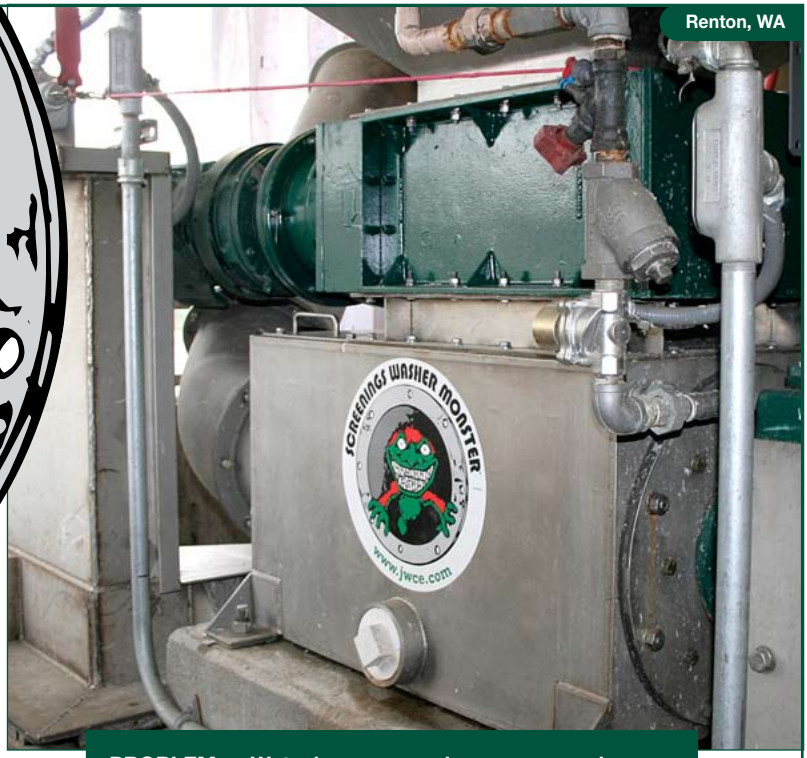


PROBLEM: Wet, sloppy screenings were causing transportation and landfill problems

SOLUTION: Screenings Washer Monster®

Monster Solutions

Monster Compactor Cleans-up at Seattle Treatment Plant

Renton, WA – In 2004 a team of researchers from King County's Wastewater Treatment Division took on the task of cleaning up problems with the discharged screenings at their two treatment plants. The screenings were filled with excessive water, fecal and other organic matter.

The local landfill even put restrictions on the time and place screenings were unloaded due to the high fecal content. Before screenings could be dumped, the landfill dug special pits then would immediately cover them. The team was concerned the restrictions might one day impact plant operations.

The team analyzed various solutions and decided to test a Screenings Washer Monster® (SWM) at the South Plant in Renton. The SWM was tested for a month and the trial unit dramatically improved screenings cleanliness and odor. The team recommended the county purchase a unit from JWC Environmental of Costa Mesa, California.

"There were several issues we looked at," said Curtis Steinke, a Process Analyst for King County and member of the research team. "First, we looked at the SWM's ability to provide additional dewatering and removal of fecal matter. Second, we compared its performance to our current screening compactor unit, which lacked a grinder."

The Screenings Washer Monster in Seattle produces the cleanest screenings possible.

South Plant's screening system consists of bar screens with 3/8-inch (10 mm) openings that remove trash and rags from the average daily flow of 78 million gallons (3,417 l/s). The screenings are pumped to a washing and compacting unit which is supposed to wash, clean and dewater the screenings; however the unit often became overloaded, and discharged screenings containing lots of bound water.

"The old washer-compactor passed the paint filter test but didn't pass the stack test," said Steinke. "The product coming off the old compactor acted like a sponge. As the screenings piled up in the dumpster, the weight of the material on top would squeeze the bound water out of material on the bottom. By the time the dumpster was full there could be 100 gallons (375 liters) of free water sloshing inside each trailer load which caused hauling and disposal issues."

Full scale testing of the SWM showed a reduction of 8 wet tons of screenings per week, almost a 60 percent reduction over the previous volume. The team estimated a yearly haul and disposal savings of roughly $40,000.

"Economically we reduced our hauls (to the landfill) from twice a week to once a week," Steinke said. "And our tons disposed of dropped from 14 wet tons down to 6 tons – a significant reduction, thanks to the SWM."

JWC's Screenings Washer uses a patented process to break up entrained fecal matter and produce a cleaner, drier final product. The first spray wash flushes screenings into a Macho Monster grinder where material is broken up and surface area is exposed to a second spray wash. The second washing liquefies more fecal matter,

Kenneth Eldridge and Curtis Steinke next to the SWM at the South Plant in Renton.

allowing it to flow through a perforated trough and back into the plant flow. An auger then compresses the washed material as it moves up and out a vertical discharge tube. The cleaned screenings then drop into a trailer ready for landfill disposal.

"It's the grinding that helps get cleaner screenings," Steinke said. "We thought our screenings had minimal fecal matter, but after watching the grinder attack the screenings and turn the wash water to the color of chocolate milk, we knew better. It turns out fecal/organic matter was bound inside of paper products, which the team nicknamed 'breakfast burritos.' The grinder was able to liquefy the organics wrapped up inside the 'breakfast burritos' and return it back to the plant for treatment."

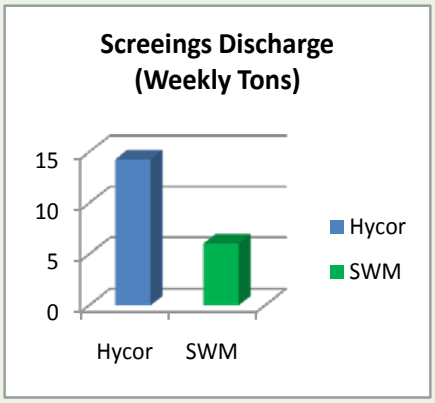
After two years of operation at South Plant, the SWM continues to produce clean and dry screenings. Relations with the local landfill have also improved – allowing the trailers to be emptied whenever needed. According to Kenneth Eldridge, Mechanical Lead at South Plant, the grinder has needed maintenance only twice.

The trial unit differed slightly from the unit eventually installed at South Plant. The installed unit uses a finer 1/8-inch (3 mm) perforated screen and the discharge tube was rotated 45° from vertical in order to fit into the available space. On average, the installed unit is producing a 40% savings over the old system. The research team is looking to extend the discharge tube 12-inches (300 mm) in order to produce even drier screenings. Both Eldridge and Steinke recommend the SWM to other treatment plants in the King County system both for the cleanliness and the savings.

At South Plant the Screenings Washer Monster is turning "breakfast burritos" into cleaner screenings for the landfill and returning the "chocolate milk" of liquefied organics back to the treatment plant where it belongs.

"It's the grinding that helps get the screenings clean. It helps reduce the fecal organic matter and return it to the treatment plant."

"Our hauled tons dropped from 14 tons down to 6 ...thanks to the SWM."



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