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**Board Meeting Minutes**

**Friday, February 26, 2021**

**9:00 am to noon, via Zoom**

**Action Items are Underlined**

**Opening**

* **Welcome and introductions** - Bob Deyle

**Secretary report**

* **January 22, 2021 minutes –** Debbie Lightsey made the motion to approve the minutes, which was approved unanimously**.**
* **February 12, 2021 minutes -** Terry Ryan made the motion to approve the minutes, including an amendment to add Debbie Lightsey to the attendee list, which passed unanimously.

**January financial report**

* Debbie Lightsey made the motion to approve the report, which was approved unanimously**.**

**Why is the Water Dark Part III: Exploring Hypotheses** – Bob Deyle

* This is the part 3A of the study results presentations. There will be a part 3B.
* Research questions:
1. What are the light-absorbing substances responsible for the dark water?
2. What are the sources of these substances?
3. Why have the frequency and duration of dark water conditions increased?
* Glass-bottom boat tour days per year have declined since 1993 with the exception of a peak in 2000.
* What have we learned? Hypotheses:
	1. More frequent Lost Creek flows to Wakulla Springs.
	2. Accelerating sea level rise and changes in head differentials.
	3. Changes in rainfall patterns.
	4. Declining spring pool state (head).

1. More frequent Lost Creek flows to Wakulla Springs.

* Dark water from the National Forest feeds Lost Creek.
* When Spring Creek reverses it pushes water from Lost Creek to Wakulla Springs.
* Spring Creek reverses when there is not enough flow to keep the salt water from flowing into the spring cave

2. Accelerating SLR and head differentials

* The head difference hypothesis is being reviewed by Hal Davis and the WMD.
* The water level at Wakulla Springs is about 5’ above Spring Creek.
* There are aquifer connections between them.
* Lower rainfall will lower the aquifer to a point that saltwater will flow into the aquifer at Spring Creek forming a “plug.” The plug of saltwater is heavier and raises the effective head at Spring Creek.
* Saltwater can make it to Wakulla Springs under some Spring Creek reversal conditions. The WMD MFL report documents the spikes starting in 2006.
* Higher salinity can affect aquatic plants.
* Dark water and salinity are linked.
* Sea level rise may be contributing to the lower head difference.
* Doug Barr’s comments on the MFL include a graph showing the increase in the rate of SLR that is consistent with world-wide climate change.

3. Changes in rainfall patterns

* Rainfall has declined over the last 15 years.
* This has affected reversals at Spring Creek.
* When there is less rain there is more clear water based on glass bottom boat tours.

4. Declining spring pool state (head).

* The stage has been declining from 1987 to now, 5.75’ to 4.7’ (2019).
* The pool stage is lower at Wakulla Springs and Spring Creek is higher because of SLR.
* Dark water from Lost Creek can be pushed to Wakulla Springs without salinity spikes.
* The lower head at Wakulla Springs also affects flow in the aquifer to Wakulla Springs from the sinkholes and sinking lakes and creeks to the north in the springshed.
* When rainfall is lower there will be lower tannin levels.
* The lower stage at Wakulla Springs will increase inflow of low levels of tannins from the aquifer from both north and south after sinking streams have stopped flowing
* Questions for next time
* Why is the Wakulla Spring Pool Stage (head) dropping?
* What happened circa 1994 and the drop in glass-bottom boat tours?
* Questions/Comments and Answers
* Q – What about Lake Bradford and others that have drained and affect dark water? A - We can add this information.
* Q – Dark water and tannic water days are not the same. Some days the water is green. There needs to be a distinction. We can look at the drought days when the water was green. The green water is coming from the north. A – The previous presentation on water color confirms this. It can be mixes of tannins and chlorophyll.
* Q – Water comes to Spring Creek from the cave system consistently from the north AND from Loss Creek. A – That is true.
* Q – Talquin made changes in 2000. Blue Sink falls and other sinks dry up. A – We don’t know if anyone is tracking this. FAMU may have some data.
* Q – You said that there was a drop in Chlorophyl a prior to 2015 and since then. Is there a connection to the sinking lakes? The water in Lake Bradford is very high now. There is a sinkhole near Debbie’s boat dock. Why does Lake Cascade drain quicker? Construction on Capital Circle SW may change flows between the lakes. These are dark water lakes and they leak. A – The dark water studies and other data showed Chlorophyl levels 50% less between 2015 and 2020 compared to earlier data. Tannin levels 2015-2020 were 3 times higher than recorded earlier. Johnny Richardson may have data. More data is in the WIN database.
* Q – The MFL report discussed the reduction in rainfall. Your hypotheses are right on. Hopefully the WMD will look at this analysis. A – Presentation part 3B will look at this. Erosion of the stream channel also has an effect.
* Q – All Leon data goes to the WIN database. The level of tannic, green and turbid water has affected grasses in the bays in the coastal area. This may come back into the aquifer when there are reversals. What about the siphon affect in sinking lakes. Iamonia takes on water from the Ochlocknee. Forest practices like burning and harvesting may correlate to some of the events at the Springs. A – Declining pool stage at Wakulla Springs may pull more water from the lakes. A study of CDOM looked at changes in vegetation management in the sinking streams and lakes and didn’t find a link to forest management.
* Q – Burning on the forest has declined since 2000. The charcoal can reduce the tannins.
* Q – Visibility at Wakulla Springs dropped from 17 last week to 10 feet yesterday. Divers have confirmed dirty water coming from Spring Creek.

**Wakulla Spring and Sally Ward Spring MFL update** - Kathleen Coates

* Expect the peer review report any day and it will be shared with the WSA.
* We are doing the rulemaking and looking at comments over the next few weeks and will modify the report.
* We will post the notice of proposal rule and there will be a 21 day comment period.
* If there are comments there may be an amended rule and another comment period.
* Q – Did the questions go to the peer review committee? A – No, that is not usually done. This is not their charge.

**WSA comments on Wakulla County Wastewater Facilities Improvements Project FFONSI** - Bob Deyle

* Despite our efforts to argue that FDEP had not properly followed what is required under the governing regulations for issuing a FFONSI, the State Revolving staff have stuck to their contention that because the treated effluent will meet the AWT standard of 3.0 mg/L required of WWTFs of GE 100,000 gpd within a PFA that there will be no adverse environmental impact to Wakulla Spring.
* The list meeting was Wednesday. Doug Barr said he was going to speak, focusing on the sinkhole lakes issue. Banks said that if they got comments that have a basis in statute, regulation, or ordinance, they can hold the record open for a couple weeks. Tim Banks confirmed that the project has now been listed for a design loan.
* The actual loan application will come later.

**Follow up comments to Wakulla County regarding planned RIB and wetland on former Moore property - Executive Committee**

* Our January 28 letter to County Administrator David Edwards urged the County to undertake a formal assessment to identify an alternative site outside of the Wakulla PFA to dispose of any wastewater that is generated within the PFA and managed at the Otter Creek WWTF
* We also called out the potential for nitrogen pollution of nearby sinkhole lakes and the possible health risks associated with nitrate concentrations in drinking water that are less than the federal and state safe drinking water standard of 10 mg/L.
* At our meeting on February12 we discussed the Gaby site as a possible alternative. While we have not formally advocated for that site, David Edwards is aware of our discussion and has insisted that (a) it is too expensive and (b) that the WMD and FDEP won’t approve a site outside the basin.
* I have clarified with Brett Cyphers that there is no statutory or regulatory policy that prohibits out-of-basin transfers of treated wastewater, but he also made it clear the WMD and FDEP strongly advocate minimizing such transfers.
* The key message at the public meeting on Tuesday was that Wetland Solutions Inc believes they can reduce the nitrate-nitrogen concentration of the effluent to less than the Wakulla TMDL of 0.35 mg/L.
* I have since corresponded with Scott Knight, son of Florida Springs Institute Director, Bob Knight, who made the presentation. He reiterated that at the Lake City wetland, average nitrate concentrations in the most down-gradient cells have averaged 0.05 mg/L (N=116) over the period-of-record for the project, and the average of all collected wetland samples has been 0.25 mg/L (N=319).
* However, he clarified that the final removal rate will depend on what they can construct on the site in terms of capacity, as well as the extent to which the wetland cells will need to be lined. The Lake City wetland treats about 1.2 mgd on 120 acres of unlined wetland cells. The Moore parcel is just a little over 100 acres and about 50% is designated as floodplain.
* In an exchange with other Executive Committee members Tom Taylor suggested several points that we might address in a follow-up letter
* Does the WSA need to send a follow-up letter that calls for:
	+ Inclusion of the engineered wetland.
	+ Sizing it to treat all effluent from the WWTF.
	+ Protects against well water contamination, sinkhole formation and sinkhole lake pollution.
* Q – Did we get a response on our previous letter? A – David Edwards referred to the analysis of alternative sited done before.
* Q – We still have major concerns with the Moore site, especially with the 50% flood plains. We should consider the 4 hypotheses presentation that shows how flows are all interconnected.
* Terry Ryan made a motion, seconded by Albert Gregory to send a letter to raise these considerations above, which passed unanimously. The Executive Committee will approve the letter to be drafted by Bob Deyle.
* Q - Has the consultant estimated the size of the wetland on the Moore site? Is the Lake City site similar in terms of sinkholes and aquifer level? If the lining collapses, we may not have any treatment. A – The next step is to submit an application for funding for the design work. We can include these questions in the letter.
* Q - We should focus on what occurs on this site. We can also ask for further reductions at the WWTF, which would reduce the required wetland acreage. Some of the wastewater comes from outside of the PFA. A – the WWTF improvements are near completion and can’t be changed. They are anticipating achieving a 2 mg/l total nitrogen concentration rather than the required 3 mg/l AWT standard. There could be a wetland at the WWTF site that would polish all of the wastewater.
* Lake City had a 7 mg/l discharge that has been reduced to 1 mg/l. Scott Knight is confident good results can be achieved with the Otter Creek WWTF effluent.
* Use language on Bob’s slide with 50% flood plain.
* David Edwards stated that he is glad to work with the WSA and move on with engineering to determine what can be achieved on this site.
* Anthony Gaudio said he hopes the county will consider better treatment at the WWTF, if it is cost effective.
* David Edwards said they will be looking at all of this.

**Insurance update** - Bob Deyle

* Further harassment of the Earl Bacon insurance agent finally bore fruit. He secured an updated quote on General Liability insurance from Philadelphia Indemnity. The annual premium remains at $784.
* But then he shared new information about the differences between D&O insurance and general Liability as it pertains to coverage for alleged defamation.
* In particular General Liability policies exclude intentional acts: (Example – something is published by the alliance that a certain individual or business Is damaging water systems in relation to the Wakulla Springs water systems and a judgement is brought against the Alliance for defamation. Should the publication be deemed an intentional act by the alliance, coverage would not be provided on a General Liability policy. Intentional acts on a Directors & Officers policy are not excluded, unless intended acts are in relation to workplace violence.)
* General liability only covers damages assessed if the insured should lose a suit; it does not cover attorneys’ fees:
* This has led Bob to conclude that we need to go with D&O after all. The Earl Bacon agent asserts that D&O covers both intentional and unintentional acts and will cover attorney’s fees as well as damages. Bob said he confirmed this in a review of the specimen received from Carolina Casualty.
* The previous quote from Carolina Casualty was $1,089 or $1,159 ($1,000,000 combined aggregate or separate aggregate limits of liability over the policy period). The agent is seeking an updated quote from Carolina Casualty.
* The maximum authorized by the Board on November 20 was $1,200. However, because he is recommending that we switch to D&O rather than General Liability Bob is bringing this back to the Board for review and direction.
* Debbie Lightsey made a motion seconded by Gail Fishman, to approve purchase of D&O insurance costing up to $1400, which passed unanimously.

**Proposed amendments to Alliance strategic plan** - Tom Taylor

* Ryan Smart, Rob Gelhardt, Dan Lanham, Bob Deyle and others provided comments on the draft WSA Strategic Plan.
* The Strategic Plan Committee, Debbie Lightsey, Gail Fishman, Albert Gregory and Tom Taylor reviewed the comments and made additional refinements.
* Everyone is encouraged to review the latest [WSA Strategic Plan Google Doc](https://docs.google.com/document/d/1fUeXuM0DL0eHWG_7K4_FEyePC0RbdZUPEfAow7iPEs4/edit?usp=sharing), make additional comments and volunteer to take the lead or volunteer for at least one of the goals or action tasks. As an all-volunteer organization, nothing gets done unless someone commits and does it.

**Upcoming meetings and events** – Bob Deyle

* **March 26**
	+ - WSA comments on Wakulla and Sally Ward Springs MFLs,
		- Part 3B of the Dark Water Study report,
		- Revision and adoption of the WSA strategic plan
* **April**
	+ - Wakulla County extension of the springs protection zone to include Spring Creek watershed.
		- Autumn Calder and DOT presentations on Capital Circle SW and Lightsey Park

**Pam Hall** – Bob Deyle

* Earlier this week we lost Spring Champion Pam Hall to the cancer she so valiantly grappled with for over 2.5 years. She leaves an incredible legacy of accomplishments on behalf of Wakulla Spring and Leon County’s environment and quality of life.
* Pam was responsible for the Wakulla Spring BMAP being the only one in the state to have two goals: attainment of a TMDL for nitrate and restoration of the biological community.
* Pam and her frequent co-conspirator, Debbie Lightsey, hatched, promoted, and brought to fruition Leon County’s Comprehensive Wastewater Treatment Facilities Plan.
* Pam and Anthony Gaudio dogged FDOH and FDEP on all things septic tank setting the stage for improvements to the BMAP and most recently the decision to expand Leon County’s pilot program installing passive nitrogen reducing septic systems to include In-ground Nitrogen Reduction Biofilters that are more likely to actually reduce nitrogen loadings to the aquifer.
* Bob acknowledged that many of us hold Pam in high regard. We will miss her sorely, but she will be with us in spirit as we continue to tread the paths she forged.

**Springshed and River Update -** Cal Jamison and Others

* Visibility is at 10’, darker the last 3 weeks even without rainwater support. The bathtub is full.
* The streams and swamps are full.
* Pam Hall, Carol Schwarz and others have passed and it is hard.
* Debbie said that there are old maps showing water connection from the Ochlocknee south. The water has never been higher except one time.
* Look at the USGS gauge on the Ochlocknee and flow into Lake Iamonia, which is so high that it flows into the parking lot at the bait shop. Lake Jackson is not holding much water. Lake Bradford is very high.
* 300,000 acres of wetlands in the National Forest. It is a huge sponge and water will flow for a long time after the rain stops.
* There was a canal from San Luis Mission to the St Marks river to move goods.
* Cal has a set of maps that show the water course between Wakulla Springs to San Luis Mission through McBride Slough, Ames Sink, to the Cascade Lakes. Some may have disappeared into sinkholes. There was a canal from Natural Bridge to the St. Marks rise.
* Munson Slough to Lake Henrietta and beyond, may have been one of the routes.

**Cave exploration update** – Andreas Hagberg

* We have been diving south of Sally Ward, which is still clear, caves to the west are dark.

**Eelgrass demise?** - Bob Deyle

* Bob did full river wildlife survey recently and discovered bare sand near the T-dock where the eelgrass and other grasses are now gone. The manatee count has been high and they pull the grass up by the roots. This changes the food web of the Spring and river. The mid-2000s revegetation project had repopulated the grasses but much of it is now gone. Manatees only showed up in the 90s and have changed the historic ecosystem. It will be interesting to see what the next quarterly submerged aquatic vegetation survey will reveal. It will affect our mission.

Appendix A

**Friday, February 26, 2021 Agenda**

**9:00 am to noon, via Zoom**

 **9:00 Opening**

* Welcome and introductions - Bob Deyle
* Agenda review - Bob Deyle

 **9:10 Secretary report** - Tom Taylor

* January 22, 2021 minutes
* February 12, 2021 minutes

 **9:20 January financial report** – Jim Davis

 **9:30 Why is the Water Dark Part III: Exploring Hypotheses** – Bob Deyle

**10:15 Wakulla Spring and Sally Ward Spring MFL update** - Kathleen Coates

**10:20 WSA comments on Wakulla County Wastewater Facilities Improvements Project FFONSI** - Bob Deyle

**10:25 Follow up comments to Wakulla County regarding planned RIB and wetland on former Moore property** - Executive Committee

**10:45 Insurance update** - Bob Deyle

**10:55 Proposed amendments to Alliance strategic plan** - Tom Taylor

**11:40 Upcoming meetings and events** – Bob Deyle

* March 26 - WSA comments on Wakulla and Sally Ward Springs MFLs
* April 23 - TBA

**11:45 What’s new?**

* Pam Hall – Bob Deyle
* Springshed and river update - Cal Jamison
* Cave exploration update – Andreas Hagberg
* Eelgrass demise - Bob Deyle
* What else?

**11:55 Other business**

**12:00 Adjourn**

Appendix B

**2-26-21 WSA Meeting Participants**

**\* indicates those present**

Officers

Robert E. Deyle, Chair \*
Howard Kessler, Vice-Chair \*
Tom Taylor, Secretary, \*
Jim Davis, Treasurer

Directors

Gail Fishman \*

Albert Gregory \*
Rob Gelhardt \*

Andreas Hagberg \*

Cal Jamison \*
Brian K. Katz \*
Terry Ryan \*
Lindsay Stevens \*
Jim A. Stevenson \*

Members

George Apthorp

Doug Barr

Dana Bryan

Bill Carroll

Sandy Cook

Hal Davis

Craig Diamond

Anthony R. Gaudio \*

Grant Gelhardt

Chuck Hess \*

Michael Hill

Zoe Kulakowski

Don Lanham

John Outland

Dan Pennington

Thomas Sawicki

Peter Scalco

Ryan Smart

Meredith Tanguay

Bob Thompson \*

Steve Urse

Sophie Wacongne-Speer \*

Nico Wienders

Guests

Carlos Herd \*

Kathleen Coates \*

Sue Damon \*

Jack Leppert \*

Brian Lupiani \*

L Cruz \*

Michelle Metcalf \*

Johnny Richardson \*

Courtney Schoen \*