

**Arkansas Department of Energy and Environment – Division of Environmental Quality  
Water Quality Management Plan Summary**

Date: November 3, 2022      Prepared by: Kai Imamura      Reviewed by: Shane Byrum

New Permit       Renewal Permit       Amended Permit

**Permit No.:** AR0047384      **Facility Name:** Canfor Southern Pine - Urbana Sawmill

**Type of Discharge:** wet deck runoff, stormwater runoff, well makeup water, non-contact cooling water, kiln condensate, and equipment washwater

**Design Flow:** 0.07 MGD      **County:** Union

**Outfall Coordinates:** Latitude: 33° 09' 46.93" N; Longitude: 92° 26' 52.61" W

**Receiving Stream:** an unnamed tributary, thence to North Lapile Creek, thence to Lapile Creek, thence to the Ouachita River

**HUC + Reach:** 08040202 + 005      **Planning Segment:** 2D      **7Q10:** 0 cfs

**Ecoregion:** Gulf Coastal (Typical)      **Watershed Size at Outfall (mi<sup>2</sup>):** 0.1

**Current Effluent Limits in mg/L (BOD<sub>5</sub>/TSS/DO):**

Year-round:      30/35.0/2.0

**Proposed Effluent Limits in mg/L (BOD<sub>5</sub>/TSS/DO):**

No changes from current effluent limits shown below.

**TMDL Limits:**      None

**Justification (Sag = Minimum Modeled Value ≠ Difference in Value):**

Reach No.	Length (miles)	DO <sub>C</sub> (mg/L)	Sag <sub>C</sub> (mg/L)	Distance to Sag <sub>C</sub> (miles)	DO <sub>P</sub> (mg/l)	Sag <sub>P</sub> (mg/L)	Distance to Sag <sub>P</sub> (miles)
1 <sub>A</sub>	1.0	2.0	1.86 <sup>1</sup>	0.05	5.0	4.89 <sup>1</sup>	0.0
1 <sub>B</sub>	0.1	3.0	5.12	0.0	5.0	7.43	0.0

This is for the reissuance of the discharge permit for this existing facility.

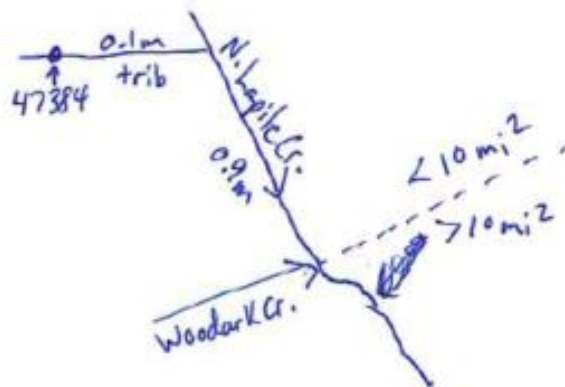
**Remarks:** The facility name is being updated in the 208 Plan, but this doesn't require public notice.

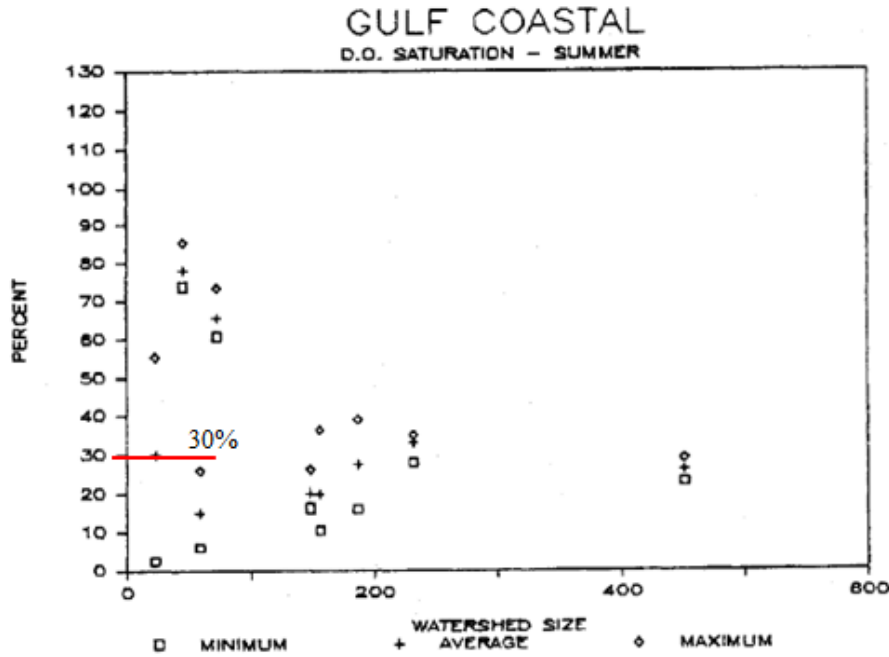
<sup>1</sup> Based on the MOA, a sag below the water quality standard of up to 0.2 mg/l is allowed to account for model uncertainty.

**MODEL INPUT DATA**

Upstream River Parameters	Critical Season (May-Oct.)		Primary Season (Nov.-Apr.)	
	North Lapile Creek above Woodard Cr. (Reach 1a)	North Lapile Creek below Woodard Cr. (Reach 1b)	North Lapile Creek above Woodard Cr. (Reach 1a)	North Lapile Creek below Woodard Cr. (Reach 1b)
D.O. Standard (mg/L)	2.0	3.0	5.0	
Flow (cfs)	0.0		0.89	
Temp. Standard (°C)	30		22	
Dissolved Oxygen (mg/L)	2.27		5.24	
5-Day BOD (CBOD <sub>5</sub> ) (mg/L)	1.0		1.0	
Ult. CBOD/CBOD <sub>5</sub> (unitless)	2.3		2.3	
Ammonia (mg/L)	0.1		0.1	
Upstream River Mile (miles)	0.0		1.1	

**Model Diagram:**

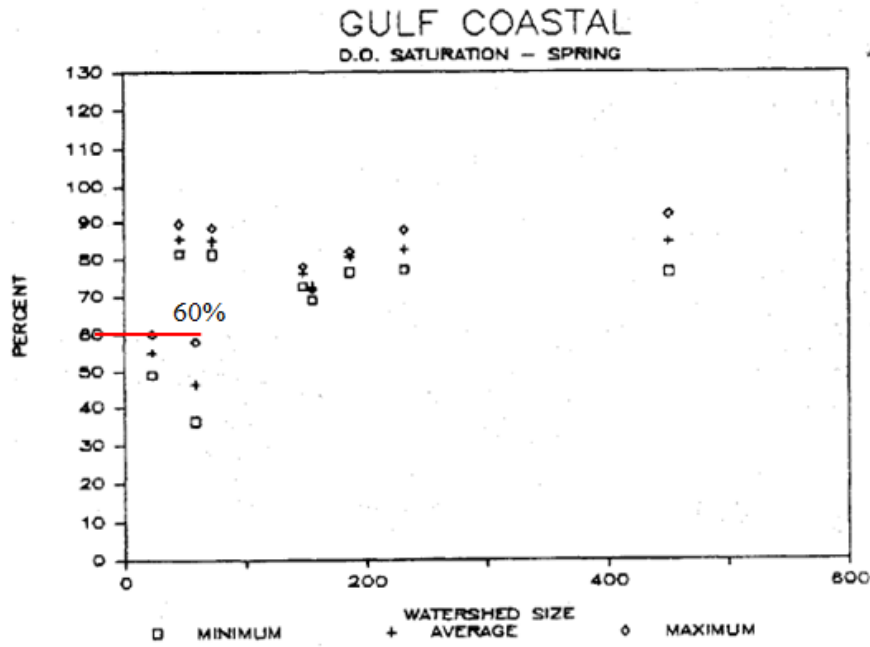




#### OXYGEN SOLUBILITY TABLE

Solubility of Oxygen (mg/L) in Water Exposed to

Temp °C	Chlorinity 0 Salinity: 0	5.0 ppt 9.0 ppt	10.0 ppt 18.1 ppt
0.0	14.62	13.73	12.89
1.0	14.22	13.36	12.55
2.0	13.83	13.00	12.22
3.0	13.46	12.66	11.91
4.0	13.11	12.34	11.61
5.0	12.77	12.02	11.32
6.0	12.45	11.73	11.05
7.0	12.14	11.44	10.78
8.0	11.84	11.17	10.53
9.0	11.56	10.91	10.29
10.0	11.29	10.66	10.06
11.0	11.03	10.42	9.84
12.0	10.78	10.18	9.62
13.0	10.54	9.96	9.42
14.0	10.31	9.75	9.22
15.0	10.08	9.54	9.03
16.0	9.87	9.34	8.84
17.0	9.67	9.15	8.67
18.0	9.47	8.97	8.50
19.0	9.28	8.79	8.33
20.0	9.09	8.62	8.17
21.0	8.92	8.46	8.02
22.0	8.74	8.30	7.87
23.0	8.58	8.14	7.73
24.0	8.42	7.99	7.59
25.0	8.26	7.85	7.46
26.0	8.11	7.71	7.33
27.0	7.97	7.58	7.20
28.0	7.83	7.44	7.08
29.0	7.69	7.32	6.96
30.0	7.56	7.19	6.85
31.0	7.43	7.07	6.73
32.0	7.31	6.96	6.62
33.0	7.19	6.84	6.51



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6.0	12.45	11.73	11.05
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8.0	11.84	11.17	10.53
9.0	11.56	10.91	10.29
10.0	11.29	10.66	10.06
11.0	11.03	10.42	9.84
12.0	10.78	10.18	9.62
13.0	10.54	9.96	9.42
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16.0	9.87	9.34	8.84
17.0	9.67	9.15	8.67
18.0	9.47	8.97	8.50
19.0	9.28	8.79	8.33
20.0	9.09	8.62	8.17
21.0	8.92	8.46	8.02
22.0	8.74	8.30	7.87
23.0	8.58	8.14	7.73
24.0	8.42	7.99	7.59
25.0	8.26	7.85	7.46
26.0	8.11	7.71	7.33
27.0	7.97	7.58	7.20
28.0	7.83	7.44	7.08
29.0	7.69	7.32	6.96
30.0	7.56	7.19	6.85
31.0	7.43	7.07	6.73

Discharger 1	Critical Season (May-Oct.)	Primary Season (Nov.-Apr.)
Flow (MGD)	0.07	0.07
Temperature (°C)	30	22
Dissolved Oxygen (mg/L)	2.0	2.0
5-Day BOD (CBOD <sub>5</sub> ) (mg/L)	30	30
Ult. CBOD/CBOD <sub>5</sub> (unitless)	2.3	2.3
Ammonia (mg/L)	0.0	0.0

Reach 1	Critical Season	Primary Season	Justification
Length (miles)	1.1	1.1	To Model End
Velocity (fps)	0.022	0.072	Spreadsheet
Average Depth (ft)	0.386	0.567	Spreadsheet
Temperature (°C)	30	22	Rule 2
K <sub>d</sub> (1/day)	0.4	0.4	EPA MOA
K <sub>n</sub> (1/day)	0.4	0.4	EPA MOA
SOD (g/m <sup>2</sup> /day)	1.79	1.130	k20 = 1.0 (TSS = 35)
K <sub>a</sub> (1/day)	8.064	8.11	EPA MOA

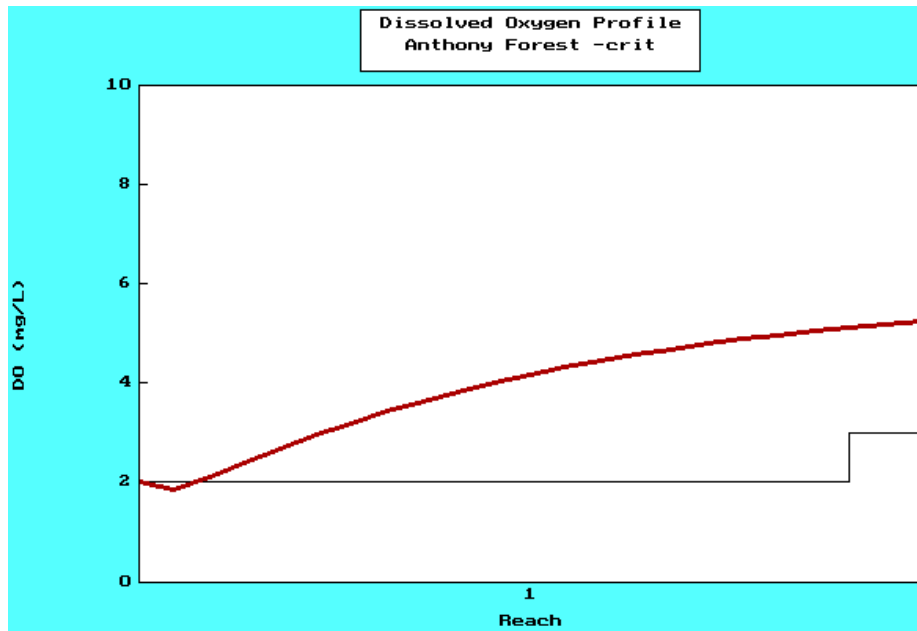
Stream Hydraulics for Critical Season									
Q mgd	V	D	W	Ka (O'Conner Dobbins)	Velocity Coefficient	Depth Coefficient	Width Coefficient	Product of Coefficients (should equal 1)	
0.005	0.005	0.175	9.635	11.980	0.085	0.751	15.665	1.000	
0.01	0.007	0.215	10.327	10.797					
0.015	0.009	0.243	10.754	10.160	Velocity Exponent	Depth Exponent	Width Exponent	Sum of Exponents (should equal 1)	
0.02	0.011	0.265	11.068	9.730	0.6	0.3	0.1	1.0	
0.025	0.012	0.283	11.318	9.410					
0.03	0.013	0.299	11.526	9.156					
0.035	0.015	0.313	11.705	8.947					
0.04	0.016	0.326	11.862	8.770					
0.045	0.017	0.338	12.003	8.616	<b>This worksheet is the hydraulics for stream flows up to 0.2 MGD.</b>				
0.05	0.018	0.349	12.130	8.481					
0.055	0.019	0.359	12.246	8.361	The Velocity, Depth, and Width values in chart to left are from the following empirical equations which were developed based on the empirical relationships presented on page 2-33 of EPA September 1983 Technical Guidance Manual for Performing Waste Load Allocations, Book II (Streams and Rivers).				
0.06	0.020	0.368	12.353	8.252					
0.065	0.021	0.377	12.452	8.154					
0.07	0.022	0.386	12.545	8.064					
0.075	0.023	0.394	12.632	7.981					
0.08	0.024	0.401	12.714	7.904	Velocity = 0.085 Q <sup>0.6</sup>				
0.085	0.025	0.409	12.791	7.832					
0.09	0.026	0.416	12.864	7.765	Depth = 0.751 Q <sup>0.3</sup>				
0.095	0.027	0.423	12.934	7.702					
0.1	0.028	0.429	13.001	7.643	Width = 15.665 Q <sup>0.1</sup>				

**Primary Season Hydraulics**

0.89 Headwater in CFS

0.07 Discharger 1 in MGD \_\_\_\_\_ Reach 1 Velocity 0.072 FPS Depth 0.567 Feet Width 24.351 Feet

**CRITICAL SEASON (47384 C .SMP):**



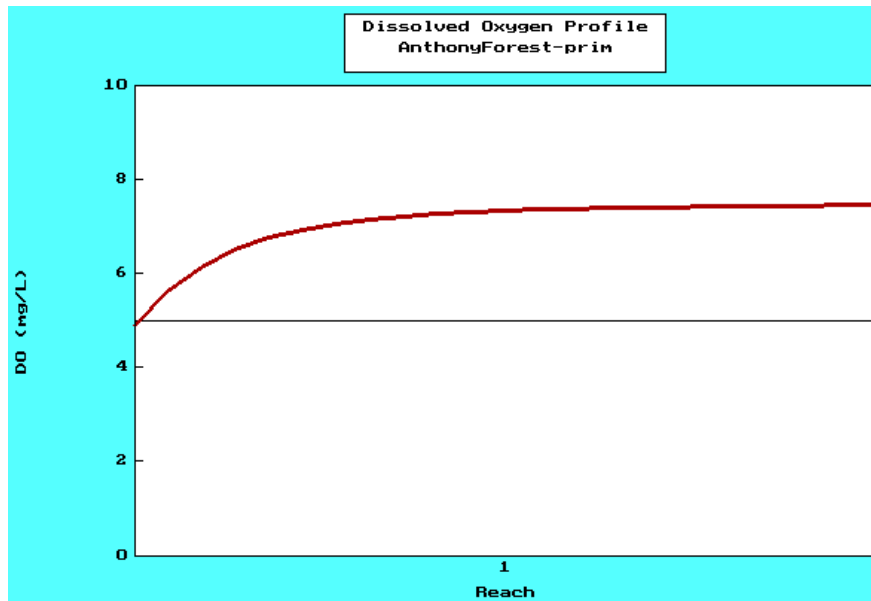
Anthony Forest -crit		TABULAR MODEL OUTPUT		
	River Mile	DO (mg/L)	BOD (mg/L)	NH3 (mg/L)
1	1.10	2.00	69.00	0.00
2	1.05	1.86	63.19	0.00
3	1.00	2.09	57.87	0.00
4	0.95	2.38	53.00	0.00
5	0.90	2.67	48.54	0.00
6	0.85	2.94	44.45	0.00
7	0.80	3.19	40.71	0.00
8	0.75	3.42	37.28	0.00
9	0.70	3.63	34.14	0.00
10	0.65	3.82	31.27	0.00
11	0.60	4.00	28.64	0.00
12	0.55	4.16	26.23	0.00
13	0.50	4.31	24.02	0.00
14	0.45	4.44	22.00	0.00
15	0.40	4.56	20.14	0.00
16	0.35	4.68	18.45	0.00
17	0.30	4.78	16.90	0.00
18	0.25	4.88	15.47	0.00
19	0.20	4.96	14.17	0.00
20	0.15	5.04	12.98	0.00
21	0.10	5.12	11.89	0.00
22	0.05	5.18	10.88	0.00
23	-0.00	5.24	9.97	0.00

Anthony Forest -crit	Upstream River Parameters		Comments
Flow	(cfs)	0.00	7Q10
Temperature	(°C)	30.00	Rule 2
Dissolved Oxygen	(mg/l)	2.27	30% sat eco
5-Day BOD	(mg/l)	1.00	Assumed
Ult. CBOD / 5-Day BOD		2.30	EPA MDA
pH	(su)	7.00	Assumed
Ammonia	(mg/l)	0.10	Assumed
Alkalinity	(mg/l)	-0.00	
Upstream river mile		1.10	

Anthony Forest -crit	Parameters for Discharge 1		Comments
Flow	(MGD)	0.07	variable flow
Temperature	(°C)	30.00	Rule 2
Dissolved Oxygen	(mg/l)	2.00	Permit
5-Day BOD	(mg/l)	30.00	Permit
Ult. CBOD / 5-Day BOD		2.30	EPA MDA
pH	(su)	7.00	Permit
Ammonia	(mg/l)	0.00	Assumed
Alkalinity	(mg/l)	-0.00	
Beginning of Reach Number		1	
Name of Discharger		Anthony	

Anthony Forest -crit	Parameters for Reach 1		Comments
Length	(mile)	1.10	To Model End
Velocity	(fps)	0.02	Spreadsheet
Slope	(ft/mile)	-0.00	
Average Depth	(ft)	0.39	Spreadsheet
Temperature	(°C)	30.00	Calculated
BOD Removal Rate	(1/day)	0.40	EPA MDA
NH3 Decay Rate	(1/day)	0.40	EPA MDA
Sediment Oxygen Demand	(g/m <sup>2</sup> /day)	1.79	k20=1.0(tss=35)
Photosynthesis/respiration	(mg/L/day)	-0.00	

**PRIMARY SEASON (47384 P .SMP):**



AnthonyForest-prim		TABULAR MODEL OUTPUT		
	River Mile	DO (mg/L)	BOD (mg/L)	NH3 (mg/L)
1	1.10	4.89	9.53	0.09
2	1.05	5.62	9.36	0.09
3	1.00	6.13	9.18	0.09
4	0.95	6.49	9.01	0.08
5	0.90	6.74	8.85	0.08
6	0.85	6.92	8.68	0.08
7	0.80	7.05	8.52	0.08
8	0.75	7.14	8.37	0.08
9	0.70	7.21	8.21	0.08
10	0.65	7.26	8.06	0.07
11	0.60	7.29	7.91	0.07
12	0.55	7.32	7.77	0.07
13	0.50	7.34	7.62	0.07
14	0.45	7.36	7.48	0.07
15	0.40	7.37	7.35	0.07
16	0.35	7.39	7.21	0.07
17	0.30	7.40	7.08	0.06
18	0.25	7.41	6.95	0.06
19	0.20	7.42	6.82	0.06
20	0.15	7.42	6.69	0.06
21	0.10	7.43	6.57	0.06
22	0.05	7.44	6.45	0.06
23	-0.00	7.45	6.33	0.06

AnthonyForest-prim	Upstream River Parameters		Comments
Flow	(cfs)	0.89	seasonal fishery
Temperature	(°C)	22.00	Rule 2
Dissolved Oxygen	(mg/l)	5.24	60% sat eco
5-Day BOD	(mg/l)	1.00	Assumed
Ult. CBOD / 5-Day BOD		2.30	EPA MDA
pH	(su)	7.00	Assumed
Ammonia	(mg/l)	0.10	Assumed
Alkalinity	(mg/l)	-0.00	
Upstream river mile		1.10	

AnthonyForest-prim	Parameters for Discharge 1		Comments
Flow	(MGD)	0.07	variable flow
Temperature	(°C)	22.00	Rule 2
Dissolved Oxygen	(mg/l)	2.00	Permit
5-Day BOD	(mg/l)	30.00	Permit
Ult. CBOD / 5-Day BOD		2.30	EPA MDA
pH	(su)	7.00	Permit
Ammonia	(mg/l)	0.00	Assumed
Alkalinity	(mg/l)	-0.00	
Beginning of Reach Number		1	
Name of Discharger		Anthony	

AnthonyForest-prim	Parameters for Reach 1		Comments
Length	(mile)	1.10	To Model End
Velocity	(fps)	0.07	Spreadsheet
Slope	(ft/mile)	-0.00	
Average Depth	(ft)	0.57	Spreadsheet
Temperature	(°C)	22.00	Calculated
BOD Removal Rate	(1/day)	0.40	EPA MDA
NH3 Decay Rate	(1/day)	0.40	EPA MDA
Sediment Oxygen Demand	(g/m <sup>2</sup> /day)	1.13	k <sub>20</sub> =1.0(tss=35)
Photosynthesis/respiration	(mg/L/day)	-0.00	