

PRESCOTT WATER ISSUES  
COMMITTEE MEETING  
FRIDAY, JUNE 17, 2011  
PRESCOTT, ARIZONA

MINUTES OF THE MEETING OF THE PRESCOTT WATER ISSUES COMMITTEE held on Friday, June 17, 2011 in the PRESCOTT CITY HALL BASEMENT CONFERENCE ROOM located at 201 SOUTH CORTEZ STREET, Prescott, Arizona

A. Call to Order.

Chairman Lamerson called the meeting to order at 1:05 p.m.

B. Roll Call.

Present:

Chairman Jim Lamerson  
Member Mary Ann Suttles

Member Steve Blair arrived at 1:07 p.m.

Staff present:

Acting City Manager McConnell  
Leslie Graser

C. ADEQ Discussion with David Walker and Susan Fitch concerning Granite Creek Total Maximum Daily Load (TMDL)

Ms. Fitch gave a PowerPoint presentation that described

- ◆ Clean Water Act – she said that they were currently in the process of looking as stressors and collecting data to determine loadings.
- ◆ Conducting a TMDL
- ◆ Impairment – excess total phosphorus and a high ph in Watson Lake

Chairman Lamerson asked if the impairment affected the recharge credit for the City. Ms. Fitch said that she was not sure. Ms. Graser said that it was not an issue.

Chairman Lamerson said that it was important to keep abreast of those criteria. Ms. Fitch said that is was impaired for the bio mass surface water

- ◆ Definition of TMDL – max quantity of a water quality parameter that can...
- ◆ Calculating a TMDL load allocations, waste load allocations, natural background, margin of safety

- ◆ Sampling Sites within Granite and Willow Creeks Watersheds
- ◆ Total Nitrogen vs. Flow Rate
- ◆ Phosphorus vs. flow Rate
- ◆ TMDL Targets – causal variables and response variables
- ◆ Challenges try to keep the lakes as level as possible which make it easier to manage
- ◆ Summer Temp and Dissolved Profiles
- ◆ Example of high primary productivity; Summer of 2003

She then introduced Dr. David Walker from University of Arizona who was hired to conduct the in-lake study.

Dr. Walker showed a PowerPoint Presentation that covered:

- ◆ Reservoir Limnology and Lake Management
- ◆ Complex ecosystems
- ◆ Reservoirs vs. Lakes – he noted that the reservoirs were built in the 1970's for irrigation, etc. He said that lakes were formed from glaciers and were circular. Reservoirs had higher shoreline development because they were built in canyons. He said that lakes were more stable ecosystems than reservoirs
- ◆ Three zones of a reservoir: Riverine Zone, Transitional Zone, Lacustrine Zone
- ◆ Primary production and Eutrophication – algae growth driven by excess nutrients
- ◆ -Dissolved Oxygen and Gasses in Water – influences nearly all chemical and biological processes within water bodies. Dr. Walker noted that the solubility of oxygen was decreased at higher temperatures. He said that the trick to lake management was to have more sources than sinks.
- ◆ The Biota – diversity crashes with low dissolved oxygen
- ◆ Eutrophication is the number one cause of water impairment worldwide.
- ◆ Stepwise Process
  - Data collection
  - Modeling and data interpretation
  - Recommendations to reduce nutrient loading and to alleviate w/l symptoms
  - Bench-scale testing of potential treatments

- Implementation and monitoring

Dr. Walker said that the most important tool for lake management was monitoring, interpretation, and staying ahead of the curve. He noted that due to highly variable conditions, management needed to be active and ongoing.

- ◆ Data collection activities in Watson - He talked about sediment coring by Dr. Paul Gremillion of Northern Arizona University and said that he thought Watson Lake had three to five meters of sediment.

Member Blair asked how precise gradients were to determine toxicity if the lake was dredged. Dr. Dave said that the sediment would be preserved and it should be accurate. He said that he could age date sections of the core. Member Blair asked if there would be a recommendation to dredge in the reports. He asked if they would see how much infill they would see. Dr. Walker said that it would be in the TMDL.

Susan said that there would be a lot of aspects of the TMDL, including the ability of the system to move sediment. She said that they would talk about trapping sediment. It would be in the implementation phase of it.

Member Blair said that to keep the lake levels static was better than lowering levels and then letting it rise back up. Ms. Fitch said that there should be some dampening of the range. Mr. Worob asked when the data would be available. Ms. Fitch said that they would hire a contractor for the in-lake modeling portion in the next couple of months.

Member Suttles asked if the Arizona Department of Environmental Quality (ADEQ) was doing this on their own. She asked how it was funded. Ms. Fitch said that it was all funded through grants.

Member Blair asked if they could go out on barge and watch the process. Dr. Walker said the more hands the better.

Chuck Budinger talked about zones and asked if there would be recommendations to help the City understand how to minimize the life of lakes, or would they have to get that information from outside. He asked how the City would move forward.

Chairman Lamerson asked if they would be able to tell when things started changing around the lake in the core samples i.e. when there were cows, parking lots, etc. He wanted to know what was going on in the bottom of the lake. Dr. Dave said that sample would be variable due to water run off each year.

Ms. Fitch said that by early October they would like to have a public meeting to show what they had found and they could show the history. Later in the fall they would have another meeting to show modeling calculations. Member Blair asked about septic tanks and if the test would show results from those. Dr. Walker said that it would be difficult to determine exactly when that happened. Ms. Fitch said that based on the type of loading, they should be able to tell where the tanks were leaking.

Member Suttles left at 2:16 p.m.

- ◆ Pros and Cons of Some In-Lake Treatments – several treatments had the potential to cause far more harm than good.
- ◆ Aeration to increase lake circulation and mixing.
  - Sizing and type is important
  - Moderately expensive and long-term operating and mgmt costs
- ◆ Dredging
  - Expensive and logistically difficult
  - Food long-term benefits
  - Where needs to be figured out
  - Need to be analyzed and disposed of
  - Can cause short term impairment
  - Suction dredges don't get down deep
- ◆ Algaecides
  - Expensive in the long –term
  - Short lived
  - Risk of DO depletion
  - High risk of toxicity to non-target organisms
- ◆ Constructed Wetlands
  - Control nutrient loading
  - High public appeal
  - Long term benefits
  - Risk of toxicity and creation of ecological trap is high
  - Minimally effective at nutrient/contaminant removal
  - Can be hotspots for vectors of disease.
- ◆ Aluminum Sulfate
  - Clarifies water
  - Good short tem success
  - Relatively inexpensive in the short tem, can be expensive in the long term
- ◆ Summary

Dr. Walker said that it would take a long time to figure out Watson Lake.

Mr. Budinger said the collaboration of local governments was important. They were starting to evangelize and would talk with the Sierra Club that evening. He noted that they were working with different agencies and Granite Creeks was involved. He said that t there was a convergence of interest.

Gary Worob asked if Ms. Fitch had questions for Council or expectations from the City. Ms. Fitch said she met with Craig Dotseth. She said that the City had a multi-probe and could get to the lake more often than Ms. Fitch's group could, which would be helpful. She noted that Mr. Dotseth's staff would be at the lake every two weeks doing the probe measurements and getting a general idea of coverage of

submerged plants, air temperature, etc. She said that every other time they go out they would collect a integrated sample of water and analyze the water which would carry them through the data collection period. Member Blair said that the committee would help if she needed anything else. He also noted that he wanted the lake to be motorized to circulate the lakes.

Chairman Lamerson noted an article about the salt in the lakes in the East. He said that the White Mountains had high levels of mercury in the fish and they were not supposed to eat them.

Worob said that the city allocated a budget and they were under budget on the probe. He said that he reserved the entire viewery for a year from now. He asked Susan if she needed the City to purchase anything else.

Susan mentioned the bathometric map would be useful. Member Blair said that it was a high priority for him for Willow Lake. She said that she would like to see it done but the lake was chocked with weeds in the summer.

Mr. Worob said that Salt River Project said that the City could only have so much water in the lake. If they could show that there was not as much water in the lakes, they would like to take that step.

Ms. Fitch said ADEQ understood the limitations at Willow Lake. She said she would like to see the committee take the initiative. She said the soils show that there is lead in Willow Creek and it did not take a lot to create an issue. It was a very shallow reservoir.

Member Blair asked what the depth of the dam was. Ms. Fitch said that Craig Dotseth had historical information from 1909. She said that there were some rough as-builts.

Member Blair asked if it would be valuable to store more water to keep the nutrient levels down.

Chairman Lamerson, Member Blair and I left at 2:43 p.m. for a Council meeting.

- D. Proposals for next steps in lakes water quality enhancement project
- E. Adjournment