

Peltier, Hannah

From: Gilliam, Allen
Sent: Thursday, January 24, 2013 12:06 PM
To: Nancy Busen (NBusen@bentonvillear.com)
Cc: Fuller, Kim; Peltier, Hannah
Subject: AR0022403_Bentonvilles Jan 2013 ADEQ TBLL Excel Spreadsheet_20120124
Attachments: bentonville Jan 2013 tbll.xls

Nancy,

Please find attached the MS Excel spreadsheet used to calculate your “Water Quality Levels not exceed”, maximum allowable headworks/maximum allowable industrial loadings.

The spreadsheet’s formulas follow ADEQ’s latest continuing planning process (CPP) procedures for calculating WQ based average monthly permit limits (as if Bentonville were to have them) based on the Arkansas Pollution Control and Ecology’s Regulation #2 Toxics Criteria in Section 5, part 2.508 for EPA’s minimum pollutants of concern.

The attached spreadsheet’s first tab (PPS_Scan) is known site specific data used in the calculations mentioned above and shown in the second tab (WQ_Levels).

The spreadsheet’s third tab (Local_Limits) is the culmination of all calculations illustrating your maximum allowable headworks and maximum allowable industrial loadings (MAHLs/MAILs) based on the driving criteria of either WQ Levels, Sludge Criteria from 40 CFR 503 (land application of biosolids) or EPA default levels for inhibition of activated sludge wastewater treatment plants.

The remaining tabs (“Rem” [Removal efficiency across the w.w. plant] and Domestic [background concentrations]) include site specific data Bentonville supplied this office also used in the “Local Limits” calculations. The NH3 tab may be disregarded at this time.

The City may concur with and accept this office’s calculated WQ levels not to exceed, MAHLs and MAILs using Bentonville’s site specific information in its Pretreatment Program section entitled “Local Limits” section or secure the services of a qualified professional to create an approvable and defensible set of data.

Based on the attached spreadsheet’s results it is this office’s opinion that Local Limits are not necessary at this time for Bentonville as the last three (3) years’ worth of influent/effluent data shows no exceedances of the MAHLs or WQ levels “not to exceed”. A table of historical industrial loading data compared to the MAILs would further demonstrate local limits are currently not necessary per 40 CFR 403.8(f)(4).

Please advise this office of your intentions within 15 working days from the date on this correspondence. You have been provided standard language suggested to be used in your local limits section to complete your entire Pretreatment Program submittal to be current with the Streamlining revisions to 40 CFR 403.

As always please feel free to contact this office with any questions or concerns. I will be available to further explain the rationale behind the attached spreadsheet.

Sincerely,

Allen Gilliam
ADEQ State Pretreatment Coordinator
501.682.0625

CALCULATIONS OF ARKANSAS WATER QUALITY-BASED EFFLUENT LIMITATIONS

For an Arkansas River/Stream
(Reserved)

STEP 1: INPUT TWO LETTER CODE FOR ECOREGION (Use Code at Right)
Basin Name

AV
AR River

FACILITY

Permittee & Date	Bentonville Jan 13
NPDES Permit No.	AR0022403
Outfall No.(s)	1.00
Plant Avg Flow (MGD)	2.85
SIUs Avg Flow (MGD)	0.02
Domestic Flow (MGD)	2.83
Plant Design Flow (MGD)	4.00
Plant Design Flow (cfs)	6.18

Codes & TSS for Ecoregions and Large Rivers

Ouachita Mts. Eco (OM) =	2.0 mg/l	Arkansas (Ft. Smith to Dardanelle Darr	12.0 mg/l
Ozark Highlands Eco (OH) =	2.5 mg/l	Arkansas (Dardanelle Dam to Terry L&	10.5 mg/l
Boston Mts. Eco (BM) =	1.3 mg/l	Arkansas (Terry L&D to L&D No. 5)	8.3 mg/l
Ark River Valley Eco (AV) =	3.0 mg/l	Arkansas (L&D No. 5 to Mouth)	9.0 mg/l
Gulf Coastal Eco (GC) =	5.5 mg/l	White (Above Beaver Lake)	2.5 mg/l
Delta Ecoregion (DL) =	8.0 mg/l	White (Below Bull Shoals to Black Riv)	3.3 mg/l
		White (From Black River to Mouth)	18.5 mg/l
		St. Francis River	18.0 mg/l
		Ouachita (Above Caddo River)	2.0 mg/l
		Ouachita (Below Caddo River)	5.5 mg/l
		Red River	33.0 mg/l

RECEIVING STREAM

Is this a large river? (see list at right)(enter "1" if yes, "0" if no; make entry as a number)	0
Name of Receiving Stream:	Town Branch
Waterbody Segment Code No.	3J
Is this a lake or reservoir? (enter '1' if yes, '0' = no; make entry as a number)	0
Is seasonal critical flow applicable (1=yes, 0=no); see Reg 2 page 1-3 for details.	0
(Reserved) DO NOT INPUT DATA INTO CELL H22, H23 & H24...LEAVE BLANK	
(Reserved)	
(Reserved)	?
(Reserved)	?
(Reserved)	?
(Reserved)	?
Ecoregion TSS (mg/l) (For Large River, See List to Right)	2.50
Ecoregion Hardness (mg/l)	148.00
Enter 7Q10 (cfs) (Reserved)	0.10
Long Term Avg / Harmonic Mean Flow (cfs)	0.30
Using Diffusers (Yes/No)	No
pH (Avg)	6.83
Percent (%) of 7Q10 for Chronic Criteria	0.67
Percent (%) of 7Q10 for Acute Criteria	0.33
Water Effect Ration (WER)	1.00
EPA Statistical Factor for Data (enter 2.13 for <20; enter 1 for >20)	2.13
Ave Monthly Limit LTA Multiplier (Ref: page 103 TSD for WQ-Based Toxics Control)	1.55
Max Daily Limit LTA Multiplier (Ref: " " " " ")	3.11

Total Hardness for:

Arkansas River = 125 mg/l	Red River = 211 mg/l
Ouachita River = 28 mg/l	St. Francis River = 103 mg/l
White River = 116 mg/l	
Gulf Coastal = 31 mg/l	Ouachita Mount = 31 mg/l
Ozark Highlands = 148 mg/l	Ark River Valley = 25 mg/l
Boston Mount = 25 mg/l	Delta = 81 mg/l

Large Rivers

Mississippi River, Arkansas River, Red River
White (Below confluence with Black River)
Ouachita (Below confluence with Little Miss. River)

WQ Levels not to exceed for Bentonville Jan 13

Aquatic Life
AML, ug/l

Cadmium Total	7.0712
Chromium (hex)	11.9375
Copper Total	41.5251
Lead Total	18.9303
Mercury Total	0.0135
Nickel Total	426.5969
Selenium Total	5.6405
Silver Total	20.0574
Zinc Total	374.8799
Chromium (Tri)	1268.6246
Cyanide Total	5.8661
Beryllium Total	5.9789
Arsenic	346.0995

Bentonville Jan 13

Pollutant	% Rem***	Water Quality mg/l	Water Quality* lbs/day	Sludge mg/kg	Sludge **** lbs/day	Inhibition** mg/l	Inhibition^^ lbs/day	MAHL lbs/day	MAHC mg/l	Domestic Allocation for %SF lbs/day	Allocation for %SF lbs/day^	MAIL lbs/day	Max Inf Exceedec MAHC	Max Effluent vs WQS(mg/l)
Cadmium Total	74.2	0.0071	0.6515	85	0.62	1.00	23.77	0.619	0.0260	0.006	0.526	0.5199	No	No
Copper Total	84.6	0.0415	6.4092	4300	27.45	1.00	23.77	6.409	0.2696	0.945	5.448	4.5030	No	No
Lead Total	77.4	0.0189	1.9909	840	5.86	1.00	23.77	1.991	0.0838	0.035	1.692	1.6569	No	No
Mercury Total	93.7	0.00001	0.0051	57	0.33	0.10	2.38	0.005	0.0002	0.001	0.004	0.0038	No	No
Nickel Total	49.0	0.4266	19.8819	420	4.63	1.00	23.77	4.629	0.1947	0.092	3.934	3.8422	No	No
Selenium Total	50.0	0.0056	0.2681	100	1.08	0.20	4.75	0.268	0.0113	0.059	0.228	0.1689	No	No
Silver Total	83.4	0.0201	2.8720	0	0.00	0.25	5.94	2.872	0.1208	0.006	2.441	2.4353	No	No
Zinc Total	66.6	0.3749	26.6782	7500	60.81	0.50	11.88	11.885	0.5000	5.196	10.102	4.9057	No	No
Chromium Total	82.0	1.2686	167.5219	3000	19.76	1.00	23.77	19.756	0.8312	0.118	16.793	16.6746	No	No
Cyanide Total	69.0	0.0059	0.4498	0	0.00	0.10	2.38	0.450	0.0189	0.236	0.382	0.1461	No	No
Arsenic	63.6	0.3461	22.6001	75	0.64	0.10	2.38	0.637	0.0268	0.035	0.541	0.5064	No	No
Molybdenum	59.2	1.0000	58.2574	75	0.68	0.20	4.75	0.684	0.0288	0.094	0.582	0.4870	No	No
Beryllium	50.0	0.005979	0.2842	0	0.00	0.10	2.38	0.2842	0.0120	0.006	0.242	0.2357	No	No

Dry tons/day of sludge **2.70** Safety Factor **0.15**

Yellow highlighted boxes indicate driving criteria

* lbs/day = mg/l X 8.34 X POTW avg flow / (1-Total POTW %Rem)

** EPA Default values (most conservative) from page G-1 of the 7/04 EPA TBL guidance manual (Be est. @ 0.10 mg/l; Se & Mo est. @ 0.2 mg/l; Ag from old 12/87 EPA guidance manual)

*** EPA Default Median Removal Numbers from page R-2 of the 7/04 TBL guidance manual for Se, Cr & CN (Be est. @ 50%)

**** lbs/day = dry tons/day X 0.002 X CFR 503 criteria / % removal from EPA Pret. Prog. Implementation workshop mtrl. ~ 6/93

^ lbs/day = mg/l X Avg POTW flow X 8.34

^ lbs/day = (1 - SF) X MAHL

MAIL = Maximum allowable industrial loading = MAHL - Allocation for % SF - Domestic lb/day

Bentonville Jan 13

Influent (mg/l) No data entered if Non-detects < MQL

Date	Cadmium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	Chromium	Cyanide	Arsenic	Molybdenum	Beryllium
1/17/12		0.0380	0.00210		0.0120		0.00140	0.160					
4/2/12		0.0360	0.00240	0.0000023	0.0063		0.00053	0.170			0.000580		
7/16/12		0.0460	0.00230		0.0076		0.00120	0.260			0.000980		
10/1/12		0.0440	0.00170	0.0000001	0.0049			0.160			0.000650		
1/3/11		0.0430	0.00200	0.0000030	0.0065		0.00230	0.140					
5/16/11	0.00097	0.0380	0.00430	0.0000180	0.0095		0.00150	0.200	0.0100				
7/24/11		0.0430	0.00220	0.0000020	0.0076		0.00220	0.160	0.0130		0.000640		
10/17/11		0.0035		0.0000820	0.0059			0.077					
1/11/10		0.0590	0.00310	0.0000430	0.0071		0.00200	0.160			0.000500	0.0086	
4/5/10	0.00097	0.0230	0.00130	0.0000590	0.0062		0.00066	0.093					
7/19/10		0.0450	0.00260	0.0000420	0.0065		0.00180	0.190			0.000770	0.0110	
10/4/10		0.0061			0.0068			0.045					
Quantitation Level (QL)	0.00050	0.0005	0.00050	0.0000050	0.0005	0.0050	0.00050	0.020	0.0100	0.0100	0.000500	0.0100	0.000500
Average	0.00097	0.0354	0.00240	0.0000279	0.0072	#DIV/0!	0.00151	0.151	0.0115	#DIV/0!	0.000687	0.0098	#DIV/0!
Maximum	0.00097	0.0590	0.00430	0.0000820	0.0120	0.0000	0.00230	0.260	0.0130	0.0000	0.000980	0.0110	0.000000
All Concs > QL (Yes/No)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!

Effluent (mg/l) No data entered if Non-detects < MQL; entered 1/2 MQL if detected in Inf. & ND in Eff

Date	Cadmium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	Chromium	Cyanide	Arsenic	Molybdenum	Beryllium
1/17/12		0.0068	0.0003		0.0039		0.00025	0.053			0.000250		
4/2/12		0.0030			0.0027			0.032					
7/16/12		0.0150		0.0000012	0.0043			0.061					
10/1/12		0.0039		0.0000001	0.0028			0.038					
1/5/11		0.0044	0.0003	0.0000013	0.0032		0.00025	0.038	0.0050		0.000250		
5/18/11	0.00025	0.0058		0.0000016	0.0043			0.064					
7/27/11		0.0030		0.0000002	0.0036			0.045					
10/19/11		0.0032		0.0000040	0.0031			0.073					
1/13/10		0.0043		0.0000032	0.0030			0.062			0.000250	0.0040	
4/7/10	0.00025	0.0026		0.0000016	0.0041		0.00025	0.042					
7/21/10		0.0065	0.0006	0.0000022	0.0037			0.050				0.0040	
10/6/10		0.0068	0.0011	0.0000021	0.0056			0.048					
Quantitation Level (MQL)	0.00050	0.0005	0.0005	0.0000050	0.0005	0.0050	0.00050	0.020	0.0100	0.0100	0.000500	0.0100	0.000500
Average	0.00025	0.0054	0.0005	0.0000018	0.0037	#DIV/0!	0.00025	0.051	0.0050	#DIV/0!	0.000250	0.0040	#DIV/0!
Maximum	0.00025	0.0150	0.0011	0.0000040	0.0056	0.0000	0.00025	0.073	0.0050	0.0000	0.000250	0.0040	0.000000
All Concs > QL (Yes/No)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Average % Removal	74.2268041	84.6208	77.39583	93.7307056	49.0219	#DIV/0!	83.44371	66.612	56.5217	#DIV/0!	63.592233	59.1837	#DIV/0!
EPA % REM (known Hg)	67.0000000	86.0000	61.00000	90.0000000	42.0000	50.0000	75.00000	79.000	82.0000	69.0000	45.000000	50.0000	50.000000
* use EPA default #s						*			*		*		*
Geometric Mean*	0.0002500	0.0048	0.00044	0.0000012	0.0036	#NUM!	0.00025	0.049	0.0050	#NUM!	0.000250	0.0040	#NUM!

*Geometric Mean: The range in the geometric mean cannot contain a "zero" value; if less than 30 values are entered in each column, the user must either enter one-half the detection level or change the range of the geometric mean. The range of the geometric mean can be changed by specifying which rows have data (for example, B42:B62 has 20 data points)

Domestic Calculations for Bentonville Jan 13

Pollutants	EPA pg V-1 mg/l	Avg Reported mg/l	Loading lbs/day	
Cadmium Total	0.0030	0.00025000	0.005905	used 1/2 the MQL of 0.0005 mg/l
Copper Total	0.0607	0.04000000	0.944755	2002 & 2012 city data
Lead Total	0.0490	0.00150000	0.035428	2012 city data
Mercury Total	0.0003	0.00002200	0.000520	2012 city data
Nickel Total	0.0210	0.00390000	0.092114	2012 city data
Selenium Total	-	0.00250000	0.059047	used 1/2 the MQL of 0.005 mg/l
Silver Total	0.0050	0.00025000	0.005905	used 1/2 the MQL of 0.0005 mg/l
Zinc Total	0.1750	0.22000000	5.196154	2002 & 2012 city data
Chromium Total	0.0050	0.00500000	0.118094	used 1/2 the MQL of 0.01 mg/l
Cyanide Total	0.0410	0.01000000	0.236189	used min. EPA guidance value
Arsenic	0.0030	0.00147800	0.034909	2012 city data
Molybdenum		0.00400000	0.094476	used 1/2 the MQL of 0.008 mg/l
Beryllium		0.00025000	0.005905	used 1/2 the MQL of 0.0005 mg/l

Date	Cadmium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	Chromium	Cyanide	Arsenic	Molydenum	Beryllium
8/21 thru 8/24/12 avg data (6 samples)	0.00025	0.035000	0.001500	0.000022	0.00390	0.002500	0.00025	0.3300	0.00500	0.0100	#####	0.0040000	0.00025
8/26 thru 10/2/02 avg data 10 samples; all ND exc Cu & Zn		0.045000						0.1100					
Quantitation Level (QL)	0.0005	0.000500	0.000500	0.000005	0.0005	0.005000	0.0005	0.02	0.0100	0.0100	#####	0.0100000	0.00050
Average	0.00025	0.040000	0.001500	0.00002	0.00390	0.002500	0.00025	0.22	0.00500	0.0100	#####	0.0040000	0.00025
Maximum	0.0003	0.045000	0.001500	0.0000	0.0039	0.002500	0.0003	0.33	0.0050	0.0100	#####	0.0040000	0.00025
All Concs > QL (Yes/No)	No	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	No	No

*EPA Default Numbers from guidance document