

## **WATER QUALITY & QUANTITY ISSUE SHEET**

### **MARTIN ISSUE GROUP TWO (MIG2)**

Determine the effect of future operation on water quality and water quantity in Lake Martin.

#### **DESCRIPTION OF ISSUE**

Stakeholders expressed concerns regarding potential sources of effects on water quality within Lake Martin, such as erosion, water withdrawal, wastewater discharges, development, and recreation.

Specific issues or areas of potential effect include:

#### Erosion

- Evaluate/investigate siltation issues in Red Creek and Blue Creek due to timber industry
- Effects of development on siltation and erosion; shoreline protection of vegetation; need for buffer zones

#### Operations

- Can APC improve the declining water quality in the lake?
- Need to have a hydrodynamic model for Lake Martin to understand flow and water quality in lake (3-D model)
- Need to have [water quality] monitoring in the embayments
- How will lake level fluctuations impact water quality and/or erosion?
- Increase dissolved oxygen (DO) in project discharge from 4 to 5 mg/l
- Investigate methods to reduce trash/debris on bottom of lake; extend window of opportunity for collection days
- The lake bed is eroding due to lake level fluctuations on a seasonal basis (plant rye grass)

#### Municipal/Industrial Discharges/Waste Water Treatment Facilities

- Calpine power plant impacts to Hillabee Creek
- NPDES permits from Alexander City and impact to Wind Creek and Lake Martin water quality
- Effects of Coley Waste Water treatment plant on Lake Martin water quality
- Reduce the amount of permitted and illegal pollution/sewage coming into the lake (point and non-point) sources
- Considering the overflows at Dadeville treatment facility, what are the impacts to Sandy Creek?
- What are the effects of sewage outflows into the reservoir?

### Development

- There are changes occurring in the water quality in Sandy Creek, Blue Creek, Upper area which are currently undeveloped - keep undeveloped to protect water quality
- APC should look at control of surface runoff through use of holding areas - water quality, sedimentation, etc. at developments (condos and homes)
- Effects of Best Management Practices (BMP) on the water quality of Lake Martin with regard to development
- New development, re-inspection of systems and impacts to water quality
- Control nutrient loading; address the effects of invasive/exotic species on the Lake
- What is being withdrawn in terms of water and how does it correlate to population?
- Limit future permitted water withdrawals, especially municipalities and new withdrawals
- Accommodate/increase existing permitted withdrawals for riparian use

### Recreation

- Impacts of storm water run off, houseboats, and marinas on the water quality of Lake Martin
- Regulate the disposal of holding tanks on boats - require pumping station per "X" number of slips
- Evaluate shoreline erosion and water quality impacts from increased boat traffic
- Evaluate impacts to recreation in Sandy Creek as a result of water quality
- APC should provide greater commitment to increase buffer zone around Lake Martin to improve water quality
- Impacts of unregulated primitive camping/debris/erosion on wildlife and vegetation

### **ADDITIONAL ISSUES IDENTIFIED FROM PAD QUESTIONNAIRE**

- An assessment of the near-term and potential long-term effects of the Alexander City waste water treatment plant effluent on public health and aquatic biota
- An assessment of all other NPDES permitted wastewater treatment plants that discharge into Lake Martin
- An assessment of the contribution of failing septic tanks of shoreline residences to higher increased incidents
- Technical assessment of the feasibility of attaining Outstanding Alabama Water use classification for Lake Martin
- An assessment of the potential effects of a reduction of winter drawdown

pool level on nuisance periphyte and macrophyte productivity in shoreline areas, especially in shallower slough areas

### GEOGRAPHIC SCOPE

- APC-owned lands within the Project Boundary and specific tributaries as they pertain to water withdrawal, water treatment plant influx, and upstream siltation events that flow into, or otherwise affect, Lake Martin

### EXISTING INFORMATION

- Water Resources: Consumptive Water Use Data; HEC-5 model for ACT Basin; HEC-5Q water quality model for ACT Basin; Water Quality Inventory for ACT Basin (cutoff at about 1994).
- Lake water quality data: Alabama Water Watch citizen-based water quality monitoring data. (13-year record of monthly physical and chemistry measurements by Lake Watch of Lake Martin volunteer monitors for selected sites around the lake).
- Deutsch, W. G., Feb 2000. Citizen Volunteer Water Quality Monitoring of Alabama Reservoirs, Lake Martin Report, Alabama Water Watch. (Summary report of Lake Martin citizen-based water quality monitoring and data trends for 1993-99).
- Deutsch, W. G. et. al., Feb 2005. Tallapoosa Watershed Project – A Transferable Model of Stakeholder Partnerships for Addressing Nutrient Dynamics in Southeastern Watersheds, 2004 Annual Report. (research findings for lake and selected watershed stream sampling during 2004 incorporating data and analyses using standard methods, citizen water watch protocols, close-range hyperspectral measurements, and satellite remote sensing).
- Deutsch, W. G. et. al., May 2006. Tallapoosa Watershed Project - A Transferable Model of Stakeholder Partnerships for Addressing Nutrient Dynamics in Southeastern Watersheds, 2005 Annual Report. (research findings for lake and selected watershed stream sampling during 2004 incorporating data and analyses using standard methods, citizen water watch protocols, close-range hyperspectral measurements, satellite remote sensing and Soils and Water Assessment Tool (SWAT) modeling of nutrient loading from the Lake Martin watershed).
- Alabama Clean Water Partnership. March 2005. The Tallapoosa River Basin Management Plan. (Section 5 Middle Tallapoosa, cited references, and appended supporting data address the point and non-point water quality concerns regarding Lake Martin, its tributaries, and surrounding environs. This document also provides other information relevant to the resource topics listed in section 2a of this questionnaire).



### CURRENT STUDY/ANALYSIS

- Prepare a complete list of all NPDES sources
- Water withdrawals white paper

### ADDITIONAL INFO/STUDY

- Hot spot erosion study, possibly using the LIDAR data for the reservoir
- Investigate effects on water quality as a result of potential increased consumptive demands, increased wastewater loadings, and effect of rule curve changes; include Aquatic Vegetation Distribution Study
- Additional water quality monitoring of eutrophication in upper lake embayments most affected by nutrient enrichment
- Develop a Water Quality Adaptive Management Sampling Plan for gathering baseline and monitoring data for comparison of changes in Lake Martin water quality due to potential changes in rule curve