

## **SOURCE REDUCTION / WASTE MINIMIZATION CASE STUDIES AT LCRA.**

### **4. Process Modifications - No Documentation**

**Pollution Prevention Project Name:** Reverse Osmosis Primary and Secondary water Treatment.

#### **Project Identification:**

This project primarily involved the reduction of raw materials and labor used to regenerate resin beds associated with the demineralizer process used to make boiler makeup water. LCRA power plants would use a substantial volume of sulfuric acid and caustic on a weekly basis to regenerate the beds. Not only was the process time consuming, it also generated large volumes of waste effluent which often required additional neutralization before being discharged.

The Reverse Osmosis (R.O.) units were selected to remove the high level of naturally occurring chlorides present in the river water used for boiler make-up. The Ferguson Plant (TCF) was the first to put the R.O. on line, followed by the Fayette Power Project and finally Sim Gideon (SGP). At SGP one R.O. unit has replaced two water demineralizer units. The units are now used as final polishing units.

#### **Economic Savings:**

The R.O. unit at SGP has increased the demineralizers regeneration cycle from once every 35,000 gallons of water produced to once every 2,000,000 gallons of water produced, saving more than \$10,000 per month in raw materials, operations and maintenance. The waste effluent was reduced by 79% or 4,498 tons!

The R.O. unit at FPP has increased the demineralizers regeneration cycle from daily to monthly. Each demineralizer train can polish 2,000,000 gallons of water before regeneration, reducing sulfuric acid and caustic by more than 90%. Cost savings have not been documented; however, estimates show a chemical cost savings of \$250,000 per year and a savings in operations and maintenance of more than \$50,000 per year. The cost to construct the R.O. at FPP was \$1.5 million. The system will pay for itself in less than 1.5 years. The waste effluent was reduced by 60% or 12,697 tons!

The R.O. unit at TCF has increased the demineralizers regeneration cycle from monthly to quarterly. Cost savings have not been documented; however, estimates show a chemical cost savings of \$50,000 per year. The waste effluent was reduced by 87% or 2,372 tons!