Northern Tampa Bay Phase II Technical Advisory Committee
SWFWMD - Tampa Service Office

Meeting 2
October 4, 2000 - 9:30AM

Minutes

The following were in attendance: Peter Owens, Hillsborough County EPC; Zhongyan Lin, Hillsborough County EPC; Gordon Leslie, Jr., Hillsborough County EPC; Rich McLean, Pinellas County; Dave Slonena, Pinellas County; Warren Hogg, Tampa Bay Water; Michael Coates, Tampa Bay Water; Ralph Craig, City of St. Petersburg; Jeff Vilagos, City of Tampa; Andy Smith, Hillsborough County; Kim Haag, U.S. Geological Survey; Michael Hancock, SWFWMD; Mark Barcelo, SWFWMD; Marty Kelly, SWFWMD; Doug Leeper, SWFWMD, Adam Munson, SWFWMD; Robert Peterson, SWFWMD; John Parker, SWFWMD; Richard Schultz, SWFWMD.

Michael Hancock reminded the group that the Northern Tampa Bay website was now online, and includes meeting announcements, technical documents, meeting minutes, and other information. The site will soon include a message board area for use by the Technical Advisory Committee.

It was also decided to move the date for the next meeting to November 2, 2000. The meetings are usually on the first Wednesday of the month. The anticipated topic for the next TAC meeting is Category 3 lake minimum level methods.

The technical topic for the meeting was lake and wetland augmentation studies. Michael Hancock gave a brief overview of the potential sources of augmentation, which include ground water, surface water, storm water, and reclaimed water. To date, ground water has been the most common water used, so many studies have concentrated on ground water use.

Mr. Hancock gave an overview of a USGS project concerning lake augmentation with ground-water. The SWFWMD is cooperatively funding the project, and the project is nearing completion. The study concentrated on the hydrologic budget of three lakes, Round Lake, Lake Dosson, and Halfmoon Lake. Round Lake is a lake that has experienced impacts from lowered water levels, and has been regularly augmented with ground water since the mid-1960s. Lake Dosson is a lake that is not known to have ever been augmented. Halfmoon Lake has experienced low water levels, and prior to the study, had not been augmented. Halfmoon Lake was to be augmented during the study, but was not due largely to high water levels caused by the El Nino rain events.

Preliminary conclusions of the study include 1) ground-water augmentation has altered the natural ground-water flow patterns around Round Lake, and has increased the lake stage, creating an artificial recharge mound, 2) analysis of lake water budgets indicate ground-water augmentation increases vertical and lateral lake leakage, 3) geochemical analysis indicates the pH and alkalinity increases in the lake and surrounding water table, 4) natural tracers indicate that significant recycling of lake water is occurring, and 5) loading at the surface, rapid water level declines as a result of pumpage, and the concentration of water that percolates downward may accelerate the natural process of sinkhole development. Rich McLean asked whether any evidence has been found that the recirculation of augmentation water causes increased dissolution of limestone. Mr. Hancock said that it has been theorized in previous studies, but that he has not seen any studies that have demonstrated this occurrence.

Doug Leeper provided an overview of recent District-sponsored studies of lake augmentation. Results from the Northwest Hillsborough Lakes Augmentation Study (B001), which involves Lakes Dosson, Halfmoon and Round, indicate that several water quality parameters differ significantly among the lakes, and that some differences (*e.g.*, calcium concentration, hardness, and pH at Round Lake) can be attributed to augmentation. Plant and macroinvertebrate assemblages also differ among the study lakes, and some differences, including the relatively high abundance of *Nitella* and mollusks at Round Lake, are likely the result of augmentation. Fish assemblages also differ among the lakes, with abundance and biomass generally lowest, and species richness highest at Round Lake. Paleolimnological analyses indicate that nutrient loading has increased at all three lakes during the past century, and that recent increases in dissolved ions and pH have occurred at Round Lake. Mr. Leeper noted that dating of sediments from Round Lake was not possible due to a disequilibrium between radium-226 and lead-210. The discussion then turned to the District's ongoing Assessment of Augmented Lakes and Wetlands Project (P886), which is focused on evaluation of radium activity in District lakes. Data on radium activities in water from Round Lake, water used to augment the lake, and tissues from selected biota was presented, along with radium activity data for mussels collected from five additional lakes. Results from a District sponsored risk assessment were summarized, and Mr. Leeper finished his presentation with brief comments on two new lake augmentation studies that the District is planning for the coming year (Assessment of Augmented Lakes - B054 and B055, and Lake Sediment and Biota Assessments - B059). Dave Slonena asked if the District has considered studying whether or not added calcium could be a positive factor concerning bird eggs or other organisms that use calcium. Mr. Leeper said that has not been considered to date. Peter Owens suggested that natural springs be tested for the water quality parameters found in the augmented lakes, and Mr. Leeper agreed that is was a good idea. Mr. Slonena, Michael Coates, and others suggested that an assessment of the concentration of radium-226 in the Floridan and surficial aquifer should be pursued.

The last presentation of the meeting was by Dr. Kim Haag of the U.S. Geological Survey. Dr. Haag gave a summary of a recent study on wetlands augmentation being funded

cooperatively by the USGS, SWFWMD, Tampa Bay Water, and Pinellas County. The objective of this study is to assess the short-term and long-term effects of ground-water augmentation on the hydrology, water quality, and ecology of selected marsh and cypress wetlands in the Northern Tampa Bay area. Marsh and cypress wetlands will be studied over a range of hydrologic conditions: natural wetlands in settings not hydrologically impacted (controls), wetlands in settings that are hydrologically impacted, and wetlands that have been augmented for years. The study will also include wetlands that will be augmented during the course of the study, but were previously not augmented. The project seeks to describe the hydrogeologic settings, evaluate differences in water quality and bed sediment characteristics, and identify differences in algae, aquatic-plant, and aquatic invertebrate communities between the wetlands. The differences in ecology will then be related to hydrology and water quality. This long-term project is scheduled to be completed in 2005. Richard Schultz asked whether tracer studies were to be included. Dr. Haag answered no, but that it might be a good idea. Several TAC members felt that an important aspect of the study should be to try to mimic natural wetland fluctuations in the newly augmented wetlands, and Dr. Haag and SWFWMD staff agreed. Mr. McLean said that it might be possible to increase studies of augmented wetland systems at the Cross Bar well field, and that water budget assessments are an important part of any augmentation study.

The next NTB II TAC meeting will be held at 9:30 AM on November 2, 2000. The location is to be announced later.

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Agenda

1. September Meeting Follow-up

2. Technical Issue - Lake and Wetland Augmentation

   a. Overview

   b. Lake Studies
      - **S** Effects of Lake Augmentation on Lake Hydrology and Water Quality in the Northern Tampa Bay Area, Florida - USGS (Presenter - Michael Hancock)
      - **S** Northwest Hillsborough Lakes Augmentation Study - SWFWMD (Presenter - Doug Leeper)
      - **S** Assessment of Augmented Lakes and Wetlands - SWFWMD (Presenter - Doug Leeper)
      - **S** Lake Sediment and Biota Assessments - SWFWMD (Presenter - Doug Leeper)

   c. Wetland Studies
      - **S** Effects of Augmentation on Hydrology, Water Quality, and Ecology of Selected Wetlands in the Northern Tampa Bay Area, Florida (Presenter - Kim Haag)

   d. Other studies

   e. Future study needs

3. Issues for the Next Meeting - November 1, 2000 (changed to November 2, 2000)