

**AUTHORIZATION TO DISCHARGE WASTEWATER 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 (Ark. Code Ann. 8-4-101 et seq.), and the Clean Water Act (33 U.S.C. § 1251 et seq.),

FutureFuel Chemical Company

is authorized to discharge industrial wastewater, domestic wastewater, and storm water from a facility located as follows: 2800 Gap Road (Highway 394), Batesville, AR 72501, approximately 8 miles southeast of Batesville in Independence County, Arkansas. The applicant's mailing address is: P.O. Box 2357, Batesville, AR 72503.

Latitude: 35° 43' 19.5"; Longitude: 91° 31' 29.67"

to receiving waters named:

the White River in Segment 4F of the White River Basin.

The outfalls are located at the following coordinates:

Outfall 001: Latitude: 35° 42' 44.11"; Longitude: 91° 31' 32.41"

Outfall 002: Latitude: 35° 42' 43.77"; Longitude: 91° 31' 33.58"

Discharge shall be in accordance with effluent limitations, monitoring requirements, and other conditions set forth in this permit. Per Part III.D.10, the permittee must re-apply 180 days prior to the expiration date below for permit coverage to continue beyond the expiration date.

Effective Date: September 1, 2018

Expiration Date: August 31, 2023



Caleb J. Osborne
Associate Director, Office of Water Quality
Arkansas Department of Environmental Quality

7.3.18

Issue Date

**PART I
 PERMIT REQUIREMENTS**

SECTION A1. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS: OUTFALL 001 - Noncontact cooling water, boiler blowdown, water supply filter backwash, and stormwater runoff from all areas of facility except for the wastewater treatment area. During the period beginning on the effective date and lasting until the date of expiration, the permittee is authorized to discharge from Outfall 001. Such discharges shall be limited and monitored by the permittee as specified below as well as Parts II and III. See Part IV for all definitions and calculations.

<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.	Daily Max	Monthly Avg.	Daily Max		
Flow	N/A	N/A	Report, MGD	Report, MGD	Continuous	Record
Total Organic Carbon (TOC) ³	N/A	N/A	5 ³	5 ³	Five/week	Composite
Temperature (T)	N/A	N/A	105 °F	105 °F	Continuous	Record
Oil and Grease (O & G)	4,862	7,293	10	15	Once/quarter	Grab
Aluminum, Total Recoverable (Al) ^{4,5}	Report	Report	Report	Report	Once/quarter	Composite
Iron, Total Recoverable (Fe) ^{4,5}	Report	Report	Report	Report	Once/quarter	Composite
pH	N/A	N/A	<u>Minimum</u> ² 6.0 s.u.	<u>Maximum</u> ² 9.0 s.u.	Continuous	Record
Chronic WET Testing ¹						
<u>Pimephales promelas (Chronic)</u> ¹ Pass/Fail Lethality (7-day NOEC) TLP6C Pass/Fail Growth (7-day NOEC)TGP6C Survival (7-day NOEC) TOP6C Coefficient of Variation (Growth) TQP6C Growth (7-day NOEC) TPP6C Pass/Fail Retest 1 (7-day NOEC) 22418 Pass/Fail Retest 2 (7-day NOEC) 22419 Pass/Fail Retest 3 (7-day NOEC) 51444			Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report % Report % Report % Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report (Pass=0/Fail=1)	Once/quarter Once/quarter Once/quarter Once/quarter Once/quarter Once/month ⁶ Once/month ⁶ Once/month ⁶	Composite Composite Composite Composite Composite Composite Composite	
<u>Ceriodaphnia dubia (Chronic)</u> ¹ Pass/Fail Lethality (7-day NOEC) TLP3B Pass/Fail Production (7-day NOEC)TGP3B Survival (7-day NOEC) TOP3B Coefficient of Variation (Reproduction) TQP3B Reproduction (7-day NOEC) TPP3B Pass/Fail Retest 1 (7-day NOEC) 22415 Pass/Fail Retest 2 (7-day NOEC) 22416 Pass/Fail Retest 3 (7-day NOEC) 51443			Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report % Report % Report % Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report (Pass=0/Fail=1)	Once/quarter Once/quarter Once/quarter Once/quarter Once/quarter Once/month ⁶ Once/month ⁶ Once/month ⁶	Composite Composite Composite Composite Composite Composite Composite	

¹ WET testing shall be performed on the combined effluent of Outfall 001 and 002. See Condition No. 13 of Part II.
² pH of the effluent shall be within the specified range at all times.
³ Net increase over intake water. This requires monitoring of both intake and effluent water.
⁴ See Condition No. 10 of Part II (MQL Requirements).
⁵ See Condition No. 12 of Part II. Monitoring and reporting for Aluminum and Iron is required for the first 12 months of the permit.
⁶ **CONDITIONAL REPORTING:** Use only if conducting retests due to a test failure (demonstration of significant toxic effects at or below the critical dilution). If testing on a quarterly basis, the permittee may substitute one of the retests in lieu of one routine toxicity test. If retests are not required, Report NODI=9 (Conditional Monitoring - Not Required This Period) under retest parameters.

Oil, grease, or petrochemical substances shall not be present in receiving waters to the extent that they produce globules or other residue or any visible, colored film on the surface or coat the banks and/or bottoms of the waterbody or adversely affect any of the associated biota. There shall be no visible sheen as defined in Part IV of this permit.

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge during the entire monitoring period. Samples for all parameters except WET shall be taken after the cooling pond prior to commingling with effluent from outfall 002 at the following monitoring coordinates: Latitude: 35° 42' 44.11" Longitude: 91° 31' 32.41". Samples for WET testing shall be taken after Outfall 001 and 002 effluent are mixed and prior to discharge to the White River.

PART I
PERMIT REQUIREMENTS

SECTION A2. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS: OUTFALL 002 - Organic chemical wastewater, pesticide wastewater, chemical destructor scrubber blowdown, water softening effluent, sanitary wastewater, stormwater runoff from the wastewater treatment area, land application runoff, and ash settling pond overflow.

During the period beginning on effective date and lasting until date of expiration, the permittee is authorized to discharge from outfall 002. Such discharges shall be limited and monitored by the permittee as specified below as well as Parts II and III. See Part IV for all definitions and calculations.

<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	Daily Max	Monthly Avg.	Daily Max		
Flow	N/A	N/A	Report MGD	Report MGD	Continuous	Record
Total Organic Carbon (TOC)	1,583	4,243	69	185	Once/week	Composite
Ammonia-Nitrogen (May-November) (December-April)	262 1,573	656 3,146	Report Report	Report Report	Once/week Once/week	Composite Composite
Oil and Grease (O & G)	229	344	10	15	Once/quarter	Grab
Aluminum, Total Recoverable ²	34	86	Report	Report	Once/6 months	Composite
Phenolics, Total Recoverable ²	63	129	Report µg/l	Report µg/l	Once/6 months	Grab
Sulfates	70,000	100,000	Report	Report	Once/6 months	Composite
Chlorides	35,000	55,000	Report	Report	Once/6 months	Composite
Biochemical Oxygen Demand (BOD ₅)	863	2302	45	120	Three/week	Composite
Total Suspended Solids (TSS)	1093	3510	57	183	Three/week	Composite
Acenaphthene ²	0.42	1.13	22 µg/l	59 µg/l	Once/6 months	Composite
Acenaphthylene ²	0.42	1.13	22 µg/l	59 µg/l	Once/6 months	Composite
Acrylonitrile ²	1.84	4.64	96 µg/l	242 µg/l	Once/6 months	Composite
Anthracene ²	0.42	1.13	22 µg/l	59 µg/l	Once/6 months	Composite
Benzene ²	0.71	2.61	37 µg/l	136 µg/l	Once/6 months	Composite
Benzo(a)anthracene ²	0.42	1.13	22 µg/l	59 µg/l	Once/6 months	Composite
3,4-Benzofluoranthene ²	0.44	1.17	23 µg/l	61 µg/l	Once/6 months	Composite
Benzo (k) fluoranthene ²	0.42	1.13	22 µg/l	59 µg/l	Once/6 months	Composite
Benzo (a) pyrene ²	0.44	1.17	23 µg/l	61 µg/l	Once/6 months	Composite
Bis (2-ethylhexyl) phthalate ²	1.98	5.35	103 µg/l	279 µg/l	Once/6 months	Composite
Carbon Tetrachloride ²	0.35	0.73	18 µg/l	38 µg/l	Once/6 months	Composite
Chlorobenzene ²	0.29	0.54	15 µg/l	28 µg/l	Once/6 months	Composite
Chloroethane ²	1.99	5.14	104 µg/l	268 µg/l	Once/6 months	Composite
Chloroform ²	0.40	0.88	21 µg/l	46 µg/l	Once/6 months	Composite
2-Chlorophenol ²	0.59	1.88	31 µg/l	98 µg/l	Once/6 months	Composite
Chrysene ²	0.42	1.13	22 µg/l	59 µg/l	Once/6 months	Composite
Di-n-butyl phthalate ²	0.52	1.09	27 µg/l	57 µg/l	Once/6 months	Composite
1,2-Dichlorobenzene ²	1.48	3.13	77 µg/l	163 µg/l	Once/6 months	Composite
1,3-Dichlorobenzene ²	0.59	0.84	31 µg/l	44 µg/l	Once/6 months	Composite
1,4-Dichlorobenzene ²	0.29	0.54	15 µg/l	28 µg/l	Once/6 months	Composite

Effluent Characteristics	Discharge Limitations				Monitoring Requirements	
	Mass (lbs/day, unless otherwise specified)		Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
	Monthly Avg	Daily Max	Monthly Avg.	Daily Max		
1,1-Dichloroethane ²	0.42	1.13	22 µg/l	59 µg/l	Once/6 months	Composite
1,2-Dichloroethane ²	1.30	4.05	68 µg/l	211 µg/l	Once/6 months	Composite
1,1-Dichloroethylene ²	0.31	0.48	16 µg/l	25 µg/l	Once/6 months	Composite
1,2-trans-Dichloroethylene ²	0.40	1.04	21 µg/l	54 µg/l	Once/6 months	Composite
2,4-Dichlorophenol ²	0.75	2.15	39 µg/l	112 µg/l	Once/6 months	Composite
1,2-Dichloropropane ²	2.93	4.41	153 µg/l	230 µg/l	Once/6 months	Composite
1,3-Dichloropropylene ²	0.56	0.84	29 µg/l	44 µg/l	Once/6 months	Composite
Diethyl phthalate ²	1.55	3.89	81 µg/l	203 µg/l	Once/6 months	Composite
2,4-Dimethylphenol ²	0.35	0.69	18 µg/l	36 µg/l	Once/6 months	Composite
Dimethyl phthalate ²	0.36	0.90	19 µg/l	47 µg/l	Once/6 months	Composite
4,6-Dinitro-o-cresol ²	1.50	5.31	78 µg/l	277 µg/l	Once/6 months	Composite
2,4-Dinitrophenol ²	1.36	2.36	71 µg/l	123 µg/l	Once/6 months	Composite
2,4-Dinitrotoluene ²	2.17	5.47	113 µg/l	285 µg/l	Once/6 months	Composite
2,6-Dinitrotoluene ²	4.89	12.30	255 µg/l	641 µg/l	Once/6 months	Composite
Ethylbenzene ²	0.61	2.07	32 µg/l	108 µg/l	Once/6 months	Composite
Fluoranthene ²	0.48	1.30	25 µg/l	68 µg/l	Once/6 months	Composite
Fluorene ²	0.42	1.13	22 µg/l	59 µg/l	Once/6 months	Composite
Hexachlorobenzene ²	0.29	0.54	15 µg/l	28 µg/l	Once/6 months	Composite
Hexachlorobutadiene ²	0.38	0.94	20 µg/l	49 µg/l	Once/6 months	Composite
Hexachloroethane ²	0.40	1.04	21 µg/l	54 µg/l	Once/6 months	Composite
Methyl Chloride ²	1.65	3.64	86 µg/l	190 µg/l	Once/6 months	Composite
Methylene Chloride ²	0.77	1.71	40 µg/l	89 µg/l	Once/6 months	Composite
Naphthalene ²	0.42	1.13	22 µg/l	59 µg/l	Once/6 months	Composite
Nitrobenzene ²	0.52	1.30	27 µg/l	68 µg/l	Once/6 months	Composite
2-Nitrophenol ²	0.79	1.32	41 µg/l	69 µg/l	Once/6 months	Composite
4-Nitrophenol ²	1.38	2.38	72 µg/l	124 µg/l	Once/6 months	Composite
Phenanthrene ²	0.42	1.13	22 µg/l	59 µg/l	Once/6 months	Composite
Phenol ²	0.29	0.50	15 µg/l	26 µg/l	Once/6 months	Composite
Pyrene ²	0.48	1.29	25 µg/l	67 µg/l	Once/6 months	Composite
Tetrachloroethylene ²	0.42	1.07	22 µg/l	56 µg/l	Once/6 months	Composite
Toluene ²	0.50	1.53	26 µg/l	80 µg/l	Once/6 months	Composite
Total Chromium ²	21.29	53.13	1,110 µg/l	2,770 µg/l	Once/6 months	Composite
Total Copper ²	24.56	49.29	1,071 µg/l	2,149 µg/l	Once/6 months	Composite
Total Cyanide ²	7.80	15.66	340 µg/l	683 µg/l	Once/6 months	Grab
Total Lead ²	6.14	13.24	320 µg/l	690 µg/l	Once/6 months	Composite
Total Nickel ²	32.42	76.34	1,690 µg/l	3,980 µg/l	Once/6 months	Composite
Total Zinc ²	20.14	50.07	1,050 µg/l	2,610 µg/l	Once/6 months	Composite
1,2,4-Trichlorobenzene ²	1.30	2.69	68 µg/l	140 µg/l	Once/6 months	Composite
1,1,1-Trichloroethane ²	0.40	1.04	21 µg/l	54 µg/l	Once/6 months	Composite
1,1,2-Trichloroethane ²	0.40	1.04	21 µg/l	54 µg/l	Once/6 months	Composite
Trichloroethylene ²	0.40	1.04	21 µg/l	54 µg/l	Once/6 months	Composite
Vinyl Chloride ²	1.99	5.14	104 µg/l	268 µg/l	Once/6 months	Composite
pH	N/A	N/A	<u>Minimum</u> 6 s.u. ³	<u>Maximum</u> 9 s.u. ³	Continuous	Record

Effluent Characteristics	Discharge Limitations				Monitoring Requirements	
	Mass (lbs/day, unless otherwise specified)		Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
	Monthly Avg	Daily Max	Monthly Avg.	Daily Max		
Chronic WET Testing ¹						
<u>Pimephales promelas (Chronic)</u> ¹ Pass/Fail Lethality (7-day NOEC) TLP6C Pass/Fail Growth (7-day NOEC)TGP6C Survival (7-day NOEC) TOP6C Coefficient of Variation (Growth) TQP6C Growth (7-day NOEC) TPP6C Pass/Fail Retest 1 (7-day NOEC) 22418 Pass/Fail Retest 2 (7-day NOEC) 22419 Pass/Fail Retest 3 (7-day NOEC) 51444 <u>Ceriodaphnia dubia (Chronic)</u> ¹ Pass/Fail Lethality (7-day NOEC) TLP3B Pass/Fail Production (7-day NOEC)TGP3B Survival (7-day NOEC) TOP3B Coefficient of Variation (Reproduction) TQP3B Reproduction (7-day NOEC) TPP3B Pass/Fail Retest 1 (7-day NOEC) 22415 Pass/Fail Retest 2 (7-day NOEC) 22416 Pass/Fail Retest 3 (7-day NOEC) 51443			Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report % Report % Report % Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report (Pass=0/Fail=1)	Once/quarter Once/quarter Once/quarter Once/quarter Once/quarter Once/month ⁴ Once/month ⁴ Once/month ⁴ Once/quarter Once/quarter Once/quarter Once/quarter Once/quarter Once/month ⁴ Once/month ⁴ Once/month ⁴	Composite Composite Composite Composite Composite Composite Composite Composite Composite Composite Composite Composite Composite Composite Composite	

¹ WET testing shall be performed on the combined effluent of Outfall 001 and 002. See Condition No. 13 of Part II.

² See Condition No.10 of Part II (MQL requirements).

³ pH of the effluent shall be within the specified range at all times.

⁴ CONDITIONAL REPORTING: Use only if conducting retests due to a test failure (demonstration of significant toxic effects at or below the critical dilution). If testing on a quarterly basis, the permittee may substitute one of the retests in lieu of one routine toxicity test. If retests are not required, Report NODI=9 (Conditional Monitoring - Not Required This Period) under retest parameters.

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. There shall be no visible sheen due to the presence of oil (Sheen means an iridescent appearance on the surface of the water).

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge during the entire monitoring period. Samples for all parameters except WET shall be taken after the final treatment prior to commingling with effluent from outfall 001 at the following monitoring coordinates: Latitude: 35° 42' 43.77" Longitude: 91° 31' 33.58". Samples for WET testing shall be taken after Outfall 001 and 002 effluent are mixed and prior to discharge to the White River.

**PART I
 PERMIT REQUIREMENTS**

SECTION A3. UPSTREAM MONITORING REQUIREMENTS: Stream Monitoring Station (SMS)

Upstream concentrations of the following parameters are required for the purpose of determining background concentrations of these parameters for use in the evaluation of the priority pollutant scan submitted at each permit renewal and the calculation of the instream waste concentration of the pollutants in the receiving stream after mixing (IWC). In addition, the upstream hardness and TSS values are used to calculate the site specific water quality standards that are a function of hardness and the conversion from dissolved metals to total metals.

During the period beginning on effective date and lasting until date of expiration, the permittee is required to collect and analyze upstream samples of the White River. Such upstream samples shall be monitored and reported 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.	Daily Max	Monthly Avg.	Daily Max		
Total Chromium ¹	N/A	N/A	Report, ug/l	Report, ug/l	Once/quarter	Grab
Total Copper ¹	N/A	N/A	Report, ug/l	Report, ug/l	Once/quarter	Grab
Total Cyanide ¹	N/A	N/A	Report, ug/l	Report, ug/l	Once/quarter	Grab
Total Lead ¹	N/A	N/A	Report, ug/l	Report, ug/l	Once/quarter	Grab
Total Nickel ¹	N/A	N/A	Report, ug/l	Report, ug/l	Once/quarter	Grab
Total Zinc ¹	N/A	N/A	Report, ug/l	Report, ug/l	Once/quarter	Grab
Hardness ¹	N/A	N/A	Report	Report	Once/quarter	Grab
Total Suspended Solids (TSS) ¹	N/A	N/A	Report	Report	Once/quarter	Grab

¹ See Condition No. 9 of Part II.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at the river water intake pumps approximately 100 feet upstream from where the effluent enters the White River.

SECTION B. PERMIT COMPLIANCE SCHEDULE

None

PART II OTHER CONDITIONS

1. The operator of this wastewater treatment facility shall be Advanced Industrial licensed by the State of Arkansas in accordance with APCEC Regulation No. 3.
2. In accordance with 40 CFR Parts 122.62 (a)(2) and 124.5, this permit may be reopened for modification or revocation and/or reissuance to require additional monitoring and/or effluent limitations when new information is received that actual or potential exceedance of State water quality criteria and/or narrative criteria are determined to be the result of the permittee's discharge(s) to a relevant water body or a Total Maximum Daily Load (TMDL) is established or revised for the water body that was not available at the time of the permit issuance that would have justified the application of different permit conditions at the time of permit issuance.
3. Other Specified Monitoring Requirements

The permittee may use alternative appropriate monitoring methods and analytical instruments other than as specified in Part I Section A of the permit without a major permit modification under the following conditions:

- The monitoring and analytical instruments are consistent with accepted scientific practices.
- The requests shall be submitted in writing to the Permits Section of the Water Division of the ADEQ for use of the alternate method or instrument.
- The method and/or instrument is in compliance with 40 CFR Part 136 or approved in accordance with 40 CFR Part 136.5.
- All associated devices are installed, calibrated, and maintained to insure the accuracy of the measurements and are consistent with the accepted capability of that type of device. The calibration and maintenance shall be performed as part of the permittee's laboratory Quality Control/Quality Assurance program.

Upon written approval of the alternative monitoring method and/or analytical instruments, these methods or instruments must be consistently utilized throughout the monitoring period. ADEQ must be notified in writing and the permittee must receive written approval from ADEQ if the permittee decides to return to the original permit monitoring requirements.

4. Best Management Practices (BMPs), as defined in Part IV.6, must be implemented for the facility to prevent or reduce the pollution of waters of the State from stormwater runoff, spills or leaks, and/or waste disposal. The permittee must amend the BMPs whenever there is a change in the facility or a change in the operation of the facility.
5. This condition shall become effective upon APC&EC approval of the draft Regulation No. 6 that the ADEQ submitted to the APC&EC in August 2016.

Pursuant to 40 CFR 401.17:

- (a) Where a permittee continuously measures the pH of wastewater pursuant to a requirement or option in a National Pollutant Discharge Elimination System (NPDES) permit issued pursuant to section 402 of the Act, the permittee shall maintain the pH of such wastewater within the range set forth in the applicable effluent limitations guidelines, except excursions from the range are permitted subject to the following limitations:
- (1) The total time during which the pH values are outside the required range of pH values shall not exceed 7 hours and 26 minutes in any calendar month; and
 - (2) No individual excursion from the range of pH values shall exceed 60 minutes.
- (b) The Director may adjust the requirements set forth in paragraph (a) of this condition with respect to the length of individual excursions from the range of pH values, if a different period of time is appropriate based upon the treatment system, plant configuration or other technical factors.
- (c) For purposes of this condition, an *excursion* is an unintentional and temporary incident in which the pH value of discharge wastewater exceeds the range set forth in the applicable effluent limitations guidelines.

6. Conditions For Land Application of Industrial Waste On Dedicated Land Disposal (DLD) Site and Groundwater Monitoring.

A. Expiration of DLD/Groundwater Monitoring Conditions Upon Effective Date of No-Discharge Permit

This NPDES discharge permit allows operation of the DLD site and Groundwater Monitoring network under the following terms and conditions until such time as a No-Discharge permit becomes effective for the DLD operations and Groundwater Monitoring network.

1. The facility shall continue to work in good faith towards acquiring a No-Discharge permit for the DLD site and new Groundwater Monitoring network by submitting an application and supplying requested information in a timely manner.
2. Upon effective date of the No-Discharge permit, the terms and conditions related to the DLD site and Groundwater Monitoring network in this NPDES permit will no longer apply, and operation of the DLD and the new Groundwater Monitoring network will then be covered under the terms and conditions of the No-Discharge permit.

B. The following terms and conditions apply to the following existing DLD Site.

<u>Acreage</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
95	33	13 North	5 West

Any new land application sites other than those described herein must be covered under a no-discharge permit or a modified NPDES permit.

C. General Requirements

1. Only waste which is not classified as a hazardous waste under state or federal regulations may be land applied.
2. Ceiling Concentration of Metals. If any one of the pollutant concentrations in the waste exceeds any of the concentrations in Table 1 (Ceiling Concentration of Metals) below, the waste cannot be land applied, and the permittee shall:
 - a. Cease all land application of sludge;
 - b. Within 15 days of receiving the analysis indicating an exceedance, submit a remediation plan and schedule to the Office of Water Quality for review and approval;
 - c. Address any deficiencies in the remediation plan and schedule within 15 days of receiving written notification of such from the Office of Water Quality; and
 - d. Implement the approved remediation plan according to the approved schedule.

NOTE: No land application of sludge shall resume prior to receiving written permission from the Office of Water Quality.

TABLE 1
Ceiling Concentration of Metals

	<u>mg/L</u>
Arsenic ¹	5.0
Barium ¹	100
Cadmium ¹	1.0
Chromium ¹	5.0
Copper	4300
Lead ¹	5.0
Mercury ¹	0.2
Molybdenum	75
Nickel	420
Selenium ¹	1.0
Silver ¹	5.0
Zinc	7500

¹ This metal shall be analyzed using the Toxicity Characteristic Leaching Procedure (TCLP test method 1311 in EPA Publication SW-846).

3. Cumulative Metals Loadings. Waste applied to land shall not exceed the total amounts of cumulative metals loadings listed in Table 2 (Cumulative Loading of Metals) below. If background soil metals concentrations exceed the loadings listed below, land application of sludge is prohibited.

TABLE 2
Cumulative Loadings of Metals in kg/ha (lbs/acre)

Arsenic	41	(37)
Cadmium	39	(35)
Chromium	3000	(2700)
Copper	1500	(1350)
Lead	300	(270)
Mercury	17	(15)
Molybdenum	18	(16)
Nickel	420	(378)
Selenium	100	(90)
Zinc	2800	(2520)

The loading equation is:

$$\frac{\text{Pounds}}{\text{Acre}} = \frac{\text{Concentration (mg/L)} \times 8.34 \times \text{Waste Volume Applied (MG)}}{\text{Acreage Applied}}$$

4. The permittee shall be responsible for assuring that the land owner and the waste applicator (if different from the permittee) abide by the conditions of this permit.
5. Sludge shall be land applied to the DLD site through the use of a spray irrigation system. In the event that storage is exceeded and waste cannot be land applied, waste shall be disposed of by other practices in accordance with Part III.B.6.A and Part III.B.6.B of this permit.
6. Sludge shall not be applied to slopes with a gradient greater than 15%; or to soils that are saturated, frozen or covered with snow, and during rain or when precipitation is imminent.
7. Sludge shall not be land applied within 100 feet of streams, including intermittent streams, ponds, lakes, springs, sinkholes, rock outcrops, wells and water supplies; or 300 feet of extraordinary resource waters as defined by the Commission's Regulation No. 2. Buffer distances for streams, ponds, and lakes must be measured from the ordinary high water mark. Sludge shall not be land applied within 50 feet of property lines or 300 feet of neighboring occupied buildings existing as of the date of the permit (except for the WWTF Control Room). The restrictions regarding property lines or neighboring buildings may be waived if the adjoining property is also approved as a land application site under a permit issued by the Department or if the adjoining property owner consents in writing.

8. The permittee shall take all necessary measures to reduce obnoxious and offensive odors. Equipment shall be properly maintained and operated to prevent spillage and leakage.
9. Disposal of waste in a floodplain shall not restrict the flow of the base flood, reduce the temporary storage capacity of the floodplain, or result in a washout of the waste, so as to pose hazards to human life, wildlife or land and water uses.
10. Any changes in the sludge disposal practice shall comply with Part III.B.6 of this permit.
11. All new application sites must have a waste management plan approved by the Department before it is utilized.
12. The soil pH of the sludge application sites must be adjusted with lime from time to time in accordance with the University of Arkansas Cooperative Extension Service. Representative soil samples must be taken before sludge is land applied. If the resulting pH's are 5.7 or lower, lime must be applied in sufficient quantities to increase the pH to 6.4, or above, depending on the crop grown. Soil pH's are to be monitored on an annual basis and adjusted, if necessary, to these requirements.

D. Monitoring and Reporting Requirements

The permittee shall be responsible for waste analyses, soil analyses and a reporting schedule that must include the following. Analytical results are to be expressed in mg/L unless otherwise indicated.

1. Waste Analysis

The waste samples collected must be representative of the treated materials 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.

Semiannual grab samples of the waste from each facility under this permit shall be analyzed for the following parameters:

% Volatile Solids	Total Kjeldahl Nitrogen
% Total Solids	Nitrate + Nitrite - Nitrogen
Total Organic Carbon	Oil & Grease
Total Phosphorus	Ammonia-Nitrogen
Total Potassium	pH (s.u.)
BOD ₅	Selenium
Arsenic	Silver
Barium	Mercury
Cadmium	Chromium
Lead	Zinc
Copper	Molybdenum
Nickel	

2. Soils Analysis

Each land application site shall be soil tested prior to Spring of each year for the following parameters:

Nitrate – Nitrogen	Potassium
Total Organic Carbon	Salt Content (micro-mohs/cm)
Phosphorus	Arsenic
Magnesium	Cadmium
pH	Zinc
Copper	Nickel
Lead	Cation Exchange Capacity (me/100g)
% Moisture	Oil & Grease

3. Reporting

- A. Annual reports shall be sent to the Department and to the owner of the land receiving waste prior to May 1st of each year. The annual report must include the following information:
1. The waste and soil analyses conducted under Part II.6.D.1 and Part II.6.D.2 above.
 2. A statement that the waste and soil analyses were performed in accordance with EPA Document SW-846, "Test Methods for Evaluation of Solid Waste", Method 200.7 using EPA/600/R-94/111, May 1994 for sample preparation, or other procedures approved by the Director.
 3. Land application dates and locations.
 4. Amounts of sludge applied in dry tons/acre-year and gallons/acre-year of sludge.
 5. Type of crop grown.
 6. Amounts of nitrogen applied.
 7. Total metals added that year (lbs/acre).
 8. Total metals applied to date (metals listed in table 2) (lbs/acre).
 9. Copies of soil analyses for each site.
 10. Certification that the sludge applied in previous year does not meet the characteristics of a hazardous waste in accordance with APC&EC Regulation 23 Part 261.
- B. The permittee shall also maintain copies of the above records for Department personnel review at the waste generating facility.

4. Ground Water Monitoring

- A. The permittee shall maintain a comprehensive groundwater monitoring program consisting of the following:
1. A minimum of one up-gradient deep monitoring well, one up-gradient shallow monitoring well, two down-gradient deep monitoring wells, and two down-gradient shallow wells shall be maintained. Shallow wells shall sample groundwater above the underlying Moorefield Formation. Deep wells shall sample groundwater in or below the

Moorefield Formation. Well locations must be approved by the Department.

2. Wells shall be sampled and analyzed on a quarterly basis as a minimum. Yearly summaries of all sample reports for the required wells shall be submitted to the Department.
 3. Groundwater shall be sampled for nitrate-nitrogen, chlorides, lead, cadmium, nickel, copper, zinc, and pH as a minimum.
- B. If any deep or any up-gradient shallow monitoring well nitrate concentration exceeds 10 mg/l, an intensive monitoring program shall be initiated within three (3) days to verify the finding. This program shall be completed within thirty (30) days. If any deep or up-gradient shallow monitoring well nitrate concentrations exceeding 10 mg/l are confirmed statistically (utilizing Student's t-test or other acceptable methods), the permittee shall notify the Department in writing within ten (10) days of confirmation. The permittee shall also submit a plan for sampling and/or additional wells to delineate nitrate concentrations in the groundwater within thirty (30) days of the notification. Based on the information collected after the execution of this plan, the permittee shall be placed on a compliance schedule which may include a program for reducing loading to the DLD system and use of alternate methods of sludge disposal.
- C. All runoff from the application site shall be contained and diverted back through the wastewater treatment system.

7. **Interim Best Technology Available (BTA) Requirements for Cooling Water Intake Structure (CWIS).**

In accordance with Subpart J – Requirements Applicable to Cooling Water Intake Structures for Existing Facilities Under Section 316(b) of the Clean Water Act, the Cooling Water Intake Structure (CWIS) associated with the once-through cooling water system shall be operated and maintained in accordance with the following Best Management Practices (BMPs) that are designed to minimize any Adverse Environmental Impacts (AEI). In accordance with 40 CFR Part 125.98(b)(6), the following BMPs are established as Interim BTA requirements in this permit based on BPJ.

- A. The condition of the screens shall be visually inspected at least once per week.
- B. The screens shall be maintained in proper operating condition whenever the river water pumps are withdrawing water.
- C. The screens shall be rotated through a cleaning cycle at least once per week.
- D. Routine preventative maintenance shall be performed on the screens at least once per quarter to maintain proper operating conditions of the screens.
- E. Records documenting the operation and maintenance procedures described above shall be kept on site for a minimum of three years, and made available to ADEQ upon request.

In accordance with 40 CFR 125.98(b)(1), nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act.

8. **CWIS INFORMATION REQUIRED IN NEXT RENEWAL APPLICATION**

In accordance with 40 CFR Part 125.98(b)(6), the permittee shall include the following information with the next permit renewal application to ensure that ADEQ will have all information required under 40 CFR 122.21 (r) necessary to establish impingement mortality and entrainment BTA requirements under 40 CFR 125.94 (c) and (d) in the next renewal permit. Please note that a minimum of two years of biological data collection for impingement must be included with the next renewal application if the permittee chooses certain impingement mortality compliance options. In addition, if the facility withdraws greater than 125 mgd actual intake flow as defined in 40 CFR 122.92 (a), two years of biological data collection for entrainment must be included with the next permit renewal application.

A. Source Water Physical Data

All information required under 40 CFR 122.21 (r)(2).

B. Cooling Water Intake Structure Data

All information required under 40 CFR 122.21 (r)(3).

C. Source Water Baseline Biological Characterization Data

All information required in 40 CFR 122.21 (r)(4)(i) through (xii).

D. Cooling Water System Data

All information required in 40 CFR 122.21 (r)(5)(i) through (iii).

E. Chosen Method(s) of Compliance with Impingement Mortality Standard

All information required in 40 CFR 122.21 (r)(6) shall be submitted based on the chosen option out of the seven options for meeting best technology available requirements for reducing impingement.

F. Entrainment Performance Studies

All information required in 40 CFR 122.21 (r)(7).

G. Operational Status

All information required in 40 CFR 122.21 (r)(8).

H. Entrainment Characterization Study

All information required in 40 CFR 122.21 (r)(9), if the facility withdraws greater than 125 mgd actual intake flow as defined in 40 CFR 122.92 (a).

I. Comprehensive Technical Feasibility and Cost Evaluation Study

All information required in 40 CFR 122.21 (r)(10), if the facility withdraws greater than 125 mgd actual intake flow as defined in 40 CFR 122.92 (a).

J. Benefits Valuation Study

All information required in 40 CFR 122.21 (r)(11), if the facility withdraws greater than 125 mgd actual intake flow as defined in 40 CFR 122.92 (a).

K. Non-water Quality Environmental and Other Impacts Study

All information required in 40 CFR 122.21 (r)(12), if the facility withdraws greater than 125 mgd actual intake flow as defined in 40 CFR 122.92 (a).

L. Peer Review

In accordance with 40 CFR 122.21 (r)(13), if the facility withdraws greater than 125 mgd actual intake flow as defined in 40 CFR 122.92 (a), the permittee must conduct an external peer review of each study report listed in items I, J, and K above to be submitted with permit application.

9. Upstream Sampling

a. 40 CFR Part 136 Analytical Requirements

Upstream monitoring shall be conducted according to analytical, apparatus, and materials, sample collection, preservation, handling, etc., procedures listed at 40 CFR Part 136.

b. Minimum Quantification Level (MQL)

See Condition No. 10 of this part.

c. Additional Monitoring

If the permittee monitors any pollutant more frequently than required in this section, using the test procedures specified in 40 CFR Part 136 or as specified in this section, the permittee shall report the highest concentration measured during the reporting period and indicate the number of samples collected and analyzed during the reporting period on the DMR.

10. The permittee may use any EPA approved method based on 40 CFR Part 136 provided the MQL for the chosen method is equal to or less than the following values:

Parameter	MQL, µg/l
Acenaphthene	10
Acenaphthylene	10
Acrylonitrile	20
Anthracene	10
Benzene	10
Benzo(a)anthracene	5
3,4-Benzofluoranthene	10
Benzo(k)fluoranthene	5
Benzo(a)pyrene	5
Bis(2-ethylhexyl)phthalate	10
Carbon Tetrachloride	2
Chlorobenzene	10
Chloroethane	50
Chloroform	10
2-Chlorophenol	10
Chrysene	5
Di-n-butyl phthalate	10
1,2-Dichlorobenzene	10
1,3-Dichlorobenzene	10
1,4-Dichlorobenzene	10
1,1-Dichloroethane	10

Parameter	MQL, $\mu\text{g/l}$
1,2-Dichloroethane	10
1,1-Dichloroethylene	10
1,2-trans-Dichloroethylene	10
2,4-Dichlorophenol	10
1,2-Dichloropropane	10
1,3-Dichloropropylene	10
Diethyl phthalate	10
2,4-Dimethylphenol	10
Dimethyl phthalate	10
4,6-Dinitro-o-cresol	50
2,4-Dinitrophenol	50
2,4-Dinitrotoluene	10
2,6-Dinitrotoluene	10
Ethylbenzene	10
Fluoranthene	10
Fluorene	10
Hexachlorobenzene	5
Hexachlorobutadiene	10
Hexachloroethane	20
Methyl Chloride	50
Methylene Chloride	20
Naphthalene	10
Nitrobenzene	10
2-Nitrophenol	20
4-Nitrophenol	50
Phenanthrene	10
Phenol	10
Pyrene	10
Tetrachloroethylene	10
Toluene	10
Total Chromium	10
Total Copper	0.5
Total Cyanide	10
Total Lead	0.5
Total Nickel	0.5
Total Zinc	20
1,2,4-Trichlorobenzene	10
1,1,1-Trichloroethane	10
1,1,2-Trichloroethane	10
Trichloroethylene	10
Vinyl Chloride	10
Total Aluminum*	66*
Total Iron*	99*

Parameter	MQL, $\mu\text{g/l}$
Total Phenolics	5

*MQLs for Iron and Aluminum were derived from EPA Region 6 guidance dated April 10, 2006: $\text{MQL} = 3.3 \times \text{MDL}$, where the MDLs for Iron and Manganese for the MQL calculation were determined using Table 4 of EPA Method 200.7 published in May 18, 2012 Federal Register Vol. 77, No. 97 on page 29826. MQLs for all other priority pollutants listed in this table were taken from ADEQ's PPS Form.

The permittee may develop a matrix specific method detection limit (MDL) in accordance with Appendix B of 40 CFR Part 136. For any pollutant for which the permittee determines a site specific MDL, the permittee shall send to ADEQ, NPDES Permits Branch, a report containing QA/QC documentation, analytical results, and calculations necessary to demonstrate that a site specific MDL was correctly calculated. A site specific minimum quantification level (MQL) shall be determined in accordance with the following calculation:

$$\text{MQL} = 3.3 \times \text{MDL}$$

Upon written approval by Permits Branch, the site specific MQL may be utilized by the permittee for all future Discharge Monitoring Report (DMR) calculations and reporting requirements.

11. The permittee has the option to develop a site-specific critical flow in the White River by performing a flow study. If the permittee chooses to perform a critical flow study, prior written approval of a study plan must be obtained from ADEQ and USGS.
12. The requirement to sample, analyze, and report the Monthly Average and Daily Maximum values of concentration and mass of Total Recoverable Aluminum and Total Recoverable Iron in Outfall 001 effluent in accordance with the requirements in Part IA, Section A of the permit is applicable for one year from the effective date of the permit. After the results of four (4) samples have been reported in accordance with the above requirements, the permittee may cease the monitoring and reporting of Aluminum and Iron at Outfall 001.

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

A. SCOPE AND METHODOLOGY

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

APPLICABLE TO FINAL OUTFALL:	{001 and 002, combined}
REPORTED ON DMR AS FINAL OUTFALL:	{002}
CRITICAL DILUTION (%):	{25%}
EFFLUENT DILUTION SERIES (%):	{11%, 14%, 19%, 25%, 33%}
TESTING FREQUENCY:	{once per quarter}
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-821-R-02-013, 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-821-R-02-013, 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.

- ii. The NOEC (No Observed Effect Concentration) is herein defined as the greatest effluent dilution at and below which toxicity (lethal or sub-lethal) 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. Chronic sub-lethal test failure is defined as a demonstration of a statistically significant sub-lethal effect (i.e., growth or reproduction) at test completion to a test species at or below the critical dilution.
- iii. 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.

B. PERSISTENT LETHAL and/or SUB-LETHAL EFFECTS

The requirements of this subsection apply only when a toxicity test demonstrates significant lethal and/or sub-lethal effects at or below the critical dilution. The purpose of retests is to determine the duration of a toxic event. A test that meets all test acceptability criteria and demonstrates significant toxic effects does not need additional confirmation. Such testing cannot confirm or disprove a previous test result.

If a frequency reduction, as specified in Item F, has been granted and any valid test demonstrates significant lethal or sub-lethal effects to a test species at or below the critical dilution, the frequency of testing for that species is automatically increased to once per quarter for the life of the permit. In addition:

i. Part I Testing Frequency Other Than Monthly

- a. The permittee shall conduct a total of three (3) retests for any species that demonstrates significant toxic effects at or below the critical dilution. The retests shall be conducted monthly during the next three consecutive months. If testing on a quarterly basis, the permittee may substitute one of the retests in lieu of one scheduled toxicity test. A full report shall be prepared for each test required by this section in accordance with procedures outlined in Item D of this section and submitted with the period discharge monitoring report (DMR) to the permitting authority for review.
- b. **IF LETHAL EFFECTS HAVE BEEN DEMONSTRATED** If any of the retests demonstrates significant lethal effects at or below the critical dilution, the permittee shall initiate Toxicity Reduction Evaluation (TRE) requirements as specified in Item E 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 also be required due to a demonstration of intermittent lethal effects at or below the critical dilution, or for failure to perform the required retests. A TRE required based on lethal effects should consider any sub-lethal effects as well.
- c. **IF SUB-LETHAL EFFECTS ONLY HAVE BEEN DEMONSTRATED** If any two of the three retests demonstrates significant sub-lethal effects at 75% effluent or lower, the permittee shall initiate the Sub-Lethal Toxicity Reduction Evaluation (TRE_{SL}) requirements as specified in Item E of this section. The permittee shall notify ADEQ in writing within 5 days of the failure of any retest, and the Sub-Lethal Effects TRE initiation date will be the test completion date of the first failed retest. A TRE may be also be required for failure to perform the required retests.
- d. The provisions of Item B.i.a are suspended upon submittal of the TRE Action Plan.

ii. Part I Testing Frequency of Monthly

The permittee shall initiate the Toxicity Reduction Evaluation (TRE) requirements as specified in Item E of this section when any two of three consecutive monthly toxicity tests exhibit significant toxic effects at or below the critical dilution. A TRE may also be required due to a demonstration of intermittent lethal and/or sub-lethal effects at or below the critical dilution, or for failure to perform the required retests.

C. REQUIRED TOXICITY TESTING CONDITIONS

i. 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:

- a. The toxicity test control (0% effluent) must have survival equal to or greater than 80%.
- b. The mean number of Ceriodaphnia dubia neonates produced per surviving female in the control (0% effluent) must be 15 or more.
- c. 60% of the surviving control females must produce three broods.
- d. 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.
- e. 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.
- f. The percent coefficient of variation between replicates shall be 40% or less in the critical dilution, unless significant lethal or sub-lethal 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.
- g. If a test passes, yet the percent coefficient of variation between replicates is greater than 40% in the control (0% effluent) and/or in the critical dilution for: the young of surviving females in the Ceriodaphnia dubia reproduction test; the growth and survival endpoints of the Fathead minnow test, the test is determined to be invalid. A repeat test shall be conducted within the required reporting period of any test determined to be invalid.
- h. If a test fails, test failure may not be construed or reported as invalid due to a coefficient of variation value of greater than 40%.

- i. A Percent Minimum Significant Difference (PMSD) range of 13 - 47 for Ceriodaphnia dubia reproduction;
 - j. A PMSD range of 12 - 30 for Fathead minnow growth.
- ii. Statistical Interpretation
- a. 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/821/R-02-013 or the most recent update thereof.
 - b. 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/821/R-02-013 or the most recent update thereof.
 - c. If the conditions of Test Acceptability are met in Item C.i 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 a survival NOEC of not less than the critical dilution for the DMR reporting requirements found in Item D below.
- iii. Dilution Water
- a. 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;
 - (1) toxicity tests conducted on effluent discharges to receiving water classified as intermittent streams; and
 - (2) toxicity tests conducted on effluent discharges where no receiving water is available due to zero flow conditions.
 - b. If the receiving water is unsatisfactory as a result of instream toxicity (fails to fulfill the test acceptance criteria of Item C.i), 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:

- (1) a synthetic dilution water control which fulfills the test acceptance requirements of Item C.i was run concurrently with the receiving water control;
- (2) the test indicating receiving water toxicity has been carried out to completion (i.e., 7 days);
- (3) the permittee includes all test results indicating receiving water toxicity with the full report and information required by Item D below; and
- (4) 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.

iv. Samples and Composites

- a. The permittee shall collect a minimum of three flow-weighted composite samples from the outfall(s) listed at Item A.i above. Unless otherwise stated in this section, a composite sample for WET shall consist of a minimum of 12 subsamples gathered at equal time intervals during a 24-hour period.
- b. 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, on use, are representative of any periodic episode of chlorination, biocide usage or other potentially toxic substance discharged on a regular or intermittent basis.
- c. The permittee must collect all three flow-weighted composite samples within the monitoring period. Second and/or third composite samples shall not be collected into the next monitoring period; such tests will be determined to not meet either reporting period requirements. Monitoring period definitions are listed in Part IV.
- d. 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 between 0 and 6 degrees Centigrade during collection, shipping, and/or storage.
- e. 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 have collected 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 D of this section.

- f. MULTIPLE OUTFALLS: If the provisions of this section are applicable to multiple outfalls, the permittee shall combine the composite effluent samples in proportion to the average flow from the outfalls listed in Item A.i. above for the day the sample was collected. The permittee shall perform the toxicity test on the flow-weighted composite of the outfall samples.
- g. If chlorination is part of the treatment process, the permittee shall not allow the sample to be dechlorinated at the laboratory. At the time of sample collection the permittee shall measure the TRC of the effluent. The measured concentration of TRC for each sample shall be included in the lab report submitted by the permittee.

D. REPORTING

- i. 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/821/R-02-013, 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 III.C.7 of this permit. The permittee shall submit full reports. For any test or retest which fails, is considered invalid or which is terminated early for any reason, the full report must be submitted for agency review.
- ii. A valid test for each species must be reported on the DMR during each reporting period specified in PART I of this permit. The full reports for 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 Agency review.
- iii. The permittee shall submit the results of each valid toxicity test and retest on the subsequent monthly DMR for that reporting period in accordance with PART III.D.4 of this permit, as follows below. Only results of valid tests are to be reported on the DMR.
 - a. Pimephales promelas (Fathead minnow)
 - (1) 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
 - (2) Report the NOEC value for survival, Parameter No. TOP6C
 - (3) Report the NOEC value for growth, Parameter No. TPP6C

- (4) If the NOEC for growth is less than the critical dilution, enter a '1'; otherwise, enter a '0' for Parameter No. TGP6C
- (5) Report the highest (critical dilution or control) Coefficient of Variation for growth, Parameter No. TQP6C
- (6) If conducting retests due to a test failure (demonstration of significant toxic effects at or below the critical dilution):
 - (A) Consecutive Monthly Retest 1: If the NOEC (lowest lethal or sub-lethal) for *P. promelas* is less than the critical dilution, enter a '1'; otherwise, enter a '0' under Parameter No. 22418;
 - (B) Consecutive Monthly Retest 2: If the NOEC (lowest lethal or sub-lethal) for *P. promelas* is less than the critical dilution, enter a '1'; otherwise, enter a '0' under Parameter No. 22419;
 - (C) Consecutive Monthly Retest 3: If the NOEC (lowest lethal or sub-lethal) for *P. promelas* is less than the critical dilution, enter a '1'; otherwise, enter a '0' under Parameter No. 51444;
 - (D) If testing on a quarterly basis, the permittee may substitute one of the retests in lieu of one scheduled toxicity test;
 - (E) If retests are not required, Report NODI=9 (Conditional Monitoring - Not Required This Period) under Parameter Nos. 22418, 22419, 51444

b. Ceriodaphnia dubia

- (1) If the NOEC for survival is less than the critical dilution, enter a '1'; otherwise, enter a '0' for Parameter No. TLP3B
- (2) Report the NOEC value for survival, Parameter No. TOP3B
- (3) Report the NOEC value for reproduction, Parameter No. TPP3B
- (4) If the NOEC for reproduction is less than the critical dilution, enter a '1'; otherwise, enter a '0' for Parameter No. TGP3B
- (5) Report the higher (critical dilution or control) Coefficient of Variation for reproduction, Parameter No. TQP3B
- (6) If conducting retests due to a test failure (demonstration of significant toxic effects at or below the critical dilution):

- (A) Consecutive Monthly Retest 1: If the NOEC (lowest lethal or sub-lethal) for *C. dubia* is less than the critical dilution, enter a '1'; otherwise, enter a '0' under Parameter No. 22415;
- (B) Consecutive Monthly Retest 2: If the NOEC (lowest lethal or sub-lethal) for *C. dubia* is less than the critical dilution, enter a '1'; otherwise, enter a '0' under Parameter No. 22416;
- (C) Consecutive Monthly Retest 3: If the NOEC (lowest lethal or sub-lethal) for *C. dubia* is less than the critical dilution, enter a '1'; otherwise, enter a '0' under Parameter No. 51443;
- (D) If testing on a quarterly basis, the permittee may substitute one of the retests in lieu of one scheduled toxicity test;
- (E) If retests are not required, Report NODI=9 (Conditional Monitoring - Not Required This Period) under Parameter Nos. 22415, 22416, and 51443

E. TOXICITY REDUCTION EVALUATIONS (TREs)

TREs for lethal and sub-lethal effects are performed in a very similar manner. EPA Region 6 is currently addressing TREs as follows: a sub-lethal TRE (TRE_{SL}) is triggered based on three sub-lethal test failures while a lethal effects TRE (TRE_L) is triggered based on only two test failures for lethality. In addition, EPA Region 6 will consider the magnitude of toxicity and use flexibility when considering a TRE_{SL} where there are no effects at effluent dilutions of 75% or lower.

- i. Within ninety (90) days of confirming toxicity, as outlined above, 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 goal of the TRE is to maximally reduce the toxic effects of effluent at the critical dilution and includes the following:
 - a. 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 (703) 487-4650, or by writing:

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

- b. 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;
 - c. 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;
 - d. Quality Assurance Plan (e.g., QA/QC implementation, corrective actions, etc.); and
 - e. Project Organization (e.g., project staff, project manager, consulting services, etc.).
- ii. 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.
 - iii. 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:

- a. any data and/or substantiating documentation which identifies the pollutant(s) and/or source(s) of effluent toxicity;
 - b. any studies/evaluations and results on the treatability of the facility's effluent toxicity; and
 - c. any data which identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no significant toxicity at the critical dilution.
- iv. The permittee shall submit a Final Report on Toxicity Reduction Evaluation Activities no later than twenty-eight (28) months from confirming toxicity 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 toxicity at the critical dilution. The report will also provide a specific corrective action schedule for implementing the selected control mechanism.
- v. 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).

F. MONITORING FREQUENCY REDUCTION

- i. The permittee may apply for a testing frequency reduction upon the successful completion of the first four consecutive quarters or first twelve consecutive months (in accordance with Item A.i.) of the current permit term 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*).
- ii. CERTIFICATION - The permittee must certify in writing that no test failures have occurred and that all tests meet all test acceptability criteria in Item C.i. 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 agency will issue a letter of confirmation of the monitoring frequency reduction. A copy of the letter will be forwarded to the agency's Permit Compliance System section to update the permit reporting requirements.

- iii. SUB-LETHAL OR SURVIVAL FAILURES - Monthly retesting is not required if the permittee is performing a TRE.
- iv. Any monitoring frequency reduction granted 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.

PART III STANDARD CONDITIONS

SECTION A – GENERAL CONDITIONS

1. 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; and/or for denial of a permit renewal application. **Any values reported in the required Discharge Monitoring Report (DMR) 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.**

2. 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 twenty-five thousand dollars (\$25,000) or by 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 penalty in such amount as the court shall find appropriate, not to exceed ten thousand dollars (\$10,000) 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.

3. Permit Actions

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

- A. Violation of any terms or conditions of this permit.
- B. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts.
- C. A change in any conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge.
- D. 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.
- E. Failure of the permittee to comply with the provisions of APCEC Regulation No. 9 (Permit fees) as required by Part III.A.11 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.

4. Toxic Pollutants

Notwithstanding Part III.A.3, if any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under APCEC Regulation No. 2, as amended, 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, narrative criteria, or prohibitions established under APCEC Regulation No. 2, as amended, or Section 307(a) 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 yet been modified to incorporate the requirement.

5. Civil and Criminal Liability

Except as provided in permit conditions for “Bypass of Treatment Facilities” (Part III.B.4), and “Upset” (Part III.B.5), 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 subject the permittee to criminal enforcement pursuant to the Arkansas Water and Air Pollution Control Act (Ark. Code Ann. § 8-4-101 et seq.).

6. 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 to under Section 311 of the Clean Water Act.

7. 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 preserved 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 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. Applicable Federal, State or Local Requirements

Permittees are responsible for compliance with all applicable terms and conditions of this permit. Receipt of this permit does not relieve any operator of the responsibility to comply with any other applicable federal requirements such as endangered species, state or local statute, ordinance or regulation.

11. Permit Fees

The permittee shall comply with all applicable permit fee requirements (i.e., including annual permit fees following the initial permit fee that will be invoiced every year the permit is active) for wastewater discharge permits as described in APCEC 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 Parts 122.64 and 124.5(d), as adopted in APCEC Regulation No. 6 and the provisions of APCEC 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**

“Bypass” means the intentional diversion of waste streams from any portion of a treatment facility, as defined at 40 CFR 122.41(m)(1)(i).

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 Parts III.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 III.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.
 - (c) The permittee submitted notices as required by Part III.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 III.B.4.C.1.

5. Upset Conditions

- A. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Part III.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 III.D.6.
 4. The permittee complied with any remedial measures required by Part III.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.

6. Removed Substances

- A. Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering waters of the State. The Permittee must comply with all applicable state and Federal regulations governing the disposal of sludge, including but not limited to 40 CFR Part 503, 40 CFR Part 257, and 40 CFR Part 258.
- B. Any changes to the permittee's disposal practices described in the fact sheet will require at least 180 days prior notice to the Director to allow time for additional permitting. Please note that the 180 day notification requirement may be waived if additional permitting is not required for the change.

7. 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.

SECTION C – MONITORING AND RECORDS

1. 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 discharge shall be monitored.

2. 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.

Calculated Flow Measurement

For calculated flow measurements that are performed in accordance with either the permit requirements or a Department approved method (i.e., as allowed under Part II.3), the +/- 10% accuracy requirement described above is waived. This waiver is only applicable when the method used for calculation of the flow has been reviewed and approved by the Department.

3. 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 provided by the Department or other form/method approved in writing by the Department

(e.g., electronic submittal of DMR once approved). Monitoring results obtained during the previous monitoring period shall be summarized and reported on a DMR form postmarked no later than the 25th day of the month or submitted electronically by 6:00 p.m. of the 25th, following the completed reporting period beginning on the effective date of the permit. When mailing the DMRs, duplicate copies of the forms signed and certified as required by Part III.D.11 and all other reports required by Part III.D, shall be submitted to the Director at the following address:

Enforcement Branch
Office of Water Quality
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

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 Part 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 individual(s) who performed the sampling or measurements.
- C. The date(s) and time analyses were performed.
- D. The individual(s) who performed the analyses.
- E. The analytical techniques or methods used.
- 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.
- 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.

SECTION D – REPORTING REQUIREMENTS

1. Planned Changes

The Permittee shall give notice to the Director as soon as possible but no later than 180 days prior to any planned physical alterations or additions to the permitted facility [40 CFR 122.41(l)]. Notice is required only when:

- A. The alteration or addition to a permitted facility may meet one of the criteria for new sources at 40 CFR 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 subject to effluent limitations in the permit, or to the notification requirements under 40 CFR 122.42(b).

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 III.C.5. **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.
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.
3. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part I of the permit to be reported within 24 hours to the Enforcement Section of the Office of Water Quality of the ADEQ.

C. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours to the Enforcement Section of the Office of Water Quality of the ADEQ.

7. Other Noncompliance

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

8. Changes in Discharge of Toxic Substances for Industrial Dischargers

The Director shall be notified as soon as the permittee knows or has reason to believe:

- A. That any activity has occurred or will occur which would result in the discharge on 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)(1).
- 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).

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 APC&EC Regulation No. 6.

11. Signatory Requirements

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

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:
 - (a) 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.
 - (b) 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.
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:
 - (a) The chief executive officer of the agency.
 - (b) 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).
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 APCEC Regulation No. 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 Environmental Quality. 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 III.A.2 and/or criminal penalties under the authority of the Arkansas Water and Air Pollution Control Act (Ark. Code Ann. § 8-4-101 et seq.).

14. Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

PART IV DEFINITIONS

All definitions contained in Section 502 of the Clean Water Act and 40 CFR 122.2 shall apply to this permit and are incorporated herein by reference. Additional definitions of words or phrases used in this permit are as follows:

1. **“Act”** means the Clean Water Act, Public Law 95-217 (33.U.S.C. 1251 et seq.) as amended.
2. **“Administrator”** means the Administrator of the U.S. Environmental Protection Agency.
3. **“APC&EC”** means the Arkansas Pollution Control and Ecology Commission.
4. **“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.
5. **“Applicable water quality standards”** means all water quality standards to which a discharge is subject under the federal Clean Water Act and which has 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 (APC&EC) Regulation No. 2, as amended.
6. **“Best Management Practices (BMPs)”** are activities, practices, maintenance procedures, and other management practices designed to prevent or reduce the pollution of waters of the State. BMPs also include treatment technologies, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw sewage. BMPs may include structural devices or nonstructural practices.
7. **“Bypass”** means the intentional diversion of waste streams from any portion of a treatment facility, as defined at 40 CFR 122.41(m)(1)(i).
8. **“Composite sample”** is a mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of 4 effluent portions collected at equal time intervals (but not closer than one hour apart) during operational hours, within the 24-hour period, and combined proportional to flow or a sample collected at more frequent intervals proportional to flow over the 24-hour period.
9. **“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.
 - A. **Mass Calculations:** 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.
 - B. **Concentration Calculations:** For pollutants with limitations expressed in other units of measurement, the “daily discharge” is calculated as the average measurement of the pollutant over the day.
10. **“Daily Maximum”** discharge limitation means the highest allowable “daily discharge” during the calendar month.
11. **“Department”** means the Arkansas Department of Environmental Quality (ADEQ).
12. **“Director”** means the Director of the Arkansas Department of Environmental Quality.
13. **“Dissolved oxygen limit”** shall be defined as follows:

- A. When limited in the permit as a minimum monthly average, 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.
14. **“E-Coli”** a sample consists of one effluent grab portion collected during a 24-hour period at peak loads. For E-Coli, report the Daily Maximum as the highest “daily discharge” during the calendar month, and the Monthly Average as the geometric mean of all “daily discharges” within a calendar month, in colonies per 100 ml.
15. **“Fecal Coliform Bacteria (FCB)”** a sample consists of one effluent grab portion collected during a 24-hour period at peak loads. For FCB, report the Daily Maximum as the highest “daily discharge” during the calendar month, and the Monthly Average as the geometric mean of all “daily discharges” within a calendar month, in colonies per 100 ml.
16. **“Grab sample”** means an individual sample collected in less than 15 minutes in conjunction with an instantaneous flow measurement.
17. **“Industrial User”** means a nondomestic discharger, as identified in 40 CFR Part 403, introducing pollutants to a POTW.
18. **“Instantaneous flow measurement”** means the flow measured during the minimum time required for the flow-measuring device or method to produce a result in that instance. To the extent practical, instantaneous flow measurements coincide with the collection of any grab samples required for the same sampling period so that together the samples and flow are representative of the discharge during that sampling period.
19. **“Instantaneous Maximum”** when limited in the permit as an instantaneous maximum value, shall mean that no value measured during the reporting period may fall above the stated value.
20. **“Instantaneous Minimum”** an instantaneous minimum value, shall mean that no value measured during the reporting period may fall below the stated value.
21. **“Monthly Average”** means the highest allowable average of “daily discharges” over 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. For Fecal Coliform Bacteria (FCB) or E-Coli, report the Monthly Average as the geometric mean of all “daily discharges” within a calendar month.
22. **“Monitoring and Reporting”**

When a permit becomes effective, monitoring requirements are of the immediate period of the permit effective date. Where the monitoring requirement for an effluent characteristic is monthly or more frequently, the Discharge Monitoring Report (DMR) shall be submitted by the 25th of the month following the sampling. Where the monitoring requirement for an effluent characteristic is Quarterly, Semi-Annual, Annual, or Yearly, the DMR shall be submitted by the 25th of the month following the monitoring period end date.

A. **MONTHLY:**

is defined as a calendar month or any portion of a calendar month for monitoring requirement frequency of once/month or more frequently.

B. **BI-MONTHLY:**

is defined as two (2) calendar months or any portion of 2 calendar months for monitoring requirement frequency of once/2 months or more frequently.

C. **QUARTERLY:**

1. is defined as a **fixed calendar quarter** or any part of the fixed calendar quarter for a non-seasonal effluent characteristic with a measurement frequency of once/quarter. Fixed calendar quarters are: January through March, April through June, July through September, and October through December.
 2. is defined as a **fixed three month period** (or any part of the fixed three month period) of or dependent upon the seasons specified in the permit for a seasonal effluent characteristic with a monitoring requirement frequency of once/quarter that does not coincide with the fixed calendar quarter. Seasonal calendar quarters are: May through July, August through October, November through January, and February through April.
- D. SEMI-ANNUAL:**
is defined as the fixed time periods January through June, and July through December (or any portion thereof) for an effluent characteristic with a measurement frequency of once/6 months or twice/year.
- E. ANNUAL or YEARLY:**
is defined as a fixed calendar year or any portion of the fixed calendar year for an effluent characteristic or parameter with a measurement frequency of once/year. A calendar year is January through December, or any portion thereof.
23. **“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.
 24. **“POTW”** means Publicly Owned Treatment Works;
 25. **“Reduction of CBOD5/BOD5 and TSS in mg/l Formula”**
[(Influent – Effluent) / Influent] x 100
 26. **“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.
 27. **“Sewage sludge”** means the solids, residues, and precipitate separated from or created in sewage by the unit processes at a POTW. Sewage as used in this definition means any wastes, including wastes from humans, households, commercial establishments, industries, and stormwater runoff that are discharged to or otherwise enter a POTW.
 28. **“7-Day Average”** Also known as “average weekly” means the highest allowable average of “daily discharges” over a calendar week, calculated as the sum of all “daily discharges” measured during a calendar week divided by the number of “daily discharges” measured during that week. The 7-Day Average for Fecal Coliform Bacteria (FCB) or E-Coli is the geometric mean of the “daily discharges” of all effluent samples collected during a calendar week in colonies per 100 ml.
 29. **“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.

30. **Units of Measure:**

“**MGD**” shall mean million gallons per day.

“**mg/l**” shall mean milligrams per liter or parts per million (ppm).

“**µg/l**” shall mean micrograms per liter or parts per billion (ppb).

“**cfs**” shall mean cubic feet per second.

“**ppm**” shall mean parts per million.

“**s.u.**” shall mean standard units.

31. “**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 or improper operations.

32. “**Visible sheen**” means the presence of a film or sheen upon or a discoloration of the surface of the discharge. A sheen can also be from a thin glistening layer of oil on the surface of the discharge.

33. “**Weekday**” means Monday – Friday.

Fact Sheet

This Fact Sheet is for information and justification of the permit limits only. Please note that it is not enforceable. This final permitting decision is for renewal of the discharge Permit Number AR0035386 with Arkansas Department of Environmental Quality (ADEQ) Facility Identification Number (AFIN) 32-00036 to discharge to Waters of the State.

1. PERMITTING AUTHORITY.

The issuing office is:

Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

2. APPLICANT.

The applicant's mailing address is:

FutureFuel Chemical Company
P.O. Box 2357
Batesville, AR 72503

The facility address is:

FutureFuel Chemical Company
2800 Gap Road
Batesville, AR 72501

3. PREPARED BY.

The permit was prepared by:

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4. PERMIT ACTIVITY.

Previous Permit Effective Date:	12/1/2003
Modification Effective Date:	9/1/2005
Previous Permit Expiration Date:	11/30/2008

The permittee submitted a permit renewal application on 6/2/2008 and a draft permit was public noticed on 9/17/2009. FutureFuel submitted comments on the 1st draft permit on 10/12/2009. The Department redrafted the permit with permit coverage of the facility's dedicated land disposal operations removed from the permit because coverage was being transferred to a No-Discharge permit (Permit No. 5082-W) for those operations. FutureFuel submitted comments on the 2nd draft permit on 6/6/2012. FutureFuel submitted an updated application Form 1 on 12/10/2014 and updated Form 2C on 3/26/2015, and the Department public noticed a 3rd draft discharge permit and a new No-Discharge permit on 5/27/2015. The 3rd draft permit did not contain coverage for the DLD site operations and required the DLD to be covered under a No-Discharge permit. It is proposed in this 4th draft permit that the current discharge permit be reissued for a 5-year term in accordance with regulations promulgated at 40 CFR Part 122.46(a), with the current DLD site operating terms and conditions included from the previous active permit until such time as a No-Discharge permit is effective for the DLD operations. The Department's responses to the comments received on the 1st, 2nd, and 3rd draft discharge permits are included in this fact sheet below.

The following comments were received in a letter from FutureFuel Chemical Company (FFCC) to ADEQ dated 10/12/2009 on the 1st draft permit which was public noticed on 9/17/2009. The Department's responses to each of these comments are included as follows:

Comment 1 FFCC requested that the following language be added to the end of the footnotes concerning the pH limits so that the footnotes read, "pH of the effluent shall be within the specified range at all times except during times of equipment malfunction."

Response: The Department assumes that the permittee is referring to the continuous pH monitors when referring to "equipment malfunctions". The Department does not agree to add the requested language. In accordance with Reg. 2.509, the pH limits apply at all times. The Department understands that malfunctions of the continuous pH monitors may occur periodically. Any pH value that is recorded by a continuous pH monitor and is believed to be inaccurate due to monitor malfunction may qualify as an upset condition. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence in accordance with the conditions listed in Part III.B.5.B of the permit. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

In addition, a revised Regulation 6 was submitted to APC&EC in August 2016. The proposed revised Regulation 6 incorporates 40 CFR 401.17 which allows a certain number of excursions for continuous pH monitors. Therefore, the Department has added Condition No. 14 in Part II of the permit that will automatically incorporate the language listed in 40 CFR 401.17 upon APC&EC approval of the revised Regulation 6 so that the permit will not need to be reopened to make this change.

Comment 2 The previous NPDES permit required FFCC to revert to quarterly testing for the WET testing upon its expiration date of November 30, 2008. FFCC has completed four quarters of WET testing since this date (Dec 08, Mar 09, May 09, Sep 09) and has submitted the test reports to ADEQ. Since none of these tests demonstrated lethal or sub-lethal effects below the critical dilution, FFCC requests that the WET testing frequency be changed to once per year for the Fathead minnow and twice per year for the *Ceriodaphnia dubia*.

Response: A letter dated January 7, 2010 authorized a frequency reduction for both test species. The reduction authorized in this letter was twice/year for both test species. As stated in this letter, the reduction applies only until the issuance of the new permit. At such time (upon issuance of the new permit), the WET testing frequency reverts to once/quarter. After reporting no lethal or sub-lethal failures for the first four quarters of the new permit, FFCC can again request a WET frequency reduction.

Comment 3 The monitoring frequency for Oil & Grease at Outfall 001 is listed as three/week. This is believed to be a typographical error because the previous permit and the first draft Fact Sheet state the O&G monitoring frequency to be once/quarter.

Response: The Department concurs. The Oil & Grease monitoring frequency was corrected to once/quarter at Outfall 001.

Comment 4 Part IB of the original draft permit required FFCC to submit an application to the water division for a land application permit for the dedicated land disposal (DLD) site no later than 12 months after the effective date of this permit (AR0035386). FFCC does not agree that the DLD should be permitted under a separate permit. Originally, the DLD site had a separate permit. In 1992, at the direction of the ADEQ and during the permit renewal process, the DLD was included in the NPDES permit (AR0035386). FFCC's DLD site is an integral part of our wastewater treatment system. FFCC does not understand why the department is compelled to separate the permits once again with no apparent change in regulations. Maintaining two permits will be less resource effective for both ADEQ and FFCC.

Response: In a letter dated January 19, 2010, the Department notified FFCC of the Department's intentions to issue this NPDES permit without coverage of the DLD site operations included. To prevent any lapse in permit coverage for the DLD site, the Department requested that FFCC submit an application for a state permit for the DLD operations within 30 days of the January 19, 2010 letter. Requiring a separate permit for land application of biosolids is the current policy being implemented statewide at permit renewal, as opposed to covering these operations under the NPDES permit. The Department believes it is advantageous to both the facility and the Department to cover the land application operations under a separate no-discharge permit that is structured specifically for land application because this would prevent the

NPDES permit from having to be reopened to incorporate any future changes in land application regulations. In addition, FFCC agreed to cover the land application operations under a separate permit in an August 3, 2016 meeting with the Department.

Comment 5 FFCC requested that the definitions of NOEC and “test failure” in the Whole Effluent Toxicity conditions remain the same as previously agreed upon between EPA, ADEQ, and FFCC during the last permit renewal.

Response: Department does not concur. The new standard Whole Effluent Toxicity conditions have slightly different wording for the definitions of NOEC and test failure compared to the previous 2008 permit as it relates to how a test failure is defined. The new language defines test failure for both lethal and sub-lethal as “a demonstration of a statistically significant effect at test completion to a test species at or below the critical dilution”.

The updated language also includes additional test acceptance criteria and additional language specifying what triggers a sub-lethal toxicity reduction evaluation (see response to comment 16 for more details). A couple of other notable changes from the 2008 permit language to the new language is that the LOEC reporting is no longer required, and retests now require 3 tests instead of 2.

Comment 6 FFCC requests that the language in Part II (Persistent Lethal and/or Sub-Lethal Effects) and (Monitoring Frequency Reduction) sections reflect the language agreed upon in the last permit renewal. Specifically, the use of the terms “at or below the critical dilution” to read “below the critical dilution”.

Response: Department does not concur. In the new standard WET testing conditions being included in permits, the term “at or below the critical dilution” is used throughout the WET condition as it relates to what constitutes a lethal or sub-lethal test failure. The justification of why these revisions were made is explained as follows.

The critical dilution for the facility is 25% effluent, with an effluent dilution series of 11%, 14%, 19%, 25%, and 33%.

If a quarterly “toxicity test demonstrates significant lethal and/or sub-lethal effects at ... the critical dilution” (i.e. there were statistically significant effects (failures) at the 33% and 25% effluent dilutions), the No Observed Effect Concentration (NOEC) (defined as the greatest effluent dilution at and below which toxicity (lethal or sub-lethal) that is statistically different from the control (0% effluent) at the 95% confidence level does not occur), would be reported as 19%.

If a quarterly “toxicity test demonstrates significant lethal and/or sub-lethal effects ... below the critical dilution” (e.g. there were statistically significant

effects (failures) at the 33%, 25%, and 19% effluent dilutions), the NOEC (defined as the greatest effluent dilution at and below which toxicity (lethal or sub-lethal) that is statistically different from the control (0% effluent) at the 95% confidence level does not occur), would be reported as 14%.

The phrase “at or” takes into account effects noted in the 25% critical dilution.

The phrase “at or” is appropriate. Deletion of the phrase would in effect revise the failure point (critical dilution) to the dilution lower than that which is stated as the critical dilution in Part II.13.A.i.

Comment 7 Consistent with the changes requested in comment #2, FFCC requests to eliminate the Monitoring Frequency Reduction section of the Whole Effluent Toxicity conditions since FFCC has already completed four quarterly tests since the expiration date of the previous permit.

Response: See response to comment 2.

Comment 8 FFCC requests that NH₃-N be removed from Table 1 in Section 14 of the Fact Sheet for Outfall 002 since the first draft permit does not contain NH₃-N limits at Outfall 002.

Response: Department does not concur. Table 1 in Section 14 of the Fact Sheet simply shows the calculated water-quality based limits for NH₃-N compared to the previous permit limits. The Department included the water quality based values in the table for comparison purposes. The Department is continuing the NH₃-N limits from the previous permit based on the anti-backsliding regulations at 40 CFR 122.44(l).

Comment 9 The 7Q10 that ADEQ used to calculate limits for this permit renewal (1150 cfs) is for the USGS station located at Batesville which is approximately 8 miles upstream of the FFCC plant site. Since this low flow is based on only thirteen years of data and since several tributaries enter the White River between the USGS station and the facility site, the 7Q10 used for permit limits is most likely conservative. Although FFCC is not objecting to using the 7Q10 for Batesville for calculating limits in this permit renewal, FFCC would like to reserve the option of developing a site specific 7Q10 at this location for future permitting.

Response: The Department has no objections to FFCC developing a site-specific critical flow in the White River to use in future permitting by performing a flow study. If FFCC decides to perform a critical flow study, prior approval of a study plan must be obtained from ADEQ and USGS before starting the study. A condition in Part II was included addressing this issue.

The following comments were received in a letter from FutureFuel Chemical Company to ADEQ dated 6/6/2012 on the 2nd draft permit which was public noticed on 5/9/2012. The Department's responses to each of these comments are included as follows:

Comment 10 FFCC requested that the permit limits for TOC at Outfall 001, and the permit limits for Total Organic Carbon, Total Aluminum, Total Phenolics, Ammonia, Chlorides, and Sulfates at Outfall 002, be removed. FFCC stated that all of these limits were proposed to be eliminated in the first draft permit public noticed on 9/17/2009, based on historical performance in meeting the limits during the previous permit term.

Response: ADEQ does not agree to remove the limits. As stated in Section 14.B of the Fact Sheet, all of the limits are being continued from the previous permit based on the anti-backsliding regulations in 40 CFR 122.44(l). FFCC is correct that these limits were originally proposed to be removed by ADEQ based on historical compliance with the permit limits. However, after further review during development of the 2nd draft permit, it was determined that removing the limits would constitute backsliding from the previous permit, which is prohibited by 40 CFR 122.44(l), unless the removal of the limits would qualify as one of the exceptions listed in 40 CFR 122.44(i). ADEQ has reviewed this list of exceptions and has determined that historical compliance with a permit limit in a previous permit does not qualify as an exception to the anti-backsliding regulations. Therefore, removal of these limits would constitute backsliding which is not allowed by federal regulations. However, monitoring requirements (frequencies) are not considered effluent limitations under Section 402(o) of the Clean Water Act, therefore anti-backsliding prohibitions would not be triggered by reductions in monitoring frequencies. The Department reviewed the historical data reported for these parameters and has determined that the facility is eligible for a monitoring frequency reductions at Outfall 002 for TOC, Total Phenolics, Aluminum, Ammonia, Chlorides, and Sulfates. Monitoring frequency for TOC and Ammonia were reduced from 3/week to once/week, and frequencies for Total Phenolics, Aluminum, Chlorides, and Sulfates were reduced from once/month to once/6 months. All reductions were determined using "EPA Interim Guidance for Performance Based Reductions of NPDES Permit Monitoring Frequencies", April 1996. The facility is not eligible for reductions of TOC monitoring at Outfall 001 since there have been two violations of the permit limit reported.

Comment 11 FFCC commented that the proposed dissolved oxygen (DO) limit of 2.0 mg/l for Outfall 002 appears to be overly conservative and unnecessary considering Outfall 002 has a flow of less than 0.4 percent of the 7Q10 of the White River. FFCC requested that the DO limit for Outfall 002 be removed. FFCC also stated that if ADEQ insists on including a DO limit, it should be imposed on the combined effluent from Outfalls 001 and 002, which is the total effluent discharged to the White River.

Response: The Department has revisited the modeling analysis and the effects of the DO value of the effluent on the receiving stream predicted instream DO. Based on this review, the Department has determined that a DO limit is not necessary to be included in this permit.

Comment 12 FFCC commented that the monthly average and daily maximum mass limits at Outfall 002 for BOD5, TSS, and O&G should be calculated using the design flow of 2.75 MGD rather than 2.0 MGD.

Response: ADEQ partially agrees. Since Oil & Grease limits are water quality-based limits from Regulation 2, and Regulation 2 defines design flow as “A facility discharge flow of process wastewater that is authorized in a NPDES permit”, the mass limits for O&G were recalculated based on the concentration limit in the permit in conjunction with the design flow rate of 2.75 MGD for the treatment system. This calculation yields the following mass limits, which are identical to those of the previous permit:

$$\begin{aligned}\text{O\&G monthly average mass} &= (10 \text{ mg/l})(8.34)(2.75 \text{ mgd}) = 229 \text{ lb/day} \\ \text{O\&G daily maximum mass} &= (15 \text{ mg/l})(8.34)(2.75 \text{ mgd}) = 344 \text{ lb/day}\end{aligned}$$

However, since BOD5 and TSS limits are technology-based from the ELG, in accordance with 40 CFR 122.45(b)(2)(i) the mass limits for BOD5 and TSS are required to be calculated based on a reasonable measure of actual flow rates (also see NPDES Permit Writer Manual page 5-30). This actual flow rate was determined to be 2.3 MGD, based on the highest monthly average flow reported from July 2014 through June 2016. This calculation yields the following mass limits for BOD5 and TSS, which are lower than those in previous permit:

$$\begin{aligned}\text{BOD5 monthly average mass} &= (45 \text{ mg/l})(8.34)(2.3 \text{ mgd}) = 863 \text{ lb/day} \\ \text{BOD5 daily maximum mass} &= (120 \text{ mg/l})(8.34)(2.3 \text{ mgd}) = 2302 \text{ lb/day}\end{aligned}$$

$$\begin{aligned}\text{TSS monthly average mass} &= (57 \text{ mg/l})(8.34)(2.3 \text{ mgd}) = 1093 \text{ lb/day} \\ \text{TSS daily maximum mass} &= (183 \text{ mg/l})(8.34)(2.3 \text{ mgd}) = 3510 \text{ lb/day}\end{aligned}$$

Based on a review of reported mass values for the past five years, the facility is currently achieving these new lower limits, therefore a schedule of compliance is not included.

Comment 13: FFCC commented that since ADEQ is requiring the dedicated land disposal (DLD) operations be covered under a State No Discharge permit and will no longer be covered under the NPDES permit, the issuance of NPDES Permit AR0035386 and the State No Discharge Permit 5082-W must be coordinated such that FFCC will have permit coverage for the operation of the dedicated land disposal (DLD) operations upon issuance of the NPDES permit.

Response: ADEQ agrees. ADEQ has included the existing DLD site operational terms and conditions from the previous effective permit that will apply until a No-Discharge permit becomes effective, so there will be no lapse in permit coverage for the DLD operations.

The following comments were received in a letter from FutureFuel Chemical Company to ADEQ dated 6/26/2015 on the 3rd draft permit which was public noticed on 5/27/2015. The Department's responses to each of these comments are included as follows:

Comment 14 A couple of footnotes appear to be in error. Footnote number 3 referencing the TOC Monthly Average for Outfall 001 in Part I, Section A1 should read "5³" instead of "3 5³". Also, footnote number 4 referencing O&G for Outfall 001 in Part I, Section A1 appears to be incorrect.

Response: The Department agrees. The footnote for TOC was corrected, and footnote number 4 for O&G was removed because footnote 4 should only reference the required MQLs for metals.

Comment 15 Part II.5 of the draft permit concerning Solids/Sludge Practices states the following, "Solids are retained in the cooling/sedimentation pond associated with Outfall 001 and removed as needed and used in various construction projects at the facility." FFCC requests that this language be changed to read, "Solids are retained in the cooling/sedimentation pond associated with Outfall 001, removed as needed, **and managed on-site.**"

Part II.5.C of the draft permit concerning Solids/Sludge Practices states the following, "Digested sludge is transported to and disposed of in the IESI Cherokee Village Landfill under Solid Waste Permit No. 299-S1." FFCC requests that this language be changed to read, "Digested sludge is transported to and disposed of in the IESI Cherokee Village Landfill under Solid Waste Permit No. 299-S1, **or other ADEQ approved permitted landfill.**"

Response: Part II.5 of the permit has been deleted because Part III.B.6 already addresses sludge management practices and references the practices contained in the Fact Sheet. The Department also revised the language addressing the DLD site operations being covered under the NPDES permit until such time as the No-Discharge permit becomes effective for these operations.

The Department agrees to change the solids/sludge practices language in Section 10 of the Fact Sheet and include the following language:

Solids generated by the treatment system associated with Outfall 001 are retained in the cooling/sedimentation pond, removed as needed, and managed on-site in a manner that ensures that any pollutants from the solids does not enter waters of the state in accordance with Part III.B.6 of this permit. An email dated 4/6/2015

from solid waste division concerning this solids practice can be viewed at the following weblink:

http://www.adeg.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/AR0035386_solid%20waste%20position%20on%20dredged%20solids%20from%20cooling%20pond_20150406.txt

Sludge generated by the treatment system associated with Outfall 002 is aerobically digested and then disposed of by one of the following practices:

- A. Digested sludge is conveyed through an underground piping system, and surface applied on a dedicated land disposal (DLD) site located on facility property under terms and conditions of Part II.6 of this permit until such time as a No-Discharge permit becomes effective for these operations.
- B. Digested sludge is dewatered to approximately 15% solids then burned in the coal fired boilers.
- C. Digested sludge is transported to and disposed of in the Waste Connections Cherokee Village Landfill under Solid Waste Permit No. 299-S1, or other ADEQ approved permitted landfill. A letter from Water Division concerning this sludge practice can be viewed at the following weblink:

http://www.adeg.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/AR0035386_Letter%20Regarding%20Response%20for%20Additional%20Sludge%20Disposal%20Method_20130513.pdf

Comment 16 Part II.13 of the draft permit concerning Whole Effluent Toxicity (WET) Testing contains additional test acceptance criteria and additional language specifying what triggers a sub-lethal toxicity reduction evaluation. FFCC has no history of problems or issues with their WET testing and believes the additional language is unnecessary. FFCC requests ADEQ to provide its full and complete rationale for the additional test acceptance criteria and additional language specifying what triggers a sub-lethal toxicity reduction evaluation.

Response: For the majority of the NPDES permit language, ADEQ uses a standard template from EPA Region 6. EPA Region 6 provided the latest update to ADEQ in November of 2008 and ADEQ began using this template for new and renewed permits at that time. Both of these additions were included in EPA Region 6's update of the WET testing language template. The following is ADEQ's rationale for inclusion of additional test acceptance criteria and additional language specifying what triggers a sub-lethal toxicity reduction evaluation:

Additional test acceptance criteria:

Test acceptance criteria including the percent coefficient of variation (CV) and the Percent Minimum Significant Difference (PMSD) are not measures of an

effluent's performance. These are measures of the testing process's performance. These measures assist with the determination of if the test itself (test organisms, test set up, etc.) was sufficiently sensitive, yet not overly sensitive, to detect toxicity if toxicity is present. An incorrect decision can be made by determining that a sample is toxic when in fact it is not (Type I error), or determining that a sample is not toxic when in fact it is (Type II error). The CV and PMSD assist with the determination if a Type I or Type II error has occurred.

No revisions will be made to the WET test acceptance criteria.

Additional language specifying what triggers a sub-lethal toxicity reduction evaluation:

In recent years EPA and ADEQ have taken the stance that it is necessary to protect receiving waters from potential impacts regarding both lethality and sub-lethality.

The previous chronic permit template focused only on lethality. A WET testing focus only on chronic lethality is not consistent with APC&EC Reg 2.508 which states "Toxic substances shall not be present in receiving waters, after mixing, 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 the indigenous aquatic biota." (emphasis added)

The updated template includes detailed clarifications regarding re-tests and TRE requirements for sub-lethality similar to those already included for lethality.

No revisions will be made to the WET testing TRE requirements.

Comment 17 Part III.B.4 (Bypass of Treatment Facilities) and Part III.B.5 (Upset Conditions) contains several references to other items within each condition. FFCC believes that the following changes in references should be made within these conditions:

References in Part III.B.4.A. should read "Part III.B.4.**B** and 4.**C**." instead of "Part III.B.4.b and 4.c"

References in Part III.B.4.C.1.(c). should read "Part III.B.4.**B**" instead of "Part III.B.4.b."

References in Part III.B.4.C.2. should read "Part III.B.4.C.1." instead of "Part III.B.4.c.(1).

References in Part III.B.5.A. should read "Part III.B.5.**B**" instead of "Part III.B.5.b".

Response: The Department agrees to make suggested changes to references so that capital letters are used in the references to match the format of the condition number.

Comment 18 FFCC stated that the following items appear to be in error within the Fact Sheet:

The 4th sentence in the opening paragraph on Page 2 of the draft Fact Sheet reads “FutureFuel submitted comments on the 2nd draft permit on 10/12/2009.” This sentence should be changed to read “FutureFuel submitted comments on the 2nd draft permit on 6/6/2012.”

In Item 12 of Section 5 (Copper and Cyanide limits at Outfall 002), the reference to the Fact Sheet section number should be corrected.

In item 13 of Section 5 (Aluminum and Iron reporting at Outfall 001), the reference to the Fact Sheet section number should be corrected.

In Section 14.M (PPS and Form 2C evaluations), the weblinks are missing for the evaluation of detected pollutants for Outfalls 001 and 002.

Response: The Department agrees. The above mentioned date, references, and weblinks have been corrected in the Fact Sheet.

Comment 19 FFCC would like to emphasize the need for the NPDES and the No-Discharge permits to be issued simultaneously. If this is not possible, a condition needs to be added to the NPDES permit to allow coverage of the Dedicated Land Disposal Site under the conditions of the 2005 NPDES permit until the No-Discharge permit is issued.

Response: ADEQ has included the existing DLD site operational terms and conditions from the previous effective 2005 permit that will apply until a No-Discharge permit becomes effective, so there will be no lapse in permit coverage for the DLD operations.

DOCUMENT ABBREVIATIONS

In the document that follows, various abbreviations are used. They are as follows:

BAT - best available technology economically achievable
BCT - best conventional pollutant control technology
BMP - best management practice
BOD₅ - five-day biochemical oxygen demand
BPJ - best professional judgment
BPT - best practicable control technology currently available
CBOD₅ - carbonaceous biochemical oxygen demand
CD - critical dilution
CFR - Code of Federal Regulations
cfs - cubic feet per second
COD - chemical oxygen demand

COE - United States Corp of Engineers
CPP - continuing planning process
CWA - Clean Water Act
DLD – Dedicated Land Disposal
DMR - discharge monitoring report
DO - dissolved oxygen
ELG - effluent limitation guidelines
EPA - United States Environmental Protection Agency
ESA - Endangered Species Act
FCB - fecal coliform bacteria
gpm - gallons per minute
MGD - million gallons per day
MQL - minimum quantification level
NAICS - North American Industry Classification System
NH₃-N - ammonia nitrogen
NO₃ + NO₂-N - nitrate + nitrite nitrogen
NPDES - National Pollutant Discharge Elimination System
O&G - oil and grease
Reg. 2 - APCEC Regulation No. 2
Reg. 6 - APCEC Regulation No. 6
Reg. 8 - APCEC Regulation No. 8
Reg. 9 - APCEC Regulation No. 9
RP - reasonable potential
SIC - standard industrial classification
TDS - total dissolved solids
TMDL - total maximum daily load
TP - total phosphorus
TRC - total residual chlorine
TSS - total suspended solids
UAA - use attainability analysis
USF&WS - United States Fish and Wildlife Service
USGS – United States Geological Survey
WET - Whole effluent toxicity
WQMP - water quality management plan
WQS - Water Quality standards
WWTP - wastewater treatment plant

Compliance and Enforcement History:

Compliance and Enforcement History for this facility can be reviewed by using the following web link:

[HTTPS://WWW.ADEQ.STATE.AR.US/DOWNLOADS/WEBDATABASES/PERMITSONLINE/NPDES/PERMITINFORMATION/AR0035386_COMPLIANCE%20SUMMARY_20170522.PDF](https://www.adeq.state.ar.us/downloads/webdatabases/permitsonline/npdes/permitinformation/ar0035386_compliance%20summary_20170522.pdf)

5. SIGNIFICANT CHANGES FROM THE PREVIOUSLY ISSUED PERMIT.

The permittee is responsible for carefully reading the permit in detail and becoming familiar with all of the changes therein:

1. This permit requires the facility to acquire No-Discharge permit coverage for the DLD site operations.
2. The DLD operating conditions expire upon effective date of No-Discharge permit coverage.
3. Facility coordinates were corrected to front gate location.
4. Outfall coordinates were corrected to more accurate values.
5. The facility name changed from Eastman Chemical Company to FutureFuel Chemical Company.
6. Condition No. 5 of Part II was added that states pH limits are now required to be met at all times until such time as the APC&EC approves the revised Reg. 6. Upon APC&EC approval of revised Reg. 6, the language stated in 40 CFR 401.17 that allows a certain amount of pH excursions for continuous monitors will become effective without the need to reopen the permit.
7. The reported flow at Outfall 001 has been updated. See Section 8 of Fact Sheet for more details.
8. The flow at Outfall 002 for technology-based effluent limits (TBELs) changed. See Section 8 of Fact Sheet for more details.
9. The published 7Q10 critical flow for the receiving stream changed from 1375 CFS to 1150 CFS based on USGS Station No. 07061000.
10. The critical dilution and dilution series for whole effluent toxicity testing changed from 20% to 25% critical dilution based on updated facility flow rates and updated receiving stream critical flow.
11. The TBEL mass limits changed at Outfall 002 for all pollutants listed in 40 CFR 414.81 and 414.91 based on updated Outfall 002 flow rate (2.3 MGD). See response to Comment 12 in Section 4 of the Fact Sheet for details.
12. Copper and Cyanide limits at Outfall 002 were changed to water quality-based effluent limits (WQBELs) since WQBELs for these pollutants were determined to be more stringent than the TBELs. See Section 14.J of Fact Sheet for details.
13. Monitoring and reporting for one year was added at Outfall 001 for Total Recoverable Aluminum and Total Recoverable Iron. See Section 14.G of the Fact Sheet for details.
14. Whole Effluent Toxicity language in Part II of the permit includes a revised definition of a test failure, additional test acceptance criteria, new language concerning when a sub-lethal toxicity reduction evaluation (TRE_{SL}) is triggered, an increase in the required number of retests from 2 to 3, and the removal of the LOEC reporting requirement.
15. Condition 11 was added to Part II allowing the facility to develop a site-specific critical background flow contingent upon prior ADEQ and USGS approval of any proposed study plan. See response to Comment 9 in Section 4 of this Fact Sheet.
16. A monthly average limit equal to the daily maximum limit was added for TOC (net increase over intake) and for Temperature at Outfall 001 to comply with 40 CFR 122.45(d)(1).
17. Mass limits were added for Oil & Grease at Outfall 001 in accordance with 40 CFR 122.45(f)(1).

18. Monitoring frequencies for TOC, Aluminum, Total Phenolics, Ammonia, Chlorides, and Sulfates have been reduced at Outfall 002. See response to comment 10 in section 4 of this fact sheet for details.
19. Condition 7 was added to Part II which includes interim operation and maintenance BMPs that the facility must perform to minimize adverse environmental impact from the cooling water intake structure. Refer to Section 13 of this Fact Sheet for details.
20. Condition 8 was added to Part II requiring information concerning the cooling water intake structure to be submitted with the next permit renewal application based on new Cooling Water Intake Structure (CWIS) regulations in 40 CFR 125.90, Subpart J, finalized on 8/15/2014 for existing CWIS.
21. Sludge ceiling concentration limits for Barium and Silver were added in Part II.6.C.2. Refer to response to comment 7 at the end of the fact sheet.
22. Sludge ceiling concentration limits for Arsenic, Cadmium, Chromium, Lead, Mercury, and Selenium were revised in Part II.6.C.2. Refer to response to comment 7 at the end of the fact sheet.
23. Units for sludge concentration limits were changed from mg/kg to mg/L in Part II.6.C.2 since sludge is 99% liquid. Refer to response to comment 7 at the end of the fact sheet.
24. A footnote was added to Part II.6.C.2 requiring TCLP test method for metals listed in Reg. 23 Part 261 (Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver). Refer to response to comment 7 at the end of the fact sheet.
25. An equation for calculating the sludge loading rate was added to Part II.6.C.3. Refer to response to comment 8 at the end of the fact sheet.
26. Monitoring/reporting for Oil & Grease in the soils was added to Part II.6.D.2. Refer to response to comment 9 at the end of the fact sheet.
27. A requirement was added to Part II.6.D.3.A.10 to include a certification with the annual sludge report stating that land applied sludge is not classified as hazardous waste. Refer to response to comment 22 at the end of the fact sheet.
28. The required buffer distance language applicable to land application of sludge was updated in Part II.6.C.7. Refer to response to comment 25 at the end of the fact sheet.
29. Additional language was added to Part II.6.C.2 to require remediation action for any waste that exceeds the metal ceiling limits. Refer to response to comment 26 at the end of the fact sheet.
30. Monitoring/reporting requirement for Percent Moisture in the soil was added to Part II.6.D.2. Refer to response to comment 30 at the end of the fact sheet.
31. Monitoring/reporting requirement for Total Organic Carbon in the sludge and soil was added to Part II.6.D.1 and Part II.6.D.2. Refer to response to comment 31 at the end of the fact sheet.

6. RECEIVING STREAM SEGMENT AND DISCHARGE LOCATION.

The outfalls are located at the following coordinates based on Google Earth using WGS84 map datum:

Outfall 001: Latitude: 35° 42' 44.11" Longitude: 91° 31' 32.41"
Outfall 002: Latitude: 35° 42' 43.77" Longitude: 91° 31' 33.58"

The receiving waters named:

White River in Segment 4F of the White River Basin. The receiving stream with USGS Hydrologic Unit Code (H.U.C.) of 11010004 and reach # 001 is a Water of the State classified for primary and secondary contact recreation, raw water source for domestic (public and private), industrial, and agricultural water supplies, propagation of desirable species of fish and other aquatic life, and other compatible uses.

7. 303(d) LIST, ENDANGERED SPECIES, AND ANTI-DEGRADATION CONSIDERATIONS.

A. 303(d) List:

The receiving stream is not listed on the 2016 303(d) list. Therefore no permit action is needed.

B. Endangered Species:

No comments on the application were received from the U.S. Fish and Wildlife Service (USF&WS). The draft permit and Fact Sheet will be sent to the USF&WS for their review.

C. Anti-Degradation:

The limitations and requirements set forth in this permit for discharge into waters of the State are consistent with the Antidegradation Policy and all other applicable water quality standards found in APC&EC Regulation No. 2.

8. OUTFALL, TREATMENT PROCESS DESCRIPTION, AND FACILITY CONSTRUCTION.

The following is a description of the facility described in the application and/or from reported data:

A. Flows:

Outfall 001: 58.3 MGD, the highest monthly average flow reported from July 2014 through June 2016.

Outfall 002: 2.75 MGD, the design flow of treatment system. This flow was used for all water quality based limit determinations, WET dilution determinations, and evaluation of reported pollutants on Form PPS and Form 2C.
2.3 MGD, the highest monthly average flow reported from July 2014 through June 2016. This flow was used to calculate the ELG mass limits, in accordance with the Permit Writers Manual page 5-30 and 40 CFR 122.44(b)(2)(i). Both of these sources state that technology-based limits (TBELs) are to be based on actual flows.

B. Type of Treatment:

Outfall 001: Cooling/Sedimentation Pond

Outfall 002: Mixing/neutralization, extended aeration, activated sludge, aerobic digestion, and sedimentation.

C. Discharge Description:

Outfall 001: Noncontact cooling water, boiler blowdown, water supply filter backwash, and stormwater

Outfall 002: Organic chemical wastewater, pesticide wastewater, chemical destructor scrubber blowdown, water softening effluent, sanitary wastewater, stormwater, dedicated land disposal site runoff, and ash settling pond overflow.

D. Facility Status: This facility was evaluated using the NPDES Permit Rating Worksheet (MRAT) to determine the correct permitting status. Since the facility's MRAT score of 120 is greater than 80, this facility is classified as a major industrial.

E. Facility Construction: This permit does not authorize or approve the construction or modification of any part of the treatment system or facilities. Approval for such construction must be by permit issued under Reg. 6.202.

9. ACTIVITY.

Under the Standard Industrial Classification (SIC) code of 2865 or North American Industry Classification System (NAICS) code of 325199, this facility is a manufacturer of specialty organic chemical intermediates. These intermediates are used in the manufacture of color film and photographic paper, paints and coatings, plastics and bottle polymers, medical supplies, prescription medicines, food supplements, household detergents, agricultural products, and biofuel.

10. SLUDGE/SOLIDS PRACTICES.

Solids generated by the treatment system associated with Outfall 001 are retained in the cooling/sedimentation pond, removed as needed, and managed on-site in a manner that ensures that any pollutants from the solids does not enter waters of the state in accordance with Part III.B.6 of this permit. An email dated 4/6/2015 from solid waste division concerning this solids practice can be viewed at the following weblink:

http://www.adeg.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/AR0035386_solid%20waste%20position%20on%20dredged%20solids%20from%20cooling%20pond_20150406.txt

Sludge generated by the treatment system associated with Outfall 002 is aerobically digested and then disposed of by one of the following practices:

- A. Digested sludge is conveyed through an underground piping system, and surface applied on a dedicated land disposal (DLD) site located on facility property under terms and conditions of Part II.6 of this permit until such time as a No-Discharge permit becomes effective for these operations.
- B. Digested sludge is dewatered to approximately 15% solids then burned in the coal fired boilers.
- C. Digested sludge is transported to and disposed of in the Waste Connections Cherokee Village Landfill under Solid Waste Permit No. 299-S1, or other ADEQ approved permitted landfill. A letter from Water Division concerning this sludge practice can be viewed at the following weblink:

http://www.adeg.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/AR0035386_Letter%20Regarding%20Response%20for%20Additional%20Sludge%20Disposal%20Method_20130513.pdf

11. FLUE GAS DESULFURIZATION (FGD) WASTESTREAM CONSIDERATIONS

This facility does not operate an FGD scrubber system, thus there is not a wastestream generated from this type of scrubber system.

12. COAL COMBUSTION RESIDUALS (CCR) WASTESTREAM CONSIDERATIONS

This facility has a CCR wastestream consisting of overflow from ash pond #1. This wastestream is commingled with the treated process wastewater and ultimately discharged via permitted Outfall 002.

13. 316(B) REQUIREMENTS FOR COOLING WATER INTAKE STRUCTURE (CWIS)

EPA promulgated Phase II regulations for existing facilities in accordance with Section 316(b) of the CWA on 7/6/2004. The Second U.S. Circuit Court of Appeals remanded most provisions of the Phase II rule on 1/25/2007. On 3/29/2007, a memo was issued by the EPA stating that the rule should be considered suspended.

In the August 15, 2014 Federal Register, EPA finalized standards for existing facilities under the Clean Water Act to follow through on a settlement agreement with environmental groups whereby EPA agreed to issue regulations to reduce injury and death of fish and other aquatic life caused by CWIS at existing power plants and industrial facilities. The new CWIS regulations found in 40 CFR Part 125, Subpart J, include standards for minimizing adverse environmental impact associated with the use of cooling water intake structures and required procedure (e.g. permit application requirements, information submission requirements) for establishing the appropriate technology requirements at certain specified facilities as well as monitoring, reporting, and recordkeeping requirements to demonstrate compliance. In

combination, these components represent the best technology available for minimizing adverse environmental impact associated with the use of cooling water intake structures at existing facilities.

The design intake flow of the CWIS associated with this facility is 172 mgd (267 cfs) which is approximately 4.6% of the harmonic mean flow of the White River (5814 cfs) based on daily flow values reported at USGS Station No. 07061000 at Batesville. The facility uses this water for non-contact cooling purposes in the manufacturing process by using a once-through cooling system. The CWIS consists of two 72-inch intake pipes and associated man-made intake channel on the bank of the White River which withdraw the river water through two rotating screens that are housed in the pump house. In 1981, Geo-Marine, Inc. conducted a study entitled "316(b) Demonstration Report for the Arkansas Eastman Plant on the White River", in which impingement monitoring was performed weekly for one year from March 1980 to March 1981, and entrainment monitoring was performed weekly during the fish spawning season from March 1980 to September 1980. A 316(b) Demonstration Supplement Report for the CWIS at this facility was prepared in December 1982 and later revised in May 1984. These study reports indicated that the design and location of the CWIS do not have a significant impact on river biota based on the low impingement and entrainment rates measured during the study.

This permit application was received prior to October 14, 2014. In accordance with 40 CFR 125.98 (b)(6) of Subpart J, in the case of any permit issued after October 14, 2014, and applied for before October 14, 2014, the ADEQ may include permit conditions in this permit term (See Part II.7 of the permit) to ensure that ADEQ will have all information required under 40 CFR 122.21 (r) necessary to establish impingement and entrainment Best Technology Available (BTA) requirements under 40 CFR 125.94 (c) and (d) in the subsequent permit. In addition, ADEQ must establish interim BTA requirements in this permit based on Best Professional Judgement (BPJ).

Based on the results of the above mentioned study reports, ADEQ has determined that the existing CWIS and current Best Management Practices (BMPs) represents Interim BTA for minimizing Adverse Environmental Impacts (AEI) at this facility during this permit term. This permit requires the facility to operate and maintain the CWIS in accordance with the following Interim BMPs during this permit term that will minimize any AEI:

- A. The condition of the screens shall be visually inspected at least once per week.
- B. The screens shall be maintained in proper operating condition whenever the river water pumps are withdrawing water.
- C. The screens shall be rotated through a cleaning cycle at least once per week.
- D. Routine preventative maintenance shall be performed on the screens at least once per quarter to maintain proper operating conditions of the screens.
- E. Records documenting the operation and maintenance procedures described above shall be kept on site for a minimum of three years, and made available to ADEQ upon request.

Additionally, in accordance with 40 CFR 125.98(b)(1), the following condition has been included in the permit: "Nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act".

14. DEVELOPMENT AND BASIS FOR PERMIT CONDITIONS.

The Arkansas Department of Environmental Quality has determined to issue a draft permit for the discharge described in the application. Permit requirements are based on federal regulations (40 CFR Parts 122, 124, and Subchapter N), the National Pretreatment Regulation in 40 CFR Part 403 and regulations promulgated pursuant to the Arkansas Water and Air Pollution Control Act (Ark. Code Ann. 8-4-101 et. seq.). All of the information contained in the application, including all of the submitted effluent testing data, was reviewed to determine the need for effluent limits and other permit requirements.

The following is an explanation of the derivation of the conditions of the draft permit and the reasons for them or, in the case of notices of intent to deny or terminate, reasons suggesting the decisions as required under 40 CFR Part 124.7.

Technology-Based Versus Water Quality-Based Effluent Limitations And Conditions

Following regulations promulgated at 40 CFR Part 122.44, the draft permit limits are based on State water quality standards and requirements pursuant to 40 CFR Part 122.44 (d), technology-based effluent limits pursuant to 40 CFR Part 122.44 (a), on or on previous permit limits, whichever are more stringent as shown in the following table. Refer to the remaining narrative of this section for the derivation and calculations of water quality and technology based effluent limitations.

Table 1 - Water Quality-Based vs. Technology-Based Effluent Limitations - Outfalls 001 and 002								
Parameter	Water Quality-Based (WQBEL)		Technology-Based (TBEL)		Previous Permit		Final Permit	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.
Outfall 001								
Total Organic Carbon	N/A	N/A	5 mg/l (increase over intake)	5 mg/l (increase over intake)	N/A	5 mg/l (increase over intake)	5 mg/l (increase over intake)	5 mg/l (increase over intake)
Temperature	N/A	107.8 °F	105 °F	105 °F	N/A	105 °F	105 °F	105 °F
Oil & Grease	10 mg/l	15 mg/l	N/A	N/A	10 mg/l	15 mg/l	10 mg/l	15 mg/l
pH	6.0-9.0 s.u.		N/A		6-9 s.u.		6.0-9.0 s.u.	
Outfall 002								
Total Organic Carbon	N/A	N/A	69 mg/l	185 mg/l	69 mg/l	185 mg/l	69 mg/l	185 mg/l
NH3-N (April)	(lb/day) 1,656 ¹	(lb/day) 4,333 ¹	(lb/day) 1,573	(lb/day) 3,146	(lb/day) 1,573	(lb/day) 3,146	(lb/day) 1,573	(lb/day) 3,146
(May – October)	1,656 ¹	4,333 ¹	262	656	262	656	262	656
(November)	5,593 ¹	10,321 ²	262	656	262	656	262	656
(December - March)	5,593 ¹	10,321 ²	1,573	3,146	1,573	3,146	1,573	3,146
Aluminum, Total Rec.	N/A	N/A	34 lb/day	86 lb/day	34 lb/day	86 lb/day	34 lb/day	86 lb/day

Table 1 - Water Quality-Based vs. Technology-Based Effluent Limitations - Outfalls 001 and 002

Parameter	Water Quality-Based (WQBEL)		Technology-Based (TBEL)		Previous Permit		Final Permit	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.
Phenolics, Total Rec.	N/A	N/A	63 lb/day	129 lb/day	63 lb/day	129 lb/day	63 lb/day	129 lb/day
Chlorides	471,223 lb/day	706,835 lb/day	35,000 lb/day	55,000 lb/day	35,000 lb/day	55,000 lb/day	35,000 lb/day	55,000 lb/day
Sulfates	1,520,429 lb/day	2,280,643 lb/day	70,000 lb/day	100,000 lb/day	70,000 lb/day	100,000 lb/day	70,000 lb/day	100,000 lb/day
Oil & Grease	10 mg/l	15 mg/l	N/A	N/A	10 mg/l	15 mg/l	10 mg/l	15 mg/l
BOD5	> 45 mg/l ³	N/A	45 mg/l	120 mg/l	45 mg/l	120 mg/l	45 mg/l	120 mg/l
TSS	N/A	N/A	57 mg/l	183 mg/l	57 mg/l	183 mg/l	57 mg/l	183 mg/l
Acenaphthene	N/A	N/A	22 µg/l	59 µg/l	22 µg/l	59 µg/l	22 µg/l	59 µg/l
Acenaphthylene	N/A	N/A	22 µg/l	59 µg/l	22 µg/l	59 µg/l	22 µg/l	59 µg/l
Acrylonitrile	N/A	N/A	96 µg/l	242 µg/l	96 µg/l	242 µg/l	96 µg/l	242 µg/l
Anthracene	N/A	N/A	22 µg/l	59 µg/l	22 µg/l	59 µg/l	22 µg/l	59 µg/l
Benzene	N/A	N/A	37 µg/l	136 µg/l	37 µg/l	136 µg/l	37 µg/l	136 µg/l
Benzo (a) anthracene	N/A	N/A	22 µg/l	59 µg/l	22 µg/l	59 µg/l	22 µg/l	59 µg/l
3,4-Benzofluoranthene	N/A	N/A	23 µg/l	61 µg/l	23 µg/l	61 µg/l	23 µg/l	61 µg/l
Benzo (k) fluoranthene	N/A	N/A	22 µg/l	59 µg/l	22 µg/l	59 µg/l	22 µg/l	59 µg/l
Benzo (a) pyrene	N/A	N/A	23 µg/l	61 µg/l	23 µg/l	61 µg/l	23 µg/l	61 µg/l
Bis (2-ethylhexyl) phthalate	N/A	N/A	103 µg/l	279 µg/l	103 µg/l	279 µg/l	103 µg/l	279 µg/l
Carbon Tetrachloride	N/A	N/A	18 µg/l	38 µg/l	18 µg/l	38 µg/l	18 µg/l	38 µg/l
Chlorobenzene	N/A	N/A	15 µg/l	28 µg/l	15 µg/l	28 µg/l	15 µg/l	28 µg/l
Chloroethane	N/A	N/A	104 µg/l	268 µg/l	104 µg/l	268 µg/l	104 µg/l	268 µg/l
Chloroform	N/A	N/A	21 µg/l	46 µg/l	21 µg/l	46 µg/l	21 µg/l	46 µg/l
2-Chlorophenol	N/A	N/A	31 µg/l	98 µg/l	31 µg/l	98 µg/l	31 µg/l	98 µg/l
Chrysene	N/A	N/A	22 µg/l	59 µg/l	22 µg/l	59 µg/l	22 µg/l	59 µg/l
Di-n-butyl phthalate	N/A	N/A	27 µg/l	57 µg/l	27 µg/l	57 µg/l	27 µg/l	57 µg/l
1,2-Dichlorobenzene	N/A	N/A	77 µg/l	163 µg/l	77 µg/l	163 µg/l	77 µg/l	163 µg/l
1,3-Dichlorobenzene	N/A	N/A	31 µg/l	44 µg/l	31 µg/l	44 µg/l	31 µg/l	44 µg/l
1,4-Dichlorobenzene	N/A	N/A	15 µg/l	28 µg/l	15 µg/l	28 µg/l	15 µg/l	28 µg/l
1,1-Dichloroethane	N/A	N/A	22 µg/l	59 µg/l	22 µg/l	59 µg/l	22 µg/l	59 µg/l

Table 1 - Water Quality-Based vs. Technology-Based Effluent Limitations - Outfalls 001 and 002

Parameter	Water Quality-Based (WQBEL)		Technology-Based (TBEL)		Previous Permit		Final Permit	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.
1,2-Dichloroethane	N/A	N/A	68 µg/l	211 µg/l	68 µg/l	211 µg/l	68 µg/l	211 µg/l
1,1-Dichloroethylene	N/A	N/A	16 µg/l	25 µg/l	16 µg/l	25 µg/l	16 µg/l	25 µg/l
1,2-trans-Dichloroethylene	N/A	N/A	21 µg/l	54 µg/l	21 µg/l	54 µg/l	21 µg/l	54 µg/l
2,4-Dichlorophenol	N/A	N/A	39 µg/l	112 µg/l	39 µg/l	112 µg/l	39 µg/l	112 µg/l
1,2-Dichloropropane	N/A	N/A	153 µg/l	230 µg/l	153 µg/l	230 µg/l	153 µg/l	230 µg/l
1,3-Dichloropropylene	N/A	N/A	29 µg/l	44 µg/l	29 µg/l	44 µg/l	29 µg/l	44 µg/l
Diethyl phthalate	N/A	N/A	81 µg/l	203 µg/l	81 µg/l	203 µg/l	81 µg/l	203 µg/l
2,4-Dimethylphenol	N/A	N/A	18 µg/l	36 µg/l	18 µg/l	36 µg/l	18 µg/l	36 µg/l
Dimethyl phthalate	N/A	N/A	19 µg/l	47 µg/l	19 µg/l	47 µg/l	19 µg/l	47 µg/l
4,6-Dinitro-o-cresol	N/A	N/A	78 µg/l	277 µg/l	78 µg/l	277 µg/l	78 µg/l	277 µg/l
2,4-Dinitrophenol	N/A	N/A	71 µg/l	123 µg/l	71 µg/l	123 µg/l	71 µg/l	123 µg/l
2,4-Dinitrotoluene	N/A	N/A	113 µg/l	285 µg/l	113 µg/l	285 µg/l	113 µg/l	285 µg/l
2,6-Dinitrotoluene	N/A	N/A	255 µg/l	641 µg/l	255 µg/l	641 µg/l	255 µg/l	641 µg/l
Ethylbenzene	N/A	N/A	32 µg/l	108 µg/l	32 µg/l	108 µg/l	32 µg/l	108 µg/l
Fluoranthene	N/A	N/A	25 µg/l	68 µg/l	25 µg/l	68 µg/l	25 µg/l	68 µg/l
Fluorene	N/A	N/A	22 µg/l	59 µg/l	22 µg/l	59 µg/l	22 µg/l	59 µg/l
Hexachlorobenzene	N/A	N/A	15 µg/l	28 µg/l	15 µg/l	28 µg/l	15 µg/l	28 µg/l
Hexachlorobutadiene	N/A	N/A	20 µg/l	49 µg/l	20 µg/l	49 µg/l	20 µg/l	49 µg/l
Hexachloroethane	N/A	N/A	21 µg/l	54 µg/l	21 µg/l	54 µg/l	21 µg/l	54 µg/l
Methyl Chloride	N/A	N/A	86 µg/l	190 µg/l	86 µg/l	190 µg/l	86 µg/l	190 µg/l
Methylene Chloride	N/A	N/A	40 µg/l	89 µg/l	40 µg/l	89 µg/l	40 µg/l	89 µg/l
Naphthalene	N/A	N/A	22 µg/l	59 µg/l	22 µg/l	59 µg/l	22 µg/l	59 µg/l
Nitrobenzene	N/A	N/A	27 µg/l	68 µg/l	27 µg/l	68 µg/l	27 µg/l	68 µg/l
2-Nitrophenol	N/A	N/A	41 µg/l	69 µg/l	41 µg/l	69 µg/l	41 µg/l	69 µg/l
4-Nitrophenol	N/A	N/A	72 µg/l	124 µg/l	72 µg/l	124 µg/l	72 µg/l	124 µg/l
Phenanthrene	N/A	N/A	22 µg/l	59 µg/l	22 µg/l	59 µg/l	22 µg/l	59 µg/l
Phenol	N/A	N/A	15 µg/l	26 µg/l	15 µg/l	26 µg/l	15 µg/l	26 µg/l
Pyrene	N/A	N/A	25 µg/l	67 µg/l	25 µg/l	67 µg/l	25 µg/l	67 µg/l

Table 1 - Water Quality-Based vs. Technology-Based Effluent Limitations - Outfalls 001 and 002

Parameter	Water Quality-Based (WQBEL)		Technology-Based (TBEL)		Previous Permit		Final Permit	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.
Tetrachloroethylene	N/A	N/A	22 µg/l	56 µg/l	22 µg/l	56 µg/l	22 µg/l	56 µg/l
Toluene	N/A	N/A	26 µg/l	80 µg/l	26 µg/l	80 µg/l	26 µg/l	80 µg/l
Total Chromium	N/A	N/A	1,110 µg/l	2,770 µg/l	1,110 µg/l	2,770 µg/l	1,110 µg/l	2,770 µg/l
Total Copper	1,071 µg/l	2,149 µg/l	1,450 µg/l	3,380 µg/l	1,450 µg/l	3,380 µg/l	1,071 µg/l	2,149 µg/l
Total Cyanide	340 µg/l	683 µg/l	420 µg/l	1,200 µg/l	420 µg/l	954 µg/l	340 µg/l	683 µg/l
Total Lead	1,590 µg/l	3,191 µg/l	320 µg/l	690 µg/l	320 µg/l	690 µg/l	320 µg/l	690 µg/l
Total Nickel	37,735 µg/l	75,714 µg/l	1,690 µg/l	3,980 µg/l	1,690 µg/l	3,980 µg/l	1,690 µg/l	3,980 µg/l
Total Zinc	8,283 µg/l	16,620 µg/l	1,050 µg/l	2,610 µg/l	1,050 µg/l	2,610 µg/l	1,050 µg/l	2,610 µg/l
1,2,4-Trichlorobenzene	N/A	N/A	68 µg/l	140 µg/l	68 µg/l	140 µg/l	68 µg/l	140 µg/l
1,1,1-Trichloroethane	N/A	N/A	21 µg/l	54 µg/l	21 µg/l	54 µg/l	21 µg/l	54 µg/l
1,1,2-Trichloroethane	N/A	N/A	21 µg/l	54 µg/l	21 µg/l	54 µg/l	21 µg/l	54 µg/l
Trichloroethylene	N/A	N/A	21 µg/l	54 µg/l	21 µg/l	54 µg/l	21 µg/l	54 µg/l
Vinyl Chloride	N/A	N/A	104 µg/l	268 µg/l	104 µg/l	268 µg/l	104 µg/l	268 µg/l
pH	6.0 – 9.0 s.u.		6.0 – 9.0 s.u.		6 – 9 s.u.		6.0 – 9.0 s.u.	

¹ Calculated toxicity-based NH₃ limit, which is more stringent than the oxygen-based NH₃ limit.

² Calculated oxygen-based NH₃ limit, which is more stringent than the toxicity-based NH₃ limit.

³ Technology-based limit for BOD₅ was modeled to verify compliance with water quality.

A. Justification for Limitations and Conditions of the draft permit:

Table 2 – Justification for Limitations and Conditions - Outfall 001

Parameter	Water Quality or Technology	Justification
Total Organic Carbon	Technology	Previous permit and 40 CFR 122.44(l)
Temperature	Technology	Previous permit and 40 CFR 122.44(l)
Oil & Grease	Water Quality	Reg. 2.510
pH	Water Quality	Reg. 2.504

Table 3 - Justification for Limitations and Conditions - Outfall 002

Parameter	Water Quality or Technology	Justification
BOD5	Technology	40 CFR 414.81
TSS	Technology	40 CFR 414.81
Total Organic Carbon	Technology	Previous permit and 40 CFR 122.44(l)
Ammonia-Nitrogen	Technology	Previous permit and 40 CFR 122.44(l)
Aluminum, Total Rec.	Technology	Previous permit and 40 CFR 122.44(l)
Phenolics, Total Rec.	Technology	Previous permit and 40 CFR 122.44(l)
Sulfates	Technology	Previous permit and 40 CFR 122.44(l)
Chlorides	Technology	Previous permit and 40 CFR 122.44(l)
Oil & Grease	Water Quality	Reg. 2.510
Acenaphthene	Technology	40 CFR 414.91
Acrylonitrile	Technology	40 CFR 414.91
Benzene	Technology	40 CFR 414.91
Carbon Tetrachloride	Technology	40 CFR 414.91
Chlorobenzene	Technology	40 CFR 414.91
1,2,4-Trichlorobenzene	Technology	40 CFR 414.91
Hexachlorobenzene	Technology	40 CFR 414.91
1,2-Dichloroethane	Technology	40 CFR 414.91
1,1,1-Trichloroethane	Technology	40 CFR 414.91
Hexachloroethane	Technology	40 CFR 414.91
1,1-Dichloroethane	Technology	40 CFR 414.91
1,1,2-Trichloroethane	Technology	40 CFR 414.91
Chloroethane	Technology	40 CFR 414.91
Chloroform	Technology	40 CFR 414.91
2-Chlorophenol	Technology	40 CFR 414.91
1,2-Dichlorobenzene	Technology	40 CFR 414.91
1,3-Dichlorobenzene	Technology	40 CFR 414.91
1,4-Dichlorobenzene	Technology	40 CFR 414.91
1,1-Dichloroethylene	Technology	40 CFR 414.91
1,2-trans-Dichloroethylene	Technology	40 CFR 414.91
2,4-Dichlorophenol	Technology	40 CFR 414.91
1,2-Dichloropropane	Technology	40 CFR 414.91
1,3-Dichloropropylene	Technology	40 CFR 414.91
2,4-Dimethylphenol	Technology	40 CFR 414.91
2,4-Dinitrotoluene	Technology	40 CFR 414.91
2,6-Dinitrotoluene	Technology	40 CFR 414.91
Ethylbenzene	Technology	40 CFR 414.91
Fluoranthene	Technology	40 CFR 414.91
Methylene Chloride	Technology	40 CFR 414.91
Methyl Chloride	Technology	40 CFR 414.91
Hexachlorobutadiene	Technology	40 CFR 414.91
Naphthalene	Technology	40 CFR 414.91
Nitrobenzene	Technology	40 CFR 414.91

Table 3 - Justification for Limitations and Conditions - Outfall 002		
Parameter	Water Quality or Technology	Justification
2-Nitrophenol	Technology	40 CFR 414.91
4-Nitrophenol	Technology	40 CFR 414.91
2,4-Dinitrophenol	Technology	40 CFR 414.91
4,6-Dinitro-o-cresol	Technology	40 CFR 414.91
Phenol	Technology	40 CFR 414.91
Bis (2-ethylhexyl) phthalate	Technology	40 CFR 414.91
Di-n-butyl phthalate	Technology	40 CFR 414.91
Diethyl phthalate	Technology	40 CFR 414.91
Dimethyl phthalate	Technology	40 CFR 414.91
Benzo (a) anthracene	Technology	40 CFR 414.91
Benzo (a) pyrene	Technology	40 CFR 414.91
3,4-Benzofluoranthene	Technology	40 CFR 414.91
Benzo (k) fluoranthene	Technology	40 CFR 414.91
Chrysene	Technology	40 CFR 414.91
Acenaphthylene	Technology	40 CFR 414.91
Anthracene	Technology	40 CFR 414.91
Fluorene	Technology	40 CFR 414.91
Phenanthrene	Technology	40 CFR 414.91
Pyrene	Technology	40 CFR 414.91
Tetrachloroethylene	Technology	40 CFR 414.91
Toluene	Technology	40 CFR 414.91
Trichloroethylene	Technology	40 CFR 414.91
Vinyl Chloride	Technology	40 CFR 414.91
Total Chromium	Technology	40 CFR 414.91
Total Copper	Water Quality	Reg. 2.508
Total Cyanide	Water Quality	Reg. 2.508
Total Lead	Technology	40 CFR 414.91
Total Nickel	Technology	40 CFR 414.91
Total Zinc	Technology	40 CFR 414.91
pH	Technology	40 CFR 414.81

B. Anti-backsliding

The draft permit is consistent with the requirements to meet Anti-backsliding provisions of the Clean Water Act (CWA), Section 402(o) [40 CFR 122.44(l)]. The final effluent limitations for reissuance permits must be as stringent as those in the previous permit, unless the less stringent limitations can be justified using exceptions listed in CWA 402(o)(2), CWA 303(d)(4), or 40 CFR 122.44 (l)(2)(i).

The draft permit meets or exceeds the requirements of the previous permit.

C. Limits Calculations

1. Mass limits:

In accordance with 40 CFR 122.45(f)(1), all pollutants limited in permits shall have limitations expressed in terms of mass if feasible. 40 CFR 122.45(f)(2) allows for pollutants which are limited in terms of mass to also be limited in terms of other units of measurement.

Outfall 001

Mass limits were added for Oil & Grease at Outfall 001 in accordance with 40 CFR 122.45(f)(1). The calculation of the loadings (lbs per day) uses an actual flow of 58.3 MGD (highest monthly average reported at Outfall 001 from July 2014 through June 2016) and the following equation:

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

Outfall 002

Mass limits for all pollutants regulated under 40 CFR Parts 414.81 and 414.91 are included. The calculation of the loadings (lbs per day) for all TBELs from ELG uses an actual flow of 2.3 MGD (highest monthly average reported at Outfall 002 from July 2014 through June 2016) and the following equation:

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

Water quality-based mass values for Copper, Cyanide, Lead, Nickel, Zinc, Ammonia-Nitrogen (NH₃-N), Sulfates, and Chlorides were determined for comparison with the previous permit limits for these parameters using the design flow of the treatment system (2.75 MGD) in conjunction with calculated water quality-based concentration values. These calculated concentrations were then converted to mass using the following equation and compared with the mass limits from previous permit:

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

The more stringent mass limits for Ammonia-Nitrogen, Sulfates, and Chlorides were determined to be from the previous permit. Therefore, the previous permit limits were continued for Ammonia-Nitrogen, Sulfates, and Chlorides based on antibacksliding requirements.

The more stringent mass limits for Copper and Cyanide were determined to be water quality based values that are more stringent than those included in previous permit and the technology based mass calculated from the concentrations given in the ELG. Therefore, the more stringent water quality based mass limits for Copper and Cyanide are included in the permit.

The more stringent mass limits for Lead, Nickel, and Zinc were determined to be the technology based mass calculated from the concentrations given in the ELG. Therefore, the more stringent technology based mass limits for Lead, Nickel, and Zinc are included in the permit.

2. Daily Maximum Limits:

Outfall 001

The daily maximum limit for Oil & Grease is based on Reg. 2.510 and the actual flow reported from outfall 001 (highest monthly average reported from July 2014 through June 2016).

The daily maximum limit for Temperature is continued from the previous permit based on antibacksliding requirements.

The daily maximum limit for net increase of TOC is continued from the previous permit based on antibacksliding requirements.

The daily maximum limit for pH is based on Reg. 2.504.

Outfall 002

The daily maximum limit for TOC, NH₃-N, Aluminum, Phenolics, Sulfates, and Chlorides is continued from the previous permit based on antibacksliding requirements.

The daily maximum limits for Oil & Grease are based on Reg. 2.510 and design flow of treatment system.

The daily maximum limits for BOD₅, TSS, and pH are based on 40 CFR 414.81.

The daily maximum limits for Total Rec. Copper and Total Rec. Cyanide are based on Reg. 2.508 and the design flow of treatment system.

The daily maximum limits for Total Rec. Chromium, Total Rec. Lead, Total Rec. Nickel, Total Rec. Zinc, and the remaining pollutants (volatile organic pollutants) monitored at Outfall 002 are based on 40 CFR 414.91 and the long term average flow (highest monthly average reported from July 2014 to June 2016) of the treatment system.

D. **Temperature (Outfall 001)**

Water quality based effluent limitations for temperature were determined and compared to the effluent limits contained in the previous permit. In this case, the previous permit limits (105 °F) are more stringent than calculated water quality based limits (107.8 °F), therefore the previous limits are continued in this permit to comply with anti-backsliding regulations. A comparison between the calculated water quality limits and previous permit limits is shown in Table 1 of this Fact Sheet. The water quality based limit calculation can be seen at the following weblink:

https://www.adeq.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/AR0035386_Calculation%20of%20Temperature%20WQBEL_20160823.pdf

E. **TOC (Outfall 001)**

The net increase limitation for Total Organic Carbon is continued from the previous permit based on antibacksliding regulations in 40 CFR 122.44(l).

F. **Oil & Grease (Outfall 001)**

Concentration limits for O&G are continued from the previous permit and are based on Reg. 2.510. Mass limits were added in accordance with 40 CFR 122.45(f)(1), and determined from the highest monthly average flow of 58.3 MGD reported from July 2014 through June 2016.

G. **Aluminum and Iron (Outfall 001)**

Monitoring and reporting requirements for Aluminum and Iron are added based on the evaluation of reported values in the application on EPA Form 2C (See summary of this evaluation in section 14.M of this fact sheet. A.C.A. § 8-4-216 authorizes the Department to require the submission of any information relevant to meeting the requirements of the Arkansas Water and Air pollution Control Act. A requirement to monitor and report for Aluminum and Iron once per quarter for one year has been added to the permit so that, in the event that a WQS for Aluminum and/or Iron is added to Reg. 2.508, data will be available to perform a reasonable potential analysis. This is in accordance with the procedure in Appendix D of the CPP (Appendix D, Part IV – Chemical Specific Standards and Criteria, Section C – Protection of Aquatic Life.

H. **Ammonia-Nitrogen (NH₃-N) (Outfall 002)**

Water quality based effluent limitations (WQBELs) for NH₃-N were determined for both oxygen-based and toxicity-based standards for comparison with the current permit limits. The toxicity-based effluent values were calculated based on Reg. 2.512 and the CPP. The DO-based effluent limits were determined from a dissolved oxygen modeling analysis. In this analysis, the previous permit limits are more stringent than the determined WQBELs, therefore the previous permit limits are continued in this permit to comply with anti-backsliding regulations. A comparison between the calculated WQBELs and previous permit limits is shown in Table 1 of this Section of the Fact Sheet. The determination for the WQBELs for NH₃-N can be seen at the following weblink:

http://www.adeg.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/AR0035386_revised%20ammonia%20calculations_20150424.pdf

The oxygen based ammonia determination from the dissolved oxygen modeling analysis can be seen at the following weblink:

http://www.adeg.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/AR0035386_Modeling%20Analysis_20150424.pdf

I. **Total Organic Carbon, Total Recoverable Aluminum, and Total Recoverable Phenolics (Outfall 002)**

The historical reported values of these parameters indicate that the facility has consistently met the previous permit limits. Therefore, the effluent limits for these parameters are being continued from the previous permit based on the antibacksliding regulations in 40 CFR 122.44(1).

J. **Copper, Cyanide, Lead, Nickel, Zinc (Outfall 002)**

Water quality based effluent limitations for these pollutants were determined and compared to the technology-based effluent limits from the effluent limitation guideline (40 CFR 414.91) contained in the previous permit. In this analysis, the technology-based permit limits (TBELs) are more stringent for Lead, Nickel, and Zinc, therefore these limits are continued in this permit. The water quality based limits (WQBELs) for Copper and Cyanide are more stringent than TBELs, therefore the WQBELs were included in the permit for Copper and Cyanide. A comparison between the calculated WQBELs and TBELs is shown in Table 1 of this Fact Sheet. The values of the water quality based effluent limitations were calculated using acute and chronic criteria from Arkansas Pollution Control & Ecology Commission Regulation No. 2, the design flow of outfall 002, critical low flow of White River, and the geometric mean upstream concentration from data collected at closest ADEQ upstream station (WHI0046). The water quality based limit calculations can be seen at the following weblink:

http://www.adeg.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/AR0035386_WQBEL%20determination%20for%20metals%20at%20Outfall%20002_20150501.pdf

K. **Chlorides and Sulfates (Outfall 002)**

Water quality based effluent limitations for Chlorides and Sulfates were determined and compared to the effluent limits contained in the previous permit. For each of these pollutants, the maximum allowable effluent concentration that would comply with both secondary drinking water standards and aquatic life criteria in Reg. 2.511(A), were calculated. A comparison between the calculated water quality limits and previous permit limits is shown in Table 1 of this Fact Sheet. The water quality based limit calculation can be seen at the following weblink:

http://www.adeg.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/AR0035386_WQBEL%20calculations%20for%20Chloride%20and%20Sulfate_20150408.pdf

Harmonic mean flow of the White River is used to determine the water quality values necessary to meet secondary drinking water criteria. This calculation can be seen at the following weblink:

http://www.adeq.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/AR0035386_white%20river%20harmonic%20mean%20flow%20calculation_20150408.pdf

In this case, the previous permit limits are more stringent, therefore these limits are continued in this permit to comply with anti-backsliding regulations.

L. **Applicable Effluent Limitations Guidelines (ELGs)**

40 CFR Part 414, Subpart H (Speciality Organic Chemicals) and Subpart I (Direct Discharge Point Sources that use End-of-Pipe Biological Treatment)

Discharges from Outfall 002 from this facility are covered by Federal Effluent Limitations Guidelines promulgated under 40 CFR Part 414, Subparts H – Speciality Organic Chemicals, and Subpart I – Direct Discharge Point Sources that use End-of-Pipe Biological Treatment. Concentration limits have been included under the authority of 40 CFR Part 122.45 (f)(2) to supplement the mass loading limits in order to encourage and insure proper operation of the treatment system at all times. The technology-based mass limits were calculated from the technology-based concentration limits in accordance with procedures detailed in EPA's Training Manual for NPDES Permit Writers, which states,

“The long-term average flow is used to calculate both monthly average and daily maximum concentrations. The use of the long-term average flow is appropriate for the calculation of a daily maximum because it will reflect the range of concentrations that could be expected in a well operated plant. The use of the maximum daily flow is not appropriate to determine the daily maximum concentration from the daily maximum mass limitation because it will reduce the daily maximum concentration below the value which could be expected in a well operated plant. The maximum concentration calculated using the maximum daily flow could be less than the monthly average concentration.”

This ELG is a flow-normalized guideline which means that the technology-based mass limits are to be calculated from the flow-normalized technology-based concentrations given in the ELG. These technology-based concentrations are applicable following the end-of-pipe treatment. Based on estimated flows of the unregulated wastestreams at outfall 002 reported in EPA Form 2C, it was determined that dilute wastestreams contribute less than 5% of the total flow through the treatment system. Furthermore, both regulated and dilute wastestreams go through the treatment system so that dilution is not being substituted for treatment. For these reasons, the technology-based concentration and mass limits were not adjusted for dilute wastestreams, and were applied directly at Outfall 002.

40 CFR Part 439 - Pharmaceutical Manufacturing

The facility does not currently manufacture any pharmaceutical products or intermediates. The facility has manufactured products in the past that would be classified under this category, however according to 40 CFR 439.0(c)(11), the provisions of this

part do not apply to wastewater discharges resulting from the manufacture of pharmaceutical products and intermediates subject to the provisions of 40 CFR Part 414, provided their manufacture results in less than 50 percent of the total flow of process wastewater that is regulated by 40 CFR Part 414 at the facility. Part 439 would not apply to any future manufacturing of pharmaceutical products or intermediates at this facility provided that the discharge flow from the pharmaceutical or intermediates manufacturing results in less than 50 percent of the total flow of process wastewater that is regulated by Part 414.

40 CFR Part 455 Subpart A – Organic Pesticide Chemicals Manufacturing Subcategory

The pesticides that are manufactured at this facility do not contain any of the “organic pesticide chemicals” defined in 40 CFR 455.21(c) and are not listed in Table 1 of 40 CFR Part 455. Therefore, Part 455 Subpart A is not applicable to this facility.

40 CFR Part 455 Subpart B - Metallo-Organic Pesticide Chemicals Manufacturing

This facility does not manufacture any pesticide active ingredients containing Mercury, Cadmium, Arsenic, or Copper. Therefore, Part 455 Subpart B is not applicable to this facility.

40 CFR Part 455 Subpart C - Pesticide Chemicals Formulating and Packaging

This facility does not have a discharge resulting from the formulating, packaging, or repacking of a pesticide. Therefore, Part 455 Subpart C is not applicable to this facility.

M. Priority Pollutant Scan (PPS) and Form 2C Evaluation

ADEQ has reviewed and evaluated the effluent in accordance with the potential toxicity of each analyzed pollutant using the procedures outlined in the Continuing Planning Process (CPP).

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 (AWQS), Regulation No. 2 (Reg. 2.508) and criteria obtained from the "Quality Criteria for Water, 1986 (Gold Book)."

Under Federal Regulation 40 CFR Part 122.44(d), as adopted by Regulation No. 6, if a discharge poses the reasonable potential to cause or contribute to an exceedance above a water quality standard, the permit must contain an effluent limitation for that pollutant. Effluent limitations for the toxicants listed below have been derived in a manner consistent with the Technical Support Document (TSD) for Water Quality-based Toxics Control (EPA, March 1991), the CPP, and 40 CFR Part 122.45(c).

The following variables were used in the calculations:

Table 4 – Priority Pollutant Evaluation Variables – Outfalls 001 and 002		
Parameter	Value	Source
Discharge Flow = Q	<u>Outfall 001</u> 58.3 MGD = 90.4 cfs ¹	<u>Outfall 001</u> Reported flows
	<u>Outfall 002</u> 2.75 MGD = 4.26 cfs ²	<u>Outfall 002</u> Design flow
Upstream (Background) Data		
7Q10 Background Flow	1150 cfs ³	USGS Station 07061000
LTA Background Flow	5814 cfs ⁴	USGS Station 07061000
TSS	8 mg/l ⁵	FutureFuel Stream Monitoring Station
Hardness as CaCo3	152 mg/l ⁵	
Total Copper	0 mg/l ⁵	
Total Cyanide	0 mg/l ⁵	
Total Lead	0 mg/l ⁵	
Total Nickel	6 mg/l ⁵	
Total Zinc	6 mg/l ⁵	
pH	7.79 s.u. ⁷	ADEQ Station WHI0046
Total Aluminum	25 µg/l ⁶	
Total Iron	21 µg/l ⁶	
Total Manganese	12 µg/l ⁶	
Total Boron	13 µg/l ⁶	
Total Magnesium	10134 µg/l ⁶	ADEQ Station WHI0046
Total Titanium	0 µg/l ⁶	

¹ Highest monthly average from July 2014 through June 2016 reported at Outfall 001.
² Design flow of treatment system for Outfall 002 based on 6/5/2009 letter from Steve Case, P.E., Utility Manager for FutureFuel.
³ 7Q10 value from pg. 71 of USGS Scientific Investigations Report 2008-5065.
⁴ Harmonic mean flow of daily flow values from October 2000 to November 2014.
⁵ Geometric mean of data reported at FutureFuel SMS from December 2012 to September 2014.
⁶ Geometric mean of data reported at WHI0046 in calendar year 2014.
⁷ Individual pH values in calendar year 2014 were converted to hydrogen ion values which were averaged and then converted back to an average pH value.

The following pollutants were reported above detection levels at Outfall 001 on either the EPA Form 2C or PPS Form included in the application:

Table 5 - Pollutants Reported Above Detection Levels - Outfall 001		
Pollutant	Concentration Reported µg/l	MQL µg/l
Arsenic, Total Rec.	0.63 ¹	0.5
Copper, Total Rec.	6.3 ¹	0.5
Lead, Total Rec.	1.6 ¹	0.5
Nickel, Total Rec.	3.8 ¹	0.5
Aluminum, Total Rec.	1,400 ¹	40
Iron, Total Rec.	1,200 ¹	7
Manganese, Total Rec.	85 ¹	2
Boron, Total Rec.	160 ¹	100
Magnesium, Total Rec.	9,400 ¹	30
Titanium, Total Rec.	39 ¹	5

¹ Single data point reported on lab report included in application.

The following pollutants were reported above detection levels at Outfall 002 on either the EPA Form 2C or PPS Form included in the application:

Table 6 - Pollutants Reported Above Detection Levels - Outfall 002		
Pollutant	Concentration Reported µg/l	MQL µg/l
Arsenic, Total Rec.	3.4 ¹	0.5
Cadmium, Total Rec.	1.5 ¹	1
Copper, Total Rec.	5.7 ¹	0.5
Cyanide, Total Rec.	52 ¹	10
Lead, Total Rec.	0.85 ¹	0.5
Nickel, Total Rec.	25 ¹	0.5
Zinc, Total Rec.	170 ¹	20
Thallium, Total Rec.	1.1 ¹	0.5
Aluminum, Total Rec.	120 ¹	40
Iron, Total Rec.	92 ¹	7
Manganese, Total Rec.	45 ¹	2
Boron, Total Rec.	840 ¹	100
Magnesium, Total Rec.	11,000 ¹	30

¹ Single data point reported on lab report included with application.

Instream Waste Concentrations (IWC's) were calculated in the manner described in Appendix D of the CPP and compared to the applicable Criteria. The following tables summarize the results of the analysis. The complete evaluation for each outfall can be viewed on the Department's website at the following hyperlinks:

Outfall 001

https://www.adeg.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/AR0035386_Updated%20PPS%20Evaluation%20Outfall%20001_20160824.pdf

Outfall 002

http://www.adeg.state.ar.us/downloads/WebDatabases/PermitsOnline/NPDES/PermitInformation/AR0035386_Corrected%20PPS%20Evaluation%20Outfall%20002_20150423.pdf

1. Aquatic Toxicity Evaluation

a. Acute Criteria Evaluation

Table 7 - Acute Criteria Evaluation - Outfall 001					
Pollutant	Concentration Reported (C _e) μg/l	C _e X 2.13 ¹	Instream Waste Concentration (IWC)	Criteria ²	Reasonable Potential (Yes/No)
			Acute, μg/l	Acute, μg/l	
Arsenic, Total Rec.	0.63	1.34	0.76	340 ³	No
Copper, Total Rec.	6.3	13.42	7.60	70	No
Lead, Total Rec.	1.6	3.41	1.93	532	No
Nickel, Total Rec.	3.8	8.09	7.19	4,433	No
Aluminum, Total Rec.	1,400	2,982	1,699	750 ³	Yes
Iron, Total Rec.	1,200	2,556	1,456	1000 ³	Yes
Manganese, Total Rec.	85	181	108	None ⁴	No
Boron, Total Rec.	160	341	198	None ⁴	No
Magnesium, Total Rec.	9,400	20,022	15,732	None ⁴	No
Titanium, Total Rec.	39	83	47	None ⁴	No

¹ Statistical ratio used to estimate the 95th percentile using a single effluent concentration or the geometric mean of a dataset.

² Criteria are from Reg. 2.508 unless otherwise specified.

³ 2009 EPA National Recommended Water Quality Criteria.

⁴ No EPA criteria found in 1986 Gold Book or 2009 National Recommended Water Quality Criteria.

Table 8 - Acute Criteria Evaluation - Outfall 002

Pollutant	Concentration Reported (C _e) µg/l	C _e X 2.13 ¹	Instream Waste Concentration (IWC)	Criteria ²	Reasonable Potential (Yes/No)
			Acute, µg/l	Acute, µg/l	
Arsenic, Total Rec.	3.4	7.2	0.42	340 ³	No
Cadmium, Total Rec.	1.5	3.2	0.19	23.62	No
Copper, Total Rec.	5.7	12.1	0.70	70.33	No
Lead, Total Rec.	0.85	1.8	0.11	532.60	No
Nickel, Total Rec.	25	53.3	8.74	4,433.90	No
Thallium, Total Rec.	1.1	2.3	0.14	1400 ⁴	No
Zinc, Total Rec.	170	362	26.66	543.83	No
Cyanide, Total Rec.	52	111	6.42	22.36	No
Aluminum, Total Rec.	120	256	38.38	750 ³	No
Iron, Total Rec.	92	196	31.15	1,000 ³	No
Manganese, Total Rec.	45	96	16.86	None ⁵	No
Boron, Total Rec.	840	1789	116.03	None ⁵	No
Magnesium, Total Rec.	11,000	23,430	10,905.23	None ⁵	No

¹ Statistical ratio used to estimate the 95th percentile using a single effluent concentration or the geometric mean of a dataset.

² Criteria are from Reg. 2.508 unless otherwise specified.

³ 2009 EPA National Recommended Water Quality Criteria.

⁴ 1986 EPA Gold Book.

⁵ No EPA criteria found in 1986 Gold Book or 2009 National Recommended Water Quality Criteria.

b. Chronic Criteria Evaluation

Table 9 - Chronic Criteria Evaluation - Outfall 001					
Pollutant	Concentration Reported (C _e) µg/l	C _e X 2.13 ¹	Instream Waste Concentration (IWC)	Criteria ²	Reasonable Potential (Yes/No)
			Chronic, µg/l	Chronic, µg/l	
Arsenic, Total Rec.	0.63	1.34	0.32	150 ³	No
Copper, Total Rec.	6.3	13.42	3.20	45.22	No
Lead, Total Rec.	1.6	3.41	0.81	20.75	No
Nickel, Total Rec.	3.8	8.09	6.50	492.42	No
Aluminum, Total Rec.	1,400	2,982	730	87 ³	Yes
Iron, Total Rec.	1,200	2,556	626	None ⁴	No
Manganese, Total Rec.	85	181	52	None ⁴	No
Boron, Total Rec.	160	341	91	None ⁴	No
Magnesium, Total Rec.	9,400	20,022	12,493	None ⁴	No
Titanium, Total Rec.	39	83	20	None ⁴	No

¹ Statistical ratio used to estimate the 95th percentile using a single effluent concentration or the geometric mean of a dataset.

² Criteria are from Reg. 2.508 unless otherwise specified.

³ 2009 EPA National Recommended Water Quality Criteria.

⁴ No EPA criteria found in 1986 Gold Book or 2009 National Recommended Water Quality Criteria.

Table 10 - Chronic Criteria Evaluation - Outfall 002

Pollutant	Concentration Reported (C _e) µg/l	C _e X 2.13 ¹	Instream Waste Concentration (IWC)	Criteria ²	Reasonable Potential (Yes/No)
			Chronic, µg/l	Chronic, µg/l	
Arsenic, Total Rec.	3.4	7.2	0.11	150 ³	No
Cadmium, Total Rec.	1.5	3.2	0.05	5.69	No
Copper, Total Rec.	5.7	12.1	0.18	45.22	No
Lead, Total Rec.	0.85	1.8	0.03	20.75	No
Nickel, Total Rec.	25	53.3	6.69	492.42	No
Thallium, Total Rec.	1.1	2.3	0.03	40 ⁴	No
Zinc, Total Rec.	170	362	11.19	496.6	No
Cyanide, Total Rec.	52	111	1.61	5.2	No
Aluminum, Total Rec.	120	256	28.36	87	No
Iron, Total Rec.	92	196	23.55	None ⁵	No
Manganese, Total Rec.	45	96	13.22	None ⁵	No
Boron, Total Rec.	840	1789	38.87	None ⁵	No
Magnesium, Total Rec.	11,000	23,430	10,327	None ⁵	No

¹ Statistical ratio used to estimate the 95th percentile using a single effluent concentration or the geometric mean of a dataset.

² Criteria are from Reg. 2.508 unless otherwise specified.

³ 2009 EPA National Recommended Water Quality Criteria.

⁴ 1986 EPA Gold Book.

⁵ No EPA criteria found in 1986 Gold Book or 2009 National Recommended Water Quality Criteria.

2. Human Health (Bioaccumulation) Evaluation

Table 11 - Human Health Evaluation - Outfall 001					
Pollutant	Concentration Reported (C _e) µg/l	C _e X 2.13 ¹	Instream Waste Concentration (IWC)	Criteria ²	Reasonable Potential (Yes/No)
			Human Health, µg/l	Human Health, µg/l	
Arsenic, Total Rec.	0.63	1.34	0.02	1.4 ³	No
Copper, Total Rec.	6.3	13.42	0.20	None ⁵	No
Lead, Total Rec.	1.6	3.41	0.05	None ⁵	No
Nickel, Total Rec.	3.8	8.09	6.03	4,770 ⁴	No
Aluminum, Total Rec.	1,400	2,982	70	None ⁵	No
Iron, Total Rec.	1,200	2,556	60	300 ⁴	No
Manganese, Total Rec.	85	181	15	None ⁵	No
Boron, Total Rec.	160	341	18	None ⁵	No
Magnesium, Total Rec.	9,400	20,022	10,285	None ⁵	No
Titanium, Total Rec.	39	83	1.30	None ⁵	No

¹ Statistical ratio used to estimate the 95th percentile using a single effluent concentration or the geometric mean of a dataset.

² Criteria are from Reg. 2.508 unless otherwise specified.

³ Criteria based on carcinogenicity from 2009 EPA National Recommended Water Quality Criteria. The respective criteria are Consumption of Organism Only value representing a human health criteria lifetime risk factor of 10⁻⁵ as stated in Reg. 2.508.

⁴ 1986 Gold Book criteria.

⁵ No EPA criteria found in 1986 Gold Book or 2009 National Recommended Water Quality Criteria.

Table 12 - Human Health Evaluation - Outfall 002					
Pollutant	Concentration Reported (C_e) $\mu\text{g/l}$	$C_e \times 2.13^1$	Instream Waste Concentration (IWC)	Criteria ²	Reasonable Potential (Yes/No)
			Human Health, $\mu\text{g/l}$	Human Health, $\mu\text{g/l}$	
Arsenic, Total Rec.	3.4	7.2	0.01	1.4 ³	No
Cadmium, Total Rec.	1.5	3.2	< 0.005	10 ⁴	No
Copper, Total Rec.	5.7	12.1	0.01	None ⁶	No
Lead, Total Rec.	0.85	1.8	< 0.005	None ⁶	No
Nickel, Total Rec.	25	53.3	6.03	4,770 ⁴	No
Thallium, Total Rec.	1.1	2.3	< 0.005	0.47 ⁵	No
Zinc, Total Rec.	170	362	6.26	26,000 ⁵	No
Cyanide, Total Rec.	52	111	0.08	140 ⁵	No
Aluminum, Total Rec.	120	256	25.17	None ⁶	No
Iron, Total Rec.	92	196	21.13	300 ⁴	No
Manganese, Total Rec.	45	96	12.06	100 ⁵	No
Boron, Total Rec.	840	1,789	14.30	None ⁶	No
Magnesium, Total Rec.	11,000	23,430	10,143	None ⁶	No

¹ Statistical ratio used to estimate the 95th percentile using a single effluent concentration or the geometric mean of a dataset.

² Criteria are from Reg. 2.508 unless otherwise specified.

³ Criteria based on carcinogenicity from 2009 EPA National Recommended Water Quality Criteria. The respective criteria are Consumption of Organism Only value representing a human health criteria lifetime risk factor of 10^{-5} as stated in Reg. 2.508.

⁴ 1986 Gold Book criteria.

⁵ 2009 EPA National Recommended Water Quality Criteria.

⁶ No EPA criteria found in 1986 Gold Book or 2009 National Recommended Water Quality Criteria.

As can be seen in the tables above, the calculated IWC for Aluminum and Iron is higher than the Acute EPA Water Quality Criterion for Aluminum and Iron at Outfall 001, and higher than the Chronic EPA Water Quality Criterion for Aluminum at Outfall 001. A.C.A. § 8-4-216 authorizes the Department to require the submission of any information relevant to meeting the requirements of the Arkansas Water and Air pollution Control Act. A requirement to monitor and report for Aluminum and Iron once per quarter for one year has been added to the permit so that, in the event that a WQS for Aluminum and/or Iron is added to Reg. 2.508, data will be available to perform a reasonable potential analysis. This is in accordance with the procedure in Appendix D of the CPP (Appendix D, Part IV – Chemical Specific Standards and Criteria, Section C – Protection of Aquatic Life).

15. WHOLE EFFLUENT TOXICITY.

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 toxicity (WET) testing 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, and EPA Region 6 Post-Third Round Whole Effluent Toxicity Testing Frequencies, revised March 13, 2000. Whole effluent toxicity testing of the effluent is thereby required as a condition of this permit to assess potential toxicity. The whole effluent toxicity testing procedures stipulated as a condition of this permit are as follows:

TOXICITY TESTS	FREQUENCY
Chronic WET	Once/quarter

Requirements for measurement frequency are based on the CPP.

Since dilution ratio (7Q10:Qd) is less than 100:1, chronic WET testing requirements are included in the permit.

The calculations for dilution used for chronic WET testing are as follows:

Highest monthly average flow for 001 (July 2014 – June 2016) = 58.3 mgd = 90.4 cfs

Design flow of treatment system at 002 = 2.75 mgd = 4.3 cfs

Qd = Outfall 001/002 combined = 90.4 cfs + 4.3 cfs = 94.7 cfs

7Q10 = 1150 cfs

Qb = Background flow = (0.25) X 7Q10 = 287.5 cfs

Critical dilution (CD) = (Qd/(Qd + Qb)) X 100

CD = (94.7) / (94.7 + 287.5) X 100 = 25%

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 11%, 14%, 19%, 25%, and 33% (See the CPP). The low-flow effluent concentration (critical dilution) is defined as 25% effluent. The

requirement for chronic WET 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 representative of organisms indigenous to the geographic area of the facility; the use of these is consistent with the requirements of the State water quality standards. The WET testing 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-821-R-02-013, October 2002 and shall be submitted as an attachment to the Discharge Monitoring Report (DMR).

This permit may be reopened to require further WET testing studies, Toxicity Reduction Evaluation (TRE) and/or effluent limits if WET testing 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 APC&EC 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 001/002 (combined):

Permit Number:	AR0035386	AFIN:	32-00036	Outfall Number:	001/002
Date of Review:	8/22/2016	Reviewer:	M. Barnett		
Facility Name:	FutureFuel				
Previous Dilution series:	8, 11, 15, 20, 27	Proposed Dilution Series:	11, 14, 19, 25, 33		
Previous Critical Dilution:	20	Proposed Critical Dilution:	25		
Previous TRE activities:	None				
Frequency recommendation by species					
<i>Pimephales promelas</i> (Fathead minnow):	once per quarter				
<i>Ceriodaphnia dubia</i> (water flea):	once per quarter				
TEST DATA SUMMARY					
TEST DATE	Vertebrate (<i>Pimephales promelas</i>)		Invertebrate (<i>Ceriodaphnia dubia</i>)		TREATMENT
	Lethal NOEC	Sub-Lethal NOEC	Lethal NOEC	Sub-Lethal NOEC	
12/31/2011	27	27	27	27	27 None
12/31/2011	27	27	27	27	27 UV Pp test
6/30/2012	27	27	27	27	27 UV
12/31/2012	27	27	27	27	27 UV Pp test
6/30/2013	100	100	100	100	100 UV Pp test
12/31/2013	27	27	27	27	27 None
6/30/2014	27	27	27	27	27 None
12/31/2014	100	100	100	100	100 UV Pp test
6/30/2015	100	100	27	27	27
12/31/2015	100	27	100	100	100 UV Pp test
6/30/2016	100	27	100	100	100
REASONABLE POTENTIAL CALCULATIONS					
	Vertebrate Lethal	Vertebrate Sub-lethal	Invertebrate Lethal	Invertebrate Sub-Lethal	
Min NOEC Observed	27	27	27	27	
TU at Min Observed	3.70	3.70	3.70	3.70	
Count	11	11	10	10	
Failure Count	0	0	0	0	
Mean	2.475	2.966	2.622	2.622	
Std. Dev.	1.412	1.263	1.396	1.396	
CV	0.6	0.4	0.5	0.5	
RPMF	1.7	1.4	1.6	1.6	
Reasonable Potential	1.574	1.296	1.481	1.481	
100/Critical dilution	4.000	4.000	4.000	4.000	
Does Reasonable Potential Exist	No	No	No	No	
PERMIT ACTION					
<i>P. promelas</i> chronic - monitoring					
<i>C. dubia</i> chronic - monitoring					

16. STORMWATER REQUIREMENTS

Effluent limitations guidelines have not been promulgated for discharges of this sort. Therefore under the authority of Section 402 (a) (1) of the Clean Water Act and State laws, the State has developed a permit on a case-by-case basis. Permittee must comply with a Best Management Plan (BMP) in lieu of a Storm Water Pollution Prevention Plan (SWPPP). Permittee shall continue implementation of the BMPs currently in place. All BMPs must be maintained in effective operating condition.

17. SAMPLE TYPE AND FREQUENCY.

Regulations require permits to establish monitoring requirements to yield data representative of the monitored activity [40 CFR Part 122.48(b)] and to ensure compliance with permit limitations [40 CFR Part 122.44(i)(1)].

Requirements for sampling frequency have been based on the previous discharge permit for all parameters except for Phenol, 2,4-Dinitrophenol, 4- Nitrophenol, 2-Nitrophenol, 2,4-Dimethylphenol, 2,4-Dichlorophenol, 2-Chlorophenol. The monitoring frequency for these parameters were changed to once/6 months to be consistent with the other parameters listed in 40 CFR Part 414.91. Monitoring frequency and type for Aluminum and Iron at Outfall 001 are based on the CPP. Sample frequency at Outfall 002 for TOC, NH3-N, Total Aluminum, Total Phenolics, Sulfates, and Chlorides were reduced based on a review of reported data using the eligible reductions given in EPA’s April 1996 Memorandum entitled, “Interim Guidance for Performance Based Reductions of NPDES Permit Monitoring Frequencies”. This document can be viewed at the following website:

<http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/upload/Interim-Guidance-for-Performance-Based-Reductions-of-NPDES-Permit-Monitoring-Frequencies.pdf>

Table 13 – Sample Type and Frequency Comparison Between Previous Permit and Renewal Permit - Outfall 001				
Parameter	Previous Permit		Draft Renewal Permit	
	Frequency of Sample	Sample Type	Frequency of Sample	Sample Type
Flow	Continuous	Recorder	Continuous	Recorder
Total Organic Carbon	Five/week	24-hr composite	Five/week	Composite ¹
Temperature	Continuous	Recorder	Continuous	Recorder
Oil & Grease	Once/quarter	Grab	Once/quarter	Grab
Aluminum, Total Rec.	N/A	N/A	Once/quarter	Composite
Iron, Total Rec.	N/A	N/A	Once/quarter	Composite

Table 13 – Sample Type and Frequency Comparison Between Previous Permit and Renewal Permit - Outfall 001				
Parameter	Previous Permit		Draft Renewal Permit	
	Frequency of Sample	Sample Type	Frequency of Sample	Sample Type
pH	Continuous	Recorder	Continuous	Recorder
Chronic WET Testing	Once/quarter	24-hr Composite	Once/quarter	Composite ²

¹ Composite is defined in Part IV of the permit.

² Composite for WET is defined in Condition 13.C.iv.a of Part II of the permit.

³ Monitoring and reporting for Aluminum and Iron at Outfall 001 is required for the first 12 months of the permit. See Condition No. 12 of Part II.

Table 14 - Sample Type and Frequency Comparison Between Previous Permit and Renewal Permit - Outfall 002				
Parameter	Previous Permit		Draft Renewal Permit	
	Frequency of Sample	Sample Type	Frequency of Sample	Sample Type
Flow	Continuous	Recorder	Continuous	Recorder
Total Organic Carbon	Five/week	24-hr composite	Once/week	Composite ¹
Ammonia-Nitrogen	Three/week	24-hr composite	Once/week	Composite ¹
Oil and Grease	Once/quarter	Grab	Once/quarter	Grab
Aluminum, Total Rec.	Once/month	24-hr composite	Once/6 months	Composite ¹
Phenolics, Total Rec.	Once/month	Grab	Once/6 months	Grab
Sulfates	Once/month	24-hr composite	Once/6 months	Composite ¹
Chlorides	Once/month	24-hr composite	Once/6 months	Composite ¹
BOD5	Three/week	24-hr composite	Three/week	Composite ¹
TSS	Three/week	24-hr composite	Three/week	Composite ¹
Acenaphthene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Acenaphthylene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Acrylonitrile	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Anthracene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Benzene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Benzo(a)anthracene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
3,4-Benzofluoranthene	Once/6 months	24-hr composite	Once/6 months	Composite ¹

Table 14 - Sample Type and Frequency Comparison Between Previous Permit and Renewal Permit - Outfall 002				
Parameter	Previous Permit		Draft Renewal Permit	
	Frequency of Sample	Sample Type	Frequency of Sample	Sample Type
Benzo (k) fluoranthene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Benzo (a) pyrene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Bis (2-ethylhexyl) phthalate	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Carbon Tetrachloride	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Chlorobenzene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Chloroethane	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Chloroform	Once/6 months	24-hr composite	Once/6 months	Composite ¹
2-Chlorophenol	Once/quarter	24-hr composite	Once/6 months	Composite
Chrysene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Di-n-butyl phthalate	Once/6 months	24-hr composite	Once/6 months	Composite ¹
1,2-Dichlorobenzene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
1,3-Dichlorobenzene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
1,4-Dichlorobenzene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
1,1-Dichloroethane	Once/6 months	24-hr composite	Once/6 months	Composite ¹
1,2-Dichloroethane	Once/6 months	24-hr composite	Once/6 months	Composite ¹
1,1-Dichloroethylene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
1,2-trans-Dichloroethylene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
2,4-Dichlorophenol	Once/quarter	24-hr composite	Once/6 months	Composite ¹
1,2-Dichloropropane	Once/6 months	24-hr composite	Once/6 months	Composite ¹
1,3-Dichloropropylene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Diethyl phthalate	Once/6 months	24-hr composite	Once/6 months	Composite ¹
2,4-Dimethylphenol	Once/quarter	24-hr composite	Once/6 months	Composite ¹
Dimethyl phthalate	Once/6 months	24-hr composite	Once/6 months	Composite ¹
4,6-Dinitro-o-cresol	Once/6 months	24-hr composite	Once/6 months	Composite ¹
2,4-Dinitrophenol	Once/quarter	24-hr composite	Once/6 months	Composite ¹
2,4-Dinitrotoluene	Once/6 months	24-hr composite	Once/6 months	Composite ¹

Table 14 - Sample Type and Frequency Comparison Between Previous Permit and Renewal Permit - Outfall 002				
Parameter	Previous Permit		Draft Renewal Permit	
	Frequency of Sample	Sample Type	Frequency of Sample	Sample Type
2,6-Dinitrotoluene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Ethylbenzene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Fluoranthene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Fluorene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Hexachlorobenzene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Hexachlorobutadiene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Hexachloroethane	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Methyl Chloride	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Methylene Chloride	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Naphthalene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Nitrobenzene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
2-Nitrophenol	Once/quarter	24-hr composite	Once/6 months	Composite ¹
4-Nitrophenol	Once/quarter	24-hr composite	Once/6 months	Composite ¹
Phenanthrene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Phenol	Once/quarter	24-hr composite	Once/6 months	Composite ¹
Pyrene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Tetrachloroethylene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Toluene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Total Chromium	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Total Copper	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Total Cyanide	Once/6 months	Grab	Once/6 months	Grab
Total Lead	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Total Nickel	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Total Zinc	Once/6 months	24-hr composite	Once/6 months	Composite ¹
1,2,4-Trichlorobenzene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
1,1,1-Trichloroethane	Once/6 months	24-hr composite	Once/6 months	Composite ¹
1,1,2-Trichloroethane	Once/6 months	24-hr composite	Once/6 months	Composite ¹

Table 14 - Sample Type and Frequency Comparison Between Previous Permit and Renewal Permit - Outfall 002				
Parameter	Previous Permit		Draft Renewal Permit	
	Frequency of Sample	Sample Type	Frequency of Sample	Sample Type
Trichloroethylene	Once/6 months	24-hr composite	Once/6 months	Composite ¹
Vinyl Chloride	Once/6 months	24-hr composite	Once/6 months	Composite ¹
pH	Continuous	Recorder	Continuous	Recorder
Chronic WET Testing	Once/quarter	24-hr Composite	Once/quarter	Composite ²

¹ Composite is defined in Part IV of the permit.

² Composite for WET is defined in Condition 13.C.iv.a of Part II of the permit.

18. PERMIT COMPLIANCE.

No schedule of compliance is included in the permit. Compliance is required on the effective date of the permit for all parameters.

19. MONITORING AND REPORTING.

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

20. SOURCES.

The following sources were used to draft the permit:

- A. [Application No. AR0035386 received 6/2/2008.](#)
- B. [Updated Form 1, 2C, and flow diagram received on 12/10/2014.](#)
- C. [Updated Form 2C received on 3/26/2015.](#)
- D. [Email dated 3/23/2015 requesting corrected Form 2C.](#)
- E. APCEC Regulation No. 2.
- F. APCEC Regulation No. 3.
- G. APCEC Regulation No. 6 which incorporates by reference certain federal regulations included in Title 40 of the Code of Federal Regulations at Reg. 6.104.
- H. [Quarterly financial report \(10Q\) for 4th quarter 2014.](#)
- I. [Annual financial report \(10K\) for 2014.](#)
- J. [Certificate of good standing from Delaware.](#)
- K. 40 CFR Parts 122 and 125.
- L. 40 CFR Part(s) 414.81, 414.91, 439.0 (c), and 455.
- M. Discharge permit file AR0035386.
- N. Discharge Monitoring Reports (DMRs).
- O. [Email dated 4/6/2015 from Solid Waste regarding removed solids from cooling pond](#)
- P. [Letter dated 5/8/2013 from Water Division to FutureFuel regarding removed solids from cooling pond.](#)

- Q. Continuing Planning Process (CPP).
- R. Technical Support Document For Water Quality-based Toxic Control.
- S. Inspection Report dated 8/22/2012.
- T. “316(b) Demonstration Report for the Arkansas Eastman Intake Structure on the White River”, Geo-Marine, Inc., June 1981.
- U. “316(b) Demonstration Supplement Report for the Arkansas Eastman Intake Structure on the White River”, R.M. Strang, Ph.D., and E.G. Zoeller, Ph.D., December 1982 and revised May 1984.
- V. Compliance Review Memo dated 3/23/2015 from Enforcement Branch to Permit Branch.
- W. MultiSMP Model dated 4/24/2015 for oxygen-based NH3 determination.
- X. NH3-N water quality-based value determination.
- Y. Evaluation of detected priority and non-priority pollutants for Outfall 001.
- Z. Evaluation of detected priority and non-priority pollutants for Outfall 002.
- AA. Determination of water quality based value for temperature at Outfall 001.
- BB. Determination of water quality based value for Chlorides and Sulfates at Outfall 002.
- CC. White River harmonic mean flow calculation.
- DD. Calculations of water quality based values for Copper, Nickel, Lead, Zinc, and Cyanide at Outfall 002 for comparison with technology-based values.
- EE. Average pH calculation for White River in calendar year 2014.
- FF. White River temperature data from January 2010 to December 2014.
- GG. Upstream data for non-priority pollutants in White River.
- HH. Upstream data for priority pollutants in White River.
- II. Cyanide retesting lab results for Outfall 001 on 4/22/2009 and 5/4/2009.
- JJ. Summary of water quality criteria for reported pollutants.
- KK. Mass limit calculations for ELG parameters.
- LL. NPDES Permit Rating Worksheet dated 4/22/2009.
- MM. Discharge Monitoring Report Summary for 1/1/2009 through 10/1/2014.
- NN. Reported flows from 001 and 002 March 2013 to February 2015.
- OO. E-mail letter dated 4/27/2010 from EPA to ADEQ authorizing ADEQ to proceed with public notice of draft permit.
- PP. Letter dated 1/7/2010 from ADEQ to FutureFuel authorizing WET testing frequency reductions until new permit is issued.
- QQ. Letter dated 6/5/2009 from Steve Case, P.E., Utility Manager for FutureFuel stating design flow of treatment system for Outfall 002.
- RR. Letter dated 10/12/2009 from FutureFuel to ADEQ containing comments on 1st draft permit public noticed on 9/17/2009.
- SS. Letter dated 6/6/2012 from FutureFuel to ADEQ containing comments on 2nd draft permit public noticed on 5/9/2012.
- TT. Letter dated 6/26/2015 from FutureFuel to ADEQ containing comments on 3rd draft permit public noticed on 5/27/2015.
- UU. E-mail dated 8/5/2016 from ADEQ to FutureFuel regarding agreement on future permitting path forward concerning DLD site.
- VV. E-mail dated 9/9/2016 from Mary Barnett to Shane Byrum regarding WET frequency reduction language.
- WW. E-mail dated 2/27/2017 from Mary Barnett to Shane Byrum regarding WET testing language updates and recommended inclusion of retesting codes requested by EPA Region 6 for all permits.

- XX. [Work Plan for Hydrogeological Investigation dated July 26, 2016 from FTN Associates.](#)
- YY. [Hydrologic Investigation Work Plan approval letter dated August 26, 2016.](#)
- ZZ. [Permittee comments on draft NPDES Permit dated May 18, 2017.](#)
- AAA. [White River Waterkeeper comments on draft NPDES Permit dated May 18, 2017.](#)
- BBB. [AR Public Policy Panel comments on draft NPDES Permit dated May 18, 2017.](#)
- CCC. [Permittee comments on draft No-Discharge permit 5082-W dated July 16, 2015.](#)
- DDD. [2016 Annual Land Application Site report dated March 27, 2017.](#)

21. PUBLIC NOTICE

The draft permit was submitted for public comment on April 18, 2017. The last day of the comment period was thirty (30) days after the publication date. A summary of the comments that the ADEQ received during the public comment period can be found beginning on the next page of this document. The response to comments and any substantial changes from the draft permit are included. A copy of the draft permit and public notice were sent via email to the Corps of Engineers, the Regional Director of the U.S. Fish and Wildlife Service, the Department of Arkansas Heritage, the EPA, and the Arkansas Department of Health.

22. POINT OF CONTACT.

For additional information, contact:

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**RESPONSE TO COMMENTS
FINAL PERMITTING DECISION**

Permit No.: AR0035386
Applicant: FutureFuel Chemical Company (FFCC)
Prepared by: Shane Byrum

The following are responses to comments received regarding the draft permit number above and are developed in accordance with regulations promulgated at 40 C.F.R. §124.17 as incorporated in APCEC Regulation 6.104(A)(5), APC&EC Regulation No. 8 Administrative Procedures, and A.C.A. §8-4-203(e)(2).

Introduction

The above permit was submitted for public comment on April 18, 2017. The public comment period ended on May 18, 2017.

This document contains a summary of the comments that the ADEQ received during the public comment period. A summary of the changes to the NPDES Permit can be found on the last page of this document.

The following people or organizations sent comments to the ADEQ during the public notice. A total of 33 comments were raised by 3 separate commenters.

Commenter	Number of Comments Raised
1. FutureFuel Chemical Company (FFCC)	4
2. White River Waterkeeper (WRW)	16
3. Arkansas Public Policy Panel (APPP)	13

Comment 1 FFCC stated that the reference in condition 6.C.5 of Part II of the draft permit is incorrect. FFCC believes the reference should be Part III.B.6.A and Part III.B.6.B.

Response: The Department concurs. The references will be corrected in Part II.6.C.5. In addition, the phrase “*listed in*” was changed to “*in accordance with*” within this condition since the permit itself does not specifically list other disposal practices, but references the other disposal practices described in the fact sheet. The revisions to Part II.6.C.5 are shown as follows:

Sludge shall be land applied to the dedicated land disposal site through the use of a spray irrigation system. In the event that storage is exceeded and waste cannot be land applied, waste shall be disposed of by other practices ~~listed in Part II.5.A or Part II.5.B~~ *in accordance with Part III.B.6.A and Part III.B.6.B* of this permit.

Comment 2 FFCC stated that Section 4 of the fact sheet (Compliance and Enforcement History) is linked to an inaccurate document. The linked document states that “...no NCR reports have been submitted. The reports were requested via certified mail on August 24, 2016.” Upon receipt of the certified mailing, FFCC contacted ADEQ to inform them the NCR reports were submitted at the appropriate time and were included as attachments to the NetDMRs. ADEQ confirmed this in an email dated August 29, 2016. FFCC requests the compliance and enforcement summary be corrected.

Response: The compliance summary report was updated on May 22, 2017. The updated report shows that the NCR reports had been received on time. An updated link to this updated report is included in Section 4 of the final Fact Sheet.

Comment 3 FFCC requested ADEQ update the last sentence of Section 8.A of the Fact Sheet for outfall 002. It appears to need additional language.

Response: The italicized words were added to this sentence for clarification. The sentence will be updated to read as follows:

“Both *of these sources* state *that* technology-based limits (TBELs) are to be based on actual flows.”

Comment 4 FFCC stated that “Delaware” is not spelled correctly in Section 20.J of the Fact Sheet.

Response: This correction has been made.

Comment 5 WRW commented on Part II, Condition 6.A (Expiration of DLD/Groundwater Monitoring Conditions Upon Effective Date of No-Discharge Permit). ADEQ has not justified this condition as required by A.C.A. 8-4-203(c)(2)(B). A draft no-discharge permit No. 5082-W covering FutureFuel’s Dedicated Land Disposal facility was public noticed by ADEQ on May 27, 2015 and still has not been

issued. The draft no-discharge permit No. 5082-W contains justification for requiring a new hydrogeological study, as well as additional groundwater monitoring requirements. Relevant points included in the draft no-discharge permit issued for public comment and which remain relevant here include:

- The groundwater downgradient from the Dedicated Land Disposal facility is categorized into two components: the shallow flow zone and the deep groundwater. Immediately downgradient from and offsite of the permitted Dedicated Land Disposal facility in the shallow flow zone is an area referred to as the "finger," which is approximately 700 feet long and 130 feet wide at the Dedicated Land Disposal facility's boundary, which continues offsite from the Dedicated Land Disposal facility's boundary to the White River. The finger is about 200 to 300 feet wide at the mouth of its drainage area (which is the White River). According to FFCC's Waste Management Plan, shallow wells sample groundwater above the underlying Moorefield Formation and deep wells sample groundwater in or below the Moorefield Formation. The shallow flow zone between the Dedicated Land Disposal facility and the White River is monitored by Well A-9, which is located in the finger, and by Well A-13. The upgradient well used to determine background water quality in the shallow flow zone is Well A-11. The deep downgradient wells are A-2 and A-12. The deep upgradient well is A-1R. (Page 3 of the Statement of Basis for draft permit No. 5082-W)
- Only two downgradient wells currently monitor the shallow groundwater in the area between the Dedicated Land Disposal facility and the White River, which encompasses an estimated 1200 ft x 2000 ft (or approximately 55 acres). Similarly, only two downgradient wells currently monitor the deep groundwater in the approximately 55-acre area between the Dedicated Land Disposal facility and the White River. (Page 5 of the Statement of Basis for draft permit No. 5082-W)
- Order No. 6 provides: It is undisputed that the ground water in the finger is contaminated with elevated levels of nitrate due to the application of sludge on the Dedicated Land Disposal facility. However, the evidence proves the ground water in the finger is not [usable as a drinking water source because the shallow ground water formation is not] capable of yielding usable quantities of ground water to wells or springs. (Page 4 of the Statement of Basis for draft permit No. 5082-W)
- Although the Commission reached the conclusion that the shallow groundwater was not capable of yielding usable quantities of groundwater to wells or springs, the Commission made no findings concerning what quantity of water is needed in order to yield usable quantities of groundwater. Since the commission entered its decision in Eastman's 2003

appeal of the PAN limit, new information has become available about groundwater use in Arkansas. Specifically, information on the yield constituting usable quantities of groundwater, which was not available during the prior Eastman Chemical appeal. This new information better informs the determination on whether the shallow groundwater downgradient of the DLD site is or could be a potential drinking water source. (Page 5 of the Statement of Basis for draft permit No. 5082-W)

- In 2007, in cooperation with the Arkansas Natural Resources Commission, the U.S. Department of the Interior and the U.S. Geologic Survey (USGS) published Scientific Investigation Report 2007-5241, entitled "Water Use in Arkansas, 2005." This report states, the statewide average for per capita residential use from public supply systems was 157 gallons per day." This average includes drinking water from both groundwater and surface water. The average per capita use for self supplied domestic water use in Arkansas, which is assumed to be from groundwater sources only, was reported by the USGS as 89 gallons per day (ranging from 80-97 gallons/day). The average per capita use for self-supplied domestic water use (i.e. groundwater) in Independence County, which is the county where FFCC is located, was reported as 89 gallons/day. Other estimates of per capita water use range from 70 gallons to 100 gallons per day. (Page 5 of the Statement of Basis for draft permit No. 5082-W)
- The only conclusion the Commission appears to have reached in the prior Eastman Chemical permit appeal about the quantity of groundwater capable of being produced in a hypothetical well in the shallow flow zone at the Eastman Chemical Company site appears to be the conclusion that the yield would be substantially lower than 7,200 gallons per day (Pages 24-25, Order No. 6). The average per capita use of groundwater in Independence County, Arkansas according to the USGS Report is 89 gallons per day. ADEQ believes the USGS Scientific Investigation Report provides an accurate estimate of the average per capita use of groundwater in Arkansas and this use reflects an average yield necessary to provide usable quantities of groundwater to a well for an individual's use in Arkansas. Consequently, ADEQ proposes to use a per capita yield of 100 gallons per day to reflect a usable quantity of groundwater to a well at FFCC's facility in Arkansas. This number is slightly higher than the range reported by the USGS for the state and is higher than the average per capita use of groundwater determined for Independence County by the USGS.
- Between the years 2005 through 2013, on occasion, quarterly groundwater data from Well A-13 reported concentrations slightly above the MCL for cadmium. Well A-13 is not located in the finger and may indicate that shallow groundwater outside of the finger may be impacted by the

operation of the Dedicated Land Disposal facility, which is located upgradient from Well A-13.

- Based on the new information from the 2007 USGS Report on Water Use in Arkansas, the fact that the shallow wells have not been dry during any quarterly sampling in the last 8 years, evidence of potential cadmium contamination detected in the shallow well outside of the finger, and other relevant information, ADEQ believes the shallow groundwater downgradient from the permitted dedicated land disposal system is or could be capable of producing usable quantities of groundwater. Furthermore, the shallow groundwater is waters of the State; therefore, the Department has determined that shallow groundwater downgradient from the dedicated land disposal system should be maintained as a potential drinking water source. Additionally, as waters of the State, the shallow groundwater should be monitored for impacts from the Dedicated Land Disposal facility as outlined in Chapters 11 and 12 of Regulation 22. The shallow groundwater downgradient from the dedicated land disposal system also should be protected as a potential water source usable for other domestic, commercial, industrial, agricultural or other legitimate beneficial uses. For these reasons and based upon other relevant information, including FFCC's permit application, Waste Management Plan, and the 55-acre area beyond the permitted land disposal area currently monitored by two downgradient wells, the Department is requiring the permittee to evaluate the existing groundwater monitoring system to ensure that the system is capable of providing an accurate representation of groundwater quality and is capable of detecting impacts on groundwater resulting from the operation of the dedicated land disposal system and to expand the groundwater monitoring system for monitoring the shallow groundwater that lies between the Dedicated Land Disposal facility and the White River. [Also, the Department has added requirements to sample the spring and stream to ensure there are no contaminants in surface waters located outside the dedicated land disposal site, which result from the operation of the Dedicated Land Disposal facility. This no discharge permit does not include effluent limits for the shallow groundwater downgradient of the Dedicated Land Disposal facility or for the spring and stream that are to be monitored. However, limits have been added for eight metals for the groundwater monitored by the two deep wells.] Also, ADEQ is adding conditions to evaluate the downgradient groundwater and the upgradient (background) groundwater in order to identify any statistically significant increase over background resulting from the operation of the dedicated land disposal system. This analysis will help determine whether the operation of the Dedicated Land Disposal facility has impacted groundwater, the extent to which impacts have occurred, and will assist ADEQ in evaluating the need for additional monitoring or corrective action. The groundwater monitoring and corrective action requirements [contained in this no-discharge permit]

were adapted from Chapters 11 and 12 of Regulation No. 22 and EPA's Statistical Unified Guidance. The groundwater monitoring requirements contained in Regulation 22 were adapted and used as guidance for this permit because these requirements in Regulation No. 22 apply to land used for the disposal or treatment of solid waste (see Reg. 22.1201-Applicability and Reg. 22.102 definitions for facility and solid waste). A dedicated land disposal system treats and disposes of sludge from an industrial wastewater treatment system, which is a solid waste as that term is defined at Reg. 22.102.

ADEQ has not justified why a new hydrogeological study and new groundwater monitoring requirements are not required in this draft NPDES permit, and ADEQ has not justified why a new hydrogeological study and new groundwater monitoring requirements have to wait on the issuance of a final no-discharge permit. Without including a compliance schedule for conducting a new hydrogeological study and without adding new groundwater monitoring requirements that conform to, or are adapted from, Chapters 11 and 12 of APC&EC Regulation 22, ADEQ is proposing to issue an NPDES Permit that fails to protect the waters of the State.

WRW commented that the Solid Waste Permit No. 0136-S1-R4 issued to Mississippi County Class I Landfill in 2015 provides an excellent model that ADEQ could follow in permitting FFCC's Dedicated Land Disposal (DLD) site, and a similar permit would assure that groundwater contamination is appropriately and timely addressed.

Response: The Department acknowledges the language submitted from the draft Statement of Basis for draft no-discharge permit No. 5082-W, summarized in the bullet points in the comment. A final permitting decision for 5082-W has not yet been issued. The Department is not waiting on issuance of a no-discharge permit before conducting a new hydrogeological study and new groundwater monitoring requirements. The facility is currently performing a new hydrogeological investigation, at the request of the Department. The purpose of this investigation is to develop a better understanding of the hydrogeological setting of the DLD (including the proposed expansion areas) and to develop a groundwater monitoring well network that will comply with the no-discharge permit and 40 CFR Part 257. Since a hydrogeological study is already ongoing, a compliance schedule to conduct a study is not needed in the NPDES permit. The Department intends to issue a final no-discharge permitting decision based on the conclusions of the study.

Comment 6 WRW commented on Part II, Condition 6.C.1. This condition reads as follows in the draft permit:

“Only waste which is not classified as a hazardous waste under state or federal regulations may be land applied as fertilizer.”

The application of the chemical manufacturing liquid sludge to the DLD site is not applied for the purpose of conditioning the soil or fertilizing crops for harvesting. It is applied as a treatment and disposal operation, not a beneficial use. As stated in FFCC's Waste Management Plan dated May 2016 (WMP), the DLD area "consists of Bermuda and other mixed grasses." The grass is mowed, not harvested. Wastewater sludge from the chemical manufacturing process is sprayed on the DLD site for treatment (denitrification) and as a way to get rid of FFCC's sludge. According to the WMP, the primary mode of treatment in FFCC's land application system is denitrification. This process requires the sludge to be applied at rates high enough to keep the area of application saturated for a significant period of time. The rate of application was reported at one time to be as high as three times the agronomic rate for the application of nitrogen, based on ADEQ's Post-Hearing Brief, page 4, Docket No. 03-007-P. Also, FFCC admits that the land application of sludge is not for the purpose of conditioning the soil. FFCC's WMP states, "While not applied for the purpose of conditioning the soil, some nitrogen is taken up by the plants." The DLD site is the final destination of the "sludge", which is a "solid waste", as those terms are defined by Arkansas Code Annotated 8-6-303(6) and Reg. 22.102. Therefore, this condition should be changed to delete "fertilizer" and it should read, "Only waste which is not classified as a hazardous waste under state or federal regulations may be land applied."

Response: Since the sludge is not applied for the purpose of conditioning the soil, ADEQ agrees to remove the phrase "as fertilizer" from Part II.6.C.1 as follows:

"Only waste which is not classified as a hazardous waste under state or federal regulations may be land applied ~~as fertilizer~~."

Comment 7 WRW commented on Part II, Condition 6.C.2. This condition currently reads as follows in the draft permit:

Ceiling Concentration of Metals. If any one of the pollutant concentrations in the waste exceeds the concentrations below, the waste cannot be land applied.

TABLE 1
Ceiling Concentration of Metals in mg/kg

<i>Arsenic</i>	<i>75</i>
<i>Cadmium</i>	<i>85</i>
<i>Chromium</i>	<i>3000</i>
<i>Copper</i>	<i>4300</i>
<i>Lead</i>	<i>840</i>
<i>Mercury</i>	<i>57</i>
<i>Molybdenum</i>	<i>75</i>
<i>Nickel</i>	<i>420</i>

<i>Selenium</i>	<i>100</i>
<i>Zinc</i>	<i>7500</i>

Since the sludge is liquid, the maximum concentrations should be reported in mg/l, rather than on a dry weight basis. The maximum concentrations listed for the following parameters should be listed as:

Arsenic	5.0 mg/l
Cadmium	1.0 mg/l
Copper	1.3 mg/l
Lead	5.0 mg/l
Mercury	0.2 mg/l
Nickel	0.4 mg/l
Selenium	1.0 mg/l
Zinc	5.0 mg/l
Barium	100.0 mg/l
Chromium	5.0 mg/l
Silver	5.0 mg/l

These maximum concentrations will ensure that the liquid sludge being disposed of at the DLD site does not meet the characteristics of a hazardous waste as defined in APC&EC Regulation 23 Part 261. This regulation does not have a limit for Copper, Nickel, or Zinc. Therefore, the maximum concentration limits for Copper and Zinc should be adapted from the National Secondary Drinking Water Regulation and the maximum concentration for Nickel should be adapted from Tennessee's Design Guidelines for Wastewater Treatment Systems Using Spray Irrigation.

Also, in order to protect the environment, ADEQ has adapted metal limits from the MPCA Land Treatment of Landfill Leachate, April 2011, for the metals concentration limits established for the land application site for treated leachate regulated under Solid Waste Permit No. 0136-S1-R4 (Mississippi County Landfill). This permit provided an excellent model for FutureFuel's DLD facility because of the similarity between the two facilities. ADEQ should be as protective of the environment at FFCC's solid waste disposal facility as it is at the Mississippi County Landfill land application site for treated leachate because FFCC's facility is known to be releasing contaminants into the shallow groundwater and the contaminated shallow groundwater is being transported beyond the solid waste disposal facility's compliance boundary to be ultimately discharged to the White River. The limits derived from the MPCA Land Treatment of Landfill Leachate are "considered to be high range values for the corresponding parameters and intended to limit application to prevent a potential groundwater issue." FFCC's DLD facility already has a groundwater issue, therefore ADEQ, at a minimum, should be as protective here, as it is at the Mississippi County Landfill's land application site for treated leachate.

Response: Since the current permit already prohibits the land application of hazardous waste in Part II.6.C.1, the Department agrees to include the following listed ceiling concentration limits in Table 1 of Part II.6.C.2.. These ceiling concentrations for Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, and Silver will ensure that the sludge disposed of at the DLD site does not meet the characteristics of a hazardous waste as defined in APC&EC Regulation 23 §261.24, Table 1.

<i>Arsenic*</i>	<i>5.0 mg/l</i>
<i>Barium*</i>	<i>100.0 mg/l</i>
<i>Cadmium*</i>	<i>1.0 mg/l</i>
<i>Chromium*</i>	<i>5.0 mg/l</i>
<i>Copper</i>	<i>4,300 mg/l</i>
<i>Lead*</i>	<i>5.0 mg/l</i>
<i>Mercury*</i>	<i>0.2 mg/l</i>
<i>Molybdenum</i>	<i>75 mg/l</i>
<i>Nickel</i>	<i>420 mg/l</i>
<i>Selenium*</i>	<i>1.0 mg/l</i>
<i>Silver*</i>	<i>5.0 mg/l</i>
<i>Zinc</i>	<i>7,500 mg/l</i>

**These metal concentrations shall be determined using the Toxicity Characteristic Leaching Procedure (TCLP Test Method 1311 in EPA Publication SW-846).*

However, the suggested ceiling concentration limits for Copper (1.3 mg/L) and Zinc (5.0 mg/L) will not be included in the permit from the National Secondary Drinking Water Regulation because these criteria are applicable to drinking water, not land applied waste. In addition, Copper and Zinc are not listed in APC&EC Reg. 23 § 261, Subsection C (Characteristics of Hazardous Waste). Also, the suggested ceiling concentration limit for Nickel (0.4 mg/L) will not be included in the permit because this parameter is not listed in APC&EC Reg. 23 § 261, Subsection C (Characteristics of Hazardous Waste). The metal ceiling limits that are not listed in Reg. 23 § 261 (Copper, Molybdenum, Nickel, and Zinc) are continued from previous permit and were derived from Table 1 of 40 CFR 503.13. These are as follows: Copper (4300 mg/L), Molybdenum (75 mg/L), Nickel (420 mg/L), and Zinc (7500 mg/L).

FFCC stated in a comment on draft permit 5082-W, “Calculating concentration limits on a dry basis for water samples that have averaged 1.4% solids since 2000 is not appropriate.” Therefore, the units were changed from mg/kg to mg/L for all metals due to the very high moisture content of the waste sludge. In addition, FFCC also stated in a comment on draft permit 5082-W, “The TCLP test should be used if the intent is to determine if the waste is hazardous by characteristic.” Therefore, to ensure that any sludge being disposed of at the DLD site does not meet the characteristics of a hazardous waste, a footnote was added to Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, and Silver to indicate

that these metal concentrations should be determined using the Toxicity Characteristic Leaching Procedure (TCLP Test Method 1311 in EPA Publication SW-846).

The commenter stated, “ADEQ has adapted metal limits from the MPCA Land Treatment of Landfill Leachate, April 2011, for the metals concentration limits established for the land application site for treated leachate regulated under Solid Waste Permit No. 0136-S1-R4 (Mississippi County Landfill).” However, a review of this solid waste permit revealed that the metal limits contained in the solid waste permit are not based on the April 2011 Minnesota Pollution Control Agency (MPCA) document as the comment and the solid waste statement of basis indicates. The metal limits in that solid waste permit are consistent with APC&EC Reg. 23 § 261, Subsection C (Characteristics of Hazardous Waste) for Arsenic, Cadmium, Lead, Mercury, and Selenium. The solid waste permit also contains limits for Copper, Nickel, and Zinc, but the limits do not appear to be derived from the MPCA document as the Statement of Basis indicates, therefore the limits for Copper, Nickel, Zinc, and Molybdenum, which were derived from Table 1 of 40 CFR 503.13, will be continued from previous NPDES permit.

Comment 8 WRW commented on Part II.6.C.3 of the draft permit. The equation used in land application permits issued by the Office of Water Quality for calculating the cumulative loading rate should be included in this permit. The equation that should be added to this permit is in Footnote 4 to Table 1 in Part I of draft Permit No. 5082-W and in Condition D.3. of Part III of Solid Waste Permit No. 0136-S1-R4. The proper equation ensures that the permittee does not exceed the metal loading rate. This equation is listed as follows:

$$\frac{\text{Pounds}}{\text{Day/Acre}} = \frac{\text{Concentrations } \left(\frac{\text{mg}}{\text{L}}\right) * 8.34 * \text{Daily Volume of Leachate Applied (MGD)}}{\text{Acreage Applied}}$$

Response: For clarification, ADEQ will add the following equation to Part II.6.C.3 of the permit for calculating the sludge loading rate. Based on a review of the 2016 annual sludge report, it appears that the facility has already been using this equation to calculate the sludge loading per acre in each annual report as well as the cumulative loads to date.

$$\frac{\text{Pounds}}{\text{Acre}} = \frac{\text{Concentration (mg/L)} \times 8.34 \times \text{Waste Volume Applied (MG)}}{\text{Acreage Applied}}$$

Comment 9 WRW commented on Part II.6.D.1 and Part II.6.D.2 of the draft permit. The parameters listed for analysis in a sample of waste are not the same parameters tested in the soils. The parameters tested in the soils should match the parameters tested in the waste in order to compare the results and help evaluate whether any changes in soil concentrations could be attributed to the disposal of sludge.

Response: A comparison of Part II.6.D.1 and Part II.6.D.2 of the permit is given in the table below. The Department has reviewed each parameter and has decided to add monitoring for Oil & Grease in the soils.

Parameter	Measured in Sludge	Measured in Soil	Justification for not requiring parameter in both Sludge and Soil
% Volatile Solids	■		It would be difficult to correlate sludge concentrations with soil concentrations because the levels of volatile solids in the sludge are generally less than one percent.
% Total Solids	■		% Moisture in Soil is measured instead.
% Moisture		■	% Total Solids in Sludge is measured instead.
Total Phosphorus	■	■	N/A, permit requires this parameter to be sampled in both soils and sludge.
Total Potassium	■	■	N/A, permit requires this parameter to be sampled in both soils and sludge.
Total Kjeldahl Nitrogen	■		The denitrification process is strongly influenced by Nitrate, not TKN.
Nitrate Nitrogen	■	■	N/A, permit requires this parameter to be sampled in both soils and sludge.
Nitrite Nitrogen	■		The denitrification process is strongly influenced by Nitrate, not Nitrite.
Ammonia Nitrogen	■		The denitrification process is strongly influenced by Nitrate, not Ammonia Nitrogen.
TOC	■	■	N/A, permit requires this parameter to be sampled in both soils and sludge.
BOD5	■		BOD5 is not measured in soil since TOC is measured instead. TOC is a better indicator of amount of carbon organics present in the soil, which is an essential component of denitrification.

Parameter	Measured in Sludge	Measured in Soil	Justification for not requiring parameter in both Sludge and Soil
Oil & Grease	■	■	The Department added this parameter to the soil testing due to the high concentration of O&G in historical sludge samples. A high concentration of O&G in the sludge and soil decreases the soil's microbial life's ability to metabolize the O&G that is land applied. An increase of O&G in soils may indicate inadequate metabolism of the O&G by the soil microbes.
pH	■	■	N/A, permit requires this parameter to be sampled in both soils and sludge.
Magnesium		■	This parameter is an essential plant nutrient. It is an indicator of soil quality, soil buffering capacity, and the soil's ability of providing nutrients and water to plants. Magnesium sampling in the sludge is not required because this is a measure of soil condition and it would be difficult to correlate sludge concentrations with soil concentrations.
Cation Exchange Capacity		■	This parameter is a soil property and is not applicable to liquids.
Salt Content		■	Salt Content sampling in the sludge is not required because this is a measure of soil condition and it would be very difficult to correlate sludge concentrations with soil concentrations.
Arsenic	■	■	N/A, permit requires this parameter to be sampled in both soils and sludge.

Parameter	Measured in Sludge	Measured in Soil	Justification for not requiring parameter in both Sludge and Soil
Barium	■		The soil analysis is not used in the cumulative loading equation. The cumulative metal loadings are calculated from the volume of waste applied, the metal concentration in the waste, and the acreage applied.
Cadmium	■	■	N/A, permit requires this parameter to be sampled in both soils and sludge.
Lead	■	■	N/A, permit requires this parameter to be sampled in both soils and sludge.
Copper	■	■	N/A, permit requires this parameter to be sampled in both soils and sludge.
Nickel	■	■	N/A, permit requires this parameter to be sampled in both soils and sludge.
Selenium	■		The soil analysis is not used in the cumulative loading equation. The cumulative metal loadings are calculated from the volume of waste applied, the metal concentration in the waste, and the acreage applied.
Silver	■		The soil analysis is not used in the cumulative loading equation. The cumulative metal loadings are calculated from the volume of waste applied, the metal concentration in the waste, and the acreage applied.
Mercury	■		The soil analysis is not used in the cumulative loading equation. The cumulative metal loadings are calculated from the volume of waste applied, the metal concentration in the waste, and the acreage applied.

Parameter	Measured in Sludge	Measured in Soil	Justification for not requiring parameter in both Sludge and Soil
Chromium	■		The soil analysis is not used in the cumulative loading equation. The cumulative metal loadings are calculated from the volume of waste applied, the metal concentration in the waste, and the acreage applied.
Zinc	■	■	N/A, permit requires this parameter to be sampled in both soils and sludge.
Molybdenum	■		The soil analysis is not used in the cumulative loading equation. The cumulative metal loadings are calculated from the volume of waste applied, the metal concentration in the waste, and the acreage applied.

Comment 10 WRW commented on Part II.6.D.2 of the draft permit. The parameters listed in the soils analysis don't match all the parameters that have maximum concentrations (Part II.6.C.2 – Table 1) and the parameters with cumulative metals loading limits (Part II.6.C.3 – Table 2). How can the permittee confirm cumulative loadings of metals for Chromium, Mercury, Molybdenum, or Selenium if the soils are not tested for these parameters? The analysis, reporting, and recordkeeping requirements should be provided in a table format for ease of reference and it would make it easier to understand. Examples that should be followed are in Tables 1 and 2 under Part 1 of draft Permit No. 5082-W or Table 1 and 2 of Part III of Solid Waste Permit No. 0136-S1-R4.

Response: The soil analysis is not used in the cumulative loading equation. The cumulative loadings are calculated from the volume of waste applied, the metal concentration in the waste, and the acreage applied. The analysis, reporting, and recordkeeping requirements are presented in the same format as the previous permit. The Department is unaware of any problems understanding the current format, therefore the format will remain unchanged. For clarification, ADEQ will add the following equation to Part II.6.C.3 of the permit for calculating the sludge loading rate. Based on a review of the annual sludge reports, it appears that the facility has already been using this equation to calculate the sludge loading per acre in each annual report as well as the cumulative loads to date.

$$\frac{\text{Pounds}}{\text{Acre}} = \frac{\text{Concentration (mg/L)} \times 8.34 \times \text{Waste Volume Applied (MG)}}{\text{Acreage Applied}}$$

Comment 11 WRW commented on Part II.6.D.3.A.2 of the draft permit. There does not appear to be any statement [in the annual reports] demonstrating compliance with this condition. This condition requires that the waste and soil analyses to be conducted in accordance with EPA Document SW-846, "Test Methods for Evaluation of Solid Waste", Method 200.7 using EPA/600/R-94/111, May 1994 for sample preparation, or other procedures approved by the Director. The test methods reported with the annual reports do not reference this required test method. Instead, the test methods reported include EPA 3051A, 6010C, 9050A, etc. the permittee appears to have failed to comply with this permit condition, which is repeated in the draft NPDES permit. Please confirm that the methods used by the permittee are acceptable for reporting metals concentration in liquids.

Response: The 2016 annual land application report was reviewed. All the test methods used in the report are EPA approved test methods or contained in EPA Document SW-846, for measuring the reported parameters in the soil and sludge, therefore are acceptable. This condition appears to have been misinterpreted as meaning that the facility must use Method 200.7 for all parameters, which is not the case. This condition allows Method 200.7, or any method listed in EPA SW-846, or any other method approved by the Director.

Comment 12 WRW commented on Part II.11 of the draft permit. Site specific critical background flow should be contingent upon prior ADEQ and USGS approved study plan, as this should be developed in accordance with USGS standards.

Response: ADEQ agrees to revise this condition to the following with italicized language added as follows, "The permittee has the option to develop a site-specific critical flow in the White River by performing a flow study. If the permittee chooses to perform a critical flow study, prior written approval of a study plan must be obtained from ADEQ *and USGS*."

Comment 13 WRW submitted a general comment concerning the DLD facility. On page 6 of the Statement of Basis for the draft no-discharge permit No. 5082-W public noticed on May 27, 2015 it clearly states "the Department has determined that shallow groundwater downgradient from the DLD system should be maintained as a potential drinking water source." It has long been established groundwater contamination has in fact occurred (see Finding of Facts regarding the impact of DLD on groundwater in Order No. 6, Docket No. 03-007, pages 5-8), contaminant levels continue to rise (in downgradient shallow well number 9 based on the 2011-2015 Annual Land Application Site Reports), and migration of groundwater is not well understood. A condition of the draft permit No. 5082-W public noticed on May 27, 2015 states, "land application must cease if evidence suggests that the facility is causing adverse impacts to groundwater". Surely, this language is standard among most, if not all, industrial waste disposal permits.

Response: Order No. 6 determined that the shallow groundwater in the finger is not capable of yielding usable quantities of groundwater to wells or springs, and

that the shallow groundwater in the finger is not an underground drinking water source. Therefore, at this time, and in accordance with the ruling of Order No. 6, there is no information showing that the operation of the DLD is contaminating an underground drinking water source beyond the solid waste boundary or beyond an alternative boundary.

The facility is currently performing a new hydrogeological investigation, at the request of the Department. The purpose of this investigation is to develop a better understanding of the hydrogeological setting of the land application area (including the proposed expansion areas) and to develop a groundwater monitoring well network that will comply with the no-discharge permit and 40 CFR Part 257. The Department intends to issue a final permitting decision for the DLD operations based on the conclusions of the hydrogeological investigation that includes an appropriate groundwater sampling network and monitoring conditions aimed at preventing contamination of an underground drinking water source beyond the solid waste boundary or beyond an alternative boundary specified in accordance with 40 CFR 257.3-4(b)(2).

Comment 14 WRW submitted a general comment concerning Cadmium levels in shallow groundwater upgradient and downgradient from the DLD site, and in the White River. Downgradient shallow groundwater well number A-9 continues to show significantly greater Cadmium levels than upgradient shallow well number A-11 based on the annual groundwater reports from 2011 to 2015. Since monitoring data already show significant increases in Cadmium then an intensive monitoring program should be conducted before granting the construction permit of an expanded irrigation system. This indication of cadmium pollution to shallow groundwater downgradient of the DLD site should not be ignored and exacerbated by granting additional acreage to the DLD irrigation system until more robust investigations can take place.

Cadmium is already likely being discharged to the White River, but this cannot be confirmed since there is no required monitoring of surface water in the existing permit. Since Cadmium bioaccumulates up the food chain in freshwater environments, one would not expect to see high levels of unbound Cadmium in ambient water quality collections from the nearest downstream monitoring station, WHI0029 near Oil Trough, approximately 11.4 miles downstream of FFCC. Biomagnification of Cadmium in predator species (e.g. sport fishes) poses a significant risk to human health as well as aquatic life, and could be the cause of chronic toxicity to threatened and endangered mussels at levels as low as 0.006 mg/L. The proposed area has also been documented within the known home range and foraging areas of federally endangered lactating female gray bats from nearby maternity colonies. Since gray bats are highly dependent on aquatic insects as a food source, they should be considered extremely susceptible to the biomagnification of Cadmium from aquatic prey. Without factoring in all previously established and readily available data regarding the implications of increasing the land application area of this DLD, the Department will be making a

poorly informed decision to grant the expansion of the DLD practices through a construction permit.

Response: The Department acknowledges the increase in Cadmium levels from well A-11 to well A-9. However, well A-9 monitors groundwater within the “finger” of shallow groundwater as described in Order No. 6 which was adopted by the Commission on January 28, 2005. On page 6 of Order No. 6 it states, “Immediately down gradient of the DLD is an area referred to as the ‘finger’ of tributary alluvium. The finger is approximately 700 feet long and 130 feet wide at the DLD boundary and about 200 to 300 feet wide at the mouth of a drainage area.” Order No. 6 stated that the ground water in the finger is not currently being used as a domestic drinking water source and there is no evidence it will be used as a domestic drinking water source in the future. The Order concluded, based on the evidence presented, that the Nitrate levels in the shallow ground water within the finger does not constitute “pollution” as that term is defined by A.C.A. § 8-4-102(6). Even though this ruling focused on Nitrates in the finger, this ruling would apply to Cadmium levels measured at Well A-9 since this well is located within the finger. However, in order to improve understanding of the geologic and hydrologic conditions existing at the DLD site, the facility is currently conducting a hydrogeological investigation of the DLD area including the proposed expansion. As discussed in Response 13, the Department intends to issue a final permitting decision for the DLD operations based on the conclusions of the hydrogeological investigation that includes an appropriate groundwater sampling network and monitoring conditions. That decision will address concerns identified pertaining to current Cadmium levels including methods for statistical evaluation of appropriate background data.

Concerning potential impacts of the DLD facility on Cadmium concentrations in the White River, the Department reviewed all available Total Recoverable Cadmium data collected from the closest downstream monitoring station in the White River (WHI0029) from 1990 to 2017. The data shows non-detect for 170 of 172 collected samples (99% of samples). The two detected samples were 1.3 µg/L and 0.29 µg/L, which are less than the chronic toxicity water quality standard of 5.69 µg/L. The water quality standard for Total Recoverable Cadmium was calculated using chronic equation in Reg. 2.508 using a mean hardness of 152 mg/L from FutureFuel’s upstream data collected in White River upstream of outfall 002 from 2012 to 2014. In addition, the two detected values of Total Recoverable Cadmium at this monitoring station is well under the bioaccumulation criteria of 10 µg/L from EPA Gold Book.

Comment 15 WRW commented on the addition of a monthly average limit for Total Organic Carbon (net increase over intake) and for Temperature, at Outfall 001. 40 CFR 122.45(d)(1) states that continuous discharge permit effluent limitations shall be stated as maximum daily and average monthly discharge limitations. This does not mean, or make sense, for these two limits to be equal. Setting monthly average limits equal to daily maximum limits for TOC net increase and

Temperature for Outfall 001 is extremely lax. Is daily monitoring and reporting required? If only monthly averages are enforced, then the daily maximum limits can actually be much higher.

Response: TOC is required to be monitored in both intake and effluent at a frequency of five/week. Temperature is required to be monitored in the effluent continuously. The previous permit only contained daily maximum limits with no monthly average limits. The Department added the monthly average limits to comply with 40 CFR 122.45(d)(1). Since the previous permit contained no monthly average limits for these parameters, the requirement is as stringent as the previous permit. The daily maximum limits for TOC and Temperature are continued unchanged from previous permit and were not increased as the comment seems to imply.

Comment 16 WRW commented on how the limitations and requirements set forth in this permit are consistent with the antidegradation policy mentioned on page 15 of the Fact Sheet. Were requirements for existing uses (Tier 1) or high quality (Tier II) waters considered? What was the determination process for determining whether “the quality of waters exceeds levels necessary to support propagation of fish, shellfish, ...” etc.? if the state does not consider this section of the White River to be categorized as a High Quality Water, then how was that determination made? I would like a thorough explanation of how “limitations and requirements set forth in this permit...are consistent with the antidegradation policy” if ADEQ has no implementation plan in place to actually determine whether or not this is true. Based on the assumption that the White River is classified as a High Quality water, please explain the “intergovernmental coordination and public participation” utilized in determining that “lowering of water quality is necessary to accommodate important economic or social development”. In whatever hypothetical Analysis of Alternatives that was considered, how was it determined that the land disposal practices, from which the runoff is covered by this permit, which results in increased cadmium and nitrate concentration in the White River was the ideal method of waste disposal?

Response: There is no evidence that this permit will cause lowering of water quality since this permit contains limitations that are as stringent or more stringent than the previous permit. This permit renewal does not contain any increased loading limits (mass limits), therefore an antidegradation review is not triggered and the limitations and requirements set forth in this permit for discharge into waters of the State are consistent with the Antidegradation Policy and all other applicable water quality standards found in APC&EC Regulation No. 2.

Comment 17 WRW commented on DLD site runoff. Can you please explain how this permit specifically allows dedicated land disposal site runoff (page 16 of Fact Sheet), but the proposed permit for the DLD site is a no-discharge permit? Isn't this an oxymoron?

Response: The NPDES permit covers runoff from the DLD site. However, the runoff is not discharged directly to a surface water. The runoff is required to be contained and diverted back through the wastewater treatment system associated with outfall 002 in accordance with Part II.6.D.4.C of the NPDES permit

Comment 18 WRW commented that Cadmium effluent limits need to be added to outfall 002 since this outfall includes runoff from the DLD site.

Response: In accordance with 40 CFR 122.44(d)(iii), when the permitting authority determines that a discharge has the reasonable potential to cause or contribute to an instream excursion above the allowable ambient concentration of a State water quality standard for an individual pollutant, the permit must contain effluent limits for that pollutant. A reasonable potential evaluation of the reported concentration of Cadmium at outfall 002 was performed. This evaluation is shown in Section 14.M starting on page 30 of the Fact Sheet. The evaluation shows that the reported effluent concentration of Cadmium at outfall 002 does not show reasonable potential to exceed the instream acute or chronic water quality standard. Therefore, Cadmium effluent limits at outfall 002 are not required.

Comment 19 WRW commented that this permit needs to be denied until an analysis of alternatives are provided for land application of sludge.

Response: An analysis of alternatives for land application of sludge is not required in either Regulation 2.202 or the CPP. No lowering of high quality water as set forth in §40 CFR 131.12(a)(2) is proposed in this draft permit, and is therefore not subject to §40 CFR 131.12(a)(2)(ii).

Comment 20 WRW commented that paddlefish are filter feeders and their diets consist almost entirely of planktonic organisms, and due to the bioaccumulative nature of Cadmium, paddlefish are at risk of being disproportionately affected by low levels of Cadmium concentrations. This section of the White River is considered an important spawning ground for paddlefish, hence the reason for no commercial fishing of paddlefish on the White River upstream of Newport. This permit should take into consideration the site specific conditions of aquatic life present in the near vicinity of this facility. A literature review of effects of Cadmium on fish life stages and consultation with appropriate AGFC staff may help aid in a more thorough understanding of potential effects of low levels of Cadmium on important paddlefish fisheries for the State.

Response: The acute and chronic water quality criteria for Cadmium in Reg. 2 are established to protect the designated aquatic life use. Based on Cadmium effluent concentration reported at Outfall 002, the facility does not show reasonable potential to cause or contribute to an exceedance of the water quality criteria for Cadmium in the White River taking into consideration site specific conditions including available background concentration, critical low flow of the White

River, and the design flow of outfall 002 treatment system. This evaluation is shown in Section 14.M of the Fact Sheet.

Comment 21 APPP commented on Part II.6.A of the draft permit. Although seventeen groundwater monitoring wells exist at the site, only the following six wells (stated on Page 5 of the Statement of Basis, Permit No. 5082-W) are currently used to monitor the two flow zones previously identified by Eastman Chemical and noted in Eastman’s RCRA Facility Investigation (RFI) in the early 1990’s:

Well #	Deep or Shallow	Location
1	Deep	Up-gradient
2	Deep	Down-gradient
12	Deep	Down-gradient
11	Shallow	Up-gradient
9	Shallow	Down-gradient
13	Shallow	Down-gradient

Soil saturation at FutureFuel’s DLD facility is supposed to promote denitrification (where nitrogen from the industrial wastewater sludge is reduced into nitrogen gas). The practice of saturating the soils is a disposal practice that has contaminated the shallow groundwater. This is shown by the levels of Nitrates and Cadmium in the [shallow] downgradient Well 9, which is located 100 feet south of the DLD site’s compliance boundary.

By comparing shallow upgradient Well 11 and shall downgradient Well 9 concentrations for the last six years, you can clearly see the contamination of the shallow groundwater.

Well data for Years 2011-2016	Nitrates lowest concentration (mg/l)	Nitrates highest concentration (mg/l)	Cadmium lowest concentration (mg/l)	Cadmium highest concentration (mg/l)
Well 11 (shallow upgradient)	<0.05	0.3	<0.004	<0.004
Well 9 (shallow downgradient)	20	110	0.01	0.07

The maximum contaminant level (MCL) for Nitrates is 10 mg/l. According to EPA, the MCL for cadmium is 0.005 mg/l. So, again, these results show that the shallow groundwater has been contaminated.

For years, FutureFuel’s DLD facility has contaminated shallow groundwater below the permitted solid waste disposal unit. Shallow contaminated groundwater

has then migrated beyond the compliance boundary. This scenario does not meet the requirements of 40 CFR 275.3-4. Therefore, this permit should not be issued without including a compliance schedule for conducting a new hydrogeological investigation and a groundwater monitoring system with a sufficient number of wells installed at proper locations and depths to yield representative groundwater samples from both the deep and shallow groundwater zones.

Waiting for the issuance of a no-discharge permit, which may never be issued, to require a hydrogeological investigation and installation of an effective groundwater monitoring system that is consistent with or adapted from Chapters 11 and 12 of APC&EC Regulation 22, is improper under the conditions existing at this site and it is not environmentally protective.

There really isn't any uncertainty here. The groundwater monitoring program does not monitor groundwater at the compliance boundary and only two downgradient wells are monitored in each flow zone. This is not a robust groundwater monitoring system. It's one that needs to be replaced now. It should be pointed out that the MCLs established for the compliance boundary of a solid waste disposal facility or practice under 40 CFR 257.3-4 are identified in Table 1 as the MCLs promulgated under the Safe Drinking Water Act. Table 1 lists the MCL for Nitrates as 10 mg/l and the MCL for Cadmium as 0.01 mg/l. however, the MCL for Cadmium promulgated under the Safe Drinking Water Act according to the EPA is 0.005 mg/l, not 0.01 mg/l. the shallow downgradient Well 9, located 100 feet from the solid waste boundary, shows concentration of groundwater that far exceed the MCLs for both Nitrates and Cadmium. In summary, not only do the concentrations in Well 9 show that the shallow groundwater is adversely impacted when compared to background water quality in the shallow upgradient Well 11, but these concentrations also exceed the MCLs established for Nitrates and Cadmium. A new hydrogeological study and groundwater monitoring system is needed for the DLD site. The investigation and groundwater monitoring system should be consistent with or adapted from Chapters 11 and 12 of APC&EC Regulation 22.

ADEQ public noticed the draft no-discharge permit No. 5082-W on May 27, 2015. The comment period for that permit closed on July 16, 2015. The permittee has had almost two years to secure a no-discharge permit. There is no justification that warrants continuing to allow the permittee to operate the DLD as is, while continuing "to work in good faith towards acquiring a No-Discharge permit for the DLD..." The operation of the DLD under the current and proposed NPDES permit conditions have allowed an uncontrolled release of contaminants to be discharged to shallow groundwater. That contaminated groundwater has migrated beyond the compliance boundary. Federal regulations prohibit a solid waste disposal facility or practice from contaminating an underground drinking water source beyond the solid waste boundary (40 CFR 257.3-4(a)). "Contaminate" means "introduce a substance that would cause: the concentration of that substance in the ground water to exceed the maximum contaminant level

specified in Appendix I...(40 CFR 257.3-4(c)(2)).” The present operation of the DLD has contaminated shallow groundwater at concentrations exceeding the MCL for both Nitrates and Cadmium. A USGS report on usable quantities of groundwater in Arkansas and Independence County, the shallow groundwater data for Nitrates and Cadmium, and ADEQ’s determination that shallow groundwater downgradient from the DLD should be maintained as a potential drinking water source, all lead to the conclusion that the operation of the DLD is contaminating an underground drinking water source beyond the solid waste boundary, which is prohibited by 40 CFR 257.3-4, which is adopted by reference in Reg. 6.104(A)(10).

In failing to include a compliance schedule for conducting a new hydrogeological investigation and adding new groundwater monitoring requirements that are consistent with, or adapted from, Chapters 11 and 12 of APC&EC Regulation 22, to properly monitor groundwater and address the groundwater contaminated by the disposal of solid waste, ADEQ issues a draft NPDES permit that authorizes the operation of a solid waste disposal facility or practice that fails to satisfy the criteria of 40 CFR 257.3-4. As such, FutureFuel’s DLD facility is an open dump that is prohibited under 40 CFR 257.1(a)(1).

Response: The Department acknowledges the increase in Nitrates and Cadmium levels from well A-11 to well A-9. However, well A-9 monitors groundwater within the “finger” of shallow groundwater as described in Order No. 6 which was adopted by the Commission on January 28, 2005. On page 6 of Order No. 6 it states, “Immediately down gradient of the DLD is an area referred to as the ‘finger’ of tributary alluvium. The finger is approximately 700 feet long and 130 feet wide at the DLD boundary and about 200 to 300 feet wide at the mouth of a drainage area.” Order No. 6 stated that the ground water in the finger is not currently being used as a domestic drinking water source and there is no evidence it will be used as a domestic drinking water source in the future. The Order concluded, based on the evidence presented, that the Nitrate levels in the ground water in the area of the finger has not rendered the waters harmful to human health, therefore it was concluded that the Nitrate levels in the ground water in the finger do not constitute “pollution” as that term is defined by A.C.A. § 8-4-102(6).

At the request of the Department, in order to improve understanding of the geologic and hydrologic conditions existing at the DLD site, the facility is currently conducting a hydrogeological investigation of the DLD area including the proposed expansion. The purpose of this investigation is to develop a better understanding of the hydrogeological setting of the land application area (including the proposed expansion areas) and to develop a groundwater monitoring well network that will comply with the no-discharge permit and 40 CFR Part 257.

The commenter mentions the USGS report of groundwater use in Arkansas and Independence County, USGS Scientific Investigations Report 2007-5241. This report contains groundwater usage rates for each county in ten different categories. Table 1 reports total groundwater use in Independence County is 41.84 million gallons per day. Table 14 of this report lists the source of this groundwater as the Mississippi River Valley Alluvial aquifer. The Mississippi River Valley Alluvial aquifer is a deep “aquifer” as that term is defined in 40 CFR 257.3-4(c)(1). This report does not contain any reported usage rates from shallow groundwater aquifers because, as the report states, only wells capable of pumping greater than 50,000 gallons per day are required by Arkansas law to report their withdrawals. However, even though this report contains withdrawal rates from only deep aquifers, this report contains valuable information on the usage rates of groundwater in Arkansas for various categories.

Order No. 6 determined that the shallow groundwater in the finger is not capable of yielding usable quantities of groundwater to wells or springs, and that the shallow groundwater in the finger is not an underground drinking water source. Therefore, at this time, there is no information showing that the operation of the DLD is contaminating an underground drinking water source

Since a two-year hydrogeological study is already ongoing, a compliance schedule to conduct a study is not needed in the NPDES permit. The Department intends to issue a final permitting decision for the DLD operations based on the conclusions of the study. This study is currently in progress and began in December 2016 and will end in December 2018.

Comment 22 APPP commented on Part II.6.C.1. This condition reads “Only waste which is not classified as a hazardous waste under state or federal regulations may be land applied as fertilizer.” FFCC should be required to submit an annual certification that the sludge disposed of on the DLD is not a hazardous waste. This requirement will ensure that the sludge is tested periodically to confirm this condition is being met. This is the same condition used for the land application of treated leachate at the Mississippi County Landfill (Condition 2 of Part III, Permit No. 0136-S1-R4). The following condition should be added to the NPDES permit:

The permittee shall certify annually that the sludge from the chemical manufacturing wastewater treatment plant being land applied does not meet the characteristics of a hazardous waste in accordance with APC&EC Regulation 23 Part 261. All supporting documentation demonstrating the above characterization shall be submitted to the Water Division with the certification for review and approval prior to beginning any land application activities. Any waste characterized as a hazardous waste shall be properly disposed of in accordance with state laws and regulations.

Response: The Department agrees to add the following language to the permit in Part II.6.D.3.A.10 which will require the facility to include a certification in the annual report:

10. Certification that the sludge applied in previous year does not meet the characteristics of a hazardous waste in accordance with APC&EC Regulation 23 Part 261.

Comment 23 APPP commented on Part II.6.C.2 of the draft permit (Ceiling concentrations of metals in mg/kg). Given the variety of chemicals manufactured over time at FutureFuel, the monitoring frequency for these parameters should be every other month when sludge is sprayed on the DLD site, with a minimum of four samples a year. This sampling frequency ensures that a representative sample of sludge being land applied is measured and recorded and does not exhibit the characteristics of a hazardous waste. Further, this requirement ensures that over application of contaminants does not occur. All loading rates should be calculated and recorded with each sampling event. This requirement is consistent with the frequency for the land application of treated leachate at Mississippi County Landfill (Solid Waste Permit No. 0136-S1-R4), which provides an excellent model for regulating the disposal of liquid sludge from a chemical manufacturing wastewater treatment plant by land application.

Response: Based on the length of time that the DLD operation has been permitted and the quantity of sludge loading data that has been sampled since 1988, an increase in monitoring frequency of sludge loading is not justified in this NPDES permit. In order to improve understanding of the geologic and hydrologic conditions existing at the DLD site, the facility is currently conducting a hydrogeological investigation of the DLD area including the proposed expansion. A permitting decision for the DLD operations will be made based on the results of the study.

Comment 24 APPP commented on Part II.6.C.5 of the draft permit. Based on the Response to Comment 15 on page 9 of the Fact Sheet, Part II.5 was removed. Therefore, the last sentence of Part II.6.C.5 should be revised to read as follows:

In the event that storage is exceeded and waste cannot be land applied, waste shall be disposed of by either:

- a. Dewatering the sludge to approximately 15% solids then burned in the coal-fired boilers in accordance with the terms and conditions of the air permit; or*
- b. Transporting the sludge to an ADEQ approved permitted landfill.*

Response: These optional sludge disposal practices are already listed in Section 10 of the Fact Sheet and are referenced in Part III.B.6.A and Part III.B.6.B of the permit. Part II.6.C.5 of the permit references Part III.B.6.A and Part III.B.6.B of the permit. Therefore, these optional sludge disposal practices contained in the

Fact Sheet are incorporated by reference by Part II.6.C.5 of the permit and do not need to be repeated in this condition.

Comment 25 APPP commented on Part II.6.C.7 of the draft permit (Minimum buffer distances). Minimum buffer distances are required between the land application area and areas that may be vulnerable to water pollution. These buffer distances have been revised over the years, having been adapted from APC&EC Reg. 5.406(D) and based on generally accepted scientific knowledge and engineering practices. Therefore, this condition should be revised to read as follows to be consistent with current language used in water permits:

Sludge shall not be land applied within 100 feet of streams, including intermittent streams, ponds, lakes, springs, sinkholes, rock outcrops, wells and water supplies; or 300 feet of extraordinary resource waters as defined by the Commission's Regulation No. 2. Buffer distances for streams, ponds, and lakes must be measured from the ordinary high water mark. Sludge shall not be land applied within 50 feet of property lines or 300 feet of neighboring occupied buildings existing as of the date of the permit (except for the WWTF Control Room). The restrictions regarding property lines or neighboring buildings may be waived if the adjoining property is also approved as a land application site under a permit issued by the Department or if the adjoining property owner consents in writing.

Response: The Department agrees to revise Part II.6.C.7 to match the updated language currently being used in no-discharge permits for required buffer distances.

Comment 26 APPP commented on Part II.6.D.1 (Waste Analysis). The following condition is included in Part II, Condition 33 of Part II of the draft Permit No. 5082-W and Condition E.3 of Part III of Solid Waste Permit No. 0136-S1-R4, and should also be included in this NPDES permit to ensure that sludge exhibiting the characteristics of hazardous waste is not land applied:

If any sludge analysis required to be sampled exceeds the maximum concentration limits (mg/L) or exhibits any hazardous waste characteristic, the permittee shall:

- a. Cease all land application of sludge;*
- b. Within 15 days of receiving the analysis reporting an exceedance, submit a remediation plan and schedule to the Water Division for review and approval;*
- c. Address any deficiencies in the remediation plan and schedule within 15 days of receiving written notification of such from the Water Division; and*
- d. Implement the approved remediation plan according to the approved schedule.*

NOTE: No land application of sludge shall resume prior to receiving written permission from the Water Division.

Response: The Department agrees to expand Part II.6.C.2, as shown below. This condition will ensure that corrective action in a timely manner will be taken to address any exceedance of the waste concentration limits and to prevent applying waste that exhibits any hazardous waste characteristic.

If any one of the pollutant concentrations in the waste exceeds any of the concentrations in Table 1 below, the waste cannot be land applied and the permittee shall:

- a. Cease all land application of sludge;*
- b. Within 15 days of receiving the analysis indicating an exceedance, submit a remediation plan and schedule to the Water Division for review and approval;*
- c. Address any deficiencies in the remediation plan and schedule within 15 days of receiving written notification of such from the Water Division; and*
- d. Implement the approved remediation plan according to the approved schedule.*

NOTE: No land application of sludge shall resume prior to receiving written permission from the Water Division.

Comment 27 APPP commented on Part II.6.D.2 (Soils Analysis). The following condition should be added to the NPDES permit to ensure that soils are not adversely impacted:

If the Dedicated Land Disposal facility's soil analyses exceed any specified maximum concentration or cumulative loading, the permittee shall:

- a. Cease all land application of sludge;*
- b. Within 15 days of receiving the analysis reporting an exceedance, submit a remediation plan and schedule to the Water Division for review and approval;*
- c. Address any deficiencies in the remediation plan and schedule within 15 days of receiving written notification of such from the Water Division; and*
- d. Implement the approved remediation plan according to the approved schedule.*
- e. No land application of sludge shall resume prior to receiving written permission from the Water Division.*

Response: The Department does not agree to add this condition since the permit does not specify any concentration or loading limits for the soil. Cumulative loading limits only apply to waste application.

Comment 28 APPP commented on Part II.6.D.4 (Ground Water Monitoring) of the draft permit. The Office of Water Quality alone does not have the regulatory program or expertise to adequately regulate a solid waste disposal facility with known impacts to groundwater. The draft NPDES permit includes an ineffectual ground water monitoring section. To summarize the few conditions included in the draft permit, eight parameters are sampled quarterly at six wells monitoring two different flow zones. And only five of the ten metals monitored in waste and soils are sampled in the groundwater.

This draft permit should require a new hydrogeological investigation that is consistent with or adapted from Chapter 11 of APC&EC Regulation 22. A Work Plan for Hydrogeological Investigation, dated July 26, 2016 was submitted and is in the NPDES permit file. However, the Work Plan is not part of this permit because there is no permit requirement or compliance schedule calling for a hydrogeological investigation to be conducted. But for purposes of commenting on this draft NPDES permit, the following quotes from FutureFuel's proposed work plan point out why a new hydrogeological investigation is needed and long overdue:

- Each monitoring zone has one upgradient and two downgradient wells. Most of these wells were not constructed to current monitoring well standards and were not initially meant to be used as part of a groundwater monitoring network for the land application area (page 1); and
- Criteria for placement of downgradient wells includes locating them relative to "the waste management unit" and such that they intercept potential pathways for contaminant migration. In accordance with §257.3-4(a), a facility or practice shall not contaminate an underground drinking water source beyond the solid waste boundary... Due to the close proximity of the land application area to other wastewater treatment facilities and the variance in vertical well placement, there is uncertainty that the current well network for the FFCC land application area completely complies with these requirements (pages 9-10).

A hydrogeological study is long overdue for FutureFuel's DLD facility, however the Office of Water Quality should not solely conduct such a study. Because FFCC's DLD facility is a solid waste facility with long standing groundwater impacts, it should be permitted by the Solid Waste Division under the Office of Land Resources. The Office of Land Resources has both the experience and regulatory programs in place to adequately guide the construction and operation of FFCC's DLD facility. The Office of Land Resources issues permits to facilities, the operation of which may impact groundwater, has regulations governing detection and assessment groundwater monitoring, regulations governing correction action if groundwater is impacted, oversees remediation efforts and site cleanups where groundwater has been impacted, and has established relevant policies such as the Groundwater Remediation Level Interim

Policy & Technical Guidance and the Monitoring Well Construction, Geotechnical Boreholes, and Plug & Abandonment Policy. The Water Division has no such experience or regulatory authority.

There is precedent for the Office of Land Resources permitting a land application facility like FFCC's DLD facility (see the Mississippi County Landfill Permit No. 0136-S1-R4). This permit was issued by the Solid Waste Division, which is under the Office of Land Resources. This Solid Waste permit regulates the land application of treated leachate. This Solid Waste permit provides an excellent example for how the FutureFuel permit should look. It is the model that should be followed. It includes enforceable conditions for a hydrological investigation and groundwater monitoring that are protective of the environment. The Office of Water Quality coordinates with the Solid Waste program in the administration of the permit, but the groundwater regulation is left to the Office of Land Resources, who is better suited for it given its staff, experience, and regulatory structure.

The Office of Water Quality has no regulatory program for groundwater monitoring, either detection or assessment monitoring, nor does it have any regulatory program governing corrective action requirements when groundwater is impacted, as it is in this case. The operation of FFCC's DLD facility results in an uncontrolled discharge of wastes to shallow groundwater. As a result of this uncontrolled release to Waters of the State, contaminated shallow groundwater is allowed to migrate beyond the solid waste disposal facility's boundary and to discharge to the White River in unknown quantities. Long standing impacts to groundwater at this site, to date, have not been adequately evaluated through any permits requiring groundwater monitoring issued by the Office of Water Quality. It is time for the Office of Water Quality to follow another model. The groundwater conditions proposed in the draft permit at issue are not effective and will allow contamination of Waters of the State to continue unabated.

Since FFCC's DLD facility is a one of a kind facility that has been leaking for years, and has contaminated shallow groundwater beyond the solid waste boundary in violation of 40 CFR 257, this DLD facility should not be regulated by the Office of Water Quality alone. To protect the environment, this facility should be regulated under a permit that contains conditions like those in Solid Waste Permit No. 0136-S1-R4. No permit should be issued to FutureFuel without enforceable requirements for a new hydrogeological investigation and groundwater monitoring system that is consistent with, or adapted from, the requirements found in Chapters 11 and 12 of APC&EC Regulation 22.

Response: Order No. 6 determined that the shallow groundwater in the finger is not capable of yielding usable quantities of groundwater to wells or springs, and that the shallow groundwater in the finger is not an underground drinking water source. Therefore, at this time, there is no information showing that the operation of the DLD is contaminating an underground drinking water source.

At the request of the Department, in order to improve understanding of the geologic and hydrologic conditions existing at the DLD site, the facility is currently conducting a hydrogeological investigation of the DLD area including the proposed expansion. The purpose of this investigation is to develop a better understanding of the hydrogeological setting of the land application area (including the proposed expansion areas) and to develop a groundwater monitoring well network that will comply with the no-discharge permit and 40 CFR Part 257. Since a hydrogeological study is already ongoing, a compliance schedule to conduct a study is not needed in the NPDES permit. The Department intends to issue a final permitting decision for the DLD operations based on the conclusions of the study and a review of the study results and monitoring protocols by the Office of Land Resources.

Comment 29: APPP commented that a condition should be added requiring the land application equipment to be inspected periodically for proper operation during land application activities.

Response: The second sentence of Part II.6.C.8 of the permit already states that equipment shall be properly maintained and operated. Therefore, no changes are needed concerning proper operation and maintenance.

Comment 30: APPP commented that a condition should be added requiring the soil moisture to be sampled.

Response: The Department agrees to add soil moisture sampling requirements in Part II.6.D.2 of the permit so the facility can determine if optimum conditions for denitrification exist. The denitrification process is significantly influenced by the soil moisture. Based on facility comments submitted on the draft no-discharge permit No. 5082-W on July 16, 2015 optimum conditions for denitrification occur when soil moisture is 50% – 90%.

Comment 31: APPP commented that a condition should be added requiring the permittee to report all Nitrogen compounds and Total Organic Carbon in the sludge, soil, and groundwater.

Response: Total Organic Carbon will be required to be sampled and reported in the sludge and soil. This parameter will be added in Part II.6.D.1 and Part II.6.D.2 of the NPDES permit. Denitrification is the conversion of Nitrate to Nitrite and Nitrogen gas. An adequate carbon source is essential for the denitrification process to occur, therefore sampling for TOC in the sludge and soil will be beneficial to verify an adequate carbon source exists for denitrification to occur.

Sampling/reporting of Total Nitrogen compounds in the sludge and soil are not being added to the permit. The denitrification process in the soil is strongly influenced by the Nitrate concentration and moisture content. The denitrification process is not significantly influenced by the Total Nitrogen compounds. The

permit already contains sampling/reporting of the Nitrate concentration in the sludge and soil, therefore Nitrate levels will continue to be sampled/reported so that the facility can optimize the denitrification process.

Sampling/reporting of these Total Organic Carbon and Total Nitrogen compounds in the groundwater are not being added because there are no drinking water or water quality standards for these parameters.

Comment 32: APPP commented that a condition should be added requiring the permittee to report the pH of the sludge.

Response: Part II.6.D.1 of the permit requires the permittee to sample the pH of the sludge, and Part II.6.D.3 of the permit requires the permittee to report the sludge analyses conducted. Therefore, no changes to the permit are needed concerning reporting the pH of the sludge.

Comment 33: APPP commented that a condition should be added requiring the permittee to report the biological oxygen demand (BOD₅) of the sludge.

Response: Part II.6.D.1 of the permit requires the permittee to sample the BOD₅ of the sludge, and Part II.6.D.3 of the permit requires the permittee to report the sludge analyses conducted. Therefore, no changes to the permit are needed concerning reporting the BOD₅ of the sludge.

ADEQ Comment:

In Part II.6.D.4.B, the sentence discussing when additional sampling and/or monitoring wells is triggered was reworded to clarify that the purpose of any additional wells would be to “*delineate* nitrate concentrations in the groundwater” instead of “*define* the nitrate concentration of the groundwater”.

Summary of Changes from Draft Permit to Final Permit Based on Comments Received			
Part	Draft	Final	Comment #
II.6.C.5	This condition referenced Part II.5.A and Part II.5.B.	This condition was corrected to reference Part III.B.6.A and Part III.B.6.B.	1
Section 4 of Fact Sheet	This section of the fact sheet contained a hyperlink to an incorrect compliance report.	The compliance report was updated with corrected information and linked in Section 4 of the Fact Sheet.	2
Section 8.A of Fact Sheet	Last sentence in this section stated, "Both state technology-based limits (TBELs) are to be based on actual flows."	Last sentence in this section was revised to "Both of these sources state that technology-based limits (TBELs) are to be based on actual flows."	3
Section 20.J of Fact Sheet	This section contains incorrect spelling of Delaware.	Spelling of Delaware was corrected.	4
Part II.6.C.2	No sludge ceiling concentration limits for Barium and Silver. All units were in mg/kg for sludge.	Sludge ceiling concentration limits for Barium and Silver were added, and limits revised for Arsenic, Cadmium, Chromium, Lead, Mercury, and Selenium based on Reg. 23 Part 261 to ensure sludge does not meet characteristics of hazardous waste. Units for waste sludge changed to mg/L since waste is 99% liquid. Footnote added requiring TCLP test method for metals listed in Reg. 23 Part 261 (Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver).	7
Part II.6.C.3	No equation for calculating sludge loading rate was included.	Equation for calculating sludge loading rate was added.	8
Part II.6.D.2	Draft permit did not require Oil & Grease to be monitored/reported in the soils.	Monitoring/reporting for Oil & Grease in the soils was added.	9
Part II.6.D.3.A.10	Certification of no hazardous waste classification was not required to be included in annual sludge report.	Requirement added to include certification with the annual sludge report stating that land applied sludge is not classified as hazardous waste.	22
Part II.6.C.7	Old buffer distance language was in the draft permit.	Required buffer distance language applicable to land application of sludge was updated.	25
Part II.6.C.2	Draft permit did not contain remediation requirements for waste that exceeds any of the metal ceiling limits given in the permit.	Additional language added to require remediation action for any waste that exceeds the metal ceiling limits given in the permit.	26
Part II.6.D.2	The annual soils analysis did not include percent moisture.	Percent Moisture (%) added as a parameter to be measured in the soil.	30
Part II.6.D.1 Part II.6.D.2	Total Organic Carbon was not a required parameter to be sampled in the sludge and soil.	Total Organic Carbon sampling/reporting added for the sludge and soil.	31
Part II.6.D.4.B	The permittee shall also submit a plan for sampling and/or additional wells to define the nitrate concentration of the groundwater within thirty (30) days of the notification.	The permittee shall also submit a plan for sampling and/or additional wells to delineate nitrate concentrations in the groundwater within thirty (30) days of the notification.	ADEQ Comment