



Winner of the 2015  
**Water Management  
Company of the Year**

## CASE STUDY

# Storage and Terminal Facility Wastewater Treatment

**CUSTOMER:** Large Greenfield Installation

**EPC:** Envar Services

**LOCATION:** Texas, U.S.A.

## Application

Treat condensate, stormwater and wastewater for discharge into the Houston Ship Channel.

**FLOW RATE:** 450 GPM at Ambient Temperature

### OBJECTIVE OF THE TREATMENT

Discharge to the Houston Ship Channel in accordance with the EPA's National Pollutant Discharge Elimination System (NPDES) permitting program and Coast Guard Authority requirements as follows:

Oil and Grease: less than 15 mg/L

Chemical Oxygen Demand: less than 150 mg/L

pH: from 6 to 9

### DATA

Average discharge levels with MYCELX during the first ten months of operation:

Oil & Grease: 0.47 mg/L with one peak instance at 11.7 mg/L

COD: 40.5 mg/L with one peak instance at 88 mg/L

pH: 7.304



## Challenge

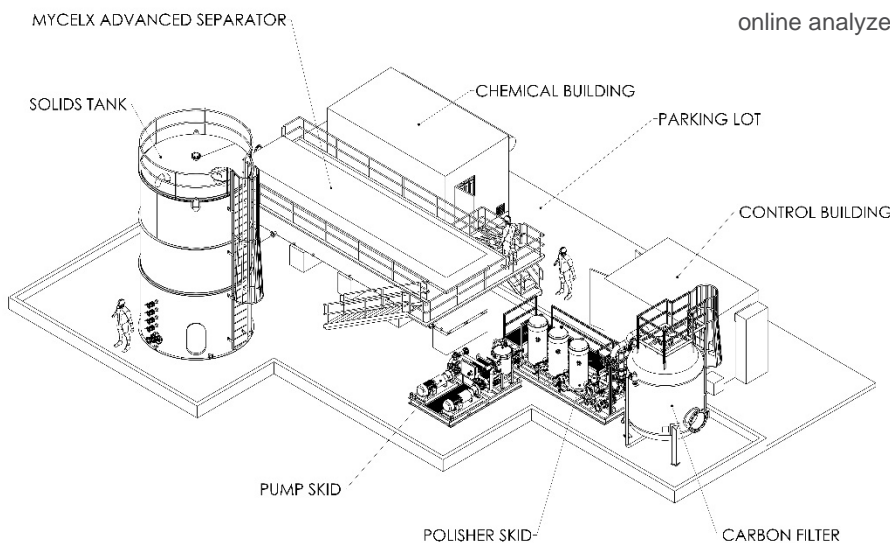
A storage and terminal facility with a capacity of over seven million barrels was under construction near the Houston Ship Channel and needed a wastewater treatment system. The 185 acres site anticipated generating approximately 426,627 bbls of wastewater annually from its operations which includes wastewater from condensate return lines, tempering, stormwater, tank washing and spills. The mechanical agitation and recirculation within the wastewater loop would further emulsify the oil into the water which would make it difficult for standard technologies to effectively treat.

Due to its proximity to the Houston Ship Channel, the client set out to find an adaptable on-site automated water treatment solution that would allow them to discharge directly to the waterway. Permits are very restricted and must meet the Environmental Protection Agency (EPA) discharge limits of less than 15 ppm of oil and grease per EPA 1664B (or no sheen condition at discharge), less than 200 ppm of Chemical Oxygen Demand per EPA 410.4, and pH from 6 to 9 per EPA 150.1 and benzene below 0.5 ppm. Additionally, wastewater storage tanks could not exceed over two-thirds capacity in order to prevent contaminated water overflow into the nearby bird estuary and channel because of hurricanes and torrential rains.

## SOLUTION

MYCELX customized a terminal wastewater system to treat two 20,000 bbls storage tanks which contained a combination of stormwater runoff, boiler condensate, tempering and collection sump water. The system deployed consisted of a solids settling and pH equalization tank, MYCELX Advanced Separator, MYCELX Polisher, a carbon stripper unit and state-of-the-art analytical equipment for continuous monitoring.

The MYCELX solution optimally utilized the appropriate technology in varying stages to minimize cost while meeting discharge requirements. Media life was further extended by implementing oil content and COD monitors to divert flow around the MYCELX polishers and carbon filter when the water was less than the discharge range.



## IMPACT

The MYCELX automated solution required very minimal supervision from the operations staff. The robust MYCELX terminal wastewater system easily handled very high fluctuations of inlet oil and grease concentrations while continuously meeting discharge requirements.

- Inlets of the system ranged up to 3% oil in water and 1,000 mg/L of Total Suspended Solids (TSS) while maintaining consistent outlet result below required limits.
- Proprietary system utilized bypass flow around consumable media to avoid premature consumption, thus saving operational costs.
- Automatically diverted any non-compliant water back to the front of the wastewater recycling loop process via online analyzers.