



GEMI[®]

Collecting the Drops:

**A Water
Sustainability
Planner**

Case Example

Tyson Foods, Inc: Growing at a Missouri Poultry Processing Facility with the Aquifer in Mind

The Tyson Foods, Inc. (Tyson) facility located in Sedalia, Missouri is the largest poultry processing plant within the company. While the U.S. plant, built in the mid 1990s, still has the potential for production growth, that growth comes at the cost of resources. The challenge to Tyson ... How to increase production at the Sedalia Processing Plant without adverse impact to the Ozark Aquifer.

Major upgrades to Tyson's Sedalia poultry processing facility years ago placed a burden on the ground water supply for the plant. Although water usage had started out at 400 million gallons per year in 1996, it had grown to 710 million gallons per year by 2000.

In 2001, Tyson realized that the aquifer used for water at the plant was in decline. Upon this realization, the plant launched conservation measures, cutting its water usage to 594 million gallons in 2002. The strides made in reducing water use at the plant may have helped stabilize the aquifer, which slightly increased to 609 million gallons in 2003, and the records show the plant started to monitor its water usage on a daily basis with flow meters throughout the plant. However, in 2004, water usage at the processing plant increased to 671 million gallons, and during 2005, water usage significantly increased to 741 million gallons

With this exponential increase in groundwater usage, Tyson decided to evaluate the impact to the local aquifer by monitoring the aquifer water level at a local USGS monitoring well. Indeed, the increase in water usage had begun to lower the aquifer water level. Therefore, Tyson took immediate action by implementing water usage reduction projects and increased Tyson Team Member awareness to reduce water usage at the processing plant.

Water Usage Reduction Projects (Non-Capital Improvement)

- Set the water flow to minimums on all process and support equipment.
- Installed flow meters to monitor usage and reduce overflow.
- Installed low flow nozzles on hoses and hand wash sinks.
- Turned off water when not in use and blocked out unnecessary nozzles.
- Squeegees are used for initial floor clean-up.
- Using feather pit water for picking room trench drains.
- Extended the overflow pipe from the final chiller the length of the pre-chill.
- Installed flow restrictors for the offal pumps.
- Utilized Berry water reuse system in Evisceration for vacuum pumps.
- Belt wash water nozzles switched to misters.
- Installed orifices at hi-pressure water drops for evisceration.

Since water usage needs to decrease and production needs to increase, the Tyson EHS Group started looking for a water reuse system that has a 1.0 MGD capacity for the Sedalia processing plant. Tyson (EHS, Engineering, & Plant personnel) reviewed water reuse proposals: end-of-pipe, aquifer storage/recovery and point-of-use (POU). After assessing the different water reuse technologies, Tyson

Tyson Foods, Inc: Growing at a Missouri Poultry Processing Facility with the Aquifer in Mind (Cont.)

decided POU systems would be the most cost effective. In 2006, Tyson began review of two POU systems from two different manufacturers:

1. Contact water – 90 gallon per minute (GPM) water reuse system for the scalding; approximately \$1 million (USD)
Tyson will need USDA approval before installing the system.
2. Non-contact water – 500 GPM system for the boiler, cooling, vacuum pumps, rotoscreens; approximately \$2.5 million