

**LOWER ST. JOHNS RIVER TECHNICAL ADVISORY COMMITTEE MEETING
 Florida Department of Environmental Protection – Northeast District Office
 8800 Baymeadows Way West, Suite 100, Jacksonville, FL
 December 11, 2013**

Participants

Errol Bos, ETM	Matt Kershner, FDEP
Robert Burks, SJRWMD	Glenn Landers, USACE
Derek Busby, SJRWMD	Jody Lee, FDACS
Tiffany Busby, Wildwood Consulting	Pam Livingston Way, SJRWMD
Eric Bush, USACE	Melissa Long, FDEP
Ed Cordova, JEA	Andy Ouellette, JU
Barry Cotter, COJ	Grazyna Pawlowicz, FDOH – Duval County
Rhea Derke, JU	Marcy Policastro, Wildwood Consulting
Betsy Deuerling, COJ	Katie Roark, JEA
Anthony DiGirolamo, FWC	Jennifer Sagan, AMEC
Charles Gauthier, FDEP	Geoffrey Sample, SJRWMD
John Hendrickson, SJRWMD	Lucy Sonnenberg, JU
Mike Hollingsworth, USACE	Lisa Sterling, CDM Smith
Eric Hughes, EPA	Eric Summa, USACE
Chad Hummell, AVS	Ryan Taylor, ESI
Jay Kamys, St. Johns County	Ross Youngs, AVS
Mike Kelter, Legacy Civil Engineering	

Welcome and Introductions

Melissa Long welcomed everyone to the Lower St. Johns River (LSJR) Technical Advisory Committee (TAC) meeting. She noted that Jim Maher (FDEP) had a last minute meeting so is unable to attend the TAC meeting. The participants introduced themselves and the entity they represent.

Algae Harvesting Benefits and New Techniques

Ross Youngs stated that Algaeventure was looking for technology to make bioplastics out of biomass. They originally started by looking at waste products from agriculture, but then moved onto algae. Algaeventure created a technology to take algae out of the water, and they used a \$6 million grant from the Department of Energy to improve the technology. Ross noted that within the consortia of organisms of algae, there is an opportunity to find compounds that have not been seen before, including toxins.

Algaeventure has a Cooperative Research and Development Agreement (CRADA) with the National Oceanic and Atmospheric Administration (NOAA) because there is the assumption that the toxins that are easily found are responsible for fish/animal kills but it could be that other toxic compounds are present in lower levels. The goal is to access and identify compounds previously unobtainable because this technology can harvest a greater amount of biomass than other technologies. When looking at the consortia of organisms, Algaeventure’s focus is on single cellular micro-organisms.

This technology is of interest to pharmacology, agrochemical, academic, and government entities. This technology could also be used in Florida to determine the cause of the recent pilot whale deaths. The technology is based on biomimicry to move the solids away from the water by using the property of

water that keeps molecules together. Algaeventure will go to a site and pull water out to process it. The water is returned to the waterbody but at a higher quality because some of the nutrients have been removed. The technology is currently a land-based harvesting system, but Algaeventure would ultimately like to have the capability add a mobile platform in the water. Algaeventure has invested more than \$12 million in this technology, and they did this because there is a good chance they could find a compound that cures a type of cancer or another disease. Ross stated that they are in Florida to explain the technology and to get collaborators on board for potential sites and bloom areas. Algaeventure will provide data on the biomass collected, and will create economic activity while in the state.

Matt Kershner asked how many gallons per hour the technology can process. Ross responded that they process very low flow to capture the microorganisms. John Hendrickson asked if the water has a lot of suspended solids, does that cause a problem with the technology. Ross responded that it does cause a problem but they know how to deal with this issue. Mike Kelter asked what Algaeventure does with the material they are not looking to harvest since they are targeting certain species. Ross responded that material like silica goes through the process and ends up as a dry solid that is sent to the landfill. Algaeventure is not targeting specific species. In the amount of biomass collected, they are able to go an order of magnitude deeper than anyone else has to find new compounds. Robert Burks asked if they are seeing toxins lysing from the cells, and can these toxins be detected before the cells lyse. Ross responded that they find a higher proportion of intact cells than what occurs in the water. It is difficult to determine what the compounds are as they find them until there is enough quantity for identification.

Lucy asked what analyses are done with the biomass. Ross stated that the process involves collecting the solids and then analyzing the compounds. They lyse the cells and break them down to the chemical components. Some of the material is kept and some is thrown away. Algaeventure is focusing on those compounds that are the most medically promising. Since there is so much material and they do not know what they are looking for, Algaeventure focuses on “molecules of interest.”

Ross stated that they are looking for sites of interest in Florida. The collection technology is currently transported on wheeled vehicles but in the future they plan to place it on a barge on the water, which would allow access to many more bloom locations. Access is an important factor for the site because Algaeventure will set up for one month with staff there 24 hours a day in a large tent. Ross stated that he would like the TAC members’ help in finding the right place and time to collect samples of algal blooms. Tiffany stated that she would post Ross’ contact information on the TAC website so that the members can provide him feedback.

Factors Favoring Cyano-Harmful Algal Bloom (HAB) Niche-Specification in the LSJR and the Dominance of *Microcystis aeruginosa*

John stated that the water quality in the LSJR is assessed using the total maximum daily load (TMDL) targets. The nutrient TMDL targets were designed for the “worst-case” locations (by water body identification number, or WBID) in the river. In the freshwater reach there is a chlorophyll-*a* duration and concentration target, and in the marine reach there is a minimum duration dissolved oxygen (DO) target. For five of the past six years (exception was 2010), the freshwater reach target has been achieved; however, there are still nuisance algal blooms occurring under certain conditions. John noted that the St. Johns River Water Management District (SJRWMD) now has a LSJR and Middle St. Johns River (MSJR) Initiative, which will focus on addressing the river’s problems.

John stated that one tool that has been employed successfully for restoration is water quality credit trading, which allows nonpoint sources and point sources to trade load allocations; however, recent algal blooms have led to questions about the continued viability of this strategy. Nuisance algal blooms in the LSJR can be subdivided into several categories. In the marine reach, there are occasional algal blooms, such as red tide. In the freshwater reach, there are cyanobacteria HABs. Because of variable salinity conditions in the oligohaline reach (salinity transitional zone) arising from variations in river flow, there may be either dinoflagellate or cyanobacteria HABs.

Cyanobacteria common to the LSJR fall into three sub-classes, one of which is made up of nitrogen-fixing bacteria. Nitrogen-fixers convert atmospheric nitrogen gas to fulfill growth needs, which allows them to thrive when bio-available nitrogen concentrations are low, which is frequently the case in the LSJR. These cyanobacteria have a low sinking rate, are low light adapted, and are persistent, and dominant the phytoplankton when flow and external N inputs are low. *Microcystis aeruginosa*, the dominant non-nitrogen fixing alga in the LSJR, increases in density when flow is high. *M. aeruginosa* is of concern as it frequently associated with the algal toxin microcystin. Theories for microcystin production are varied, and include predation avoidance, stress from nutrient depletion or salinity, or as an anti-oxidant to counteract ultraviolet light (UV) damage. *M. aeruginosa* is noted for strong buoyancy control, so it can move up into the water column if it needs light, or sink for enhanced nutrient assimilation. So it has an adaptive advantage when higher flows have created downstream sections of the LSJR with deeper, fresher water.

SJRWMD has maintained a plankton monitoring program from Lake George to the mouth of the river, for 16 years (1995-2010). The biovolume of *Microcystis* was high in the 1990s, lower during the period from 2000-2004, and then came back and stayed after the 2004 hurricanes. The relative abundance follows the same pattern as biovolume. Generally, *Microcystis* is not a dominant cyanobacteria although there are times and locations in the river where the abundance is higher. The sampling location in the river with the highest percentage of samples with *Microcystis aeruginosa* present is at the Shands Bridge. The highest mean biovolume, when *Microcystis* is present, is found at Doctor's Lake. The highest relative abundance is found at Doctor's Lake and Piney Point.

John stated that he evaluated the algal biovolume and relative abundance compared to low flow conditions (lowest third of flows) and high flow conditions (highest third of flows). The biovolume and relative abundance of nitrogen-fixers is highest in low flow conditions because they can compensate for low external N input by utilizing atmospheric N, and a long residence time permits utilization of all of the available phosphorus. The worst case WBIDs 2213K and L in the freshwater reach historically had the highest concentrations of algae. Due to increasing salinity, *Microcystis* and N-fixing cyanobacteria are restricted to reaches of the river above Shands Bridge. The relative abundance and biovolume of nitrogen-fixers and *Microcystis* are higher in the downstream reaches (River Kilometers 81 – 48) during high flow conditions, and the abundance of *Microcystis*, relative to N-fixers, is higher. Associated algal toxin sampling and analysis has shown that in the downstream, oligohaline reach, there is more microcystin associated with *Microcystis* at similar biovolume. In some cases, microcystin is present but *Microcystis* is not. This may be due to the death and lysing of *Microcystis* cells, or because another cyanobacteria species is creating microcystin.

The TMDLs are based on point source and nonpoint source loads from 1995-1999. As river flow increases, nonpoint source loading becomes a greater percentage of the total loading, while point source loads decrease in relative contribution. Due to reductions brought about by the TMDLs, point source nitrogen load has been reduced to less than half of the 1995-99 level, and freshwater point source phosphorus load reduced to less than one quarter of the 95-99 level. Today, during low river flow conditions, when the point sources dominate, the nutrient loads to the river are decreasing; however, there is no downward trend during high river flow when the nonpoint sources dominate. During high river discharge, nonpoint source-dominated load years, the St. Johns River estuary is fresh down to Jacksonville. Because it is fresh, it can support cyanobacteria blooms, which, in high flow conditions, have a high relative abundance of *Microcystis*. *Microcystis*, when buoyancy control has become limited due to physiological stress or salinity density, has a tendency to float, and to be concentrated by wind and tides into shoreline scums. The downstream LSJR has a higher population, so when a high-flow year *Microcystis* bloom occurs, it is visible to more people, and this creates the perception that little progress has been made in reducing harmful algal blooms in the river as a whole. It appears that the point source reductions alone will have a diminishing effect on reducing the severity of high runoff condition blooms that tend to have a high concentration of the cyanotoxin-producing *M. aeruginosa*. Possible options or assessments to address this include: Better best management practices (BMPs) in the Tri-County Agricultural Area (TCAA) through the Water Management Partnership; alternative or enhanced nonpoint source technology (such as absorptive media or treatment wetlands with ponds); verification monitoring for existing systems; Doctor's Lake restoration to help with blooms moving into the river; wet weather discharge assessment, creating reuse water reservoirs; and looking into new concepts for trading.

Lucy asked if this presentation will be posted. John responded that his presentation can be posted to the TAC website, although it includes some preliminary data that need to be updated. Robert stated that he has seen a lot of cyanobacteria blooms in retention ponds that feed into the river. He asked if there have been any studies to look at the correlation of seed sources of the blooms. John responded that there are no studies for retention ponds and *Microcystis* specifically, but the concept of concentrated areas acting as seed sources to spread blooms to other areas has been investigated, with one example being red tide.

Update on the Jacksonville Harbor Deepening Study

Eric Bush stated that the U.S. Army Corps of Engineers (USACE) is not an advocate for dredging, but they are an advocate for studying the project and making an informed decision on how to proceed. They are studying the environmental, economic, and engineering aspects of the project. From this study, they have identified economically justified modifications to the existing navigation project in the LSJR, considering the environmental impacts. Eric noted that all of the study information is posted to the USACE Jacksonville District website.

The recommended plan is to deepen the channel to 47 feet up to river mile 13. This project will cost about \$695 million, which includes costs for mitigation, monitoring, and the corrective action plan. The federal portion of the project is about \$338 million and the non-federal portion through JAXPORT is about \$357 million. Eric noted that the most economically justified plan was to deepen the channel to 45 feet; however, JAXPORT wanted the channel deepened to 47 feet, which is what the Savannah Harbor is waiting for authorization to go to. The Corps evaluated the project to determine if 47 feet is economically viable. The benefit-to-cost ratio of this project is 2.6, compared to other similar projects that are closer to 1.0. Therefore, there is strong economic support of deepening the channel to 47 feet.

Congress will have to take two separate actions to implement the deepening, so it is not a given that the project will occur. Congress has to authorize the project and then appropriate funds. Once these have occurred, it will take four to six years to construct the project. About 18 million cubic yards of material will be removed, and most of this will go to disposal, although some will be used for beach placement and other beneficial uses. Eric stated that USACE is still in the early phases of the process, even though this project has been studied for a while. After the draft report was released, USACE extended the review period by 84 days because the initial report was incomplete. All of the environmental and engineering modeling efforts are completed, and several public meetings were held. The final draft report was submitted to USACE South Atlantic Division for their policy compliance review. Eric noted that the first draft of the report had a significant mitigation component; however, after completing the environmental impacts evaluation, they found that the impacts were minor. Instead, USACE is shifting to a plan of monitoring and corrective actions. If there are impacts from the project, the plan will include provisions for correcting them.

Eric Summa stated that he will focus on the environmental issues and concerns that USACE evaluated in the study. The biggest concern was for changes to salinity in the river due to the channel deepening. SJRWMD's water supply study looked at water withdrawals in the Upper St. Johns River Basin, and a lot of their work was adopted by USACE for the channel deepening study. SJRWMD's study stated that there is a potential for salinity impacts if USACE goes forward with the channel deepening, which is why the Corps spent so much time looking at this issue. This conclusion in the SJRWMD study was based on deepening the channel to 50 feet up to river mile 20. However, this was too cost prohibitive, which is why USACE scaled back the project to a depth of 47 feet up to river mile 13.

Based on this project option, there were no salinity impacts observed in the modeling, even though the Corps used the most conservative numbers for the model factors. The driest year for rainfall conditions and the 1995 land uses were used in the modeling. The 1995 land use was selected because there were concerns that greater runoff from development would mask any salinity changes in the river. The modeling showed that the average salinity increase would be less than 0.1 parts per thousand (ppt).

USACE also used SJRWMD's model to determine how the salinity changes would affect submerged aquatic vegetation (SAV). This modeling was done before the salinity models were run. For effects on wetlands, USACE consulted a number of local experts, and Dr. Courtney Hackney gave a threshold exceedance of 1 ppt salinity for more than 25% of the time during high tide conditions, as leading to a transition of the wetland system. In looking at the salinity in the river for the baseline condition and the selected plan, the differences are very small. The most significant change is near the Acosta Bridge, although this difference is still low. For eelgrass, there was an increase in stress of 1%-3%, but this occurred between the Acosta and Buckman bridges where eelgrass beds are typically not located. There were no data to indicate that there would be a change to the wetlands communities. Eric noted that when they added and took out sea level rise from the model, they found that the river has been changing and will continue to change from sea level rise alone. Therefore, changes to the wetlands are expected, just not from the project. USACE also evaluated fish and macroinvertebrates and saw a 1%-3% change in the distribution of shrimp in the river from this project.

Eric stated that all this information is based on a lot of modeling, so USACE is developing a monitoring program to confirm the modeling predictions. However, if the predictions were wrong, they will

develop a methodology to correct the issue. Up to 15 years of monitoring is planned to evaluate water quality in the main stem of the river and major tributaries. The Corps hopes to use existing water quality stations as part of the monitoring plan, and the plan will be finalized once Congress has authorized the project. The eelgrass monitoring will involve quarterly sampling at the Bolles School site, Buckman Bridge, Moccasin Slough, and Scratch Ankle (located outside of the project area to determine natural changes). The wetlands monitoring will involve bi-annual sampling at Ortega River, Julington Creek, Black Creek, and Six Mile Creek. The fish and shrimp monitoring will use information from the Fisheries Independent Monitoring Program, and USACE will supplement this information in Julington Creek, Ortega River, Arlington River, Trout River, Clapboard Creek, and Sisters Creek.

The post-construction modeling will use the monitoring information to see if the changes in the river match what was predicted pre-project. The models will also be used to determine if the changes are attributable to the project by pulling out different variables. The adaptive management plan for the project was updated on November 25th. The monitoring will collect information that has not been collected before. Thresholds will be set for each of the factors, and USACE will ensure the thresholds are sensitive enough to pick up any changes. The monitoring under the adaptive management plan will evaluate water quality to determine if changes have passed the thresholds and if these changes are due to the project. This information will be added to the ecological model to determine what could be done to offset or mitigate any impact. Annual reports and a five-year report will be prepared to summarize the findings.

Eric stated that USACE needs the TAC members' expertise to help improve this project. One item that has been difficult to determine is what an appropriate mitigation for changes in salinity would be. Eric noted that he believes nutrient reductions would be good mitigation because that would be a benefit to the river.

There are additional issues associated with the project that USACE is evaluating. There are concerns about the impacts to ground water, especially for shallow wells near the river because they are already experiencing salinity issues. The Corps has committed to ground water monitoring to address this concern, and they found that the project will not have an adverse effect on the aquifer overall. At about 44 feet in some areas of the river, there is rock that needs to be removed. The most efficient way to do this is through confined blasting. The USACE Jacksonville District has done this type of blasting in projects in Puerto Rico and Miami. The Corps will monitor for wildlife while doing the blasting, and they will coordinate with other agencies on this effort. Another concern is for bank erosion for those homes near the river due to larger wakes from larger ships. The Corps found that increasing the volume of the channel mitigates the larger wakes. Eric stated that the draft report is available at the link in the presentation, and they would be happy to discuss the report with anyone who has questions.

Mike Kelter stated that it seems like USACE is going through and eliminating uncertainty in this project. He asked if this would affect the benefit-to-cost ratio. Eric Bush responded that reducing the uncertainty could help lower the costs of the project, which would improve the benefit-to-cost ratio. Lucy asked if they compared 47 feet to 45 feet in the economic modeling, and if these options had a different benefit-to-cost ratio. Eric Summa responded that they used 44, 46, and 48 feet in the economic modeling. At that time the project costs were higher, so he was unsure what the current cost-to-benefit ratio of these other options would be. Mike Hollingsworth added that the benefits maxed out at about 45 feet. Andy Ouellette asked if the Corps considered the impacts of the increased shipping itself. Eric

Summa responded that they did evaluate this. The larger ships have larger volume for containers; therefore, fewer ships are needed to bring in the same number of containers. If the larger ships are not used, then there would be the same number of ships coming in as there are today. The Corps also evaluated air emissions from the ships and on the ground infrastructure, and social issues. Jennifer Sagan noted that the ships could come in from a larger geographic area, which could increase the number of exotic species brought in.

Upstream St. Johns River Nutrient Reduction Plans

Charlie Gauthier stated that he works in the Florida Department of Environmental Protection (FDEP) Division of Environmental Assessment and Restoration. There have been several staff changes such as Drew Bartlett is now the Deputy Secretary for Water Policy and Ecosystem Restoration, Tom Frick is the Division Director, and Beth Alvi is the Administrator for the Watershed Restoration Program. The Division has been working on numeric nutrient criteria, water quality assessments, TMDLs, and basin management action plan (BMAP) development. There are 17 adopted BMAPs across the state that cover more than five million acres. BMAPs are adopted by FDEP Secretarial order, and the actions included are enforceable. There are another ten BMAPs under development.

The Lake Okeechobee BMAP is under development, and springs are also a big priority. BMAPs are underway for Wekiva River and Springs, Silver River and Springs, Rainbow River and Springs, Wakulla River and Springs, and Suwannee River. For each BMAP, a series of fact finding meetings are held to build the document. Once a BMAP is adopted, annual reports are prepared on the status of activities. After five years of BMAP implementation, an assessment report is prepared. This assessment was done for Long Branch, is underway for the Upper Ocklawaha and Orange Creek, and will be done this year for the LSJR main stem.

In the LSJR main stem, a lot of progress has been made on addressing point sources in the basin and more work is needed to address the nonpoint sources. Charlie noted that reductions are also needed upstream to meet the LSJR TMDLs, and there are several BMAPs that will help with these reductions. The Upper Ocklawaha BMAP was adopted in 2007, and there is a meeting next Tuesday, December 17th to discuss the five-year assessment report. The Lake Jesup BMAP was adopted three years ago, and FDEP and SJRWMD have been working to remodel the basin to better understand the nutrient loading from different factors, such as in-lake cycling. This modeling may lead to revisions of the TMDL. The Lakes Harney and Monroe and MSJR BMAP is one year old, and stakeholders in this area began implementing projects before the BMAP was adopted.

The Wekiva River and Springs BMAP is focused on the ground water contribution area, which partially overlaps with the Upper Ocklawaha BMAP area. Septic tanks are a major source in this basin; therefore, FDEP has included a septic tank initiative in the BMAP, which will start after adoption. The Florida Department of Health (FDOH) has been working on a study to evaluate passive nutrient removing technologies for septic systems to identify more affordable but effective technologies. This study was originally scheduled for completion in 2015 but it may extend to 2016. The Silver River and Springs BMAP includes a large springshed, with a lot of agriculture. Once a BMAP is adopted, agricultural producers must implement BMPs or monitor to show they are not having an impact on water quality. The Florida Department of Agriculture and Consumer Services (FDACS) is working to enroll producers in the areas with adopted BMAPs. There have been concerns about whether on-farm BMPs will be effective enough, and FDEP and FDACS will be researching this concern. Charlie noted that

while the state is leading the process to identify water quality issues, this process does not work without local involvement.

Mike Kelter stated that from the community level, people are concerned because they have done a lot of work to reduce nutrients but new initiatives keep coming up, such as human health criteria and the mercury TMDL. He asked if this is a case of “regulatory creep.” Charlie responded that everything needs to be balanced. For the BMAP program, law says that there should be as much consensus and collaboration as possible, and FDEP has been working towards that on each BMAP. However, the BMAPs are enforceable and FDEP expects the activities to occur to make sure the improvements in the waterbody happens.

John stated that there are several U.S. Environmental Protection Agency (EPA) TMDLs that FDEP has not established. He asked if BMAPs are needed for those TMDLs to ensure the reductions are occurring. Charlie responded that developing BMAPs is discretionary, and BMAPs are only done for state TMDLs. Tiffany added that FDEP does not have the ability to address EPA TMDLs, but they can adopt a similar TMDL and implement it through a BMAP.

Charlie stated that he is intrigued about what might occur with the harbor deepening mitigation. Eric Bush responded that nutrient reductions could be an option but USACE typically does not address water quality because that is a state requirement. Eric Summa added that little, if nothing, about the project will affect nutrients so it is difficult to make the tie to why nutrient reductions would be a good way to offset project impacts. If salinity has an adverse effect on eelgrass, it could be that lower nutrient concentrations would help the grass. Jennifer stated that as nutrients are reduced, water clarity is improved. Therefore, the salinity impacts could be ameliorated by increasing light to help SAV.

Technical Updates and Announcements

City of Jacksonville

Betsy Deuerling stated that the city submitted their National Pollutant Discharge and Elimination System (NPDES) permit annual report FDEP. As part of this report, the city submits a water quality monitoring update that includes a lot of ambient monitoring data. The city has continued the routine monitoring in the river and tributaries, and they began a shellfish area study to determine if water quality in the closed shellfish areas has improved. This will be at least a yearlong study, and the city has already gone to the sites once for reconnaissance and twice for sampling.

SJRWMD

John stated that after a two year hiatus, SJRWMD now has a LSJR and MJSR Initiative, which provides the mechanism to develop work plans and funding. Derek added that once the work plans are refined, he can bring them to the TAC and ask for input. John noted that through this initiative, some of the monitoring that was ceased can be added back again. Derek stated that SJRWMD received their revenue agreement from FDEP for funding the Water Management Partnership for \$1.9 million to implement BMPs in the TCAA.

USACE

Mike Hollingsworth stated that the Mile Point project was included in the Water Resources Development Act that is currently with Congress. If the act is passes, this project will hopefully have both authorization and funding. JAXPORT has been looking into options in case Congress does not

fully act on this project. For the Big Fishweir Creek project, the USACE geotechnical section did some sampling for the area where material will be placed for the restoration island. The results from this sampling have not come back yet.

Fisheries Independent Monitoring

Tony DiGirolamo stated that they are wrapping up the end of the year sampling, and they recently completed the report for SJRWMD on the freshwater reach monitoring. They will start putting together the annual report on catch, and will start more research on offshore spawning in the spring.

Other Member Updates

Lisa Sterling stated that she is on the board of the Florida Watershed Journal, and there will be an article coming out on the numeric nutrient criteria, followed by articles on new wastewater treatment technologies and setting dissolved oxygen site-specific alternative criteria for streams.

Ed stated that JEA recently completed their last project for the BMAP. JEA is now discharging significantly less than their BMAP allocation.

Andy stated that FDEP created a Bacteria TAC, because they want to change their process for establishing bacteria TMDLs. Instead of creating TMDLs on a case-by-case basis, they would like to make the process more broad, and are thinking of skipping listing the waters as impaired and going straight to restoration. There was some concern that this change would cut out public comment on the listing. FDEP also wants to be able to track bacteria to look for sources to determine if the bacteria are coming from animals or humans, which would help to identify which sources need to be addressed. FDEP will be adopting EPA's recommended water quality criteria for E. coli and Enterococcus to replace the current fecal coliform standard. Ed noted that the next Bacteria TAC meeting will be at the Northeast District Office. He had suggested holding the meeting in Jacksonville since the stakeholders in this area have more experience with fecal coliform TMDLs than other parts of the state. Jennifer asked if Dr. Jody Harwood is still researching the use of genetic markers for tracking bacteria. Andy responded that those markers are the types of technology that FDEP wants to use, and these markers will be discussed at a future bacteria TAC meeting. Tiffany added that Jody has continued to work on developing the markers, and FDEP used them in a LSJR study in 2009.

Marcy Policastro reminded the TAC members that information for the LSJR Main Stem BMAP annual report will be due on January 17th. Melissa added that the Executive Committee meeting on the annual report will be held on February 27th at 9:30 AM at the Northeast District Office. Since a meeting was not held last year, there are a lot of updates for this meeting.

Next Meeting Date

The next meeting will be held in March 2014 and hosted by SJRWMD.

Adjourn

The meeting was adjourned at 4:06 PM.