



Alabama Department of Environmental Management  
adem.alabama.gov

MARCH 27, 2019

1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463  
Montgomery, Alabama 36130-1463  
(334) 271-7700 ■ FAX (334) 271-7950

MR STEVE HARGROVE  
GENERAL MANAGER  
SHEFFIELD UTILITIES  
POST OFFICE BOX 580  
SHEFFIELD AL 35660

Re: DRAFT LOCAL LIMITS  
SHEFFIELD UTILITIES  
SHEFFIELD WWTP  
NPDES PERMIT NO. AL0050121

Dear Mr. Hargrove:

The Alabama Department of Environmental Management (ADEM) is required by Administrative Rule 335-6-5-.03 to develop local limits for Publicly Owned Treatment Works (POTWs) receiving wastewater from significant industrial users which could adversely impact the operation or performance of the treatment works. These limits should prevent pass through of pollutants that could cause violations of water quality standards in the POTW's receiving stream, interfere with the POTW collection/treatment system or cause sludge disposal concerns. Because many POTWs have modernized or expanded their treatment plants since the last issuance of local limits, ADEM is currently in the process of updating these requirements.

In this regard, ADEM has developed an updated draft local limits document for the Sheffield WWTP. A copy of this draft along with supporting information is attached for your review and comment. ADEM is requesting that your comments be received no later than 60 days from the date of this letter.

It should be noted that this draft is based on assumed levels of treatment, assumed levels of pollutants in domestic wastewater and stream conditions that may not reflect actual conditions at your facility. For this reason the Department encourages you to become involved with the local limits development process. Specifically, we are encouraging you to establish a sampling program to collect data that may be used to determine more site specific requirements. Requirements based on site specific information should ensure the protection of your plant's operation and could prevent the unnecessary reduction in permit limits for industrial sources and/or limit capacity for future growth.

If you are interested in establishing a program to collect this data prior to the final development of local limits, you should contact Theo Pinson at (334) 274-4202 within 30 days of the date of this letter to indicate your interest and to obtain specific guidance on proper sampling protocol. In addition a general guidance document for developing a sampling program is attached for your consideration. Should you choose to collect this data no further action will be taken on the attached draft until adequate time has been allowed for the submittal of sampling results.

ADEM rules also provide the opportunity for POTWs to reserve a portion of their hydraulic or treatment capacity for any pollutant. This initial draft assumed a reserved capacity of 10%. Please inform the Department if this assumption is consistent with current plans for future development. In addition we would

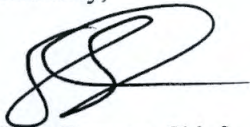


appreciate your input on local issues such as other pollutants of concern that may be impacting your operation and that need to be addressed in the local limits program.

Following evaluation of any additional information provided, revised draft local limits will be developed. If your facility has no comments and does not wish to establish a sampling program, ADEM will proceed with the development of final local limits based on the attached 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 Theo Pinson by email at [tpinson@adem.alabama.gov](mailto:tpinson@adem.alabama.gov) or by phone at (334) 274-4202.

Sincerely,

A handwritten signature in black ink, appearing to be 'S. Ramsey', written over a horizontal line.

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

Attachments: Draft Local Limits  
Rationale for Local Limits  
Local Limits/Pass Through Calculations  
List of Significant Industrial Users  
Sampling for Local Limit Development

CC: Ford Motor Co  
Nicholas Lowe  
Theo Pinson

# LOCAL LIMITS

**PUBLICLY OWNED TREATMENT WORKS:** SHEFFIELD WWTP  
**LOCATION:** SHEFFIELD, ALABAMA  
COLBERT COUNTY  
**PERMIT NUMBER:** AL0050121

## 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.

<u>Parameter</u>	<u>Allowable Average Daily Pollutant Load at Headworks of POTW</u> (lbs/day)
Arsenic, Trivalent	0.4900
Cadmium, Total Recoverable	0.3730
Chromium, Total Recoverable	162.6
Copper, Total Recoverable	14.70
Cyanide, Free	3.253
Lead, Total Recoverable	4.049
Mercury, Total Recoverable	0.2793
Nickel, Total Recoverable	2.940
Silver, Total Recoverable	8.132
Zinc, Total Recoverable	27.91

**HYDRAULIC LOADING:**

The hydraulic loading limit on an average basis is the design capacity of the treatment plant which is 3.9 million gallons per day.

**ORGANIC LOADING:**

The organic loading limit (CBOD<sub>5</sub>) is the design capacity of the treatment plant which is 5432 pounds per day.

**SOLIDS LOADING**

The Total Suspended Solids loading limit (TSS) is the design capacity of the treatment plant which is 6505 pounds per day.

**EFFECTIVE DATE:**

**ISSUANCE DATE:**

**DRAFT**

---

**Alabama Department of Environmental Management**

## Rationale for Local Limits

Sheffield WWTP  
3.9 MGD Activated sludge  
Sheffield/Colbert County

(AL0050121)

Reissuance  
Prepared Date: 1/18/2019  
Prepared By: Ed Hughes

### 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 6872 cfs, 1Q10 of 5154 cfs, an annual average flow of 50,379 cfs and a stream hardness of 69 mg/l as CaCO<sub>3</sub>. 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 Tuscumbia and Florence WWTPs discharge to the same stream segment as the Sheffield outfall. For the purpose of developing local limits for these three sites the available water quality pollutant allocation was divided between the three plants based on their design flows. The Sheffield WWTP's design flow of 3.9 MGD represents 19% of the total wastewater flow; therefore, 81% of the pollutant loading was withheld and allocated to the other two sites.

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 land application. According to the POTW's 2017 MWSS report, 165 tons of sludge are generated annually at an average wastewater flow of 1.2 MGD. This equates to 1.47 tons per day at the plant's design capacity of 3.9 MGD. This value was 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.

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 limit is the design capacity of the treatment plant as indicated by the POTW, 3.9 MGD.

#### Organic loading:

The organic loading limit (CBOD<sub>5</sub>) is the design capacity of the treatment plant. This loading was calculated using the design flow of the POTW and an influent CBOD<sub>5</sub> 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.

**LOCAL LIMIT/ PASS THROUGH CALCULATIONS**

POTW NAME: Sheffield WWTP  
 NPDES PERMIT NUMBER: AL0050121

DATE PREPARED: 1/17/2019  
 PREPARED BY: Ed Hughes

STREAM DATA AND POTW FLOW DATA					
RECEIVING STREAM CLASSIFICATION	=	F & W	0	RECEIVING STREAM TIDALLY INFLUENCED =	No
POTW DESIGN FLOW	=		3.9 MGD		
FLOW FROM OTHER CONTRIBUTORS	=		36.62 MGD		
DOMESTIC FLOW	=		3.36 MGD		
7Q10	=		6872 CFS	OR	4439.31 MGD
1Q10	=		5154.00 CFS	OR	3329.48 MGD
7Q2	=		CFS	OR	0.00 MGD
ANNUAL AVG FLOW	=		50379 CFS	OR	32544.83 MGD
STREAM HARDNESS (DEFAULT VALUE 100)	=		69 MGL AS CaCO3		

ALLOWABLE LOADING TO STREAM BASED ON WATER QUALITY AND HH STANDARDS										
PARAMETER	1) CHRONIC	SW CHRONIC	2) MAX W Q	3) ACUTE	SW ACUTE	4) MAX W Q	5) HUMAN	6) MAX W Q	7) WQ / HH	PARAMETER
	TOXICITY (MG/L)	TOXICITY (MG/L)	INSTREAM (LBS/D)	TOXICITY (MG/L)	TOXICITY (MG/L)	INSTREAM (LBS/D)	HEALTH (MG/L)	INSTREAM (LBS/D)	BASED DISC LEVEL (LBS/D)	
ANTIMONY, TOTAL RECOVERABLE	----	----	----	----	----	----	0.3733333	101457.758	101457.758	ANTIMONY, TR
ARSENIC, TRIVALENT	0.1500	----	9763.536	0.3400	----	16648.055	0.00030	82.352	82.352	ARSENIC, TRI
CADMIUM, TOT RECOVERABLE	0.0002	----	30.089	0.0014	----	167.164	----	----	30.089	CADMIUM, TR
CHROMIUM, TOT RECOVERABLE	0.0547	----	9730.367	0.4204	----	56271.589	----	----	9730.367	CHROMIUM, TR
CHROMIUM, HEXAVALENT	0.0110	----	410.980	0.0160	----	449.693	----	----	410.980	CHROMIUM, HEX
COPPER, TOTAL RECOVERABLE	0.0065	----	628.051	0.0095	----	684.905	----	----	628.051	COPPER, TR
CYANIDE, FREE	0.0052	----	194.281	0.0220	----	618.328	9.3333	348710.12	194.281	CYANIDE, FREE
LEAD, TOT RECOVERABLE	0.0017	----	304.055	0.0430	----	5869.577	----	----	304.055	LEAD, TR
MERCURY, TOT RECOVERABLE	0.000012	----	1.485	0.0024	----	223.358	0.0000424	1.585	1.48457	MERCURY, TR
MOLYBDENUM	----	----	----	----	----	----	----	----	----	MOLYBDENUM
NICKEL, TOT RECOVERABLE	0.0380	----	2810.999	0.3421	----	19038.644	0.9929078	37096.822	2810.999	NICKEL, TR
SELENIUM, TOTAL RECOVERABLE	0.0005	----	18.681	0.0020	----	56.212	2.4305556	90809.928	18.681	SELENIUM, TR
SILVER, TOT RECOVERABLE	----	----	----	0.0017	----	47.757	----	----	47.757	SILVER, TR
ZINC, TOT RECOVERABLE	0.0863	----	9767.061	0.0856	----	7287.768	14.8936170	556452.32	7287.768	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	<b>SLUDGE DISPOSAL</b>	
TREATMENT INCLUDE NITIFICATION?	No		DOES THE POTW HAVE SECONDARY CLARIFICATION?	Yes
			AVERAGE TONS OF SLUDGE PER DAY (DRY WEIGHT)	1.47
			IS SLUDGE LAND APPLIED?	Yes
<b>GROWTH ALLOCATION</b>				
			% ALLOCATION RESERVED FOR FUTURE GROWTH =	10

PARAMETER	7) MAX WO 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	101457.7582	82180.78415	19276.9741	0	19276.9741				19276.9741	0.0280	0.0000	17349.2514	WATER QUALITY
ARSENIC, TRIVALENT	82.3521	66.70518194	15.6469	45	28.4489	0.100	3.2526	0.49	0.4900	0.0280	0.0000	0.4158	SLUDGE
CADMIUM, TOT RECOVERABLE	30.0886	24.37178269	5.7168	67	17.3238	1.000	32.5260	0.372985075	0.3730	0.0841	0.0000	0.2600	SLUDGE
CHROMIUM, TOT RECOVERABLE	9730.3666	7881.596916	1848.7696	82	10270.9425	5.000	162.6300	-----	162.6300	1.4011	0.0000	145.1060	INHIBITION
CHROMIUM, HEXAVALENT	410.9798	332.893628	78.0862	83	459.3304	1.000	32.5260	-----	32.5260	0.0000	0.0000	29.2734	INHIBITION
COPPER, TOTAL RECOVERABLE	628.0506	508.7209751	119.3296	86	852.3544	1.000	32.5260	14.7	14.7000	1.6813	0.0000	11.7168	SLUDGE
CYANIDE, FREE	194.2814	157.3678969	36.9135	69	119.0757	0.100	3.2526	-----	3.2526	1.1209	0.0000	1.9185	INHIBITION
LEAD, TOT RECOVERABLE	304.0553	246.2847671	57.7705	61	148.1295	1.000	32.5260	4.04852459	4.0485	1.4011	0.0000	2.3827	SLUDGE
MERCURY, TOT RECOVERABLE	1.4846	1.20250558	0.2821	60	0.7052	0.100	3.2526	0.2793	0.2793	0.0000	0.0000	0.2514	SLUDGE
MOLYBDENUM		0						0.2205	0.2205	0.0000	0.0000	-----	SLUDGE
NICKEL, TOT RECOVERABLE	2810.9990	2276.909168	534.0898	42	920.8445	1.000	32.5260	2.94	2.9400	0.5604	0.0000	2.1416	SLUDGE
SELENIUM	18.6809	15.13152855	3.5494	50	7.0987			0.588	0.5880	0.0000	0.0000	0.5292	SLUDGE
SILVER, TOT RECOVERABLE	47.7568	38.68300571	9.0738	75	36.2952	0.250	8.1315	-----	8.1315	0.2802	0.0000	7.0661	INHIBITION
ZINC, TOT RECOVERABLE	7287.7680	5903.092076	1384.6759	79	6593.6949	1.000	32.5260	27.91139241	27.9114	5.0440	0.0000	20.5806	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 criteria 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 criteria 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. Based on the ratio of design flows, Florence and Tuscumbia's WWTPs contribute 81 % of the waste load of the POC to this stream segment. Column 8 contains the loading from these sources.

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 treatment 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 availability)

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.

## SIGNIFICANT INDUSTRIAL USERS

PERMITTEE	AVG FLOW (MGD)	DAILY AVG ANTIMONY (MG/L)	DAILY AVG ARSENIC (MG/L)	DAILY AVG CADMIUM (MG/L)	DAILY AVG CHROMIUM (MG/L)	DAILY AVG HEX CHROM (MG/L)	DAILY AVG COPPER (MG/L)	DAILY AVG CYANIDE (MG/L)	DAILY AVG LEAD (MG/L)	DAILY AVG MERCURY (MG/L)	DAILY AVG Molybdenum (mg/l)	DAILY AVG NICKEL (MG/L)	DAILY AVG SELENIUM (MG/L)	DAILY AVG SILVER (MG/L)	DAILY AVG ZINC (MG/L)
Ford Motor Co (IU0817000369)	0.5400	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	0.0000
Total Industrial flow	0.5400														

Monthly average permit limits are listed in bold print.

Other values are based on a minimum of 24 months of data if available as reported on DMRs (for parameters with testing requirements in permits).



**CURRENT PERMITTED INDUSTRIAL LOADING TO POTW (LBS/DAY)**

PARAMETER	
ANTIMONY	0.0000
ARSENIC	0.0000
CADMIUM	0.0000
CHROMIUM	0.0000
HEX CHROM	0.0000
COPPER	0.0000
CYANIDE	0.0000
LEAD	0.0000
MERCURY	0.0000
Molybdenum	0.0000
NICKEL	0.0000
SELENIUM	0.0000
SILVER	0.0000
ZINC	0.0000

## SAMPLING FOR LOCAL LIMIT DEVELOPMENT

Local limits developed utilizing site specific data will more accurately achieve the following:

- Identify Pollutants of Concern (POCs) that could adversely impact the operation of the treatment works, affect water quality in the receiving stream or limit the sludge disposal method utilized by the POTW.
- Determine the headworks capacity for each POC such that the POTW can make decisions regarding pollutant loadings allocation among industrial sources.
- Allow the POTW to make informed decisions regarding reserving pollutant loading for future growth.

**For POTWs that desire to have more involvement with the local limit development process, ADEM encourages the collection of site specific data.** This may be of particular importance for sites where calculated loadings will be restrictive on future growth and where the POTW believes assumed values in the ADEM Local Limits/Pass Through (LL-PT) spreadsheet do not correctly reflect the actual conditions at the site. For these cases, samples can be collected and analyzed by the POTW in accordance with a sampling plan developed by the POTW that can include the following items:

### SAMPLING SITES

- POTW Influent - Influent sampling provides data to be used in calculating POTW-specific removal efficiencies. The sample should be collected from a location that allows for the collection of untreated wastewater before it is mixed with any waste streams returned to the headworks from operations within the POTW. Without site specific data, assumed values may be utilized.
- POTW Effluent - Sampling the treatment works' effluent is essential to determining the POTW's overall removal efficiency. Samples taken to demonstrate compliance with the POTW's NPDES permit can be used for this purpose.
- Collection System - In order to measure pollutant loadings from unregulated (domestic and commercial) sources, samples from a point within the collection system that isolates these sources would provide data regarding domestic/commercial pollutant loading.
- Receiving Stream – When available, the instream Hardness (measured as CaCO<sub>3</sub>) upstream of the discharge is typically used to determine the water quality criteria for some metal pollutants. Stream Hardness affects the loading of these POCs in the POTW's effluent and based on treatment removal rates determines the loading into the POTW headworks. Without site specific instream Hardness data, an assumed value may be utilized.

### SAMPLING METHODS

- Sampling should occur on dates that are representative of typical loadings to the POTW and normal treatment works operations.
- 24-hour, flow-proportioned composite samples are the most accurate for generating the data. This sampling technique should be used whenever feasible for all pollutants except those that require grab samples (e.g. Cyanide).

- ADEM suggests 7 to 15 consecutive days of sampling for influent and effluent and 7 consecutive days for collection system data. Fewer sampling days may be appropriate in some cases. This should be discussed with your ADEM Industrial Section area engineer.
- If possible, an effluent sample should be collected at the appropriate time following the collection of the associated influent sample to account for the retention period in the POTW.
- Sampling for instream Hardness should be performed upstream of the discharge point. If possible, sampling should be performed during lower stream flow conditions that typically occur during the late August to early November time period.

#### **ANALYTICAL METHODS**

- Approved analytical methods found at 40 CFR Part 136 should be used in the development of local limits. The POTWs should use approved sufficiently sensitive methods (e.g. if there is no detection of the pollutant then a test method with the lowest detection level should be utilized).
- Regarding metals and Cyanide analyses, metals can be analyzed as "Total Recoverable" using EPA Method 200.8. Cyanide can be analyzed using EPA Method 335.4. Other methods may be appropriate if approved by ADEM.

#### **OTHER CONSIDERATIONS**

POTWs should not sample during or after periods of heavy rainfall when I&I is also high. Flows at these times may be diluted, and may not be representative of typical residential and commercial flow.

It would be useful to utilize data collected and analyzed over various seasons if available. However, to expedite the development of local limits more rapid data collection and analysis may be appropriate.



### LOCAL LIMIT/ PASS THROUGH CALCULATIONS

POTW NAME: Sheffield WWTP  
 NPDES PERMIT NUMBER: AL0050121

DATE PREPARED: 1/17/2019  
 PREPARED BY: Ed Hughes  
 REVISED DATE: 6/7/2019

STREAM DATA AND POTW FLOW DATA					
RECEIVING STREAM CLASSIFICATION	=	F & W	0	RECEIVING STREAM TIDALLY INFLUENCED =	No
POTW DESIGN FLOW	=		3.9 MGD		
FLOW FROM OTHER CONTRIBUTORS	=		36.62 MGD		
DOMESTIC FLOW	=		3.36 MGD		
7Q10	=		6872 CFS	OR	4439.31 MGD
1Q10	=		5154.00 CFS	OR	3329.48 MGD
7Q2	=		CFS	OR	0.00 MGD
ANNUAL AVG FLOW	=		50379 CFS	OR	32544.83 MGD
STREAM HARDNESS (DEFAULT VALUE 100)	=		69 MG/L AS CaCO3		

ALLOWABLE LOADING TO STREAM BASED ON WATER QUALITY AND HH STANDARDS										
PARAMETER	1) CHRONIC	SW CHRONIC	2) MAX W Q	3) ACUTE	SW ACUTE	4) MAX W Q	5) HUMAN	6) MAX W Q	7) WO / HH	PARAMETER
	TOXICITY (MG/L)	TOXICITY (MG/L)	INSTREAM (LBS/D)	TOXICITY (MG/L)	TOXICITY (MG/L)	INSTREAM (LBS/D)	HEALTH (MG/L)	INSTREAM (LBS/D)	BASED DISC LEVEL (LBS/D)	
ANTIMONY, TOTAL RECOVERABLE	----	----	----	----	----	----	0.3733333	13948.405	13948.405	ANTIMONY, TR
ARSENIC, TRIVALENT	0.1500	----	9763.536	0.3400	----	16648.055	0.00030	82.352	82.352	ARSENIC, TRI
CADMIUM, TOT RECOVERABLE	0.0002	----	30.089	0.0014	----	167.164	----	----	30.089	CADMIUM, TR
CHROMIUM, TOT RECOVERABLE	0.0547	----	9730.367	0.4204	----	56271.589	----	----	9730.367	CHROMIUM, TR
CHROMIUM, HEXAVALENT	0.0110	----	410.980	0.0160	----	449.693	----	----	410.980	CHROMIUM, HEX
COPPER, TOTAL RECOVERABLE	0.0065	----	628.051	0.0095	----	684.905	----	----	628.051	COPPER, TR
CYANIDE, FREE	0.0052	----	194.281	0.0220	----	618.328	9.3333	348710.12	194.281	CYANIDE, FREE
LEAD, TOT RECOVERABLE	0.0017	----	304.055	0.0430	----	5869.577	----	----	304.055	LEAD, TR
MERCURY, TOT RECOVERABLE	0.000012	----	1.485	0.0024	----	223.358	0.0000424	1.585	1.48457	MERCURY, TR
MOLYBDENUM	----	----	----	----	----	----	----	----	----	MOLYBDENUM
NICKEL, TOT RECOVERABLE	0.0380	----	2810.999	0.3421	----	19038.644	0.9929078	37096.822	2810.999	NICKEL, TR
SELENIUM, TOTAL RECOVERABLE	0.0005	----	18.681	0.0020	----	56.212	2.4305556	90809.928	18.681	SELENIUM, TR
SILVER, TOT RECOVERABLE	----	----	----	0.0017	----	47.757	----	----	47.757	SILVER, TR
ZINC, TOT RECOVERABLE	0.0863	----	9767.061	0.0856	----	7287.768	14.8936170	556452.32	7287.768	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	<b>SLUDGE DISPOSAL</b>	
TREATMENT INCLUDE NITIFICATION?	No		DOES THE POTW HAVE SECONDARY CLARIFICATION?	Yes
			AVERAGE TONS OF SLUDGE PER DAY (DRY WEIGHT)	1.47
			IS SLUDGE LAND APPLIED?	Yes
<b>GROWTH ALLOCATION</b>				
			% 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	13948.4049	11298.20798	2650.1969	0	2650.1969				2650.1969	0.0280	0.0000	2385.1520	WATER QUALITY
ARSENIC, TRIVALENT	82.3521	66.70518194	15.6469	45	28.4489	0.100	3.2526	0.49	0.4900	0.0280	0.0000	0.4158	SLUDGE
CADMIUM, TOT RECOVERABLE	30.0886	24.37178269	5.7168	67	17.3238	1.000	32.5260	0.372985075	0.3730	0.0841	0.0000	0.2600	SLUDGE
CHROMIUM, TOT RECOVERABLE	9730.3666	7881.596916	1848.7696	82	10270.9425	5.000	162.6300	-----	162.6300	1.4011	0.0000	145.1060	INHIBITION
CHROMIUM, HEXAVALENT	410.9798	332.893628	78.0862	83	459.3304	1.000	32.5260	-----	32.5260	0.0000	0.0000	29.2734	INHIBITION
COPPER, TOTAL RECOVERABLE	628.0506	508.7209751	119.3296	86	852.3544	1.000	32.5260	14.7	14.7000	1.6813	0.0000	11.7168	SLUDGE
CYANIDE, FREE	194.2814	157.3678969	36.9135	69	119.0757	0.100	3.2526	-----	3.2526	1.1209	0.0000	1.9185	INHIBITION
LEAD, TOT RECOVERABLE	304.0553	246.2847671	57.7705	61	148.1295	1.000	32.5260	4.04852459	4.0485	1.4011	0.0000	2.3827	SLUDGE
MERCURY, TOT RECOVERABLE	1.4846	1.20250558	0.2821	60	0.7052	0.100	3.2526	0.2793	0.2793	0.0000	0.0000	0.2514	SLUDGE
MOLYBDENUM		0							0.2205	0.2205	0.0000	-----	SLUDGE
NICKEL, TOT RECOVERABLE	2810.9990	2276.909168	534.0898	42	920.8445	1.000	32.5260	2.94	2.9400	0.5604	0.0000	2.1416	SLUDGE
SELENIUM	18.6809	15.13152855	3.5494	50	7.0987				0.588	0.5880	0.0000	0.5292	SLUDGE
SILVER, TOT RECOVERABLE	47.7568	38.68300571	9.0738	75	36.2952	0.250	8.1315	-----	8.1315	0.2802	0.0000	7.0661	INHIBITION
ZINC, TOT RECOVERABLE	7287.7680	5903.092076	1384.6759	79	6593.6949	1.000	32.5260	27.91139241	27.9114	5.0440	0.0000	20.5806	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 criteria 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 criteria 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. Based on the ratio of design flows, Florence and Tuscumbia's WWTPs contribute 81 % of the waste load of the POC to this stream segment. Column 8 contains the loading from these sources.

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 treatment 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 availability)

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.