X 10⁻⁶)

C / Ct = Fraction of Metal Dissolved

Metals	Streams	C / Ct
	K _p	
Arsenic	245892	0.6193
Cadmium	1420325	0.2197
Chromium (3)	1433029	0.2182
Copper	527907	0.4311
Lead	1345259	0.2292
Mercury	1020343	0.2816
Nickel	290650	0.5792
Zinc	658191	0.3780
Silver	933970	0.2999

Total Metal = Dissolved Metal / (C/Ct)

ATTACHMENT 1A

Priority Pollutant Scan Calculation

Permittee City of Springdale
 Receiving Stream Spring Creek
 Permit number AR0022063 Qe for:
 Flow (Qe) 24.00 MGD Municipalities = Design Flow
 Flow (Qe) 37.08 CFS Industrial Discharges = Highest monthly average flow of the last two years
 7Q10 = 1.20 CFS
 Long Term Average = 4.00 CFS TSS for:
 Using Diffusers No Yes/No Gulf Coastal 5.5 mg/l Ouach Mount = 2 mg/l
 pH = 7.79 S.U. Ark River Valley = 3 mg/l Ozark Highlands = 2.5 mg/l
 Total Hardness 148.00 mg/l Boston Mount = 1.3 mg/l Delta = 8 mg/l
 TSS 2.5 mg/l
 (% of 7Q10 for Chronic) 0.67 Total Hardness for:
 (% of 7Q10 for Acute) 0.33 Arkansas River = 125 mg/l Red River = 211 mg/l
 Ouachita River = 28 mg/l St. Francis River = 103 mg/l

For the following receiving enter 0.06 in cell "C17 White River = 116 mg/l

Mississippi, Arkansas, Red River. Gulf Coastal = 31 mg/l Ouachita Mount = 31 mg/l
 White (Below confluence with Black River) Ozark Highlands = 148 mg/l Ark River Valley = 25 mg/l
 Ouachita (below Confluence with Little Miss. River) Boston Mount = 25 mg/l Delta = 81 mg/l

Upstream Flow (Qb) = 0.80 (Chronic) 0.40 (Acute)
 Pollutant Concentration Upstream (Cb) = 0 ug/l
 Water Effect Ratio(WER) 1.00
 Cancer Risk Level: 1.00E-05 (STATE); 1.00e-6 (EPA)

IWC = Instream concentration of pollutant after mixing with the receiving stream
 $IWC = (Ce * Qe + Cb * Qb) / (Qb + Qe)$
 Ce = Pollutant concentration in the effluent (ug/l) : Reported value as Total Recov

	Reported Value (Ce) (ug/l)	Ce*2.13 (ug/l)	EPA Acute (ug/l)	STATE Acute (ug/l)	IWC Acute (ug/l)	EPA Chronic (ug/l)	STATE Chronic (ug/l)	IWC Chronic (ug/l)	EPA Bioacc. (ug/l)	STATE Bioacc. (ug/l)	IWC Bioacc. (ug/l)	Violation of Acute	Chr	Bio
METALS and CYANIDE														
1. Antimony Total	4.40	9.37	9000	*****	9.27	1600	*****	9.17	4300	*****	8.46	NO	NO	NO
2. Arsenic Total	0.50	1.07	581.30	*****	1.05	306.80	*****	1.04	1.40	*****	0.96	NO	NO	NO
3. Beryllium Total	0.00	0.00	130.00	*****	0.00	5.30	*****	0.00	*****	0.076	0.00	NO	NO	NO
4. Cadmium Total*	0.00	0.00	25.76	*****	0.00	6.27	*****	0.00	*****	*****	0.00	NO	NO	NO
6. Chromium (Tri)*	0.00	0.00	3466.72	*****	0.00	1124.57	*****	0.00	*****	*****	0.00	NO	NO	NO
7. Chromium (hex)	0.00	0.00	15.71	*****	0.00	10.58	*****	0.00	*****	*****	0.00	NO	NO	NO
8. Copper Total*	0.00	0.00	57.11	*****	0.00	36.81	*****	0.00	*****	*****	0.00	NO	NO	NO
9. Lead Total*	0.00	0.00	430.62	*****	0.00	16.78	*****	0.00	*****	*****	0.00	NO	NO	NO
10. Mercury Total*	0.00	0.00	7.24	*****	0.00	0.0120	*****	0.00	0.15	*****	0.00	NO	NO	NO
12. Nickel Total*	48.00	102.24	3405.03	*****	101.16	378.16	*****	100.07	4600	*****	92.28	NO	NO	NO
13. Selenium Total	0.00	0.00	20.00	*****	0.00	5.00	*****	0.00	*****	*****	0.00	NO	NO	NO
14. Silver Total*	0.00	0.00	22.5816	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
15. Thallium Total	0.00	0.00	1400	*****	0.00	40.00	*****	0.00	6.30	*****	0.00	NO	NO	NO
16. Zinc Total*	46.00	97.98	422.06	*****	96.94	385.40	*****	95.90	*****	*****	88.44	NO	NO	NO
129. Phenols, Total	0.00	0.00	*****	*****	*****	*****	*****	*****	*****	*****	0.00			NO
17. Cyanide Total	0.00	0.00	22.36	*****	0.00	5.20	*****	0.00	220000	*****	0.00	NO	NO	NO

* See linear partition coefficient (Page 6)

Reported	Ce*2.13	EPA	STATE	IWC	EPA	STATE	IWC	EPA	STATE	IWC	Violation of
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	Value (Ce) (ug/l)	(ug/l)	Acute (ug/l)	Acute (ug/l)	Acute (ug/l)	Chronic (ug/l)	Chronic (ug/l)	Chronic (ug/l)	Bioacc. (ug/l)	Bioacc. (ug/l)	Bioacc. (ug/l)	Acute Chr	Bio	
DIOXIN														
18. 2-3-7-8-TCDD	0.00	0.00	0.01	*****	0.00	*****	*****	0.00	1.40E-07	1.00E-09	0.00	NO	NO	NO
VOLATILE COMPOUNDS														
19. Acrolein	0.00	0.00	68.00	*****	0.00	21.00	*****	0.00	780.00	*****	0.00	NO	NO	NO
20. Acrylonitrile	0.00	0.00	7550	*****	0.00	2600	*****	0.00	6.60	*****	0.00	NO	NO	NO
21. Benzene	0.00	0.00	5300	*****	0.00	*****	*****	0.00	710.00	*****	0.00	NO	NO	NO
22. Bromoform	0.00	0.00	*****	*****	0.00	*****	*****	0.00	3600.00	*****	0.00	NO	NO	NO
23. Carbon T Tet	0.00	0.00	35200	*****	0.00	*****	*****	0.00	44.00	*****	0.00	NO	NO	NO
24. Chlorobenzene	0.00	0.00	250.00	*****	0.00	50.00	*****	0.00	2.10E+04	*****	0.00	NO	NO	NO
25. Chlorodibromomethane	0.00	0.00	*****	*****	0.00	*****	*****	0.00	340.00	*****	0.00	NO	NO	NO
26. Chloroethane	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
27. 2-Chloroethylvinyl ether	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
28. Chloroform	6.40	13.63	28900	*****	13.49	1240	*****	13.34	4700.00	*****	12.30	NO	NO	NO
29. Dichlorobromomethane	0.00	0.00	*****	*****	0.00	*****	*****	0.00	220.00	*****	0.00	NO	NO	NO
30. 1-1-Dichloroethane	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
31. 1-2-Dichloroethane	0.00	0.00	118000	*****	0.00	20000	*****	0.00	990.00	*****	0.00	NO	NO	NO
32. 1-1-Dichloroethylene	0.00	0.00	11600	*****	0.00	*****	*****	0.00	32.00	*****	0.00	NO	NO	NO
33. 1,2 Dichloropropane	0.00	0.00	23000	*****	0.00	5700	*****	0.00	*****	*****	0.00	NO	NO	NO
34. 1,3 Dichloropropylene	0.00	0.00	6060	*****	0.00	244.00	*****	0.00	1700.00	*****	0.00	NO	NO	NO
35. Ethylbenzene	0.00	0.00	32000	*****	0.00	*****	*****	0.00	29000.00	*****	0.00	NO	NO	NO
37. Methyl Chloride	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
36. Methyl bromide	0.00	0.00	*****	*****	0.00	*****	*****	0.00	4000.00	*****	0.00	NO	NO	NO
38. Methylene chloride	25.00	53.25	*****	*****	52.69	*****	*****	52.12	16000.00	*****	48.06	NO	NO	NO
39. 1-1-2-2-Tetrachloroethane	0.00	0.00	9320	*****	0.00	2400	*****	0.00	110.00	*****	0.00	NO	NO	NO
40. Tetrachloroethylene	0.00	0.00	5280	*****	0.00	840	*****	0.00	88.50	*****	0.00	NO	NO	NO
41. Toluene	0.00	0.00	17500	*****	0.00	*****	*****	0.00	2.0E+05	*****	0.00	NO	NO	NO
42. 1,2-trans-dichloroethylene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
44. 1-1-2-Trichloroethane	0.00	0.00	18000	*****	0.00	9400	*****	0.00	420.00	*****	0.00	NO	NO	NO
43. 1-1-1-Trichloroethane	0.00	0.00	18000	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
45. Trichloroethylene	0.00	0.00	45000	*****	0.00	21900	*****	0.00	810.00	*****	0.00	NO	NO	NO
46. Vinyl Chloride	0.00	0.00	*****	*****	0.00	*****	*****	0.00	5250.00	*****	0.00	NO	NO	NO

	Reported Value (Ce) (ug/l)	Ce*2.13 (ug/l)	EPA Acute (ug/l)	STATE Acute (ug/l)	IWC Acute (ug/l)	EPA Chronic (ug/l)	STATE Chronic (ug/l)	IWC Chronic (ug/l)	EPA Bioacc. (ug/l)	STATE Bioacc. (ug/l)	IWC Bioacc. (ug/l)	Violation of Acute	Chr	Bio
ACID COMPOUNDS														
47. 2-Chlorophenol	0.00	0.00	4380	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
48. 2,4-Dichlorophenol	0.00	0.00	2020	*****	0.00	365	*****	0.00	*****	*****	0.00	NO	NO	NO
49. 2,4-Dimethylphenol	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
50. 4,6-Dinitro-o-Cresol	0.00	0.00	*****	*****	0.00	*****	*****	0.00	765.00	*****	0.00	NO	NO	NO
51. 2,4-Dinitrophenol	0.00	0.00	*****	*****	0.00	*****	*****	0.00	14000	*****	0.00	NO	NO	NO
52.-53. Nitrophenols	0.00	0.00	230	*****	0.00	150	*****	0.00	*****	*****	0.00	NO	NO	NO
54. 4 Chloro-3-methylphenol	0.00	0.00	30.00	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
55. Pentachlorophenol	0.00	0.00	20.06	20.06	0.00	12.67	12.67	0.00	82.00	*****	0.00	NO	NO	NO
56. Phenol	0.00	0.00	10200	*****	0.00	2560	*****	0.00	4600000	*****	0.00	NO	NO	NO
57. 2,4,6-Trichlorophenol	0.00	0.00	*****	*****	0.00	*****	*****	0.00	65.00	*****	0.00	NO	NO	NO
BASE/NEUTRAL COMPOUNDS														
58. Acenaphthene	0.00	0.00	1700	*****	0.00	520	*****	0.00	*****	*****	0.00	NO	NO	NO
59. Acenaphthylene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
60. Anthracene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	110000.00	*****	0.00	NO	NO	NO
61. Benzidine	0.00	0.00	2500	*****	0.00	*****	*****	0.00	5.4E-03	*****	0.00	NO	NO	NO
62. Benzo(a) anthracene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.310	*****	0.00	NO	NO	NO
63. Benzo(a) pyrene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.310	*****	0.00	NO	NO	NO
64. 3,4-benzoflouranthene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.310	*****	0.00	NO	NO	NO
65. Benzo(g,h,i)perylene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
66. Benzo(k) fluoranthene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.310	*****	0.00	NO	NO	NO
67. Bis(2-chloroethoxy)methane	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
68. Bis(2-cloroethyl) Ether	0.00	0.00	*****	*****	0.00	*****	*****	0.00	14.00	*****	0.00	NO	NO	NO
69. Bis(2-Chloroisopropyl) eth	0.00	0.00	*****	*****	0.00	*****	*****	0.00	1.7E+05	*****	0.00	NO	NO	NO
70. Bis(2-ethylhexyl)phthalate	0.00	0.00	*****	*****	0.00	*****	*****	0.00	59.00	*****	0.00	NO	NO	NO
71. 4-Bromophenyl phenyl ether	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
72. Butylbenzy phthalate	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
73. 2-chloronaphthalene	0.00	0.00	1600	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
74. 4-chlorophenyl phenyl ether	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
75. Chrysene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.310	*****	0.00	NO	NO	NO
76. Dibenzo(a,h)anthracene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.310	*****	0.00	NO	NO	NO
77-79. Dichlorobenzene(1,2-1,3-1,4)	0.00	0.00	1120	*****	0.00	763	*****	0.00	2600.0	*****	0.00	NO	NO	NO
80. 3,3' Dichlorobenzidine	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.770	*****	0.00	NO	NO	NO
81. Diethyl Phthalate	0.00	0.00	*****	*****	0.00	*****	*****	0.00	1.2E+05	*****	0.00	NO	NO	NO
82. Dimethyl phthalate	0.00	0.00	*****	*****	0.00	*****	*****	0.00	2.9E+06	*****	0.00	NO	NO	NO
83. Di-n-Butyl phthalate	0.00	0.00	*****	*****	0.00	*****	*****	0.00	1.2E+04	*****	0.00	NO	NO	NO
84. 2,4-Dinitrotoluene	0.00	0.00	330	*****	0.00	230	*****	0.00	91.00	*****	0.00	NO	NO	NO
85. 2,6-Dinitrotoluene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
86. Di-n-octyl phthalate	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
87. 1,2-diphenylhydrazine	0.00	0.00	270	*****	0.00	*****	*****	0.00	5.400	*****	0.00	NO	NO	NO
88. Fluoranthene	0.00	0.00	3980	*****	0.00	*****	*****	0.00	370.00	*****	0.00	NO	NO	NO
89. Fluorene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	14000.000	*****	0.00	NO	NO	NO
90. Hexachlorobenzene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.00770	*****	0.00	NO	NO	NO
91. Hexachlorobutadiene	0.00	0.00	90.00	*****	0.00	9.30	*****	0.00	500.000	*****	0.00	NO	NO	NO
92. Hexachlorocyclopentadiene	0.00	0.00	7.00	*****	0.00	5.20	*****	0.00	1.70E+04	*****	0.00	NO	NO	NO
93. Hexachloroethane	0.00	0.00	980	*****	0.00	540	*****	0.00	89.00	*****	0.00	NO	NO	NO
Hexachlorocyclohexane	0.00	0.00	2.00	2.00	0.00	0.08	0.08	0.00	*****	*****	0.00	NO	NO	NO
94. Indeno(1,2,3-cd)pyrene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	0.31000	*****	0.00	NO	NO	NO
95. Isophorone	0.00	0.00	117000	*****	0.00	*****	*****	0.00	6000	*****	0.00	NO	NO	NO
96. Naphthalene	0.00	0.00	2300	*****	0.00	620	*****	0.00	*****	*****	0.00	NO	NO	NO
97. Nitrobenzene	0.00	0.00	27000	*****	0.00	*****	*****	0.00	1900.00	*****	0.00	NO	NO	NO
98. N-nitrosodimethylamine	0.00	0.00	*****	*****	0.00	*****	*****	0.00	81.00	*****	0.00	NO	NO	NO
99. N-nitrosodi-n-propylamine	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
100. N-nitrosodiphenylamine	0.00	0.00	*****	*****	0.00	*****	*****	0.00	160.00	*****	0.00	NO	NO	NO
101. Phenanthrene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO
103. 1,2,4-trichlorobenzene	0.00	0.00	*****	*****	0.00	*****	*****	0.00	*****	*****	0.00	NO	NO	NO

	Reported Value (Ce) (ug/l)	Ce*2.13 (ug/l)	EPA Acute (ug/l)	STATE Acute (ug/l)	IWC Acute (ug/l)	EPA Chronic (ug/l)	STATE Chronic (ug/l)	IWC Chronic (ug/l)	EPA Bioacc. (ug/l)	STATE Bioacc. (ug/l)	IWC Bioacc. (ug/l)	Violation of Acute	Chr	Bio
PESTICIDES														
104. Aldrin	0.00	0.00	3.00	3.00	0.00	*****	*****	0.00	0.00140	*****	0.00	NO	NO	NO
105. Alpha-BHC	0.00	0.00	*****	2.00	0.00	*****	0.08	0.00	1.300E-01	0.0373	0.00	NO	NO	NO
106. Beta-BHC	0.00	0.00	*****	2.00	0.00	*****	0.08	0.00	0.4600	*****	0.00	NO	NO	NO
107. Gamma-BHC	0.01	0.02	2.00	2.00	0.02	0.08	0.08	0.02	0.6300	*****	0.02	NO	NO	NO
108. Delta-BHC	0.00	0.00	*****	2.00	0.00	*****	0.08	0.00	*****	*****	0.00	NO	NO	NO
109. Chlordane	0.00	0.00	2.40	2.40	0.00	0.0043	0.0043	0.00	5.900E-03	0.0050	0.00	NO	NO	NO
110. 4,4'-DDT	0.00	0.00	1.10	1.10	0.00	0.0010	0.0010	0.00	0.0059	*****	0.00	NO	NO	NO
111. 4,4'-DDE	0.00	0.00	*****	1.10	0.00	*****	0.0010	0.00	0.0059	*****	0.00	NO	NO	NO
112. 4,4'-DDD	0.00	0.00	*****	1.10	0.00	*****	0.0010	0.00	0.0084	*****	0.00	NO	NO	NO
113. Dieldrin	0.00	0.00	2.50	2.50	0.00	0.0019	0.0019	0.00	1.400E-03	0.0012	0.00	NO	NO	NO
114. Alpha-endosulfan	0.00	0.00	0.22	0.22	0.00	0.0560	0.0560	0.00	2.00	*****	0.00	NO	NO	NO
115. Beta-endosulfan	0.00	0.00	0.22	0.22	0.00	0.0560	0.0560	0.00	2.00	*****	0.00	NO	NO	NO
116. Endosulfan sulfate	0.00	0.00	*****	0.22	0.00	*****	0.0560	0.00	2.00	*****	0.00	NO	NO	NO
117. Endrin	0.00	0.00	0.18	0.18	0.00	0.0023	0.0023	0.00	8.100E-01	*****	0.00	NO	NO	NO
118. Endrin aldehyde	0.00	0.00	*****	0.18	0.00	*****	0.0023	0.00	8.1000E-01	*****	0.00	NO	NO	NO
119. Heptachlor	0.00	0.00	0.52	0.52	0.00	0.0038	0.0038	0.00	0.0021	*****	0.00	NO	NO	NO
120. Heptachlor epoxide	0.00	0.00	0.52	0.52	0.00	0.0038	0.0038	0.00	0.0011	*****	0.00	NO	NO	NO
121. PCB-1242	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
122. PCB-1254	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
123. PCB-1221	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
124. PCB-1232	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
125. PCB-1248	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
126. PCB-1260	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
127. PCB-1016	0.00	0.00	*****	*****	0.00	0.0140	0.0140	0.00	4.500E-04	4.00E-04	0.00	NO	NO	NO
128. Toxaphene	0.00	0.00	0.73	0.73	0.00	0.00020	0.0002	0.00	4.500E-04	0.0063	0.00	NO	NO	NO
130. Chlorpyrifos	0.00	0.00	0.083	0.083	0.00	0.041	0.041	0.00	*****	*****	0.00	NO	NO	NO

Linear Partition Coefficients

Metals	Streams Kpo	a
Arsenic	*****	-0.73
Cadmium	*****	-1.13
Chromium(3)	*****	-0.93
Copper	*****	-0.74
Lead	*****	-0.80
Mercury	*****	-1.14
Nickel	*****	-0.57
Zinc	*****	-0.70
Silver	*****	-1.03

$Kp = Kpo \times TSS^a$

Kp = Linear Partition Coefficient
 TSS = Total Suspended Solids (mg/l)
 Kpo = found from above table
 a = found from above table

$C/Ct = 1 / (1 + Kp \times TSS \times 10^{-6})$

C / Ct = Fraction of Metal Dissolved

Metals	Kp	Streams C / Ct
Arsenic	245892	0.6193
Cadmium	1420325	0.2197
Chromium (3)	1433029	0.2182
Copper	527907	0.4311
Lead	1345259	0.2292
Mercury	1020343	0.2816
Nickel	290650	0.5792
Zinc	658191	0.3780
Silver	933970	0.2999

Total Metal = Dissolved Metal / (C/Ct)

AQUATIC LIFE CRITERIA (DISSOLVED ACUTE VALUES)

Pollutant	Dissolved(ug/l)	Formula
Cadmium	5.66	WER X Conversion Factor* X e[1.128ln(hardness)]-3.828
Chromium(III)	756.50	WER X 0.316 X e[0.819ln(hardness)]+3.688
Chromium(V)	15.71	WER X 0.982 X 16
Copper	24.62	WER X 0.96 X e[0.9422ln(hardness)]-1.464
Lead	98.70	WER X Conversion Factor** X e[1.273ln(hardness)]-1.460
Mercury	2.04	WER X 0.85 X 2.4
Nickel	1972.07	WER X 0.998 X e[0.8460ln(hardness)]+3.3612
Silver	6.7713	WER X 0.85 X e[1.72ln(hardness)]-6.52
Zinc	159.54	WER X 0.978 X e[0.8473ln(hardness)]+0.8604

* 1.136672 - [(ln hardness)(0.041838)]

** 1.46203 - [(ln hardness)(0.145712)]

AQUATIC LIFE CRITERIA (DISSOLVED CHRONIC VALUES)

Pollutant	Dissolved(ug/l)	Formula
Cadmium	1.38	WER X Conversion Factor* X e[0.7852ln(hardness)]-3.490
Chromium(III)	245.40	WER X 0.86 X e[0.819ln(hardness)]+1.561
Chromium(V)	10.58	WER X 10
Copper	15.87	WER X 0.96 X e[0.8545ln(hardness)]-1.465
Lead	3.85	WER X Conversion Factor** X e[1.273ln(hardness)]-4.705
Nickel	219.23	WER X 0.997 X e[0.8460ln(hardness)]+1.1645
Zinc	145.68	WER X 0.986 X e[0.8473ln(hardness)]+0.7614

* 1.101672 - [(ln hardness)(0.041838)]

** 1.46203 - [(ln hardness)(0.145712)]

Attachment 1

[PPS]

Attachment 2

Linear Partition Coefficients for Priority Metals in Streams and Lakes*

METAL	STREAMS		LAKES	
	K _{po}	a	K _{po}	a
Arsenic	0.48 X 10 ⁶	-0.73	0.48 X 10 ⁶	-0.73
Cadmium	4.00 X 10 ⁶	-1.13	3.52 X 10 ⁶	-0.92
Chromium**	3.36 X 10 ⁶	-0.93	2.17 X 10 ⁶	-0.27
Copper	1.04 X 10 ⁶	-0.74	2.85 X 10 ⁶	-0.9
Lead***	2.80 X 10 ⁶	-0.8	2.04 X 10 ⁶	-0.53
Mercury	2.90 X 10 ⁶	-1.14	1.97 X 10 ⁶	-1.17
Nickel	0.49 X 10 ⁶	-0.57	2.21 X 10 ⁶	-0.76
Silver****	2.40 X 10 ⁶	-1.03	2.40 X 10 ⁶	-1.03
Zinc	1.25 X 10 ⁶	-0.7	3.34 X 10 ⁶	-0.68

$$K_p = K_{po} \times TSS^a$$

K_p = Linear Partition Coefficient

TSS = Total Suspended Solids (mg/l)-(See **Attachment 3**)

K_{po} = found from table

a = found from table

$$C/C_t = 1/(1 + (K_p \times TSS \times 10^{-6})) \quad C/C_t = \text{Fraction of Metal Dissolved}$$

* Delos, C. G., W. L. Richardson, J. V. DePinto, R. B., Ambrose, P. W. Rogers, K. Rygwelski, J. P. St. John, W. J. Shaughnessey, T. A. Faha, W. N. Christie. Technical Guidance for Performing Waste Load Allocations, Book II: Streams and Rivers. Chapter 3: Toxic Substances, for the U. S. Environmental Protection Agency.(EPA-440/4-84-022).

** Linear partition coefficient shall not apply to the Chromium VI numerical criterion. The approved analytical method for Chromium VI measures only the dissolved form. Therefore, permit limits for Chromium VI shall be expressed in the dissolved form. See 40 CFR 122.45(c)(3).

*** Reference page 18 of EPA memo dated March 3, 1992, from Margaret J. Stasikowski(WH-586) to Water management Division Directors, Region I-IX.

**** Texas Environmental Advisory Council, 1994

Permit No.22063

Attachment 3**TOTAL SUSPENDED SOLIDS(15th PERCENTILE) BY RECEIVING STREAM AND ECOREGION**

For direct discharges to the Arkansas, Red, Ouachita, White, and St. Francis Rivers use the following mean values:

TSS(15th percentile)		
Receiving Stream	TSS	Unit
Arkansas River:		
Ft. Smith to Dardanelle Dam	12.0	mg/l
Dardanelle Dam to Terry L&D	10.5	mg/l
Terry L&D to L&D #5	8.3	mg/l
L&D #5 to Mouth	9.0	mg/l
Red River	33	mg/l
Ouachita River:		
above Caddo River	2.0	mg/l
below Caddo River	5.5	mg/l
White River:		
above Beaver Lake	2.5	mg/l
Bull Shoals to Black River	3.3	mg/l
Black River to Mouth	18.5	mg/l
St. Francis River	18	mg/l

For all other discharges use the following ecoregion TSS:

TSS (15th percentile)		
Ecoregion	TSS	Unit
Ouachita	2	mg/l
Gulf Coastal	5.5	mg/l
Delta	8	mg/l
Ozark Highlands	2.5	mg/l
Boston Mountains	1.3	mg/l
Arkansas River Valley	3	mg/l

Attachment 4

Calculations

**BIOMONITORING FREQUENCY RECOMMENDATION
AND RATIONALE FOR ADDITIONAL REQUIREMENTS**

Permit Number: **AR0022403**

Facility Name: **City of Springdale**

Previous Critical Dilution: **97%**

Proposed Critical Dilution: **97%**

Date of Review: **9-11-02**

Name of Reviewer: **Clem**

Number of Test Performed during previous 5 years by Species:

***Pimephales promelas* (Fathead minnow) : 10**

***Ceriodaphnia dubia* (water flea): 8**

Failed Test Dates during previous 5 years by Species:

***Pimephales promelas* (Fathead minnow) : 7-00 (sub-lethal)**

***Ceriodaphnia dubia* (water flea): None**

Previous TRE Activities: None

Frequency Recommendation by Species:

***Pimephales promelas* (Fathead minnow) : four/year**

***Ceriodaphnia dubia* (water flea): four/year**

Additional Requirements (including WET Limits) Rationale/Comments Concerning Permitting:

Rationale: *Continuous Planning Process, 2000, Appendix D, E., 1.b.* "For permittees with a design flow greater than or equal to 2 MGD and no known problems, the toxicity testing frequency shall be four times a year for both species."

Pretreatment Attachments
(get package from Cabinet)

MONITORING RESULTS (1) FOR THE ANNUAL PRETREATMENT REPORT
REPORTING YEAR _____ **TO** _____
TREATMENT PLANT : _____ **NPDES PERMIT #AR00** _____
AVERAGE POTW FLOW: _____ **MGD** **% IU FLOW:** _____ **%**

METALS, CYANIDE and PHENOLS	Maximum Allowable Headworks Level (4)	Influent (2) Dates Sampled				WQ Level/ Limit (3)	Effluent (2) Dates Sampled			
Antimony (Total)										
Arsenic (Total)										
Beryllium (Total)										
Cadmium (Total)										
Chromium (Total)										
Copper (Total)										
Lead (Total)										
Mercury (Total)										
Molybdenum (Total)										
Nickel (Total)										
Selenium (Total)										
Silver (Total)										
Thallium (Total)										
Zinc (Total)										
Cyanide (Total)										
Phenols (Total)										
(5)										

It is advised that the influent and effluent samples are collected considering flow detention time through each plant. Analytical MQLs should be used so that the data can also be used for Local Limits assessment and NPDES application purpose.

Indicate reported unit of measurement.

This value was calculated during development of TBL and based on State Water Quality Standards and implementation procedures.

This can be reported in ppm (mg/L), ppb (ug/l) or lbs/day.

Record the named of any pollutants [40 CFR 122, Appendix D, Table II and/or Table V] detected any the quantity in which they were detected.

ATTACHMENT C
PRETREATMENT PERFORMANCE SUMMARY (PPS)

: ALL QUESTIONS REFER TO THE INDUSTRIAL PRETREATMENT PROGRAM AS APPROVED BY THE
 THE PERMITTEE SHOULD NOT ANSWER THE QUESTIONS BASED ON CHANGES MADE TO THE
 OVED PROGRAM WITHOUT DEPARTMENT AUTHORIZATION.

I. General Information

Local Authority Name

Address

State/Zip

Contact Person

(Position)

Contact Telephone ()

3. Permit Nos.

Reporting Period

(Beginning Month and Year)

(Ending Month and Year)

1. Number of Categorical IUs

1. Number of Significant Noncategorical IUs

II. Significant Industrial User Compliance

SIGNIFICANT INDUSTRIAL USERS

Categorical

NonCategorical

No. of SIUs Submitting BMRs/Total

No. Required. /

N/A*

No. of SIUs Submitting 90-Day Compliance

Reports/No. Required. /

N/A*

No. of SIUs Submitting Semiannual Reports/

Total No. Required. /

No. of SIUs Meeting Compliance Schedule/

Total No. Required to Meet Schedule /

No. of SIUs in Significant Noncompliance/

Total No. of SIUs /

Rate of Significant Noncompliance for all

SIUs (categorical and noncategorical) /

ATTACHMENT 6

Oklahoma Department of Environmental Quality
Instream Waste Concentration Calculations

Numerical Criterion for Aquatic Life

Hardness = 106.55 mg/l of CaCO3 for stream segment 121700

ln (Hardness) = 4.67

Nickel

acute 1493.45 micrograms/liter
chronic 165.86 micrograms/liter

acute = (exp ((0.8460 * ln (hardness) + 3.3612)) * 0.998
chronic = (exp ((0.8460 * ln (hardness) + 1.1645)) * 0.997

Zinc

acute 120.77 micrograms/liter
chronic 110.28 micrograms/liter

acute = (exp ((0.8473 * ln (hardness) + 0.8604)) * 0.978
chronic = (exp ((0.8473 * ln (hardness) + 0.7614)) * 0.986

Instream Waste Concentrations

Design Flow = 15.6 MGD = 24.10 cfs

Long Term Average = 4 cfs 7Q10 = 1.2 cfs

	Ce, ug/l	Ce * 2.13, ug/l	Aquatic Life IWC ug/l	Human Health IWC, ug/l
Antimony	4.4	9.37	9.37	8.04
Arsenic	0.5	1.07	1.07	0.91
Nickel	48	102.24	102.24	87.69
Zinc	46	97.98	97.98	84.03
Chloroform	6.4	13.63	13.63	11.69
Methylene Chloride	25	53.25	53.25	45.67
Gamma - BHC	0.009	0.02	0.02	0.02

Aquatic Life IWC Formula

$$IWC = Ce * 2.13$$

Human Health IWC Formula

$$IWC = ((Ce * 2.13) * Design Flow) + (Cb * LTA) / (Design Flow + LTA)$$

Oklahoma Department of Environmental Quality
Instream Waste Concentration Calculations

Numerical Criterion for Aquatic Life

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$$\ln(\text{Hardness}) = 4.67$$

Nickel

acute 1493.45 micrograms/liter
chronic 165.86 micrograms/liter

$$\text{acute} = (\exp((0.8460 * \ln(\text{hardness}) + 3.3612)) * 0.998)$$

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Zinc

acute 120.77 micrograms/liter
chronic 110.28 micrograms/liter

$$\text{acute} = (\exp((0.8473 * \ln(\text{hardness}) + 0.8604)) * 0.978)$$

$$\text{chronic} = (\exp((0.8473 * \ln(\text{hardness}) + 0.7614)) * 0.986)$$

Instream Waste Concentrations

Design Flow = 24 MGD = 37.1 cfs

Long Term Average = 4 cfs 7Q10 = 1.2 cfs

	Ce, ug/l	Ce * 2.13, ug/l	Aquatic Life IWC ug/l	Human Health IWC, ug/l
Antimony	4.4	9.37	9.37	12.37
Arsenic	0.5	1.07	1.07	1.41
Nickel	48	102.24	102.24	134.99
Zinc	46	97.98	97.98	129.36
Chloroform	6.4	13.63	13.63	18.00
Methylene Chloride	25	53.25	53.25	70.31
Gamma - BHC	0.009	0.02	0.02	0.03

Aquatic Life IWC Formula

$$\text{IWC} = \text{Ce} * 2.13$$

Human Health IWC Formula

$$\text{IWC} = ((\text{Ce} * 2.13) * \text{Design Flow}) + (\text{Cb} * \text{LTA}) / (\text{Design Flow} + \text{LTA})$$