In response to environmental and budgetary concerns, York County initiated a Water Management Program in 2009. The program utilized new technology, improved design, and best management practices for the installation, modification and maintenance of the county and public school irrigation systems.

The new technology utilized includes the use of rain sensors to detect the need for irrigation. The automated irrigation system will begin only when the sensors read that all water has evaporated, saving money on watering the turf grass and sod and local parks and playing fields, as well as saving staff dollars (due to the irrigation being automated rather than manual), and saving on the replacement of the turf grass or sod that occurred at times due to regularly scheduled irrigation followed by unanticipated heavy rains that would rot the material.

In 2012, the Water Management Program resulted in a savings of almost $36,000.

In 2009, the York County Department of General Services initiated a "Water Management Program." The goal of this Water Management Program was to reduce the overall use of water by utilizing technology, improving design, and applying best management practices for installing, modifying, and maintaining county and public school irrigation systems. Under this "Water Management Program" the Department of General Services began a program of converting manual hydraulic-type irrigation control boxes to digital controls with rain sensors, using technology to ensure the beneficial use of water and improving designs to current and future irrigation installations.

Over the last few years, rising energy costs, growing environmental concerns, and declining budgets have presented several challenges to local governments trying to satisfy public demand for more and better facilities and services. A major area of emphasis in York County has always been the aesthetic appeal of its park facilities and athletic playing surfaces for the benefit of citizens and to welcome and encourage growth in tourism and new business. With 43 separate manual analog type irrigation systems located throughout the county, numerous working hours were spent turning systems on and off, water resources were lost when irrigation systems were running

after hours and/or during rain events, and water resources were not beneficially utilized.

While more and more communities are building programs to combat rising energy costs, protect resources, and reduce environmental concerns, we are also faced with the public demand for additional recreational opportunities and athletic fields. The development and implementation of the "Water Management Program" helped satisfy all of these demands. The program works like this:

1. Our manual analog hydraulic-type irrigation systems have been converted to digital control boxes with rain sensors. The new systems will delay programmed irrigation until the water has evaporated from the rain sensor terminals, thereby saving water resources and easing operational costs. Of course, the installations of these new systems save on staff costs as employees were previously assigned to manually control the systems. Savings on maintenance were realized due to the system's longer life span because of the minimized run times, lack of disease damage, nutrient loss due to overwatering, reduction in run-off that could potentially pollute our waterways, and increased sustainability for future generations.

2. Our aging irrigation system designs have been audited. Changes were made according to the Irrigation Associations best management practices and lessons learned. Some of these practices include but are not limited to: ensuring our systems have efficient and uniform distribution of water, using quality parts, routinely inspecting systems, and modifying systems as turf conditions change. One example would be the installation of what the county terms as “sod heads” on soccer fields. These are two separate heads and zones used specifically to water the sod installed in the soccer goal mouth. These “sod heads” installed behind the goals are used only for turf renovation during the off season and only water the newly installed sod at a higher rate than the remainder of the playing surface targeting the direct maintenance need. Other modifications include but are not limited to: converting spray irrigation zones to drip irrigation in high traffic areas reducing vandalism costs, installing separate irrigation zones for watering infield clay areas, changing nozzle sizes to reduce off site watering and match precipitation, and to properly adjust mower heights to reduce turf stress and reduce

water requirements. Plans for future irrigation systems must also pass our audit team and County of York's best practices guidelines.

3. The Sentinel Control System has been installed and is monitoring water use and irrigation cycles at our new multiple field sports complex. The system takes rain sensing to the next level. This is a single water management command system controlling 13 separate athletic fields. The command system utilizes a weather station and provides effective Evapo-Transpiration based management. Evapo-Transpiration is the sum of evaporation and plant transpiration from the Earth's surface to the atmosphere. The system also monitors pipes, malfunctioning valves, missing irrigation heads and will automatically shut down to prevent excessive water loss.

Digital Irritrol/Hunter Pro C series control boxes were installed in conjunction with Irritrol/Hunter wireless and mini click rain sensor terminals. These digital control systems use solenoid valve common circuits to prevent the opening of irrigation valves when water is sensed in the

terminal bucket. These sensors will stop all programmed irrigation cycles until the moisture in the terminal bucket evaporates.

The Sentinel Control System consists of a central computer, digital irrigation controllers, sensors, weather station, and a communication system that ties it all together. The system incorporates different sensors, including flow sensors, rain sensors, freeze sensors and a full weather station. The sensors monitor site and climatic conditions and report information to the central computer. Runtime adjustments are automatically made based on these inputs and the Evapo-Transpiration based management formula. A total water use reduction of 55 percent was realized at the Sentinel site alone.

Modifications to 27 irrigation systems at nine different locations have been performed to date. The total approximate cost for the system upgrades including boxes, rain sensors, Sentinel Control System, and implementation of our best practices was $12,000. Funding for the system came from the county's operating budget.

A 40 percent reduction in total HCF (Hundred Cubic Feet) was realized via the 27 irrigation systems located at nine locations. Usage in 2010 totaled 27,004 HCF with the HCF in 2011 declining 10,816 HCF to a total of 16,188 HCF. At $3.32 per HCF or 10,816 HCF X $3.32, a total

budgetary savings of $35,909 was realized, a savings almost three times the cost of implementing the program.

York County believes that building sustainability, saving costs, and maintaining our quality athletic fields during times of budget constraint make this Water Management Plan a winning program.