

Pilot Study

Grease (FOG) Receiving Pilot Test Delcora WRTP (Western Regional Treatment Plant) Delaware County - Chester PA



The BEAST processed approximately 20 truckloads per day.

Pilot Test Overview

Delcora WRTP has had a Truck Waste Receiving Program in place since 1973. The program receives waste from both inside and outside of its sewer service area and the number of trucks continues to grow. Currently, the facility has rotating rake-type screens processing the truck discharge. This type of screen is unable to handle the high flows required for fast truck unloading and is slowed even further by grease. The percentage of grease being discharged has grown significantly and prompted Delcora to initiate a pilot testing program to find a more efficient screen for the FOG Receiving Station at the facility.

Delcora personnel attended a BEAST on Wheels pilot test demonstration in Eastern Pennsylvania sponsored by Envirep. Based on the Envirep pilot, the BEAST was selected to participate in a side-by-side pilot test

against an internally-fed, rotating drum screen with a separate washer compactor.

Each screen was scheduled to do a one month test. The BEAST went first and tested from August 21 through September 15, 2017. Enviro-Care provided two weeks of onsite support for installation, commissioning, and

training. After that, Delcora personnel manned the test. Almost all load types fell into the FOG category but with varying levels of viscosity.

Pilot Test Objectives:

1. Demonstrate the equipment's ability to handle the flow from various size trucks discharging by either gravity or pressurized.
2. Demonstrate the debris capture capabilities and quantify the number of debris captured.
3. Demonstrate that the equipment did not need a rock trap or grinder.
4. Verify truck unloading times.

BEAST Grease (FOG) Receiving Pilot Test

The test had a secondary objective which was to assess the amount of grit passing through the screen. This required reducing the BEAST's 10" outlet to a 6" outlet in order to discharge into a grit tank. It was also



The BEAST can be programmed to dilute highly viscous grease.

necessary to elevate the BEAST 36" above ground in order to gravity feed into that grit tank. This meant that the trucks could not gravity feed to the Beast. Reducing the outlet to 6" reduced the free discharge and restricted the flow through the screen.



Proper elevation and discharge piping size are critical to performance.

Delcora PA Grease (FOG) Receiving Pilot



The viscosity of this grease was similar to SAE 30 oil.

The limitations imposed by the temporary installation were somewhat like asking The BEAST to operate with one hand tied behind its back. Since the temporary installation elevations ruled out the ability to gravity feed, all loads were pressurized between 5 and 10 psi depending on the size of the discharge pipe.



Dry, stackable debris removed from FOG loads.

The BEAST handled everything that was pumped to it which meant an average of 20 trucks per day of various sizes and various types of loads from heavy, viscous cosmetic waste to oily bilge water waste. While the discharge was restricted to 6", the majority of the trucks unloaded at 500 gpm



Mixed loads have more and larger solids.

pressurizing at 5 psi. Once the grit test was complete and the BEAST could use its standard 10" discharge, off-loading rose to 700 gpm at 10 psi with no high level alarms or valve modulation.

Feedback from the haulers and Delcora personnel was very positive. The BEAST allowed the trucks to off load much faster as noted in the table above. Even though this was billed as a FOG Pilot, a certain percentage of trucks showed up with mixed loads. This meant that there were also large quantities of rags and rocks being



Coagulated grease with the consistency of oat meal.

discharged to the BEAST. The BEAST proved that it did not require a rock trap. Rocks were captured by the BEAST and conveyed to discharge as easily as rags and smaller debris.

Internally-fed Drum Screen Pilot Test

The drum screen – washer compactor combination was expected to perform the same identical testing as the BEAST and for the same one month timeframe. After a week, Delcora determined that this was not the correct equipment for the job and asked the manufacturer to remove the screen and washer compactor.

Results

In December 2017, Delcora ordered two (2) FOG BEAST 1400 screening systems from Enviro-Care for their FOG Receiving Station.

Data

DESCRIPTION/DISCHARGE PIPE SIZE	ESTIMATED FLOW RATE	ESTIMATED VOLUME	TIME TO OFFLOAD
Franc – mixed load lots of rocks (6")	500	3500	7m
Oily Bilge Waste (6")	415	5000	12m
Cosmetic – thick (6")	310	5000	16m
Dog Food/Simmons – very thick -backside level buildup flowing to red tank (6")	350	6300	18m
Thin Restaurant grease (6") higher pressure	700	2000	2m45s
McGovern load at 98 degrees – light (10") no backside high level or valve closure	540	6000	11m
Liquid Enviro load pressure up to 10 psi (10")	630	4100	6m30s