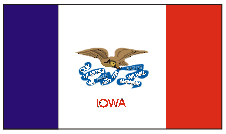
Truck Cleaning Operation Meets Oil & Grease Limits With S&L's DAF



Application Profile:	**Altoona, Iowa**
S&L Equipment:	**Modular FAST®**
Installed:	**1991**

A truck/tanker cleaning operation in Altoona, Iowa was having trouble meeting their oil and grease and suspended solids discharge limits with their existing waste treatment facility.

The wastewater treatment facility operation was manual with no mechanical means of removing floating oil and grease or settled solids. This resulted in a sludge buildup, occasional overflowing and obnoxious odor problems.

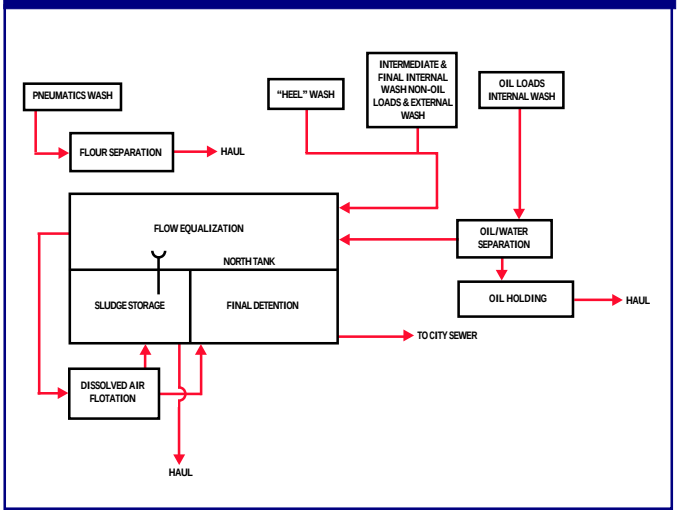
The truck wash cleans an average of 335 trucks and tankers monthly containing a variety of materials. The majority of the material is edible soybean oil; however, other materials include flour, animal fat, calcium chloride, caustics, antifreeze, zylene, soaps, solvents, grain liquor, corn syrup, honey, molasses, orange juice, citric acid, butter, castor oil, wood preservatives and yeast. The extensive array of constituents certainly produced a wide range of of influent loading.

Oils and greases as high as 700 mg/L and suspended solids in excess of 2,000 PPM were being discharged to the city sewer – even after their grease trap system. Therefore, the city surcharges were considerable due to the 200 PPM F-O-G and 300 PPM TSS limits. Smith & Loveless worked with this client to analyze and design a system to meet the effluent limitations at an economical cost.

The north tank, seen in Figure 1, that was used for storage in the old system was converted into a flow equalization zone and primary clarifier. Smith & Loveless partitioned a section of the north tank to capture the heavy settleable solids and allow the "clean effluent" to overflow into the flow equalization basin. Air headers were then installed by Smith & Loveless to provide mixing and cooling of the 100°F plus wastewater.

Next, a model DAF-R50RF Dissolved Air Flotation System (DAF) was installed to treat the incoming wastewater from the flow equalization zone. Smith & Loveless incorporated a chemical feed system complete with pH adjustment and polymer feed to enhance the operation of the DAF and break the chemical emulsion prior to scum removal.

Figure 1: System Flow Schematic



This package treatment for a truck/tanker wash wastewater company used a DAF system to successfully meet their discharge limits.

The DAF system provides a separation of particles with a specific gravity near 1.0 and wastewater that is highly variable, as in this situation. These coagulated wastewater particles are attached to 40 micron dissolved air and float these particles to the surface for mechanical removal. The effluent from the DAF is now 90% free of the particles that constituted the oil and grease and suspended solids concentrations.

The wastewater that used to have as high as 700 mg/L of oil and grease before the installation of the DAF now contains reported levels in the 14 – 20 mg/L range. Suspended solids as high as 2,000 mg/L have been reduced to less than 50 mg/L.

The addition of the Dissolved Air Flotation System and modification of the existing treatment facility has provided an efficient chemical/physical means of removing oil, grease and suspended solids from the plant effluent. Now, the truck wash can continue running its operation, while meeting the city's discharge limits.