

**MINUTES OF THE MEETING
of the
HARRIS CHAIN OF LAKES RESTORATION COUNCIL
June 1, 2018**

The regular meeting of the Harris Chain of Lakes Restoration Council (Council) was held at 9:02 a.m. on June 1, 2018 at the Lake County Board of County Commissioner Chambers, 315 West Main Street, Tavares, Florida.

- **CALL TO ORDER**
Chairman Grow called the meeting to order at 9:02 a.m.
- **INVOCATION AND PLEDGE OF ALLEGIANCE**
Councilman Nicholson gave the invocation. The Pledge of Allegiance followed.
- **COUNCIL ROLL CALL; REMINDER FOR OTHERS TO SIGN IN**
Chairman Grow called the roll.

Council Members Present

Sid Grow, Chairman
Keith Truenow, Vice-Chairman
Don Nicholson, Secretary
Stephanie Bishop
Skip Goerner
Robert Johnson
John Stump

Council Members Absent

Vacant, Attorney
Vacant, Physician

- **APPROVAL OF MINUTES**
Minutes from April 6, 2018 were unanimously approved.
- **PRESENTATION**
Lake Yale Hydrologic / Nutrient Budgets and Water Quality Management Plans
Mike Perry, Lake County Water Authority

Mike Perry, Lake County Water Authority (LCWA), introduced his presentation, a review of Lake Yale hydrologic and nutrient budgets and description of proposed water quality management plans. Mr. Perry provided a description of Lake Yale, a 4,044-acre lake with a watershed that is largely undeveloped. Water levels in the lake vary from 53.56-60.26 ft which represents a relatively large range for a Central Florida lake.

LCWA requested the Lake County Environmental Resource Division (ERD) to quantify and rank hydrologic and pollutant loadings to Lake Yale, and to identify potential water quality improvement

projects. The ERD conducted field monitoring to collect hydrologic and water quality data for use in developing hydrologic and nutrient budgets and identify opportunities for load reductions, conducted a detailed evaluation of sediment characteristics, and developed bathymetric maps of water and muck depth, along with estimates of water and muck volume. The ERD was also tasked with identifying and evaluating water quality improvement projects and provide recommendations for water quality improvement options.

Mr. Perry described previous studies of the lake including the development of interim Pollution Load Reduction Goals (PLRGs) by the St. Johns River Water Management District (SJRWMD) and development of Total Maximum Daily Loads (TMDLs) for phosphorus by the Florida Department of Environmental Protection (FDEP) in 2003. The current study is intended to re-evaluate and verify the previously identified inputs, while supplementing the analyses to include shallow groundwater seepage and internal recycling.

A water depth contour map for Lake Yale presented by Mr. Perry suggests that Lake Yale originated because of one or more sinkhole features. Water elevations and discharges from Lake Yale occur through a 24-inch culvert in an earth berm approximately 50 ft east of CR 452. The invert of the culvert is approximately 58 ft which essentially establishes this as the control elevation for the lake.

A graph of historic rainfall from 1960 to present showed a relatively good correlation between annual rainfall and water level in Lake Yale, with increases and decreases in water level elevations in Lake Yale generally following annual rainfall patterns. Rainfall in recent years has been insufficient to maintain constant water levels in Lake Yale, resulting in an overall decline in water level.

Mr. Perry discussed nutrient trends in Lake Yale, noting total nitrogen (TN) concentrations have exhibited a moderate degree of variability over time, with a relatively close agreement between nitrogen concentrations measured by the various agencies. A general trend of increasing nitrogen concentrations is apparent in Lake Yale over the period of record. Measured total phosphorus (TP) concentrations in Lake Yale have been highly variable over time, though a general trend of increasing phosphorus concentrations has occurred in Lake Yale over time, like TN. A jump in TN and TP concentrations occurred in Lake Yale from 1996-1998. During this same period chlorophyll-*a* (Chl-*a*) concentrations increased, and Secchi depths decreased. A graph of trends in trophic state index in Lake Yale from 1982-2016 shows the Lake changing from an oligotrophic lake to one that is eutrophic to hypereutrophic. Chairman Grow observed TP seems to be increasing in Lake Yale with very little development yet decreasing around Lake Apopka with a high degree of development. In response to Chairman Grow's observation, Mr. Perry noted the relatively rapid changes in lake water quality appears to coincide with the introduction of many grass carp into Lake Yale, beginning in 1987 and continuing to 1994, along with repetitive herbicide applications for control of hydrilla. The nutrients released from the decomposition of vegetation, combined with excretions of plant material by the grass carp, resulted in an increase in water column nutrient concentrations, beginning in approximately 1994. Peak concentrations for total nitrogen and total phosphorus were reached during 1998, with relatively consistent water column concentrations of both total phosphorus and total nitrogen since that time.

Mr. Perry discussed the Lake Yale nutrient budget components and mean annual mass budgets including bulk precipitation, runoff/baseflow, groundwater seepage, lake outflow, and deep recharge. The dominant source of nitrogen loading to Lake Yale appears to be bulk precipitation while internal recycling is clearly the largest phosphorus input to Lake Yale, contributing 80% of the estimated

annual phosphorus loading. Chairman Grow queried Mr. Perry about the source of TP in rainfall. Mr. Perry noted dust or other particulates which may contain P are carried to the land surface by rainfall. Councilman Johnson reported that the entire Harris chain is underlain by the Hawthorne series which is characterized by phosphorus pebbles. Based upon the field monitoring conducted by ERD, the existing sediment accumulations in Lake Yale contribute a significant phosphorus loading to the lake each year. Water quality within the lake could be improved substantially by reducing the observed phosphorus loadings from internal recycling and shallow groundwater seepage.

Recommended management options for Lake Yale include treatment of stormwater inputs, requiring rear yard berms and swales, providing vegetation control of tussocks by mechanical means, re-introducing submerged aquatic vegetation, conducting a whole-lake alum treatment to sequester phosphorus in the sediments, providing public education, and restricting boating activities in shallow water.

Mr. Perry emphasized one of the most significant components to reduce total phosphorus concentrations in Lake Yale is the proposed sediment inactivation project (whole-lake alum treatment) which will provide significant load reductions for inputs resulting from internal recycling and groundwater seepage, and ERD recommends that this activity be given high priority. Mr. Perry noted the alum essentially creates a veneer of sediment trapping settled nutrients below it. Councilman Goerner queried Mr. Perry about the effect of alum on benthic organisms. Mr. Perry reported numerous studies show a limited short-term impact on benthic organisms. Councilman Goerner indicated a similar occurrence on Lake Griffin and suggested applying the Lake Griffin restoration model as a more permanent and cost-effective option than alum. Councilman Goerner suggested continuing to review the success on Lake Griffin and the reasons for the success and provide some more observation. Councilman Goerner also queried Mr. Perry about whether the SJRWMD or the scientific community had reviewed the proposal. Mr. Perry noted they had not yet reviewed the proposal.

Councilwoman Bishop discussed the recommended options for Lake Yale querying Mr. Perry about the value of combining stormwater retrofit and alum treatment. Mr. Perry noted stormwater treatment was probably not cost-effective because of limited contributions from that source. Councilman Stump discussed the impact of layering of alum over the muck layer and whether it might ultimately cause loss of depth in the lake. Councilman Stump expressed concern that if the sources of nutrients (grass carp and hydrilla) were still then there would have been continued buildup of sediments. Mr. Perry noted there is no hydrilla in the lake and few if any grass carp.

Vice-Chairman Truenow queried Mr. Perry as to why there is vegetation in Lake Yale. Mr. Perry noted high phytoplankton concentrations reduce light penetration such that no light reaches to the bottom to allow submerged aquatic vegetation to grow. In addition, the large amount of flocculent in the lake does not provide adequate substrate for root attachment. Councilman Goerner expressed concern about the effects of alum on fish populations and reiterated his suggestion that the Lake Griffin restoration model might be more appropriate.

LCWA included \$2,202,328 in its FY 2017-2018 budget for a Lake Yale Sediment Inactivation project but will need to look for funding partners for the balance or continue accumulating funds over future fiscal years. LCWA will also need to coordinate with Florida Fish and Wildlife Commission and the FDEP regarding whole lake alum applications. In conclusion, Mr. Perry noted LCWA will release requests for proposals for a Lake Yale Sediment Inactivation project.

- **PRESENTATION**

SJRWMD Hurricane Preparation Update, Steve Miller, Land Resources Bureau Chief, SJRWMD

Steve Miller, SJRWMD Bureau Chief, Bureau of Land Resources, acts of one of the alternate SJRWMD emergency coordinators during a declared state of emergency by the State of Florida. Mr. Miller noted SJRWMD is one of the response partners within the state emergency management system and may be called upon for assistance for emergencies ranging from hurricane and wildfires to plane crashes and floods. Mr. Miller described the incident command system within SJRWMD's Emergency Operations Center, noting the monitoring of tropical systems is now a priority with the beginning of hurricane season on June 1. SJRWMD participated in the annual statewide hurricane exercise from April 30-May 4 and met with other water management district personnel to coordinate responses.

Mr. Miller presented a series of graphs of water levels of the Upper St. Johns River Basin and the Upper Ocklawaha River Basin (UORB) to illustrate how SJRWMD monitors water levels, in this case in relation to the rainfall from Sub-tropical Storm Alberto. Water levels and flow in the UORB are managed through water control structures, including the Apopka Lock and Dam, Harris Bayou, the Burrell Lock and Dam, and the Moss Bluff Lock and Dam.

Mr. Miller discussed Lake Apopka and the issues with water levels during Hurricane Irma in 2017. Mr. Miller noted prior to Hurricane Irma excess water in Lake Apopka could only be moved north through the Apopka Lock and Dam. The priority of moving that water was to protect property as much as possible, but it is a balancing act, and some flooding was unavoidable. Since then, the United States Fish and Wildlife Service has approved the pumping of water out of Lake Apopka into five new sections of the Lake Apopka north shore restoration area (NSRA) in emergencies.

Councilman Goerner queried Mr. Miller on options for more conveyance of water, particularly in relation to the Dora Canal. Mr. Miller noted the LCWA removed numerous fallen trees from the canal to aid in conveyance. SJRWMD is evaluating ways to expand capacity in the Dora Canal including underground piping, expansion of the bayou, and dredging. Councilman Nicholson encouraged SJRWMD to continue working on the problem.

- **PRESENTATION**

Harris Chain of Lakes Minimum Flows and Levels (MFLs) Update, Andrew Sutherland, PhD, MFLs Technical Program Manager, Bureau of Resource Evaluation and Modeling, SJRWMD

Andrew Sutherland, Ph.D., SJRWMD, provided an overview of the SJRWMD MFL Program noting the water management districts are statutorily mandated to establish MFLs that set the limit at which further withdrawals would be significantly harmful to the water resources or the ecology of the area. Further, in establishing these MFLs, consideration must be given to a series of ten different non-consumptive uses and environmental values in Chapter 62-40, Florida Administrative Code.

In determining MFLs, Dr. Sutherland noted SJRWMD first identifies the most critical environmental features to protect and the minimum hydrologic regime required for their protection (MFLs condition), then assesses the baseline hydrologic regime that represents the current impacted condition (Baseline condition), finally comparing MFL and Baseline conditions to determine if water is available. Dr. Sutherland presented a conceptual graphic illustrating the MFL condition, the Baseline

condition, the amount of water needed to sustain surface water environment and beneficial uses, and the amount available for withdrawal.

Dr. Sutherland reported that the current status of an MFL is determined using long-term hydrologic model simulations, based on surface water and groundwater model output to determine the effects of current pumping on the frequency of minimum hydrologic events. Future status of MFLs is determined using 20-yr groundwater withdrawal projections to compare future drawdown with remaining freeboard (available water).

The UORB Lakes MFLs, including Lake Apopka, the Harris Chain of Lakes and Lake Griffin, are all scheduled to be completed in 2019. Computer model review responses are scheduled to be added to the SJRWMD website this month (June 2018), with a stakeholder and peer review workshop to review the UORB MFLs report scheduled for March 2019. Notice of Rule Development is planned for October 2019, with a rulemaking workshop in November 2019, followed by an SJRWMD Notice of Proposed Rule in December 2019.

Councilman Stump queried Dr. Sutherland about the hydrologic connection of Lake Apopka to the aquifer. Dr. Sutherland noted part of the lake recharges to and part discharges from the aquifer.

Councilman Nicholson questioned whether the US Navy is a partner in MFL development as they maintain a sonar lab at Bugg Spring. Dr. Sutherland noted they are not currently involved in MFL development as Bugg Spring is wholly managed by the US Navy.

Councilman Goerner expressed concern about plans for the NSRA about MFLs, particularly in relation to surface water pumping for landscape irrigation by the City of Apopka. Dr. Sutherland noted that the public workshop scheduled for March 2019 would be a good venue for voicing opinions/concerns about how the lakes are simulated (including NSRA management) for the MFLs status assessments.

- **PUBLIC COMMENTS**

There were no public comments.

- **FOR INFORMATION**

Council discussion on sediment transport in the Apopka Beauclair Canal.

Chairman Grow queried Council as to interest in hearing about storm-specific sediment flows in the Apopka-Beauclair Canal. Councilmembers Stump, Nicholson, and Johnson all expressed an interest in receiving more information. Chairman Grow suggested SJRWMD could provide the necessary data.

Lisa Kelley, Assistant Executive Director, SJRWMD, informed Council SJRWMD does not have the requested data and suggested using the Council's Technical Advisory Group (TAG) to develop that information.

Council discussed various parameters for measurement and the availability of data. Chairman Grow presented a motion on the request, **Council is interested in the amount of effluent that came down the Apopka-Beauclair Canal as a result of Hurricane Irma, and how much of it went into the side canal and how much is in the navigable part of the A-B canal, and what is it going to take to remove it.** The request was unanimously approved.

- **FOR INFORMATION**

Discussion and compilation of draft questions from Council Members to be addressed by Dr. Ann Shortelle, Executive Director, SJRWMD.

Chairman Grow presented a series of questions (included in attachment to the minutes) provided by Councilmembers to be addressed by Dr. Ann Shortelle. Council agreed to the following:

Question 1

Council requests SJRWMD and pertinent Council technical advisory group agencies (FWC, FDEP, LCWA) to provide current scientific data in a presentation to the Council that allows the North Shore Restoration (NSRA) to either be connected or not connected to Lake Apopka. If reconnection is an option, the presentation should include required steps, cost, and timeline. Council was informed several times during the 2017 Council meetings that the District will not look at reconnecting the Lake Apopka North Shore(LANS) until 2021. Can the district analyze or hire a firm to analyze the reconnection of the LANS sooner?

Question 2

Dr. Mike Allen proved that the harvest of gizzard shad is not effective, in the manner that it is being done, in significantly reducing phosphorus in Lake Apopka. Why is money being wasted on continuing the harvest?

Councilman Goerner left the meeting at 11:47 a.m. during discussion of draft questions.

- **CONSIDERATION**

Approval of list of Council questions for Dr. Ann Shortelle.

Councilmembers present unanimously approved the following questions be forwarded to Dr. Ann Shortelle.

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Question 2

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- **FOR INFORMATION**

- **Review of available platforms and associated costs to advertise Council vacancies.**

Ms. Susan Davis, SJRWMD, contacted the Villages News, the Villages Daily Sun, and the Daily Commercial newspapers to obtain pricing information on the publication of Council vacancies and the Council meeting agenda. Ms. Davis reported the newspaper representatives requested they meet directly with a Council representative to determine costs. Chairman Grow agreed to act as Council representative, meet with appropriate newspaper personnel, and report back to Council.

- **CONSIDERATION**

- **Approval of selected platforms to advertise Council vacancies and associated costs.**

Approval was deferred until further information is provided by Chairman Grow.

- **AGENCY UPDATES**

Mike Perry, LCWA, reported all water currently moving through the Apopka-Beauclair Canal is being threatened the Nutrient Reclamation Facility (NuRF). LCWA has spent \$2 million on alum so far. LCWA is already using the reserve funds for alum acquisition and funds are running short. Mr. Perry reported \$9,856 is currently available for Council use.

Mr. Dennis Renfro, Florida Game and Freshwater Fish Commission (FWC), reported 10 more fish attractors had been installed in Lake Dora. Volunteers from local bass clubs helped with the project. FWC is doing research on catch differences between sites with either 50 or 100 attractors per site. FWC partnered with Tavares for the new boat ramp on the lake. Mr. Renfro also noted more Spadderdock plants had been placed offshore in Lake Griffin.

Susan Davis, SJRWMD, reported on SJRWMD activities relevant to the Harris Council since the April 6, 2018 Harris Council meeting, including the announcement of the submerged aquatic vegetation project for consideration at the July District Governing Board meeting. The agency update with supporting documents are included as an attachment to these minutes and are part of the permanent record.

Kevin Coyne, Florida Department of Environmental Protection, had no updates.

- **COUNCILMEMBER COMMENTS**

- **A. Comments**

Councilman Johnson commented about discussions of Roberts Rules at the April meeting.

Councilman Nicholson noted the Council had officially adopted Roberts Rules of order.

Councilwoman Bishop reported she had a two-page condensed summary of Roberts that could be provided to Council. **Councilwoman Bishop agreed to provide a copy of the summary and requested Council Administrative Support to distribute the Robert Rule summary to other Councilmembers.**

- **B. Review of action items requested during meeting**

Council is interested in the amount of effluent that came down the Apopka-Beauclair Canal as a result of Hurricane Irma, and how much of it went into the side canal and how much is in the navigable part of the A-B canal, and what is it going to take to remove it.

Councilwoman Bishop agreed to provide a copy of the summary and requested Council Administrative Support to distribute the Robert Rule summary to other Councilmembers.

C. Discussion of next scheduled meeting

The next scheduled meeting is July 13. Councilman Nicholson indicated he would not be able to attend the next meeting.

Council requested a Lake Apopka dredging update, and a presentation by Dr. Karl Havens on how multiyear oscillations in depth affect water quality in Lake Apopka

Councilwoman Bishop remarked Council should start thinking about the Annual Report, suggesting Council should be reviewing projects and making recommendations.

• **ADJOURNMENT**

The meeting adjourned at 12:11PM.