

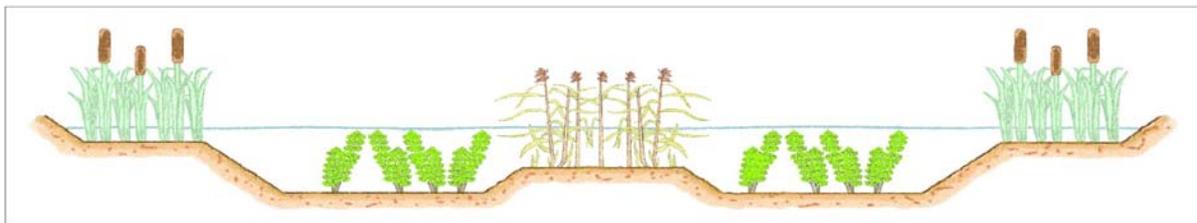
AquaTec, Inc.

1235 Shappert Drive Rockford, Illinois 61115 (815) 654-1500 (800) 654-1505 Fax (815) 654-0038

Engineered Wetland Systems for the Treatment of Dairy Wastewaters

Traditional wastewater treatment often requires costly inputs and constant maintenance. However, constructed wetlands rely on natural energies to accomplish low-cost, natural wastewater treatment. When wastewater enters a constructed wetland, many of the residual pollutants remaining in the effluent become a resource for the wetland biota, which can transform these raw materials into biomass, new sediments, or harmless atmospheric gases. These transformations result in the effective cleanup of contaminated wastewater.

Specifically, wetland systems can effectively reduce concentrations of BOD₅, nutrients, metals, organic compounds and other pollutants in wastewaters from dairy operations. The well-defined composition of substrate, type of vegetation and flow pattern provides for effective removal of wastewater contaminants.



Wetland systems have been shown to be effective for the reduction of nitrates, nitrites, ammonia, phosphates, suspended solids, BOD₅ and coliform bacteria in effluent from feedlots and milking parlors. Wetlands systems have consistently achieved reductions of up to >90% in these parameters. For example, engineers from the University of Wisconsin-Madison’s Agricultural Engineering Department created a “constructed wetland” to treat the dairy wastewater. They found the wetland was able to reduce a variety of wastewater constituents (See Table).

	Total Solids	Total Phosphorus	NH₃-Nitrogen	BOD₅
Non-Treated	15.6% increase	48.6% decrease	95.6% decrease	95.8% decrease
Pre-Treated	6.22% decrease	65.3% decrease	89.1% decrease	97.4% decrease

AquaTec, Inc. provides our clients with complete feasibility planning, design, construction over-sight and monitoring of wetland systems. We offer pretreatment and wetland cell designs that are specifically tailored to meet our client's wastewater management goals. In some cases, it may be necessary to combine wetland technology with more traditional pond and lagoon treatment of highly enriched dairy wastewater as well as by incorporation of a solids separator. With a combination of technologies, it would be expected that a BOD₅ and TSS approaching 5,000 mg/l could be reduced by nearly 90 percent.

To achieve our client's wastewater compliance goals, **AquaTec, Inc.** can develop a wetland treatment solution in a multi-phased approach. In Phase I, we provide our client with a wetland feasibility report that outlines all possible treatment wetland alternatives. From the Phase I report, we establish accurate treatment wetland criteria for the Phase II wetland planning and design development. After this is completed, meetings will be conducted and recommendations will then be made for the Phase III options, a wetland processes pilot-study or the construction of the full-scale treatment wetland.

AquaTec, Inc. was founded in 1972 in Rockford, Illinois. We have completed projects throughout the United States as well as internationally. **AquaTec, Inc.** offers our clients scientific, technical, and creative solutions. Whether working for private sector, federal or local governments, or regional authorities, our approach is consistent and proven. We offer our clients unique approaches, supported by multidisciplinary teams that adhere to the highest professional standards.