ADEQ

ARKANSAS
Department of Environmental Quality

NPDES PERMIT FILE
NPDES #AR0033880
AFIN #26-00145
Permit PN
✓ Correspondence
Technical Backup
5/21/09 MH Date Scanned

May 20, 2009

Mr. Steve Mallet, Deputy City Manager
City of Hot Springs Public Works Dept.
Post Office Box 700
Hot Springs National Park, Arkansas 71902

RE: Hot Springs Wastewater Treatment Plant MAHL & Draft Ordinance
(Permit No. AR0033880, AFIN 26-00145)

Dear Mr. Mallett:

In reference to the City of Hot Springs ("City") letter dated April 30, 2009, the City submitted only data, calculations, and results for the Maximum Allowable Headworks Loading (MAHL) for the Davidson Drive Wastewater Treatment Plant. ADEQ received this information on May 1, 2009.

On October 14, 2005 EPA promulgated revisions to 40 CFR 403. These revisions are commonly referred to as the "Streamlining Revisions". The City was required to update the approved pretreatment program to comply with these revisions by February 1, 2009. In a meeting held at ADEQ on February 11, 2009, ADEQ agreed to extend the deadline from February 1, 2009 to May 1, 2009. In reference to the City's letter dated February 13, 2009, the City agreed to submit "Revised ordinance language" and MAHL values by May 1, 2009.

The City did not submit the draft ordinance and ADEQ has concerns with the MAHL evaluation. The MAHLs shown on the enclosed "SUMMARY" sheet for the Davidson Drive WWTP are less than typical domestic loadings. If the City elects to use these MAHLs, any local limits derived from them would impose "Non-Detect" discharge limits on all SIUs. Since the City did not submit a narrative with sample calculations, the department cannot follow the City's rationale for these MAHLs.

The City may elect to use the enclosed MAHLs or submit new MAHLs with a narrative and sample calculations to the department for further review. If the City elects to use the enclosed MAHLs, the City must submit only the draft ordinance incorporating the MAHLs.

ADEQ will expect the next submittal containing either the revised MAHLs and/or a draft ordinance by July 1, 2009.

If the City elects to use the enclosed MAHL documents, note that the gray shaded cells on the "Hot Springs MAHL" page contain the WQ Limits/Levels and Maximum Allowable Headworks Concentrations (MAHCs). The limits/levels and MAHCs should appear in the appropriate columns on the influent/effluent chart. This chart is enclosed, and the City must submit this chart with each annual report.

If the City has any concerns or questions, please contact Rufus Torrence at (501) 682-0626 or torrence@adeq.state.ar.us.

Sincerely,

Mo Shafii
Assistant Chief Water Division

CC: Rufus Torrence, ADEQ Engineer

Encl: Hot Springs TBLL2008 Excel Spreadsheets (Five pages)
Influent/Effluent Chart for Annual Reports
City of Hot Springs Summary MAHL for Davidson WWTP April-09

City of Hot Springs
Maximum Allowable Headworks Loading Development
Davidson Drive Wastewater Treatment Plant
April-09

Data Summary

Pollutant	NPDES	WATER QUALITY STANDARDS								PROCESS INHIBITION			SLUDGE DISPOSAL	MAHL	CRITERIA
AHL	lb/day	EPA+MRE CMC lb/day	EPA+MRE CCC lb/day	EPA + Sludge CMC lb/day	EPA + Sludge CCC lb/day	ADEQ+ MRE CMC lb/day	ADEQ+ MRE CCC lb/day	ADEQ+Sludge CMC lb/day	ADEQ+Sludge CCC lb/day	ACTIV. SLDG lb/day	NITRIF lb/day	AER DIG lb/day	lb/day	lb/day	
Arsenic	NONE	--	23.98	41.90	23.98	--	--	--	--	8.77	239.05	1.46	0.6454175	0.645	SLUDGE DISPOSAL
Antimony	NONE	--	--	--	--	--	--	--	--	--	--	--	--	0.000	--
Beryllium	NONE	--	--	--	--	0.49	0.64	0.49	0.64	--	--	--	--	0.493	ADEQ+MRE
Cadmium	NONE	--	0.35	0.53	0.35	0.12	0.06	0.12	0.06	103.12	1381.21	12.29	0.4123435	0.064	ADEQ+MRE
Chromium	NONE	23.27	20.75	2.20	1.97	23.27	20.00	2.20	1.89	120.07	121.74	65.28	10.366611	1.895	ADEQ+Sludge
Copper	NONE	16.66	14.96	2.50	2.25	6.41	6.65	0.96	1.00	175.31	103.12	19.38	12.500913	0.962	ADEQ+Sludge
Lead	NONE	147.38	7.35	156.19	7.79	36.28	1.77	38.45	1.87	203.85	112.38	229.50	3.4838609	1.765	ADEQ+MRE
Mercury	NONE	33.12	23.64	0.21	0.15	47.32	0.31	0.30	0.00	9.74	--	--	0.1797395	0.002	ADEQ+Sludge
Nickel	NONE	695.01	99.77	111.45	16.00	713.79	102.65	114.46	16.46	101.92	31.04	14.00	10.119787	10.120	SLUDGE DISPOSAL
Silver	NONE	3.52	--	33.52	--	0.41	--	3.94	--	--	--	7.14	0.9445134	0.414	ADEQ+MRE
Zinc	NONE	45.39	58.89	32.06	41.60	14.75	17.34	10.42	12.25	58.44	95.62	227.17	27.358319	10.420	ADEQ+Sludge
Cyanide	NONE	--	0.83	2.71	0.83	2.71	0.83	2.71	0.83	12.01	96.14	2.39	--	0.831	EPA+MRE
Selenium	NONE	--	11.35	35.74	11.35	2.46	0.80	2.46	0.80	--	--	--	--	0.799	ADEQ+MRE
Molybdenum	NONE	--	--	--	--	--	--	--	--	--	--	--	--	0.000	--

Hot Springs *Maximum Allowable Headworks Loading*

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 Exceeded MAHC	Max Effluent vs WQS(mg/l)
Cadmium Total	67	0.0036	1.068	85	0.866	1.00	96.66	0.866	0.00896	0.28	0.65	0.366	No	No
Copper Total	81	0.0249	12.673	4300	36.244	1.00	96.66	12.673	0.13111	5.73	9.50	3.772	No	No
Lead Total	61	0.0045	1.120	840	9.402	1.00	96.66	1.120	0.01159	4.63	0.84	0.000	No	No
Mercury Total	60	0.00002	0.006	57	0.649	0.10	9.67	0.006	0.00006	0.0283	0.0042	0.000	No	No
Nickel Total	42	0.3716	61.936	420	6.827	1.00	96.66	6.827	0.07063	1.98	5.12	3.137	No	No
Selenium Total	50	0.0096	1.858	100	1.365	0.20	19.33	1.365	0.01413	0.47	1.02	0.552	No	No
Silver Total	75	0.0016	0.600	0	0.000	0.25	24.165	0.600	0.00620	0.47	0.45	0.000	No	No
Zinc Total	65	0.2410	66.568	7500	78.778	0.800	77.33	66.568	0.68868	16.53	49.93	33.400	No	No
Chromium Total	82	0.5549	297.994	3000	24.978	1.00	96.661	24.978	0.25841	0.01	18.73	18.725	No	No
Cyanide Total	69	0.0100	3.117	0	0.000	0.10	9.666	3.117	0.03225	3.87	2.34	0.000	No	No
Arsenic	45	0.5767	101.357	75	1.138	0.10	9.666	1.138	0.01177	0.28	0.85	0.570	No	No
Molybdenum	50	0.0000	0.000	75	1.024	0.20	19.332	1.024	0.01059	94437311.76	0.77	0.000	No	No
Beryllium	50	0.010190	1.970	0	0.000	0.10	9.6661	1.970	0.02038	94437311.76	1.48	0.000	No	No

Dry tons/day of sludge**** 3.41 Saftey Factor 0.25

* lbs/day = mg/l * 8.34 * average flow / (1-%Rem)

** Page 3-44 of EPA 833B87202 Be est @ 0.10 mg/l and Zinc Level from 04-19-2005 Inf analysis

\+ lbs/day = (dry tons/day * 0.002 * critria(mg/kg))/ % Rem; Dry Tons/Day taken from Audit report dated 9-24-08, page 3 of checklist

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

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

MAIL = Maximum allowable industrial loading = Allocation for % SF - Domestic

*** Page 3-56 EPA 833B87202, Be & Mo est @ 50

****Dry tons/day of sludge from page 3 in checklist of last audit report dated 9-24-08 at (1246 dt/year)/365 days/yr = 3.41 dt/day

CALCULATIONS OF ARKANSAS WATER QUALITY-BASED EFFLUENT LIMITATIONS

For an Arkansas Lake

(Reserved)

STEP 1: INPUT TWO LETTER CODE FOR ECOREGION (Use Code at Right) — N/A

Basin Name — Lake Catherine

FACILITY

Permittee	Hot Springs
NPDES Permit No.	AR0033880
Outfall No. 002 **(Discharge to the Arkansas River)**	001
Plant Ave Flow (MGD) from HTSP 2008 Annual Report	11.59
SIUs Ave Flow (MGD) from HTSP 08 report at 2.3% of Ave	0.27
Domestic Flow (MGD)	11.32
Plant Design Flow (MGD)	12.00
Plant Design Flow (cfs)	18.54

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:	Lake Catherine
Waterbody Segment Code No.	2F
Is this a lake or reservoir? (enter '1' if yes, ' 0 ' = no; make entry as a number)	1
Is seasonal critical flow applicable (1=yes, 0=no); see Reg 2 page 1-3 for details.	0
Is Jet Stream model applicable (1=yes,0=no); see CPP attmt V section IV.	0
(Reserved)	(Reserved)
(Reserved) (Reserved)	(Reserved)
(Reserved)	(Reserved)
(Reserved)	(Reserved)
(Reserved)	(Reserved)

TSS (mg/l)			2.00
Hardness (mg/l)			28.00
Enter 7Q10 (cfs)		(Reserved	20.00
Long Term Ave / Harmonic Mean Flow (cfs)		(Reserved	3384.00
Using Diffusers (Yes/No)			No
pH (Avg)			6.89
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 (Not Applicable to these calculations)			N/A
Ave Monthly Limit LTA Multiplier (Ref: page 103 TSD for WQ-Based Toxics Control)			1.55
Max Daily Limit LTA Multiplier (Ref: " " " ")			3.11

Codes & TSS for Ecoregions and Large Rivers

Ouachita Mts. Eco (OM) =	2.0 mg/l	Arkansas (Ft. Smith to Dardanelle Dam	12.0 mg/l
Ozark Highlands Eco (OH) =	2.5 mg/l	Arkansas (Dardanelle Dam to Terry L&I	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

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)

For industrial and federal facility, use the highest monthly average flow for the past 24 months. For POTWs, use the design flow.

#VALUE! => No violation or Not Applicable

WQ Limits for the Hot Springs

	Aquatic Life AML, ug/l
Cadmium Total	3.65
Chromium (hex)	18.82
Copper Total	24.91
Lead Total	4.52
Mercury Total	0.02
Nickel Total	371.64
Selenium Total	9.61
Silver Total	1.55
Zinc Total	241.04
Chromium (Tri)	554.92
Cyanide Total	10.00
Beryllium Total	10.19
Arsenic	576.72

Hot Springs REMOVAL EFFICIENCIES

Influent

Date	Cadmium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	Chromium	Cyanide	Arsenic	Molydenur	Beryllium
01-31-06		0.0280						0.0570					
05-16-06		0.0300						0.0940					
08-08-06		0.0530						0.1000					
10-31-06		0.0390						0.0900					
02-27-07		0.0280						0.0560					
05-08-07		0.0450						0.1200					
08-29-07		0.0640						0.1500					
11-13-07		0.0460						0.1100					
Detection Level (DL)	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!	0.04163	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.09713	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Maximum	0.0000	0.0640	0.0000	0.0000	0.0000	0.0000	0.0000	0.1500	0.0000	0.0000	0.0000	0.0000	0.0000
All Concs > DL (Yes/No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Effluent

Date	Cadmium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	Chromium	Cyanide	Arsenic	Molydenur	Beryllium
01-31-06		0.0060						0.0230					
05-16-06		0.0060						0.0220					
08-08-06		0.0068						0.0390					
10-31-06		0.0064						0.0370					
02-27-07		0.0060						0.0200					
05-08-07		0.0061						0.0460					
08-29-07		0.0110						0.0360					
11-13-07		0.0140						0.0470					
Detection Level	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!	0.00779	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.03375	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Maximum	0.0000	0.0140	0.0000	0.0000	0.0000	0.0000	0.0000	0.0470	0.0000	0.0000	0.0000	0.0000	0.0000
All Concs > DL (Yes/No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	#REF!	Yes	Yes	Yes	Yes	Yes

% Rem

	Cadmium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	Chromium	Cyanide	Arsenic	Molydenur	Beryllium
Average	#DIV/0!	81	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	65	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
EPA % REM	67	86	61	60	42	50	75	79	82	69	45	50	50

Domestic Calculations for Hot Springs

Pollutants	EPA, P3-59* mg/l	Avg Reported mg/l	Loading lbs/day
Cadmium Total	0.0030	0.00000	0.28
Copper Total	0.0607	0.00000	5.73
Lead Total	0.0490	0.00000	4.63
Mercury Total	0.0003	0.00000	0.0283
Nickel Total	0.0210	0.00000	1.98
Selenium Total	0.0050	0.00000	0.47
Silver Total	0.0050	0.00000	0.47
Zinc Total	0.1750	0.00000	16.53
Chromium Total	0.0500	0.00000	0.01
Cyanide Total	0.0410	0.00000	3.87
Arsenic	0.0030	0.00000	0.28
Molybdenum	999999.0000	0.00000	94437311.76
Beryllium	999999.00	0.00000	94437311.76

Date	Cadmium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	Chromium	Cyanide	Arsenic	Molydenum	Beryllium
Detection Level (DL)	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!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#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 > DL (Yes/No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*EPA Page 3-59 of 833-B87-202 except Selenium is Detection Level at 0.005 mg/l

CALCULATIONS OF ARKANSAS WATER QUALITY-BASED EFFLUENT LIMITATIONS

For an Arkansas Lake

(Reserved)

STEP 1: INPUT TWO LETTER CODE FOR ECOREGION (Use Code at Right) — N/A

Basin Name — Lake Catherine

Codes & TSS for Ecoregions and Large Rivers

		Ouachita Mts. Eco (OM) = 2.0 mg/l	Arkansas (Ft. Smith to Dardanelle Dam 12.0 mg/l
		Ozark Highlands Eco (OH) = 2.5 mg/l	Arkansas (Dardanelle Dam to Terry L&I 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

FACILITY

Permittee	Hot Springs		
NPDES Permit No.	AR0033880		
Outfall No. 002 **(Discharge to the Arkansas River)**	001		
Plant Ave Flow (MGD) from HTSP 2008 Annual Report	11.59		
SIUs Ave Flow (MGD) from HTSP 08 report at 2.3% of Ave	0.27		
Domestic Flow (MGD)	11.32		
Plant Design Flow (MGD)	12.00	Gulf Coastal Eco (GC) = 5.5 mg/l	White (Above Beaver Lake) 2.5 mg/l
Plant Design Flow (cfs)	18.54	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:	Lake Catherine	
Waterbody Segment Code No.	2F	
Is this a lake or reservoir? (enter '1' if yes, ' 0 ' = no; make entry as a number)	1	
Is seasonal critical flow applicable (1=yes, 0=no); see Reg 2 page 1-3 for details.	0	
Is Jet Stream model applicable (1=yes,0=no); see CPP attmt V section IV.	?	
(Reserved)	?	
(Reserved) (Reserved)	?	
(Reserved) (Reserved)	(Reserved)	
(Reserved)	(Reserved)	
(Reserved)	(Reserved)	

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)

For industrial and federal facility, use the highest monthly average flow for the past 24 months. For POTWs, use the design flow.

#VALUE! => No violation or Not Applicable

TSS (mg/l)	2.00		
Hardness (mg/l)	28.00		
Enter 7Q10 (cfs) (Reserved)	20.00	(Reserved	
Long Term Ave / Harmonic Mean Flow (cfs)	3384.00	(Reserved	(Reserved)
Using Diffusers (Yes/No)	No		
pH (Avg)	6.89		
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 (Not Applicable to these calculations)	N/A		
Ave Monthly Limit LTA Multiplier (Ref: page 103 TSD for WQ-Based Toxics Control)	1.55		
Max Daily Limit LTA Multiplier (Ref: " " " ")	3.11		

MONITORING RESULTS FOR THE ANNUAL PRETREATMENT REPORT
REPORTING YEAR: _____, 20__ TO _____, 20____
TREATMENT PLANT: City of _____ NPDES PERMIT #AR00_____
AVERAGE POTW FLOW: ____MGD % IU FLOW: ____%

METALS, CYANIDE and PHENOLS	MAHC (Total) (µg/l) (2)	INFLUENT DATES SAMPLED (µg/l) Once/quarter				WQ level/ limit (µg/l) (2)	EFFLUENT DATES SAMPLED (µg/l) Once/quarter				LABORATORY ANALYSIS		
		Date	Date	Date	Date		Date	Date	Date	Date	EPA MQL (µg/l) (1)	EPA Method Used (1)	Detection Level Achieved (µg/l)
Antimony	N/A					N/A					60		
Cadmium											0.5		
Copper											0.5		
Lead											0.5		
Mercury											.005		
Nickel											0.5		
Selenium											5		
Silver											0.5		
Zinc											20		
Chromium											10		
Cyanide											10		
Arsenic											0.5		
Molybdenum						N/A					--		
Phenols	N/A					N/A					5		
Beryllium											0.5		
Thallium	N/A					N/A					0.5		
Flow, MGD	N/A					N/A							
(3)													

(1) It is advised that the influent and effluent samples are collected considering flow detention time through each plant. **Analytical MQLs must be met for the effluent (and SHOULD be met for the influent) so the data can also be used for Local Limits assessment and NPDES application purposes.**

(2) This value was calculated during the development of TBLL based on State WQ criteria, EPA guidance and either ADEQ Pretreatment staff Excel spreadsheets or the Permittee's consultant with concurrence from Pretreatment staff.

(3) Record the name of any pollutant [40 CFR 122, Appendix D, Table II and/or Table V] detected and the concentration at which they were detected.

MAHL - Maximum Allowable Headworks Level / MAHC – Maximum Allowable Headworks Concentration

WQ - "Water Quality Levels not to exceed" OR actual permit limit.