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MARCH 24, 2020

MR DAVID DENARD
DIRECTOR
JEFFERSON COUNTY COMMISSION - ENVIRONMENTAL SERVICE DEPARTMENT
716 RICHARD ARRINGTON JR BLVD N
BIRMINGHAM AL 35203

Re: REVISED DRAFT LOCAL LIMITS
JEFFERSON COUNTY COMMISSION
VALLEY CREEK WWTP
NPDES PERMIT NO. AL0023655

Dear Mr. Denard:

This letter is to provide notification that ADEM has revised the draft local limits documents for the Valley Creek WWTP. The attached draft is identical to the proposed local limits mailed to you February 3, 2020 with the exception that the headworks allocation for Mercury is increased. Cyanide remains the only over-allocated pollutant. A copy of this draft along with supporting information is attached for your records.

It is the Department's understanding that you are in agreement with the draft local limits and do not plan to conduct additional testing for the purpose of generating site-specific data for this POTW. In accordance with this understanding, ADEM plans to proceed with the development of final local limits based on the attached revised draft. After consideration of any comments received during the public notice period, a final determination on the local limits will be made. All permits issued to industrial users must comply with adopted local limits.

Should you have any questions about this process, please contact Alex Chavers by email at achavers@adem.alabama.gov or by phone at (334) 271-7851.

Sincerely,

Scott Ramsey, Chief
Industrial Section
Industrial/Municipal Branch
Water Division

Attachments: Draft Local Limits
Rationale for Local Limits
Local Limits/Pass Through Calculations

CC: Margaret Tanner/Jefferson County Commission
Dustin Stokes
Alex Chavers

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

LOCAL LIMITS

PUBLICLY OWNED TREATMENT WORKS: **VALLEY CREEK WWTP**

LOCATION: **BESSEMER, ALABAMA**
JEFFERSON COUNTY

PERMIT NUMBER: **AL0023655**

GENERAL PRETREATMENT PROHIBITIONS

No discharge to the Publicly Owned Treatment Works (POTW) shall exceed or otherwise violate the General Pretreatment Standards described in ADEM Administrative Code 335-6-5. Specifically the POTW shall ensure that discharges to their system comply with the following prohibitions to ensure protection of the treatment and collections systems and to ensure worker safety:

Pollutants which create a fire or explosion hazard including but not limited to waste streams with a closed cup flashpoint of less than 140 degrees Fahrenheit;

Pollutants which will cause corrosive structural damage to the treatment works but in no case discharges with a pH lower than 5.0 S.U. unless the treatment works are specifically designed to accommodate such discharges;

Solid or viscous pollutants in amounts which will cause obstruction to the flow in sewers or other interference with the operation of the treatment works;

Any pollutant, including oxygen demanding pollutants released in a discharge of such volume or strength as to cause interference in the treatment works;

Heat in amounts which will inhibit biological activity in the treatment plant resulting in interference, but in no case in such quantities that the temperature of the effluent at the treatment plant exceeds 104 degrees Fahrenheit unless the treatment plant is designed to accommodate such heat;

Pollutants which will result in the presence of toxic gases, vapors or fumes within the treatment works in a quantity that may cause acute worker health and safety problems;

Any trucked or hauled pollutants except at discharge points designated by the treatment works; and

Petroleum oil, nonbiodegradable cutting oil, or products of mineral origin in such amounts that will cause interference or pass through.

GENERAL PRETREATMENT STANDARDS AND LOCAL LIMITS

POLLUTANTS:
The total average daily loading of the substances from all sources shall not exceed the indicated mass listed below.

Parameter	Allowable Average Daily Pollutant Load at Headworks of POTW (lbs/day)
Arsenic, Total Recoverable	0.8165
Cadmium, Total Recoverable	3.620
Chromium, Total Recoverable	2421
Copper, Total Recoverable	188.0
Cyanide, Free	12.69
Lead, Total Recoverable	44.79
Mercury, Total Recoverable	0.0751
Nickel, Total Recoverable	37.60
Silver, Total Recoverable	26.09
Zinc, Total Recoverable	356.9

No future loading above the domestic wastewater concentration of Cyanide will be allowed. All new or expanding industrial dischargers containing these pollutants shall be limited as indicated below:

Parameter	Allowable Average Concentration (mg/l)
Cyanide, Free	0.04

HYDRAULIC LOADING:

The hydraulic loading on an average basis is the design capacity of the treatment plant which is 85 million gallons per day.

ORGANIC LOADING:

The organic loading (BOD_5) is the design capacity of the treatment plant which is 118,386 pounds per day.

SOLIDS LOADING

The Total Suspended Solids loading (TSS) is the design capacity of the treatment plant which is 141,780 pounds per day.

EFFECTIVE DATE:

ISSUANCE DATE:

DRAFT

Alabama Department of Environmental Management

Rationale for Local Limits

Valley Creek WWTP (AL0023655)
85 MGD activated sludge facility
Bessemer/ Jefferson County

Reissuance
Prepared Date: 9/24/2018
Prepared By: Ed Hughes
Revised Date: 1/28/2020
3/3/2020

Nonconventional Pollutants:

Pass Through:
Allowable pollutant loadings were based on state water quality standards applicable to streams with a use designation of Limited Warmwater Fishery. Local limits calculations were performed using a receiving stream 7Q2 of 8.45 cfs, 1Q10 of 2.42 cfs, an annual average flow of 143.16 cfs and a stream hardness of 182 mg/l as $CaCO_3$. The treatment plant removal rates and untreated domestic sewage pollutant concentrations were based on Best Professional Judgment using literature values and EPA recommended levels as the basis unless site specific data was available. Calculations estimate the allowable quantity of heavy metals (measured as Total Recoverable) and Free Cyanide that can be discharged into the POTW to ensure that state water quality standards for aquatic toxicity and human health criteria are met in the receiving stream during critical flow conditions. Because only the portion of heavy metals present in dissolved form is "bioavailable" to aquatic life, the calculations which evaluate aquatic toxicity take into account the relationship between "dissolved" metals and metals measured using the Total Recoverable test procedure. The allowable pollutant loadings based on pass through concerns are located in column 11 of the Local Limits-Pass Through (LL-PT) spreadsheet.

Interference:
The Department evaluated the potential for processes at the POTW to be inhibited as result of the pollutant loading entering the treatment works. Inhibition values were based on Best Professional Judgment using literature values and EPA recommended levels as the basis unless site specific information was provided by the POTW. The allowable pollutant loadings based on inhibition concerns are located in column 13 of the LL-PT spreadsheet.

Sludge Disposal:
The POTW disposes of sludge by land application. The POTW's most recent MWSS report states that 2955 metric tons or 3251 US tons are generated and land applied annually based on an average flow of 40.3 MGD. This equates to a daily quantity of 18.8 TPD at the design flow of 85 MGD. This value is being used in the development of local limits for this site. For POTWs that use land application as a means of disposal the LL-PT spreadsheet calculates the allowable pollutant loading to ensure that metal concentrations in the sludge comply with EPA 503 regulations for land application of biosolids. The results of these calculations are located in column 14 of the spreadsheet.

Column 15 of the LL-PT spreadsheet indicates the most stringent of the above three criteria. These loadings are considered the POTW's total headworks capacity for the pollutants of concern.

The LL-PT spreadsheet also lists the current loading of the pollutants of concern from domestic/commercial and industrial sources and determines the remaining capacity currently available. Domestic/commercial loadings are indicated in Columns 16 and current industrial loadings are shown in column 17 (a listing of each significant industrial user and their permit limits and average reported discharge level for pollutants without permit limits is shown on the attached Significant Industrial User sheet). Column 18 of that spreadsheet shows the remaining capacity after subtracting the current loadings. Negative values indicate that no additional capacity is available for these pollutants. Specifically, these calculations estimate that no additional loading of Cyanide above the domestic sewage concentration can be allowed; therefore, new and expanded discharges shall be limited to domestic sewage concentrations. The limiting factor for this pollutant is shown below:

Parameter	Limiting Factor
Cyanide, Free	Water Quality

It should be noted that the available pollutant loadings shown in column 18 have been reduced by 10%, which is the percent of total capacity reserved for future growth.

Conventional Pollutants

Temperature:
The Department is not aware of any specific circumstances related to this POTW which require a temperature limitation more stringent than general standards and prohibitions contained in ADEM Administrative code 335-6-5-.03(2)(e).

pH:
The Department is not aware of any specific circumstances related to this POTW which require a minimum pH limitation more stringent than general standards and prohibitions contained in ADEM Administrative code 335-6-5-.03(2)(b).

Hydraulic loading:
The hydraulic loading is the design capacity of the treatment plant as indicated by the POTW, 85 MGD.

Organic loading:
The organic loading ($CBOD_5$) is the design capacity of the treatment plant. This loading was calculated using the design flow of the POTW and an influent CBOD5 concentration of 167 mg/l.

Total Suspended Solids loading
The Total Suspended Solids (TSS) loading was calculated using the design flow of the POTW and an influent TSS concentration of 200 mg/l.

While ADEM develops local limits and reviews compliance, POTWs are responsible for ensuring proper management of Significant Industrial Users and other sources to meet their NPDES limits and to prevent pass through and interference problems and to ensure compliance with the prohibitions contained in ADEM

Administrative Code 335-6-5-.03 for protection of the treatment works, collection system and worker safety. The POTWs' responsibilities include establishing any additional limitations via local ordinances, etc. to protect the POTW and comply with their permit.

Revision Date (4/1/2019):

Local limits were calculated using the most recent version of the local limit spreadsheet. Allowable loadings were changed to be consistent with calculated values from the updated document. Also the previous rationale incorrectly listed Lead as a pollutant that exceeded the allowable loading. This has been corrected and Cyanide is now the only parameter that exceeds the allowable loading based on current domestic and industrial discharge levels.

The above discussion of sludge disposal was revised to utilize actual data provided by the POTW's MWSS report to determine loading limitations related to this concern. The previous version used assumed values.

Revision Date (1/28/2020):

In this revision, the metal loading associated with the discharge of process wastewater from United States Pipe and Foundry's outfall DSN 001 outfall was added as a background source. The loadings used were based on the mass permit limits for Copper, Lead and Zinc in the existing permit. The estimated flow contribution from this source of 0.2194 MGD was based on the average of the monthly average flows reported for the past 12 months.

Revision Date (3/3/2020):

Local limits for Valley Creek WWTP were recalculated using the latest revision of the local limit spreadsheet. Results show an increase in the headworks loading allocation for Mercury. Cyanide remains the only pollutant that is currently over-allocated.

LOCAL LIMIT/ PASS THROUGH CALCULATIONS

POTW NAME: Valley Creek WWTP

NPDES PERMIT NUMBER: AL0023655

DATE PREPARED: 3/3/2020

PREPARED BY: Ed Hughes

STREAM DATA AND POTW FLOW DATA							
RECEIVING STREAM CLASSIFICATION	=	LWF	3		RECEIVING STREAM TIDALLY INFLUENCED =		No
POTW DESIGN FLOW	=	85	MGD				
FLOW FROM OTHER CONTRIBUTORS	=	0.2194	MGD				
DOMESTIC FLOW	=	84.0223	MGD				
7Q10	=	3.23	CFS	OR	2.09	MGD	
1Q10	=	2.42	CFS	OR	1.56	MGD	
7Q2	=	8.45	CFS	OR	5.46	MGD	
ANNUAL AVG FLOW	=	143.16	CFS	OR	92.48	MGD	
STREAM HARDNESS (DEFAULT VALUE 100)	=	182	MG/L AS CaCO3				

ALLOWABLE LOADING TO STREAM BASED ON WATER QUALITY AND HH STANDARDS										
PARAMETER	1) CHRONIC TOXICITY (MG/L)	SW CHRONIC TOXICITY (MG/L)	2) MAX W Q INSTREAM (LBS/D)	3)ACUTE TOXICITY (MG/L)	SW ACUTE TOXICITY (MG/l)	4)MAX W Q INSTREAM (LBS/D)	5)HUMAN HEALTH (MG/L)	6)MAX W Q INSTREAM (LBS/D)	7)WQ / HH BASED DISC LEVEL (LBS/D)	PARAMETER
ANTIMONY, TOTAL RECOVERABLE	-----	-----	-----	-----	-----	-----	0.3733333	271.836	271.836	ANTIMONY, TR
ARSENIC, TRIVALENT	0.1500	-----	197.628	0.3400	-----	428.721	0.00030	0.449	0.449	ARSENIC, TRI
CADMIUM, TOT RECOVERABLE	0.0004	-----	1.195	0.0036	-----	11.051	-----	-----	1.195	CADMIUM, TR
CHROMIUM, TOT RECOVERABLE	0.1210	-----	435.86395	0.9305	-----	3206.869	-----	-----	435.864	CHROMIUM, TR
CHROMIUM, HEXAVALENT	0.0110	-----	8.319	0.0160	-----	11.581	-----	-----	8.319	CHROMIUM, HEX
COPPER, TOTAL RECOVERABLE	0.0149	-----	29.119	0.0236	-----	43.986	-----	-----	29.119	COPPER, TR
CYANIDE, FREE	0.0052	-----	3.933	0.0220	-----	15.923	9.3333	6795.90	3.933	CYANIDE, FREE
LEAD, TOT RECOVERABLE	0.0048	-----	17.617	0.1231	-----	432.669	-----	-----	17.617	LEAD, TR
MERCURY, TOT RECOVERABLE	0.000012	-----	0.03005	0.0024	-----	5.752	0.0000424	0.031	0.03005	MERCURY, TR
MOLYBDENUM	-----			-----	-----		------		------	MOLYBDENUM
NICKEL, TOT RECOVERABLE	0.0863	-----	129.257	0.7771	-----	1113.784	0.9929078	722.968	129.257	NICKEL, TR
SELENIUM, TOTAL RECOVERABLE	0.0005	-----	0.378	0.0020	-----	1.448	2.4305556	1769.765	0.378	SELENIUM, TR
SILVER, TOT RECOVERABLE	-----	-----	-----	0.0090	-----	6.522	-----	-----	6.522	SILVER, TR
ZINC, TOT RECOVERABLE	0.1962	-----	449.683	0.1946	-----	426.881	14.8936170	10844.52	426.881	ZINC, TR

		Antimony	Arsenic	Cadmium	Chromium, To	Chromium,VI	Copper	Cyanide	Lead	Mercury	Molybdenum	Nickel
DOMESTIC	DATA VALUE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	LIT VALUE	0.0010	0.0010	0.0030	0.0500	0.0000	0.0600	0.0400	0.0500	0.0000	0.0000	0.0200
		Selenium	Silver	Zinc								
	DATA VALUE	0.0000	0.0000	0.0000								
	LIT VALUE	0.0000	0.0100	0.1800								

TYPE OF TREATMENT =	2	Act Sludge
TREATMENT INCLUDE NITIFICATION?	No	

SLUDGE DISPOSAL

DOES THE POTW HAVE SECONDARY CLARIFICATION?	Yes
AVERAGE TONS OF SLUDGE PER DAY (DRY WEIGHT)	18.8
IS SLUDGE LAND APPLIED?	Yes

GROWTH ALLOCATION

% ALLOCATION RESERVED FOR FUTURE GROWTH =	10

PARAMETER	7) MAX WQ INSTREAM (LBS/D)	8) ALLOCATION FROM BACKGROUND (LBS/D)	9) ALLOWABLE DISC FROM POTW (LBS/D)	10) REMOVAL RATE (%)	11) ALLOWABLE DISCHARGE (WQ / HH) (LBS/D)	12) INHIBITION TRESHOLD CONC (MG/L)	13) ALLOWABLE DISCHARGE (INHIBITION) (LBS/D)	14) ALLOWABLE DISCHARGE (SLUDGE) (LBS/D)	15) ALLOWABLE DISCHARGE LOCAL LIMIT (LBS/D)	16) DOMESTIC INFLUENT LOADING (LBS/D)	17) INDUSTRIAL INFLUENT LOADING (LBS/D)	18) AVAILABLE CAPACITY FOR GROWTH (LBS/D)	LIMITING FACTOR
ANTIMONY, TOT RECOVERABLE	271.8359	0	271.8359	0	271.8359				271.8359	0.7007	0.0000	244.0216	WATER QUALITY
ARSENIC, TRIVALENT	0.4491	0	0.4491	45	0.8165	0.100	70.8900	6.266666667	0.8165	0.7007	0.1021	0.0124	WATER QUALITY
CADMIUM, TOT RECOVERABLE	1.1946	0	1.1946	67	3.6201	1.000	708.9000	4.770149254	3.6201	2.1022	0.0047	1.3619	WATER QUALITY
CHROMIUM, TOT RECOVERABLE	435.8639	0	435.8639	82	2421.4664	5.000	3544.5000	-------	2421.4664	35.0373	0.5098	2147.3273	WATER QUALITY
CHROMIUM, HEXAVALENT	8.3188	0	8.3188	83	48.9342	1.000	708.9000	------	48.9342	0.0000	0.0000	44.0408	WATER QUALITY
COPPER, TOTAL RECOVERABLE	29.1186	0.0703	29.0483	86	207.4875	1.000	708.9000	188	188.0000	42.0448	3.5375	128.1759	SLUDGE
CYANIDE, FREE	3.9325	0	3.9325	69	12.6856	0.100	70.8900	------	12.6856	26.0298	0.0968	-13.8970	WATER QUALITY
LEAD, TOT RECOVERABLE	17.6170	0.1483	17.4687	61	44.7915	1.000	708.9000	51.77704918	44.7915	35.0373	0.2403	8.5625	WATER QUALITY
MERCURY, TOT RECOVERABLE	0.0300	0	0.0300	60	0.0751	0.100	70.8900	3.572	0.0751	0.0000	0.0002	0.0675	WATER QUALITY
MOLYBDENUM		0						2.82	2.8200	0.0000	0.0000	-------	SLUDGE
NICKEL, TOT RECOVERABLE	129.2574	0	129.2574	42	222.8576	1.000	708.9000	37.6	37.6000	14.0149	0.2235	21.0254	SLUDGE
SELENIUM	0.3781	0	0.3781	50	0.7563			7.52	0.7563	0.0000	0.0000	0.6806	WATER QUALITY
SILVER, TOT RECOVERABLE	6.5215	0	6.5215	75	26.0861	0.250	177.2250	------	26.0861	7.0075	0.0160	17.1563	WATER QUALITY
ZINC, TOT RECOVERABLE	426.8813	0.2124	426.6689	79	2031.7566	1.000	708.9000	356.9620253	356.9620	126.1343	8.5564	200.0442	SLUDGE

Comments

Item 1: Allowable concentration instream based on above noted stream conditions and state standard to protect aquatic life from chronic toxicity.

Item 2: Mass of pollutant allowed instream based on above noted stream conditions and chronic criteria calculated as shown below:
Item 2 = stream 7Q10 x 8.34 x Item 1. If stream segment is tidally influenced, the more stringent of freshwater and saltwater critria is used.

Item 3: Allowable concentration instream based above noted stream conditions and state standard to protect aquatic life from acute toxicity.

Item 4: Mass of pollutant allowed instream based on above noted stream conditions and acute criteria and calculated as shown below:
Item 4 = stream 1Q10 x 8.34 x Item 3. For LWF streams, Item 4 = stream 7Q2 x 8.34 x Item 3.
If stream segment is tidally influenced, the more stringent of freshwater and saltwater critria is used.

Item 5: Allowable concentration instream based on above noted stream conditions and state human health standard for a stream with this use classification.

Item 6: Mass of pollutant allowed instream based on above noted stream condition, the human health standard and calculated as shown below:
Item 6 = Annual average stream flow x 8.34 x Item 5 (for carcinogens) and 7Q10 x 8.34 x Item 5 (for non-carcinogens).

Item 7: The most stringent of the requirements calculated in Items 2,4 and 6.

Item 8: Amount allocated to other facilities discharging to this stream segment.

Item 9: Remaining allocation available.

Item 10: Pollutant removal rates based on the treatment process.

Item 11: The calculated allowable discharge into the POTW based on water quality and human health concerns.

Item 12: Concentration of pollutant that could cause inhibition of biological processes utilized at the treament plant.

Item 13: Allowable discharge into the POTW based on levels to prevent inhibition of biological treatment processes.

Item 14: Allowable discharge into the POTW based on levels to meet EPA 503 standards for land application of sludge, if sludge is land applied.

Item 15: Allowable discharge into the POTW based on the more stringent of Items 11, Item 13 and item 14 requirements. This column contains the Local Limits for this POTW.

Item 16: Domestic influent (lbs/d) based on domestic flow and sampled domestic influent data if available or literature values if not.

Item 17: Industrial influent (lbs/d) based on monthly average permit limits and actual average values for the past 2 to 5 years (depending on availablity) for "monitor only" pollutants as shown on SIUs sheet. Values reported as less than detect are not included in average calculation.

Item 18: Available capacity remaining for new sources after subtracting capacity being utilized by industrial sources, domestic sources (including commercial sources and septage disposal) and capacity reserved for future growth.