Alabama Department of Environmental Management

LOCAL LIMITS

PUBLICLY OWNED TREATMENT WORKS:	**BOAZ SLAB CREEK WWTP**
LOCATION:	**BOAZ, ALABAMA** **MARSHALL COUNTY**
PERMIT NUMBER:	**AL0049603**

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, Trivalent	0.0250
Cadmium, Total Recoverable	0.1286
Chromium, Total Recoverable	79.80
Copper, Total Recoverable	6.710
Cyanide, Free	0.6827
Lead, Total Recoverable	1.275
Mercury, Total Recoverable	0.0040
Nickel, Total Recoverable	5.280
Silver, Total Recoverable	0.5237
Zinc, Total Recoverable	40.70

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

Parameter	Allowable Average Concentration (mg/l)
Arsenic, Trivalent	0.001
Cadmium, Total Recoverable	0.003
Cyanide, Free	0.04
Lead, Total Recoverable	0.05

HYDRAULIC LOADING:

The hydraulic loading on an average basis is the design capacity of the treatment plant which is 4.88 million gallons per day.

ORGANIC LOADING:

The organic loading ($CBOD_5$) is the design capacity of the treatment plant which is 6797 pounds per day.

SOLIDS LOADING

The Total Suspended Solids loading (TSS) is the design capacity of the treatment plant which is 8140 pounds per day.

EFFECTIVE DATE:

ISSUANCE DATE:

LOCAL LIMIT/ PASS THROUGH CALCULATIONS

POTW NAME: Boaz Slab Creek WWTP

NPDES PERMIT NUMBER: AL0049603

DATE REVISED: 5/23/2019

PREPARED BY: Ed Hughes

STREAM DATA AND POTW FLOW DATA							
RECEIVING STREAM CLASSIFICATION	=	F & W	0		RECEIVING STREAM TIDALLY INFLUENCED =		No
POTW DESIGN FLOW	=		4.88	MGD			
FLOW FROM OTHER CONTRIBUTORS	=			MGD			
DOMESTIC FLOW	=		4.655	MGD			
7Q10	=		0	CFS	OR	0.00	MGD
1Q10	=		0.00	CFS	OR	0.00	MGD
7Q2	=			CFS	OR	0.00	MGD
ANNUAL AVG FLOW	=		0.884	CFS	OR	0.57	MGD
STREAM HARDNESS (DEFAULT VALUE 100)	=		100	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)WO / HH BASED DISC LEVEL (LBS/D)	PARAMETER
ANTIMONY, TOTAL RECOVERABLE	-----	-----	-----	-----	-----	-----	0.3733333	15.194	15.194	ANTIMONY, TR
ARSENIC, TRIVALENT	0.1500	-----	10.636	0.3400	-----	24.108	0.00030	0.014	0.014	ARSENIC, TRI
CADMIUM, TOT RECOVERABLE	0.0002	-----	0.042	0.0020	-----	0.347	-----	-----	0.042	CADMIUM, TR
CHROMIUM, TOT RECOVERABLE	0.0741	-----	14.364	0.5698	-----	110.423	-----	-----	14.364	CHROMIUM, TR
CHROMIUM, HEXAVALENT	0.0110	-----	0.448	0.0160	-----	0.651	-----	-----	0.448	CHROMIUM, HEX
COPPER, TOTAL RECOVERABLE	0.0090	-----	0.939	0.0134	-----	1.407	-----	-----	0.939	COPPER, TR
CYANIDE, FREE	0.0052	-----	0.212	0.0220	-----	0.895	9.3333	379.86	0.212	CYANIDE, FREE
LEAD, TOT RECOVERABLE	0.0025	-----	0.497	0.0646	-----	12.759	-----	-----	0.497	LEAD, TR
MERCURY, TOT RECOVERABLE	0.000012	-----	0.002	0.0024	-----	0.323	0.0000424	0.002	0.00162	MERCURY, TR
MOLYBDENUM	-----			-----	-----		-------		-------	MOLYBDENUM
NICKEL, TOT RECOVERABLE	0.0520	-----	4.191	0.4682	-----	37.736	0.9929078	40.411	4.191	NICKEL, TR
SELENIUM, TOTAL RECOVERABLE	0.0005	-----	0.020	0.0020	-----	0.081	2.4305556	98.922	0.020	SELENIUM, TR
SILVER, TOT RECOVERABLE	-----	-----	-----	0.0032	-----	0.131	-----	-----	0.131	SILVER, TR
ZINC, TOT RECOVERABLE	0.1181	-----	14.570	0.1172	-----	14.452	14.8936170	606.16	14.452	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)	2.64
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	15.1944	0	15.1944	0	15.1944				15.1944	0.0388	0.0000	13.6400	WATER QUALITY
ARSENIC, TRIVALENT	0.0138	0	0.0138	45	0.0250	0.100	4.0699	0.88	0.0250	0.0388	0.0000	-0.0124	WATER QUALITY
CADMIUM, TOT RECOVERABLE	0.0424	0	0.0424	67	0.1286	1.000	40.6992	0.669850746	0.1286	0.1165	0.0146	-0.0023	WATER QUALITY
CHROMIUM, TOT RECOVERABLE	14.3638	0	14.3638	82	79.7990	5.000	203.4960	-------	79.7990	1.9411	0.3565	69.7512	WATER QUALITY
CHROMIUM, HEXAVALENT	0.4477	0	0.4477	83	2.6335	1.000	40.6992	------	2.6335	0.0000	0.0000	2.3701	WATER QUALITY
COPPER, TOTAL RECOVERABLE	0.9394	0	0.9394	86	6.7101	1.000	40.6992	26.4	6.7101	2.3294	0.4316	3.5542	WATER QUALITY
CYANIDE, FREE	0.2116	0	0.2116	69	0.6827	0.100	4.0699	------	0.6827	1.5529	0.0083	-0.7907	WATER QUALITY
LEAD, TOT RECOVERABLE	0.4972	0	0.4972	61	1.2749	1.000	40.6992	7.270819672	1.2749	1.9411	0.0104	-0.6090	WATER QUALITY
MERCURY, TOT RECOVERABLE	0.0016	0	0.0016	60	0.0040	0.100	4.0699	0.5016	0.0040	0.0000	0.0000	0.0036	WATER QUALITY
MOLYBDENUM		0						0.396	0.3960	0.0000	0.0000	-------	SLUDGE
NICKEL, TOT RECOVERABLE	4.1913	0	4.1913	42	7.2264	1.000	40.6992	5.28	5.2800	0.7765	0.4962	3.6066	SLUDGE
SELENIUM	0.0203	0	0.0203	50	0.0407			1.056	0.0407	0.0000	0.0000	0.0366	WATER QUALITY
SILVER, TOT RECOVERABLE	0.1309	0	0.1309	75	0.5237	0.250	10.1748	------	0.5237	0.3882	0.0500	0.0769	WATER QUALITY
ZINC, TOT RECOVERABLE	14.4520	0	14.4520	79	68.8189	1.000	40.6992	50.12658228	40.6992	6.9881	0.3086	30.0623	INHIBITION

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.

Rationale for Local Limits

Boaz Slab Creek WWTP (AL0049603)
4.88 MGD Trickling filter/Schreiber activated sludge
Boaz/Marshall County

Reissuance
Prepared Date: 12/31/2018
Prepared By: Ed Hughes
Revised Date: 5/23/2019, 7/9/2019

Nonconventional Pollutants:

Pass Through:
Allowable pollutant loadings were based on state water quality standards applicable to streams with a use designation of Fish & Wildlife. Local limits calculations were performed using a receiving stream 7Q10 of 0.0 cfs, 1Q10 of 0.0 cfs, an annual average flow of 0.884 cfs and a stream hardness of 100 mg/l as CaCO3. 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 using landfilling and land application. Information provided by the POTW's NPDES permit application and most recent MWSS report indicates that 685 dry tons per year of biosolids are generated based on an effluent flow of 3.48 MGD with 45.12 tons per year being land applied. For purposes of developing local limits it will be assumed that all biosolids are land applied and the quantity of sludge will be adjusted to the quantity that would be generated at the design flow level of 4.88 MGD. This value (2.64 TPD) will be 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 Users 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 Arsenic, Cadmium, Cyanide or Lead above the domestic sewage concentration can be allowed; therefore, new and expanded discharges shall be limited to domestic sewage concentrations. The limiting factor for each of these pollutants is shown below:

Parameter	Limiting Factor
Arsenic, Trivalent	Water Quality
Cadmium, Total Recoverable	Water Quality
Cyanide, Free	Water Quality
Lead, Total Recoverable	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, 4.88 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 (5/23/2019):
In this revision Trivalent Arsenic was added to the list of pollutants with no additional allocation available due to water quality concerns. It was inadvertently left off the list in the previous draft.

Revision Date (7/9/2019):
This revision is to change specific language in the rationale to address issues related to the POTW's hydraulic and organic capacity. These changes are in accordance with previous discussions with the POTW. The revision does not change any of the proposed requirements contained in the local limits document transmitted to the sewer board on May 8, 2019.