

WASTEWATER TREATMENT

Innovation and Creativity.



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At KC Engineering and Land Surveying, P.C. (KC), our interdisciplinary team ensures responsible solutions tailored to planning challenges and specific clients' needs.

KC's wastewater treatment group has designed, observed construction of, and assisted with operation of over 70 facilities. We work with government, industrial, and private clients to meet a full range of wastewater related needs.

We approach each project with innovative and creative expertise to deliver comprehensive engineering services that solve the most intricate wastewater challenges from concept through design, construction, and operation.

In addition, KC has designed, supervised the construction of, and/or evaluated more than 30 industrial wastewater treatment systems. These include rendering plants, dairy wastes, poultry and egg processing, commercial laundry, metal plating, chemical, winery, and food processing systems. Our wastewater services help increase capacity and improve the performance of existing treatment facilities. KC strives to meet strict water discharge policies, conserve energy, and reduce environmental impact. We serve municipal wastewater facilities, hospitals, hotels, nursing homes, residential developments, and schools.

KC's wastewater treatment group consists of skilled wastewater, water, civil, and environmental engineers as well as proficient plant designers with experience in all aspects of wastewater collection, supply, and treatment, including wastewater treatment plants, sewers, and pump stations.

Services Activated Sludge Plants **Collection Systems & Pump Stations** Community Liaising Conceptual Design **Design Support During Construction Detailed Design Environmental Analyses** Infiltration/Inflow Reduction Master Planning Membrane Bioreactor Plants **O&M** Manual Drafting Odor Control SCADA/Computer Observation & Control Design Septage Receiving Stations Technical Support for Plant Operation & Training



Tri-Municipal Sewer Commission Aeration System **Replacement**, **Poughkeepsie**, **NY** | As part of this project, KC provided consulting services for the design of a diffused air fine bubble aeration system to replace the fixed surface aeration system. The fine bubble aeration system will provide more efficient oxygen delivery in the aeration basins while reducing the requirement for free board, thereby increasing potential treatment capacity within the existing aeration basins. The fine bubble aeration system also employs a sophisticated control system that monitors the dissolved oxygen levels and pressure of the system. This information is fed back into the control system to raise and lower the speed of the blowers as required. This type of system will greatly reduce the utility expenses at the facility and provide better overall treatment of the wastewater flow.



Aeration Basin Upgrade, Bethel, NY | The Kauneonga Lake Sewer District (KLSD) Wastewater Treatment Plant uses two aerated lagoons to provide biological treatment for up to 0.6-MGD of sewage. KC worked with the plant operators and NYSDEC to specify replacement aerators for rehabilitation of the basin. The replacement will allow for operation of the basin for another 20 years. KC provided the consulting services for the engineering design, NYSDEC permitting, engineer's reports, preparation of contract documents, construction inspection and management, and support services during startup and operation.





KC strives to meet strict water discharge policies, conserve energy, and reduce environmental impact. **Pump Station Piping Modifications, Wappingers Falls, NY** | KC provided the design, preparation of contract documents, and engineering services during startup and construction of this project. Before the modifications, two of the valves in the discharge force main became inoperable. It was determined that the best solution to control flow from the pumps to the force mains was to modify the piping in the pump station and add a new valve. Tasks included installation of temporary piping to carry the sewage during the work, modification of the surge relief piping to make room for new sewage piping, and installation of control valves and new sewer sections from the pump station to the existing flow meter.



Raw Sewage Pump Replacement, Wallkill, NY | As part of this project, KC provided consulting services for the replacement of 3 shaft-driven 60HP raw sewage pumps with dry pit immersible pumps. KC worked closely with the Plant Operators to select a pump system that minimizes the dangerous maintenance tasks involved with the extended drive shaft. The project also included a complete rehabilitation of the pump room, including sandblasting and painting of the piping, new valving, and an epoxy floor finish. A new motor control center and control system was also designed and installed as part of the project. The Town's electrical demands have seen a significant reduction since the installation of the new, more efficient pumps. The Town maintenance employees have expressed satisfaction with the significant reduction in noise and dangerous maintenance tasks involved with the old pumping system.

Services included the engineer's report, preparation of contract documents, design drawings, construction inspection, and engineering support services during startup.





South Street Pump Station Emergency Generator Replacement, Suffern, NY | This pump station serves as the primary pump station within the sanitary sewer collection system and received significant damage during Hurricane Irene. KC was responsible for providing engineering consulting services for the project, which included performing site and existing condition investigations and preparing design documents, specifications, and the engineering cost estimate. KC also provided bid phase services, including preparation of bid and contract documents.





Tri-Municipal Facility HVAC Improvements, Wappingers Falls, NY | KC evaluated the HVAC and hot water system to determine the most efficient approach for replacement. Replacement of the complete furnace and fan coil unit was determined to be an impractical and ineffective solution. A phased approach, utilizing independent split unit systems, was determined to be the most effective solution. This would allow for more consistent and effective heating and cooling of the various spaces within the facility, depending on use. The water heating unit replacement utilized an on-demand system suitable for the minimal hot water used at the facility. These modifications allowed for the downsizing of the existing central furnace and associated fuel storage tank.

FlexRake Bar Screen Installation, Wallkill, NY | Due to an increased frequency of clogging at the plant, which was attributed in part to the increased use of "flushable" wipes (rags), plant operators were required to take the pumps apart weekly to remove the clog before returning the pump back to service. In order to protect the Town's investment and eliminate recurring maintenance on the raw sewage pumps and other areas of the plant, KC proposed to install two mechanically-cleaned bar screens upstream of the raw sewage pumps. The mechanically-cleaned bar screens now allow wastewater to flow through while filtering debris from the influent channel.





Phase III and IV Sewer Rehabilitation, Bethel, NY Phase III of the rehabilitation of the KLSD sanitary sewer collection system required relining 11,300 feet of pipe, repairing 53 concrete block manholes, and replacing 58 shoreline pipe laterals from residences to the collector pipes. Phase IV required replacing 4,352 feet of northern interceptor pipes, repairing or replacing 9 manholes, and replacing 21 lateral pipes. KC provided field survey of the project site; provided manhole inspections, focusing primarily on factors contributing to inflow and deformation of manhole caps and seals; prepared a report with findings and recommendations for repair or replacement and opinions of probable construction cost; and completed SEQR forms while assisting the Town Board in satisfying SEQR requirements. KC also prepared contract plans, including construction plans, sewer profiles, baseline ties and working points, construction details, specifications, and cost estimates.



Diversified. Multidisciplined.

KC Engineering and Land Surveying, P.C. (KC) is a diversified, multidisciplined consulting engineering firm. Since 1983, KC has provided our public and private sector clients with a comprehensive range of professional services using only the latest technical equipment. The corporate headquarters of the firm is located in New York City with a branch office in Newburgh, NY. KC has extensive experience with government agencies, municipalities, and private clients; a diverse, professional staff; and an impeccable record of services rendered.

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