FLORIDA KEYS NATIONAL MARINE SANCTUARY
Water Quality Protection Program Steering Committee
April 26, 2017
Marathon City Hall (Council Chambers)
DRAFT MINUTES

Steering Committee Members Present
Jennifer Derby, US Environmental Protection Agency, Region IV
Jon Iglehart, Florida Department of Environmental Protection (FDEP) (Co-Chair)
Billy Causey, Southeast Regional Director NOAA Office of National Marine Sanctuaries
Sandy Walters, SWC, Inc., Environmental consultant/citizen representative
Gil McRae, FWC Fish and Wildlife Research Institute
George Neugent, Mayor of Monroe County Board of County Commissioners
Shelly Krueger, Florida Sea Grant/IFAS Extension Monroe County
Chris Kavanagh, Everglades and Dry Tortugas National Parks
Charles Causey, Florida Keys Environmental Fund, Inc.

Management Committee Members Present
George Garrett, City of Marathon
Steve Blackburn, EPA

Canal Restoration Advisory Subcommittee Members Present
Rhonda Haag

I. Call Meeting to Order (Co-Chair, Jennifer Derby
Opening Remarks

Co-Chair Derby explained that she is the Chief for Marine Regulatory and Enforcement Section, Region IV, which includes the Florida Keys Initiative coordinated by Steve Blackburn.

Ms. Derby thanked George Garrett and the City of Marathon for use of the very nice facility. She also thanked Steve Blackburn and the management committee for developing the agenda and arranging for the speakers and Nancy Diersing for handling meeting logistics and producing the minutes.

Public comment periods will be held at 11:45am and 2:45 pm. Topics to be addressed at the meeting are: wastewater project status, Reasonable Assurance Document (RAD), coral disease outbreak, canal restoration, sponge restoration, coral and water quality monitoring and a website update. The steering committee members will discuss their priorities and funding issues. Dr. Fourqurean will not be attending today so the seagrass monitoring update will be moved to the next meeting. Mr. Charles Causey stated that Chris Bergh sent boating impacts/education information in advance to the steering committee. Mr. Causey would like to discuss this matter during the meeting.

Co-Chair Derby explained that no budget for EPA exists at this time; EPA is operating on a continuing resolution. Congress can take one of several steps with regards to funding: they can issue a budget or authorize funding at current or FY 16 levels for a short or longer period of time. The next budget to be decided is the FY18 budget. EPA's office of Policy and Management is charged with

reconciling with the President's budget proposal is to the agency's budget. The President's budget called for the elimination of all geographic initiatives (including South Florida and the Florida Keys) and many ocean and coastal programs. The President's budget is a recommendation to Congress; Congress determines the actual appropriation and that process for FY18 has not yet begun.

Co-Chair Derby gave a brief overview of the statutory obligations that put this WQPP and its steering committee in place. To give context to the budget discussion, Ms. Derby read the following: "The Florida Keys National Marine Sanctuary of 1990, which set up the sanctuary, included in the language of that law that there would be an establishment and implementation of the WQPP, of which the steering committee and technical advisory committee are components. This enabling legislation required a number of things, including restoration and maintenance of aquatic habitats, elimination and reduction of pollution sources, providing for monitoring programs and public participation and identifying funding."

Co-Chair Derby added that the success of this program has been remarkable. She knows of no other program in the Southeast states that compares with the successes of this one. The wastewater infrastructure improvements and the long-term monitoring programs stand out as the greatest achievements and now more recently canal restoration projects. Many special projects have come about too such as sponge restoration. EPA is supportive of continuing with program priorities in the future, which includes the wastewater improvements and canal projects.

Co-Chair Iglehart noted that FDEP currently has an acting secretary, Secretary Ryan E. Matthews. The secretary position has been advertised; the first choice will go before the cabinet for approval on May 28. As a matter of process, the secretary has to be approved by the legislature.

Secretary Matthews sends his regrets for not being able to attend. He is busy with FDEP budget matters in Tallahassee at this time while still paying close attention to events here as well as elsewhere. As was noted, this committee and the WQPP were created in 1990 under President Bush. The purpose of the steering committee is to set the guidance and policy and seek adequate funding for the development and implementation of the program's corrective actions, research and monitoring, special studies, public education and outreach. The comprehensive monitoring program has been ongoing since the WQPP's inception and is one of the best monitoring programs on the planet. The nearshore work has demonstrated that the water quality issues are primarily the result of Keys-based activities, but are difficult to pinpoint. As a result, they have supported the RAD vs. TMDLs and projects such as the sewering. When the data demonstrated that the canals have an adverse effects on nearshore waters, they initiated the canal restoration demonstration program and followed their charter to identify issues and implement corrective actions. Since the last meeting, there have been healthy community discussions concerning canal issues and their contribution to water quality issues and the responsibility of enhancement projects. During these discussions, some have advocated for lowering the classification of canals and resulting water quality standards rather than investing in raising the water quality conditions to the Class III standards for which they are designated. Nowhere in this body's stated purpose does it state or imply or even suggest that restoring and maintain the physical, chemical and biological integrity by reducing the standards by which success is measured. The program did not achieve the wastewater component by reducing standards. Rather they pushed for the best systems man can design and the same approach must be used for stormwater and canals. The program should strive for at the bare minimum the fishable, swimmable standards that should currently be achieved.

The secretary expresses his appreciation for all of those who are serving on and participate in the canal subcommittee meeting. Co-Chair Iglehart recognized Gus Rios for his work in organizing those meetings.

Motion (passed)
A motion was made by Gil McRae to accept the minutes. The motion was seconded by Billy Causey and passed with no objections.

II. Update on Wastewater Projects in Monroe County
FKAA Manager of Engineering Jolin Reynolds has been with the FKAA for about 25 years and has been in this position for three months. At this time, FKAA is replacing the collection system in Key Haven. Sections A, B, and C should be complete by January 2018 and D, E, and F should be complete by November 2017. The transmission force main that will run from Boca Chica to Key Haven plant is in design and construction is expected to begin this summer.

The following two projects are expected to be completed in 2018: the main from the Navy Boca Chica wastewater plant to the Big Coppitt wastewater plant and the expansion of the Big Coppitt plant. The goal is to have all treatment at the Big Coppitt plant and decommission the other two plants. The deep injection well at Cudjoe Regional is expected to be operational next week. For that plant, about 45% of the connections have been made at this time. For Long Key, FKAA expects to receive clearance from FDEP in three to four weeks and then will send connection notices out. The onsite wastewater program is a collaboration with EPA and FKAA. Onsite systems are slated for 10 locations, including Lower Sugarloaf and the Torch Keys. These will be done in November 2017. Then, they will examine onsite systems in other areas such as Pigeon Key.

Key Largo Wastewater Treatment District General Manager Peter Rosasco gave an update on progress made in the Key Largo Wastewater Treatment District (KLWTD). Wastewater improvements have been a great accomplishment and thanks goes to everyone for their cooperation. The plant, which has been in operation since 2010, has been meeting AWT standards since that time. KLWTD has received several awards over the years. In 2016, KLWTD operations manager was given the David B. Lee Award from the Florida Water Pollution Control Operators Association. This award is given only to one operator in the state each year.

Currently, the KLWTD has over 15,000 EDUs and 98% of the Key Largo connections are in place. The district recently completed a project for unique properties that are difficult to serve and continue to upgrade and make the system more efficient and effective. KLWTD entered into a partnership with Islamorada and is now serving this area, too. They treat about 1.13 millions of gallons per day to AWT standards. Flows from Islamorada have increased about 50% this year as hook-ups from that area continue.

Assistant County Administrator Kevin Wilson gave an update projects throughout the county. All systems are in place are almost 100% connected and reaching equilibrium, except in the Cudjoe region. Construction of the Cudjoe plant with its deepwell is finished. In this region, about 4,000 of 7100 properties are connected or in the process of connecting. He gave the update for Greg Tindle for Islamorada. They are about 80% connected (about 4100 parcels).

III. 2017 Reasonable Assurance Document (RAD) Update
Julie Espy, FDEP, gave a presentation about updating the Reasonable Assurance Document (RAD) (also called the Reasonable Assurance Plan). A Reasonable Assurance Plan has been in place in the

Keys since 2008. Canal restoration is also underway to improve water quality. These two different strategies enhance each other, but are different. This Reasonable Assurance Plan (RAP), which addresses nutrient impairments, was implemented in lieu of Total Maxium Daily Load or TMDL for impaired water bodies. The RAP/RAD identified projects, which are are scheduled to be complete by 2020, designed to improve water quality in the nearshore waters of Keys.

FDEP routinely assesses about 1/5 of the state waters each year by sampling individual water body units called WBIDs. In the 2011 assessment, FDEP found that several WBIDs, especially some poor quality canals, were not meeting dissolved oxygen standards. In 2012, several people came together to work on a management plan for the canals. FDEP conducted a draft assessment in 2011 and found that several WBIDs that had previously been identified as impaired for DO are now meeting the standards. Several factors can account for the difference. One reason is that the DO standard changed recently. Instead of being based on 4mg/l of dissolved oxygen, they are now based on percent saturations, which is better because it takes into account temperature effects on DO.

In some WBIDs, there is insufficient data on which to base an evaluation of DO. FDEP is making plans to conduct some additional assessments. FDEP has a Monitoring Strategy that determines that determines the areas to be sampled each year and has specific monitoring requirements and considerations. FDEP collects data at representative sampling locations and collects samples under different environmental conditions. They collect a minimum of 20 samples for DO assessments and the number of locations varies with the size of the canal.

FDEP has been working with AMEC to see how the data AMEC has collected feeds into FDEP assessments later this year. They are also interested in the results from the demonstration reports because that will help identify where any additional monitoring or restoration should be done. FDEP recommends that the following considerations when prioritizing canal restoration: ecological considerations, social considerations and economic considerations. Ecological considerations include the severity of the problem and proximity to coral reefs; economic considerations include getting the best value/restoration for the money spent.

The 2017 nutrient (nitrogen and phosphorus) assessment will result in an update of the RAD (Reasonable Assurance Document/Reasonable Assurance Plan) in 2020. The projects identified in the RAP are scheduled to be complete by 2020 and are expected to bring about the associated improvements in water quality. As of 2011, 58 of the RAP projects were not complete and 68 were complete. FDEP will be reaching out to the different stakeholders to find out the status of these projects. The targets for the Reasonable Assurance Document were set to be met away from shore; thus, samples taken close to shore are not adequate. The idea was to measure how the land activities affect water quality within 500 meter from shore, so sampling needs to be done accordingly.

Ms. Espy provided a schedule for updating the RAD, which includes reaching out to stakeholders in May for information on their activities. A report containing that information is scheduled to be delivered to stakeholders for review in July/August. The draft will be revised in September and then finalized in November. By the end of December, FDEP expects to adopt the assessments. In some WBIDs, there are not enough data to assess for the Reasonable Assurance Plan. At least one ocean side and one bayside sample station is needed for each of the 23 WBIDs. This is because different targets exist for the Oceanside/bayside. If each of the 52 stations was sampled 4 times per year for the next two years, that would provide the data needed for the 2020 RAD evaluation. FDEP can assist with some of the sampling, but cannot collect all of the data needed. She thinks that this can be accomplished with FDEP and agency partners/stakeholders. The work, effort and money that has

been done to improve water quality in the Florida Keys, including wastewater projects, should be noted (in the RAD).

Ms. Espy introduced Tiffany Busby, who is with the Wildwood Consulting, the firm that aids FDEP in compiling the RAD. She and Ms. Espy are available to meet with stakeholders regarding the RAD. Monitoring requirements and considerations for sampling nutrients included collecting samples during different seasons and other specifications. Less data are needed for nutrients than for DO.

Discussion

Ms. Espy explained that 2017 is an interim report that will identify what actions still need to be taken to complete the RAD in 2020.

Mr. Charles Causey stated that the real question seems to be how the canals are affecting inshore water quality because the local economy depends on water quality. He added that the results of newly established sampling stations near and around the 500 meter limit from shore may give an idea of the quality of water and how it might be affecting diving and fishing activities in the Keys and asked whether or not this information should be known and considered before going forward with widespread canal program. He wants to see the results before going forward and wants to know if the number of stations will be enough to give the information needed. Ms. Espy explained that is why she provided guidance about prioritizing canal restoration. She doesn't think the canal efforts should be stopped since they do know there are issues with some canals. Both the data and other factors can be considered together. Mr. Causey emphasized that this sampling could give the information needed by Monroe County to protect its economy before going forward with a major costly project. This approach is similar to the approach the business world would take.

Dr. Billy Causey stated that some canals are much more than an ecological problem. He thinks the issue is more urgent. Some canals are a health problem. For people who own property on those canals, it could be rewarding to see the water quality improve on the canal along with property values. He remembers when you could swim in those canals and wants it to be that way again for his grandchildren. He thinks that canal restoration should continue. He also suggested that tidal and water circulation patterns and the differences between the Upper and Lower Keys be considered when deciding on locations for the sampling stations.

IV. Canal Restoration Advisory Subcommittee: Update on demo projects; EPA and FDEP grant updates; new project selection process and financing for canal restorations, Rhonda Haag, Monroe County; Greg Corning demonstration projects; permitting project and financing for canal restorations

Mr. Greg Corning, Amec Foster and Wheeler, and Ms. Rhonda Haag, Sustainability Program Coordinator, gave a presentation on canal restoration projects.

Mr. Corning stated that the air-curtain installation project on Lower Matecumbe Key is a public–private partnership involving the local property owner and Village of Islamorada. This project should begin within the next few weeks. Another air-curtain project on Lower Matecumbe was recently completed. FDEP provided $50,000 for design and construction costs. In summary, for canal restoration in the village, Islamorada has provided $425k, FDEP has contributed $50k, homeowners have given $75k, and the RESTORE local Pot has provided $128k. Islamorada

evaluated and ranked their canals in 2014 and have been working from that plan as funds become available.

Ms. Haag gave a presentation on canal restoration in Monroe County (unincorporated). At this time, canal restoration funding sources have included the following: Monroe County —$7 million; homeowners—$0; FDEP—$50 to 75k per year; EPA—$170k in FY16; and RESTORE local Pot 1—$478k. FDEP funded projects include air curtains in two canals on Big Pine Key, culvert construction on Geiger Key, organic removal projects, bathymetric surveys and master plan development. EPA has funded the management master plan, Florida Keys Water Watch, alternative technologies and business plan development, canal education plan, canal water quality monitoring and management plan database.

Monroe County has funded a suite of demonstration projects on Big Pine Key, Geiger Keys and Key Largo. Projects have involved organic removal, air curtains, culvert construction and backfilling canals. Monroe County approved additional funds ($88k) for an air curtain on a Big Pine Key canal #290 that received muck removal for $800k. The weed gate, which was maintained by the homeowners, failed to keep floating wrack from entering the canal. The county (and FDEP) is funding the installation of the air curtain, which is expected to be completed by June 2017. Another organic removal, backfilling and air curtain project is under construction in canal #83 in Rock Harbor, Key Largo. This $1.5 million dollar project funded by Monroe County will use a different technique for dewatering. The county issued a Request for Proposal for augmented aeration projects to remove organize muck in Key Largo canals in March. Augmented aeriation projects may include bio bugs and macroalgae or other means for improving water quality. A selection committee will evaluate the proposals; only two proposals were submitted. A new backfilling project is taking place in canal #75 in Rock Harbor in Key Largo with FDEP funding ($1.5 million) from the state stewardship grant allocation. No operation and maintenance will be required on completion of this canal.

Eden Pines, which only has one mouth for a complex mile long canal, was evaluated for the use of a pump to improve water quality. Due to homeowner concerns with the operation and maintenance of the pump and finding land space, the project was put on hold. Out of the five different technologies evaluated for this canal, the final report recommended injection wells. Six shallow 24-inch injection wells will be installed and will be dug down from 60 to 120 feet. During a tidal exchange, the wells will work on gravity to allow water to flow down the well (with the tidal head). This idea was based on water flows into the temporary wells dug for sewer installation. Fifteen thousand or more gallons a minute could be placed down in those wells just by gravity alone. This system of wells will increase the volume of water moving through the canal. AMEC is in design at this time and is recommending to the county in the report that a pilot project be done only one well before going forward.

EPA's 2016 South Florida Initiative Grant money was used to fund Part III A of the Canal Master Plan with some funding from Monroe County. EPA funds were used to support AMEC sampling in 180 Fair and 131 poor ranked canals in February and March 2017. A Quality Assurance Plan (QAP) was submitted to EPA for review. AMEC is proposing continuous water quality sampling using FDEP standards for 10 canals and sediment collection in 15 canals. (These canals may be considered for restoration in the next round.) Hydrographic surveys were done originally, but now they are proposing to collect sediment cores. Sediments tend to be thicker than the original method measured. In AMECs initial evaluation, they sought to determine the water quality in the entire canal system and used the original FDEP DO criteria.

EPA 2016 grant money funded the resampling of canals in 2017 in accordance with the revision of the DO criteria applied in the 2013 Canal Management Monitoring Plan (CMMP). A preliminary review of the 303 poor and fair rated canals using the current FDEP criteria resulted in fewer canals considered as having poor and fair waters and more canals considered as having good water quality. In the 2017 sampling a total of 254 canals were ranked fair or poor and 248 canals were ranked good. FDEP samples are taken one foot below the surface, which does not measure the entire water column—a factor that can be important in deep canals. These evaluations are is preliminary at this time.

Mr. Corning explained that FIU scientists (Dr. Henry Briceño) using EPA funds have conducted canal water quality monitoring of demonstration projects. The final report is due in September 2017. The initial trends show positive results, especially for culverts and backfilling projects. Organic and air curtain projects may require additional restoration technologies to provide 100% restoration. Coordination is required for monitoring for future projects.

Ms. Haag explained that the county did not agree to pay for maintenance of the canal restoration projects (beyond the initial 2-year period in some cases). Homeowners receiving canal demonstration projects have signed forms in advance asking about the canal condition, etc. and about willingness to contribute financially to the project. In order for restoration demonstration projects to occur, more than 90% of homeowners in that canal system had to indicate they were willing to pay. Some reluctance still exists on the part of canal homeowners to cover operations costs.

Resident meetings were held on April 2017 in Big Pine Key and Key Largo to discuss the operation and maintenance costs associated with air curtain and culvert technologies. Using the costs of the four air curtains they had installed as part of the demonstration, they determined a cost for this technology per canal lot. For air curtains, the cost was $797.37 per year. For culvert technology, it was $67.49 per year per canal lot. Costs have already started to drop on these technologies and are expected to be competitive in the future. The county commissioners considered a number of options to address costs for current operations and maintenance and decided to fund all costs for residents for one more year. In the meantime, county staff will research options to lower costs and bring back options at the end of 2017.

Ms. Haag reviewed the canal funding sources. She noted that willingness of homeowners to pay could be an important consideration when moving forward with canal restoration in the near future. Monroe County staff are listening to what residents have to say about their canals and restoration methods. They may remove a demonstration air curtain (and reinstall it elsewhere) that is costing the residents more than their original curtain. The residents could return to using the older air curtain they had in place originally.

RESTORE Gulf funds, which will be about one million per year for Monroe County, cannot be used for operation and maintenance. Funds from the State Stewardship act are not known until the appropriation is made. Ms. Haag requested input as to what criteria should be considered when ranking new canal projects. These criteria could be different from what was used to rank the demonstration projects. Modified additional criteria could include technology effectiveness.

Discussion

- Commissioner Neugent expressed that as restoration takes place, it is important to consider what restoration methods might already be in place in the canal and take care to keep costs low. Before any future restoration projects begin in the future, a full disclosure needs to be made to the residents and the Municipal Service Benefit Unit (MSBU) should be in place and agreed on. Willingness to pay is a consideration in selection of canals.
- Ms. Walters explained that in other similar situations, the ranking process involved using different weightings for each category to arrive a decision that meets more than one criteria. She recommends using similar method. Mr. Corning indicated that AMEC used a weighted matrix to select the initial demonstration projects (and the committee approved these criteria). They are seeking input as to what additional criteria may also belong in that matrix.
- Ms. Walters inquired about using a capping technique over organics in waterways. A presentation given at the South Florida Environmental Professionals symposium Association last month this method to be hugely successful and cost effective in the Intracoastal Waterway in Palm Beach County. Mr. Corning stated that AMEC evaluated capping in 2015 and will probably be moving forward with such a project in the future. AMEC used a matrix to select the initial demonstration projects (and the committee approved these criteria). They are seeking input as to what additional criteria may also belong in that matrix.
- Ms. Walters asked for an additional explanation on how the injection wells were going to work with the tidal flows. Mr. Corning explained that in the initial plan they were going to pump freshwater into the back end of the canal to increase its flow rate. The injection wells will move about the same amount of water as the pumps; about 1600 gallons per minute from the system. Each injection well-head is equipped with a pressure head that opens when a certain pressure is released and the water can flow into the well.
- Co-Chair Derby asked whether or not there were concerns about those well waters having impacts to surrounding surface waters. Mr. Corning explained that they had discussed the idea conceptually with David Rhodes from FDEP and he says that they can move forward at this time, but will have to evaluate the impacts to surficial aquifer waters as part of the process.
- Co-Chair Iglehart added that one of the additional criteria that should be citizen buy-in.

Ms. Haag sated that she in regards to canal restoration criteria and impaired waters, she will be reaching out to Julie Espy for her input.

V. WQPP Dicussion—EPA update, future direction, priorities, funding, monitoring coordination/special studies

Mr. Steve Blackburn gave a presentation about the budget for FY17 and FY18. For FY17, one of the two possible budget scenarios is receiving funding at $1.339M, which will cover monitoring, but not include special projects. In the other FY17 scenario, (continuing resolution funded at FY16 levels), the funding would cover a special projects RFP for $250k.

A list of specials studies that have been recently funded by EPA include canal restoration, Florida Keys Water Watch, sponge community restoration, Southeaster Florida Coral Reef Initiative (SEFCRI), South Florida TMDL development, Everglades mapping and other projects.

Mr. Blackburn reviewed the RFP priorities for FY16 and initiated a discussion as to the priorities for FY17 should special study money become available. (The President's budget for FY 18 contains no funding for geographic programs at this time.)

Discussion/suggestions regarding FY17 priorities

- Mr. Charlies Causey introduced the topic of boating impacts to the seafloor and benthic marine life. In the past year and half, Mr. Causey has been working with Curtis Kruer, who has been updating the seagrass prop scar study published by Florida Marine Research Institute in 1995 (now FWC FWRI). The results of the update were presented at a recent Sanctuary Advisory Council meeting and can be viewed on the sanctuary's website http://floridakeys.noaa.gov/sac/othermaterials/20170221boatingimpacts.pdf.
- Mr. Causey stressed that seagrasses have undergone losses in recent years and this trend should not be allowed to continue. He sees this committee as the leader in water quality in the county. There are many more boaters today creating the potential for more boating impacts and in general, they are less experienced and less educated. Many boaters are not used to the maze of shallow water habitats. Shallow water habitat is very important for water quality and for the marine life inhabitants. The shallow water is where most activities take place. Mr. Causey suggests that this committee support boater education as a priority in the RFP priorities for FY17. Everglades National Park has experience with successful boater education and can assist with this project. He would like to see a contractor take on boater education for the next three years with RFP funding. He could bring private money to the partnership. This could be a voluntary program for a few years and may become mandatory at some point in the future.
- Ms. Walters supports the idea of boating education and added that she has analyzed channel systems leading to marinas, etc. and found often that channel marking and boater education are lacking in such instances. In the past, the county had a more robust channel-marking program.
- Dr. Billy Causey added that he agrees with Charlie about the importance of seagrass and is supportive of all water quality priorities listed. Seagrasses have been monitored routinely for many years and the Wildlife Management Areas (WMAs) have served to protect shallow seagrass zones. Once these areas were marked, compliance was good. He thinks a statewide initiative regarding boater education is needed and the sanctuary can add the specifics of this area. He is supportive of marine zoning and boater education to reduce injuries to seagrass. Enforcement and education have been important for reducing impacts from boaters. USCG and FWC regulate channel marking. The county also plays a role in channel marking, especially in marking entrances to marinas, shoals and other areas.
- Mr. Gil McRae stated that he supports this boater education and suggested that if work is going to done, the high use areas where scarring is increasing should be the focus of the educational approach. Preventing boating damage in these areas is likely to have the greatest overall impact. Additionally, areas that experience high levels of boat rentals could be targeted for outreach/education. FWC law enforcement should also be involved and could be more visible in high use/scar areas.
- Commissioner Neugent emphasized the importance of focusing on the environment because it is so important for supporting the economy of the region/state. The impacts from the large numbers of visitors/boaters are evident in the seagrass beds. People here have been working on water quality issues for years. Funding has been an issue for water quality related projects, but the Keys community has made much progress. He would like to see more protection for the environment from other levels of government, too, including having more money from deepwater horizon and other funds go toward restoration in the Keys and South Florida. Undesirable discharges of water from Lake Okeechobee through the Caloosahatchee and St. Lucie River are still causing damage to the ecology of South Florida and the Keys. This issue

needs attention from the state. It is important to stay focused on the local issues and put local sales taxes toward the environment and local economy. This county should continue with the canal restoration and cobble together money as they did with the wastewater program over the years. Maybe at some point more money will become available if political views change and the environment is seen as being important for the economy. The rest of Florida should eliminate septic tanks and take other measures to improve water quality similar to what this small county has done. This county should send the message to protect Florida's environment to government leaders.

- Ms. Walters stated that incorporating seagrass boating priorities are important. She added that there may be opportunities and broader relationships that could be accomplished if private entities were allowed to submit proposals as well (and not be tied to a government partner).

Management Committee Comments

Mr. Blackburn added the boating education to the priority list. He would like to guidance on which of the above priorities are most important should FY17 funds become available. Stormwater pollutants, residential canals, endocrine disruptors, public education and South Florida Coral Reef Initiative were possible priorities carried over from FY16. Mr. John Hunt suggested that the steering committee give guidance to the management committee regarding funding priorities with a consensus sense of prioritizing this list. Thus, if funds become available, the management committee can act quickly. Speaking as an individual member of the management committee, Mr. Hunt suggested that the steering committee narrow down the number of priorities on the list and added that if boater education remains on the list, then it probably needs to be a focused project to fit the RFP.

Discussion (steering committee) continued

- Mr. Gil McRae supports a focused boater education approach. Concerning canal restoration, he inquired as to whether or not a resident's survey has been completed that could be used to gauge participation. He thinks this might be worth considering it is not too costly. This could incorporate social information and a more targeted approach could be used with this information.
- Mr. Charlie Causey stated that he sees damage done often by uneducated boaters and sees this effort as being about general boater education and resource education. He sees this option as a short all-encompassing course and not about a specific area.
- Ms. Walters suggested surveying boaters at ramps and rental places to find out more about them. This would identify better ways to communicate with them on these topics. She emphasized the importance of communicating to people on the water how to better protect the coral and seagrass resources.
- Co-Chair Derby agrees with narrowing the list regarding the RFP priority.
- Co-Chair Iglehart stated this might be an opportunity to send the seagrass concerns and issues raised by Gil to the Technical Advisory Committee (TAC), which could then provide feedback to the steering committee at the next meeting. In response to this suggestion, it was noted that this is one time funding and a stepped approach is not feasible.

Motion (passed)

Ms. Walters made a motion that the public education priority be focused on education measures to focus towards protecting the benthic resources of the sanctuary, including a boater education course. Mr. Causey seconded the motion. The vote passed with one nay vote.

Note: Co-Chair Derby clarified that the details of the proposal are not specified in this motion, which is about making the education priority about boater education.

Co-Chair Iglehart expressed concerns that this could be a very long-term endeavor and he would like to see the background work done in advance as Gil suggested. He supports gathering the information needed during the initial period. What is needed in terms of education should be determined first before making a greater commitment. Ms. Walters pointed out that the USCG offers a boater's course. Someone could work with USGS to add the specific information for the Keys to their course. The same is true for rental operators. Mr. Blackburn indicated that he can consider emails on the topic.

VI. Sponge Restoration Update

Mr. Bill Sharp gave a presentation on the sponge restoration project in Florida Bay. This is a multi-faceted project with several partners (Old Dominion University, Florida Sea Grant, Bonefish & Tarpon Trust, Florida Keys Environmental Fund, Inc. and The Nature Conservancy). Primary funding is from EPA.

The sponge restoration project has six main objectives that revolve around using donor sponges and sponge nurseries to restore sponges in the bay, sponge recruitment and reproduction, and sponge filtration experiments. The costs and feasibility of a large-scale restoration effort will be evaluated. Four sponge nurseries have been established, including one at Sandfly Key. This nursery was thought to be out of the range of most algae blooms that originate in Florida Bay. So far, about 6000 sponges have been propagated using volunteers and staff.

Last year, they observed above average rates of mortality of vase, brown branching, glove, yellow and sheepswool sponges. They evaluated the extent of the mortality, which covered a larger area than just the nursery. Other nurseries were not affected. The slow growing loggerhead sponges were unaffected and did not suffer mortality. The mortality observed at the Sandfly Key nursery was probably linked to a cyanobacterial bloom, which appears in satellite imagery in November 2016. The die-off had abated by January 2017; approximately 20% of nursery sponges were lost. (Marathon nurseries did not experience bloom or mortality.) Sponge propagation has resumed since this event.

In March 2017, Ms. Krueger coordinated a sponge forum that brought in sponge researchers and citizens. In conjunction with project partners, she also updated a fact sheet on sponge restoration research. Another restoration forum is being planned for the end of July in Islamorada.

VII. Public Comments

Mr. Martin Moe, Sanctuary Advisory Council member

Mr. Moe indicated that he wanted to give an update on his *Diadema antillarun* culture work. Mr. Moe's presentation will be heard this afternoon after the last presentation.

Mr. Mike Buchman, FKNMS Chief of Staff and Scientist

Mr. Buchman, who has a degree in eco-toxicology, raised the issue of organic pollutants— a topic that came up recently in the Sanctuary Advisory Council meeting. Mr. Buchman received an email recently about a product that used ubiquitously in the keys and is known from NOAA experiments to affect coral, fish and invertebrates in parts per trillion levels. That makes the substance of concern and extremely potent at very low levels. This substance is not found just in sunscreen, but a host of

products that people use. He has heard some mention today of endocrine disruptors, but almost no mention of this kind of organic chemicals that can affect the health of marine life. After the deepwater horizon incident, he looked for data on these chemicals, but found very little information. He found no broad scale assessment to establish a baseline regarding these chemicals. He urges the committee to consider this kind of study especially in light of restoration efforts that are underway that could be affected by such chemicals.

Mr. Colin Hannaford, Resident of Sugarloaf Key
Mr. Hannaford stated that the mission of the Water Quality Protection Program is to provide the opportunity for public input and feedback to the steering committee. A three-minute period for public comment every several months is not sufficient. He commented that Charlie made some very valid points about boater education and added that the sanctuary has a volunteer program, Team OCEAN. This program reaches out to boaters at the reef. It is a friendly interactive way to reach people and answer their questions. He has been with Team OCEAN for about 13-14 years. When he goes to the SPAs, he reaches about 100 people a day. The concept of using volunteers to reach boaters might be used in shallow water, too.

The other part of the WQPP is to seek outside guidance. He thinks there is some confusion, perhaps on his part, regarding the restoration program. In these past few years, measures have been taken in terms of wastewater to get waters up to state standards. Canal restoration is really meant to affect the dissolved oxygen conditions. It is very unclear as to whether canal restoration is necessary. It was packaged as such to get in compliance with state standards. He doesn't know if that is true or not. He sees that it now appears in the RAD and he asked last time whether this was a requirement or not for us to meet state standards and the answer was no. He thinks some clarity from this committee with regards to the role of canal restoration program would be helpful. Is it really to improve the water quality so that we can comply or is it really something that should be done because it is affecting canal front owners because they can't swim like they used to? Or maybe it's about being a health hazard. This information will help guide who pays for the restoration. Frankly, if it is a water quality issue to get in compliance with state standards, then it should be considered that these are state waters and are not owned by canal residents. They are navigable waters of the United States and the seafloor in most cases is owned by the State of Florida. Seagrasses that float into canals are not caused by the canal residents. Yet, a program is being put in place that requires owners to pay for it because there is no money elsewhere. And that might be the right thing to do, but he still feels that clarity is needed regarding this effort. They say it is to get back into compliance and yet it really isn't. They say that it is really to benefit the residents. His feedback to the steering committee is to really give some guidance on the goal of restoration and where this program fits in. It is really water quality or a cosmetic or health issue that is being addressed?

Ms. Mimi Stafford, FKNMS Sanctuary Advisory Council member
Ms. Stafford addressed boating education. The elephant in the room is that while everyone wants it to be voluntary, the fact is that we need to require a boat operator's license. When her father was young, everyone drove a car and there were no rules. She has been on the water all of her life and in the old days, you didn't see a boat all day. Now, you see them all the time. So much of the damage is caused by people who get in a boat and don't know anything about navigation. We are going to have to go the license route. She realizes this issue is beyond the scope of this committee.

Lunch

VIII. Coral Disease Outbreak, CRTF meeting August 7-11

Ms. Karen Bohnsack, Florida Department of Environmental Protection Florida Coastal Office, gave a presentation on a recent coral disease outbreak and the Coral Reef Task Force meeting.

Ms. Bohnsack provided background on coral disease in general, the status of the disease outbreak and ongoing response efforts. She recognized partners involved in this effort including FWC, FKNMS and The Nature Conservancy. The causes of coral disease are tremendously complicated and not well understood, but a loss of tissue generally indicates the presence of disease that may lead to mortality. A variety of factors contributes to disease, including an infectious agent or pathogen. Natural or human-induced stressors that result in changes in the ambient conditions such as temperature, excess nutrients, etc. The third factor is the inherent defects in the coral that increases its susceptibility to disease. Disease really results from the interaction of three factors: host, pathogen and environment. Disease is one of the factors that naturally keeps population levels in check and a background level of disease of about 6% is normal for coral reefs. A variety of factors can contribute to disease outbreaks, including pollution, increasing temperature, nutrients, etc.

Ms. Bohnsack explained that observations of disease outbreak began off Key Biscayne in the fall of 2014. Through 2015, the disease spread northward into the northern boundary of Broward County and south into Biscayne National Park. In 2016, the disease spread further north (to Jupiter) and south into the upper Keys of the marine sanctuary. In 2017, new sites are being detected in the marine sanctuary spreading across of variety of species. Currently, the boundary of this disease is Conch and Crocker Reefs. All of the regularly described diseases have been observed along with a newly described disease condition. It is a "white blotch" sort of condition that is being seen along with other white plague type disease conditions. At least 21 of the 46 species identified in the sanctuary have been affected, but not to the same degree. Some species are listed as endangered or threatened. Pillar coral has been severely affected by this disease outbreak and 99% of the known colonies in Southeast Florida have died as a result of this event. In the upper Keys, an estimated 75% of the known colonies have died. Baseline surveys in 2016 show the increasing mortality off Southeast Florida and increasing disease off the Upper Keys. In 2017, mortality in the upper Keys had increased. Some of the oldest known corals have been impacted by this outbreak. One approximately 330-year old coral (*Orbicellus faveola*) located off the mainland succumbed to mortality due to this disease in a matter of months. From a landscape perspective at any site, about 50% of corals are affected and 85-100% of certain species. This is a tremendously complicated issue.

Response efforts began in 2015. Since that time, FDEP and FWC along with numerous partners from government, universities and non-governmental organizations have been working to document and better understand this outbreak. They have taken a variety of actions. Coral reef monitoring (CREMP/SECREMP) and Florida Reef Resilience Program have been documenting the disease as part of their regular monitoring. FWC has taken the lead with other partners in investigating whether the disease is caused by a pathogen and what can be done in response. A comprehensive conditions report was compiled that describes environmental conditions that may or may not have contributed to the outbreak. This includes a data archive of known datasets. Active intervention and disease treatment is being studied by the National Coral Disease Health Center. Active amputation and antibiotic treatments are being evaluated. NOAA is leading a team to rescue the last of pillar coral colonies with the goal of preserving genetic stock for potential restoration in the future. Funding and capacity are limited in this unexpected situation. Funding for pathogen identification work and other efforts mentioned was not planned in advance. Partners used available resources to respond in various ways to the outbreak, which shows the importance of working together. The USGS National Wildlife Health Center is working to fund a National Science Foundation (NSF) intern. In addition, NSF has funded further study of the host-pathogen interactions. This issue requires conducting a

great deal of research because understanding the pathogens/environmental factors is needed to take management actions. While it is not known what is causing this disease outbreak, the good work of the WQPP comes into play because it is known that corals need good water quality to thrive.

Florida is hosting the 38th meeting of the US Coral Reef Task Force in Ft. Lauderdale August 7 -11. For more information, visit www.coralreef.gov. The USCRTF was established in 1998 by Presidential Executive Order to lead U.S. efforts to preserve and protect coral reef ecosystems. The disease outbreak will be highlighted in this high-level meeting.

Motion (passed)
Co-Chair Iglehart suggested considering this topic to the priority list for special study funding. Mr. McRae made the motion to add this topic to the priority list. The motion was seconded by Billy Causey. Motion passed unanimously.

IX. Data Management Website Update, Florida
Mr. Chris Anderson, FWC Fish and Wildlife Research Institute, gave a presentation about the data management and the update to the WQPP website.

Mr. Anderson explained that data from the monitoring programs are made available through this website, along with reports and other meeting information. In 2001, a Data Integration program was created. At that time, CDs were produced and distributed to disseminate data to others. In 2006 FWRI created a Data Integration Site on a website they hosted. In 2010, FKNMS redesigned their website with a new look. After that, the FKNMS superintendent at the time asked FWRI to redesign the website to look more like the sanctuary's site. This was undertaken by FWRI. The new WQPP website, like the previous one, is updated with presentations and minutes from the different WQPP meetings, including the Technical Advisory Council meetings.

IX. Coral Reef Evaluation and Monitoring Program (CREMP) Update
Mr. Rob Ruzicka, FWC Fish and Wildlife Research Institute, gave an update of the Coral Reef Evaluation and Monitoring Program.

Mr. Ruzicka stated that this program has been monitoring coral/coral reefs for 22 years. Prior to the recent disease event, the focus was on the mass bleaching associated with the El Niño event in 2014-2015. In 2016, after the El Niño began to abate bleaching prevalence subsided. In 2016, abundance numbers showed the mortality or loss of corals that followed the El Niño. The study documented mortality in *Orbicella* complex spp., which is one of the main reef-building species on high value patch reefs. About fifty *Orbicella* colonies have been lost in recent years. In terms of long-term trends, stony coals showed a slight decline in 2016 after the 2014 bleaching event. That decline was not as dramatic as it was after the 1997 bleaching. This observation could be explained in one of two ways. Stony coral cover is so low that losses are not as noticeable as they were in the past. A second possibility is that the corals remaining were more tolerant to thermal stress. This outbreak is significantly affecting *Siderastrea siderea*, which has been fairly tolerant of thermal conditions and was thought to be somewhat resistant to disease.

Mr. Ruzicka stated that the dive operator community has noticed the ongoing coral disease and FWRI has fielded multiple calls from dive operators in the Keys. Operators are alarmed because they think it is bleaching taking place during this past winter. Instead, it was likely that bleaching is being mistaken for the disease. FWRI is taking the lead on response sampling. FWRI has been collecting tissue samples from diseased corals and sending them out for analysis to identify the

pathogen. This event reinforces the importance of long-term monitoring being conducted to better understand the vulnerability and resilience of corals.

Public Comment

Mr. Martin Moe, Sanctuary Advisory Council
Mr. Martin Moe gave a brief verbal presentation about the *Diadema antillarum* research that he has been conducting. Mr. Moe is a retired fishery biologist/author and aqua-culturalist. He explained that while putting corals out on the reef is a good thing, it is not really restoration of the coral reef. In order to achieve restoration, the ecology of the entire ecosystem needs to be restored. One important factor affecting corals at the reef is the balance between macroalgae and coral growth. Herbivory maintains that balance. After the massive die-off of *Diadema* in 1983, macroalgae began to overtake the reefs. This macroalgae was normally kept in check by the *Diadema* and allowed for settlement of the larvae of coral and other marine life. Ten years ago, he began culturing the *Diadema*. Mr. Moe read a statement into the record. He explained that his last trial for raising *Diadema* did not produce any viable offspring. The rudiment in the larvae had failed to develop and therefore no adult form emerged. Up to the early fall of 2012, larvae raised in his laboratory using Florida Bay water developed normally. The same is true for the Mote Marine Lab in the Keys. Since that time, larvae raised in these labs have failed to properly develop rudiments. Florida Bay water will still not support normal *Diadema* development. Other labs (in other locations) have produced larvae that produce normal rudiments. He has had some success producing rudiments with artificial seawater, which points to issues with nearshore waters in the Florida Keys. He has reason to believe that there are heavy metals in the water that might be contributing to the issue and has every reason to believe that a lab with a good water supply could continue this work of culturing *Diadema*.

X. Water Quality Monitoring Update
Dr. Henry Briceño, Florida International University Southeast Environmental Research Center, gave a presentation describing the recent results from the Water Quality Monitoring Program. He presented the EPA targets for chlorophyll-a, light attenuation, Dissolved inorganic Nitrogen and Total Phosphorus. DIN has been high relative to the baseline over the past five years. Overall, a regression analysis of data since 1995 shows relatively little change over time in water quality. Deviations from the trends caused by events—natural or human-induced are more important than long-term trends. The DIN slope is slightly positive, which means DIN is declining and this trend is evident in the Everglades and other South Florida locations.

Several years ago, they used the water quality data to divide the sanctuary into water body types, each with different water quality characteristics. FDEP adopted these water body types, which form the basis for water quality criteria. The DIN trends are the similar for all water body types in the sanctuary. Regional phenomena might be causing these changes. Hurricane activity in the region during corresponds to DIN changes and may be affecting DIN conditions. Certain thresholds have become evident in water quality data for different water body types that fact should be considered in relation to nutrient criteria.

Dr. Briceño conducted some analyses to answer the question as to whether seagrass die-off that took place in Florida Bay recently has affected water quality in the Florida Keys. In the Back bay water body/segment, Total Phosphorus was elevated in 2016. The field team did observe bloomy water flowing from the bay. No major impacts were observed in the Offshore segment where the reefs are located and in the Middle Keys segment. In summary, DIN has been out of EPA compliance since 2012 and TP has been in compliance since 2012. Except for Total Organic Carbon (TOC), most

water quality variables have remained the same over time. Significant deviations were observed and were driven by storm and hurricane events.

Public Comment:
The Honorable Bonnie Rippingille Schoedinger, Key Largo resident, attorney and Miami-Dade judge (retired)

Judge Rippingille Schoedinger stated that everyone should have received copies of her summary (*The Federal Lawsuit Against Florida Power and Light for Violations of the Clean Water Act at the Turkey Point Nuclear Facility A Position Paper and Summary of the History, the Legal Issues, Evidence of Violations*) and additional materials from the WQPP administrator in advance of this meeting. She introduced Steven Schoedinger, a water quality expert with more than 45 years of experience, who has been serving as her in-house expert. Monroe County passed a resolution asking that the cooling tower solution be implemented at Turkey Point. They called for the cooling towers to be built and the cooling canals to be closed as soon as possible. FPL has said that the most prudent environmental solution will require a retrofitting because the cooling towers will have to be built just for reactors 3 and 4 and will still need some kind reservoir as a heat sink because these reactors are so old that they will be 60 years old in 2032. FPL says that cooling towers are not feasible. Her expert, Bill Powers, provided an analysis (report attached to her paper). This report indicates that the new towers can be built and operating in a matter of 4 to 5 years. A financial analysis done by experts showed that the costs incurred would be very small compared to the company's capital projects in Florida and is easily doable. With 16 years left on the life of the plant, building cooling towers seems like the best solution to her, especially when compared with the 10-year solution being implemented by FPL. If this 10-year solution fails because of the hydrology in the area (and it is still experimental), a permanent solution is further postponed.

No one can say, including FPL, whether or not reactors 6 and 7 will be built. This is because Toshiba is out of the business of building reactors and its subsidiary Westinghouse is in bankruptcy. You only have to read the nightmare that is occurring in South Carolina and Georgia to know that FPL has to be considering other solutions while they are collecting the money from ratepayers to build reactors 6 and 7. Through the end of this year, they will have already collected $280 million dollars. She is saying that they are admitting that they are out of compliance. The saline plume is in the aquifer because of prior saltwater intrusion, but also because of their negligence in not taking care of the matter. FPL first found out that the salty water passed the Interceptor Ditch, which was created in order to keep the water from migrating that far. They knew about it and they claim that they reported it to regulators. Discovery is closed in connection with a CWA (Clean Water Act) lawsuit. Because they are looking to dismiss, FPL has asked for an order of stay and discovery. That has not been decided yet. The lawsuit is still viable. There is ample case law that says that hypersaline polluted water in groundwater will migrate to surface water. These cases will be provided in the next update to my paper. Suffice to say that the problem is a continuing one and they still can't guarantee that their experimental remediation will work. They are putting in a series of wells to pull out the water that is five to six miles out. She has no doubt that the urgency of the situation is such that they now need to continue to do that. She is not saying that they shouldn't start on what EPA and DERM agreed, let them do to remediate the situation. But, they will not know if it is working for at least five years and even as to whether or not it will continue to leak out of the CCS (Cooling Canal System). Has it reached the keys yet? No, but as you know your water wells are in Miami-Dade County. It is getting closer and closer. The other problem is that they have found sampling in Biscayne Bay that shows ammonia, chlorophyll. It is all in her paper. Please read it. This situation could affect and probably is affecting aquatic life because fisheries are in Card Sound Bay. She

doesn't want to keep people longer because it is all in her paper. Basically, what the company is saying is that significant costs and timeline to accomplish these changes. Everyone else says that it will take less than those 10 years to put in those cooling canals. It is estimated to take only about five years.

The national park service has said that they don't want FPL to build units 6 and 7 because the company has not shown any evidence managing their stewardship properly over our nuclear generation. She is not anti-nuclear. She is just asking them to do it right. The right, scientific and proven solution is cooling towers. If they have to build a small reservoir as a heat-sink and the age of the reactors, let them do it. She has had about five mathematicians look at it and no matter what it is going to be only a $1.50 to l.75 increase to the ratepayer. Even if does cost a billion dollars to clean up the canals, it will be a permanent solution. She is asking everyone to consider this situation. Monroe County passed a resolution asking for cooling towers. She hopes to have the support of this group, too. You can't wait until it reaches the Florida Keys. You need to start now because the mechanics of governments and regulatory agencies can be slow. She thanked everyone.

Co-Chair Iglehart stated Judge Rippingille Schoedinger can send any updates to Steve Blackburn for distribution to the committee.

Co-Chair Iglehart asked for any closing comments from the members.

Bill Causey recognized John Hankinson, former EPA Region IV administrator, who passed away in March. He was a dedicated Florida environmentalist. He never missed a meeting of the WQPP steering committee and was very much responsible for the No Discharge Zone in the sanctuary.

Commissioner Neugent thanked the judge for taking the time to inform the committee. Judge Rippingille Schoedinger added that the issue is that FPL doesn't know what they are going to do in five years—whether they are going to continue with the plan or put in solar or more natural gas. They don't know, but want us to bear the brunt of their years of neglect. She has had the paper reviewed over and over again by outside experts (not necessarily scientists) and they all say that the solution is simple—to put in cooling towers and start now.

Co-Chair Iglehart stated that the next meeting, which will probably be a two-day one, will probably take place in late September- early October.