City Of Bentonville

Assessment of need for Technically Based Local Limits

This assessment of technically based local limits is meant to compliment and supplement Section 3.2 (Technically Based Local Limits) of the City's Pretreatment Ordinance No. 2019-185, for development of local limits if necessary or demonstrate they are not necessary per 40 CFR 403.8(f)(4). Maximum Allowable Headworks Loadings (MAHLs), and thus Maximum Allowable Industrial Loadings (MAILs), will continually change from day to day depending on flow and wastewater characteristics. This document is meant to establish average MAHLs/MAILs over an extended period of time with enough of a safety factor to take into account those daily fluctuations, therefore avoiding the necessity to revise and adopt the City's Pretreatment Ordinance on a frequent basis.

The General Pretreatment Regulations in 40 CFR Part 403, as pursuant to 40 CFR 403.5 (a) and (b) and required by NPDES permit, requires Publicly Owned Treatment Works (POTW) having an approved pretreatment program to assess the need in adopting Technically Based Local Limits (TBLLs) of pollutants for protection of the environment, wastewater treatment facilities and biosolids from pass-through or interference from common pollutants of concern. TBLLs are defined in the U.S. Environmental Protection Agency Introduction to the National Pretreatment Program publications as "specific discharge limits developed and enforced by POTWs upon industrial or commercial facilities (IUs) to implement the general and specific discharge prohibitions listed in 40 CFR 403.5(a)(l) and (b)", and are to be assessed occasionally, as stipulated by individual NPDES permits, typically every five (5) years.

The purpose of evaluation is to determine and document whether or not the City of Bentonville needs to adopt Technically Based Local Limits (TBLLs) for Pollutants of Concern (POC) to protect its Water Resource Recovery Facility (WRRF) from pass through or interference, and to assure that biosolids produced by the WRRF can be disposed of by land application in accordance with 40 CFR 503. The examination of the need for TBLLs is pursuant to 40 CFR 403.5 (a) and (b), and as mandated by Part II (8)(B) of the City of Bentonville's NPDES permit AR0022403.

Common POC generally studied for TBLL development include Arsenic, Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver and Zinc as per EPA Region 6 guidance. Detailed sampling and analysis of Influent and Effluent for calculation of TBLLs for the common pollutants of concern is conducted at least four (4) times per year. Tables I and 2 summarize the Influent and Effluent results taken from 2016 to 2020. Sampling and analysis of biosolids is conducted quarterly, and results of biosolids analysis performed from 2016 to 2020 can be seen in Table 3, which shows Bentonville's biosolids results, individual and average, are well below maximum limits required by EPA. Background (domestic) information is conducted at least two (2) times per year, and Table 4 contains results of sampling and analysis collected on background, or domestic only sources (Receiving no industrial flow), from 2016 to 2020. Data from each sampling entity was averaged and can be seen in Table 5 along with removal percentages for the Bentonville WRRF.

Water Quality Standards, Sludge (Biosolids) Loadings and Plant Inhibition loadings are established to ascertain those values in calculating the Maximum Allowable Headworks Loadings (MAHLs) and the Maximum Allowable Industrial Loadings (MAILs), which are established to protect the WRRF from pass through causing pollution of the receiving stream.

Table 1. Influent TBLL Data: 2016-2020 (All results are Total)

Date	Cd ug/l	Cu ug/l	Pb ug/l	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Cr ug/l	CN ug/l	As ug/l	Mo ug/l	Be ug/l
1/11-12/16	< 0.5	20	1.1	0.0740	5.4	< 5	1.0	120	< 10	< 0.01	3	< 8	< 0.5
4/11-12/16	< 0.5	29	1.7	0.1100	10	< 5	1.6	210	< 10	< 0.01	5.6	< 8	< 0.5
7/11-12/16	< 0.5	1.8	< 0.5	0.0400	3.7	< 5	0.50	29	< 10	< 0.01	0.52	< 8	< 0.5
10/4-5/16	< 0.5	33	3.2	0.0500	7.3	< 5	0.90	250	< 10	< 0.01	4.9	< 8	< 0.5
1/9-10/17	< 0.5	51	2.4	0.0190	8.3	< 5	4.80	270	< 10	< 0.01	7.7	< 8	< 0.5
4/3-5/17	< 0.5	27	1	0.0930	4.3	< 5	0.61	140	< 10	< 0.01	5.6	< 8	< 0.5
7/10-11/17	< 0.5	31	1.5	0.0610	5.6	< 5	< 0.50	110	< 10	< 0.01	6.2	< 8	< 0.5
10/9-10/17	< 0.5	39	1.2	0.0069	4.4	< 5	0.62	140	< 10	< 0.01	3.2	< 8	< 0.5
1/29-30/18	< 0.5	30	0.68	0.0100	6.7	< 5	0.83	99	< 10	< 0.01	1.9	< 10	< 0.5
4/9-10/18	< 0.5	16	1.2	0.1100	6.2	< 5	< 0.50	240	< 10	< 0.01	0.82	< 10	< 0.5
7/9-10/18	< 0.5	16	1.2	0.0810	3.9	< 5	< 0.50	140	< 10	< 0.01	1.6	< 10	< 0.5
10/8-9/18	< 0.5	28	1.5	0.0470	6.4	< 5	< 0.50	180	< 10	< 0.01	2.6	< 10	< 0.5
1/14-15/19	< 0.5	14	0.56	0.0087	3.2	< 5	0.62	69	< 10	< 0.01	1.1	< 10	< 0.5
4/8-9/19	< 0.5	29	1.1	0.0200	5.5	< 5	0.91	140	< 10	< 0.01	1.6	< 10	< 0.5
9/9-10/19	< 0.5	45	1.6	0.0450	8.2	< 5	0.91	250	22	< 0.01	90	< 10	< 0.5
10/28-29/19	< 0.5	15	< 0.5	0.0300	4.2	< 5	< 0.50	140	< 10	< 0.01	20	< 10	< 0.5
1/20-21/20	< 0.5	13	< 0.5	0.0240	3.1	< 5	< 0.50	71	< 10	< 0.01	14	< 10	< 0.5
4/6-7/20	< 0.5	23	0.96	< 0.0005	4.3	< 5	< 0.50	170	< 10	< 0.01	40	< 10	< 0.5
7/14-15/20	< 0.5	24	0.86	< 0.0005	4.3	< 5	< 0.50	140	< 10	< 0.01	23	< 10	< 0.5
10/5-6/20	< 0.5	42	1.2	0.0540	5.6	< 30	0.57	320	< 10	< 0.01	50	< 10	< 0.5

Table 2. Effluent TBLL Data: 2016-2020 (All results are Total)

Date	Cd ug/l	Cu ug/l	Pb ug/l	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Cr ug/l	CN ug/l	As ug/l	Mo ug/l	Be ug/l
1/13-14/16	< 0.5	2.3	< 0.5	0.0011	3.2	< 5	< 0.5	47	< 10	< 0.01	0.62	< 8	< 0.5
4/13-14/16	< 0.5	2.5	< 0.5	0.0007	4.7	< 5	< 0.5	37	< 10	< 0.01	0.67	< 8	< 0.5
7/13-14/16	< 0.5	2.5	< 0.5	0.0014	4.3	< 5	< 0.5	33	< 10	< 0.01	0.64	< 8	< 0.5
10/6-7/16	< 0.5	2.5	< 0.5	0.00051	5.1	< 5	< 0.5	57	< 10	< 0.01	0.92	< 8	< 0.5
1/11-12/17	< 0.5	3.1	< 0.5	0.0015	3.4	< 5	< 0.5	45	< 10	< 0.01	0.59	< 8	< 1.5
3/5-6/17	< 0.5	2.0	< 0.5	0.0013	2.8	< 5	< 0.5	30	< 10	< 0.01	0.63	< 8	< 2.5
7/11-12/17	< 0.5	2.4	< 0.5	0.004	3.6	< 5	< 0.5	31	< 10	< 0.01	0.91	< 8	< 3.5
10/10-11/17	< 0.5	4.7	< 0.5	0.0013	2.8	< 5	< 0.5	37	< 10	< 0.01	0.92	< 10	< 4.5
1/31-2/1/18	< 0.5	13	< 0.5	0.0060	3.5	< 5	< 0.5	47	< 10	< 0.01	0.58	< 10	< 0.5
4/11-12/18	< 0.5	2	< 0.5	0.0013	2.8	< 5	< 0.5	30	< 10	< 0.01	0.63	< 10	< 0.5
7/11-12/18	< 0.5	2.4	< 0.5	0.0040	3.6	< 5	< 0.5	31	< 10	< 0.01	0.91	< 10	< 0.5
10/10-11/18	< 0.5	4.7	< 0.5	0.0013	2.8	< 5	< 0.5	37	< 10	< 0.01	0.92	< 10	< 0.5
1/16-17/19	< 0.5	3.6	< 0.5	< 0.0005	2.0	< 5	< 0.5	50	< 10	< 0.01	< 0.5	< 10	< 0.5
4/10-11/19	< 0.5	6.2	< 0.5	< 0.0005	2.7	< 5	< 0.5	37	< 10	< 0.01	< 0.5	< 10	< 0.5
9/11-12/19	< 0.5	4.6	< 0.5	0.0011	2.7	< 5	< 0.5	44	< 10	< 0.01	3.0	< 10	< 0.5
10/30-31/19	< 0.5	2.8	< 0.5	< 0.0005	2.5	< 5	< 0.5	27	< 10	< 0.01	4.2	< 10	< 0.5
1/22-23/20	< 3	5.5	< 3	0.0037	2	< 30	< 3	37	< 10	< 0.01	7.9	< 50	< 0.5
4/8-9/20	< 0.5	4	< 0.5	< 0.0005	3	< 5	< 0.5	31	13	< 0.01	3.7	< 10	< 0.5
7/16-17/20	< 0.5	4.6	< 0.5	0.00061	2.8	< 5	< 0.5	< 100	< 10	< 0.01	1.4	< 10	< 0.5
10/7-8/20	< 0.5	6.9	< 0.5	0.0024	2.5	< 5	< 0.5	42	< 10	< 0.01	< 50	< 10	< 0.5

Table 3. BNV WRRF Biosolids Data: 2016-2020 (All results are Total)

Date	Cd	Cu	Pb	Hg	Ni	Se	Zn	Cr	As	Mo
1/7/2016	0.56	210	6.3	0.55	11	< 7	400	13	< 5	6.1
4/4/2016	0.65	160	6.4	0.45	14	< 7	360	13	< 5	5.4
7/6/2016	0.45	180	7.0	0.49	13	< 7	540	14	< 5	6.0
10/3/2016	< 0.4	170	7.5	0.82	8.3	< 7	350	15	< 5	5.3
1/9/2017	0.99	170	5.9	0.49	12	< 7	500	14	< 5	4.7
4/21/2017	1.02	170	6.9	*ND*	15.1	5.88	505	13.2	2.47	5.71
7/6/2017	< 0.4	170	14	0.79	18	7.6	620	16	< 5	4.0
10/5/2017	0.95	190	6.0	0.54	14	< 7	490	16	< 5	4.4
1/4/2018	< 0.4	190	< 4	0.48	15	< 7	430	11	< 5	4.0
4/23/2018	1.19	168	7.00	*ND*	19	5.95	398	12.4	3.80	5.36
7/9/2018	*ND*	177	*ND*	0.477	18.8	*ND*	508	29.1	*ND*	*ND*
10/4/2018	*ND*	213	*ND*	0.374	16.2	*ND*	633	23.5	*ND*	*ND*
1/28/2019	0.74	140	4.9	0.42	490	< 7	380	26	< 5	4.0
4/2/2019	0.90	130	< 4	0.44	14	< 7	350	15	16	2.6
7/2/2019	0.48	64	< 4	0.51	7.6	< 7	160	11	< 5	1.1
10/28/2019	1.1	170	5.0	0.87	16	< 7	640	39	< 5	2.9
1/13/2020	0.83	110	< 4	0.62	11	< 7	430	26	8.6	1.2
4/9/2020	0.82	120	< 4	0.47	15	< 7	490	34	6.2	1.4
7/15/2020	0.42	120	7.4	0.57	14	10	710	24	< 5	< 1
10/8/2020	< 0.4	120	< 4	0.67	11	< 7	600	22	< 5	3.4
AVG.	< 0.71	157	< 6.0	0.56	37.7	< 7.08	475	19.4	< 5.67	< 3.81
EPA Max Limits (mg/kg)	85	4300	840	57	420	100	7500	3000	75	75

ND - Non-Detect

Table 4. Background (Domestic Only) TBLL Data: 2016-2020 (All results are Total)

Date	Cd ug/l	Cu ug/l	Pb ug/l	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Cr ug/l	CN ug/l	As ug/l	Mo ug/l	Be ug/l
3/28-29/16	0.318	7.9	6.39	*ND*	7.00	*ND*	*ND*		2.000	*ND*	0.539	0.269	
4/25-26/16	*ND*	22.5	*ND*	*ND*	4.25	*ND*			*ND*	*ND*		*ND*	
9/6-7/16	*ND*	19.5	3.75	*ND*	4.25	*ND*	*ND*	141	*ND*	3.09	*ND*	*ND*	
11/28-29/16	*ND*	20.8	*ND*	*ND*	3.00	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	
5/23-24/18	*ND*	0.00971	*ND*	*ND*	*ND*	*ND*	*ND*	0.0666	*ND*	*ND*	*ND*	*ND*	*ND*
7/30-31/18	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	0.208	*ND*	*ND*	*ND*	*ND*	*ND*
8/7-8/18	*ND*	0.0394	*ND*	*ND*	*ND*	*ND*	*ND*	0.464	*ND*	*ND*	*ND*	*ND*	*ND*
10/23-24/18	< 0.5	26	0.89	< 0.20	5.4	< 5	0.63	110	< 10	< 10	2.90	< 10	< 0.5
8/28-29/19	< 0.5	35	0.55		4.2	< 5	< 0.5	190	< 10	< 10	55	< 10	< 0.5
9/18-19/19	0.52	54	0.8		9.7	< 5	< 0.5	660	< 10	< 10	540	< 10	< 0.5
10/8-9/19	< 0.5	37	0.57		5.8	< 5	1.5	280	< 10	< 10	35	< 10	< 0.5
7/27-28/20	< 0.001	0.0271	< 0.005	< 0.00005	< 0.01	< 0.005	< 0.002	1.16	< 0.01	< 10	< 0.005	< 0.01	< 0.01
8/10-11/20	0.002	0.148	< 0.01	< 0.0001	< 0.02	0.0109	< 0.004	1.45	< 0.02	< 10	< 0.01	< 0.02	< 0.02

ND - Non-Detect

Table 5. Average Influent, Effluent, and Background TBLL Data: 2016-2020

Pollutant	Domestic		Influent		Effluent		Avg. WWRF
Cadmium, T	<	0.33	<	0.50	<	0.63	67*
Copper, T		18.58		26.34		4.12	84
Lead, T	<	1.62	<	1.22	<	0.63	81
Mercury, T	<	0.07	<	0.04	<	0.002	96
Nickel, T	<	4.36		5.53		3.14	43
Selenium, T	<	3.34	<	6.25	<	6.25	50*
Silver, T	<	0.52	<	0.89	<	0.63	79
Zinc, T		138.43		161.40	<	41.50	77
Chromium, T	<	6.00	<	10.60	<	10.15	59
Cyanide, T	<	9.01	<	0.01	<	0.01	69*
Arsenic, T	<	90.49		14.17	<	4.01	87
Molybdenum, T	<	5.76	<	9.20	<	11.30	50*
Beryllium, T	<	0.34	<	0.50	<	1.00	50*

*Average EPA Percent Removal used in place of actual percent WRRF removal.

Table 6. Pollutant Limits for Water Quality and Sludge for Determination of MAHLs and MAILs*

Pollutant	Water Quality lbs/day	Sludge lbs/day	Inhibition lbs/day	MAHL lbs/day	MAIL lbs/day
Cadmium, T	0.57	1.05	26.42	0.57	0.47
Copper, T	7.02	46.44	26.42	7.02	5.48
Lead, T	2.7	10.01	26.42	2.7	2.24
Mercury, T	0.01	0.56	2.64	0.01	0.008023
Nickel, T	19.85	7.87	26.42	7.87	6.55
Selenium, T	0.3	1.84	5.28	0.3	0.25
Silver, T	2.58		6.61	2.58	2.18
Zinc, T	43.21	102.76	7.93	7.93	3.1
Chromium, T	81.94	33.59	26.42	26.42	22.41
Cyanide, T	0.5		2.64	0.5	0.16
Arsenic, T	72	1.09	2.64	1.09	0.92
Molybdenum, T	52.85	1.15	5.28	1.15	0.97
Beryllium, T	0.32		2.64	0.32	0.26

*Boxes highlighted in yellow denote the driving MAHL/MAIL criteria for TBLL determination

Current values established using the past 5 years data can be found in Table 6. Water Quality Standards are determined by the Arkansas Division of Environmental Quality (ADEQ), while Sludge and Inhibition loadings use biosolids, industrial, influent, effluent and domestic only data collected by the WRRF and Pretreatment Staff. These values were determined in December 2020 by City Pretreatment staff following EPA TBLL guidance and ADEQ's Continuing Planning Process as well as ADPC&E's Regulation No. 2 Water Quality Criteria. MAHLs, and therefore MAILS, in determining the need for TBLLs, as well as calculations for and adoption of TBLLs, if necessary, are chosen based on the most stringent of the three loading values.

MAHLs for Nickel, Arsenic and Molybdenum are Sludge driven, while Zinc and Chromium MAHLs values are based on Plant Inhibition levels, which are denoted by the yellow highlighted boxes in Table 6. All other POC MAHLs are derived by Water Quality values established by ADEQ. Given the plant loadings and calculated MAHLs, there is no indicated need for TBLL development for any pollutant listed in Table 4. A comparison of calculated MAILs and average industrial loadings, for the years 2016 and 2020, can be seen in Table 7 indicating industrial loadings for the pollutants Cu, Zn, and Mo are at least 90% below MAILs. The maximum percentage in Table 7 was calculated using the highest loading value determined from each pollutant and dividing by the appropriate MAIL.

Table 7. Average Industrial Loadings and MAILS comparison

Industry	Cu lbs/day	Zn lbs/day	Mo lbs/day
Walmart TMG 2016	0.01	0.10	
Walmart TMG 2017	0.002	0.03	
Walmart TMG 2018	0.002	0.03	
Walmart TMG 2019	0.004	0.03	< 0.01
Walmart TMG 2020	0.01	0.03	
MAIL	5.48	3.10	0.97
MAX%	0.16	3.06	< 0.87

The City concurs with the calculations for its MAHLs and MAILs and will certify that this technical evaluation has demonstrated that the existing technically based local limits (TBLLs) are based on current state water quality standards and are adequate to prevent pass through of pollutants, inhibition of or interference with the treatment facility, worker health and safety problems, and sludge contamination.

TBLLs for the City of Bentonville WRRF will be reevaluated whenever changes in conditions require, but no less than every five (5) years.

CALCULATIONS OF ARKANSAS WATER QUALITY-BASED EFFLUENT LIMITATIONS
For an Arkansas River/Stream

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

Facility	
Permittee & Date	Bentonville
NPDES Permit No.	AR0022403
Outfall No.	1
Plant Avg Flow (MGD)	*3.17*
SIUs Avg Flow (MGD)	*0.02*
Domestic Flow (MGD)	*3.15*
Plant Design Flow (MGD)	4.00
Plant Design Flow (cfs)	6.18
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

Codes & TSS for Ecoregions and Large Rivers		
Ouachita Mts. Eco (OM)	2.00	mg/l
Ozark Highlands Eco (OH)	2.50	mg/l
Boston Mts. Eco (BM)	1.30	mg/l
Ark River Valley Eco (AV)	3.00	mg/l
Arkansas (Ft. Smith to Dardanelle Dam	12.0	mg/l
Arkansas (Dardanelle Dam to Terry L&	10.5	mg/l
Arkansas (Terry L&D to L&D No. 5)	8.3	mg/l
Arkansas (L&D No. 5 to Mouth)	9.0	mg/l
Gulf Coastal Eco (GC)	5.5	mg/l
Delta Ecoregion (DL)	8.0	mg/l
White (Above Beaver Lake)	2.5	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

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

Total Hardness for:		
Arkansas River	125	mg/l
Ouachita River	28	mg/l
White River	116	mg/l
Red River	211	mg/l
St. Francis River	103	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

Treatment Facility: City of Bentonville

Data Range: 2016 - 2020

Pollutant	% Rem***	Water Quality mg/l	Sludge mg/kg	Inhibition** mg/l	Water Quality* lbs/day	Sludge**** lbs/day	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 WQ(mg/l)
Cadmium	67.0	0.0071	85	1.00	**0.57**	1.05	26.42	0.57	0.02	0.01	0.48	0.47	No	No
Copper	84.4	0.0415	4300	1.00	**7.02**	46.44	26.42	7.02	0.27	0.49	5.97	5.48	No	No
Lead	81.5	0.0189	840	1.00	**2.70**	10.01	26.42	2.70	0.10	0.06	2.30	2.24	No	No
Mercury	96.2	0.00001	57	0.10	**0.01**	0.56	2.64	0.01	0.000358	0.000007	0.008030	0.008023	No	No
Nickel	43.2	0.4266	420	1.00	19.85	**7.87**	26.42	7.87	0.30	0.14	6.69	6.55	No	No
Selenium	50.0	0.0056	100	0.20	**0.30**	1.84	5.28	0.30	0.01	0.0003	0.25	0.25	No	No
Silver	79.4	0.0201		0.25	**2.58**		6.61	2.58	0.10	0.01	2.19	2.18	No	No
Zinc	77.1	0.3749	7500	0.30	43.21	102.76	**7.93**	7.93	0.30	3.63	6.74	3.10	No	No
Chromium	59.1	1.2686	3000	1.00	81.94	33.59	**26.42**	26.42	1.00	0.05	22.46	22.41	No	No
Cyanide	69.0	0.0059		0.10	**0.50**		2.64	0.50	0.02	0.26	0.43	0.16	No	No
Arsenic	87.3	0.3461	75	0.10	72.00	**1.09**	2.64	1.09	0.04	0.01	0.93	0.92	Yes	No
Molybdenum	50.0	1.0000	75	0.20	52.85	**1.15**	5.28	1.15	0.04	0.01	0.98	0.97	No	No
Beryllium	50.0	0.005979		0.10	**0.32**		2.64	0.32	0.01	0.01	0.27	0.26	No	No

Driving Criteria	
Dry tons/day of sludge	*4.59*
Safety Factor	*0.15*

* 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 of the 7/04 EPA TBLL 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 TBLL guidance manual for Cd, Se, Mo, & 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

Treatment Facility: City of Bentonville
Data Range: 2016 - 2020

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

INFLUENT SAMPLING

Date	Cadmium mg/l	Copper mg/l	Lead mg/l	Mercury mg/l	Nickel mg/l	Selenium mg/l	Silver mg/l	Zinc mg/l	Chromium mg/l	Cyanide mg/l	Arsenic mg/l	Molybdenum mg/l	Beryllium mg/l
1/11-12/16		0.0200	0.0011	0.00007	0.0054		0.001	0.1200			0.003		
4/11-12/16		0.0290	0.0017	0.00011	0.0100		0.0016	0.2100			0.0056		
7/11-12/16		0.0018		0.00004	0.0037			0.0290			0.00052		
10/4-5/16		0.0330	0.00320	0.00005	0.0073		0.0009	0.2500			0.0049		
1/9-10/17		0.0510	0.00240	0.00002	0.0083		0.0048	0.2700			0.0077		
4/3-5/17		0.0270	0.00100	0.00009	0.0043		0.00061	0.1400			0.0056		
7/10-11/17		0.0310	0.00150	0.00006	0.0056			0.1100			0.0062		
10/9-10/17		0.0390	0.00120	0.00001	0.0044		0.00062	0.1400			0.0032		
1/29-30/18		0.0300	0.00068	0.00001	0.0067		0.00083	0.0990			0.0019		
4/9-10/18		0.0160	0.00120	0.00011	0.0062			0.2400			0.00082		
7/9-10/18		0.0160	0.00120	0.00008	0.0039			0.1400			0.0016		
10/8-9/18		0.0280	0.00150	0.00005	0.0064			0.1800			0.0026		
1/14-15/19		0.0140	0.00056	0.00001	0.0032		0.00062	0.0690			0.0011		
4/8-9/19		0.0290	0.00110	0.00002	0.0055		0.00091	0.1400			0.0016		
9/9-10/19		0.0450	0.00160	0.00005	0.0082		0.00091	0.2500	0.022		0.0900		
10/28-29/19		0.0150		0.00003	0.0042			0.1400			0.0200		
1/20-21/20		0.0130		0.00002	0.0031			0.0710			0.0140		
4/6-7/20		0.0230	0.00096		0.0043			0.1700			0.0400		
7/14-15/20		0.0240	0.00086		0.0043			0.1400			0.0230		
10/5-6/20		0.0420	0.00120	0.00005	0.0056		0.00057	0.3200					
Quantitation Level (QL):	*0.0005*	*0.0005*	*0.0005*	*0.000002*	*0.0005*	*0.005*	*0.0005*	*0.02*	*0.01*	*0.01*	*0.0005*	*0.01*	*0.0005*
Average		0.0263	0.0014	0.000049	0.0055		0.0012	0.1614	0.0220		0.0123		
Maximum		0.0510	0.0032	0.0001	0.0100		0.0048	0.3200	0.0220		0.0900		
All Concs > QL (Yes/No)	No	Yes	No	No	Yes	No	No	Yes	No	No	No	No	No

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

EFFLUENT SAMPLING

Date	Cadmium mg/l	Copper mg/l	Lead mg/l	Mercury mg/l	Nickel mg/l	Selenium mg/l	Silver mg/l	Zinc mg/l	Chromium mg/l	Cyanide mg/l	Arsenic mg/l	Molybdenum mg/l	Beryllium mg/l
1/13-14/16		0.00230	**0.00025**	0.0000011	**0.00320**			0.0470			0.00062		
4/13-14/16		0.00250	**0.00025**	0.0000007	0.00470			0.0370			0.00067		
7/13-14/16		0.00250		0.0000014	0.00430			0.0330			**0.00064**		
10/6-7/16		0.00250	**0.00025**	0.0000005	0.00510			0.0570			**0.00092**		
1/11-12/17		0.00310	**0.00025**	0.0000015	0.00340			0.0450			**0.00059**		
3/5-6/17		0.00200	**0.00025**	0.0000013	0.00280			0.0300			0.00063		
7/11-12/17		0.00240	**0.00025**	0.0000040	0.00360			0.0310			0.00091		
10/10-11/17		0.00470	**0.00025**	0.0000013	0.00280			0.0370			0.00092		
1/31-2/1/18		0.01300	**0.00025**	0.0000060	0.00350		**0.00025**	**0.0470**			0.00058		
4/11-12/18		0.00200	**0.00025**	**0.0000013**	0.00280			0.0300			0.00063		
7/11-12/18		0.00240	**0.00025**	0.0000040	**0.00360**			0.0310			0.00091		
10/10-11/18		0.00470	**0.00025**	0.0000013	0.00280			0.0370			0.00092		
1/16-17/19		0.00360	**0.00025**	**0.0000010**	0.00200		**0.00025**	0.0500			**0.00025**		
4/10-11/19		0.00620	**0.00025**	**0.0000010**	0.00270		**0.00025**	0.0370			**0.00025**		
9/11-12/19		0.00460	**0.00025**	0.0000011	0.00270		**0.00025**	**0.0440**	**0.005**		0.00300		
10/30-31/19		0.00280		**0.0000010**	0.00250			**0.0270**			0.00420		
1/22-23/20		0.00550		**0.0000037**	0.00200			0.0370			0.00790		
4/8-9/20		0.00400	**0.00025**		0.00300			0.0310	0.013		0.00370		
7/16-17/20		0.00460	**0.00025**	**0.0000006**	0.00280			**0.0100**			0.00140		
10/7-8/20		0.00690	**0.00025**	0.0000024	0.00250		**0.00025**	0.0420					
Quantitation Level (QL):	*0.0005*	*0.0005*	*0.0005*	*0.000002*	*0.0005*	*0.005*	*0.0005*	*0.02*	*0.01*	*0.01*	*0.0005*	*0.01*	*0.0005*
Average		0.0041	0.0003	**0.000002**	0.0031		0.00025	0.0370	0.0090		0.0016		
Maximum		0.0130	0.0003	0.000006	**0.0051**		0.00025	0.0570	**0.0130**		0.0079		
All Concs > QL (Yes/No)	No	Yes	No	No	**Yes**	No	No	No	No	No	No	No	No

Avg % Removal Rate	**#DIV/0!**	**84.4**	**81.5**	**96.2**	**43.2**	**#DIV/0!**	**79.4**	**77.1**	**59.1**	**#DIV/0!**	**87.3**	**#DIV/0!**	**#DIV/0!**
EPA % REM	**67.000**	**86.000**	**61.000**	**90.000**	**42.000**	**50.000**	**75.000**	**79.000**	**82.000**	**69.000**	**45.000**	**50.000**	**50.000**
*** Use EPA default #s**	*					*				*		*	*
Geometric Mean*		**0.0044**	**0.0003**	**0.0000**	**0.0027**		**0.0003**	**0.0331**	**0.0081**		**0.0012**		

***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.**

Treatment Facility: City of Bentonville
Data Range: 2016 - 2020

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

DOMESTIC SAMPLING

Date	Cadmium mg/l	Copper mg/l	Lead mg/l	Mercury mg/l	Nickel mg/l	Selenium mg/l	Silver mg/l	Zinc mg/l	Chromium mg/l	Cyanide mg/l	Arsenic mg/l	Molybdenum mg/l	Beryllium mg/l
3/28-29/16	0.0003	0.0079	0.0064		0.0070				0.0020		0.0005	0.0003	
4/25-26/16		0.0225			0.0043								
9/6-7/16		0.0195	0.0038		0.0043			0.1410		0.0031			
11/28-29/16		0.0208			0.0030								
5/23-24/18		0.0000						0.0001					
7/30-31/18								0.0002					
8/7-8/18		0.0000						0.0005					
10/23-24/18		0.0260	0.0009		0.0054		0.0006	0.1100			0.0029		
8/28-29/19		0.0350	0.0006		0.0042			0.1900			0.0550		
9/18-19/19	0.0005	0.0540	0.0008		0.0097			0.6600			0.5400		
10/8-9/19		0.0370	0.0006		0.0058		0.0015	0.2800			0.0350		
7/27-28/20		0.0000						0.0012					
8/10-11/20	0.000002	0.0001				0.00001		0.0015					
Quantitation Level (QL):	0.0005	0.0005	0.0005	0.000001	0.0005	0.0050	0.0005	0.0200	0.0100	0.0100	0.0005	0.0100	0.0005
Average	0.000280	0.01858	0.00216		0.0055	0.000011	0.001065	0.14	0.002	0.00309	0.1267	0.0003	
Maximum	0.00052	0.054	0.00089		0.0097	0.000011	0.001500	0.66	0.002	0.00309	0.5400	0.0003	
All Concs > QL (Yes/No)	No	No	No	No	No	No	No	Yes	No	No	No	No	No
Half Value of QL:	0.00025	0.00025	0.00025	0.00000025	0.00025	0.0025	0.00025	0.01	0.005	0.005	0.00025	0.005	0.00025

Pollutant	EPA pg V-1 mg/l	Avg Reported mg/l	Loadings lbs/day	Note
Cadmium	*0.0008*	0.00028000	0.01	2016 - 2020 City Data
Copper	*0.0050*	0.01857702	0.49	2016 - 2020 City Data
Lead	*0.0010*	0.00215833	0.06	2016 - 2020 City Data
Mercury	*0.0001*	0.00000025	0.00	used 1/2 the MQL of 0.000001 mg/l
Nickel	*0.0010*	0.00545000	0.14	2016 - 2020 City Data
Selenium	~	0.00001090	0.00	2016 - 2020 City Data
Silver	*0.0007*	0.00025000	0.01	used 1/2 the MQL of 0.000001 mg/l
Zinc	*0.0100*	0.13843486	3.63	2016 - 2020 City Data
Chromium	*0.001**	0.00200000	0.05	2016 - 2020 City Data
Cyanide	*0.0100*	0.01000000	0.26	used min. EPA guidance value
Arsenic	*0.0004*	0.00025000	0.01	used 1/2 the MQL of 0.0005 mg/l
Molybdenum	~	0.00026900	0.01	2016 - 2020 City Data
Beryllium	~	0.00025000	0.01	used 1/2 the MQL of 0.0005 mg/l

** T Chromium*