DUPERON®
CASE STUDY

MUNICIPAL WASTEWATER




# CITY OF HITCHCOCK, TX

## PROJECT-AT-A-GLANCE

Flood-resilient headworks upgrade that protects pumps, reduces maintenance, and eliminates sanitary sewer overflows.

**SITE:** *Municipal Wastewater Treatment Plant*
**EQUIPMENT:** *FlexRake IQ²®*
**INSTALLED:** *January, 2026*

## RESILIENCE AT THE HEADWORKS: HOW HITCHCOCK, TX FOUGHT BACK AGAINST FLOOD-DRIVEN SEWER OVERFLOWS

The City of Hitchcock, Texas, sits on the mainland of Galveston County, just across the water from Galveston Island and downhill from Houston – a low-lying position that puts a sizable share of the city's roughly 8,000 residents inside FEMA-designated floodplains. The City of Hitchcock Wastewater Treatment Plant, built in 1980, treats an average flow of 0.7 MGD with peak capacity of 8.0 MGD, discharging into the Highland Bayou Diversionary Canal, built 60 years ago by the Army Corps of Engineers.

Like much of the Texas Gulf Coast, Hitchcock's wastewater infrastructure sits where it has to: adjacent to the floodway for gravity-fed discharge. That geography, combined with a modest municipal budget and aging equipment, left the plant chronically vulnerable to overflows and compliance issues even before Hurricane Harvey made landfall in August 2017. Harvey dropped historic rainfall across the Houston-Galveston region: Galveston County alone saw more than 28 inches of rain during the storm, and Hitchcock's plant and every pumping station structure were overwhelmed, submerged under roughly 12 feet of water.

In the storm's aftermath, the City of Hitchcock, along with neighboring Dickinson, Galveston, La Marque and Texas City, became part of a $179 million Texas General Land Office flood mitigation initiative aimed at protecting more than 123,000 residents from repeat disasters. That funding, paired with federal support from the American Rescue Plan Act of 2021, gave Hitchcock the opening to rebuild its plant not just back to code, but for future storm resilience.

## THE PROBLEM

At the heart of the plant's vulnerability sat a manual bar screen, located roughly 30 feet below grade in the pumping station's wet well. During major storm events, the screen could go fully underwater with no way to clean it, directly contributing to sanitary sewer overflows. But the




screen was a liability even on clear days. Hitchcock, like most municipalities, deals with a steady influx of "flushable" wipes and other non-organic debris that does not break down. With no automated way to clear it, the screen blinded easily, sending debris downstream where it damaged equipment, drove up maintenance and increased chemical use throughout the plant.

Clearing the screen was also dangerous work. Maintenance crews had to descend into the deep, confined wet well wearing oxygen masks just to manually rake debris off the bars – a frequent, high-risk chore rather than a routine task.

Compounding the problem was the screen's location: downstream of the station's four main pumps, rather than upstream. That meant the pumps, not the screen, bore the brunt of incoming debris. Rags, wipes and solids wrapped around impellers, jammed pump housings and in the worst cases burned out motor internals when a clogged or bound impeller forced a motor to work against resistance it was not built to handle. At least one pump had to be physically removed from service for cleaning or repair every single day. Frequent pump replacement was among the plant's biggest recurring costs.

## DUPERON'S APPROACH

As one part of Hitchcock's broader flood-resilience upgrade, Director of Public Works Leroy Thomas led the effort to replace the plant's manual bar screen with a self-cleaning solution: the FlexRake IQ$^2$ from Duperon.

> "The FlexRake IQ$^2$ has enabled us to become much more proactive," said Thomas. "We're no longer constantly in urgent reactionary mode, and our plant is much better prepared for the next storm."

Three design changes made a huge difference. First, the new screen was installed above grade, eliminating the need for crews to enter a submerged, oxygen-mask-required confined space just to keep it clean. Second, and perhaps more consequentially, the screen was relocated upstream of the pumps rather than downstream. That single change meant debris was captured and removed before it ever reached the pumps, rather than after the pumps had already been damaged by it. Finally, the screen was outfitted with an automatic discharge function, which pushed debris into a waiting dumpster and eliminated the daily need for staff to manage debris.

The FlexRake IQ$^2$ also brought a new level of flexibility to the plant. The screen's openings automatically adjust between 0.25" and 0.75" in response to changing flow, a valuable feature in a storm-prone area, where flows can spike suddenly during heavy rain. That automatic response significantly reduces the risk of overflow.

Installation itself came with its own high-stakes constraint. Because the work required halting incoming flow to the plant, the team was racing a hard deadline. After roughly eight hours without flow, wastewater would begin backing up into residents' homes. To build in a safety margin, the crew planned for a six-hour installation window and scheduled the work during the slowest flow period of the day, 11 a.m. to 5 p.m. Outfitted in waders and safety harnesses, the installation team worked directly in the channel to install the new screen and reopen the gate, completing the job with time to spare before flow levels reached anything close to critical.

## THE RESULTS



The FlexRake IQ$^2$ went into service in January 2026, and the plant has already seen dramatic operational shifts. Pumps that once needed to be pulled daily now come out only once every week or two. Chemical use has dropped substantially, as has overall plant maintenance. Oxidation ditch rotor maintenance (previously required about twice a month) has stretched to once every six months.

Before the upgrade, with no dedicated dumpster at the headworks, crews filled about two improvised containers a day – often 5-gallon buckets or empty 100-lb chemical pails – amounting to roughly one cubic yard of hand-hauled debris per week. Today, a single 60" by 48" by 36" dumpster, holding more than double that volume at roughly 2.2 cubic yards, fills up automatically and is emptied just once a week on the plant's regular collection schedule. The FlexRake IQ$^2$ isn't just running more efficiently than the old manual process; it's capturing significantly more debris than before, material that used to bypass the screen entirely and wreak havoc on pumps and downstream equipment.

Perhaps most tellingly, since the FlexRake IQ$^2$ was installed, the plant has experienced zero sanitary sewer overflows, a striking turnaround for a facility whose flood-prone location and unreliable screen once made overflows a recurring risk.

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## ABOUT DUPERON

*Duperon Corporation is the leader in innovative preliminary liquids/solids separation systems. For more than 40 years, Duperon has provided simple yet innovative solutions for a variety of screening and solids handling applications in the water and wastewater industry. Duperon technologies are designed and manufactured in Saginaw, Michigan.*

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