

# St. Martinville Wetland Assimilation Monitoring Report

*April-June 2018*



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**For:** Thomas Nelson, Mayor  
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# St. Martinville Wetland Assimilation Monitoring Report

## Summary of Activities: April-June

### Site visits

**April 12, 2018:** Comite Resources field technicians Jason Day and Joel Mancuso visited the St. Martinville assimilation wetlands to carry out monthly monitoring. Leaf litter biomass was collected from each study site. Water levels were measured at each site - there was no standing water at the 6M, 3O, and 3M sites, and site 1T was dry. Dissolved oxygen, conductivity, temperature, salinity and pH were measured at all of the study sites except 1T (see data below).

*Discrete water quality data from the St. Martinville assimilation wetlands on April 12, 2018.*

	DO (mg/L)	Cond (mS)	Temp. (°C)	Sal (PSU)	pH	Water Level (cm)
PIPE	2.0	1487.9	18.5	0.9	7.0	<1 cm
1T	dry	dry	dry	dry	dry	dry
3T	2.0	1125.5	16.4	0.7	7.4	2.1
3M	0.8	461.6	16.0	0.3	6.7	<1 cm
3O	7.0	1360.0	17.5	0.8	7.6	<1 cm
6T	0.3	1499.2	18.7	0.9	6.5	3.5
6M	1.0	1501.1	16.9	0.9	6.8	<1 cm
Ref N	2.6	63.4	17.9	0.0	7.9	6.4
Ref S	2.6	66.4	16.8	0.0	7.1	14.7



*Jason Day collecting discrete probe data on April 12, 2018.*



*Joel Mancuso collecting leaf litter at site 3M on April 12, 2018.*

**May 9, 2018:** Comite Resources staff traveled to the St. Martinville assimilation wetlands to carry out monthly monitoring. Dissolved oxygen, conductivity, temperature, salinity and pH were measured site 3M, which had only a small puddle to for water chemistry (see data below). Leaf litter biomass was collected at each site. There was no discharge to the wetlands from the treatment ponds. There was also no water from the wetland exiting to the Cypress Island Coolie.

*Discrete water quality data from the St. Martinville assimilation wetlands on May 9, 2018.*

	DO (mg/L)	Cond (mS)	Temp. (°C)	Sal (PSU)	pH	Water Level (cm)
PIPE	dry	dry	dry	dry	dry	dry
1T	dry	dry	dry	dry	dry	dry
3T	dry	dry	dry	dry	dry	dry
3M	1.2	428.8	22.6	0.2	7.4	<1 cm
3O	dry	dry	dry	dry	dry	dry
6T	dry	dry	dry	dry	dry	dry
6M	dry	dry	dry	dry	dry	dry
Ref N	dry	dry	dry	dry	dry	dry
Ref S	dry	dry	dry	dry	dry	dry



*Joel Mancuso at site 1T on May 9, 2018.*





Site 3M on May 9, 2018.

**June 12, 2018:** Comite Resources personnel Jason Day and Joel Mancuso visited the St. Martinville assimilation wetlands to conduct monthly monitoring. Leaf litter biomass and water levels were collected at each site. No standing water was present at any of the sites. There has been no discharge to the wetlands for over a month because of low pond levels and pump maintenance. Mr. F. Leblanc of the city of St. Martinville informed Comite Resources Jason Day that normal pumping would resume next week.

*Discrete water quality data from the St. Martinville assimilation wetlands on June 12, 2018.*

	DO (mg/L)	Cond (mS)	Temp. (°C)	Sal (PSU)	pH	Water Level (cm)
PIPE	dry	dry	dry	dry	dry	dry
1T	dry	dry	dry	dry	dry	dry
3T	dry	dry	dry	dry	dry	dry
3M	dry	dry	dry	dry	dry	dry
3O	dry	dry	dry	dry	dry	dry
6T	dry	dry	dry	dry	dry	dry
6M	dry	dry	dry	dry	dry	dry
Ref N	dry	dry	dry	dry	dry	dry
Ref S	dry	dry	dry	dry	dry	dry

## Annual Report

Comite Staff wrote and submitted the 2017 Annual report to the city on April 30, 2018, who then should have be submitted it to LDEQ. The first 6 pages of the report have been appended to the end of this report.

**LOUISIANA POLLUTANT DISCHARGE  
ELIMINATION SYSTEM (LPDES)  
Wetland System Monitoring Report**

**City of St. Martinville  
Wetland Assimilation Project**

**Permit Number: LA0040941  
Agency Interest Number: AI19216  
Activity Number: PER20110002**

**Prepared By  
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**2017 Annual Wetland Monitoring Report**

**Permit Year: 1 2 3 4 5 (circle one)**

**Date: April 30, 2018**

**ANNUAL WETLAND MONITORING REPORT**  
**Summary Sheet**  
Due each year on the effective day of the permit

City of St. Martinville  
 Cypress Island Coulee Wetland Wastewater Assimilation Project  
 Post Office Box 379  
 St. Martinville, Louisiana 70582

PERMIT NUMBER: LA0040941  
 AGENCY INTEREST NUMBER: AI 19216  
 ACTIVITY NUMBER: PER20030001

Two new reference monitoring sites were recently established at the St. Martinville assimilation wetland. The two reference sites historically used for the St. Martinville assimilation wetland are no longer accessible to Comite Resources personnel as of August 2017. Since the two new reference sites for St. Martinville were established in the latter part of 2017, woody and leaf litter productivity, water chemistry, and hydrology data were not available for comparison to the assimilation wetland sites. Locations of the new reference sites are shown in Figure 1, and GIS coordinates are provided in the Table 1.

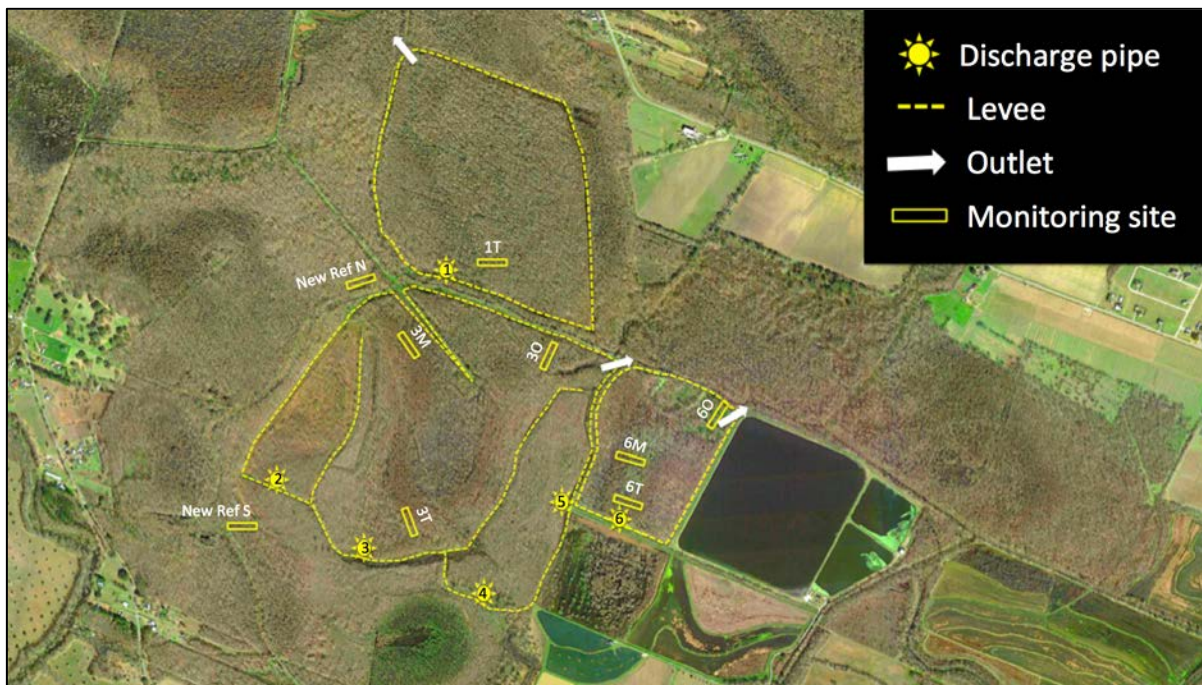


Figure 1. Location of the Reference North (Ref N) and Reference South (Ref S) sites at the St. Martinville assimilation wetland.

Table 1. GIS coordinates for the reference sites at the St. Martinville assimilation wetland.

Corner	Reference North		Reference South	
1	30 09' 07.8" N	91 52' 37.8" W	30 08' 39.6" N	91 52' 53.5" W
2	30 09' 08.0" N	91 52' 37.8" W	30 08' 38.5" N	91 52' 53.4" W
3	30 09' 06.8" N	91 52' 40.8" W	30 08' 38.6" N	91 52' 54.7" W
4	30 09' 07.1" N	91 52' 40.9" W	30 08' 39.5" N	91 52' 54.6" W

**GROWTH STUDIES ~ STEM GROWTH (Flora)**

PARAMETER	GROWTH STUDIES ~ STEM GROWTH (Flora)					
	Wastewater Management Area (g/m <sup>2</sup> /yr) (mean ± standard error)			Control Area (g/m <sup>2</sup> /yr) (mean ± standard error)		
	UAA Overall Average	Current Overall Average	Difference <sup>1</sup>	UAA Overall Average	Current Overall Average	Difference <sup>1</sup>
<b>Site 1</b>						
Tmt Area 1 (Treatment)	485±68	774.7±213.2	1			
<b>Site 3</b>						
Tmt Area 3 (Treatment)	134±59	273.3±34.9	1			
Tmt Area 3 (Mid)	NM <sup>2</sup>	192.9±14.1	-			
Tmt Area 3 (Out)	364±115	843.9±294.5	1			
<b>Site 6</b>						
Tmt Area 6 (Treatment)	NM	363.5±62.2	-			
Tmt Area 6 (Mid)	NM	636.2±62.2	-			
Reference Area 1 <sup>3</sup>				628	407.8±95.2	2

<sup>1</sup>The difference in the UAA value and the Current value shall be indicated by **NO INCREASE = 0, INCREASE = 1, or DECREASE = 2.**

<sup>2</sup>NM = Not measured. Site 3 Mid was not measured because at the time that the EBS was conducted, two Treatment and two Out sites were being monitored (and no Mid sites). No data exist for the EBS for Site 6 because at the time of the EBS, site 6 did not exist. The locations of the sites were changed after the EBS was completed.

<sup>3</sup>Reference Area 1 = Breaux Bridge Reference

**ANALYSIS OF VARIANCE (ANOVA)**

**Was there a significant difference (p=0.05) between stem growth (flora) in the control and the treatment area?**

YES  NO

**If yes, please explain the significance between the control and the treatment areas and outline any corrective actions taken, if needed.**



GROWTH STUDIES ~ LITTER FALL (Flora)

PARAMETER	GROWTH STUDIES ~ LITTER FALL (Flora)					
	Wastewater Management Area (g/m <sup>2</sup> /yr) (mean ± standard error)			Control Area (g/m <sup>2</sup> /yr) (mean ± standard error)		
	UAA Total Dry Weight	Current Total Dry Weight	Difference <sup>1</sup>	UAA Total Dry Weight	Current Total Dry Weight	Difference <sup>1</sup>
<b>Site 1</b>						
Treatment	615±67	759.3±52.8	1			
<b>Site 3</b>						
Treatment	847±48	1026.7±19.1	1			
Mid	NM <sup>2</sup>	1093.3±42.0	-			
Out	788±15	1035.3±26.2	1			
<b>Site 6</b>						
Treatment	NM	1059.3±56.4	-			
Mid	NM	1086.7±27.6	-			
Reference Area 1				680	1288.7±29.9	1

<sup>1</sup> The difference in the UAA value and the Current value shall be indicated by **NO INCREASE = 0, INCREASE = 1, or DECREASE = 2.**

<sup>2</sup>NM = Not measured. Site 3 Mid was not measured because at the time that the EBS was conducted, two Treatment and two Out sites were being monitored (and no Mid sites). No data exist for the EBS for Site 6 because, at the time of the EBS, site 6 did not exist. The locations of the sites were changed after the EBS was completed.

ANALYSIS OF VARIANCE (ANOVA)

Has there been a significant difference (p=0.05) between the Litter Fall (Flora) in the control and the treatment area?

YES  NO

If yes, please explain the significance between the control and the treatment areas and outline any corrective actions taken, if needed.

Leaf litter biomass was higher at all sites compared to the UAA. The Reference site (located at the Breaux Bridge assimilation wetlands) was significantly higher compared to the other sites [F(6, 35)=16.2580, p<0.0001]. However, leaf litter biomass at all sites was higher than collected for the ecological baseline study (i.e., UAA). Ecological data vary annually due to changes in rainfall, temperature, etc., and no corrective actions are necessary at this time.



**WATER STAGES (Surface Water)**

Sample Date	Water height (cm)					
	1TRT	3TRT	3MID	3OUT	6TMT	6MID
January	>1 m*	16.8	17.4	>1 m*	10.0	7.8
February	10.2	1.6	0.0	1.8	1.0	4.6
March	4.1	0.0	2.3	1.9	6.9	5.3
April	0.0	9.6	2.3	4.0	3.2	4.9
May	36.6	9.1	3.9	4.1	0.0	1.0
June	>1 m*	16.5	18.4	>1 m*	6.1	10.0
July	>1 m*	5.8	4.9	>1 m*	10.1	9.2
August	24.9	4.0	0.0	2.7	6.2	8.7
September	13.6	2.5	0.0	0.8	5.7	13.8
October	16.6	5.0	9.8	13.1	2.8	2.3
November	0.9	0.0	2.0	0.0	9.2	7.9
December	28.4	5.7	3.7	6.4	12.1	8.9

\*Surface water too high to access site.

Sample Date	Water height (cm)
	Breaux Bridge Reference
January	15.6
February	6.7
March	8.6
April	5.9
May	7.6
June	6.0
July	1.9
August	2.1
September	0.0
October	0.0
November	9.3
December	13.2

**SUMMARY OF THE OVERALL WATER STAGE FOR ONE YEAR**

There are six discharge effluent pipes at the St. Martinville assimilation wetland, and the discharge is rotated among the pipes to allow for flooding and drawdown (see Figure 1). Pulsing of the effluent mimics natural hydrologic conditions and promotes nitrogen removal through oxidation of ammonium and subsequent reduction of nitrous oxide to nitrogen gas. Pulsing also protects the vegetation from extended periods of flooding. The discharge pattern is shown in Table 2. The site where the effluent was discharged typically had a small increase in water depth (Figure 2). There were several months when Sites 1T and 3O were not accessible because surface water was too deep. These two sites are located at a lower elevation than the other sites and they are also hydrologically connected to Cypress Island Coulee. When the coulee floods due to heavy rainfall, it increases water levels at these sites.

**Table 2. Location of effluent discharge (indicated by X) at the St. Martinville assimilation wetland.**

2017 Month	Discharge Pipe					
	1	2	3	4	5	6
January	X					
February	X					
March	X					
April			X			
May			X			
June			X			
July					X	
August					X	
September					X	
October		X				
November		X				
December		X				