Managing fish protection and aquatic debris at cooling water intake structures (CWIS) is an existing challenge for many facilities and impending regulatory actions will greatly increase the challenges in the near future. The Clean Water Act Section 316(b) Rule to be issued by the U.S. Environmental Protection Agency (EPA) on November 4, 2013 may allow for the use of fish-friendly modified traveling water screens and fish return structures as the best technology available (BTA) for the mitigation of fish and shellfish impingement at CWIS. Ristroph modified traveling water screens and fish return systems were identified by EPA as BTA in the 2011 proposed Rule and as potentially “pre-approved screens” in the EPA Notice of Data Availability of 2012. There are several types of screens potentially included in the “fish-friendly” category including the new Hydrolox™ screens. The Hydrolox™ screen is composed of engineered polymers which significantly reduces screen weight, does not corrode and has demonstrated resistance to wear, impact and fatigue in aquatic environments. In anticipation of the issuance of the 316(b) rule, Alabama Power Company (APC) has installed a Hydrolox™ fish-friendly system at Plant Barry on the Mobile River. This installation will be the first fish-friendly Hydrolox™ system for an entire CWIS in the US.

This study will evaluate whether the Hydrolox™ “fish friendly screens equipped with fish collection buckets and a fish return system are capable of meeting the required annual average and monthly mortality limits that EPA will have in the final 316(b) Rule. Operational factors, such as general screen reliability in a heavy debris environment and the ability of the system to separate live fish from the debris removal system will be critical to meeting the mortality limit(s).

Impingement sampling began in May 2013 and will continue through 2013. For one week of each month, impingement samples will be collected for 48 hours and held for 48 hours to assess latent impingement mortality (LIM). Impinged species at the Plant Barry CWIS predominantly include freshwater species such gizzard and threadfin shad, channel and blue catfish, freshwater drum and cyprinids. Some marine fish are impinged under certain tidal conditions. Hatchery fish will also be used as an impingement surrogate to identify potential areas that contribute to observed latent mortality within the screen and fish return system.

Presenter and author:
Justin Mitchell
jusmitch@southernco.com
Alabama Power Company