

Waller, Scott

From: Gilliam, Allen
Sent: Wednesday, October 31, 2012 1:44 PM
To: James N. Carlock (jamesncarlock@sbcglobal.net)
Cc: Waller, Scott
Subject: AR0021570_Osceolas Sept 2011 local limits spreadsheets_20111031
Attachments: Osceola TBLL Sept 2011.xls

James,

As promised via our phone conversation today please find attached ADEQ's local limits spreadsheets indicating your maximum allowable headworks and maximum allowable industrial loadings (MAHL/MAIL) based on your site specific data previously supplied.

As you can see (in the "Local Limits" tab) your w.w. treatment plant should not exceed 0.5 mg/l at its headworks. Taking into account what Southwire is already loading you with Zn, Actagro would have to meet something less than the MAIL of 4.4 lbs/day.

Their latest Actagro analyticals (11/15/11) on file showed Zn at 818 mg/l. At an anticipated flow of 5,000 gpd their Zn loading (~34 lbs/day) would greatly exceed that MAIL number.

The driving criteria for your MAHLs/MAILs were dictated by a range of "default inhibition values" in EPA's guidance manual for the development of local limits (7/04). These inhibition values were for an activated sludge system, not a facultative system such as yours.

There are no published inhibition levels this office has seen for facultative lagoons. Only bench scale tests to determine at what levels Zn would cause an upset or inhibition of your biomass would be a failsafe system in this office's opinion.

ADEQ cannot dictate whether to allow Actagro to discharge or not to the City, but it would be advisable for the City to require Actagro to install Zn removal technology and show much lower loadings to your POTW before considering accepting their discharge.

If there are any questions regarding the spreadsheet's numbers/derivation please feel free to contact this office.

Sincerely,

Allen Gilliam
ADEQ State Pretreatment Coordinator
501.682.0625

WQ Levels not exceed for Osceola 9/11

Aquatic Life
AML, ug/l

Cadmium Total	30737.95
Chromium (hex)	55611.97
Copper Total	137571.33
Lead Total	90129.02
Mercury Total	103.16
Nickel Total	2485496.70
Selenium Total	42984.22
Silver Total	27661.87
Zinc Total	1129231.24
Chromium (Tri)	6292393.34
Cyanide Total	44703.59
Beryllium Total	45563.27
Arsenic	2346501.33

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Influent (mg/l) No data entered = Non-detects @ MQL

Date	Cadmium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	Chromium	Cyanide	Arsenic	Molydenu	Beryllium
3/14/2006		0.01700					0.00100	0.02800					
3/22/2006		0.01000					0.00300	0.04500					
3/29/2006		0.02800					0.00300	0.06500					
4/6/2006		0.02000					0.00500	0.04200					
4/18/2006		0.05700					0.00700	0.12200					
5/18/2006		0.01600					0.00100	0.05400					
6/6/2006		0.03300					0.00400	0.08700				0.00600	
6/29/2006		0.04300	0.00600	0.00060			0.01700	0.08700					
8/22/2006		0.02600					0.00300	0.06500					
9/12/2006		0.10000					0.00100	0.11800					
10/12/2006		0.24700					0.00200	0.14300				0.00800	
11/8/2006		0.05000		0.00050			0.00100	0.13100				0.00500	
12/12/2006		0.06800					0.00200	0.06100					

Quantitation Level (QL)	0.0005	0.0005	0.0005	0.000005	0.0005	0.0050	0.0005	0.0200	0.0100	0.0100	0.0005	0.0100	0.0005
Average	#DIV/0!	0.05500	0.00600	0.00055	#DIV/0!	#DIV/0!	0.00385	0.08062	#DIV/0!	#DIV/0!	#DIV/0!	0.00633	#DIV/0!
Maximum	0.0000	0.2470	0.0060	0.0006	0.0000	0.0000	0.0170	0.1430	0.0000	0.0000	0.0000	0.0080	0.0000
All Concs > QL (Yes/No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes

Effluent (mg/l) No data entered = Non-detects @ MQL

Date	Cadmium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	Chromium	Cyanide	Arsenic	Molydenu	Beryllium
3/14/2006		0.00500	0.00250	0.00010			0.00100	0.01000				0.00700	
3/22/2006		0.01400	0.00250	0.00010			0.00100	0.01000				0.00250	
3/29/2006		0.00500	0.00250				0.00100	0.01000				0.00600	
4/6/2006		0.00500					0.00100					0.00500	
4/18/2006												0.00500	
5/18/2006												0.00700	
6/6/2006												0.00250	
6/29/2006												0.00250	
8/22/2006												0.00700	
9/12/2006												0.01100	
10/12/2006												0.00800	
11/8/2006												0.00700	
12/12/2006												0.00700	

Quantitation Level (QL)	0.0005	0.0005	0.0005	0.000005	0.0005	0.0050	0.0005	0.0200	0.0100	0.0100	0.0005	0.0100	0.0005
Average	#DIV/0!	0.00725	0.00250	0.00010	#DIV/0!	#DIV/0!	0.00100	0.01000	#DIV/0!	#DIV/0!	#DIV/0!	0.00596	#DIV/0!
Maximum	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
All Concs > QL (Yes/No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes

Average % Removal rat	Cadmium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	Chromium	Cyanide	Arsenic	Molydenu	Beryllium
EPA % REM	#DIV/0!	87	58	82	#DIV/0!	#DIV/0!	74	88	#DIV/0!	#DIV/0!	#DIV/0!	6	#DIV/0!
* use EPA default #s	67	86	61	60	42	50	75	79	82	69	45	50	50
Geometric Mean*	#NUM!	0.01	0.00	*(95%) 0.00	#NUM!	#NUM!	0.00	0.01	#NUM!	#NUM!	#NUM!	0.01	#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)

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

DL
Mississippi River

FACILITY

Permittee & Date	Oseola 9/11
NPDES Permit No.	AR0021580
Outfall No.(s)	1.00
Plant Ave Flow (MGD)	2.30
SILs Ave Flow (MGD)	0.04
Domestic Flow (MGD)	2.26
Plant Design Flow (MGD)	2.50
Plant Design Flow (cfs)	3.86

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)	1
Name of Receiving Stream:	Mississippi River
Waterbody Segment Code No.	6C
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)	8.00
Ecoregion Hardness (mg/l)	81.00
Enter 7Q10 (cfs)	(Reserved) 119000.00
Long Term Ave / Harmonic Mean Flow (cfs)	357000.00
Using Diffusers (Yes/No)	No
pH (Avg)	7.00
Percent (%) of 7Q10 for Chronic Criteria	0.25
Percent (%) of 7Q10 for Acute Criteria	0.13
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
Ozark Highlands = 148 mg/l
Boston Mount = 25 mg/l

Ouachita Mount = 31 mg/l
Ark River Valley = 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)

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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 lbs/day	Allocation for %SF lbs/day^	MAIL lbs/day	Max Inf MAHC	Exceedec WQS(mg/l)	Max Eff vs
Cadmium Total	67	30.7379	1786.7130	85	0.00	1.00	19.18	19.182	1.000	0.09	14.387	14.292	No	No	
Copper Total	87	137.5713	20299.1789	4300	0.00	1.00	19.18	19.182	1.000	0.54	14.387	13.843	No	No	
Lead Total	58	90.1290	4116.3209	840	0.00	1.00	19.18	19.182	1.000	0.06	14.387	14.328	No	No	
Mercury Total	82	0.10316	10.9936	57	0.00	0.10	1.92	1.918	0.100	0.0019	1.439	1.437	No	No	
Nickel Total	42	2485.4967	82201.3753	420	0.00	1.00	19.18	19.182	1.000	0.85	14.387	13.538	No	No	
Selenium Total	50	42.9842	1649.0466	100	0.00	0.20	3.84	3.836	0.200	0.02	2.877	2.858	No	No	
Silver Total	74	27.6619	2040.8076	0	0.00	0.25	4.80	4.796	0.250	0.19	3.597	3.408	No	No	
Zinc Total	88	1129.2312	180507.6140	7500	0.00	0.50	9.59	9.591	0.500	2.77	7.193	4.423	No	No	
Chromium Totæ	82	6292.3933	670559.3838	3000	0.00	1.00	19.18	19.182	1.000	0.45	14.387	13.934	No	No	
Cyanide Total	69	44.7036	2766.1428	0	0.00	0.10	1.92	1.918	0.100	0.08	1.439	1.363	No	No	
Arsenic	45	2346.5013	81837.4336	75	0.00	0.10	1.92	1.918	0.100	0.47	1.439	0.967	No	No	
Molybdenum	6	0.0000	0.0000	75	0.00	0.20	3.84	3.836	0.200	0.08	2.877	2.802	No	No	
Beryllium	50	45.563274	1747.9894	0	0.00	0.10	1.92	1.9182	0.100	0.01	1.439	1.433	No	No	

Dry tons/day of sludge Safety Factor

[All conversions from mg/l to lbs/day used the City's avg. flow (2.3 MGD) from 1/1/2010 to 7/31/2011

** Page 3-44 of EPA Guidance Mtrl. (Be est. @ 0.10 mg/l)

*** EPA Default Numbers from page 3-56 of TBLL guidance manual except for Cu, Pb, Hg, Ag, Zn & Mo. (Be & Se est. @ 50%; Hg est. @ 95%

**** lbs/day = dry tons/day * 0.002 * CFR 503 criteria/ % removal from EPA Pret. Prog. Implementation workshop mtrl. ~ 6/9;

++ lbs/day = mg/l * Flow * 8.34

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

MAHL = Maximum Allowable Headworks Loading

MAHC = Maximum Allowable Headworks Concentration

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

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Effluent WQS		Influent WQS		Effluent WQS	
pH	NH3	pH	NH3	pH	NH3
?	#####	?	#VALUE!	?	#####
?	#####	?	#VALUE!	?	#####
?	#####	?	#VALUE!	?	#####
?	#####	?	#VALUE!	?	#####
?	#####	?	#VALUE!	?	#####
?	#####	?	#VALUE!	?	#####
?	#####	?	#VALUE!	?	#####
?	#####	?	#VALUE!	?	#####
?	#####	?	#VALUE!	?	#####

Avg #DIV/0! ##### #DIV/0! #VALUE! #DIV/0! #####

Influent	WQS
pH	NH3
?	#####
?	#####
?	#####
?	#####
?	#####
?	#####
?	#####
?	#####
?	#####

#DIV/0! #####