LANDFILL LEACHATE

A large landfill in PA produces a total of between 40,000 and 100,000 gallons of leachate daily, varying according to seasonal conditions. The wastewater is biologically treated for removal of BOD, COD and ammonia, as well as heavy metals. The treated water is being discharged to a local POTW and is, by far, the largest single discharger to this facility.

The water still contains up to 10,000 mg/l of TDS in the dry season and up to 600 mg/l of COD. Ammonia levels are often consistently higher than the required discharge standards. Additionally, the POTW has a new color standard that will not be met by the current discharge.

The landfill uses on-site well water for dust control as well as for irrigation and other non-potable uses. The well water is of low quality containing sulfur and, consequently, there are aesthetic reasons against its use for these purposes.

Treatability Studies
Dynatec carried out treatability studies at two levels. First, benchtop work in order to establish the viability of using membrane technology followed by a full pilot treatability study at the facility. This work proved that first the required water quality could be achieved on an on-going basis and that the amount of volume reduction that would be achieved would be acceptable to produce water suitable for discharge to POTW, dust control or irrigation.

Equipment Design
A custom design work for a Reverse Osmosis treatment system capable of treating 60,000 gallons per day with a minimum volume reduction of 80% was produced. 45,000 gallons per day would be available for use at the landfill or for discharge to the POTW. The result was that no more than 15,000 gallons per day of concentrate would have to be disposed of by re-injection into the landfill.

Space constraints demanded that the system be designed within a small space adjacent to an existing filter press platform. The system design included a platform above the Reverse Osmosis skid to hold three tanks; first stage permeate to feed the second system, second stage permeate that flowed to a third tank, where final pH adjustment was carried out prior to discharge to an existing holding tank.