

LOWER ST. JOHNS TECHNICAL ADVISORY COMMITTEE (TAC) MEETING
City of Jacksonville—Ed Ball Building, Room 851
214 N. Hogan St., Jacksonville, FL 32202
June 23, 2010

Participants

Khalid Al-Nahdy, FDEP	Dana Morton, COJ
Keri Armstrong, FDEP	George Myers, FDEP/CAMA
Russ Brodie, FWC	Patrick O'Connor, FDEP
Robert Burks, SJRWMD	Ying Ouyang, SJRWMD
Tiffany Busby, Wildwood Consulting	Marcy Policastro, Wildwood Consulting
Dean Campbell, SJRWMD	Geoffrey Sample, SJRWMD
Ed Cordova, JEA	Vince Seibold, COJ
Betsy Deuerling, COJ	Lucy Sonnenberg, JU
Kevin Hayes, COJ	Scott Turner, DCHD
John Higman, SJRWMD	Gary Weise, COJ
Chuck Jacoby, SJRWMD	Quinton White, JU
Pam Livingston Way, SJRWMD	April Williams, COJ
Nicole Love, GTMNERR	

Welcome and Introductions

Dana Morton welcomed everyone to the Lower St. Johns River (LSJR) Technical Advisory Committee (TAC) meeting. The TAC meets quarterly and there are some good agenda topics for this meeting. The participants introduced themselves and the entity they represent. Tiffany Busby thanked Dana and Vince Seibold for hosting the meeting.

Update on the Gulf of Mexico Oil Spill and Potential Impacts to Northeast Florida

Quinton White, Jacksonville University, stated that the Deepwater Horizon explosion occurred on April 20, 2010, killing 11 people. The first satellite images showed fire and smoke from the explosion, which occurred about 50 miles from where the Mississippi River comes into the Gulf of Mexico. This is similar to a spill that occurred in Campeche Bay, Mexico in the late 1970s, which lasted 9-10 months. There are over 4,000 active oil platforms in the Gulf and the drilling is moving to deeper water. The Deepwater Horizon well is in 5,000 feet of water and the drilling extends three miles down. There are 30 deepwater drilling operations that have been suspended since the spill.

The Loop Current in the Gulf, which also has eddies spinning off of it, can move the oil. As the oil gets caught in the Loop Current it travels to the Florida Current and then into the Gulf Stream. Analyses have been conducted to follow the movement of surface oil. There is a large loop eddy named Franklin that is currently keeping most of the oil in the Gulf. The analysis from yesterday shows that additional eddies are forming, and that the water-oil mixture (WOM) has been picked up and is moving higher into the current. The oil is starting to move towards the east coast of Florida.

The estimated release of oil is more than 140 million gallons. As a comparison, the Exxon Valdez spill was 10.8 million gallons. To address the spill, dispersants are being applied to the oil directly at the well and sprayed on the surface. Dispersants are soap-like liquids designed to break up oil into smaller droplets so that natural bacteria can act on it. The toxicity of the dispersants is not well known. There are also questions about how long it lasts in the environment and how far it can be transported. Over 1.35 million gallons of dispersants have been used to date, which is a much larger quantity than has been used before. The oil coming from the breach is in several forms including gas, lighter oil that floats, water soluble oil, and heavier oil that stays on the bottom. The oil and dispersants are lethal to both plants and animals, in both the adult and larval stages, although it is more fatal to the larval form. Organisms could

ingest these materials and external exposure can cause hypothermia or suffocation. In addition, there is concern over the long term exposure for humans. The impact to northeast Florida is highly weather dependent; therefore, the timeline for the oil arrival is unknown. The oil will likely be found in northeast Florida in the form of tar balls, which are thick, weathered oil. If the tar balls are not collected and removed they become asphalt-like.

Lucy Sonnenberg asked if there is any evidence of an emulsified plume on the bottom of the ocean. Quinton responded that subsurface oil does exist and not much is known about subsurface currents. There is concern that dead zones could form because of the oil droplets. Lucy noted that subsurface movement seems to more directly affect the west coast of Florida. Quinton agreed and stated that there have been reports of tar balls appearing there with no surface warning. In northeast Florida, we will probably see smaller tar balls that are about the size of a quarter. George Myers asked if any modeling has been done to project when the oil might arrive here. Quinton responded that south Florida has done some modeling that ends around Cape Canaveral so there is no information for this area. The timeline is really dependent on weather and which way the wind is blowing. A hurricane in the Gulf could also be a major factor.

Khalid Al-Nahdy stated that he thought all oil floated on top of water. Quinton responded that the oil coming out of the ground is not refined so there are other components mixed in. Some of the oil rises to the surface and some parts stay on ocean bottom. Buoyancy of the oil is also affected by water temperature and salinity, so which oil components float could change with conditions. Pat O'Connor asked what percentage of the oil is volatile. Quinton responded that since it is a gas, that portion is hard to quantify. The gas does go into the atmosphere and can be deposited through rain. Ying Ouyang asked how his oil compares to gasoline. Quinton responded that it is different and that when the oil is refined, part of the product is gasoline.

Dana noted that the oil appears to already be in the Florida Loop Current based on the imagery. Quinton responded that the oil is being tracked through satellite imagery as well as via ships that are taking samples. Tracking efforts for the spill are documented at <https://oilspill.fsu.edu>. Dana stated that it appears the oil is staying off the west coast of Florida and is instead moving around the state. Quinton responded that is the case but could change based on wind. Dana asked what the role is of the Academic Task Force. Quinton responded that they have some funding to do research on the oil spill. In addition, Jacksonville University (JU), University of North Florida (UNF), and City of Jacksonville (COJ) put together a proposal that went to Rep. Corrine Brown for monitoring of the beaches, buoys to track ocean currents, and water quality monitoring in the river. There is also a plan for the state to monitor the beaches.

Khalid noted that one of the environmental challenges will be how to dispose of the oil and he asked how this would be done. Quinton responded that when it hits the shore as tar balls, the oil will have to be disposed of in a landfill. The oil skimmed from the water is going to a refinery for use. There is some effort being made to burn the oil on the surface. Quinton stated that he would rather let the oil come to the surface and have it skimmed off. The technology being used has never been utilized at this scale before. Gary Weise asked if there have been any discussion of stopping the use of dispersants. Quinton responded that the U.S. Environmental Protection Agency (EPA) has stopped the use of a more toxic dispersant. There are a lot of questions related to the toxicity of the dispersants for which we do not have the answers. Gary asked if there is an agency that has the final say on the use of dispersants. Quinton responded that the agency would be EPA, but they have a lot of political pressure to do something to control and treat the spill.

George asked if the “fingerprint” of the oil can still be identified after it has been in the water for awhile. Quinton responded that is it possible to fingerprint the oil, which is based on the reservoir the oil came

from. The oil does change over time when it is in ocean water, but in a known way so it can be tracked. Lucy added that carbon isotopes are also being used to identify the oil. Gary stated that he saw a report on natural oil seeps compared to this spill. Quinton responded that there are natural seeps in the Gulf with natural bacteria that act on it, so the system is not strongly affected by the seeps. The volume being added now by the spill is huge compared to the natural seeps.

Lucy stated that she shares concern about the use of dispersants because there are studies that show the combination of the dispersants and oil are more toxic for organisms. The dispersants add to the uptake of oil by organisms. She asked what the strategy would be to remove the oil because she has heard talk about microbial seeding. Quinton responded that people think they need to do something and massive cleanups in salt marshes causes more harm than good based on past studies. The beaches will recover first and the salt marshes will take the longest. Letting natural processes take care of the problem could be the best approach. Dana added that he spoke to a friend at the Gulf Breeze EPA laboratory and EPA has several contracts to look at the toxicity of the dispersants. It is very expensive and time-consuming to conduct the bioassay work for this study. Quinton noted that there will be a lot of good research coming out of this spill. Gary asked if there is any research from the Mexican spill. Quinton responded that there were no studies done in Mexico but there was some research by staff in Texas. The Texas research showed a responsive beach community and less responsive salt marsh community for recovery after the spill.

John Higman noted that four forms of oil were mentioned earlier and he asked what is known about the forms. Quinton responded that the mid-level oil is hard to track and there are no estimates for the oil on the ocean bottom. BP has not been willing to allow samples of oil to be collected for analysis. John noted that the Gulf Loop is moving the surface oil and he asked if there was any idea on what will happen with the heavier oil. Quinton responded that not much is known about the subsurface currents so it is unknown how the heavier oil will be moved. John asked if there is any idea what would happen if the oil moves through the middle grounds. Quinton responded that there is concern about contamination and coating of organisms.

Nicole Love stated that the Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR) is cooperatively managed by National Oceanic and Atmospheric Administration (NOAA) and Florida Department of Environmental Protection (FDEP) through Coastal and Aquatic Managed Areas (CAMA). FDEP is designated as the state lead for the Natural Resource Damage Assessment (NRDA) as a trustee for NOAA. Mike Shirley with GTMNERR has been given the lead for the baseline sampling in northeast Florida, which is occurring throughout the entire state. The purpose of the baseline sampling is to get an idea of what the systems look like now, so that if there are any oil impacts BP knows exactly what they need to restore back to. If there are impacts, there will also be post-impact assessments.

Each area of the state is coming up with a baseline plan that will go to NOAA for approval and then to BP for approval. The last area for the baseline sampling is the Indian River Lagoon. The northeast Florida sampling is being done through GTMNERR and once the baseline plan has been approved, Nicole will send it to Tiffany for distribution to the TAC. All the selected sites here are in coastal areas from Volusia County to Nassau County based on where the inlets are located, since this is where the tar balls will likely enter the area. Water and sediment samples are being analyzed by NOAA in Texas for hydrocarbons and other typical parameters. The sampling in northeast Florida should start in about two weeks and occur over a few days. Information from all sampling efforts across the state will be posted to www.nrdata.org. None of the data from the sampling are currently available and this is an issue that BP and the state trustees are working on now. Once information is available, it will be posted to a public website. The state is paying for the sampling and they will be reimbursed by BP sometime in the future.

John stated that he knows of two NRDA personnel in the southeast region and asked if there are more in the area. Nicole responded that all efforts are through NOAA and the staff are not always in the area. A lot of people are now based out of Mobile, Alabama for these efforts. There is a separate Shoreline Cleanup Assessment Team (SCAT) that will be looking for tar balls to collect and send for analysis. There is discussion about making the SCAT a larger effort here since we will mainly see tar balls and not damage from liquid oil. This effort may be expanded through the counties' sea turtle teams. Specific protocols must be followed for the sampling and even for photographs in order for the information to be used for official pre- and post-spill assessment.

Overview of LSJR Field Research Programs Conducted by SJRWMD and a Call for Partnerships

Robert Burks, SJRWMD, stated that the SJRWMD LSJR Program has six dedicated field scientists, dedicated research vessel, field program supervisor, five project scientists/managers, three database managers, technical program supervisor, Geographic Information System (GIS) specialist, internship programs, and volunteer programs. The scientists have to make a lot of decisions in the field and safety is the first priority, followed by integrity of science and efficiency.

Surface water quality sampling includes total maximum daily load (TMDL) work, diurnal (in Lake George), stormwater (including the regional stormwater treatment facilities [RSTs] that capture and treat agricultural runoff), carbon, tidal sampling, automated sampling, and *in-situ* meters. The biological sampling includes submerged aquatic vegetation (SAV), wetland vegetation, invertebrates, and fisheries. The group utilizes a variety of equipment including two aluminum research vessels, trucks and trailers, and light meters.

Sampling is active in 115 miles of the LSJR from just south of Lake George to the mouth of the river including the Ocklawaha River and major tributaries. There are monthly and bimonthly sampling points throughout the river. The Lake George sampling includes spring run sampling that occurs bimonthly, past 24-hour sampling in four areas of the lake to see changes in phytoplankton, and sediment core sampling in three areas of the lake to determine sediment contribution to nutrients. In the Ocklawaha River, samples are taken before, during, and after drawdown of the Rodman Dam. At the mouth of the river, monthly samples are taken to determine flows to the marshes during different tides. Robert noted that there is a three-hour downtime during this sampling so there may be the opportunity for them to collect other samples during that time if anyone has an idea.

The group has also dredged some areas of the river to collect clams that are brought back to the SJRWMD biological laboratory to be measured, weighed, and checked for toxics. In Julington Creek, groundwater wells and wetland wells are monitored to determine the amount of pollutants to the creek from septic systems in the area. They also have piezometers to look at pore water in the river to compare it to surface water quality, and they do see differences. SJRWMD has plankton and cyanobacteria sampling. For SAV, they have conducted transect monitoring, hyperspectral imagery, productivity monitoring, and intensive monitoring. At the moment, an experiment examining responses of *Vallisneria* to salinity, including changes in stress enzymes, is occurring at three sites: Bolles, Alpine Grove Park, and Murphy Island. Invertebrate monitoring also has occurred. SJRWMD works with the Florida Fish and Wildlife Conservation Commission (FWC) on monthly fisheries sampling including electro shocking at RSTs, ichthyoplankton trawls, soniferous fish assessment, and toxin sampling.

SJRWMD support capabilities include using divers to look at springs, diurnal trawls, media tours, sediment cores, offshore deployment and monitoring, high definition bathymetry on vessels, and deoxyribonucleic acid (DNA) collection with UNF. SJRWMD works with FWC, University of Florida, UNF, JU, University of North Carolina, U.S. Navy, and Florida Department of Health. Benefits for the river of this cooperation includes more opportunities to see different entities conducting science, collective gathering of knowledge of the LSJR, greater efficiencies to reduce duplication of efforts, and

integration of new technology and ideas to take the best from each entity. Any entities interested in partnering with SJRWMD on sampling efforts can contact Robert.

George asked if the SJRWMD only focused on the St. Johns River because no efforts were named for the Nassau and St. Marys rivers. Robert responded that the SJRWMD covers all waters that are in the St. Johns River Basin. This presentation focused on monitoring efforts only in the LSJR. Dean Campbell added that every major drainage basin within the District's boundaries has an individual program and that there are other groups that work in those basins. The Nassau and St. Marys rivers are the biggest gap in the SJRWMD program because they are not Surface Water Improvement and Management (SWIM) waterbodies. These rivers are part of the District-wide sampling but do not have the same level of dedicated staff that the SWIM waterbodies do. John added that the SJRWMD also includes Indian River Lagoon and their jurisdiction goes up to the beach.

Technical Updates and Announcements

Fish Kill Update

Russ Brodie stated that the fish kill in the St. Johns River began in late May 2010. FWC, SJRWMD, and Florida Department of Health (FDOH) are all working to determine the cause. Over 250 calls have been received on the hotline documenting fish kills, with red fish being the primary species reported. All reported killed species include stingrays, catfish, gar, and baitfish. Species that are less or not affected include croaker, spot, pinfish and silversides. The fish kill seems to vary by species and size. For instance, large red fish are affected but not smaller red fish. It does not appear that other wildlife is affected.

The main area involved in the fish kill is from south of the Shands Bridge to downtown Jacksonville. There are rare reports in Doctor's Lake and north of Jacksonville. Fewer fish kills have occurred south from Colee Cove to Palatka and down Lake George. FWC is not sure if the fish kill in Lake George is related to the fish kill in the river. The cyanobacteria bloom is *Aphanizomenon* and appears to be restricted to the freshwater and low salinity portions of the river. FWC has not had samples with high cyanobacteria toxicity but recent SJRWMD samples have had high counts. The fish kill is not consistent with low levels of dissolved oxygen (DO) and sampling shows that DO is high. There are no obvious water quality parameters that might suggest what is happening. The bloom may result in water quality changes such as high pH and ammonia. FWC suspects the cause of the fish mortality is toxicosis based on preliminary pathology, but more work is needed to verify this finding. They are conducting complete diagnostics on fish, reviewing potential connections, looking at water quality data, and looking at fisheries data and trophic dynamics. A lot of research is ongoing but the cause is not yet known.

Robert noted that they recently began finding a lot of microcystin around Black Creek and Shands Bridge. The Orangedale area had the highest hits. Dean added that the bloom in Orangedale has broken up with the rains over the last week. Russ stated that they start to see the dead fish once the blooms subside. The strange behavior in the fish seems to be consistent with toxicosis. Lucy stated that she heard stingrays have shown signs of ulceration. Russ responded that they have not seen any evidence of ulcers. FWC has collected mullet with bacterial infections but it is not clear it is related. Vince asked if this issue is isolated to the St. Johns River or if it is occurring in other parts of the state. Russ responded that this type of bloom is different than what usually occurs in the river. Dean added that blooms are occurring across the state, but not with fish kills. Vince stated that the new incoming COJ Council President is vocal on this issue and staff are working to educate him with what is known to date, but there may be requests for agency presentations on the bloom and fish kills. John stated that in the past there was evidence that freshwater flowed into the river and species got trapped by the freshwater. Russ noted that this does not seem to be the cause in this instance. Russ stated that the number of calls to the hotline has decreased over the last week.

St. Johns River Alliance/2010 River Summit

Tiffany stated that the Alliance Board met on Monday at UNF and they are planning a River Summit on September 15 and 16 at the Prime Osborn Convention Center in Jacksonville. The save the date information is in the process of going out right now. The Summit will include two days of sessions on issues about the entire St. Johns River including siltation, numeric nutrient criteria, the oil spill, land use changes, and historic and cultural aspects. The Alliance is looking for several higher profile speakers in addition to speakers for expert panel sessions. A discussion on knowledge gaps will occur on the first day of the summit. The early registration fee is \$50 and will go to \$75 closer to the date. Tiffany also noted that the St. Johns River license plate will be available in the spring and there will be an option for pre-ordering. Kirby Green (SJRWMD) has offered to put together some marketing materials for the plate. The funds from the sale of the license plate will be used to support the Alliance and St. Johns River projects.

Fecal Coliform TMDL

Vince Seibold stated that the second tributaries basin management action plan (BMAP) was recently endorsed by stakeholders. The BMAP is currently going through the FDEP adoption process and will be adopted in the fall. This BMAP was finished much faster than the first BMAP and also includes the Beaches. Many of the activities in the BMAP are already underway.

Scott Turner stated that Senate Bill 550 (rule 2010-205) includes a provision for septic tank maintenance. COJ tried to pass something similar several years ago but it did not pass. This rule will go into effect starting January 1, 2011, and will be phased in over five years. The rule requires that all septic tanks in the state must be pumped out every five years and be inspected (both the tank and drainfield). This will generate a lot of repairs. In COJ, there are about 90,000 tanks with an estimated 18,000 pump outs each year prompted by the new legislation, which will result in an estimated 1,800 repairs per year that would be permitted locally. This is three to four times the number of repairs the Duval County Health Department (DCHD) is processing now. DCHD estimates that they will need another 20 staff people over the next five years to meet this demand. The rule also requires an increase in the separation from the water table for septic tanks. Any system put in place before 1983 that needs to be repaired will need to provide 12 inches of separation. For systems put in place after 1983, those tanks will have to meet a 24 inch separation. Owners will be responsible for the costs of the pump out and maintenance. The state is putting a program into place to help people who cannot afford the maintenance. This grant program will start January 1, 2012. Vince asked if the program covers connection to sewer. Scott responded that he will follow up on this question. Russ asked if the state is responsible for all parts of this program. Scott responded that when an owner has their tank pumped out and inspected, they will send the report and fee to the state. The local health departments will be responsible for following up on the repairs. Vince asked with the additional pump outs, where the residuals would be applied. Scott responded that this issue has been identified but they have not worked out the capacity issues. Khalid added that land application is not allowed so presumably it would be processed by a wastewater treatment facility.

Other Member Updates

Vince stated that the COJ Environmental Protection Board and UNF Environmental Symposium will be held on July 16th. The cost is \$50 cost for individuals and \$200 for a booth.

Dana stated that COJ is a sponsor of two U.S. Army Corps of Engineers (USACE) projects: Big Fishweir Creek dredging and Hogan Creek restoration. COJ is planning to meet with USACE about the Hogan Creek project because it has been stalled due to a proposed COJ stormwater pond near the JEA chiller plant. There is a total budget of \$5 million for both projects.

Dana stated that COJ and DCHD are working on the updated septic tank failure area ranking. Areas that have a score of at least 56 points are considered nuisance areas and have a mandatory requirement for

sewering. FDEP is helping to pull together the latest fecal coliform data for each of the impaired tributaries. This information will be used to score the sanitary conditions portion of the ranking. DCHD will organize the information for all the failure areas and provide it to the Mayor's office for the budget proposal.

Dana noted that the COJ Deer Creek stormwater pond in the Talleyrand area is a five acre pond. The City has inflow and outflow water quality monitoring data for the pond for the past two years. COJ is now working with Eric Livingston (FDEP) and CDM on adding Beemats, which are floating wetlands, to the pond. The pond currently achieves 30%-35% nitrogen removal and with the Beemats it is estimated to achieve a 70% reduction. The inventor of the Beemats will be coming to COJ this week to place the mats in the pond. There was a presentation at the Florida Stormwater Association (FSA) conference on the benefits of floating wetlands. Pam Livingston Way noted that SJRWMD put these mats in the header ditch at the RSTs and they saw a significant reduction in nitrogen and phosphorus. Dana added that there has been a lot of research to determine what plants are best for removing nutrients. There is a maintenance component to the Beemats because the plants must be replaced every year. Dean noted that the plants are then composted.

Dean stated that SJRWMD had planned a river symposium, related to the water supply study, in October but the meeting has been postponed. The symposium, if held, will be scheduled with the conjunction of the study release, which will be in June or July 2011.

Next Meeting Date

The next meeting will be held in September 2010 and will be hosted by FDEP.

Adjourn

The meeting was adjourned at 12:26 PM.