

June 2005 Feature

Reclaimed Water Offers Solutions to Water Quality, Water Demand Problems

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Rapid growth in an area with a high quality streams and dwindling water supplies is a recipe for environmental and economic problems. But in State College, the [University Area Joint Authority](#) and other partners are looking to reclaimed water to be part of the solution.



"Concerns about the impact the UAJA wastewater discharge was having on the temperature and water quality of Spring Creek, particularly in low-flow conditions, lead to a comprehensive sewage study of the area by the Centre Region Planning Agency," explained Brian Book, Manager of the [Herbert, Rowland & Grubic, Inc.](#) office in State College.

In 1997 the sewage and water quality studies concluded that the High Quality section of Spring Creek would not be degraded so long as flows did not exceed 6.0 million gallons per day (mgd).

However, projections showed growth would increase the discharge by up to 9.0 million more gallons a day by 2020 and increase of slightly more than 3.0 mgd.

"UAJA developed a multi-step strategy for dealing with this problem," said Book. "They attacked inflow and infiltration to eliminate rain water and other clean water entering their system and installed advanced nutrient removal technology on their treatment plant. They also started an aggressive [water conservation education](#) program and worked with large apartment building owners to install water saving devices."

The result of these initial efforts was to keep the discharge from growing as fast as it was originally projected. The studies projected the discharge to be right at 6 million gallons a day by this year, instead it now stands at 5.4 million gallons, inspite of significant growth in the area.

But clearly another strategy was needed.

In 1997 UAJA began a public discussion of 14 different wastewater treatment options.

"The special protection designation of Spring Creek meant we had to find treatment options that did not degrade the water quality of the stream." said Book. "UAJA began looking seriously at reclaimed water as one of the potential solutions."

This discussion was not without controversy, Book said, as the public questioned each of the alternatives and their potential environmental impacts.

When reclaimed water was selected to explore further, Herbert, Rowland & Grubic [developed a proposal](#) using micro-filtration, reverse osmosis and ultra-violet treatment technology to produce a wastewater discharge that was equivalent to potable water.

This ultra-clean water would then be piped four miles upstream in the Slab Cabin Run watershed, a small tributary to Spring Creek, discharged into one of two 20 to 25 acre wetlands for additional natural treatment and then allowed to flow down the Run and into Spring Creek. The water would travel four miles before it reaches the original UAJA wastewater discharge.

"We really took a belts and suspenders approach to designing this project to produce the cleanest possible water," said Book. "Nothing like this had ever been done in Pennsylvania before."

"Water reclamation technologies like these are already in use in the Disney theme parks in Florida, in Orange County, California and communities in Oregon and Washington as well at the New England Patriots Stadium," said Book. "Communities in Georgia and Virginia are also considering them."

"UAJA began with a demonstration area that included different water treatment technologies and a wetland area," said Book. "While we were able to prove that the reliable technology could be installed and operated to produce ultra-pure reclaimed water, we were concerned that the water would be too aggressive, so we developed a method to "re-buffer" the water."

After the results of the initial demonstration, the full scale proposal was developed that will ultimately treat and discharge 3 million gallons a day of reclaimed water.

Phase I that treats 750,000 gallons a day was just completed in May and about one-third of the pipeline to Slab Cabin Run has been constructed. Phase II, due to be completed in 2008, will raise that amount another 750,000 gallons. The final phase is scheduled to be completed in 2012.

"The route of the pipeline to Slab Cabin Run provides a unique opportunity to have businesses along the way use the reclaimed water, rather than regular public water, for their processes further reducing demand for groundwater," said Book.

Preliminary studies have indicated that a number of existing commercial establishments are willing or interested in using the reclaimed water, this includes concrete production, a commercial laundry, several public and municipal car washes, and an agricultural businesses.

Initial water users along the route now plan to reuse approximately 147,000 gallons per day (gpd), on average, and the Authority is currently trying to accelerate a reclaimed water service extension to allow the use of 600,000 gpd for summer golf course irrigation.

"Because of our work, reclaimed water is now considered by the Department of Environmental Protection as an acceptable technology for use when special protection watersheds are involved," said Book.

In addition to creating a potential revenue source and providing a feasible alternative to meet water quality regulations, Book said the project creates an economic development opportunity.

"The water treatment technologies we're using are producing water to the same strict standards used by semi-conductor manufacturers and other water quality sensitive industries," explained Book. "It would be a great offshoot of this project if high tech businesses are attracted to this area because of the clean water we're producing."

For more information, visit the [HRG project webpage](#) and the [UAJA website](#). Contact Brian Book of HRG at 814-238-7117 or send email to: bbook@hrq-inc.com.

Video: [UAJA Reclaimed Water Project Overview](#) (update of video: startup date for phase I is August 2005 and the total cost of the project is \$45 million) Quicktime File (large)

Attachment: [Reuse Without Water Shortage – Book, Wert, Siegfried - PDF](#)