

CENTRAL STATES WATER

The Official Magazine of the Central States Water Environment Association, Inc.

95TH ANNUAL MEETING PREVIEW

95TH ANNUAL MEETING
PREVIEW

PLANT PROFILE:

Heart of the Valley Metropolitan
Sewerage District



PLUS:

2022 Officer Nominations

Mark Doneux Named
Stormwater Committee Chair

Striving for Equity at the Source

Central States Water Environment Association
1021 Alexandra Blvd, Crystal Lake, IL 60014
ADDRESS SERVICE REQUESTED



**Water Environment
Federation**
the water quality people



Heart of the Valley
Metropolitan Sewerage
District, 1969.



Heart of the Valley
METROPOLITAN SEWERAGE DISTRICT

HEART OF THE VALLEY **METROPOLITAN SEWERAGE DISTRICT**

KAUKAUNA, WISCONSIN

The Heart of the Valley Metropolitan Sewerage

District (HOVMSD) is located in Wisconsin's Fox River Valley and provides treatment of domestic, commercial and industrial wastewater from the city of Kaukauna, villages of Combined Locks, Kimberly, Little Chute, and the Darboy Sanitary District.

HOVMSD was formed in 1974 to meet growing demand as the region's business and residential areas flourished. The new regional approach included the City of Kaukauna Wastewater Treatment Facility, which was constructed in 1939 and is located in Kaukauna, WI, on an island adjacent to the Ahlstrom-Munksjo-Thilmany Mill.

To achieve its mission, the district is governed by a five-member commission, with each member community represented by a commissioner. Member community commissioners are officially appointed by the Outagamie County Executive to five-year terms. The Commission oversees the interceptor system and treatment facility through the district director, utility staff, and O&M crew that perform the daily operation and maintenance duties.

HOVMSD utilizes a 5.5-mile gravity interceptor sewer to transport wastewater from the communities it serves to the wastewater treatment facility. The interceptor receives flow through seven metering stations with an additional two-meter stations discharging directly to the plant headworks. The meter stations totalize daily flows and a composite sampler collects representative samples that are analyzed for member community billing.

The district also accepts and treats hauled waste discharged by local holding and septic tank pumpers. Permitted haulers are issued a code that allows



**Heart of the Valley
METROPOLITAN
SEWERAGE DISTRICT**
801 THILMANY ROAD

TO ACHIEVE ITS MISSION, THE DISTRICT IS GOVERNED BY A FIVE-MEMBER COMMISSION, WITH EACH MEMBER COMMUNITY REPRESENTED BY A COMMISSIONER. MEMBER COMMUNITY COMMISSIONERS ARE OFFICIALLY APPOINTED BY THE OUTAGAMIE COUNTY EXECUTIVE TO FIVE-YEAR TERMS.

them access to the plant receiving station. Hauled waste is stored in a tank outfitted with pumps that allow the waste to be slowly fed into the headwork flow stream.

Since the creation of the Heart of the Valley Metropolitan Sewerage District in the 1970s, several major upgrades representing significant investment have been made to the interceptor and treatment facility. The treatment facility footprint is compact as the facility site is constricted which has proven to be a major factor in the selection of treatment technologies. HOVMSD completed its most recent major upgrade in 2007. Extensive rehabilitation of existing infrastructure and equipment including new processes were constructed and placed into service.

The Commission, utility staff, and O&M crew take pride in the operation of the treatment facility ensuring effluent meets or exceeds WDNR permit requirements while protecting the environment for future generations.

CURRENT FACILITY AND TREATMENT PROCESSES

The influent wastewater enters the headworks building where it is metered, screened, and flow proportionally-composite sampled. Influent flows in excess of 25 MGD are diverted to the peak flow headworks which has an additional 35 MGD design. Each of the headworks are equipped with 36' Parshall flumes and all influent flow measurement, sampling and screening is conducted at these two locations.

With preliminary treatment complete, the influent flow enters the wet well in the Actiflo building. Three 20-inch vertical turbine pumps, each rated at 10,000 GPM, deliver normal flow and four 14-inch refurbished primary effluent pumps are used to deliver peak flows to the upper floor of the Actiflo building. The wastewater is pumped once and moves through the remainder of the facility by gravity. Grit removal and chemically



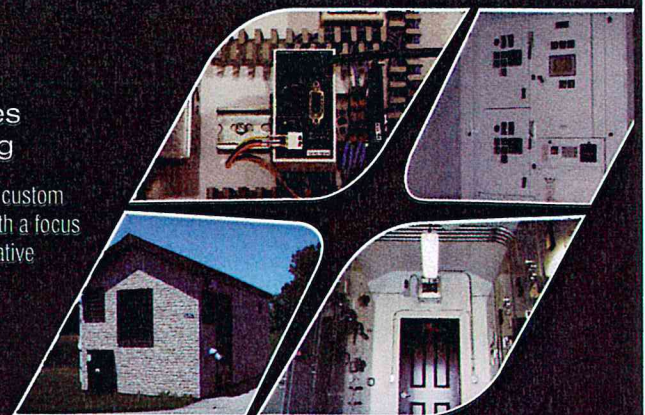
**Starnet
TECHNOLOGIES**

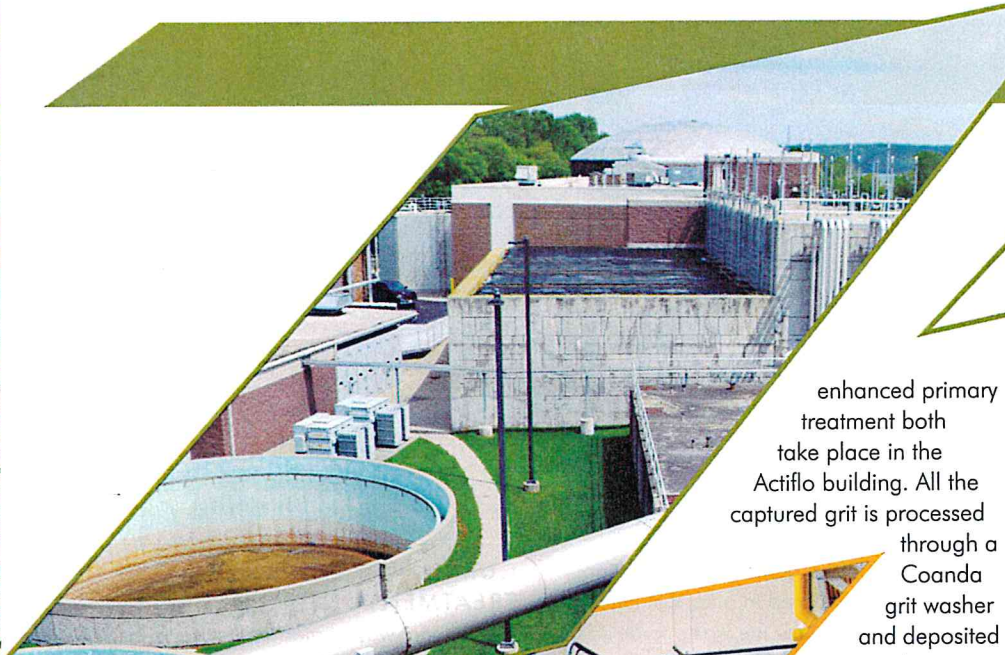
- SCADA Systems
- Custom Controls
- System Integration
- Prefabricated Structures
- PLC & HMI Programming

For over 20 years, Starnet has been providing custom solutions to the water & wastewater industry, with a focus on operator safety. Visit us and discover an innovative answer for your application.

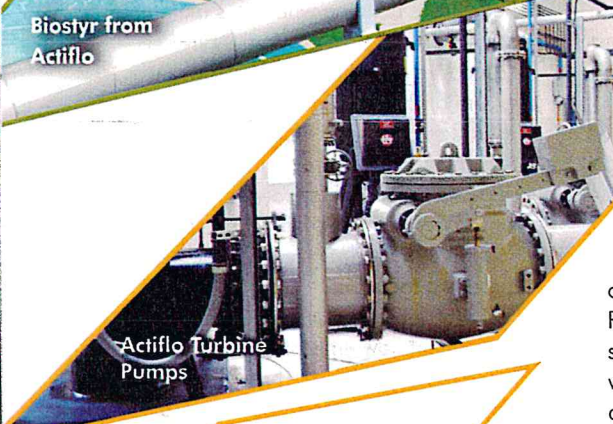
Call Us: (262) 886-0228

StarnetTech.com • ArrowStations.com • ArcSafe.com





Biostyr from Actiflo



Actiflo Turbine Pumps

enhanced primary treatment both take place in the Actiflo building. All the captured grit is processed through a Coanda grit washer and deposited into a dumpster and landfilled.

After grit removal, the wastewater flows to the Actiflo Ballasted Sedimentation System.

Ferric sulfate, polymer, and 150-micron sand combine in a series of mixing chambers, as part of the high-rate clarification process. Rubber-lined pumps transfer settled solids and microsands to hydrocyclones, where the microsand is separated and returned to the process while the sludge solids flow to a gravity thickener for further dewatering prior to solids handling. The Actiflo process provides effective primary treatment in a fraction of the footprint that would be necessary for a 60 MGD facility.

The Actiflo effluent then flows to the Biostyr Biological Aerated Filter (BAF) process. When flows are in excess of 26.4 MGD they are automatically

diverted around the BAF to the peak flow chlorine contact tanks where they are disinfected and blended with the effluent. The BAF is an up-flow biological aerated filter technology which removes suspended solids, BOD and ammonia nitrogen, with up to eight cells available for biological treatment. Accumulated biological solids are periodically backwashed from each BAF cell and pumped back to the Actiflo process for removal. The BAF design only uses about 10% of the space required for a traditional nitrifying activated sludge system.

Biostyr effluent then continues onto disinfection and the chlorine contact tank. Seasonal disinfection is required and achieved using liquid sodium-hypochlorite that is introduced just ahead of contact chamber with sodium-bisulfite added just prior to discharge to neutralize any remaining residual chlorine.

The district has a long-standing effluent agreement where approximately 60% of its effluent is diverted to a nearby electrical power generating facility. A portion of the reused effluent is further purified and used to make steam and condensate directly in power production with the remainder being used for cooling water. The power plant discharges its process and cooling water under its own WPDES permit.

Water/Wastewater
Supply, Treatment, Reclamation, Reuse
Solutions

TKDA

The comingled primary and secondary biological solids are pumped from the gravity thickener to one of two Dissolved Air Flootation units where it is further thickened and pumped to a batch day tank prior to conditioning and digestion. HOVMSD utilizes the Auto Thermal Aerobic Digestion (ATAD) process that after a 14-day HRT produces a Class A biosolids. Post ATAD Reactors provide nitrification/denitrification of biosolids, and a 10% to 15% reduction in ammonia nitrogen. Together, the system provides 65% VSS destruction and uses less than one half of the footprint required for conventional anaerobic digestion. Biosolids are land applied annually on local agricultural cropland.

Past district projects and improvements have served the district well ensuring that HOVMSD continues to provide quality service as growth in the region continues. Two additional projects are currently underway that will continue that mission.

EFFLUENT DISK FILTER PROJECT

Installation of tertiary level treatment is necessary for the district to meet its suspended solids and phosphorus TMDL allocations. Six existing sand filters that have been out of service since 2006, will be rehabbed to house the effluent disc filter equipment. Two filter basins will be repurposed for chemical feed and flocculation and the remaining four basins will house the new disk filters. A splitter structure will be added for Biostyr effluent to be either directed straight to the disk filters or to chemical treatment prior to filtration, or finally to bypass effluent filtration and direct it to disinfection and then discharge. This project is scheduled to go to bid in the first quarter of 2022 and will be funded with a below market interest rate Clean Water Fund loan.

INTERCEPTOR REHABILITATION PROJECT

The 5.5-mile interceptor system, which was originally installed in 1974, has experienced microbial induced corrosion (MIC) of the concrete pipe and manhole structures. The interceptor is televised every five years and video inspections have shown extensive surface corrosion of the pipe which if left unchecked will greatly reduce the longevity of the interceptor. The interceptor pipe remains structurally sound and has the flow capacity to serve the district and its communities for many years. The rehabilitation project involves installation of a new cured in place pipe (CIPP) liner and the application of acid resistant coatings

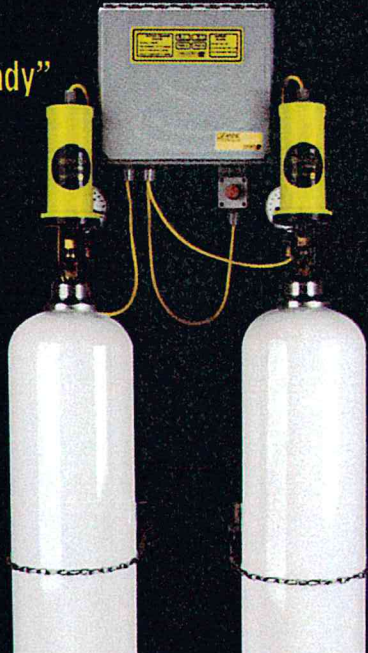
to the manhole structures. The district is moving forward with this project with the knowledge that more widespread damage is certain and it would require even more expensive and costly renovation or even full replacement if left unchecked. The interceptor rehabilitation is expected to take two construction seasons and be completed in 2024.


As the 2021 Operations Award winner for Wisconsin, district Director Brian Helminger says it's great to be recognized for the work we do that most of the time goes unnoticed. We are lucky to have a dedicated staff of wastewater professionals and they deserve the credit for a job well done! CS

EMERGENCY CHLORINE SHUTOFF SYSTEM

Now With More Alarm Outputs -
"Low Battery" & "Not Armed and Ready"

- ◆ Closes valve within seconds
- ◆ Fire code approved as alternative for scrubber in most states
- ◆ Compatible with all direct mount vacuum regulators
- ◆ No tools or adapters required for installation on valve





www.halogenvalve.com