

# Stuttgart Municipal Water Works

612 S College – PO Box 130 – Stuttgart Arkansas 72160  
Phone 870-673-3246 Fax 870-673-8783

**Tommy Lawson**  
**Manager**

April 2, 2015

Arkansas Department of Environmental Quality  
5301 Northshore Drive  
North Little Rock, AR 72118-5317

ATTN: Mr. Alan Anderson, Enforcement Officer

RE: Discharge Permit No. AR0034380, AFIN 01-00041

Dear Mr. Anderson,

Per our recent conversation, we are writing this letter Preliminary Report and efforts to comply with our new permit changes and tentative plans for meeting the changed criteria.

1. The monthly sanitary sewer overflows (SSO's) and monthly total volume will be reported on our monthly DMR's.
2. We have already notified Sorrell's Laboratory to sample and test once per year influent for CBOD<sub>5</sub> and TSS.
3. The total residual chlorine limit is changed to "No Measureable". Because we are dechlorinating our wastewater with sulphur dioxide, we plan to continue this process to comply with new limit.
4. We will monitor and report recoverable copper, total phosphorus, nitrate and nitrite nitrogen as listed in the permit requirements.
5. Samples for CBOD<sub>5</sub>, TSS, NH<sub>3</sub>-N and copper have all been changed to composite samples.
6. The NH<sub>3</sub>-N limits for the months of April through October have been changed.
7. We have engaged Ecotech Enterprises, Inc., Scott, Arkansas to run bench tests and recommend process changes for Best Management Practices to achieve the concentration goals for phosphorus, nitrate, and nitrate nitrogen levels in our treated effluent discharge.

In their testing effort and as reported in their attached letter dated March 20, 2015, the test of raw unfiltered, raw filtered, treated unfiltered, and treated filtered for nitrate and nitrite nitrogen were all well below the 10 mg/l combined total and 1mg/l for nitrite level. Therefore there are no plans currently for changing our process for NO<sub>3</sub> and NO<sub>2</sub> N at this time.

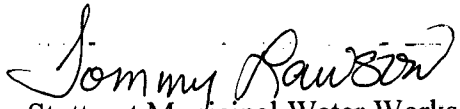
Attached also are Ecotech's letter report and attachments for pilot evaluation for using liquid alum applied in the front of the aeration SCB of the plant ahead of final clarification filtration, and disinfection to discharge.

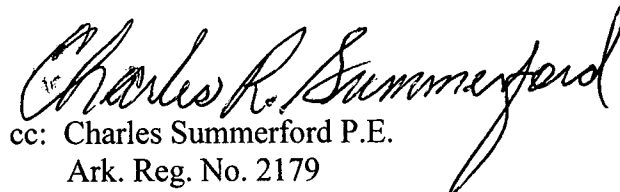
According to the study this process will lower the phosphorus below the target level of 2.0 mg/l in our discharge.

The process change is very expensive as indicated and we anticipate possibly minor changes to possibly lower the amount of alum required and/or application point for economy improvement.

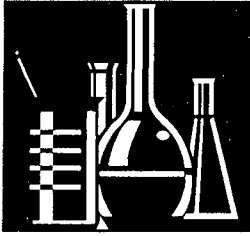
We hope you will find this letter report and attachments meets your requirements for reporting our efforts to achieve Best Management Practices.

Sincerely,

  
Stuttgart Municipal Water Works  
Tommy Lawson, Mgr

  
cc: Charles Summerford P.E.  
Ark. Reg. No. 2179

Enc. as stated



## ECOTECH ENTERPRISES, INC.

PO BOX 39  
7100 Colonel Maynard Road  
Scott, AR 72142  
Phone (501) 961-9500  
Fax: (501) 961-9502

Dear Tommy,

Tommy Lawson  
Stuttgart Municipal Water Works  
P.O. Box 130  
Stuttgart, AR 72160

We appreciate the chance to work with you concerning new effluent standards at the Wastewater a Treatment Plant. Danny Wilson has done a great work over the last month establishing the parameters needed to determine the dosages needed to reduce phosphorus.

The data provided has twelve values for the SCB. We dropped two data points that were over limit leaving ten to determine high, low, and average readings. The average of these ten values is 5.66 mg/L as P Total. The highest value is 8.64 mg/L with a low of 1.32 mg/L as P. Effluent data using all twelve values resulted in an average of 5.47 mg/L with a high value of 8.59 mg/L and a low value of 4.06 mg/L as P.

The difficulty in treatment will be handling the wide swings in phosphorous levels. Our laboratory testing established a dosage ratio of 23:1 - Aluminum Sulfate : P Total. We recommend starting at a feed with the average influent P Total. Starting a dosage for 6.00 mg/L as P Total, we will need 138 ppm of a Liquid Aluminum Sulfate. At 1.8 MGD, 2,072 lbs. of product will be used at a feed rate of 491 ml/min or 7.8 GPH. The pump we recommend is a motor driven 25 GPH pump that will range very low and high to handle swings in phosphorous. At 3.0 MGD, the 25 GPH pump can dose for a value of 11.6 mg/L as P Total. With a turn down ratio of 86:1, the pump can dose as low as 0.3 GPH which would dose for 0.22 mg/L as P Total.

Bulk facilities will be needed to handle an average dosage of 2,072 lbs./day. A 45,000 lb. bulk load will be used every 22 days. This may seem excessive, but is not out of the ordinary for the plants we see in Northwest Arkansas that have been dealing with this issue for many years.

11lbs gall

For a trial period, we will provide a pump like the one specified above. We can bring in tanks to handle the usage for the trial period as well. A period of three months should be run as a trial period to validate the treatment and learn the process. A feed facility can easily be placed near the area we obtained the samples which dips the chamber after the SCB. Keeping the facility outdoors should not be a problem as the freezing point of this product is well below freezing.

We can quote product as follows:

**ECO 800 - Liquid Aluminum Sulfate 48.5% - \$0.09/lb. fob delivered**

With an average of 2,072 lbs./day, the cost of treatment is \$186.48 day or \$68,065/year. The product can be directly delivered by ECOTECH ENTERPRISES at Scott, AR. We have this product in bulk at our facility giving us maximum flexibility in providing product to your plant.

Please see the attached letter we provided to Charlie Summerford concerning nitrates and nitrites. We ran a lab where we looked at these values with and without treatment, but found the values are below 10 mg/L nitrate and 1 mg/L nitrite. These are the values we see as limits in potable water and see no issues for treatment at this time.

Another issue is removal of phosphorous from the clarifier. We will work with Danny to look at removal of precipitated P in the wasting process and develop the necessary calculations and procedures to ensure the phosphorus does not cycle up and increase the values.

Attached is the SDS for ECO700, the letter to Summerford Engineering concerning Nitrates and Nitrites, and the lab establishing dosages for phosphorus removal. Please contact us if you have questions or need additional information for submitting to ADEQ.

Sincerely,

ECOTECH ENTERPRISES, INC.

*Darrell E. Cates*

(electronic signature)

Darrell E. Cates  
Consultant

Cc: Mr. Danny Wilson, Stuttgart  
Mr. Charles Summerford, Summerford Engineering  
Mr. Joseph A. Luzzi, ECOTECH  
Ms. Bonnie Taylor, ECOTECH

Stuttgart Wastewater Plant

Date	mg/l	PO4	Phosphorus				Whom	60 min settling ml
			Month	March	Year	2015		
	Day	Time	sample Location	Sample	5 to 1	10 to 1		
2nd	Mon.	3:10 PM	Plant Eff	Plus	5.95	5.966	DW	0.1
2nd	Mon.	3:10 PM	SCB (Bio Tower Eff)	Plus	3.33	4.205	DW	1.5
3rd	Tue.	3:11 PM	Plant Eff	NA	8.59	7.53	DW	0
3rd	Tue.	3:10 PM	SCB (Bio Tower Eff)	NA	Plus	9.29	DW	1.9
6th	Fri.	3:17 PM	Plant Eff	NA	5.36	5.61	DW	<0.1
6th	Fri.	3:11 PM	SCB (Bio Tower Eff)	NA	5.59	5.25	DW	1.5
9th	Mon	4:11 PM	Plant Eff	NA	4.06	3.65	DW	0.5
9th	Mon	3:57 PM	SCB (Bio Tower Eff)	NA	4.89	4.40	DW	1.4
10th	Tue	3:30 PM	Plant Eff	NA	4.52	3.62	DW	0
10th	Tue	3:20 PM	SCB (Bio Tower Eff)	NA	7.47	6.88	DW	2.1
11th	Wed	3:40 PM	Plant Eff	NA	6.52	3.75	DW	0
11th	Wed	3:30 PM	SCB (Bio Tower Eff)	NA	3.26	7.47	DW	1.5
13th	Fri.	3:10 PM	Plant Eff	NA	4.92	4.53	DW	0.2
13th	Fri.	3:01 PM	SCB (Bio Tower Eff)	NA	7.16	6.91	DW	3.8
16th	Mon.	3:16 PM	Plant Eff	NA	4.96	4.34	DW	0
16th	Mon.	3:02 PM	SCB (Bio Tower Eff)	NA	6.89	6.94	DW	1.5
18th	Wed.	3:10 PM	Plant Eff	NA	4.22	7.50	DW	0
18th	Wed.	3:00 PM	SCB (Bio Tower Eff)	NA	Plus	9.88	DW	1.4
19th	Thurs.	3:37 PM	Plant Eff	NA	7.45	6.91	DW	0
19th	Thurs.	3:27 PM	SCB (Bio Tower Eff)	NA	8.64	7.69	DW	0.5
23rd	Mon.	3:56 PM	Plant Eff	NA	4.82	6.94	DW	0.3
23th	Mon.	3:44 PM	SCB (Bio Tower Eff)	NA	1.32	4.92	DW	1.7
24th	Mon.	3:37 PM	Plant Eff	NA	5.35	4.40	DW	0
24th	Mon.	3:26 PM	SCB (Bio Tower Eff)	NA	8.08	6.81	DW	2

			5	10
			[REDACTED]	[REDACTED]
			3.28	1.35
			4.96	2.09

Stuttgart WST Lab 1-20-15

Cates

Series 1		uL	PPM	Active Al <sub>2</sub> O <sub>3</sub>	Active Al	PT	P removed
1	1801	38.8	50	5.4	2.9	0.6	3.0
2	1801	58.1	75	8.1	4.3	0.0	3.6
3	1801	77.5	100	10.8	5.7	0.0	3.6
4	1801	96.9	125	13.5	7.2	0.0	3.6
5	1801	116.3	150	16.2	8.6	0.0	3.6
6	1801	135.7	175	18.9	10.0	0.0	3.6

1000 ml samples

Series 2		uL	PPM	Active Al <sub>2</sub> O <sub>3</sub>	Active Al	PT	P removed
1	1801	38.8	50	5.4	2.9	0.6	3.0
2	1801	43.4	56	6.0	3.2	0.6	3.0
3	700	50.0	66	5.5	2.9	0.8	2.8
4	700	54.5	72	6.0	3.2	0.5	3.1
5	1506	23.4	32	5.4	2.9	0.8	2.8
6	1506	25.9	35.5	6.0	3.2	0.4	3.2

1000 ml samples

1801 best filtration with 700 & 1506 =

Series 3		uL	PPM	Active Al <sub>2</sub> O <sub>3</sub>	Active Al	PT	P removed
1	1801	43.4	56	6.0	3.2	0.9	2.7
2	700	54.5	72	6.0	3.2	0.6	3.0
3	801	54.5	72	5.9	3.1	0.8	2.8
4	801	43.9	58	4.8	2.5	1.0	2.6
5	801	37.9	50	4.1	2.2	1.2	2.4
6	801	27.3	36	3.0	1.6	1.3	2.3

1000 ml samples

All Samples including Raw filtered with 0.8 micron filter paper

Active Al:P Removed	Raw PT	Al as product : P removed
0.95	3.6	17
1.19		21
1.59		28
1.99		35
2.39		42
2.78	pH - 6.78	49

Active Al:P Removed	Raw PT	Al as product : P removed	
0.95	3.6	17	
1.07		19	
1.04		24	
1.02		23	Need 23 ppm of GEO Alum to remove 1 ppm of P
1.03		11	
1.00		11	Need 11 ppm of 1506 to remove 1.0 ppm of P

Active Al:P Removed	Raw PT		Al as product : P removed
1.19	3.6		21
1.06			24
1.12	0%	Dose reduction	26
0.97	20%	Dose reduction	22
0.91	30%	Dose reduction	21
0.68	50%	Dose reduction	16



of P (as P)

' (as P)

**Section 15 - Regulatory Information**

This product does not contain any ingredients subject to the reporting requirements of SARA Title III, Section 313 (40 CFR Part 372).

SARA Section 311/312: Acute Health Hazard.

TSCA: Components found in TSCA Inventory.

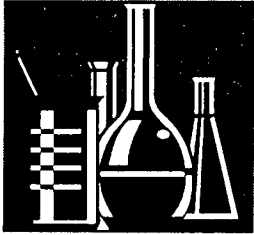
**Section 16 - Other Information**

PREPARER'S NAME:	Joseph A. Luzzi
PREPARER'S TITLE:	Product Manager
PREPARER'S TELEPHONE NUMBER:	(501) 690-1038
REFERENCE NUMBER:	3204H
LAST REVISION DATE:	08/11/2009

The information herein is given in good faith but no warranty, expressed or implied, is made.

**Legend**

NAV = Not Available; NAPL = Not Applicable; NTES = None Established; TRSC = Trade Secret



## ECOTECH ENTERPRISES, INC.

PO BOX 39  
7100 Colonel Maynard Road  
Scott, AR 72142  
Phone (501) 961-9500  
Fax: (501) 961-9502

March 20, 2015

Charles Summerford  
Summerford Engineering, Inc.  
175 Frost Rd.  
Arkadelphia, AR 71923-9608

Charles,

The following are the results of the lab work we did on Stuttgart's waste water in regards to Nitrate/Nitrite.

Stuttgart Waste Lab 3-19-2015

	<u>Raw Unfiltered</u>	<u>Raw Filtered</u>	<u>Treated Unfiltered</u>	<u>Treated Filtered</u>
Nitrate	3.0	2.4	4.0	3.6
Nitrite	.013	.014	.013	.017

If you have any questions, please feel free to give us a call.

Sincerely,

Sandra Castañon  
Ecotech Enterprises Inc  
[Sandra@ecotechenterprises.com](mailto:Sandra@ecotechenterprises.com)

# ECOTECH ENTERPRISES, INC.

7100 Colonel Maynard Road

Scott, AR 72142

(501)961-9500

(501)961-9502 fax

## Material Safety Data Sheet

### Section 1 - Chemical Product and Company Information

PRODUCT NAME: ECO800  
SYNONYMS: Water And Wastewater Treatment Solution  
SUPPLIER: ECOTECH Enterprises, Inc Warehouse/Production Facility  
ADDRESS: 7100 Colonel Maynard Road, Scott, AR 72142

#### NFPA Rating

HEALTH: 2  
FLAMMABILITY: 0  
REACTIVITY: 0

#### HMIS Rating

HEALTH: 2  
FLAMMABILITY: 0  
REACTIVITY: 0

EMERGENCY TELEPHONE NUMBER: CHEMTREC 1-800-424-9300

### EMERGENCY OVERVIEW

Clear, colorless to yellow-brown or yellow-green odorless liquid. This product is expected to cause skin and eye irritation. Expected to be harmful if inhaled or swallowed.

### Section 2 - Composition Information

<u>INGREDIENTS</u>	<u>CAS NO.</u>	<u>% WT/WT</u>	<u>PEL</u>	<u>TLV</u>
Proprietary Ingredients	10043-01-3	26.8-28.2	*15 mg/m <sup>3</sup> (TD) *5 mg/m <sup>3</sup> (RF)	SOLUBLE SALTS: *2 mg/m <sup>3</sup> (TWA)
Water	7732-18-5	71.8-73.2	NTES	NTES

\*Aluminum metal, (as Al)

#### LISTED AS CARCINOGEN BY:

IARC: NO  
OSHA: NO

NTP: NO  
ACGIH: NO

PEL: OSHA Permissible Exposure Limit  
STEL: Short Term Exposure Limit  
HI: Hazardous Ingredient  
OM: Oil mist  
ST: Skin TWA

TWA: Time Weighted Average, 8-hr  
TLV: ACGIH Threshold Limit  
C.LIM: Ceiling Limit  
WF: Wax fume

TD: Total dust  
ND: Nuisance dust  
INP: Inhalable Particulate  
RF: Respirable fraction

### Section 3 - Hazards Identification

#### ROUTES OF EXPOSURE

INHALATION: Mist or vapor may be irritating to mucous membranes and respiratory tract.  
SKIN CONTACT: Expected to be irritating especially on prolonged contact or repeated contact.  
SKIN ABSORPTION: No Data  
EYE CONTACT: Expected to cause eye irritation which may be severe and may cause burns.  
INGESTION: Can cause burns to mouth, bleeding stomach, incoordination, muscle spasm, and/or kidney injury.

#### EFFECTS OF OVEREXPOSURE

ACUTE OVEREXPOSURE: Eye, skin and respiratory tract irritation.  
CHRONIC OVEREXPOSURE:

### Section 4 - First Aid Measures

EYES: Immediately flush with plenty of water for at least 15 minutes, holding eyelids apart to ensure flushing of the entire surface. Washing within one minute is essential to achieve maximum effectiveness. Seek medical attention.  
SKIN: Wash thoroughly with soap and water, remove contaminated clothing and footwear. Wash clothing before reuse. Get medical attention if irritation should develop.  
INHALATION: Remove victim from contaminated area to fresh air immediately. Get immediate medical attention.  
INGESTION: Do not induce vomiting. Give large amounts of water followed by milk if available. If vomiting should occur spontaneously, keep airway clear. Get medical attention. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIAN: Aluminum soluble salts may cause gastroenteritis if ingested. Treatment includes the use of demulcents. Note: Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

### Section 5 - Fire Fighting Measures

FLASHPOINT: NAPL  
AUTOIGNITION TEMPERATURE: NAPL

FLAMMABLE LIMITS IN AIR, % BY VOLUME:  
LOWER FLAMMABILITY LIMIT: NAPL  
UPPER FLAMMABILITY LIMIT: NAPL

EXTINGUISHING MEDIA: Not combustible. Use appropriate extinguishing media for material that is supplying fuel. Use water spray to cool the surrounding area and to maintain fire temperature below decomposition temperature.

FIRE OR EXPLOSION HAZARDS: At temperatures >650°C, product decomposes to give off sulfur trioxide, an oxidizing agent which will support combustion. Sulfur trioxide will with water to form sulfuric acid.

FIRE FIGHTING PROCEDURES: Cool exposed containers with water spray. Use self-containing breathing apparatus in confined areas. May produce hazardous decomposition products under fire conditions greater than 650°C

### Section 6 - Accidental Release Measures

Stop leaks. Use absorbent material to clean up spills. Do not allow liquid to enter streams or waterways. Place in labeled waste container for disposal. Provide adequate ventilation to spill area. Wear adequate personal protective clothing and equipment.

## Section 7 - Handling and Storage

### PRECAUTIONARY STATEMENTS:

#### CAUTION!

MAY CAUSE IRRITATION.

Avoid contact with eyes, skin, and clothing.

Avoid breathing mist or spray.

Wear chemical splash goggles, gloves, and protective clothing when handling.

Use with adequate ventilation and employ respiratory protection where mist or spray may be generated.

Wash thoroughly after handling.

Do not take internally

May be harmful if swallowed or inhaled.

May cause nervous system effects.

May cause kidney injury..

Keep container closed when not in use.

FOR INDUSTRIAL USE ONLY.

### HANDLING/STORAGE REQUIREMENTS:

Store in a cool, dry place away from direct heat. Avoid storing at temperatures near or below freezing point. Do not store below 40°F, product may congeal or stratify if cold. Warm to 122°F and mix well before using. Keep material from coming into contact with common metals due to the corrosive nature of this product.

## Section 8 - Exposure Controls/Personal Protection

VENTILATION REQUIREMENTS: Local exhaust ventilation recommended.

EYE PROTECTION: Chemical splash goggles and/or face shield.

SKIN PROTECTION: Chemical resistant gloves.

RESPIRATORY PROTECTION: When exposures exceed the PEL, use NIOSH/MSHA approved respirator in accordance with OSHA Respiratory Protection Requirements under 29 CFR 1910.134.

OTHER REQUIRED EQUIPMENT: Standard work clothing and work shoes. Safety shower and eye wash located in immediate area.

## Section 9 - Physical and Chemical Properties

APPEARANCE:	Clear, colorless to yellow-brown or yellow-green liquid		
ODOR:	Odorless		
SOLUBILITY IN WATER:	Miscible	pH:	3.5
SPECIFIC GRAVITY (WATER=1):	1.30 - 1.35	DENSITY @ 25°C:	10.84-11.26 lb/gal
BOILING POINT:	214°F(101°C)	MELTING POINT:	NAV
FREEZING POINT:	4°F to 30°F	EVAPORATION RATE:	NAV
VAPOR PRESSURE:	NAV	VAPOR DENSITY (AIR=1):	NAV
VISCOSITY:	NAV	VOLATILES BY WEIGHT:	NAV

### Section 10 - Stability and Reactivity

STABLE: YES

HAZARDOUS POLYMERIZATION: NO

CONDITIONS TO AVOID: High temperatures greater than 650°C as material may decompose to form aluminum oxide and sulfur trioxide (an oxidizing agent which supports combustion)

INCOMPATIBLE MATERIALS: Aluminum sulfate reacts with strong alkali to form aluminum hydroxide. This product may be weakly corrosive to carbon steel and incompatible with strong oxidizing agents, iron, copper or copper alloys.

DECOMPOSITION PRODUCTS: Thermal decomposition products include oxides of sulfur and aluminum.

### Section 11 Toxicological Information

Acute Oral LD50 (rat): 6207 mg/kg  
Acute Oral LD50 (mouse): 274 mg / kg  
Unreported route – Guinea pig LD50: 490 mg/kg  
Unreported route – Mouse LD50: 520 mg / kg  
Unreported route LD50 (rat): 410 mg/kg  
Severe eye irritation-Rabbit: 10 mg / 24hr

### Section 12 - Ecological Information

BOD5:	mg O2/mg:	NAV
	ppm:	NAV
	Biodegradable, %:	NAV
BOD28:	mg O2/mg:	NAV
	ppm:	NAV
	Biodegradable, %:	NAV
COD:	mg O2/mg:	NAV
	ppm:	NAV
	Biodegradable, %:	NAV

Aquatic Toxicity:  
Not Available

### Section 13 - Disposal Considerations

Dispose of in accordance with all applicable federal, state and local regulations.


### Section 14 - Transportation Information


DOT Proper Shipping Name:

Corrosive Liquid, Acidic, Inorganic, n.o.s. (proprietary ingredients), 8, UN3264, PG III, ERG#154

Harmonized Tariff Schedule Number: 2833.33.00 00

STUTT GART MUNICIPAL WATER WORKS  
P.O. BOX 130  
STUTT GART, AR 72160  
PHONE: 870-673-3246

Hasler  
04/02/2015  
**USIPOSTAGE** \$00.42<sup>0</sup>  
  
ZIP 72160  
011D10608725

Hasler  
04/02/2015  
**USIPOSTAGE** \$00.48<sup>0</sup>  
  
ZIP 72160  
011D10608725

ATTN: Alan Anderson

Arkansas Department of Environmental Quality  
5301 Northshore Drive  
North Little Rock, AR 72118-5317

