

Collaborative Efforts Solve Wastewater Treatment Challenges for WV

Prepared by Carla Hardy, Watershed Program Coordinator, West Virginia Conservation Agency- November 17, 2012



After over a decade of planning, the new Moorefield Regional Wastewater Treatment Plant is well underway with construction and will soon become a reality. Upon completion, it will be a significant nutrient reduction practice for West Virginia in meeting the Chesapeake Bay pollution control mandates. Lucas Gagnon, Town of Moorefield Public Works Director, stated, "Not only will we be making significant strides in meeting WV's TMDL, we will also be improving local water quality. At start up, this

plant will reduce total nitrogen loading by 90,000 pounds per year and total phosphorus by 93,000 pounds per year. This equates to a 32.3% reduction for total nitrogen and a 59.6% reduction for total phosphorus for the 2017 Bay Program goal. It will result in a 21.2% reduction for total nitrogen and a 34.2% reduction for total phosphorus for the 2025 goal. These reductions are based upon both the point and non-point source requirements." This is welcome news for the stakeholders of West Virginia who have been involved in the process of developing a watershed implementation plan to reduce nutrients and sediment from entering local waterways.

This facility is innovative in nature for several reasons: those being both the technology utilized and the path it has taken to get to construction. The process began in 2001 with a study for a regional project between Pilgrim's Pride and the Town of Moorefield which would combine the existing wastewater systems instead of individual and separate facility upgrades. Coinciding with this effort was Governor Bob Wise signing onto the Chesapeake Bay Water Quality Memorandum of Understanding in June of 2002 resulting in West Virginia becoming a headwaters partner in the Bay Program. This obligated the state to begin the process of meeting the then-current water quality goals.

As a result of the study and years of planning and design, five current, separate permits will be combined into one system. They include: Pilgrim's Pride (2 plants); Town of Moorefield; Caledonia Heights Subdivision (which was recently closed and added to the Town's system); and the Hardy County Rural Development Authority package plant. The existing systems were unable to meet permit requirements for the Chesapeake Bay TMDL without costly upgrades. The Moorefield/Hardy County Wastewater Authority was formed after the 2010 adoption of West Virginia House Bill 4309 which modified Section 13D of Chapter 16 of the Code of West Virginia by allowing a private entity to sit on a wastewater authority. With the passage of the Bill, Pilgrim's Pride was able to take a seat on the Authority Board since they are the largest corporate user of wastewater in Hardy County. The Board allows four other members who consist of a town councilman, a county

commissioner, and two at-large members with unanimous approval from the other members. Each system could have upgraded individually, but the decision was made to combine. John Gangwer, who sits on the Authority representing Pilgrim's Pride stated, "We knew we had to make upgrades to meet the TMDL and many different options were explored. In the end, it came down to it being marginally more expensive to go in with the regional project, but we felt it was the best decision for the community and the region."

It has taken years to secure the funding to make this project a reality. As it stands to date, the final completion of the new facility will stand at \$40.4 million dollars. These funds have been procured from a variety of sources including; \$5 million from the West Virginia Economic Development Authority for preliminary design, \$18 million through the West Virginia State Revolving Fund Program administered by the West Virginia Department of Environmental Protection, \$5.5 million in STAG US Environmental Protection Agency funds via the late Senator Byrd (in 2008, \$1.5 million were cut), \$4 million dollars through the Infrastructure Jobs and Development Council, \$6 million through West Virginia Senate Bill 676 (lottery proceeds and bond selling), \$1.5 million from Pilgrim's Pride (in-kind) and \$401,000 from the Town of Moorefield (in-kind).

The project was sent out for bids in December 2011 and was awarded to HRI Inc. in the spring of 2012. Triad Engineering, Inc. serves as the project engineer and representative between all the partners and certifies all standards are met throughout construction. It is expected that substantial completion will be by August 2013 and final completion with online services will occur in October. "We are currently ahead of schedule and on budget. As long as we don't have an extremely bad or long winter, we feel that the project will be completed on schedule if not before. Everything is going very smooth and we haven't had any major issues", stated Ted LeMaster, Engineering Technician IV with Triad Engineering, Inc.

Pilgrim's Pride will maintain a pretreatment system with no discharge and will become a permitted industrial user of the Authority. A pumping station will be located within town limits and will collect wastewater flow from Pilgrim's as well as the Town's municipal customers. Over 16,000 linear feet of pipe have been laid and will deliver wastewater to the headworks of the plant for grit and grease removal and then on to primary clarifiers. Next in the system will be five-stage Bardenpho oxidation ditches which will provide biological treatment processes. Nitrification and denitrification, coupled with biological and chemical phosphorus removal, will take place in the oxidation ditches. The secondary clarifiers will then remove the biological sludge as well as allow blending of ferric chloride for enhanced phosphorus removal capabilities. Cloth disk filters will be utilized for final polishing of the wastewater and the filters will be equipped with a polymer feed to improve filterability and enhanced phosphorus removal. The wastewater will then be chlorinated and sent over a step cascade system to raise the dissolved oxygen levels. Finally, the wastewater will be dechlorinated and the effluent discharged to the South Branch of the Potomac River. A portion of the effluent will be recycled back into the plant to be used as process water thereby decreasing the potable water demand. The plant will be online 24 hours a day, seven days a week

and a flow equalization lagoon will be constructed to maintain adequate flow during Pilgrim's down time on Sundays. The system will operate at approximately 3.2 million gallons per day (mgd) at startup and will treat an average of 4.1 mgd at full capacity.

The sludge from the primary and secondary clarifiers will be pumped into aerobic digesters and then into the dewatering building. A screw press will remove liquids and produce a sludge cake with 25% solids. The cake will be conveyed over to the mix building and combined with a carbon source (sawdust and wood chips) and then moved to a Gore Compost System which uses an eight heap compost pad. One week's worth of mixed sludge will equate to one heap. A Gore cover will be utilized which will allow forced air to enter into the piles from below while protecting the compost from the elements. The composting process will be an eight week cycle from beginning to end with heaps being constantly rotated. A trommel screen will be utilized to separate the compost into appropriate particle size as well as separate the wood chips for reuse. The final product will be certified Class A compost that will be sold in bulk. Any potential leachate from the process will be captured and treated on site. Due to the composting pads being located in the flood plain, a concrete wall constructed above the 100 year flood elevation protects the site.

Protecting the integrity of the view shed has been an important factor in the blueprint of this facility. A landscaping plan has been developed which will be integrated into the final design upon completion. The facility's buildings have been planned to be barn-like in feature so as to blend in with the rural landscape.

Phyllis Cole, Project Consultant, has been instrumental in seeing this venture through and stated, "This project is 'state of the art' and the first of its kind in West Virginia. I wish to commend the Town of Moorefield, Hardy County and Pilgrim's Pride for the tireless hours they committed to see this project to completion. Vital to the project was the commitment by the West Virginia Department of Environmental Protection, the State Agencies and most importantly Delegate Harold K. Michael and Governor Earl Ray Tomblin. The citizens of Moorefield and Hardy County can be proud of their local officials. They sat aside their differences and worked together for eleven long years in order to give the industries and the citizens a wastewater project that will take care of your needs for years to come."

For more information on this project, please contact Lucas Gagnon, Town of Moorefield Public Works Director at 304.530.6142.