Florida Specifier

Practical Information For Environmental Professionals

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An eight-foot diameter auger, contained within a 12-foot diameter shroud, is raised from a column just treated with steam and zero-valent iron to the next untreated column. FECC's in-situ steam treatment technology was used to cleanup a former missile engine maintenance facility at NASA's Kennedy Space Center. The site work was managed by Jacobs. The cleanup effort was discussed in detail at the 2015 Florida Remediation Conference. See story below.

Annual St. Johns River report presents good news/bad news scenario

By BLANCHE HARDY, PG

The eighth edition of the annual State of the River Report for the Lower St. Johns River Basin has been released.

The report is supported by the Environmental Protection Board of the city of Jacksonville and the River Branch Foundation. Primary contributors to the 2015 report include the University of North Florida, Jacksonville University, Valdosta State University, the Marine Science Research Institute and the Miller Wilson Laboratory for Chemical Research.

The 2015 report contains positive indications that the basin's health is improving. However results of data analysis indicate other areas are in decline.

Many of the indicators evaluated each year, indicating both good and unsatisfactory results, appear to be in stasis.

The report is a collaborative effort between academic researchers, agency representatives and private stakeholders. Annual report preparation includes the review of literature, and assembly and analysis of current and historic data collected.

Contributors include the Florida Department of Environmental Protection, the St. Johns River Water Management District, the Florida Fish and Wildlife Conservation Commission, the city of Jacksonville and individual researchers.

Four primary areas of the river's heath are examined: water quality, fish-

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FRC in review:

Upbeat event featured snapshots of what's ahead for practitioners

By ROY LAUGHLIN

Tone and content during the 2015 Florida Remediation Conference indicated that Florida's soil and groundwater cleanup industry is emerging from the last few years of sluggishness with a broader array of cleanup opportunities and tools available.

Brownfields are turning green for both remediation professionals and real estate developers. The state Petroleum Restoration Program is poised to resume substantial and consistent funding. Remediation technology development is incorporating new in-situ detection methods, mobile communications, cloud storage and refined database analysis including statistical and graphical results presentation.

Case studies during the conference's technical sessions illustrated successful projects, sometimes with a return to a site whose prior efforts were not completely successful.

Long-time Conference Chair Nick Albergo, PE, DEE, senior engineer with GHD in Tampa, kicked of the event with his usual insightful and provocative keynote—this year featuring his thoughts on "BS" and how to avoid it.

Michael Goldstein, ESQ, managing partner with The Goldstein Environmental Law Firm in Miami, followed Albergo with a discussion of legal aspects applicable to environmental professionals working on sites for private clients.

His talk highlighted reporting requirements and how environmental professionals can navigate the channels bound by contracts with owners, notification requirements that are largely state-mandated and professional ethics.

As Goldstein explained, interpreting the rules to guide behavior is sometimes

FRC
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Correction

In October's issue, we reported that Ted Everett was appointed to the governing board of the Northwest Florida Water Management District, filling the seat left vacant when Jon Steverson became secretary of the Florida Department of Environmental Protection. Steverson was, of course, the executive director of the district before accepting the top DEP job. Everett actually filled the vacancy on the governing board created when Gary Clark resigned his post.

We apologize for the error.

Industry groups provide guidance on converting wastewater to drinking water

Staff report

The recently released white paper, *Framework for Direct Potable Reuse*, provides guidance to state regulatory agencies and utilities for developing guidelines to safely convert wastewater into municipal drinking water through emerging practices in direct potable reuse, or DPR.

DPR relies on advanced water treatment technologies including membrane filtration, reverse osmosis and advanced oxidation to remove viruses, bacteria, chemicals and other contaminants from domestic wastewater.

These technologies were often not available when existing regulations were formulated. The document is an attempt to provide accurate, updated information for new regulations to foster DPR.

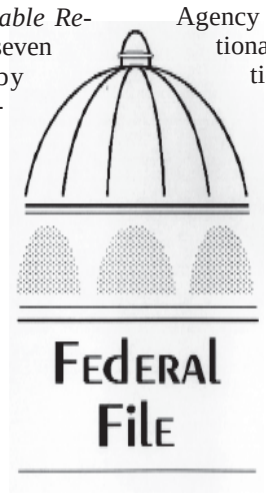
The paper also provides context with a discussion of costs, benefits, energy requirements and comparisons with other water sources and measures.

It also examines what the authors characterize as the three key components of a DPR program: regulatory considerations that mitigate public health risks; technical issues related to advanced drinking water production; and public support and outreach.

The extensive drought in the U.S. over the past decade has provided ample evidence that, in some areas, water supplies can run out completely.

Southern California drinking water utilities, in particular, have been early experimenters with aquifer storage and recovery and a few ASR pilot projects involving treated wastewater have occurred here in Florida.

Framework for Direct Potable Reuse was prepared by a panel of seven industry experts, chaired by George Tchobanoglous, professor emeritus, University of California, Davis. Other panel members included Joseph Cotruvo, James Crook, Ellen McDonald, Adam Olivieri, Andrew Salveson and R. Shane Trussell.



The panel's experts are engineers and consultants with extensive experience with proposed and existing DPR projects in the U.S.

Three professional organizations collaborated on the document's preparation: the American Water Works Association; the Water Environment Federation and the National Water Research Institute. The NWRI administered the independent advisory panel that prepared the report.

The white paper is available on-line from WateReuse, a nonprofit coalition of utilities, government agencies and industries advocating water reuse.

On-line Clean Water Act reporting. The U.S. Environmental Protection Agency released its final rule, the National Pollutant Discharge Elimination System Electronic Reporting Rule, which requires entities including municipalities, industries, states and federal regulators to use existing information technology to electronically report data required by NPDES.

The change to electronic submission ends the filing of paper reports. Included under the new rule are discharge monitoring reports, notices of intent to discharge in compliance with the general permit and program reports.

The rule provides authorized NPDES programs with considerable implementation flexibility, more time for the transition from paper to electronic reporting and more flexibility in granting electronic reporting waivers.

Most facilities subject to effluent monitoring reporting requirements under NPDES, such as those submitting discharge monitoring reports or sewage sludge/biosolids annual program reports, will be required to start submitting data electronically one year following the effective date of the final rule.

A second phase of the rule will initiate electronic reporting for other Clean Water Act reports. These include performance status reports for municipal urban stormwater programs, controls on industrial discharges to local sewage treatment plants and sewer overflows.

The EPA is providing states more time to electronically collect, manage and share Clean Water Act data—up to five years instead of the two years originally proposed.

The agency estimates that under full rule implementation, the 46 states and the Virgin Islands territory that are authorized to administer the NPDES program will collectively save $22.8 million annually by switching from paper to electronic reporting.

In addition, facility-specific information including inspection and enforcement history, pollutant monitoring results and other information from NPDES permits will be available to the public through the EPA's website.

This rule is one component of the EPA's Next-Generation Compliance Strategic Plan and their E-Enterprise for the Environment strategy.

The agency expects that these efforts will reduce pollution by increasing compliance.

The agency believes that electronic reporting will make environmental data more accurate, complete and efficient. It will help the EPA and co-regulators to better manage information and improve effectiveness and transparency.

The new rule, which awaits publication in the Federal Register and the 60-day notification period, should be effective by Jan. 1, 2016.

OIG report on environmental justice within EPA. Release of the EPA's *EJ in Rulemaking Guide* is years behind schedule.

The publication, meant to provide environmental justice guidance for both the EPA as well as other federal agencies, was originally expected to be released by the end of 2011. However, it was not released until May of this year.

In addition, the release of a technical complement to the *EJ in Rulemaking Guide*—a draft of *EJ Technical Guidance*—is not expected until next year.

The use of the *EJ in Rulemaking Guide* is voluntary and it is not consistently used as part of the EPA's rulemaking process. The EPA, the federal government's lead agency for environmental justice, lacks measures and controls that assess when and how EJ guidance is used in rulemaking, even within its own agency. That limits its ability to encourage broad, consistent use and to evaluate the guides' impact on rulemaking.

These are the primary findings published in a recent report from the U.S. Environmental Protection Agency's Office of Inspector General.

The inspector general recommended that the EPA's associate administrator for the Office of Policy implement a process to measure the use of the agency's environmental justice guidelines.

The IG also recommended informing the EPA administrator if delays occur in issuing the *EJ Technical Guidance* document, or if delays occur with providing training on its use.

In addition, the IG recommended that the assistant administrator for chemical safety and pollution prevention provide training on the use the *EJ in Rulemaking Guide.*

EPA management concurred with the recommendations and initiated corrective actions with planned completion dates.

EPA management, in its defense, said that delays in completing the guides occurred due to the extensive number of comments made during the internal agency review process.

Earlier this year, a group of agency employees criticized the agency for its environmental justice failures, noting in particular that the agency does not "aggressively" evaluate recipients of EPA funding to ensure they follow Federal Civil Rights laws.

Beginning in October, the EPA's Civil Rights Office began conducting proactive reviews of state and local offices to ensure compliance with civil rights laws.

The complete report is available online at www.epa.gov/oig/reports/2015/.

Corps contract for Okeechobee dike repairs. The U.S. Army Corps of Engineers, Jacksonville District, awarded Jacksonville-based Harry Pepper & Associates a $49.9-million contract to replace Culvert 10A near Canal Point on Lake Okeechobee's east side.

The structure provides irrigation and drainage. Replacement is expected to be complete by summer, 2020.

Culvert 10A is the last of the Herbert

FEDFILE

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Critics call for review of Port Everglades expansion plan

Staff report

A U.S. Army Corps of Engineers plan to expand Port Everglades in Ft. Lauderdale has come under fire from more than a dozen South Florida business and environmental organizations that want the corps to reevaluate its plans.

The groups include the Miami Riverkeeper and the Center for Biological Diversity.

The South Florida organizations outlined their concerns recently in a 15-page letter to the corps, noting that hundreds of acres of corals were damaged during the PortMiami expansion. They do not want to see the same mistakes repeated.

Environmental groups said that the marine waters and reefs of Port Everglades support highly sensitive habitats and species, and asked the corps to reinstate Endangered Species Act consultations with NOAA's National Marine Fisheries Service about the effects of expansion on protected corals in the area.

Sabal Trail pipeline moves forward. State and federal regulators are working their way through environmental issues related to the proposed Sabal Trail pipeline.

The Federal Energy Regulatory Commission said that although construction of the interstate natural gas pipeline "would temporarily and permanently impact the environment," there would not be major environmental impacts if the companies behind it follow the required rules.

The pipeline would run across sovereign submerged lands and under four rivers.

A 45-day public comment period on the FERC's draft environmental impact statement ran through Oct. 26.

The Florida Department of Environmental Protection has already said it plans to issue an environmental resource permit for the project.

That permit is being challenged by the WWALS Watershed Coalition, a south Georgia-based environmental group with members in North Florida. The challenge will be heard by an administrative law judge with Florida's Division of Administrative Hearings.

Sabal Trail is a $3.2 billion, 515-mile, three-foot wide pipeline that will carry one billion cubic feet of natural gas a day from Alabama through South Georgia and a dozen Florida counties before reaching its endpoint in Osceola County.

The pipeline will provide natural gas for power plants in Florida and is a joint venture between FPL parent company NextEra, Duke Energy and Spectra Energy.

The state and federal environmental reports said construction is expected to impact or destroy 940 acres of wetlands, including nearly 700 acres in Florida.

FERC officials said pipeline construction along most of the route would have impacts on only six to eight feet below ground surface.

The report also concluded that protection of springs and groundwater could be achieved through the use of "best drilling practices," including steps to reduce the loss of drilling mud and plans to monitor nearby springs and wells.

Brownfield grants. The U.S. Environmental Protection Agency announced two grants to cleanup and redevelop contaminated brownfields sites in Florida: a $300,000 grant to the Treasure Coast Regional Planning Council and a $300,000 grant to Palm Beach County.

There are an estimated 450,000 abandoned and contaminated sites in the country. EPA's brownfield program targets these sites to encourage redevelopment, and help to provide the opportunity for productive community use of contaminated properties.

UF sustainability. The University of Florida received kudos for its efforts with environmental sustainability.

UF was ranked 56th out of 153 "cool schools" by *Sierra* magazine.

The Sierra Club ranks a school's "coolness" based on its sustainability programs. The university was ranked 84th in 2010. In five years, the college has moved up 28 places in rank.

UF officials said the changes are due to the college's expansion. Compared to five years ago, there are more sustainability-related classes this year.

Another factor is UF's waste management program that increased recycling options on campus. The program promotes the use of more environmentally friendly products.

UF is also a plastic bag-free university. This means no food service company on campus uses plastic bags.

Florida Notes

People news. Jorge Caspary, PG, former director of the Division of Waste Management at the Florida Department of Environmental Protection, joined WSource in Tallahassee as a vice president. WSource specializes in water resources development, management, consulting and capital funding, and provides consulting services in the areas of environmental site assessment, remediation and closure with an emphasis on creative site closure solutions.

Stephanie Gudeman was hired in August at DEP to troubleshoot the Petroleum Restoration Program in an effort to improve processing and streamline activities. In addition, veteran DEPer John F. Wright, PE, was promoted to chief engineer with the program.

Matthew Miller joined Tampa-based WRA as an environmental manager. Miller is a University of South Florida graduate and a professional wetlands scientist with over 10 years of experience in both the private sector and with the Southwest Florida Water Management District.

Claude Auguste was hired as a project engineer in the transportation engineering department of Erdman Anthony's West Palm Beach office. Auguste holds a bachelor of science degree in civil engineering with a minor in geographical information systems from Florida Atlantic University.

Attorney Angela Morrison joined Berger Singerman as a partner and mem-

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Northwest Florida WMD helps Sneads upgrade drinking water system

Staff report

The town of Sneads, on the west side of the Apalachicola River in Jackson County, recently broke ground on a project to refurbish part of it's drinking water supply system.

The project's focus is 3,380 feet of an existing undersized water main along Old Spanish Trail between Section and Park Avenues.

All cross connections with existing intersecting water lines, valves, hydrants and other components will also be replaced. In addition, the main's connection to an elevated water tank, along with 1,120 feet of water line on Park Avenue that is directly connected to the Old Spanish Trail line will also be replaced.

Water line replacement and upgrades will reduce water losses from Sneads' drinking water pipelines and provide fire fighters with a more reliable source of water.

The construction project is expected to last about six months.

A $402,354 grant from the Northwest Florida Water Management District will underwrite the drinking water system upgrade portion. The project is part of the water management district's Water Supply Development Grant Program that is now in its third year.

Titusville stormwater park. In December, the city of Titusville expects to begin construction of its Draa Field Stormwater Park. The field is currently a baseball field but, by the end of next year, it will include a stormwater treatment system with a four-acre wet detention pond and a planted shoreline and aeration system.

THE WATER WATCH

The detention pond's water will flow through a permeable lime rock barrier and then into a constructed wetland before being discharged off-site.

Flooding in adjacent areas will be reduced by installing larger diameter culvert pipes to the new detention pond.

In addition, pervious pavement will be used in the parking lot.

The new stormwater park is designed to remove at least 45 percent of total nitrogen and 71 percent of total phosphorus from the runoff it receives from surrounding neighborhoods, significantly reducing the nutrient load that would otherwise flow into the Indian River Lagoon.

Most of the existing ball field will be converted to stormwater treatment. But the project will offer new recreational and environmental education opportunities including a new multiuse trail that will serve as a trail head for the East Central Regional Rail Trail.

The project is expected to cost about $1.9 million. The Florida Department of Environmental Protection provided a total of $1.2 million with funds made available through $800,000 approved by the Florida Legislature and from a Clean Water Act Section 319 grant of $389,000. The city of Titusville provided $400,000 in matching funds.

Jordan Brothers Construction LLC of Orlando submitted the lowest bid of $1,762,373.90. Titusville's City Council approved the contract on Oct. 13. Construction should begin in December this year and be completed within 12 months.

Forest certification standards. Best management practices developed by foresters for growing and harvesting timber prevent pollution and protect water quality in lakes, streams and rivers.

That's the primary conclusion of a recent study supported by the National Association of State Foresters.

The NASF study examined the Sustainable Forestry Initiative, a certification standard that requires best management practices for maintaining water quality.

The water management practices include controlling soil erosion, ensuring rapid revegetation of a site following a harvest, leaving intact forest and buffers along streams, installing "water bars" to control runoff, and ensuring careful construction of logging trails and stream crossings.

These practices protect water quality in the short term, foster long-term improvements in water quality and prevent sedimentation.

The link between best management practices in forestry and good water quality is essential because over half of the drinking water in the country and nearly two-thirds of the drinking water in Canada passes through forests.

Several best management practice protocols required by forest certification standards exist. NASF SFI's important contributions include longer training, land owner outreach and water quality requirements, according to an NASF description.

In Florida, forestry and protection of water resources have been intimately connected since 1979 when the Forest Hydrology Section, now part of the Florida Department of Agriculture and Consumer Services, was established.

According to the section's website, "[the] Forest Hydrology Section provides specialized technical services and information to Florida's private and public forest landowners and to other interested parties, for the protection of the state's water resources in association with silviculture activities."

The section is also responsible for development and implementation of forestry best management practices, making them quasi-regulatory in our state.

South Lake water initiative. Lake County's South Lake Regional Water Initiative officials are attempting to draft a uniform landscaping code that favors Florida-friendly landscaping and limits its irrigation.

In its present draft form, the ordinance requires new housing developments to use landscaping designs that meet Florida Water Star specifications.

Under this program, landscaping must meet water conservation certification criteria. Those include the absence of exotic plants in landscaped areas and a minimum of 90 percent of landscape plantings that are compatible with site-specific conditions including sunlight, soil and salinity.

Certification also limits irrigation to not more than 60 percent of the total landscaped area.

A recent report compiled for the SLRWI predicted that the county would be able to supply drinking water to its residents in the coming decades, but if current landscaping irrigation practices continue with new development, the region faces a shortage of 12–16 million gallons a day.

SLRWI members are still working on the conservation plan's details. Some claim that it would take the most stringent Florida Water Star certification criteria, known as Water Star Gold criteria, to provide sufficient conservation results and that should be specified in the new ordinance.

Water Star Gold limits high-volume irrigation to less than 50 percent of landscaping and requires planting of trees to produce shade, a practice that also reduces irrigation water demand. Turf surfaces may also need to be limited.

Other members expressed strong doubts that conservation focused on landscape irrigation alone would be sufficient, with a predicted gap of two to five percent remaining under the most stringent conservation requirements.

They encourage the development of new water supplies. Those new supplies could include sourcing lower quality water such as reuse water, surface waters, stormwater or any other that meets the requirements for irrigation water.

Southern Lake County, according to experts advising the members, may have about five years to meet conservation goals before water withdrawals from the aquifer adversely affect lakes, wetlands and springs.

The hope is that, within the next few months, an ordinance acceptable and fair to all municipalities and county residents could be implemented and applied to future development.

During the past seven years, population growth has been quite tame, but many feel it is poised to increase sharply, so that water conservation practices for irrigation water will be necessary.

Winter Haven promotions. Mike Britt, PE, who served as Winter Haven's Natural Resources Division director, was recently appointed to the position of assistant director of utility services. Britt has been with the city for the past 25 years.

In addition, M.J. Carnavale was named interim director of the Natural Resources Division, replacing Britt. Carnavale is a

WATCH

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Osceola County adopts plan for maintaining, improving region's lakes

By BLANCHE HARDY, PG

Osceola County Commissioners approved and adopted the Osceola County Lakes Management Plan by consent in September. The plan was prepared by the county's Community Development Department.

"We fully support the lakes management plan," said Randy Hanson, vice president of the Family Boating Association. "We think it's a good plan...a vital plan for the health and welfare of our lakes."

County staff worked with the South Florida Water Management District, the Florida Fish and Wildlife Conservation Commission, the U.S. Fish and Wildlife Service, and local citizens to develop the plan. Stakeholders, including agencies, anglers, hunters, recreational boaters and environmental groups reviewed the plan.

It provides details of management activities to be performed by the county and other agencies, and contains assessments of the lakes including descriptions of lake characteristics, water quality, aquatic plant management and recreational amenities.

It also considers the underlying causes of lake impairment, such as alterations to the natural system for flood control and impacts resulting from stormwater runoff.

The county contains more than fifty named lakes that contribute significantly to the region's economy and its natural systems. Florida has the nation's largest population of bald eagles outside Alaska, and Osceola County has the largest population of nesting bald eagles in the state.

The county is also known as an international destination for sports fishing and is the location of well know bass fishing tournaments. The county's lakes provide ample opportunity for ecotourism and recreation that, when combined, bring $7 million into the community annually.

The plan divides the county lakes into eight groups and recommends strategies to ensure the long-term health and recreational value of each system, including recommendations for improving water quality, ensuring safe and adequate lake access, promoting education and public involvement, and adopting and enforcing regulations to assure standards compliance.

The development of stormwater management strategies was characterized by the plan as "the single-most important strategy (needed) for improving water quality in Osceola's lakes."

Osceola County Public Works is currently evaluating the stormwater program to identify projects necessary to stay in compliance with numeric nutrient criteria, total maximum daily loads and federal National Pollutant Discharge Elimination System requirements.

The county adopted a stormwater assessment ordinance as a potential revenue generation mechanism in 2009, but an assessment value was never set.

The plan suggests a stormwater assessment could provide funding for water quality compliance and stormwater operations and maintenance activities, as well as lake management activities.

Creation of a municipal services benefit unit specifically for lakes management activities was suggested as an alternative to assessing a stormwater fee.

In order to function within existing agency governance criteria, the plan's recommendation are crafted to be consistent with the county's comprehensive plan, land development code, and state and federal policies for water quality, flood control and natural resource protection.

ST. JOHNS

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areas of industrialization such as the shipping channel, urban areas and highly industrialized tributaries.

The report indicates that fisheries are stable and healthy, and that threatened and endangered species are holding their own.

According to the data analyzed, most finfish and invertebrate species are not in danger from overfishing. Of the varieties commercially fished, 73 percent of the total catch consisted of blue crabs.

Species reaching their take capacity include channel and white catfish, and Penaeid shrimp. The report also indicates stone crabs have reached their maximum harvest level.

Among the endangered species, the Florida manatee, wood stork, shortnose sturgeon, piping plover, Florida scrub jay and eastern indigo snake are noted as continuing to experience negative impacts related to habitat loss, increased human interaction and loss of submerged aquatic vegetation cover.

Invasive species continue to be a problem, and although 74 such species were identified in the basin again this year, this is the first observation period over which the number of nonnative species documented has not increased.

Invasive species garnering increased attention include lionfish, Japanese climbing fern and Cuban tree frogs.

The report is now available at www.sjrreport.com and is specifically formatted to be readable by the general public.

eries, aquatic life and contaminants.

"Our study reveals some improvement in the river's health, as well as the importance of continued monitoring of the river and its ecosystem," said Dr. Radha Pyati, professor of chemistry and department chair at the University of North Florida.

Data and trends examined in the latest edition of the report indicate that nitrogen levels continue to decline from their 1997 high. The level of fecal coliform bacteria remains high in the river's tributaries with some improvement overall, including improvement in many of the tributaries that are impaired.

Total phosphorus levels declined in the basin's marine and estuarine environments, but not in the fresh water areas examined. Turbidity levels continue to remain stable.

Annual median values of dissolved oxygen concentrations in the Lower St. Johns' primary course are meeting acceptable limits, however the minimum DO values recorded over this year's data set are low enough to cause concern for aquatic life.

Among the most concerning trends reported by the researchers is a continued increase in salinity, which, in addition to increased loss of wetlands and aquatic grass bed cover, could result in a southward shift of ecological zones.

In addition, chlorophyll levels have not improved in the river proper and remain an indicator of the potential for algal blooms.

The concentration of metals detected in water collected from many of the basin's tributaries remains elevated but of those analyzed, only copper and silver were reported above water quality criteria.

Polycyclic aromatic hydrocarbons were also detected. Both metal and PAH contaminants appear to be concentrated in

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four-year veteran of Winter Haven's Natural Resources Division.

SWFWMD board appointments. Gov. Rick Scott appointed John Henslick and Kelly Rice to fill vacant positions on the Southwest Florida Water Management District's Governing Board.

Henslick, a resident of Myakka City and owner of the consulting firm Henslick & Associates, will represent Manatee County during a term from Sept. 25, 2015, to March 1, 2017.

Rice, a resident of Webster, will represent Citrus County in a term from Sept. 25, 2015, to March 1, 2019. Rice is the broker/owner of Prime Property Resources Inc., president of Physical Therapy Services of Brooksville Inc. and president of the Rice Cattle Co.

Both appointments are subject to confirmation by the Florida Senate.

Activists concerned about ecosystem impacts of PortMiami dredging

By PRAKASH GANDHI

Environmental activists are concerned about the damage the recently completed $205 million deep dredge project has done to the marine ecosystem—specifically the coral reef—at PortMiami.

The port channel was deepened by about six feet to 52 feet deep, which will allow ships sailing through the widened Panama Canal to bring cargo through Miami.

State officials defended the project and boasted about its economic benefits. Gov. Rick Scott claimed that the three-year long expansion provided about 33,000 jobs.

But activists said that several acres of reef have been lost off Miami Beach, coral has been destroyed in the Government Cut shipping channel and there has been additional damage to reefs and sawgrass from salt and sediments.

A major concern is the well-being of staghorn coral, which is listed as a threatened species under the federal Endangered Species Act. The U.S. Army Corps of Engineers has relocated about 924 other coral varieties.

A $400,000 settlement was reached to relocate staghorn from the project area. But despite that, activists claim that not enough is being done to preserve the reefs.

As work neared completion, state and federal regulators discovered that the U.S. Army Corps of Engineers and its contractor caused far more damage than expected.

In August, the National Marine Fisheries Service warned the corps that damage covered four times the area allowed in its permit.

The Fisheries Service has repeatedly asked the corps to provide a more accurate tally of how much marine life was damaged and what steps should be taken to help repair it.

The PortMiami project smothered hundreds of acres of coral reef, according to groups including Miami Riverkeeper, stretching as far as 3,000 feet from the channel. This is almost ten times the anticipated impact, they claim.

"Florida's coral reefs are a national treasure that deserve to be protected," said Jaclyn Lopez, Florida director of the Center for Biological Diversity in its St. Petersburg office.

The activists sued to force the corps to improve coral and seagrass protection, and federal environmental agencies have required the corps to take steps to monitor the sediment levels.

Meanwhile, project supporters downplayed the environmental impacts. Scott said the state would work with the corps to make sure the damage is addressed. He touted the project's benefits, saying the expansion makes it the only port south of Virginia large enough to accommodate the giant cargo ships.

Scott said the project would pump about $7 billion into the region.

Of the total cost of $220 million for the channel deepening, the state of Florida provided $112 million and Miami-Dade County contributed $108 million.

Scott announced plans to fully fund the $77 million federal shortfall for the port dredging project in March 2011. Since taking office in 2011, Scott has pumped more than $850 million in seaport improvements statewide.

"We did not wait on the federal government to fund this important project," Scott said in a statement. "We stepped up because we want Florida to be a global leader in trade."

He said the investment in PortMiami infrastructure has made Florida better positioned for continued growth. "The completion of the PortMiami deep dredge is historic for all of Florida," he said.

And, perhaps, historic for the damage it has done to the ecosystem it shares.

Regional water supply cooperative coming together in Polk County

By ROY LAUGHLIN

The formation of the Polk Regional Water Cooperative is perhaps half way completed with the goal of establishing a permanent local cooperative.

PRWC's primary purpose will be to act as a regional coordinating body to prioritize and implement alternative water supply project development in Polk County.

In late September, 34 representatives from 16 Polk County city and county government officials met and selected a chair and two vice chairs to act as officers of a Formation Committee.

Polk County's Chairman of the Board of County Commissioners George Lindsey was elected as the Formation Committee's chair with Mayor Tim Pospichal of Auburndale as vice chair and Mayor Gene Fultz of Lake Wales, as alternative vice chair.

Lindsey, Pospichal and Fultz will lead the committee for the next four to five months.

Priority tasks include completing the cooperative's charter of policies, rules and procedures; enlisting the formal membership of Polk County's municipalities; electing the permanent officers; and selecting a list of alternative water supply projects to implement or promote for funding.

Cooperative membership will be limited to elected representatives of member municipalities and Polk County government.

"We want it to be driven by elected policymakers, not technical persons or staff," said Lindsey. "(The role of the cooperative) is a public policy issue not a technical issue for city managers and utility directors."

He backed up the call for elected officials to participate by volunteering to continue his involvement. "I was honored to be elected as chair of this team and, if asked, am willing to serve when the cooperative is formed," he said.

At the September meeting, members agreed that each municipality will have one vote to establish policy and that policy must be carried by a two thirds vote of the members. Votes on specific projects may be weighted based on funding contributions.

The committee now has a set of rules with which to begin functioning and plans to have final rules and membership obligations completed by the spring of 2016.

Lindsey said that he hoped to have the organizing efforts concluded by February, ahead of the original time line of April.

A teleconference was conducted during the week after the September meeting, joined primarily by staff of involved municipalities. Their goal was to develop a list of best management practices that can be implemented by the cooperative or individual utilities to maximize conservation potential.

The group discussed six different efforts including water-saving toilet rebates; public school retrofit programs and audits to determine public school water use and conservation progress; public outreach and public service announcements; establishment of a water conservation website; distribution of water resource enforcement "courtesy letters" by Polk County Utilities to member utilities and hiring deputies for enforcement; and possible promotion of stormwater and irrigation condensate cisterns for residential use.

The technical committee will continue to meet biweekly to further the goal of preparing a draft list of alternative water supply projects. The plan is to present the list to state and local agencies and the Florida Legislature for funding, beginning no later than 2017.

The cornerstone of the cooperative's success will be buy-in by local municipalities, the benefits of which are clearly understood by some of those that supported its formation.

"For Auburndale, the big opportunity (provided to members by the cooperative) is to share the cost for future (water) demands," said Pospichal.

That cost will be substantial. The Southwest Florida Water Management District estimates the price tag for developing an additional 30 million gallons a day of water supply over the next 20 years will range between $360 million and $460 million.

The Florida Legislature and water management districts have made clear their desire to deal with regional cooperative entities when permitting and funding water supply projects. For Polk County, the cooperative will be the intermediary between funding agencies and construction contractors for water supply projects.

"What we've got working for us is the ability to bring 17 municipalities together to make this happen versus litigation between municipalities fighting for the same resources," said Auburndale City Manager Bobby Green.

Efforts to establish the cooperative date back to 2006 during the construction

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New molecular method identifies fecal contamination sources

By ROY LAUGHLIN

A team of Michigan State University researchers published results of a detailed survey of 64 river basins in Michigan based on a novel molecular biology genetic marker that characterizes human fecal contamination in rivers and lakes far more accurately than does the standard *E. coli* test.

The new method could revolutionize microbial contamination surveillance and source tracking in Florida.

According to Dr. Marc Verhougstraete, assistant professor at the University of Arizona and the research team's lead author, *Bacteroides thetaiotaomicron* has different ecological traits than *E. coli*. It is the most abundant bacteria in the microbiota of healthy human adults, is anaerobic and exhibits minimal multiplication outside the body, so its persistence in the ground and surface water is low.

It is therefore a more specific indicator of recent or proximate human fecal contamination.

Analyzing water samples from 64 river basins in south Michigan yielded a number of surprising findings and conclusions.

The researchers found that wastewater treatment plants were not a driving factor for microbial water quality in the watersheds they studied. They reported that while *E. coli* concentrations "were linked primarily to total phosphorus and potassium, *B. theta* concentrations were primarily associated with the total number of septic systems in the watershed and within a 60 meter buffer."

This seems to fly in the face of conventional wisdom, where density of septic tanks is correlated with *E. coli* concentrations in surface waters. The distinction this study makes is that the *E. coli* identified do not conclusively reflect human fecal contamination because *E. coli* persist in the environment.

Furthermore, the occurrence of *B. theta* markers, according to the authors, comes largely from poorly maintained and underperforming septic systems in the watersheds sampled.

The study is the largest and most extensive basin-scale study of microbial water quality available. In Michigan, the research team's genetic marker for *B. theta* "suggests that fecal contamination was affecting 100 percent of the studied river system."

The method to identify *B. theta* can easily be used elsewhere. It is a quantitative polymerase chain reaction, qPCR, amplification of DNA filtered from a 900 milliliter water sample.

"Results can be achieved in as little as two hours," wrote Verhougstraete, in response to an e-mail question. "This method is well accepted and any laboratory setup for molecular methods can test for *Bacteroides thetaiotaomicron*."

In the paper, the researcher noted that "comparative *B. theta* data sets are relatively small relative to available *E. coli* data, a key aspect defining reference levels."

"*Bacteroides thetaiotaomicron* was just one of 163 (primarily environmental) variables considered during this project," noted Verhougstraete.

While the quantitative result for *B. theta* from a qPCR test may not be as immediately explicit as results of GC/MS for an organic compound extracted from a water sample, the appropriate reference data can make it so.

The research points to an additional microbial test for surveillance of fecal contamination and its sources from septic systems, which are occult, nonpoint nutrient and microbial contamination sources.

B. theta, which is a specific human marker that does not propagate significantly in the environment, is more useful than *E. coli*, which may persist in surface and ground waters. All warm-blooded vertebrates foster *E. coli* in their guts and release the bacteria with their feces.

"Identifying specific sources of fecal contamination in rivers cannot be achieved using ubiquitous bacteria, such as *E. coli*," noted the authors. "Assessing water quality using solely *E. coli* may mislead water quality managers and severely limit the ability to remediate impaired waterways.

"However, microbial source-tracking markers, such as the human-specific *B. theta* marker, can provide a more refined tool to identify the impacts of nonpoint sources of human fecal pollution, which could help prioritize restoration activities that should be implemented at watershed scales."

The Florida Department of Environmental Protection is already using microbial DNA identification as a tool to screen for the origin of coliform in surface waters.

Verhougstraete said that about a decade ago, impacts of stormwater runoff on a Florida beach were confirmed using microbial genetics methods. More recently, microbial tracking to differentiate human and ruminant fecal contamination was also used in a Florida rivershed.

In a press release, DEP noted that "new laboratory tools will allow department scientists to quickly identify whether fecal coliform bacteria are related to humans, animals or other sources. The new testing method uses DNA analyses of bacteria to distinguish human waste from other sources."

Dee Ann Miller, DEP deputy press secretary, noted that the agency has performed microbial source tracking in Tallahassee, Tampa and on the St. Lucie River.

The use of *B. theta* for identifying human fecal contamination could become another method to allow water quality specialists to separate direct contribution of fecal contamination from septic systems.

The application of genetic methods to microbial source tracking seems poised to produce a new crop of useful techniques and protocols that will improve precision and efficiency of microbial surveillance of ground and surface waters.

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bubble. Lindsey said it was then that the SWFWMD realized limits to the region's groundwater supply, and Polk County found that its utility was out of compliance with some of its permit requirements.

If the water management district reduced permitted withdrawal limits as clearly seemed likely, Polk County utilities that largely served rural sections of the county would face significant supply problems.

Lindsey said that the county responded by beginning the planning process, and hired professional water utility staff to address the issues in its drinking water utility.

A broader regional planning effort began about that same time but foundered in 2008 when population growth stalled and financial circumstances couldn't support large new infrastructure projects.

In April, 2015, Polk County and the SWFWMD signed a contract to underwrite the cooperative's Formation Committee activities.

That support led to recent public outreach efforts, municipal recruitment efforts and the recent meetings.

The contract with the district offers a $10 million contribution to fund its future AWS projects if it successfully completes formation activities by the end of April, 2016.

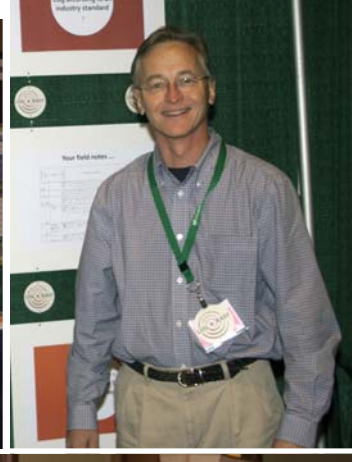
Establishment efforts for the Polk Regional Water Cooperative are well along, but not yet finished.

Polk County Utilities Director Marjorie Craig, PE, said that local government officials want to make sure that the project decision making process is transparent to the public.

If the progress made over the past three months is any indication, the cooperative will be established early in 2016, ahead of the original schedule.

"I think the process will bode well for Central Florida," said Lindsey. "I think we are on the leading edge, statewide."

Thanks for Joining Us at the 2015



FRC

From Page 1

unclear, or dependent upon established precedents. Legal counsel can provide useful guidance in those situations.

Goldstein strongly endorsed brownfield projects as both economically attractive opportunities and significant contributors to Florida's development efforts, now more important than ever in urban areas that currently have some of the highest growth rates as the economy recovers

Three presentations followed Goldstein, discussing case studies involving high resolution site mapping.

Terry Griffin, PG, senior project geologist with Cardno in Clearwater, and Roger Lamb, principal geologist, and John Sohl, CEO, both with COLUMBIA Technologies in Columbia, MD, described projects that used in-situ laser fluorescence and detection with closely spaced monitoring wells and multiple depths of sampling.

The data obtained formed a matrix of location, depth and geological data, most of which was uploaded to cloud-based storage and computation resources that quickly returned statistical and graphical data interpretation.

In case studies, areal extent, depth and relative concentrations of hydrocarbons were immediately apparent, aiding relatively rapid and effective DNAPL and LNAPL removal.

In the assessment session's final talk, Bill Davis, PhD, president of Triad Environmental Solutions Inc. in Durham, NC, described a newly developed, simple concentration and analysis technique for 1,4 dioxane.

Davis uses solid phase extraction followed by mass spectrometric analysis. The extraction process is simple, allowing simultaneous 1-4 dioxane extraction of multiple samples, followed by mass spectrometry using direct sampling with an ion trap mass spectrometer.

The analysis process takes approximately five minutes allowing a large number of samples to be handled per day. In Davis' study, a traditional sample collection method—water in a bottle—provides multiple samples for a detailed characterization of 1,4 dioxane within a contaminant plume.

The combination of new techniques and new data tools can replace the horde of field workers needed a few years ago with a few people working at a site for a couple of weeks.

Rachel Klinger, PE, project environmental engineer with Geosyntec Consultants in Titusville, described her team's ongoing remediation work to remove a substantial deposit of coal gas plant NAPL from a site in Tampa.

The highly engineered approach yielded 600 gallons of NAPL, a notable accomplishment, with removal efforts still underway.

Another noteworthy talk was a collaborative project presented tag-team by Lance Robinson, PE, principal research and design engineer with Texas-based EN Rx Inc. and Eric Arenberg, PG, principal geologist with AMEC Foster Wheeler in Jacksonville.

The project showcased a multi-screened horizontal well array the company trademarked as "Vertebrae." The horizontal wells are multi-branched and have customized, closely spaced access screens to allow sampling, in-situ detectors and subsequent treatment ports.

Robinson noted that although horizontal drilling may initially be more expensive than drilling a succession of vertical wells, if the horizontal wells can be used for both assessment and subsequent treatment, the total project cost becomes much less.

Horizontal wells need only a single wellhead that can be located out of the way of any ongoing activities at a cleanup site. He also pointed out that at most sites with a shallow water table, contamination has a highly horizontal orientation being perhaps hundreds of yards in extent but only a few feet thick.

The wells can be horizontally drilled continuously within the plume, and the port screens designed to provide closely spaced treatment reagent release. The case study showed an example of an advantageous use of horizontal wells at a remediation site.

Where contaminated sites have existing infrastructure that needs to remain in place, horizontal drilling may become a mainstay for remediation efforts.

Many of the remaining FRC technical presentations described remediation projects using enhanced methods in a familiar genre.

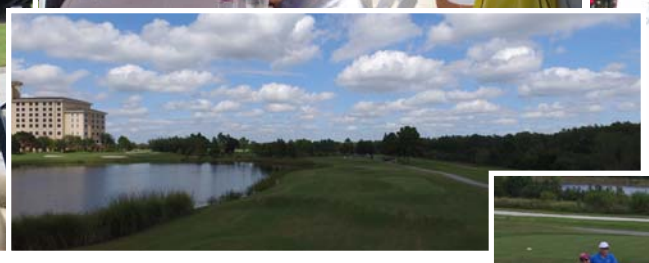
During the final session of the conference, two talks dealt with novel approaches to enhancing the use of zero valent iron, carbon sources and microorganisms to reduce chlorinated hydrocarbons.

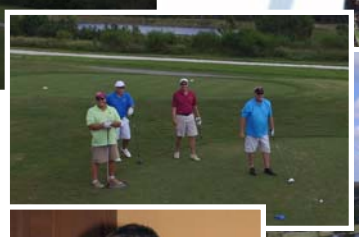
The impression left was not that more needs to be learned to make these approaches work, but how broadly applicable they can be by tweaking treatment protocols to provide microorganisms with the perfect opportunity to do a difficult job.

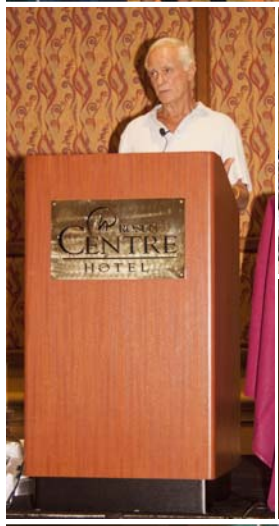
And when that doesn't work, one might try the large-scale manual approach described by Robert Kline, PE, and Anne Chrest, both environmental control technicians at NASA's Kennedy Space Center. They used a large diameter auger to remove high concentrations of trichloroethylene deposits at the site of a former missile engine maintenance facility.

Successful physical removal, treatment of the recalcitrant high concentration deposit, and return of the soil to its original location, it is hoped, will allow natural at-

Florida Remediation Conference







tenuation to complete low residual TCE destruction.

During the last decade, 1,4 dioxane has become a problematic pollutant at contaminated sites across the country. It was originally used as a stabilizer in chlorinated solvents. The EPA listed it relatively recently as a probable carcinogen, and groundwater and soil standards dropped as a result.

Because it is completely miscible in water, extraction and chemical analysis has only recently become quick and routine.

Yi Wang, PhD, director of the Pace CSIA Center of Excellence in Pittsburgh, PA, discussed using carbon and chlorine isotope mass spectrometry analysis to differentiate the source contamination deposits for 1-4 dioxane in groundwater plumes.

He showed that his method could differentiate dioxane from two different source locations on a contaminated site with as little as a three parts per thousand difference in average isotopic mass. For the remediation effort, focusing on cleaning up one source rather than two gave an effective immediate 1-4 dioxane reduction in the contaminant plumes.

Day Two's panel discussion focused on the regulatory environment for remediation in the state. Glenn MacGraw, PG, principal with Clean Asset Environmental Inc. in Tallahassee, opened the panel with a brief discussion of pertinent topics that the state Legislature is now considering in pre-session committees.

Keith Tolson, PhD, principal environmental scientist with Geosyntec Consultants in Tampa, followed with an update on recent activities of the DEP's Contaminated Media Forum. The group provides technical guidance for DEP policy on contamination standards, exposure criteria and ecological risk assessment.

His presentation was notable for presenting several representative case studies that show how outcomes can be modified by initial assumptions of target characteristics, exposure routes and other factors. This is the type of information DEP may consider when establishing standards.

Following Tolson's update, Diane Pickett, PG, administrator of the DEP's Petroleum Restoration Program, and John F. Wright, PE, chief engineer with the PRP, took the stage to provide a program status report and answers questions.

The discussion went on for more than an hour, delivering the message that the program is set to contract about $10 million in work per month, and has been doing so for the past three months.

Assessment efforts for low-scored sites is going to continue because, as Pickett noted, this is likely the quickest route to closing a substantial number of sites if assessments show minimal contamination.

A new agreement with the Florida Department of Transportation was discussed that will allow the PRP to fund remediation at sites that impinge on roads and other DOT properties.

In addition, the Advanced Cleanup Program plans another round of funding, and Pickett reiterated that it allows the bundling of sites.

With respect to the PRP's Innovative Technology Acceptance Program, Pickett said the RFP should be "on the street" by the end of October.

Compared to last year's regulatory panel discussion, the tone of the questions asked to DEP representatives was much less contentious.

The PRP has not and may not soon recover to its former size and level of work, but it has returned to a consistent level of funding, at least so far this fiscal year.

An item of good news for PRP contractors is that the selection algorithm has been tweaked again to lower the influence of bonding and encumbered contract amounts, and the PRP will rely in their stead on contractor ratings based of prior contracts with the PRP.

First successful completion order under DEP/DOT MOU

The June 2014 Memorandum of Understanding between the Florida Department of Environmental Protection and the Florida Department of Transportation outlined the circumstances under which regulatory closure can be achieved on a petroleum-impacted site where assessment and remedial activities are inhibited by a DOT right of way.

The MOU can be used for any applicable petroleum-impacted site, regardless of its eligibility for funding.

The agencies have successfully used the MOU to achieve a conditional site rehabilitation completion order through the use of institutional controls on a site located in Escambia County.

It took some time to work out the details but now that it's done, generally acceptable procedures are in place and the process should proceed more quickly. It is the first site that has run through the entire process. More sites are in the works.

The DEP is updating its Institutional Controls Procedures Guidance document. Additional information regarding applications and specific procedures for successful use of the MOU will be included in the revised ICPG, which is anticipated to be published by the end of the year.

DEP is planning internal training in the near future for site managers on how to most effectively implement the MOU.

--Contributed by Steve Hilfiker

Study on landfill methane emissions provides unanticipated results

By ROY LAUGHLIN

Recently published findings by Yale University and University of Florida investigators analyzed statistics for U.S. landfills with the results yielding several surprises.

A statistical model analysis of EPA's data for landfill loading and greenhouse gas emissions suggests that total U.S. landfill loadings are more than twice the agency's estimates.

Fermentation of organic materials in landfills emits a lot of methane, a potent greenhouse gas. Methane emissions from operating landfills account for 91 percent of the emissions from U.S. landfills.

Technology exists to improve methane trapping at operating landfills but fire occurrence must be reduced to ensure that the technology used to capture methane can be more effective, according to the researchers.

The team analyzed data on more than 850 landfills collected by the EPA between 2010 and 2013. The data followed the agency's establishment of standards for electronic data submission from landfills that emit more than 25,000 tons of greenhouse gas equivalents per year.

The researchers' statistical model yielded an estimate of 262 million tons in 2012, more than twice the 122 million tons estimated by the EPA.

The World Bank also provides estimates of waste production and theirs was much closer to that presented in the current research.

In spite of the larger landfill contribution, the research team estimated that the median life-span of U.S. operating landfills is 37 years. That means that into the foreseeable future, landfill disposal is likely to remain a dominant practice and methane production from them will continue.

It will also grow to be a dominant practice in developing countries. Their annual methane production is expected to increase sharply if their standards of living advance as projected.

The EPA's data set includes both operating and closed landfills, but operating landfills are the dominant emitters. A large percentage of U.S. methane emissions from landfills occurs from operating landfills in spite of gas collection systems at both open and closed landfills.

The researchers suggest that additional efforts are clearly warranted to improve methane collection from operating landfills. Those could include temporary membranes to improve methane trapping and modification of landfill gas extraction methods to reduce their contribution to fires.

Landfill fires are a surprisingly common occurrence, with 839 unique landfill fire incidents reported in the U.S. annually between 2004 and 2010. In 2010, 402 of 869 landfills examined had at least one fire incident. 151 of those had more than one fire incident during the seven-year reporting interval.

The research also presented other surprising findings. Landfills that recirculate leachate water, a practice often said to increase methane production, exhibited a four percent lower efficiency of landfill gas collection compared to landfills that do not recirculate leachate.

Landfill gas collection efficiency is 17 percent higher in closed landfills compared to open landfills.

Paradoxically, methane content in collected landfill gas was about six percent lower from closed landfills than from open landfills. Although relatively small, the difference is statistically significant at the five percent level.

Both factors taken together contribute to the finding that methane emissions from open landfills dominate total landfill methane emissions. In the U.S., landfill methane emissions are the third-highest source of atmospheric methane emissions, contributing about 18 percent of the country's total methane emissions.

The authors concluded their paper by noting that continued high landfill methane emission rates and the substantial expansion of landfill use in developing countries comprise a substantial source of global methane emissions.

Attempts to successfully manage greenhouse gas contributions to mitigate climate change will necessarily have to include some effort to reduce methane emissions by trapping it so that it can be combusted or used beneficially.

Outcome of Wekiva nutrient study expected to impact restoration plan

By BLANCHE HARDY, PG

The Florida Department of Environmental Protection hosted a meeting late this summer to discuss its latest water quality restoration plan for the Wekiva River, Rock Springs Run and the Little Wekiva Canal. The often controversial Wekiva Basin Management Action Plan has been under development and listed as "pending" by the state since 2009.

"The department is dedicated to achieving real water quality improvements by working alongside stakeholders to craft an effective restoration plan," said Tom Frick, director of the DEP's Division of Environmental Assessment and Restoration.

To point, another new study intended to determine if septic tanks are a source of the Wekiva's nutrient problems was announced, though details of the study are still emerging.

"My understanding is that the study will look at nutrients that are being transported from the septic systems to the underlying soil and groundwater," said Jim Adamski, PG, vice president of Friends of the Wekiva. "Similar studies have been done in other parts of the country. Hence, I don't think the study is completely unique, but may be unique to Central Florida."

DEP released the Wekiva draft restoration plan in February, 2013. And although the restoration plan continues to languish, numerous efforts have been made by local governments to address excess nutrients present in the basin.

The projects include stormwater treatment, capture and reuse efforts; agricultural best management practices; wastewater reclamation and reuse projects; sewer conveyance upgrades and installation of wastewater collection systems to areas previously using septic tanks.

DEP records indicate that over a dozen projects have been undertaken to replace septic tanks with wastewater collection systems in Altamonte Springs, Orlando, Apopka, Mt. Dora and in the Wekiva Springs State Park.

Significant restoration efforts are already in the works from Wekiva Basin Working Group member organizations in advance of formal adoption of the state BMAP.

It is anticipated that implemented and currently planned actions could amount to reductions in annual nutrient pollution to the Wekiva River Basin of as much as 423,000 pounds of total nitrogen and more than 90,000 pounds of total phosphorus.

"The (nutrient) numbers would be beneficial in quantifying the contribution of local septic systems to the spring," Adamski said, in consideration of the new Wekiva study.

DEP hopes the new study will eliminate some of the controversy associated with previous studies and activities. As recently as last year, an $8 million effort to extend wastewater collection lines to residences in the Wekiva Springs area resulted in public opposition from many area homeowners.

Residents were concerned about the estimated cost of $10,000 or more for septic tank replacement.

Calendar

November

NOV. 2-6 – Course: Backflow Prevention Assembly Tester Training and Certification, Destin, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 4 – Workshop: Florida Lake Management Society Fall Workshop. Contact John Walkinshaw at wrc.fl@verizon.net.

NOV. 4 – Course: Asbestos Refresher: Management Planner, Gainesville, FL .Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 4 – Course: Asbestos Refresher: Inspector, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 5 – Course: Asbestos Refresher: Contractor/Supervisor, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 5 – Meeting: The Nature-Technology Nexus Environmental Roundtable for EHS managers, Melbourne, FL. Presented by the Florida EHS Roundtable. Call (321) 543-4414 or visit www. ehsround table.org.

NOV. 5-6 – Course: Backflow Prevention Recertification Lake Buena Vista, FL .Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 12 – Meeting: 2015 Annual Business Meeting of the Florida Association of Environmental Soil Scientists, Monticello, FL. Contact Travis Richardson at trichardson@sjrwmd.com or visit www.faess.org.

NOV. 13-14 – Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Venice, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 14-15 – Course: Backflow Prevention Recertification, Bradenton, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 14-15 – Course: Backflow Prevention Recertification, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 16-19 – Symposium: National Working Waterfronts & Waterways Symposium, Tampa, FL. Produced in partnership with Stern to Stern: Boating and Waterway Management in Florida. Call (352) 392-5930 or visit http://conference.ifas.ufl.edu/nwwws.

NOV. 16-19 – Conference: 2015 AWRA Annual Water Resources Conference, Denver, CO. Produced by the American Water Resources Association. Call (540) 687-8390 or visit www.awra.org/meetings/denver2015.

NOV. 16-20 – Course: Asbestos: Contractor/Supervisor, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 17 – Course: Initial Training Course for Spotters at Landfills, C&D Sites and Transfer Stations-8 Hour, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 17 – Course: Refresher Training Course for Experienced Solid Waste Operators-4 Hour, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 17 – Course: Refresher Training Course for Experienced Solid Waste Operators-8 Hour, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 17-18 – Course: Initial Training Course for Transfer Station Operators and Materials Recovery Facilities-16 Hour, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 17-18 – Course: Water Reclamation & Treatment Processes, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 17-18 – Course:Refresher Training Course for Experienced Solid Waste Operators-16 Hour, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 17-19 – Course: Initial Training for Operators of Landfills and Waste Processing Facilities, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 17-19 – Course: Initial Training Course for Landfill Operators and C&D Sites-24 Hour, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 17-20 – Symposium: 35th International Symposium of the North American Lakes Management Society, Saratoga, NY. Call (608) 233-2836 or visit www.nalms.org

NOV. 19-20 – Course: Backflow Prevention Recertification, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 21-22 – Course: Backflow Prevention Recertification, Key West, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

NOV. 29 – DEC. 3 – Conference: FSAWWA Fall Conference, Orlando, FL. Presented by the Florida Section of the American Water Works Association. Call (407) 957-8448 or visit www.fsawwa.org.

December

DEC. 1-3 – Course: Respiratory Protection, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 3-4 – Conference: FLERA Winter Symposium 2015, St. Petersburg, FL. Presented by the Florida Local Environmental Resource Agencies Inc. Call (248) 933-1069 or visit www.flera.org.

DEC. 3-4 – Course: Backflow Prevention Recertification, Fort Myers, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 5-13 (weekends) – Course: Backflow Prevention Assembly Tester Training and Certification, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 5-6 – Course: Backflow Prevention Recertification, Jacksonville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 5-6 – Course: Backflow Prevention Recertification, Bradenton, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 7-11 – Course: Backflow Prevention Assembly Tester Training & Certification, Lake Buena Vista, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 7-8 – Course: Backflow Prevention Recertification, Altamonte Springs, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 8-10 – Course: Introduction to Electrical Maintenance, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 8-9 – Course: Initial Training Course for Transfer Station Operators and Materials Recovery Facilities-16 Hour, Plant City, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 8 – Course: Initial Training Course for Spotters at Landfills, C&D Sites and Transfer Stations-8 Hour, Plant City, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 8-9 – Course: Refresher Training Course for Experienced Solid Waste Operators-16 Hour, Plant City, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 8 – Course: Refresher Training Course for Experienced Solid Waste Operators-8 Hours, Plant City, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

DEC. 8 – Course: Refresher Training Course for Experienced Solid Waste Operators-4 Hours, Plant City, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 9-11 – Conference: 2015 FSA Winter Conference, Orlando, FL. Presented by the Florida Stormwater Association. Call 1-888-221-3124 or visit www.florida-stormwater.org.

DEC. 10-11 – Course: Backflow Prevention Recertification, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 10-11 – Course: Backflow Prevention Recertification - Destin, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 11-12 – Course: Backflow Prevention Recertification, Venice, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

DEC. 17-18 – Course: Backflow Prevention Recertification, West Palm Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit www.treeo.ufl.edu.

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The *Florida Specifier* welcomes columns, articles and letters to the editor on any subject or issue pertinent to the environmental, regulatory and technical areas the newspaper covers. We reserve the right to edit all submissions for newspaper style and publish submissions on a space-available basis only. The opinions expressed on this page are those of the authors.

Energy discussions highlight Florida's unique opportunities, challenges

By ROY LAUGHLIN

Florida lags behind other states in implementing a comprehensive sustainable energy policy. Indoor energy use, primarily for air conditioning, is one of the biggest pieces of the state's energy pie.

Until recently, conventional wisdom held that indoor air conditioning and ventilation is so essential that high energy costs are a fact of life for the Florida lifestyle.

Or maybe not. This summer, a panel discussion about Florida's sustainable energy prospects at the American Institute of Aeronautics and Astronautics Propulsion and Energy Forum presented a very different and more optimistic scenario.

The panels's speakers focused on energy efficiency in buildings as the most significant unit of energy sustainability. Their message was that prospects for a significantly more energy-sustainable future are achievable and, with leadership, can be accomplished within a couple of decades.

Energy efficiency

Jon Ippel, sustainability director with the city of Orlando, began the discussion by providing national and state statistics. Energy use in U.S. buildings is the third largest energy consumption sector on earth and accounts for nearly 40 percent of all energy use in the country.

In Orlando, buildings account for 76 percent of the city's greenhouse gas emissions.

Clearly such staggering numbers are surrogates for massive money flows from consumers to the energy sector, one that could finance reliable lower-cost alternatives.

"We need an 'ecosystem of programs' to enhance efficiency," said Ippel. Efficiency is key because "renewable energy becomes more cost-effective."

He noted that Orlando was second in the Southeast U.S. behind Atlanta as the region's most energy efficient city. Orlando benefits from its unusual characteristics with respect to buildings—over 50 percent of Orlando residents live in apartments, which offer opportunities to enhance energy efficiency.

Six percent of Orlando's buildings, about 1,200 buildings, comprise more than 57 percent of the total square footage in the city. Initial efforts of his Green Works Orlando program reduced energy consumption for electricity and gas by 55 percent within the building sector.

But in spite of the progress, challenges remain. Buildings in the lowest energy efficiency quartile use four times the energy for space heating and air-conditioning as do the best performing buildings.

For the least energy-efficient retail buildings, the use is eight times the most efficient buildings.

To put that impact in perspective, he said that Florida's lack of a statewide energy policy has huge economic consequences. Because Florida has no significant fossil fuel extraction, it sends $60 billion annually out-of-state to buy oil and gas.

About $23 billion of that is used to generate power. Statewide spending for energy efficiency is a scant $123 million. If increasing energy efficiency made renewables such as solar and wind power viable contributors to Florida's energy mix, the financial benefits would be immense.

Although new technologies are part of his ecosystem of solutions, building energy use benchmarking and auditing is an equally effective technique that can lead to increases in energy efficiency.

Orlando's 55 West Apartment building is part of the city's Green Works Orlando Program that bears out the effectiveness of audits so that "at the end of the day, owners and tenants are able to compare" their energy use and energy efficiency.

Energy Star Portfolio Manager, software available from the U.S. Environmental Protection Agency, provides energy and water benchmarking and auditing capabilities. It's an open source product and available to anyone who wants to use it.

Ippel said that in Orlando, energy star buildings get premium rental prices and have higher utilization rates.

For most of the components of the Green Works Orlando program including food systems, solid waste management, water, livability, transportation as well as energy, the time frames for the program's goals are within the next 15 years, not generations away.

The program, which began in 2012, is well underway and already has successfully passed substantial milestones in some categories. Success with reaching others in the next three years is likely.

Separating dehumidification from cooling

The second panelist, Saeed Moghaddam, PhD, an assistant professor in the University of Florida's Department of Mechanical and Aerospace Engineering, discussed a promising hybrid technology that he and his research team have developed that is far more efficient than current vapor compression air conditioning to reduce humidity in Florida's buildings.

The process traps water vapor using a salt solution infused through thin panels made of a vapor permeable membrane.

In Florida's high humidity climate, removing water from the air is the primary energy cost of air conditioning. Water vapor contains latent heat, the heat that caused it to evaporate in the first place. When water vapor condenses, it releases most of that absorbed heat to the cooling coils of vapor compression air-conditioners.

In Miami, it takes seven times as much energy to remove humidity and its latent heat of condensation while cooling a building, compared to the energy to change the temperature of the air. When dehumidification is separated from cooling, the energy efficiencies have the potential to become huge in large buildings.

Moghaddam's system uses a lithium bromide salt solution infused between Teflon membranes with one nanometer pore size. Water vapor passes through the membrane and reacts with the salts in it. As a liquid, it will not pass back through the membrane.

The salt solution circulates to an external diffuser that releases water vapor outside the building upon heating the solution. This process is much less energy intensive than the usual piston-based vapor compression air-conditioning system.

When the water condenses and combines with the salt, the latent heat is released, as is the case on an air conditioner cooling coil. Its temperature, typically between 25-50° C, makes it a source of hot water or heat to produce hot potable water.

Moghaddam said that in theory, a building could obtain more energy by tapping this latent heat.

During discussions that followed the presentations, Moghaddam noted that lithium bromide is an expensive material, but that others such as ionic liquids, which are much less expensive, are being evaluated as a substitute with promising results.

It is probable that a membrane-based dehumidification system would be installed in large commercial buildings or hotels initially.

Experience may lead to effective miniaturization for single-family residences and smaller commercial spaces.

Virtual energy storage

Regardless how much wind and solar energy may contribute to U.S. electricity production, no one envisions abandoning the electrical grid. Renewable energy sources, however, pose unique challenges matching available energy to demand.

The panel's third speaker, Prabir Barooah, PhD, associate professor in the University of Florida's Department of Mechanical and Aerospace Engineering, described his concept and applications on "smart grid research" to modify energy demand in large buildings.

His goal is to reduce a building's power consumption when the grid's demand fluctuates sharply, in a matter of minutes as is sometimes the case, without substantially impinging on activities by the building occupants.

"The power grid must be balanced between supply and demand down to the microsecond," he said, "Efficiency is not enough" when you want to use renewable energy sources that are sometimes intermittent, and when supply is not under a utilities direct control.

Barooah's solution is to use software in machine controllers, coordinated through the web by grid operators, to temporarily stop or reduce electricity use for a few minutes at a time. This interval gives utility operators time to level grid demand with supply.

For example, air conditioning compressors and water heaters could be turned off, and ventilation fans could be slowed for 10 to 20 minutes without a building's occupants likely to notice.

A building's thermal mass slows substantial temperature changes, and humidity levels would change imperceptibly in such a short interval.

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NPG paper on water supply, population growth sure to open some eyes

By BLANCHE HARDY, PG

Environmental scientist, wildlife ecologist and natural resources planner Leon Kolankiewicz has written a compelling paper on the nation's water supply, *Dying of Thirst: Population Growth, Climate Change Aggravate Water Shortages*, published by Negative Population Growth Inc.

Beginning with the composition of the water molecule and progressing through a staggering volume of facts on the planet's water supply and how life uses it, the paper is as compelling as it is disturbing.

Kolankiewicz opens with a positive, noting that "the Earth is blessed with an unfathomably enormous volume of water: 332,500,000 cubic miles to be exact. That's equal to 250 million cubic yards for each of the 7.3 billion inhabitants of the planet, or about 70,000 Olympic sized swimming pools."

He quickly breaks that seemingly vast volume of water into its quality and situation—only three percent of the water is fresh and, of that three percent, 70 percent is frozen as ice in places such as Iceland and Greenland.

The author notes that the available fresh water isn't sufficient to meet the demands of 7.3 thirsty human beings with ever increasing claims on the available supply.

Surprisingly, water consumption in the U.S. decreased between 2005 and 2010, even though population increased by five percent, or 10 million inhabitants.

Dying of Thirst reports that in 2005 over a thousand gallons of water per person per day was withdrawn in the U.S. He explains that every incremental increase in population does not necessarily equate to an incremental increase in water consumption.

"In addition to population size, economic structure and level of activity, water conservation, reuse and efficiency measures all have a bearing in determining total water consumption," he notes.

The paper provides details of water use by sector including thermoelectric power generation, irrigation and municipal supply and provides data on water use trends over the past half century.

It also describes how the impact of these trends and human alteration of the natural environment have resulted in the loss of greater than 123 species of freshwater fauna in North America since 1900.

The percentage of wetlands lost by state in the U.S. from the 1780s to 1980s is graphically displayed. In Florida, a relatively newly populated state, 46 percent of wetlands are now gone. In California, 91 percent of the state's wetlands are gone.

The paper provides the reader with the details needed to understand its final topic, the impact of climate change on water supplies, as predicted in the 2014 U.S. National Climate Assessment performed on behalf of the U.S. government.

The assessment was performed by a team of more than 300 experts under the guidance of a 60-member National Climate Assessment and Development advisory committee. This is the largest and most diverse group ever assembled to undertake a U.S. climate assessment.

The Southeast U.S. is one of the regions most likely to be adversely impacted. Kolankiewicz characterizes the situation as "a double whammy: many more people exerting greater demands on a constrained, diminished water resource."

Reclaimed water now flowing to Boca West Country Club, common areas

By BLANCHE HARDY, PG

Boca Raton City Council members approved a 20-year agreement to provide reclaimed irrigation water for the Boca West Country Club's four golf courses and master association common areas.

The September agreement allowed reclaimed water to flow to Boca West in October.

With the addition of the new reclaimed water customers, the city is distributing all of the water it produces—and well in advance of the requirement to do so.

In addition to the new source of revenue, city of Boca Raton Operations and Environmental Compliance Manager Lisa Wilson-Davis noted that they are now a 100 percent reuse facility.

To comply with its consumptive use permit and other criteria, the city's Utility Services Department expanded its water reclamation facility a few years ago to increase its reclaimed water production capacity.

The city council subsequently adopted an ordinance last year creating a reclaimed water use zone within their utility service area.

Certain users within the zone including golf courses are required to connect to the city's reclaimed water distribution system and use the reclaimed water for their irrigation.

The agreement between the entities—the city and the two Boca West entities accepting the new reclaimed water supply, the master association responsible for the Boca West Lake System and the Boca West residential and golf community—guarantees delivery of in excess of 2.18 million gallons of reclaimed water on any given day within a 24-hour period.

Each entity is responsible for design, construction, operation and maintenance of the water distribution systems on its end of the designated point of delivery between the city and Boca West.

Boca West retains responsibility for permits and signage related to the management of the Boca West Lake System, including permits from the Southwest Florida Water Management District and similar agencies such as the Lake Worth Drainage District.

Prior to acquiring the reclaimed irrigation water supply, the association had diverted surface water from the Lake Worth Drainage District's E-2E Canal and the country club golf course diverted surface water from the Boca West Lake System. Surface water withdrawal for irrigation may still be necessary during drought conditions.

After exempting Boca West from paying the 25 percent surcharge required for water supplied outside the city limits, the city anticipates the new Boca West revenue sources will add $310,000 per year to city coffers.

In addition to the financial benefit, the reclaimed water supply expansion benefits the surrounding environmental communities.

"(The) use of reclaimed water has many benefits," said Wilson-Davis. "Environmental benefits include a savings of approximately 4.745 billion gallons of water a year to the regional system and the elimination of treated wastewater discharge to the Atlantic Ocean.

"Also, our customers now have a renewable source of water for irrigation that is independent of rainfall and available during droughts."

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Barooah characterized managing a building's flexible electricity demand cybernetically over the web as "virtual energy storage."

In his test building, Pugh Hall at the University of Florida in Gainesville, cybernetically controlling machinery allowed extraction of the equivalent of a kilowatt of energy through air-conditioning and ventilation over a 10-minute interval.

Barooah's idea and implementation through control, communication and decision-making software is in its early stages but the technological base is largely in place. He noted that many large machines have embedded programmable controllers to which a few lines of new code could be added.

In other cases during the normal replacement cycle, new fans and compressors with controllers with this capability could be installed. What is still needed, he said, is the software to manage communication over the web.

In addition, the equipment's long-term mechanical resistance to variable loads needs to be evaluated to ensure that electricity management does not adversely shorten its useful life span.

Barooah said his pilot tests give no indication that cybernetic control shortens the useful life of compressors and other motors, but experience over the long term is needed for verification.

The panel discussion at the forum presented achievable goals that are now or soon to be technologically available and would provide substantial payback of any investment in a short period of time.

Ippel noted that in 2005, six percent of Orlando's buildings were Energy Star buildings. In just a decade, the number of Energy Star buildings rose to 36 percent, demonstrating that substantial progress can be achieved rather quickly.

Orlando's experience and the efforts of Florida's university researchers are providing promising opportunities to further advance energy sustainability for Florida buildings.

NOAA awards grant to increase awareness of microplastics in ocean

By ROY LAUGHLIN

Northeast Florida Sea Grant Extension Agent Maia McGuire recently received a National Oceanic and Atmospheric Administration Marine Debris Program grant to raise the awareness of microplastics in the ocean.

The grant will fund the creation of a statewide citizen science initiative, the Florida Microplastic Awareness Project.

The initiative will focus on microplastics and promote several specific efforts. One will be to train volunteers to collect water samples and analyze them for the presence of microplastics.

McGuire will be joined by 15 other training coordinators from the University of Florida's Institute of Food and Agricultural Sciences and Sea Grant extension faculty covering all of Florida's coastal counties. They will teach citizen volunteers how to collect and detect plastic in water samples. The training sessions are expected to begin in November.

The sampling and analysis is not intended to provide a quantitative estimate of plastics in Florida coastal waters but rather to show that microplastics are present throughout Florida's marine and estuarine waters.

That will show that the problem is local, which should encourage people to reduce their use of microplastics and avoid practices that introduce them into the ocean.

The initiative will also encourage people to properly dispose of any plastic used. People can also choose to use personal care products that do not contain polyethylene, a specific type of microbead found in some toothpastes, deodorants, makeup, body washes and facial scrubs.

McGuire advises readers who want to check for microplastics in products such as toothpaste to check the labeling on both the tubes and boxes. It may be listed on one but not both.

Consumers concerned about microplastic pollution may wish to consider products with baking soda, a substitute for microplastics in toothpaste.

The project has established an informational website and plans to prepare educational exhibits and conduct workshops.

Volunteers' microplastic assessment data will be entered into a Google maps-based database that will show the concentration of microplastics in Florida waters.

Microplastics are small pieces of plastic less than five millimeters in size—the size of a pencil eraser. Some arise from the physical abrasion and breakdown of plastics discarded in the ocean.

They can be composed of polyvinyl chloride, polycarbonate, polyethylene, polypropylene, polystyrene or other forms of plastics.

Microfibers are another large category of microplastics. They originate when synthetic fiber fabrics are laundered and largely consist of polyester, nylon and other petroleum-based fibers.

Most of the plastic that has been added to the ocean since the age of plastics began over 60 years ago are thought to still be there, in some form or another.

There is no method currently available to remove microplastics from the ocean effectively. The best option to address the pollution issue is to reduce the massive input, an effort that McGuire's NOAA grant specifically endorses.

The project will be funded initially for two years, but McGuire hopes to have continuing support past the initial grant stage.

Study underway to determine environmental impact of septage land application

Staff report

State officials started work on a study of land application of septage—partially treated sludge from septic tanks. The study is being conducted by the Florida Department of Environmental Protection, the state Department of Health and the Florida Onsite Wastewater Association.

It will evaluate potential nutrient impacts to groundwater at typical septage land application sites that have operating permits with the Department of Health.

The study includes 12 sites out of about 90 such permitted sites in the state. The study sites are in Levy, Marion, Hernando, Putnam, Hillsborough and Polk counties.

DEP Deputy Press Secretary Dee Ann Miller said the 12 sites are of average size, with average septage loading rates, and represent a variety of soil types. She said groundwater monitoring parameters include nutrients, chloride, boron, bromide, and nitrogen isotopes.

These parameters were selected to help evaluate the influence of septage application on groundwater quality and to help distinguish between influence from septage and other potential nutrient sources in the sites' vicinity.

The results of the study will be considered by the Legislature to "inform any determination they may make regarding a ban on septage, which the implementing bill currently delays until June 30, 2016," Miller said.

FEDFILE

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Hoover's Dike's 20 water control structures along Lake Okeechobee's southern perimeter that have contracts for replacement.

When construction on this one is complete, all water control structures between Belle Glade and Port Mayaca will have been replaced or upgraded to prevent potential risks of dike failure.

Since 2007, more than $500 million has been spent to upgrade the Hoover Dike.

Corps awards second contract for Kissimmee restoration. BCPeabody Construction Services Inc. of Tampa won a $4.7 million construction contract from the corps.

The company will backfill portions of the C-38 Canal to restore the hydrology and habitat along the Kissimmee River to pre-channelization conditions.

Backfilling will interrupt Kissimmee River navigation on 1.5 miles of the channelized Kissimmee River south of the U.S. Highway 98 bridge. The interruption is expected to last about a year during which time navigation through the construction zone will be closed.

Two additional construction projects are planned for the Kissimmee River restoration project—the Reach 2 Backfill and the S-69 Weir. Construction contracts are expected to be awarded within the next two years.

The entire Kissimmee River restoration project is expected to be completed by 2019. It will restore 40 square miles of the river's flood plain, including 20,000 acres of wetlands and 44 miles of historic river channel.

Everglades stormwater construction project. Barnard Construction of Barnard, MT, received a $197 million contract from corps' Jacksonville District to construct the reservoir component of the Indian River Lagoon–South C-44 Reservoir and Stormwater Treatment Area in Martin County.

The project involves construction of a 3,400-acre reservoir up to 15 feet deep with a capacity of 40,600 acre-feet of water.

The project includes a 35,000-foot-long western reservoir perimeter canal running parallel to the reservoir's northern, western and southern embankments. The perimeter canal will carry surface water runoff and seepage flow from the embankment's internal drain and the trench drain system.

The canal will return water to the reservoir via a 50-foot-wide spillway into the intake canal. That control structure is already built.

Bernard Construction will also build a similar 15,000-foot-long eastern reservoir perimeter canal.

The contract calls for a reservoir discharge tower structure with three slide gates capable of releasing 1,100 cubic feet of water per second through two culverts to the system's discharge canal. This structure's usual flow will be 600 cfs but could be up to twice that when needed.

The contract also calls for construction of two miles of discharge canal to the Eastern Stormwater Treatment Area Collection Canal. Several road culverts and boat ramps are also included in planned construction.

Some of the massive treatment area and reservoir construction has already begun with funding from the South Florida Water Management District including the discharge canal, pump station and STA.

The reservoir, the first construction effort of the Indian River Lagoon–South project to be funded by the federal government, will capture local runoff from the C-44 basin and result in the creation of 3,600 acres of new wetlands.

The project's goal is to reduce nutrient loading to the St. Lucie Estuary and maintain the salinity level of the Lower Indian River Lagoon.

Construction is expected to be completed in 2020. Two years of operational testing will follow.

A tale of two properties: The value of herbicides for longleaf pine growth

By ARLO KANE

Every once in a while, I run into landowners who are opposed to herbicide use. Most of the time, if I provide them with some basic information, they become more comfortable with using herbicides to help manage the resources on their properties.

However, some will never be comfortable. But that's okay; they just need to understand that the growth of their longleaf pine may be delayed for quite a while or they might not survive at all.

In 2004, the Florida Fish and Wildlife Conservation Commission's Landowner Assistance Program began working closely with the U.S. Department of Agriculture's Natural Resources Conservation Service on longleaf pine restoration.

One of our first properties was located in the sandhills of Calhoun County on some of the poorest quality soils in Florida. The site was suitable for only longleaf or sand pine.

The landowner had just cut sand pine off the property and wanted to convert the site to longleaf to benefit bobwhite quail. Although an herbicide treatment was recommended for site preparation, the landowner decided his only site preparation work would be a prescribed burn.

Four years later, the neighbor on the south side of the same highway—with the same soil type—cut his sand pine and decided to re-plant with longleaf. His site preparation did, however, include an herbicide treatment that was followed by a prescribed burn.

For the last 10 years, I have regularly traveled the road between these two properties and it appears that the herbicide treatment done during site preparation on the southern property has made a big difference.

After 10 years, the northern property that was not treated with herbicide has trees that are just now reaching six-feet in height.

For many years, the trees remained in the grass stage. Too much competition from turkey oaks kept the trees from initiating height growth.

The trees on the southern property reached 20-feet in only four years.

Most people opposed to herbicides for site preparation are influenced by media bias on the subject.

First of all, most negative articles about herbicide use are focused on specific agricultural practices where herbicides are used every year and sometimes multiple times a year.

In forestry, herbicides are applied once, maybe twice, over a 20-30 year time frame. The impact to fish and wildlife—or the vegetation for that matter—is minimal and temporary.

Yes, the effect on vegetation is temporary. All you are trying to accomplish is to give your longleaf a chance to get established and give them a one-year head start against the competition.

Longleaf does not tolerate competition in its first year of establishment. Woody and herbaceous plants will reinvade the site over time and many important wildlife plants such as legumes are not affected when using the proper herbicides.

Picking the right herbicides for the job is important. Talk with your consultant or contractor about what herbicides they are using and what plants could be affected.

One of the biggest problems we see is the use of high concentrations of glyphosate for site preparation. Glyphosate is a contact herbicide used mainly to cause browning of the leaves so you can tell where the herbicide was sprayed and to treat some of the herbaceous component.

It is not very effective at controlling hardwoods.

However, when used in the high concentrations that are now being recommended, 96 ounces per acre, it can kill wiregrass.

Wiregrass is one of the most important fuel sources for prescribed burning. It's the first herbaceous material to dry out and ignite in the morning and carry fire across the forest.

The problem is that it doesn't reproduce very well, or at all in most cases, and once it is destroyed by herbicide, it will not reinvade the site like most other plants. This can hinder your ability to prescribe burn your longleaf in the future, especially in the sandhills.

> The bottom line is that herbicides are a critical part of site preparation for longleaf planting. They can help with survival and growth of your young longleaf.

The bottom line is that herbicides are a critical part of site preparation for longleaf planting. They can help with survival and growth of your young longleaf.

Just make sure you talk to your consultant or contractor about what herbicides they are using and ask them what plants they are targeting.

And be involved. You will enjoy the process of growing a new forest more when you are actively involved in managing your property.

Arlo Kane is the northwest region conservation planning coordinator for the Florida Fish and Wildlife Conservation Commission.

Classified Advertising

FRC 2015 charity event sets donation record

FRC 2015 Charity Golf Tournament sponsors and players, plus FRC conference attendees set a new standard this fall, donating a record $29,166.43 to the Orlando-based Yellow Brick Road Foundation.

The goal of the foundation is to increase the exposure and awareness of congenital heart defects, the world's most common and deadly birth defect, while providing support to families of hospitalized children with CHDs.

CH2M led the way as the 2015 Tournament Signature Sponsor. Other major contributors included Alpha-Omega Training & Compliance, Advanced Environmental Laboratories, Lewis Environmental, Clean Earth and U.S. Environmental Services.

The FRC charity event has now raised well over $100,000 for Florida-based charities over the past six years.

Jim Cohen, principal with Rainmaker Group Consulting, served for the past two years as chairman of the charity committee and Jennifer Belmore, vice president with Carbon Service and Equipment Co., filled the role of committee co-chair and on-site tournament operations manager.

Mobile Irrigation Lab program pays dividends in water conservation efforts

By PRAKASH GANDHI

State agricultural and environmental officials lauded a Mobile Irrigation Lab program that's helping to save millions of gallons of water annually.

The program is a partnership between the Florida Department of Agriculture and Consumer Services, the five state water management districts, the U.S. Department of Agriculture's Natural Resources Conservation Service and the agricultural community.

The program helps producers improve irrigation efficiency by providing free system evaluations and on-site education.

State Agriculture Commissioner Adam Putnam said Florida's agricultural community is increasing water conservation productivity thanks to the mobile lab program's modern technology and techniques.

"Only through increased efficiency and conservation can the needs of Florida's diverse water users be met," Putnam said in a statement. "And Florida agriculture is doing its part."

The labs have been operating throughout Florida for more than 16 years. Currently, there are 17 mobile irrigation labs providing services in 66 of the state's 67 counties.

Each mobile lab consists of a one- or two-person team, a vehicle and field equipment.

The lab services are free and provide expertise in analyzing irrigation services and educating property owners on how to improve water conservation and usage.

The labs provide recommendations on improving existing irrigation systems and equipment, and educate customers and the public on water conservation, irrigation planning and irrigation management.

The mobile lab systems originally targeted agricultural water users, but they now include assistance for residential and commercial water users.

Some labs also help farmers by identifying water quality improvement opportunities available through best management practices. More than nine million acres of Florida farms and ranches are enrolled in the best management practices program.

State officials said that landscapes, nurseries and golf courses have benefited greatly from the advice and education provided by the labs.

Between July 1, 2014, and June 30, 2015, the Mobile Irrigation Lab program conducted more than 1,000 evaluations. This helped save another 1.2 billion gallons of water.

Since 2004, more than 12 billion gallons of water a year have been saved from more than 8,100 evaluations conducted by the mobile irrigation labs.

The need for a higher level of water conservation is highlighted in water supply plans developed by the state's water management districts, DEP and the Florida Department of Agriculture and Consumer Services that show a 1.2 billion gallon per day water shortfall by 2030.

NOTES

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ber of the government and regulatory team in their Tallahassee office.

She brings more than 25 years of experience in the fields of environmental and administrative law, with an emphasis on air quality, climate change and energy issues.

Jones Edmunds and Associates Inc., a Florida-based engineering and environmental sciences consulting firm, and its construction engineering and inspection subsidiary JEAces, have promoted three employees to vice president. Greg Perrine, PE, is now a vice president with Jones Edmunds and David Weintraub, PhD, PE, and Stephen Haney, PE, now serve as vice presidents with JEAces.

SJRWMD approves cost-share program

Staff report

The St. Johns River Water Management District approved a new $5 million cost-share program that will reward rural communities and innovative projects that support the district's missions.

The district's board approved selection criteria and funding for the program, approved nearly $25 million in cost-share funds and directed district staff to expand the program to target these communities and projects.

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