



- [Company](#) »
- [Projects](#) »
- [Clients](#) »
- [News](#) »
- [Contact Us](#) »

[Home](#) » [News](#) » [Wastewater Wetland Assimilation](#)

## Wastewater Wetland Assimilation

Posted on Nov 7, 2011

Wastewater Wetland Assimilation: Climate Change Mitigation in New Orleans

[Sarah K. Mack\\*](#), [John W. Day\\*\\*](#), [R. Lane\\*\\*](#), [J. Funk\\*\\*\\*](#)

\* Tierra Resources LLC, 1320 St. Andrew Street Suite 6, New Orleans, Louisiana 70130 USA

\*\* Department of Oceanography and Coastal Sciences, Louisiana State University Baton Rouge, Louisiana 70803 USA

\*\*\*Environmental Defense Fund, 1875 Connecticut Ave NW #600, Washington D.C. 20001 USA

**Keywords:** climate change mitigation; carbon sequestration; wetland treatment

The East Bank Sewage Treatment Plant (EBSTP) is located in the lower 9<sup>th</sup> Ward of New Orleans near Bayou Bienvenue. The EBSTP provides wastewater treatment for the entire east bank of Orleans Parish and treats biosolids for both the east and west banks of Orleans Parish. The treatment facility received approximately \$70 million of damage as a result of the 17-foot storm surge created by Hurricane Katrina. The neighboring St. Bernard Parish received catastrophic damage to all seven wastewater treatment plants. In addition to restoring critical

infrastructure, both agencies faced upcoming regulatory nutrient limits which would require new energy intensive tertiary treatment systems. The municipalities sought a solution to climate change and energy scarcity adaptation that would provide a less expensive option to restore infrastructure while enhancing deteriorating coastal marshes as a self-sustaining complement to the structural protection of levees.

Currently nutrient rich effluent from both parishes is discharged to the Mississippi River where it contributes to hypoxia in the Northern Gulf of Mexico. Rerouting the effluent will significantly reduce energy requirements for pumping and conveyance and allow the nutrients to be used to replenish the wetlands, rather than increasing damage to the coastal environment. Most of the degraded wetlands are within the rural St. Bernard Parish that produces a dry weather flow of approximately 38,000 m<sup>3</sup> a day. The EBSTP produces a dry weather flow averaging 340,000 m<sup>3</sup> a day. Hurricane Katrina presented the opportunity for the two parishes to partner to pursue wetland assimilation of secondarily treated wastewater effluent as an alternative to conventional tertiary treatment and hurricane protection. The application of municipal effluent will buffer saltwater intrusion, offset regional subsidence, and re-establish favorable conditions for bald cypress growth. This type of wetland restoration promotes additional carbon sequestration by reversing wetland loss, enhancing burial, and by reestablishing cypress forests. Thus, the wetland assimilation project will integrate sustainability with mitigation measures by enhancing storm surge protection, utilizing natural energies, and sequestering large amounts of carbon.

There is a rising demand to know how much carbon is sequestered by wetlands, the timeframe in which it takes place, and the amount of carbon emitted during wetland loss. To answer these questions an analysis was conducted based upon peer-reviewed literature to identify the carbon storage pools of wetlands and to quantify the primary carbon storage mechanisms where carbon sequestration is being enhanced by wetland assimilation of municipal effluent (Rybczyk et al. 2002; Day et al. 1999). In addition to peer-reviewed literature, the analysis utilized non-published data collected as part of monitoring programs by state agencies, as well as data collected by university scientists. The objective of the analysis was to calculate general long-term (e.g., 50+ years) carbon sequestration rates for wetland restoration inclusion in greenhouse gas (GHG) policy regimes. The findings were then applied to the regional wetland assimilation system planned to receive municipal effluent from the city of New Orleans in order to quantify the carbon sequestration of an 809 hectare restoration area and the full 12,140 hectares as applicable towards carbon credits (Table 1.1).

**Table 1.1.** Additional Carbon Sequestration (CO<sub>2</sub>e) for the Orleans Wetland Assimilation System

Mechanism	809 ha	12,140 ha
Biosequestration in planted cypress a year	22,000 tons	334,000 tons
Total additional 1 <sup>st</sup> year	36,000 tons	534,000 tons
Total additional 50 <sup>th</sup> year	74,000 tons	1,106,000 tons
Total cumulative additional over 50 years	2,915,000 tons	43,732,000 tons

The results of this research can be used as a predictive tool for utilizing carbon credits to fund the municipal effluent wetland restoration project. The methodology for quantifying the carbon

sequestration potential of the project provides guidance to others pursuing innovative climate mitigation measures that integrate natural resource management with wastewater treatment. The paper concludes with a detailed summary of future research requirements to provide the scientific basis for quantifying carbon sequestration and certifying offsets from wastewater wetland projects.

Addressing global climate change will require a significant reduction in annual GHG emissions in the United States and throughout the world. The management approaches developed to restore and sustain the New Orleans region will provide insight to those elsewhere needing to adapt to climate change in times of resource scarcity. Natural sinks such as wetlands that capture and store carbon from fossil fuels will have an important role in a new low-carbon economy. Using natural wetlands for tertiary treatment becomes a multi-benefit climate change adaptation measure by sequestering large amounts of carbon, offsetting sea level rise, and increasing the resiliency of the natural and built environment to hurricanes.

## References

Day, J. W., J. Rybczyk, F. Scarton, A. Rismondo, D. Are, and G. Cecconi. (1999) Soil accretionary dynamics, sea-level rise and the survival of wetlands in Venice Lagoon: a field and modelling approach. *Estuarine, Coastal and Shelf Science* **49**:607-628.

Rybczyk, J., J. Day, and Conner W. (2002) The impact of wastewater effluent on accretion and decomposition in a subsiding forested wetland. *Wetlands*. **22**:18-32.

## My Posts Order

- [Ecosystem Marketplace: Writing the Rule That Will Rebuild the Bayou- With Carbon](#)
- [NYT story in Green blog section: Calculating the carbon value of a swamp](#)
- [America's WETLAND Foundation Calls Protocol For Beneficial Use Of Carbon Sponsored By Entergy And Partners A Major Step In Fight To Save Wetlands](#)
- [Methodology Release](#)



Tierra Resources LLC (504) 339-4547 begin\_of\_the\_skype\_highlighting (504) 339-4547 end\_of\_the\_skype\_highlighting  
1310 Saint Andrew St. Suite 1  
New Orleans, LA 70130

© Copyright 2012 Tierra Resources™ All rights reserved.  
Developed by Calliope Consulting Group