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Wetland's Treatment of Leachate Demonstration Project

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The Delaware Solid Waste Authority (DSWA) has begun a project to demonstrate the feasibility of passively treating leachate using a constructed wetlands area. The project is being performed at the Area A/B disposal area of the Central Solid Waste Management Center in Sandtown Delaware. The disposal area was filled from about 1984 through 1987. As of early 2003, only a few constituents were being detected in leachate (e.g., low levels of ammonia and chlorides), but the presence of these constituents prevent direct discharge of the leachate from the site and require that the leachate be treated. Wetland treatment systems can be substantially less expensive than active treatment systems (e.g., on the order of \$0.01

or less per gallon) but, because wetland treatment processes are typically anaerobic and removal of ammonia requires aerobic treatment, wetlands have not been used for treatment of ammonia (a common component of relatively clean leachate from highly biodegraded waste). However, using a new, patented aerobic wetland treatment system developed by Aqua Treatment Technologies, ammonia can now be removed using wetland treatment systems. The current demonstration project involves constructing two separate conventional wetland treatment

cells (one measuring 12 ft by 12 ft, and the other measuring 15 ft by 30 ft) and also three vertical flow bio-filter cells (five total) and routing leachate through the cells to several sampling points; one type of cell treats leachate by horizontal flow through the wetland (which results in anaerobic treatment) and one type of cell treats leachate by vertical flow through the wetland (which results in aerobic treatment). The patented bio-filter cells use vertical flow creating aerobic

conditions and utilize some proprietary technology and operating techniques to enhance treatment performance, particularly in the winter months when conventional wetlands are not as effective. The

system was constructed in August 2003 based on a design and construction plan developed by GeoSyntec Consultants. Based on preliminary data, the system is already producing a significant reduction in ammonia and biological oxygen demand concentrations. The study is scheduled to be completed in mid-2004. Based on the preliminary success of the study to date, DSWA is proceeding with detailed design of the full-scale system and plans to construct the full-scale system in mid-2004



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