CASE STUDY

MABR

MABR Technology Implemented at Wastewater Treatment Plant in Bordeaux, St. Thomas, US Virgin Islands

Background

St. Thomas in the US Virgin Islands is considered to be one of the most beautiful sites in the Caribbean. Being an island affects the natural water supply and water shortages have an impact on irrigation for local farmers, domestic use and tourism.

The Bordeaux plant in St. Thomas is a localized municipal waste water treatment plant, designed to serve a population of approximately 200 houses.

The Challenge

The Bordeaux region of St. Thomas had a pressing need for a wastewater treatment plant that produces high effluent quality. Its existing plant was old and did not meet regulation nor industry standards. The Virgin Islands Waste Management Authority (VIWMA) was looking for a solution that could treat current and future sewage flow and produce high quality effluent, to be discharged into the environment in the Bordeaux area.

Solution Criteria

- Minimal energy consumption
- Economical capital cost
- Capacity of 25,000 gallons per day (GpD)
- Modular, easily expanded to treat higher flows as and when required
- High effluent quality
- Designed, delivered and executed within seven months.

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CASE STUDY • MABR | USVI wastewater treatment plant

Design Parameters:

- **Flow:** 20,000-50,000 GpD
- **Wastewater characteristics:** characteristics: municipal wastewater only
- **Wastewater minimum temperature:** 24°C

Raw Wastewater Influent Characteristics:	
$BOD_{5,t}$:	220 mg/l
TSS:	180 mg/l
TN:	45 mg/l
Phosphorous:	14 mg/l

Effluent Requirements	
BOD_5:	10 mg/l
TSS:	10 mg/l
TN:	10 mg/l
Phosphorous:	1 mg/l

The Solution

The MABR-based wastewater treatment solution was chosen because of the following features:

- Extremely low energy consumption
- Low operating costs
- High effluent quality
- Modular, scalable and easily expandable
- Quiet and odorless

The Fluence MABR-based wastewater treatment solution features:

- Fine screens and FOG separator as pretreatment
- Biological treatment using MABR modules arranged in two stages
- - 1st stage - 6 modules
- - 2nd stage - 3 modules
- Secondary clarifier
- Tertiary treatment, based on media filters and disinfection unit

Fluence, together with its partner SD&C Inc., built the MABR-based wastewater treatment plant from the ground up, utilizing whatever existing pieces of equipment could be used from the old plant.

The plant has been operating since December 2016, producing excellent effluent quality.

The MABR based plant works under discharge permit number VI0039977 from the US Virgin Islands Department of Planning and Natural Resources.

Customer's point of view

"The MABR solution met every parameter originally declared in the initial specifications provided in the proposal. The Fluence MABR has an unmatched range of key benefits, including lower commissioning costs, low maintenance, superior environmental performance and low energy, as well as being neighborhood friendly."

Mr. James E. Grum, Chief Engineer of Virgin Islands Wastewater Management Authority (VIWMA)

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