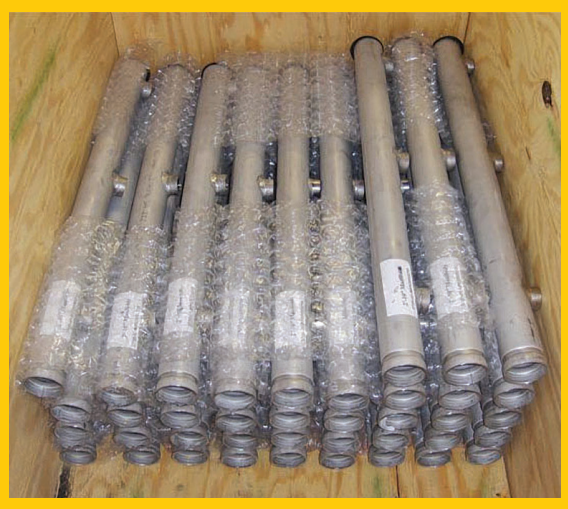
The assemblies can be lifted out, inspected and replaced without having to dewater the channel. The cradle brackets provide a guide when reconnecting the assembly.

Multiple assemblies installed along one side of the channel produce a single roll mix, keeping solids in suspension.



These assemblies are modular and can be shipped economically via common transport. The units are field-assembled easily using vitaulic coupled connections.

ARTICLE SUMMARY

Challenge: Settleable solids were causing maintenance and capacity problems in common channels at Cleveland, Ohio's Easterly Wastewater Treatment Facility. Clogging issues needed to be addressed during operations.

Solution: The district contracted Tideflex Technologies to provide check valve diffusers to solve clogging problems and enhance the mixing process.

Conclusion: The removable aeration channel assemblies—470 in all—were installed throughout the facility's channels in less than the up to five days planned for, reducing diversion periods.

By Jeffrey T. Kelly

Clearer Channels

Wastewater treatment facility installs coarse bubble diffusers with removable assemblies for channel aeration and mixing

The Easterly Wastewater Treatment Facility, part of the Northeastern Ohio Regional Sewer District in Cleveland, Ohio, has more than 6,000 ln ft of channels where the wastewater flow is routed to and from various process components within the system. These channels cannot be bypassed or drained for access without disrupting the treatment processes and system hydraulics.

The residence time of the wastewater as it travels through these channels can cause the residual dissolved oxygen to drop to the point that it causes process problems at the influent to the treatment tanks by resulting in a significant oxygen uptake.

Biosolids, grit particles and other settleable solids were causing maintenance and capacity problems within all the common channels. The channels previously were equipped with air-diffuser manifolds with drilled open-port air-discharge orifices. The entire manifolds filled with biosolids when the air manifolds were shut down, resulting in the orifice openings becoming clogged. These assemblies also were unable to resuspend solids along the channel bottom due to the installation height of the orifice above the channel floor.

Need for Speed

The construction project was to occur while the treatment facility was still in operation. All of the channels that were to be retrofitted were still in operation, carrying wastewater to numerous treatment tanks. An important requirement of the project was that these channels could only be out of service for very short periods.

The installation contractor was required to isolate a specific channel, divert the flow, dewater and clean the channel and install the new aeration assemblies within four to five days. This logistics plan required that the aeration assemblies be modular and designed for fast assembly and installation.

Diffuser Response

The district decided to utilize Tideflex check valve diffusers to eliminate the clogging problems, as well as enhance the overall mixing, by orienting the diffuser units with the discharge point near the channel floor.

Tideflex Technologies provided the district with 470 removable aeration channel assemblies. These assemblies were constructed of schedule 10–316L stainless steel and equipped with Victaulic Brand stainless steel rigid couplings and valves for quick field assembly. The support brackets were prefabricated and provided with the manifold assemblies.

The modular components of the assemblies were shipped to the site in individual crates equipped with hinged lids and padlocks for site security of the stainless steel materials.

All 470 of the assemblies were installed within the 6,000 ln ft of channels throughout the plant in less time than the contractor had proposed initially. This shortened installation schedule allowed the municipality to bring the systems back online sooner, thus reducing the diversion periods. WWD

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