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May 2014

Volume 36, Number 5

## Suitable site 5

The Hernando County Utilities Department will start their search again for property on which to develop a drinking water treatment complex after the county commission denied the necessary rezoning on their targeted site.

## DeLeon Springs cleanup 11

The final stage of a three-decades-old cleanup effort to address petroleum contaminated soil and groundwater in DeLeon Springs is scheduled to begin in late April.

## IRL projects 16

Surface water quality in the troubled Indian River Lagoon will get a boost from two new projects. Groundbreaking took place earlier in the year for the new Indian Hills Stormwater Treatment and Recreation Area. In addition, St. Johns River water managers will expand a stormwater park in southern Brevard County.

## Port plan approved 19

Federal authorities approved plans in early March for the deepening of the Port Everglades shipping channel.

## Flatwoods Initiative 20

The Flatwoods Initiative is expected to return sheet water flow to Charlotte Harbor as it existed before all the new highways and railroads were constructed.

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### Got a story lead?

Got an idea for a story? Like to submit a column for consideration? Fire away. And don't forget to fill us in on your organization's new people and programs, projects and technologies—anything of interest to environmental professionals in the state. Send to P.O. Box 2175, Goldenrod, FL 32733. Call us at (407) 671-7777; fax us at (407) 671-7757, or email [mreast@enviro-net.com](mailto:mreast@enviro-net.com).

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Photo by Erick Busold

Jimmy Stewart (right) and Bill Baxley ready an experimental ocean current prototype turbine that will generate electricity for tow testing off the coast of South Florida. Florida Atlantic University engineers are nearing the conclusion of a multi-year research and development effort that produced the prototype turbine. See story on Page 6.

## Gainesville biomass plant making headway with significant environmental issues

By PRAKASH GANDHI

**A**lachua County officials said the owner of Gainesville's biomass plant has made major strides to alleviate serious environmental concerns, but officials will continue

to monitor the plant to determine if those improvements will continue year-round.

The Gainesville Renewable Energy Center has applied to the Florida Department of Environmental Protection for its initial Title V operating permit

that would cover the five-year period beginning Jan. 1, 2015, and wants to modify its existing construction air permit that expires at the end of this year.

GREC is also working with DEP for a permit change that would allow them to market the bottom ash remaining after the burning of clean wood for use in cement production, as a soil additive or for some other purpose. Currently, the ash is transported to a landfill.

The state has already approved changes allowing ash left over from fuel-burning plants to be marketed in a similar way.

GREC initially applied in September

## Florida chemical company hit with compliance penalties

By PRAKASH GANDHI

**A** Florida chemical company has been hit with a more than \$230,000 penalty for improperly disposing of chemical waste products at two sites in the state.

The Florida Department of Environmental Protection said Thatcher Chemical of Florida Inc. must take urgent steps to cleanup the contamination at a manufacturing plant in DeLand and another in Palmetto.

State environmental officials have also been meeting with law enforcement officials about possible criminal action against company representatives.

"Our job at DEP is to protect public health and the environment and we take our job seriously," said Jeff Prather, DEP's central district director.

"Our goal is ensuring that our regulated community stays in compliance with all applicable regulations," he said. "By burying waste on their property, Thatcher Chemical's actions were both calculated and negligent. Therefore, we have initiated formal enforcement with maximum penalties."

The facility manufactures chemicals for use in water treatment plants and food production plants, said DEP officials.

An inspection of the DeLand facility in August and September last year by DEP staff found the facility buried over a hundred thousand pounds of

**PENALTIES**  
Continued on Page 16

**BIOMASS**  
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## Water use controversy flares up again between Florida, Georgia

By SUSAN TELFORD

**C**ity and county officials in South Georgia are concerned about how the proposed withdrawal of tens of millions of gallons of water a day from the St. Marys River will affect their communities should Florida become unable to meet its water demands and tap the black water river in the future.

The proposed plan to withdraw water from the St. Marys was included within the appendix of the St. Johns River Water Management District's newly released 20-year strategic plan.

Georgia officials said there is no way to determine what effect it would have on the health of the river because there is no gauge or measurement of the mean daily flow.

"Without a mean daily flow, there is no scientific basis to support pulling 33 million gallons a day from the St. Marys," said Camden County (GA) Attorney John Myers as he urged county commissioners to send a letter

**ST MARYS**  
Continued on Page 20

## Issues combined

Because of a temporary change to the printing schedule, the June and July 2014 issues will be combined this summer into a single edition of the *Florida Specifier* for distribution in early June. We will return to monthly publication in August.

Editor

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# EPA, Army corps propose significant rule change to Clean Water Act

## Staff report

The U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers jointly released a proposed rule to clarify and streamline wetlands and stream protection under the Clean Water Act.

Under the proposed rule, three categories of waters will be protected under the Clean Water Act: most seasonal and rain dependent streams, wetlands near rivers and streams, and other types of waters that have "more uncertain connections with downstream water."

The EPA made considerable effort characterizing caveats to this rule.

The agency's justification for the proposed rule is that upstream waters and wetlands are essential for downstream water quality and uses.

Approximately 60 percent of the stream miles in the U.S. flow seasonally and these will now be protected under the new rules.

Wetlands are important because they retain flood waters, recharge groundwater supplies, sequester pollution and provide habitat for fish and wildlife. Those adjacent to rivers and streams will now have specific rules protecting them.

The EPA's third category gives the agency flexibility to characterize habitats based on science and new insights into their

influence on downstream water quality.

Agricultural exemptions that allow conversion of wetlands, such as prairie potholes and riparian muck lands, will remain in place. But otherwise, the proposed rules cover wetlands and water courses that for 30 years were protected by the CWA.

Two Supreme Court decisions, one in 2001 and the second in 2006, muddled the waters regarding qualifying waters under the Clean Water Act. Those court cases found that some seasonal streams and isolated wetlands did not qualify for protection under the federal law.

Since then, application of the Clean Water Act has been mired in confusion and uncertainty.

The EPA said that it is responding to members of Congress, state and local officials, industry, agriculture, environmental groups and the public who asked for rulemaking to provide clarity.

The proposed rule is intended to provide that clarity.

In addition, it will expand wetland and riparian habitat protection through 36 states that restrict riparian and wetland habitat protection to those waters covered by the CWA.

When the CWA was passed 40 years ago, two thirds of the country's rivers and

coastal waters were unfit for fishing and swimming.

Today, largely due to the impact of the law, that proportion has dropped to only one third.

The EPA opened the new rule for a 90-day comment period that will end about July 1.

The agency cited a draft scientific assessment for its action, whose completion is contingent on incorporation of relevant public comment.

The final draft of the expert study, a synthesis of more than 1,000 items of research, will be the scientific and technical support for the rule when it is passed.

**BP back in the game.** BP may immediately begin entering into contracts with the federal government again, including lease contracts for oil drilling in federal waters and on federal lands.

The company had been suspended and barred following its guilty plea to charges involving the Deepwater Horizon oil spill disaster in April, 2010.

Lifting the suspension and disbarment is a result of an administrative agreement between the company and the EPA. The agreement spans five years.

It stipulates that BP must retain an independent auditor approved by the EPA. The auditor will prepare an annual review characterizing BP's compliance with the agreement.

Specific provisions of the agreement include ethics compliance, corporate governance and process safety.

Under the agreement, EPA may take "appropriate corrective action in the event the agreement is breached."

Suspension and disbarment, which became effective in November, 2012, affected 25 BP entities.

In particular, BP Exploration and Production Inc. was disqualified from performing federal contract work at its Houston facility as a result of the criminal conviction that arose from the Deepwater Horizon incident.

The suspension did not affect any existing agreements that BP had in place with the federal government, but no new ones have been issued since. The agreement became effective on March 13, 2014. Under its terms, BP is again allowed to bid on and develop federal oil and gas leases.

**EPA settlements in the SE.** During the 2013 fiscal year, EPA's Region 4 cited

23 entities for violating Section 404 of the Clean Water Act, primarily for depositing dredge or fill material in wetlands.

Penalties included an estimated \$1.7 million for restoring and monitoring activities, and a total of \$130,800 in civil penalties.

Six of the 23 citations were associated with Florida sites. No civil penalties were assessed on those sites, but a total of \$391,056 in injunctive relief costs were levied, 23 percent of all noncriminal settlements.

The largest Florida penalty was \$165,038, levied on Northwest Florida Holdings Inc. for a man-made basin in St. Andrews Bay in Bay County.

Florida's largest settlement was second on the EPA's Region 4 list this year. The largest was an \$881,555

penalty paid by Hancock County Land LLC of Hancock County, MS.

Georgia was second on the list with five citations; the remaining southeastern states had between one and three citations.

With the exception of Northwest Florida Holdings' basin project, the remaining five citations resulted from residential and commercial property development.

**SmartWay partnerships.** For the past 10 years, the SmartWay Transport Partnership provided information to shippers that resulted in a less polluting, more energy efficient and lower cost shipping management scenario.

Over the past decade, according to the EPA, SmartWay eliminated 51.6 million metric tons of carbon pollution resulting in savings of more than 120 million barrels of oil and \$16.8 billion in fuel costs.

The effort that began with just 15 freight sector business charter partners has grown to over 3,000 partners. Those partners include large freight shippers such as Best Buy Company Inc., Hewlett-Packard, Lowe's, Home Depot, Sharp Electronics, General Motors and the U.S. Postal Service.

The program is now operating in Canada, which is important to cross-border shippers. Other U.S. trading partners including China and Mexico have initiated their own programs similar to SmartWay.

SmartWay is a public-private initiative between the EPA, trucking companies, rail carriers, logistics companies, commercial manufacturers, retailers, and other federal and state agencies.

The EPA's contribution is to provide freight shippers information about global goods movements and the energy footprint that results.

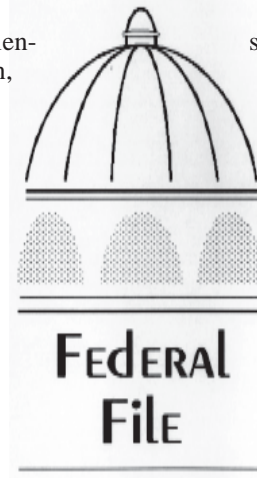
As SmartWay has grown, innovation and collaboration have increased. One example is that this year, SmartWay is preparing its first assessment for the inland barge industry.

**EPA to strengthen reporting program.** The EPA's Inspector General recently reported weaknesses in the agency's expanding cross media electronic reporting regulation program, or CROMERR.

The first weakness noted is a lack of priority to promote concurrency in CROMERR procedures. This occurs, for example, when a state changes its delegated CROMERR process without notifying the EPA, or when reporting requirements in a state are at variance with reporting requirements approved by the EPA.

To address this, the EPA will develop a process to verify states' compliance and completeness with CROMERR.

A second weakness noted is that EPA lacks processes that "ensure approval from the designated officials." This means that in states, the attorney general, or for Indian tribes and local governments, the chief



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*Florida*  
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**FEDFILE**  
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## State pulls plug on "surplus" conservation land sales

### Staff report

State environmental officials have backed off a scheme to sell "surplus" conservation land.

The Florida Department of Environmental Protection now plans to raise money for future Florida Forever land purchases by selling sites such as the closed A.G. Holloy state hospital in Lantana and other prison, hospital and state buildings.

The state spent six months whittling a list of parcels from among the state's inventory of more than three million acres of publicly owned conservation land to determine which properties could be sold without negative impact to the state's environment.

The surplus land sale program was established by lawmakers in 2013 to add to the \$20 million they set aside in the budget for future conservation land purchases through the Florida Forever fund.

They envisioned raising an additional \$50 million for the purchase of land to protect springs, improve water quality and quantity, and to serve as buffers for military bases.

Conservationists were concerned that the initial list of 169 sites included ecologically important wetlands, submerged lands and important wildlife habitat.

They were not alone. Among others, the Polk County Commission asked for the Green Swamp area to be removed from the list as it contains the headwaters of four Florida rivers, including the Hillsborough and Withlacoochee.

**Manatee phosphate permits.** Manatee County commissioners approved operating permits for three phosphate mines in East Manatee.

The three are working mines operated by Mosaic Fertilizer. Some environmental organizations wanted the commission to delay the permit decisions, but the commissioners said Mosaic had fulfilled all the permit application requirements.

Company officials said their mining facilities combined are permitted to withdraw up to 69 million gallons of water a day, but they typically use much less by observing the latest in reuse and water conservation techniques.

The company already has permission to mine the tracts since the commission previously granted it master mining permits.

The Southeast Tract mining site is complete, so the company will be doing reclamation there over the next few years.

**Bay waste.** Bay County voted to sign a two-year contract with EQ - The Environmental Quality Company to dispose of its hazardous waste.

EQ collects and disposes of all sorts of dangerous materials, such as flammable liquids and solids, latex paint, pesticides, fire extinguishers and certain batteries.

The county collects most of its hazardous waste on special amnesty days when residents may drop off materials without paying fines.

**Brooksville brownfield.** The Brooksville City Council gave the green light to city staff to start contacting the owners of former and current industrial properties suspected of being contaminated.

The properties were pared from an initial list of about 90 sites by a citizens' task force appointed eight months ago.

The work is being done with a \$400,000 grant from the U.S. Environmental Protection Agency that seeks to identify sites that are historically linked to contaminants such as petroleum, cleaning chemicals and solvents, pesticides and other industrial wastes.

Project staffers can now contact property owners to explain the benefits of participating in brownfields assessments that could lead to additional state and federal money for cleanup.

The properties were chosen based primarily on their redevelopment and rehabilitation potential. The sites include abandoned gas stations, citrus processing plants, railroad storage tank sites and auto repair shops.

Additional sites could be added to the list if the task force chooses to do so.

The assessment phase of the brownfields program is due to be concluded by September 2015.

**New office for Lee.** Lee County established an Environmental Policy Management office.

The new office will serve as a central source of environmental information and assistance for county manager Roger Desjarlais and county departments such as community development, natural resources, transportation, utilities, transit and solid waste that affect Lee County's management of environmental services, construction management, and land use planning and zoning.

Holly Schwartz, who has been with the county for more than 20 years and is assistant county manager of community services, will direct the Environmental Policy Management office. Her team will include four other current county employees who will be reassigned.

**Green award.** The Society of Environmentally Responsible Facilities has given its green certification to the Thomas M. Cooley Law School for its Tampa Bay campus.

The campus was built with materials from local suppliers, available shelving for greater storage space and flexibility, highly efficient restrooms with low-flow toilets and automatic sinks throughout the campus.

The buildings most recent green upgrade is a white roof membrane that reflects up to 80 percent of sunlight and reduces heat absorbed into classrooms.


**Company expands.** Tampa-based WRS Infrastructure & Environment, a provider of environmental remediation, civil construction and technical services, opened a regional office in Golden, CO.

The new office is located at 14143 Denver West Parkway, Suite 100, Golden, CO.


Eric R. Brown has joined the firm as

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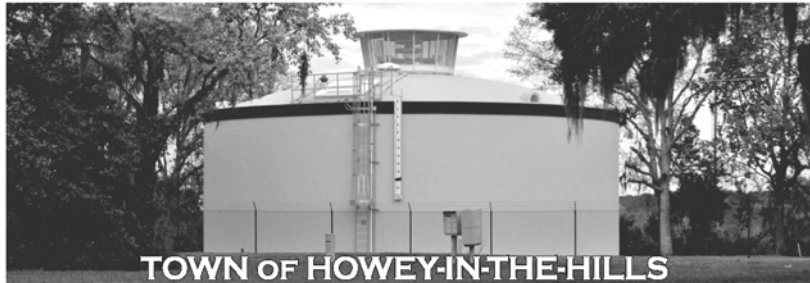




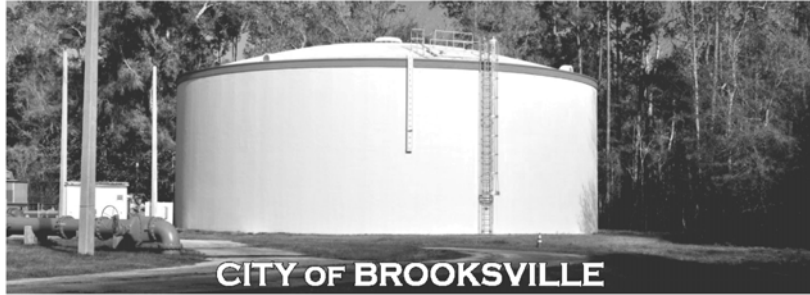
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# Minimum flows and levels proposed for Lower Santa Fe, Ichetucknee

## Staff report

The Florida Department of Environmental Protection published a proposed rule establishing minimum flows and levels for the Lower Santa Fe and Ichetucknee rivers, and the surrounding natural systems they support.

MFLs have been established to protect the overall health of the ecosystem by monitoring flow thresholds for permitting and consumptive use of the spring flows and natural systems that directly affect recreational, environmental and economic benefits of the natural areas of the river

basins.

Passed during the 2013 legislative session, Senate Bill 244 required the water management districts to apply the MFLs adopted by DEP.

The Suwannee River Water Management District, St. Johns River Water Management District and DEP have also developed recovery strategies for these natural systems, required when a water body falls below, or is projected to fall below, established MFLs.

Recovery strategies for the Lower Santa Fe and Ichetucknee include increased water conservation and restoration

projects to enhance aquifer recharge—ensuring that any future withdrawals do not impact the flows in the rivers.

The governing boards for both water management districts were simultaneously presented with a recovery strategy that will protect the Lower Santa Fe and Ichetucknee rivers and associated springs.

MFLs were established for the water bodies using the best available science and subjected to an independent peer review of the data.

The conclusions from the study, conducted by the University of Florida Water Institute, indicated that both districts need to take proactive measures to ensure proper water flow to prevent significant harm to the natural areas.

The SRWMD and SJRWMD worked with DEP and had input from the North Florida Regional Water Supply Partnership Stakeholder Advisory Committee to develop the MFLs and recovery strategies for the environmentally sensitive areas.

**Alachua will not challenge MFLs.** Rather than challenging the DEP on the MFLs established for the Lower Santa Fe and Ichetucknee rivers, the Alachua County Commission reviewed the protections that would take place should the water bodies fall below the MFLs.

Anticipating that both rivers would fall below the MFLs once the DEP had established them, Alachua County officials were concerned not only with the MFLs but also with the latest DEP rules that eliminate five-year limits on some consumptive use permits for water withdrawals and allow instead for extended year permits.

The updated proposal would also require re-evaluation of the MFLs once the North Florida Southeast Georgia Regional Groundwater Flow Model is completed in 2019.

Until the completion of that flow model, existing permits still deemed necessary are renewable but could be altered after the MFLs have been re-evaluated.

Alachua County Commissioner Robert Hutchinson, who made the motion to challenge the DEP rules, said that the recovery strategy does not really require anyone to do anything and that the proposed rules only weaken existing district permitting requirements.

Citing corruption of the process and resulting damage to area rivers and springs, the commission decided that it

would be best to ask more questions before moving ahead with any litigation.

Alachua County Attorney Michele Lieberman estimated the cost to challenge the DEP rule to be about \$100,000.

**Environmental group challenges ruling.** Earthjustice filed a notice in federal court appealing a federal judge's order that sides with Florida and the U.S. Environmental Protection Agency on a 2013 agreement allowing the state to set pollution standards for waterways.

The appeal may cause delays for the DEP in moving forward with state rules approved by the federal court and the EPA.

The appeal was filed in the 11th U.S. Circuit Court of Appeals in Atlanta in March by the Florida Wildlife Federation, the Conservancy of Southwest Florida, the Environmental Confederation of Southwest Florida, St. John's Riverkeeper and the Sierra Club.

Challenging Florida's "polluter-friendly" rules, Earthjustice Attorney David Guest, speaking on behalf of the groups, said that the Clean Water Act is supposed to mean clean water, but the evidence is all around us—dead manatees, dead dolphins, polluted drinking water and slime in our springs, rivers, lakes and bays—that it's not happening here. That's why they're going to court.

DEP Secretary Herschel Vinyard Jr. said he was deeply disappointed by the legal action and said that it will likely prevent the department from implementing the most comprehensive water standards in the nation.

However, Guest said that the appeal does not prevent the state or EPA from taking action.

**NFWFMD water project.** The Northwest Florida Water Management District's Governing Board approved \$5.5 million in grant funding for the construction of an alternative pump station for Deer Point Lake Reservoir.

The project is considered vital to ensuring a clean, safe and reliable water supply for the region.

Funding from the district will be used by Bay County to develop an upstream intake near the mouth of Econfina Creek.

The project also includes construction of a surface water intake, pump station and pipeline.

The new station will have the capacity to deliver close to 30 million gallons per day of raw water to the Bay County Water Treatment Plant.

**ECWCD grant.** DEP awarded a \$1.224-million grant to the East County Water Control District for construction of the Aquifer Benefit and Storage for Orange Basin project located in Lehigh Acres.

Awarded under the TMDL water quality restoration program, the grant provides funding for the construction of 27 weirs.

The effort will result in approximately 1,000 acre-feet of storage, as well as sediment and nutrient reduction for watershed runoff to the Orange and Caloosahatchee rivers, and ultimately Gulf Coast waters.

**Newberry wastewater renovations.** The city of Newberry celebrated the completion of its newly renovated water reclamation facility with a ribbon-cutting ceremony.

Upgraded from treating 350,000 gallons per day to 560,000 per day, the complex is expected to operate at about 495,000 gpd to keep costs down.

The wastewater plant renovations were several years in the making.

Due to grant funding and clever financing, the city brought the project in well under budget.

**WATCH**  
Continued on Page 5



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**WATCH**  
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# Hernando utility seeks new site for water treatment plant after proposed rezoning fails

By **BLANCHE HARDY, PG**

The Hernando County Utilities Department will start their search again for a property on which to develop a drinking water supply and treatment complex.

Brad Smith, an assistant engineer in the utility's Engineering Department, said the county will focus on trying to find a new piece of land on the eastern side of the county.

The utility had planned to acquire a 17.5-acre parcel on Sherman Hills Boulevard to establish the East Water Treatment System Improvements' Ridge Manor West #1 Water Treatment Plant complex.

But the county commission denied the proposed rezoning of the property in early March.

The previously proposed complex would have been located just east of Interstate 75 and north of the intersection of Sherman Hills and Cortez Boulevard in an area comprised of predominately agricultural and undeveloped land.

There are a few subdivisions and estate home developments in the area including the Sherman Hills golf community that borders the parcel to the north and east.

Commercial and nonresidential developments and undeveloped land border the property along Cortez Boulevard and Windmere Road to the south and east.

Two of the county's existing municipal potable water supply wells are already located at separate locations immediately adjacent to the property.

Smith said the existing wells are two of the largest on the east side of the county, and that the utility had considered the parcel in part to more efficiently make use of

the two existing wells.

Additionally, co-locating the existing wells and proposed complex would have provided significant cost savings.

The plan proposed the installation of an additional well followed by installation of a two-million-gallon storage tank at the front of the parcel.

A second new well and storage tank, if necessary, would have followed in a second phase of development at a date in the future.

In all, the parcel could have accommodated the installation of a total of nine new wells over time, due to its size.

"The county doesn't have much storage capacity," said Smith. "So putting in a storage tank would help."

The eastern portion of the county is particularly short on water storage capacity. Construction of a new storage tank in the area becomes more critical with each period of less than adequate rainfall and the construction of each new development.

The proposed complex is located as far to the east as possible. Smith said that the facility cannot be located further east within the vicinity of the Withlacoochee River.

The Withlacoochee is an Outstanding Florida Water and, as such, is highly protected.

The Withlacoochee State Forest is the second largest state forest in Florida covering more than 140,000 acres in eastern Hernando and adjoining Citrus County. Encroachment is not an option.

The previously proposed site could have actually benefited the river as it would, in time, have allowed the county to abandon existing smaller plants and wells serving the area.

Leggette, Brashears & Graham Inc. completed impact studies for the proposed site and found it represented no adverse impact to associated surface waters.

Smith said the study also indicated the complex may have benefited the Withlacoochee by increasing recharge to the river.

Considering the benefits, the commission's denial of the proposed zoning change seems puzzling—until one considers public opposition.

The commission meeting addressing the proposed rezoning had a significant crowd of opposing residents from the golf community subdivision to the north and West Ridge Manor.

The usual complaints about any new treatment facility were aired, such as its potential for causing sinkholes and lower-

ing property values. In addition, claims were made that the county could install the wells and then sell the facility to adjoining counties who need the additional water supply.

Ironically, the proposed complex would have included 75 feet of 80 percent opaque buffers on the three sides visible to residents and would have had the appearance of a park.

The proposed tanks would have been located along the central southern border behind the existing commercial uses on

Cortez Boulevard (State Road 50), a busy four-lane divided highway.

An access road as well as buffering would have minimized the tank's profiles from the highway.

The residents would have gained a nicely landscaped, 17-acre park frontage rather than the existing frontage visually composed of a busy commercial building-lined highway immediately serving the intersection of I-75 and SR 50—not to mention the projected cost savings they would have enjoyed on their water bills through the co-location of existing facilities.

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## WATCH

From Page 4

**Lake Wales sewer improvement.** DEP will provide a \$6-million loan to the city of Lake Wales to complete sewer system improvements.

A community development block grant will be used to help repair and replace sewer lines.

The loan will fund a lift station that will improve the flow of wastewater. Lift pumps will also be updated to accommodate the increased demand, and some sewer lines will be replaced with lines at lower elevations to help reduce infiltration and inflow problems.

Lake Wales is one of 11 entities receiving more than \$27 million in loan for wastewater and stormwater projects.

## Lakeside Ranch project recognized.

The Lakeside Ranch Stormwater Treatment Area in Okeechobee, FL, has earned CDM Smith Inc. of West Palm Beach, FL, a National Recognition Award for Exemplary Engineering Achievement in the American Council of Engineering Companies' 48th annual Engineering Excellence Awards.

The project is among 143 engineering projects throughout the nation and the world recognized by ACEC as a preeminent engineering achievement in 2013.

Using advanced modeling technology, the project team optimized the configuration and flows of new and existing elements, producing an environmentally sound effect without the need for an actual reservoir.

**New face at district.** The Suwannee River Water Management District recently hired Jamie Sortevik as an engineer in their Resource Management Division.

Sortevik will review water use permit applications, evaluate data, analyze aquifer tests and computer modeling of groundwater systems, and calculate the withdrawals on water levels.

She will also conduct field reviews of existing and proposed water use systems to collect data and determine compliance status.

Sortevik earned a BS in agricultural and biological engineering from the University of Florida.

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# FAU makes progress converting power of ocean into electricity

By ROY LAUGHLIN

Since last fall, Florida Atlantic University's Southeast National Marine Renewable Energy Center's research and development group has progressed quietly with its ocean current energy technology. But it's now poised to meet most of its original goals by the end of the year.

A primary technological goal was to build and test an ocean current research turbine that generates electricity.

Last fall, the center received a permit to install a mooring in the Gulf Stream off the South Florida coast where its test turbine could be tethered.

The group recently performed successful tow tests of the turbine prototype off the coast of St. Lucie County.

The next stage of testing will be mooring the turbine about 200 meters deep in the Gulf Stream to test the device under operating conditions.

The program could do that shortly after permits are approved, as early as the end of the summer.

SNMREC's R&D engineers have decades of experience with wind turbines, but their experience with ocean current turbines is minimal, said Dr. Manhar Dhanak, director of SNMREC.

Much of the program's effort over the past six years has been to establish engineering experience with seawater turbines. The greater density of water compared to air means that forces on an ocean current turbine could be up to ten times those on wind turbines.

The prototype will characterize and measure those forces to ensure that a full size turbine with blades—whose outer arc may be 30 meters in diameter—will stand up to them.

The turbine will be free floating, attached to a mooring anchored to the sea bottom. It has to be either light or buoyant, a trait that can be enhanced by the use of high tech materials.

"We are looking at nanocomposite carbon fiber," said Dhanak. "We have done work on its durability in seawater. They appear to be durable."

Corrosion, which is particularly a prob-

lem in seawater, is an important part of the research program's focus.

"We have an area of people working on corrosion," said Dhanak. "We have expertise that goes back to the start (of FAU's ocean science and engineering program). Cathodic protection is something we will be faced with as a work in progress. You can take appropriate measures to design a system so that it's not an issue even if you are generating power."

Dhanak explained that the FAU developers have written a "health monitoring software system" for the turbine. Sensors will measure vibrations in the turbine, identify their source and advise if there is a problem. That will make maintenance faster and more effective.

Dhanak noted that the system is expected to be autonomous on its tether for long periods of time.

But when maintenance is necessary, a surface ship or barge will be moored in open, navigable waters to raise the turbine for service.

Those instances need to be minimized for reasons of both safety and cost.

He said that for both research prototypes and operational machines, minimizing maintenance is as important as keeping the cost of the turbines down.

Even with all the expertise and extensive shoreside engineering that has gone into this device over the years, the need to test in the ocean is necessary.

But first, the researchers need a permit from the federal Bureau of Ocean Energy Management before they can moor their prototype for the final series of planned tests. A favorable permitting outcome seems likely.

BOEM issued a "finding of no significant impact" for the environmental assessment of the electricity generation machines in September, 2013, and the Florida Department of Environmental Protection found the use of the turbines "consistent with the Florida Coastal Management Program."

As soon as this summer, FAU's turbine prototype could be moored in the Gulf Stream with blades turning in the current—if the required permits are granted soon.

Deploying and testing the prototype marks the end of the currently funded program, and it is scheduled to wrap up this August.

But permits for the mooring and the laboratory access will allow anyone else to test similar machines in the future.

Dhanak said they are applying for continued funding, have industry partners and expect to continue the ocean energy program.

Florida is unique in the U.S., he noted, because the flow of the Gulf Stream is capable of supplying the energy to generate electricity and is close to large population centers that could use the power.

With the expense of permits behind them, and the mooring and shore facilities in place, there is much to offer at reasonable costs to both academic and private interests that could continue the research effort.

FAU's SNMREC was founded in 2007 with funding from the state of Florida. Through a competitive grant award, it established its program to develop cost-competitive ocean energy generation.

Three years later, the U.S. Department of Energy designated it a "national center for ocean energy research and development to advance the operational readiness of ocean energy technologies" and its name changed to reflect that mission.

Because of its proximity to the unique opportunities offered by the Gulf Stream flow along Florida's southeast coast and FAU's marine engineering prowess, the program so far has focused primarily on its turbine development and testing program.

Education for engineering professionals to support this technology and public awareness of the potential for ocean energy to electricity generation are also important elements of the program.

Because the Gulf Stream's flow is persistent—day and night, every day—it is more reliable than wind or sunlight for energy generation. And it's just off shore in Florida.

The potential is clear. Once prototypes are tested and performance evaluated, the technology may be much closer at hand for future Floridians to enjoy a blue-green energy future.

## Withlacochee authority accepting grant applications

The Withlacochee Regional Water Supply Authority's Board of Directors, representing Citrus, Hernando, Marion and Sumter counties, will accept applications for its fiscal year 2014-15 Local Government Grants Program, beginning May 1, 2014.

Applications will be accepted no later than June 30, 2014.

The program is intended to fund water conservation-related projects on a matching basis. Applications and instructions are found on the Authority's website at [www.wrwsa.org](http://www.wrwsa.org).

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This fall, the Annual Florida Remediation Conference, celebrating its 20th year, will again focus on the issue of soil and groundwater contamination cleanup in Florida's unique physical and regulatory environment.

Engineers, scientists, hydrogeologists, project managers, regulators, compliance managers, consultants, equipment vendors, lab representatives and other environmental professionals will benefit from the opportunity to exchange information, discuss case studies and analyze field operations in what has become the Southeast's top annual remediation meeting.

All participants will have a chance to learn about emerging treatment technologies and support services available for effective cleanup projects, and how they're being put to the task in the field.

We are now identifying sessions topics for presentation and are asking for abstracts a variety of topics: green remediation, risk assessment/RBCA, bioremediation, natural attenuation, emerging technologies, mixed waste challenges, site assessment technologies and methods, field sampling, site stabilization, combined strategies, vapor intrusion, regulatory policy and initiatives and cleanup of sites and surface water contaminated with petroleum, PCBs, chlorinated solvents, arsenic and heavy metals, pesticides and other contaminants.

We are again looking for talks on proven technologies with real-world applicability to Florida and appreciate data-heavy presentations and "roll-up-the-sleeve" approaches.

## Submission Instructions

We have started reviewing subject matter to be included on the 2014 FRC agenda. If you are interested in being a part of this year's conference, submit an abstract of approximately 250 words by July 15, 2014. FRC presentations are limited to 25 minutes in length. Mail, fax or e-mail abstracts to:

Florida Remediation Conference

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## Conference Producer

The Florida Remediation Conference is produced and sponsored by National Technical Communications Co. Inc., publishers of the *Florida Specifier*, and producer of the *Enviro-Net* website, providing on-line news and archival access to print publication articles and columns.

The *Florida Specifier*, NTCC's state-based, industry-leading trade newspaper for over three decades, regularly covers the soil and groundwater cleanup industry in Florida and the Southeast with news and information about state and federal regulatory changes, effective technology-based solutions and the players involved in this solid segment of environmental protection and resource management.

## Questions?

You can reach us by phone at (407) 671-7777 or online at [mreast@enviro-net.com](mailto:mreast@enviro-net.com) should you have any questions or need additional information about FRC 2014. In addition, visit our web site at [www.enviro-net.com](http://www.enviro-net.com) for the latest conference updates.

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					Hollow stem auger	Air/mud rotary	Dual rotary	Sonic	Direct push	Diamond coring	Cone penetration testing	
<b>AMEC Environment &amp; Infrastructure Inc.</b> 3901 Carmichael Ave. Jacksonville, FL 32207 (904) 391-3717 Fax: (904) 399-3176 Jason Goldstein, Drilling Dept. Manager jason.goldstein@amec.com www.amec.com	0.48	57	4,200/449	Drilling and push probe, geophysics, testing of soil and rock, geo-hydrology	■	■			■	■		1) Comprehensive, innovative solutions for environmental compliance, management and remediation. Our architectural, engineering and facilities management expertise enables us to excel at defining and designing A/E projects. 2) Environmental and geotechnical services 3) NA 4) Dilatometer testing 5) Serves entire state
<b>ATI Companies, LLC</b> 4610 Central Ave. St. Petersburg, FL 33711 (727) 328-0268 Fax: (727) 328-2477 Carlos Lemos, President info@ambienttech.com www.ambienttech.com	1.0	20	40/27	Environmental & geotechnical drilling, (Florida and Central America); rock coring (Central America); concrete coring and drilling. Instrument installation in borehole.	■	■			■	■		1) Central America office in Panama 2) Excellent safety record 3) MBE, SDB, DBE 4) Utility locate capabilities and surveying 5) Serves Central Florida
<b>Cascade Drilling</b> 6424 Pinecastle Blvd., Suite D Orlando, FL 32809 (206) 396-1561 Brian Gose, Regional Manager bgose@cascaeddrilling.com www.cascaeddrilling.com	0.73	25	475/30	Full service drilling firm with 20 offices nationally including three in the Southeast. Truck- and track-mounted DPT (injection, direct imaging, etc.), auger, rotary and sonic	■	■		■	■	■	■	1) Waste handling/management 2) Sonic: smallest to full size; DPT: remedial injection, direct imaging, sampling; auger & rotary 3) NA 4) Air/water knife, vacuum extraction 5) Serves entire state
<b>Custom Drilling Services Inc.</b> 100 Kid Ellis Rd. Mulberry, FL 33860 (863) 425-9600 Fax: (863) 425-9620 Michael Johnson, Drilling Services Mgr. mdjohnson@customdrilling.net www.customdrilling.net	0.91	24	33/33	Environmental drilling: DPT services	■	■			■			1) Well abandonment 2) NA 3) NA 4) NA 5) Serves entire state
<b>Directional Technologies Inc.</b> 3220 Lord Murphy Trail Tallahassee, FL 32309 (850) 270-3246 Mark Uanino, Regional Sales Manager muanino@directionaltech.com www.directionaltech.com	0.96	23	16/1	Horizontal remediation wells, directional boring, horizontal soil sampling, horizontal air sparge, vapor extraction, chemical oxidation, bio-sparge and vapor intrusion mitigation.								1) National and international drilling services 2) Horizontal remediation wells 3) Woman-owned small business 4) Horizontal directional drilling 5) Serves entire state
<b>Earth Tech Drilling</b> 2703 NW 19th St. Pompano Beach, FL 33069 (954) 974-2424 Fax: (954) 974-2423 Bob Orlando, President borlando@earthtechdrilling.com www.earthtechdrilling.com	0.93	12	9/9	Environmental and geotechnical drilling	■	■	■	■	■	■	■	1) NA 2) Quality, safe environmental drilling 3) SBE 4) NA 5) Serves entire state
<b>Ellis &amp; Associates Inc.</b> 7064 Davis Creek Road Jacksonville, FL 32256 (904) 880-0960 Fax: (904) 880-0970 Michael Lithman, PE, Executive VP m.lithman@ellisassoc.com www.ellisassoc.com	NA	44	66/62	Geotechnical and environmental drilling services, consulting engineers and scientists; drilling capabilities include difficult access sites and overwater drilling (EB998; GB 265)	■	■				■	■	1) Falling head permeability test, double ring infiltrometer test, drawdown modeling, consumptive use permitting, dilatometer soundings 2) Geotechnical engineering, construction materials testing & inspection, and environmental engineering 3) NA 4) Large diameter hollow stem auger 5) Serves Central and NE FL, South GA and AL
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<b>EnviroTek</b> 3007 N. 50th St. Tampa, FL 33619 (813) 909-0040 Fax: (813) 909-0042 Shane Billings, Business Development sbillings@envirotek.com www.envirotek.com	0.89	21	31/31	Geoprobe and drilling services including small diameter wells (1/2" - 1 1/2" dia.), conventional wells (2" and 4" dia.), injection wells, dewatering wells and dewatering system installation, directional borings, air sparge wells, SVE wells and well abandonment. Now providing LDA source removals.	■	■			■			1) Remediation product injections, soil stabilization 2) Direct push technology and injection services 3) NA 4) Geotech SPTs, large diameter auger deep source removals 5) Serves entire state
<b>Groundwater Protection</b> 2300 Silver Star Rd. Orlando, FL 32804 (407) 426-7885 Fax: (407) 206-0856 Charles Bucher, General Manager charles@drillprollc.com www.groundwaterprotection.com	0.80	27	32/32	Monitoring and remediation well installation; injection and well abandonment services; horizontal well installation. Auger, DPT, Sonic, angle drilling	■	■		■	■			1) Remediation systems, injection 2) Sonic, difficult access/low clearance angled wells 3) Certified small business, FL Water Well Contractor, NC/SC Water Well Contractor, Bonded in GA 4) Well abandonment 5) Serves entire state and Southeast U.S.
<b>Huss Drilling Inc.</b> 35920 State Road 52 Dade City, FL 33525 (352) 567-9500 Fax: (352) 567-6646 Ben Huss, Owner ben@hussdrilling.com www.hussdrilling.com	0.74	24	24/24	Environmental, geotechnical, exploration and water resource drilling services	■	■		■	■	■		1) Well rehabilitation 2) Environmental, geotechnical and exploration drilling 3) NA 4) ATV rigs, barge rigs 5) Serves Central, NE and NW Florida

# Hillsborough County's Rock Ponds restoration project shifts into Phase II

By **BLANCHE HARDY, PG**

Early in February, members of the Southwest Florida Water Management District, Hillsborough County, and state and community leaders joined in planting a small longleaf pine tree

to break ground on the Rock Ponds Ecosystem Restoration Project.

Rock Ponds is the largest restoration project ever undertaken within the district's Surface Water Improvement and Management program's Tampa Bay priority waterbody area.

Phase 1 of the 264-acre Rock Ponds Ecosystem Restoration Project, an upland restoration currently under three years of quarterly maintenance, was completed late in 2011.

The location's native coastal pine flatwoods and scattered hardwood hammocks were historically removed to establish agriculture. Over time, the area became dominated by invasive and nuisance species.

During Phase I, the undesirable species were removed and replaced by native canopy and understory trees.

Brandt Henningsen, PhD, chief environmental scientist for the district's SWIM program, said they wanted to allow the uplands to "get a couple of years of growth" before starting the current Phase II Rock Ponds coastal upland and estuarine and freshwater wetland restoration.

In Phase II, about 381 acres will be restored as coastal uplands and 398 acres will be restored as wetlands.

"The entire Rock Ponds project when completed will restore approximately 1,050 acres of additional coastal lands," said Henningsen.

The Rock Ponds project is being hailed as the largest volunteer marsh-planting project in the bay's history. Execution of the planting effort will be coordinated by Tampa Bay Watch.

"Their goal is to have 400 volunteers plant 40,000 plugs in Rock Ponds' intertidal area as early as fall 2014," said Henningsen.

Volunteers can register through Tampa Bay Watch for an opportunity to participate in the planting effort.

Upon completion of the project, the

restored estuarine wetlands will flow directly into Tampa Bay while the freshwater wetlands will reach the bay through a series of lagoons and channels.

Henningsen said the district anticipates restoration will result in improved water quality, fishery habitat and natural improvement of oyster bars and seagrass.

In addition to the ecological benefits, by running some off-site stormwater drainage from upstream watersheds into the lagoon, the restored area will provide water polishing, as well as keep the freshwater wetlands hydrated.

"When they fill up, they can overflow into the lagoon and sheetflow through mangrove forests and into Tampa Bay. This is the traditional method of drainage and will encourage baby snook and mullet to return to the project area," said Nancy Norton, PE, an engineer in the SWIM section at the district. "The benefit of sheet flow is that it has a lower velocity. Sediment particles will not be readily transported into the bay."

Adjacent to site is an old borrow pit that is the source of the project's name. The borrow pit area is listed as one of the most important rookeries in the region.

The district hopes the newly created Rock Ponds area will allow the borrow pit to better operate as an ecosystem.

Through connection with the Rock Ponds restoration, water quality will be improved as the now intermittent borrow pit's tidal water replenishment will be enhanced.

Additionally, the removal of non-native plants and their replacement with native plants will enhance the function of the overall area as bird-friendly habitat.

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<b>JAEE Environmental Services Inc.</b> 3010 Peachtree Cir. Davie, FL 33328 (954) 476-8333 Fax: (954) 476-8347 Willie Smitherman, President jaee@bellsouth.net www.jaeeenv.com	0.96	23	11/11	Soil and groundwater sampling, installation of monitoring wells, well abandonment, bioremediation injection	■ ■	1) Bio-injecting, well abandonment 2) Sampling using Geoprobe equipment 3) Water well contractor 4) NA 5) Serves entire state
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<b>Geologic &amp; Environmental Testing</b> 2509 Success Dr., Suite 1 Odessa, FL 33556 (727) 376-7833 Fax: (727) 376-7433 David Harro, PG, Professional Geologist david.harro@geo3group.com	NA	15	5/5	Geotechnical and environmental drilling	■ ■ ■	1) Geophysics 2) Geotechnical, environmental 3) MBE 4) NA 5) Serves Central Florida
<b>Terra Sonic International</b> Drilling Services Division 2401 Clark St., UNit 2 Apopka, FL 32703 (407) 730-9853 Fax: (407) 730-9858 David Boggs, Manager dab@terrasonicinternational.com www.terrasonicinternational.com	<1	1	10/10	Sonic drilling in all applications, tracked DPT	■ ■	1) Remedial injections, well abandonments, tech work 2) Sonic drilling 3) SBE 4) DPT 5) Serves entire state
<b>Terracon Consultants Inc.</b> 1675 Lee Road Winter Park, FL 32789 (407) 740-6110 Fax: (407) 740-6112 Jim P. Smith, Drilling Dept. Manager jpsmith@terracon.com www.terracon.com	0.94	48	3,000/200	Terracon has conducted subsurface exploration for geotechnical and environmental projects since 1965. The company's large fleet of drilling equipment is geographically dispersed to provide prompt service to clients.	■ ■ ■ ■	1) Conventional truck-mounted rigs; skid and all-terrain rigs for accessing difficult sites. 2) Environmental; Facilities; Geotechnical and Materials 3) NA 4) Piston sample, dilatometer testing, seismic testing and vane shear 5) Serves entire state
<b>ZEBRA Environmental Corp.</b> 1020 S. 82nd St. Tampa, FL 36619 (813) 626-1717 Fax: (813) 626-1718 Mike Early, Branch Manager mikee@zebraenv.com www.teamzebra.com	0.96	22	45/8	All aspects of DPT drilling and sampling, injections, well installations and direct sensing data collection. Fleet of over 27 DPT units including the newest Geoprobe® 7822 and 8040 models.	■ ■ ■ ■ ■	1) UVOST/LIF technology 2) DPT: Soil sampling; groundwater sampling; in-situ injections and installations; direct sensing: MIP, HPT, MiHPT, HPT-GW, CPT, EC; well installation services including prepacked screens, soil vapor implants; conventional drilling services 3) NAICS 562910 & WOSB 4) Chem-Ox and bioremediation injections; site conceptual modeling-2D and 3D visualizations; triads-direct sampling ion mass spectrometer (DSITMS) 5) Serves entire state and Southeast U.S.



# EPA releases latest draft of five-year strategic plan

By ROY LAUGHLIN

By law, the U.S. Environmental Protection Agency prepares and works under a five-year plan as a blue print for its activities.

Late last year, the agency released its draft 2014–2018 plan that includes three categories of effort: 1) Strategic Goals, 2) Cross-Cutting Fundamental Strategies and 3) Measurement Framework.

The first and last categories are closely linked. The second is more diffuse, dealing with broadly applicable concepts and general practices.

The Strategic Goals category describes multiple activities across agency subdivisions. In the second half of the draft, specific metrics are presented.

Each goal and some notable or new items from Measurement Framework category are discussed here.

*Addressing climate change and improving air quality* aims to reduce greenhouse gas emissions, and promote plans and strategies to mitigate the effects of climate changes that are already bound to occur.

Reducing greenhouse gas emissions from vehicles and trucks is a second category of effort here that essentially means increasing fuel efficiency.

The agency's metric is proposed as a reduction of six million metric tons of greenhouse gas equivalents released as tailpipe emissions, by reducing oil consumption by 12 billion barrels of oil over the lifetime of vehicles and trucks built during the plan.

Ozone layer restoration and protection will be a third effort, and the effort to "minimize exposure to radiation" will work to reduce releases of radioactive material and minimize human exposure when unavoidable releases occur.

*Protecting America's waters.* The first item in this goal category is "Protect Human Health." In the last five-year plan, the EPA focused on drinking water systems of any size. But in the next five years, it intends to focus on small drinking water systems that the agency said account for 97 percent of public drinking water systems in the U.S.

It promises to "strengthen the technical, managerial and financial capacity of those systems."

A second objective is to protect and restore watersheds and aquatic ecosystems, including coastal and ocean resources. The enhancement of nonpoint source reduction efforts is specifically mentioned.

Nutrient pollution, which has become an increasing problem nationwide, and a specific one for Floridians, will fall under this item in the EPA's plan.

This goal includes continued expanding cooperation with the U.S. Department of Agriculture because of the focus on nutrients.

In this goal category, the EPA will be looking for "a new approach for measuring local improvements and water quality" that will rely on the National Hydrography Data Set Plus.

The agency said it will be evaluating the use of the "12 digit" scale developed by the U.S. Geological Survey.

The EPA would like to determine if this scale effectively tracks water quality improvements that would make it useful in a watershed approach to maintaining water quality.

If the USGS' evaluation system proves useful, the EPA proposes replacing, where appropriate, water quality standards with this strategy for improving water quality conditions in impaired waterbodies. This could be particularly important in Florida.

*Communities and advancing sustainable development.* In an increasingly urbanized America, cleaning up contaminated land through the brownfields program, and handling wastes to prevent additional degradation is widely recognized as an effective societal investment.

This goal category adds more emphasis by expanding it to Indian country, increasing recycling efforts, and increasing

brownfields rehabilitation for both environmental and economic benefits.

Many peninsular Florida communities have active brownfield redevelopment programs and more are being promoted as raw land is less available for development.

*Ensuring the safety of chemicals and preventing pollution.* The EPA proposes to focus substantially on preventing pollution at the source, by reducing the use of toxic chemicals as well as their disposal in the environment.

Endocrine disruptors are mentioned here. This effort dovetails with prior one in terms of sustainability goals.

*Protecting human health and the environment by enforcing laws and assuring compliance.* The EPA had notable successes in its prior five-year plan in "vigorous targeted civil and criminal enforcement."

More than once, it announced record fines and recoveries from prosecution efforts. This plan includes more of the same. But in the proposed plan, the agency acknowledges that "enforcement alone will not be enough to achieve compliance results to protect public health or to assure that businesses that comply with the law do not have to compete with companies that do not play by the rules."

In the implementation section, the EPA embraced the use of advanced electronic detectors and small mobile devices, which the agency hopes will change the playing field for monitoring.

The EPA intends to explore the possibility of using cell phones and the Internet to remotely monitor for regulatory compliance and contamination releases. The agency said it hopes to substitute expert sampling and analysis efforts with "crowd sourcing" for environmental monitoring.

The plan reinforces the EPA's current pursuit of the biggest polluters, vigorously seeking fines and other forms of restitution.

Critics of this approach say that enforcement and compliance monitoring are

set to receive less money and emphasis in the next five years, compromising efforts widely seen as very successful in the past decade. The report does not discuss budget and suggests increasing enforcement efforts, not reducing them.

During the next five years, the EPA will continue to redesign permits and regulations that are easier to implement. A shift towards electronic reporting is already underway and will expand in the next five years.

The agency promises to make compliance reporting less expensive for the regulated, and to make the electronically submitted data more quickly and extensively available to the public, including state and local regulatory agencies.

In this five-year plan, the EPA also listed and characterized four Cross-Cutting Fundamental Strategies: working toward a sustainable future; working to make a visible difference in communities; launching a new era of state, tribal, local and international partnerships; and embracing EPA as a high-performing organization.

Unlike the preceding two sections discussed, this one is heavily laced with jargon and glittering generality. For example, the following subheading characterizes the first strategy Working toward a Sustainable Future: "Advance sustainable environmental outcomes and optimize economic and social outcomes through agency decisions and actions, which include expanding the conversation on environmentalism and engaging a broad range of stakeholders."

Readers interested in theoretical and philosophical aspects of the EPA's plan are encouraged to read them without the abbreviation inherent in an article such as this.

In general, the next five-year plan continues most of the efforts already begun, expands some such as electronic submittals and reporting. Some new tools and the use of mobile electronics and communication may change time frames in which the EPA responds to environmental problems.

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# SJRWMD-UF consortium begins springshed to spring run nutrient study

By ROY LAUGHLIN

A team of investigators from the University of Florida and the St. Johns River Water Management District will soon be in the field and lab, working on a long term multidisciplinary study of factors and conditions that influence the growth of “attached algae” in Florida’s springs.

Problems caused by attached algae occur when clumps and strings of single cell, filamentous algae and cyanobacteria grow so extensively that spring runs are choked by it.

The weedy algal overgrowth reduces habitat function, aquatic community structure and diversity, aesthetic appeal and the water quality of the spring runs.

Attached algae have in recent decades shifted from rarely observed and not extensive to an episodically routine occurrence.

During attached algal blooms, plant respiration lowers oxygen tension at night, so most invertebrates and fish leave the spring run or die off. Submerged aquatic vegetation—the desirable plants in spring runs—may also die off.

The boom-bust cycle of attached algae resemble that of phytoplankton blooms except that attached algae booms can last much longer. Some changes, such as loss of snails and other organisms, have been

long term, if not permanent, in some spring runs following prolonged attached algae blooms.

Attached algae growth is the most obvious symptom of the water quality and quantity problems in Florida’s springs.

Several factors seem to play a role in attached algal growth, but none is predominant in all of Florida’s springs.

SJRWMD’s new springs study, Collaborative Research on Sustainability and Protection of Springs, or CRISPS, aims to characterize how biogeochemical, hydrological and ecological factors act in concert to initiate and sustain attached algal blooms.

The study will focus on Silver Springs and Wekiva Springs with respect to experimental studies, but monitoring data from other springs may be used in ecological analysis and models.

Investigators will be split into two supergroups. One will focus on the springshed sources and quantities of nutrients, particularly nitrogen, and aquifer processes such as denitrification that modify nutrient concentrations.

This group will also be looking at how trace nutrients influence nitrogen utilization and how biogeochemical processes in aquifers influence nitrogen dynamics before water flows through springs into spring runs.

The UF scientists and their labs will

largely comprise the first group.

Dr. Wendy Graham, director of UF’s Water Institute, will be developing a model for the transport. She said she will be looking closely at the difference between seepage flow (slow) and conduit flow (rapid) with respect to nutrient delivery to springs.

Dr. Matt Cohen, an ecologist and hydrologist with the institute, will measure and interpret the isotopic biogeochemistry of nitrogen and carbon compounds in aquifers and spring water, and in biota and food webs in spring runs.

These studies may tell researchers if and how much denitrification occurs in the aquifer, and how nitrogen released in the springshed is utilized in spring run food webs.

The second group in the study, the ecology group led by Dr. Ed Lowe, chief scientist with the SJRWMD, will examine the ecology of the spring run to characterize attached algal growth, factors that influence its growth and its growth’s effect on the spring run’s biological community.

The effect of water flow rates and herbivores on algal abundance are two topics of initial inquiry. Both have been characterized as a significant influence on attached algae abundance.

In some previously studied springs with abundant attached algae, herbivorous snail populations are very low or absent, and algae growth became luxuriant.

A quick read of the study’s description might evoke a “deja vu” experience from the reader, however, this study will be different. The researchers want to look not only at a single factor, but the interaction of factors that significantly influence algal growth at the end of an ecological system that begins in the springshed, maybe miles away from the spring run.

“Many aspects may influence attached algae, but one important one is that nitrogen by itself is not a problem,” said Cohen. “There’s a series of hypotheses about what controls the proliferation of algae. Intentionally and explicitly, we’re looking at other things. That includes water flow and other nutrients.”

He noted that when low flow conditions occur and attached algae proliferate regardless of nutrient levels, dissolved oxygen levels drop and hydrogen sulfide and ammonia levels increase.

When those anoxic episodes occur, snail populations appear seriously reduced or die off and, along with them, biological control of algae growth. This is only one of several complex hypotheses that will be scrutinized in the study.

Lowe said one goal is to pinpoint the primary source of nitrogen in the spring. But he noted that in the complex system that includes the springshed, aquifer and spring run, the role of nitrogen sources “is not uniform.”

“The intersection (of high nitrogen on the springshed and high nitrogen loading to the aquifer) is what we’re looking for,” said Lowe. “Our goal here is to provide a strong scientific foundation for DEP and local governments to provide strong regulatory control. Collectively, we’ll be able to work toward cost-effective solutions.”

CRISPS is a collaborative, applied research study between the SJRWMD and UF. Lowe heads the ecology supergroup and much of that work will be done by district scientific staff using analysis of the district’s long term data.

Dr. K. Ramesh Reddy, chair of the UF Institute of Food and Agricultural Sciences’ Soil and Water Science Department, will be the scientific leader for UF during the three-year study.

The SJRWMD plans to spend \$3 million to support the study over a period of three years.

Governor Rick Scott’s budget proposed \$55 million for “spring restoration” of 38 of Florida’s major springs, just a small portion of the state’s 900 recognized springs.

The Florida House of Representatives proposal is \$50 million (in mid-April, when this article was written).

The Florida Senate has a \$380 million springs bill in the works. The bipartisan bill has passed all three Senate committees in spite of opposition from cities and counties. It is expected to make its way to a full Senate vote.

Florida’s numerous and large springs occur because of a fortuitous coincidence of extensive karst topography that forms a productive aquifer that feeds the springs and abundant rainfall that fills the aquifer. Such places are few on earth, so scientific studies of them are limited.

Past studies of nutrient dynamics and ecological effects have produced useful characterizations and tantalizing insights into how complex and interconnected ecosystems from streamshed to spring run influence each other.

Those studies have produced more than a few paradoxical impressions of how the components interact even before increasing human-mediated changes of the streamsheds are factored into predictions of the effects on springs and spring runs.

With a little luck and adequate funding, this study could become the landmark scientific characterization of nutrient dynamics in springsheds and their influence on spring run ecology.

And for its financial support, the public might even get a set of principles for effective long term preservation and management of these priceless ecosystems.



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# After three decades, eminent threat site in DeLeon Springs now set for final cleanup

By **BLANCHE HARDY, PG**

What residents hope will be the beginning of the final action in a 28-year-old cleanup effort to address petroleum contaminated soil and groundwater in DeLeon Springs is scheduled to begin in late April.

"As a community we are extremely excited to see this taken care of after 30 years," said Amy Munizzi, DeLeon Springs Community Association secretary and local cleanup spokesperson.

Petroleum contamination was first discovered in the Johnson family's potable water well. The Johnsons lived in the direct vicinity of the former Acree Oil Company Inc.'s Fina Express Gas 'N Shop convenience store and gas station at 5145 North U.S. Highway 17 in Volusia County.

They noted a gasoline odor in drinking water pumped from their 33-year-old well in the mid 1980s. The Johnsons commissioned installation of a replacement well that also produced petroleum-contaminated water and subsequently replaced the second well with a third also yielding petroleum-contaminated water.

By the time the source of the petroleum release was isolated and a cleanup order issued in 1988, petroleum contamination was detected in groundwater pumped from a number of residential wells close to the gas station.

The contaminated site is near the Louise S. McInnis Elementary School and within a mile of DeLeon Springs State Park's second magnitude DeLeon Springs.

The significance of the combined potential receptors resulted in a cleanup ranking of "high priority" by the state. Acree's consultant estimated cleanup would cost in excess of \$100,000 at that point.

The contaminated site entered into the regulatory picture as the state Department of Environmental Protection was in the process of establishing its Early Detection Incentive program for petroleum cleanup.

When the state announced funding as-

sistance for the cleanup of petroleum storage tank releases, it was assumed there would be far fewer applicants than the avalanche they received. Population centers such as the Orlando/Orange County area generated upwards of a thousand or more applications.

Initially, the state simply didn't have sufficient staff to process the sites.

Just as the state and their contracted local programs were up and running, the Chiles administration eliminated restrictions governing the use of money from the trust fund that was crafted to finance petroleum assessments and cleanups.

Large amounts of previously dedicated cleanup dollars were diverted out of the program. The range of acceptable contractor personnel and unit costs were standardized and relatively uniform task order criteria were established.

But funding for the maturing program became an exercise in feast or famine and although assessment activities were underway, the DeLeon Springs site's status wasn't upgraded to "imminent threat" until 2008.

In 2008-2009, a \$3.5-million contaminated soil removal was conducted in the area of the gas station and then a few years later, an \$8-million removal of contaminated soil was completed across the street.

Contaminated soil beneath U.S. 17 was left in place. But because U.S. 17 is a federal highway and part of the state's Strategic Intermodal System, special conditions had to be addressed, such as traffic management and the use of Florida Department of Transportation-qualified contractors capable of managing lane closures on the 10,000-daily-trip highway.

The upcoming soil removal project was originally scheduled to take place in 2012. However, resolution of legal and contract issues between Acree's selected contractor, Universal Solutions Inc., DEP and FDOT delayed the start date

until April 2014.

Southland Construction of Apopka was added to the project team to provide the needed expertise.

During the project, traffic on U.S. 17 will be limited to only the south bound lane and subsequently only the north bound lane for three months on each side to allow contaminated soil to be removed from below one side of the road at a time.

"DeLeon Springs doesn't have central water or sewer service," said Munizzi. "We are all supplied by individual wells."

"Petroleum has shown up in the water

of many people. DEP now ranks the DeLeon Springs petroleum contamination as the number one eminent threat site in the state," she said.

Over time, the contamination plume has migrated 400 feet to the west in the direction of DeLeon Spring State Park and, according to Munizzi, the estimated cleanup cost for this remediation phase is now approximately \$7.1 million.

Last year, Volusia County designated U.S. 17 through the impacted and commercial portion of DeLeon Springs as a brown-field district to assist the community and businesses in seeking funds to help revitalize the long contaminated area.



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## Plan to protect manatees in Blue Springs put into action

By **SUSAN TELFORD**

Four projects coordinated by local governments and state agencies will restore groundwater flow to Blue Spring in an effort to provide ample room for the manatees there whose numbers have increased from dangerously low double digits in the 1970s to more than 400 at the last count.

The projects will connect the wastewater reuse pipelines of Volusia County with the cities of DeLand, Deltona, Orange City and Sanford.

The expanded network of piping will enable utilities to share the reuse water, where and when it is needed.

"There's more work to be done," said Keith Riger, PE, DeLand's city engineer and public services director. "But it appears there's a commitment from the St. Johns River Water Management District and state Department of Environmental Protection to support us as we move forward."

The flow of groundwater has been a problem in the area for close to 20 years.

State and federal wildlife officials insist that too much groundwater pumping in the area has endangered the manatees that use Blue Spring as a refuge.

Meanwhile, drinking water utilities in western Volusia County are under a mandate to reduce their groundwater pumping by 2025 in order to meet the goals for restoring spring flow.

The projects planned by the local governments will allow area businesses to use treated wastewater rather than groundwater to irrigate their landscaping.

Additional partnership projects are on the drawing board including aquifer recharge work.

The goal is to reduce the dependence on groundwater for non-potable uses to in-

crease its available flow to Blue Spring.

According to SJRWMD Executive Director Hans Tanzler, "It's a continuing obligation and an opportunity."

District officials hope to achieve the recommended minimum flow and levels for Blue Spring by 2030.

Nearly \$47 million has been committed this fiscal year to springs cost-share programs within the St. Johns River Water Management District alone.

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# Supreme Court case: Does method matter when regulating greenhouse gas emissions?

By ROY LAUGHLIN

Early this year, the Supreme Court heard arguments in a case that may determine the legality of the U.S. Environmental Protection Agency's enforcement methods for greenhouse gas emissions from large stationary sources.

In 2013, the agency established emission standards for CO<sub>2</sub> emissions for the very largest emitters, typically coal-burning power plants and large industrial facilities.

At issue is the legality of two-tier enforcement of the Clean Air Act: targeting large-emission violators for enforcement, while overlooking those who violate the law, but with lower emission levels.

Under the Clean Air Act, EPA has the authority to regulate GHG emissions as air contaminants.

That authority came into focus following a 2007 Supreme Court case, *Massachusetts v. EPA*, when the Supreme Court endorsed higher vehicle mileage standards as a mechanism to reduce GHG under the Clean Air Act.

Once the Supreme Court established in its decision that CO<sub>2</sub> emissions are air

contaminants under the Clean Air Act, EPA could regulate emissions of even a single boiler in a large building. It chose instead to begin regulating the largest sources.

Donald Verrilli Jr., solicitor general of the U.S. who represented the EPA before the Supreme Court, said that the agency, through its rule-making approach, had implemented Congress' intention in the Clean Air Act by avoiding disruptive regulatory approaches.

The plaintiffs argued that the Clean Air Act does not give the EPA discretion to set rules for some violators and excuse others. It asked the Supreme Court to void the rule.

In their questioning, the justices of the Supreme Court indicated they understood the complexity of the issue in both legal and technical terms.

Justice Elena Kagan, quoted in an article in the *New York Times*, characterized the complexity as "the conundrum."

On strictly legal grounds, Justices Anthony Kennedy and Samuel Alito noted the absence of any precedent that allows the EPA the accommodation to enforce nu-

merical standards that are higher than Clean Air Act standards, even though those higher standards are more manageable and less disruptive than the law's standards.

The higher standards, in this case, refer to focused enforcement on higher emitters while ignoring lower volume emitters.

Other justices including Kagan disagreed, supporting the EPA's decision.

The issue focuses on method rather than substance because the EPA has other regulatory mechanisms to set the same or similar standards and enforcement mechanisms, a situation noted in comments by Justice Stephen Breyer.

One alternative that could sidestep the legalities of this case could be that the EPA establishes a set of national air standards, as it does for the emission of lead or mercury whose emitters are few and whose emissions occur as a result of specific activities subject to more explicit regulation and monitoring.

The EPA chose to avoid nationwide standards because CO<sub>2</sub> releases are so widely dispersed and their risks to human

health and the environment are more complex. That this was the EPA's first attempt to regulate CO<sub>2</sub> as a greenhouse gas might also be a factor.

What is not at issue in this case may very well be more important, some say, than what is. The EPA's authority to regulate GHG under the Clean Air Act is not an issue. The decision of *Massachusetts v. EPA* will not be revised by any finding in the present case.

Because the EPA's authority to regulate GHG is not likely to be undermined, and because other regulatory options exist, a finding for the plaintiffs will delay GHG emission regulation for a while longer. Eventually, the EPA will establish regulations under the Clean Air Act to reduce CO<sub>2</sub> emissions.

The Supreme Court initially scheduled 90 minutes to hear arguments in this case, a generous amount only occasionally granted, and unexpectedly extended the time several more minutes for each side's arguments.

At this point, the probable ruling is hard to predict. The court is expected to reach a decision this summer.

Still, there are concerns about fugitive dust and objectionable odors, Bird said. "The odor seems to get bad after we get a lot of rain. A lot of wood fuel is getting water in it and it starts to decompose," he added.

"We have met with GREC and provided comments to them on what we would like them to do. They have strengthened their best management plan and installed a dust-suppression system. We are still monitoring things, but GREC has clearly addressed some of our concerns," he said.

Bird noted that last fall, thousands of people were impacted by issues related to the plant, primarily noise. Now, the main concern is with employees at the public works department who have complained of headaches and irritated eyes.

Bird said the odor and dust problems appear to be weather-related. "The weather may help with one of the issues, but it may exacerbate the other," he said. "The plant has been operating only since last fall. We would like to see a full year of the plant operating and see how it runs during different weather conditions."

"We would be interested in seeing how effective their dust control system will be if you have an extended drought, for example," he said.

GREC officials said that acoustic panels were installed in the stack to reduce noise, misting equipment was installed to cut down on dust blowing from wood chip storage areas and emissions testing was implemented.

Under federal regulations approved in 2013, allowable emission levels for some pollutants would remain the same as they were under the existing state permit.

But some emission levels would be more restrictive, and others would be less restrictive.

In its permit application to DEP, GREC voluntarily sought to keep the current air construction permit limits in place for hydrogen chloride and hydrogen fluoride to address public concerns about the facility.

## Space Coast beach renourishment complete

Staff report

Close to 24 miles of beach was restored along the Space Coast beginning at Patrick Air Force Base, located just north of Melbourne, heading south along Indian-lantic and ending just north of the Sebastian causeway.

The project that began in early December was a coordinated effort between Brevard County, JP Donovan Construction Inc. and AMEC.

The stretch of beach, a preserved 20.5-mile sanctuary between Melbourne and Wabasso Beach, has historically been a popular nest-laying area for sea turtles.

## BIOMASS

From Page 1

ber to modify the construction air permit to meet national emissions standards for hazardous air pollutants that the federal government approved in January 2013. At that time, the plant was not yet commercially operational and emissions testing had not taken place.

Eventually, the application was withdrawn with the intent of filing again when GREC sought its initial Title V permit.


Alachua County filed an objection to the construction permit and sought an administrative hearing due to odor and dust issues at the public works facility.

Chris Bird, director of Alachua County's Environmental Protection Department, said county officials have been reviewing the permit application.

GREC made some improvements to help alleviate the concerns of the county and its residents.

But some issues remain to be resolved, Bird said. These center on noise, fugitive dust and odor concerns.


"We filed a challenge, but GREC withdrew their permit application last year and our challenge didn't go to an administrative hearing," Bird said. "We have been working with them on the dust and odor issues. They have installed a noise-suppression system and it seems to be working well. We are not getting the complaints that we used to."

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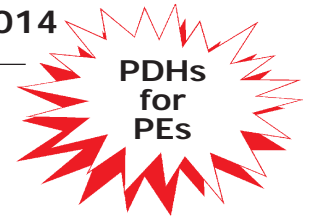


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## Day One

Thursday, May 8, 2014

### Session 1

#### 9:00 Opening Remarks

Joel A. Mintz, Professor of Law  
Nova Southeastern University Shepard Broad Law Center  
Fort Lauderdale

Joel has been a faculty member at Nova Southeastern University Shepard Broad Law Center since 1982. He teaches courses in environmental law, torts and environmental enforcement, and he has taught courses and seminars in land use planning, state and local government law and comparative environmental law.

His scholarship focuses primarily on environmental law and policy, environmental enforcement, sustainable development, regulation of hazardous wastes, and state and local taxation and finance. He is the author of a well-received monograph, *Enforcement at the EPA: High Stakes and Hard Choices* (University of Texas Press, 1995, revised edition, 2012) and a treatise on the federal environmental liabilities of state and local governments. His law review articles have appeared in numerous journals and his articles and book contributions have been widely cited, quoted and excerpted in texts, scholarly books and articles.

Prior to joining the Law Center faculty, Joel was an attorney and chief attorney with the U.S. Environmental Protection Agency in Chicago and Washington, DC. He is an elected member of the American Law Institute, a Fellow of the American Bar Foundation, a member scholar of the Center for Progressive Reform and a member of the Board of Directors of the Everglades Law Center, a not-for-profit environmental public interest law firm.

Joel received his bachelors from Columbia University, his JD from NYU School of Law, and his LLM and JSD from Columbia Law School.

#### 9:30 A Recommitment Towards Developing an Accurate Conceptual Site Model Prior to Remedial Implementation Nicholas Albergo, PE, DEE CRA, Tampa

There is still a fair bit of jumping the gun when moving from assessment to remediation. We call the approach remedial assessment and the concept is that we conduct site assessment with the likely remedial approach in mind, rather than the old style of simply defining the horizontal and vertical impacts and then moving on to focus on remedial alternatives (the Superfund approach). Unfortunately, sometimes we fail to have sufficient understanding of the issues that led to the impacts (the conceptual site model) and thus needless surprises are encountered during remediation resulting in schedule delays and cost overruns because we don't implement the scientific method to routinely confirm that the data being collected makes sense. It's time to recommit to the conceptual site model and scientific method as a means of maintaining focus and efficiency when designing and implementing remediation projects.

#### 10:00 2014 Florida Legislative Session: *Hot Topics*

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Nason, Yeager, Gerson, White & Lioce PA, Boca Raton

10:30 Morning Break

### Session 2

#### 11:00 Destruction of Perfluorooctane Sulfonate and Perfluorooctanoic Acid Using Activated Persulfate Patrick Hicks, PhD, Technical Manager, Southeast Territory PeroxyChem, Philadelphia, PA

Perfluorooctane sulfonate is a man-made fluorosurfactant listed in Annex B of the Stockholm Convention on Persistent Organic Pollutants. It was used in stain repellants and also widely used in fire-fighting. Perfluorooctanoic acid is used in the emulsification of fluoropolymers and was widely used in non-stick coatings and water resistant clothing. Soil and groundwater contamination by PFOA occurred as a result of manufacturing operations. PFOS and PFOA have been recognized as pollutants and authorities around the world are in the initial stages of establishing regulatory limits for groundwater. PFOS and PFOA are both difficult to remediate in soil and groundwater systems due to their recalcitrant nature. Activated persulfate chemistry has been used effectively to treat soil and groundwater contaminated by a wide range of pollutants of concern. Recent laboratory work has demonstrated that activated persulfate is capable of oxidizing and

mineralizing PFOS in groundwater with minimal daughter product formation. This presentation provides the latest in data demonstrating the reduction of PFOS by activated persulfate utilizing a variety of activation methods, such as high pH, hydrogen peroxide and chelated iron, as well as an overview of peer-reviewed papers investigating the destruction of PFOA by persulfate.

#### 11:30 Use of ZVI Catalyzed Hydroxyl & Sulfate-Free Radicals to Address BTEX Contamination via In-Situ Chemical Oxidation followed by Intrinsic Facultative, Biologically Mediated Processes

Michael Scalzi, President  
Innovative Environmental Technology Inc., Pipersville, PA

In-situ chemical oxidation via zero valent iron activated sodium persulfate and hydrogen peroxide has been used in numerous sites across the country. Two specific sites are discussed specifically where the objective was to reduce the concentration of volatile organic compounds, such as BTEX and trimethylbenzene, in soil and groundwater. The first site is a former gasoline service station located in St. Augustine and the second site is a former gas station located in Clinton, NY. The remedial design that was implemented at both sites managed to initially oxidize the targeted contaminants and then promote facultative biodegradation in the subsurface. The introduction of a unique mixture of hydroxyl, peroxy and sulfate-free radicals allows for both Fenton-like reactions and long-lived sulfate-free radical oxidation. These reactions extend the oxidant and free radical residual, and further stimulate the biological mineralization of the petroleum compounds. Through the use of the oxidation by-products, iron and sulfate, biological mineralization proceeds following the oxidation event. The sulfate ion produced as a consequence of the decomposition of the persulfate allows for the attenuation of the targeted contaminants under sulfate-reducing conditions. Both remedial designs were implemented by Innovative Environmental Technologies Inc. The injection in St. Augustine was performed in April of 2008 and the one in Clinton in October, 2009. The three targeted wells in St. Augustine showed BTEX concentration decreases of 74%, 95% and 91% respectively, 12 months after the completion of the injection event. The site in Clinton recorded a total decrease of 79% in BTEX concentrations, 17 months after the implementation of the remedial design. Compounds that are more readily biodegraded, such as xylene, readily disappeared and compounds that are more recalcitrant, such as benzene, were degraded at high rates and eventually disappeared. In Clinton, trimethylbenzene compounds were targeted by the remedial design and were successfully reduced to standard within 12 months of the remedial event. Both sites have since received notices of no further action.

#### 12:00 FRC-South Luncheon

Sponsored by **Advanced Environmental Laboratories**  
Guest Speaker: **Wilbur Mayorga, PE, Chief**  
Pollution Regulation and Enforcement Division  
Department of Regulatory & Economic Resources  
Miami-Dade County

### Session 3

#### 1:30: An Update: Broward County's Environmental Programs, Practices and Activities

David Vanlandingham, PE, Senior Environmental Engineer  
Broward County Environmental Assessment and Remediation Section

*Additional panelists from Broward County include:*

Leonard Vialpando, PE, Director  
Environmental Licensing and Building Permitting Division  
Monica Pognon, Natural Resource Specialist III  
Pollution Prevention, Remediation and Air Quality Division  
Maribel Feliciano, Planning Administrator  
Planning and Redevelopment Division

3:00 Afternoon Break

### Session 4

#### 3:30 Electron Acceptor Selection for Enhanced Bioremediation of Non-Chlorinated Hydrocarbons

Bill Walsh, Technical Acct. Manager  
EOS Remediation, Raleigh, NC

Continued on Page 14

Replenishment of electron acceptors in the subsurface is a common method to stimulate biodegradation of non-chlorinated hydrocarbons in groundwater. Two widely used products are calcium-based peroxides for aerobic degradation and sulfate-based salts for anaerobic degradation. What design parameters should a consultant consider in selecting from multiple electron acceptors? A small consulting firm was responsible for addressing BTEX contamination at a former gas station site. The challenge was to select the appropriate electron acceptor that could cost-effectively stimulate bioactivity and reduce contaminant concentrations that had remained above the state MCL for over a decade. Of the electron acceptors considered, Electron Acceptor Solution, EAS™, was selected to enhance anaerobic biodegradation of BTEX under established sulfate-reducing conditions. During the pilot study, 52.5 gallons of EAS was introduced into the former UST pit area via a single injection well and samples were collected at several downgradient monitoring wells. After six months, concentrations of toluene and xylenes decreased by 98% and 87%, respectively; benzene and ethylbenzene concentrations decreased to a lesser extent (<34%). Sulfate levels remained elevated up to five feet from the injection point. Results from the pilot study will be used in designing the upcoming full-scale application.

### Continuing Education Credits

National Technical Communications Co. Inc., producer of FRC-South, is an approved Continuing Education Provider (CEP 0004002) for the Florida Board of Professional Engineers. As a CEP, NTCC offers professional development hours for FRC-South to professional engineers who are licensed in Florida and other states. FRC-South conference attendance will earn 8.5 PDHs (both days)—5.5 PDHs for Day One and 3 PDHs for Day Two. **Sign-in/sign-out is mandatory for PEs and your PE license number is required.** In addition, our conference provides continuing education credits for professional geologists and other professionals licensed in states that require continuing education to maintain licenses.

### Registration

The registration fee for the full 2014 FRC-South event is \$295; Day One only is \$240, and Day Two only is \$100. The fee includes a conference manual and flash drive with all talks, continental breakfast(s), beverage break(s), and the luncheon and reception for all Day One attendees.

To register for FRC-South, complete and return the form on the next page with payment in full to: NTCC Inc., P.O. Box 2175, Goldenrod, FL 32733, e-mail attachment to mreast@enviro-net.com, or fax completed registration form with credit card information to (407) 671-7757. (This is a secure fax number.) Purchase order numbers are accepted for government employees. We encourage you to register early. Conference registration is limited to avoid overcrowding. Note: Payment in full is required to confirm your registration. Cancellations received before April 8, 2014, will be refunded, less a \$75 service charge. No refunds will be made for cancellations received after this date. However, paid no-shows will receive a copy of the presentation materials upon request. Substitutions will be accepted at any time, preferably with advance notice.

### 4:00 Optimizing Sustainability and Cost for EVO Injections

David Alden, Technical Associate  
Tersus Environmental, Wake Forest, NC

Management of common environmental contaminants including chlorinated halogenated straight chain and aromatic hydrocarbons such as perchloroethene; trichloroethene and chlorinated phenols; perchlorate; explosive materials such as aromatic nitrates and residues of energetic munitions; nitrates; acids; radionuclides and metal oxides allows restoring aquifers and the environment to productive use. It is well known that creating anaerobic groundwater conditions by adding organic substrate stimulates biological mechanisms to degrade such contaminants. Once the organic material initially consumes any oxygen and other electron acceptors such as nitrates and sulfates, it provides a carbon source and serves as an electron donor during reductive dechlorination of contaminants by indigenous or exogenous microorganisms. Better understanding of the processes undergoing this degradation mechanism has increasingly taken those charged with remediating contaminated groundwater to engineer systems that enhance these biological mechanisms. During these biostimulation practices, emulsified vegetable oils are a commonly deployed carbon source for enhanced halorespiration, the use of halogenated compounds as sources of energy. The EVO selection and delivery process must, on one hand, favor a substance with appropriate characteristics for subsurface delivery while providing a short- and long-term source of hydrogen and carbon for enhanced reductive dechlorination. On the other, sustainability and cost considerations are factors that can determine using a product that ships as a 100% vegetable oil base solution yet emulsifies on-site without additional high-energy mixing simply by adding local water. Self-emulsifying organic substrates are an isotropic mixture of vegetable oil and vegetable oil derived fatty acid esters that have a unique ability of forming fine oil-in-water emulsions when mixed with aqueous media under mild agitation. Spontaneous emulsification to produce fine O/W emulsion under gentle agitation followed by dilution in aqueous media occurs since the entropy change favoring dispersion is larger than the energy needed to increase the surface area of dispersion. Emulsification occurs spontaneously due to the relatively low positive or negative free energy required to form the emulsion. Secondary environmental advantages of using self-emulsifying vegetable oils include reducing greenhouse gas emissions by eliminating mechanical energy inputs and reducing substrate-shipping volumes. In addition, a self-emulsifying EVO substrate with a long shelf life allows bulk storage that reduces the need for excess drums and totes that would require additional energy and materials for recycling or disposal at the conclusion of the project. This non-perishable characteristic allows considering, particularly for large projects, intermodal or consolidated shipping to reduce the transportation carbon footprint. This presentation shows how the low-cost self-emulsifying organic substrate is implemented, shares project data and illustrates the advantages of optimizing sustainability, site geochemistry and hydrogeology to address groundwater impacted with chlorinated hydrocarbons.

### 4:30 Design and Implementation of a Large-Scale Bioaugmentation/ Bioremediation Remedy at a Superfund Site in West Palm Beach

Bill Ware, PG, Senior Geologist; Leighton Walker, Senior Staff Engineer; and Will Burke, Senior Staff Hydrogeologist  
Geosyntec Consultants, Boca Raton

Geosyntec began work at a circuit board manufacturing facility in May, 2012, as a subconsultant tasked with 1) technical/field support for the assessment of chlorinated volatile organic compounds; 2) identification of a "treatment" zone for targeted CVOC remediation; 3) selection of a remedy for impacted groundwater and generation of a Remedial Action Work Plan; and 4) implementation of the RAWP. Completion of these tasks was challenging due to the depth interval of contaminated groundwater at approximately 188-245 feet below land surface and the client's goal of having a remedy in place by September, 2013. Geosyntec used CVOC assessment data and 3D modeling software to generate a conceptual site model that facilitated the resolution of data gaps, the identification of a target treatment zone and the selection of injection well spacing. The RAWP utilized an 83-injection well network that was installed from March through May, 2013, and a biostimulation/bioaugmentation injection of ~28,000 gallons of diluted potassium lactate, ~400 L KB-1, ~190,000 gallons of diluted EOS PRO and ~137,000 gallons of anaerobic chase water, completed from June through August, 2013. Implementing the RAWP was met with significant challenges including raw material storage/preservation, generation of anaerobic mix water, injectate quality control, site control, personnel health and safety, and progress communication with the client. Adjustments for lessons learned allowed for activities to be completed safely, attaining design goals and meeting the client's schedule for remedy implementation.

### 5:00 2014 FRC-South Reception

Sponsored by Flowers Chemical Laboratories and Vironex

### 6:30 FRC-South After Party

The South Florida Environmental Discussion Network and SCS ES Consultants will host the FRC-South After Party immediately following the FRC-South Reception at WAVES, the pool deck bar area at the Bahia Mar Hotel.

## Day Two

Friday, May 9, 2014

7:15 **Beach Walk** in support of Narcotics Overdose Prevention & Education Task Force

### Session 5

### 8:30 Characterization of Groundwater Flow Patterns through Permeable Reactive Barrier Systems Created using Hydraulic Fracturing Technologies

Richard Hall, Senior Scientist  
FRx Inc., Cincinnati, OH

Hydraulic fracturing technologies can be used to create lenses of zero valent iron in subsurface formations that can function as effectively as

Continued on Page 18



## Registration Form

--- Please type or print contact information legibly ---

If registering more than one person, please complete a separate page for each.

<b>Full Conference</b>	<input type="checkbox"/> <b>(Both days)</b>	\$295
<b>One Day Only</b>	<input type="checkbox"/> <b>Day 1</b> (Thursday, 5/8/2014, full day)	\$240
(Indicate which day)	<input type="checkbox"/> <b>Day 2</b> (Friday, 5/9/2014, half day)	\$100

**Beach Walk for Charity** (Friday, 5/9/2014, 7:15 AM) \$20

**TOTAL:** \$ \_\_\_\_\_

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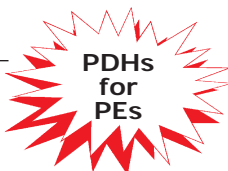
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# Calendar

## May

MAY 1 – Course: Refresher Training Course for Experienced Solid Waste Operators- 8 Hours, Ft. Myers, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 1 – Course: Initial Training Course for Spotters at Landfills, C&D Sites and Transfer Stations - 8 Hour, Ft. Myers, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 1 – Course: Dissolved Oxygen & Oxidation Reduction Potential Training, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 1-2 – Course: Initial Training Course for Transfer Station Operators and Materials Recovery Facilities, Ft. Myers, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 1-3 – Convention: 2014 Florida Groundwater Association Annual Convention & Trade Show, Orlando, FL. Call (850) 205-5641 or visit [www.fgwa.org](http://www.fgwa.org).

MAY 2 – Course: Refresher Training Course for Experienced Solid Waste Operators- 8 Hours, Ft. Myers, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 3 – Course: Backflow Prevention Recertification Review, Bradenton, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 5 – Course: Asbestos Refresher: Project Design- Dania Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 6 – Course: Asbestos Refresher: Inspector, Dania Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 6 – Course: Asbestos Refresher: Management Planner, Dania Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 6 – Course: Refresher Training Course for Experienced Solid Waste Operators- 8 Hours, Lakeland, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 6 – Course: Refresher Training Course for Experienced Solid Waste Operators- 4 Hours, Lakeland, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 6-7 – Course: Initial Training Course for Transfer Station Operators and Materials Recovery Facilities - 16 Hour, Lakeland, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 6-7 – Course: Refresher Training Course for Experienced Solid Waste Operators- 16 Hours, Lakeland, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 6-8 – Course: Initial Training Course for Landfill Operators and C&D Sites – 24 Hour, Lakeland, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 6-8 – Course: Initial Training for Operators of Landfills and Waste Processing Facilities, Lakeland, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 6-9 – Conference: 17<sup>th</sup> National Mitigation & Ecosystem Banking Conference, Denver, CO. Presented by JT&A Inc. Call 1-800-726-4853 or visit [www.mitigationbankingconference.com](http://www.mitigationbankingconference.com).

MAY 7 – Course: Asbestos Refresher: Contractor/Supervisor, Dania Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 7 – Course: Refresher Training Course for Experienced Solid Waste Operators- 8 Hours, Lakeland, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 7 – Course: 8 Hour Training Course for Spotters at Landfills, C&D Sites and Transfer Stations, Lakeland, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 8-9 – Conference: 2014 Florida Remediation Conference-South, Ft. Lauderdale Beach, FL. Presented by NTCC Inc. and the Florida Specifier. Call (407) 671-7777 or visit [www.enviro-net.com](http://www.enviro-net.com).

MAY 9 – Course: Backflow Prevention Recertification Review, Ft. Myers, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 10 – Course: Backflow Prevention Recertification Exam, Bradenton, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 10 – Course: Backflow Prevention Recertification Review, Ft. Myers, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 12-14 – Conference: Backflow AWRA Spring Specialty Conference, GIS and Water Resources VIII – Data to Decisions, Salt Lake City, UT. Presented by the American Water Resources Association. Call (540) 687-8390 or visit [www.awra.org/meetings](http://www.awra.org/meetings).

MAY 12-16 – Course: Backflow Prevention Assembly Tester Training and Certification, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 13 – Course: 4-Hour Refresher Course for Spotters at Landfills, C&D Sites and Transfer Stations, Panama City, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 13 – Course: Spotter Training for Solid Waste Facilities, Panama City, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 13-16 – Course: Water Class C Certification Review, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 14 – Course: Heavy Equipment Safety, Panama City Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 14 – Course: Personal Protection Equipment (PPE) and Safety Procedures, Panama City Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 15 – Course: Permit Required Confined Space Awareness, Panama City Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 15 – Course: Supervisor Safety Training for Solid Waste Operations Staff, Panama City Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

MAY 16 – Meeting: Bimonthly meeting of the Florida Section of the American Water Resources Association, Ormond Beach, FL. Contact Cathy Vogel at (386) 673-8924 or visit [www.awraflorida.org](http://www.awraflorida.org).

MAY 16-24 – Course: Backflow Prevention Assembly Tester Training and Certification, Venice, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 19 – Course: 8-Hour OSHA HazWoper Annual Refresher, Tallahassee, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

MAY 19 – Course: Backflow Prevention Recertification Review, Destin, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

MAY 19-21 – Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

MAY 20 – Course: Backflow Prevention Recertification Exam, Destin, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

## Florida Lake Management Society



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Keynoters: **Marty Kelly**, Principal Technical Professional, Atkins North America

**July Espy**, Program Administrator, Water Quality Assessment Program  
Florida Department of Environmental Protection

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## Aquifer Storage Recovery (ASR) Training Workshop: Updated Information for Water and Wastewater Utility Managers and Operators

MAY 13 - 14, 2014 Orlando

**ASR Overview for Utility Managers and Water Utility Decision Makers (Day One)-May 13, 2014  
Operations Training for an ASR System (Day Two)-May 14, 2014 (including field trip)**

Single day registration available or register for both days at a discounted price.

The regulatory climate for ASR in Florida has recently improved significantly, reopening the opportunity for Florida and other states to "get the water right" by storing it underground. ASR technology provides an environmental-friendly, cost-effective water storage option for achieving water supply reliability and sustainability. Instructors: David Pyne, P.E. and Ted Belser, P.E.

<http://www.treeo.ufl.edu/drinking-water-and-distribution-courses.aspx>

Course Questions: 352-392-9570 ext 209 - [chinton@treeo.ufl.edu](mailto:chinton@treeo.ufl.edu)

Registration Questions: 352-392-9570 ext 212 [rfoli@treeo.ufl.edu](mailto:rfoli@treeo.ufl.edu)

## Florida Specifier

P.O. Box 2175  
Goldenrod, FL 32733

**Michael R. Eastman**  
Publisher/Editor  
Goldenrod, FL  
[mreast@enviro-net.com](mailto:mreast@enviro-net.com)

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.

# Two stormwater projects will benefit troubled Indian River lagoon

By PRAKASH GANDHI

Surface water quality in the troubled Indian River Lagoon will get a major boost from two important new projects.

Groundbreaking took place in February for the Indian Hills Stormwater Treatment and Recreation Area.

The goal of the stormwater treatment project is to make sure polluted surface water never reaches the lagoon or the St. Lucie Estuary.

The project will expand the existing reservoir to three times its size and allow city of Fort Pierce and St. Lucie County staff to treat the lake water with chemicals and plant mats.

With more than \$4.2 million in grants from the state, the project is a collaborative effort between several agencies including the Florida Department of Environmental Protection and the South Florida Water Management District.

The work is expected to take 12 months to complete.

The first phase includes expansion of the estuary's stormwater retention area. The system will also feature an alum in-

jection system and floating vegetative mats to provide additional treatment of the stormwater runoff.

County that will improve the quality of water flowing into the Indian River Lagoon. The 300-acre Wheeler Stormwater

ants that currently flow directly into the lagoon.

The property is bisected by the Sottile Canal which receives stormwater from a 21,000-acre residential and farming area and discharges it into the northern prong of the St. Sebastian River, a tributary of the Indian River Lagoon.

A pond was being constructed as part of Phase 1 of the project. That pond is now being expanded from 15 to 23 acres.

The pond will receive direct discharges from the Sottile Canal and will serve as the primary sediment collection area for flows from the canal to the St. Sebastian River.

"This is an excellent opportunity to provide additional treatment of surface water flowing into the Indian River Lagoon," said William Tredik, director of the district's Indian River Lagoon Protection Initiative. "It is a positive step in reducing nutrients and sediment inputs to the lagoon."

## IRL advisory board seeks help with nutrient loading

An advisory board of the Indian River Lagoon National Estuary Program has asked DEP and state legislators to speed up restrictions for nitrogen and phosphorus loading into the central lagoon, which ranges from Melbourne to Vero Beach.

City and county governments there face an estimated \$1.4 billion in stormwater improvement needs to limit nutrients flowing into the lagoon by about half within 15 years.

The IRL program's 2014-15 work

plan includes 37 proposals that total \$15 million in grant requests.

The program run by the St. Johns River Water Management District typically receives only about \$500,000 annually for the work plan from the U.S. Environmental Protection Agency.

A draft of this year's lagoon work plan will be presented for approval on April 30 to an IRL's advisory board, and then to the water management district's governing board in May for submission to EPA by June 1.

The estimated cost of construction is \$2.5 million. Design and construction costs for the improvements will be shared between the city of Fort Pierce and St. Lucie County.

Elsewhere, St. Johns River water managers have approved the expansion of a stormwater park in southern Brevard

Park is being built in multiple phases and features a series of stormwater ponds and restored wetlands that will capture pollut-

## Optimizing biopolymer to remove copper from process water

By ROY LAUGHLIN

Innotec Group, a British manufacturer of printed circuit boards, announced a research and development project to optimize and use chitosan to remove copper ions from manufacturing solutions so that the metal can be recovered and reused.

Chitosan is an organic polymer obtained from the exoskeleton of crustaceans or insects. Chitin yields chitosan when calcium and other salts are removed to leave organic constituents, which are primarily structural polysaccharides.

Unlike cellulose in wood, chitin in crustacean shells has an amino group in

place of an OH substituent. This gives chitosan alkaline chemical characteristics and allows it to strongly bind metal cations, a behavior that does not occur with most carbohydrates lacking a nitrogen containing substituent. Otherwise, chitosan behaves like a carbohydrate.

Chitosan's binding cation behavior is reversible. Researchers hope to develop a reusable, granular chitosan with effective ion exchange characteristics.

If that goal is achieved, copper ion binding would be enhanced under alkaline

**CHITOSAN**  
Continued on Page 20

## PENALTIES

From Page 1

waste sludge in unlined pits in the woods behind the production facility.

DEP officials said the burial of the waste appears to have started in January 2010, and ended some time in 2011.

The DeLand facility also had unpermitted discharges and spills of pollutants to ground surfaces.

According to documents related to the case, inspectors found that plant employees had buried ferric sulfate sludge in seven or eight pits in a wooded area behind the facility.

The sludge is a byproduct of a production process that takes place at the plant. The department eventually estimated the facility's staff had buried between 100,000 and 200,000 pounds of ferric sulfate sludge.

Inspection of the Palmetto facility in January by department staff also uncovered unpermitted discharges of pollutants to ground surfaces and to the stormwater management system.

DEP officials said the company failed to test waste sludge prior to disposal of the

hazardous waste on site. This resulted in a substantial threat to human health and the environment, said the agency.

A complete and proper waste determination, which is required to ensure that hazardous waste is properly managed, was not conducted on any of the facility's waste streams, department inspectors said.

The company also came under fire for failing to train its employees in proper hazardous waste management and for not determining whether hazardous sludge was being generated.

DEP officials also claim the company did not notify officials of its hazardous waste activities, and failed to properly identify containers or minimize releases from roll off containers.

In a proposed consent order, the department ordered the company to comply right away with all department rules and start correcting earlier violations.

DEP officials said the company must also develop a contingency plan, train employees, and evaluate all the facilities' practices and options for improvement.

Thatcher officials did not return calls for comment.

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# State air permitting: Air general permit categories and the registration process

By **JEFF KOERNER, PE**

Part two in a series

Last month's air permitting column identified the available methods for being exempt from state air permitting requirements: categorical and conditional exemptions, generic exemptions and case-by-case exemptions.

This month's column identifies the air general permit categories available for several small business activities and the registration process.

In Florida, there are approximately 4,000 businesses with air quality permits of some type. More than 60 percent of these businesses hold air general permits, which are commonly referred to as "permits-by-rule."

Currently, there are air general permits for the following specific categories:

- Asbestos manufacturing and fabrication facilities
- Animal crematory
- Bulk gasoline plants
- Cast polymer operations
- Chromium electroplaters
- Concrete batching plants
- Ethylene oxide sterilizers
- Halogenated solvent degreaser
- Human crematory
- Mercury recovery and reclamation
- Nonmetallic mineral processing plants
- Perchloroethylene dry cleaners
- Printing operations
- Reciprocating internal combustion engines
- Reinforced polyester resin operations
- Secondary aluminum sweat furnace
- Surface coating operations

Approximately 70 percent of the nearly 2,600 air general permits are for dry cleaners, concrete batch plants and non-metallic mineral processing plants (i.e., rock crushers).

Although selected for a variety of rea-

## FEDFILE

From Page 2 administrative official, has to formally approve submission of electronic reports.

Currently, the EPA lacks a mechanism to ensure that the responsible people have submitted the report, or delegated the responsibility to the person who submitted the report.

The Inspector General found that about 20 percent of the reviewed CROMERR applications lacked, or lack documentation of, appropriate support to determine that the responsible person had in fact approved it before electronic submission.

The EPA has committed to developing internal guidance that staff will use to assure that responsible officials have properly approved report submission.

The EPA's cross media electronic reporting regulation is a set of procedures and regulations that allow states, tribes and local governments to accept electronic reporting, including electronic signatures, under delegated monitoring and compliance programs.

The agency's goal is to increase efficiency by reducing the amount of paper reports created and transferred. That will reduce the cost to the entity responsible for reporting, and will allow the EPA and other government agencies to store and analyze the information far more efficiently.

This improvement scenario is part of

sons, typically these categories represent small businesses subject to a single specific regulation.

This is important because an owner cannot hold two air general permits regulating the same facility. Also, you must surrender any conventional air permits you now hold as part of the registration process.

Obtaining an air general permit requires three basic steps: 1) Determine eligibility for your business, 2) Register for an air general permit; and 3) Pay the \$100 registration fee.

Facilities vary, so be sure your registration describes the operations at your facility in sufficient detail to demonstrate eligibility to use the air general permit and to provide a basis for tracking any future equipment or process changes.

Your registration should describe all air pollutant-emitting processes and equipment at the facility and it should identify any air pollution control measures or equipment used.

For example, the registration worksheet for concrete batching plants requires the following general information: facility name and location, purpose of registration (e.g., new, re-register, etc.), any current permits being surrendered, contact information; stationary or relocatable plant, methods to control fugitive dust, and process and control equipment subject to Rule 62-296.414(1), Florida Administrative Code (specific to concrete batching plants).

To determine whether your facility may be eligible for an air general permit, visit the Florida Department of Environmental Protection's website at [http://www.dep.state.fl.us/air/emission/air\\_gp.htm](http://www.dep.state.fl.us/air/emission/air_gp.htm).

You will find information on the specific regulatory requirements for each category, eligibility, worksheets, the registration process and answers to frequently asked questions.

Also, there is a description of the Small

the EPA's five-year plan that includes a component to make the EPA a "high-performing organization" and to "work towards a sustainable future."

**Status review of southeastern species.** The U.S. Fish and Wildlife Service announced it will conduct five-year status reviews of 25 endangered and eight threatened species that occur in the designated 10 southeastern states and the Commonwealth of Puerto Rico.

Florida species subject to the status review include the Anastasia Island Beach mouse, the southeastern beach mouse, the Perdido Key beach mouse, Etonia rosemary, Florida bonamia, scrub buckwheat, longspurred mint and Rugel's pawpaw; Miccosukee gooseberry and Telephus spurge.

The FWS is specifically seeking information on species' biology including distribution, abundance, demographics, genetics and population trends; habitat conditions; conservation measures that have been implemented; threat status and trends; and any other information or data including taxonomic or nomenclature role changes, and identification of erroneous information contained in the ESA list.

For each species or group of species characteristic of a habitat, FWS has designated specific individuals and field offices to handle the information submissions and comments about the species review.

Business Environmental Assistance Program and contact information for Florida's Small Business Ombudsman.

The purpose of the SBEAP is to help Florida's small business community achieve and maintain regulatory compliance by providing free and confidential support, education, outreach and advocacy.

The SBEAP can assist in determining eligibility and with the registration process. Registration and payment is simple and fast with the Air General Permit Electronic Registration System, which uses the Department's Business Portal <http://www.dep.state.fl.us/air/emission/agpers.htm>.

Alternatively, you may submit a

hardcopy of the category worksheet along with the fee.

Once you have registered your business, the air general permit becomes effective 30 days after submission. Air general permits are valid for five years and you must re-register to remain in compliance.

For additional information, please contact the SBEAP at 1-800-722-7457.

Jeff Koerner, PE, is the program administrator in the Office of Permitting & Compliance at the Florida Department of Environmental Protection in Tallahassee. The permitting section website is <http://www.dep.state.fl.us/Air/emission/permitting.htm>.

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permeable reactive barriers constructed by trenching. Hydraulic fractures, emplaced with long axes parallel to flow, intercept little fluid directly but rather capture groundwater by distorting flow around the fracture. Significant volumes can be so captured when the ZVI-formation permeability ratio exceeds two orders of magnitude and typical fractures are utilized. An ability to predict flow capture behaviors is essential to successful design of fracture-facilitated, passive reactive systems. Fracture capture zones and contaminant residence time distributions were characterized by developing analytical solutions and utilizing a numerical flow model. Capture zones for individual fractures are elliptical in the far field with dimensions that consistently increase with increases in kRat and fracture dimension. Contaminant residence times vary based on where flowlines enter the fracture. Overall residence time distribution is a function of kRat and can be scaled to maximum residence time, which is a function of ambient formation flux. Judiciously emplaced systems of multiple, neighboring fractures can be used to capture greater volumes with only modest inefficiency due to competition. This analysis was applied using the hydrological properties and contaminant characteristics of three sites with positive results.

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9:00 **Horizontal Remediation Wells Provide Rapid Site Closure in Florida**  
Mark Uanino, Regional Manager  
Directional Technologies, Tallahassee

Horizontal remediation wells installed using horizontal directional drilling, HDD, technologies are being used to rapidly remediate environmentally impacted sites throughout Florida. The technology was developed from the oil industry where it allowed the removal of oil from reservoirs after conventional wells had ceased production. Oil well productivity surged as a result of the increased efficiency of HDD technology. This increased efficiency has been transferred to the environmental field, where the need for precise delivery of a growing number of in-situ remediation technologies has led to a higher demand for horizontal wells. Many sites have eluded closure due to contamination plumes trapped under buildings, roads, wetlands and other obstructions. Florida's unique geology and dependency on groundwater supplies has amplified the need to quickly remediate these areas. Installing horizontal wells allows for better access to the plume and more contact with the screen. These benefits dramatically decrease the time required to reduce the contamination to target levels. Horizontal remediation wells, with much larger screen surface areas, have a proven history of reducing environmental liabilities by achieving remedial objectives more quickly and cost-effectively than conventional methods.

9:30 *Early Morning Break*

*Session 6*

9:45 **Methods of Reducing Variability in Long-Term Monitoring Well Results**  
Sandy Britt, PG, CHG, Principal Hydrogeologist  
ProHydro Inc., New York, NY

Variability in groundwater monitoring data significantly complicates data analysis at long-term monitoring sites. Separating real long-term trends from seasonal changes, water-level-associated trends, or confounding random error is difficult in many cases because we often cannot isolate the sources of concentration change. In a typical monitoring well, contaminant concentrations are observed to increase or decrease between monitoring events due to a variety of factors that may be unrelated to the long-term effects of natural contaminant attenuation or site remediation. Current efforts are underway to identify and eliminate some sources of groundwater monitoring error. ESTCP project ER-201209 is in the field work phase of an effort to identify alternative methods that limit user sampling error. Sampling error is thought to be one of the primary sources of variability not directly connected with the actual concentration changes present in the subsurface. The objective of the project is to demonstrate an easy-to-apply, cost-effective suite of tools and simple procedures that can be used to 1) reduce monitoring variability, 2) more accurately characterize long-term concentration trends, and in turn, 3) optimize monitoring frequency. Two primary mechanisms are thought to be the source of most sampling error: 1) the process of sample collection from the well, and 2) sample handling once the sample is brought to the surface. Note that "error" is different from "change." Actual concentrations vary over time and even position within a well screen. "Error" is broadly defined here as inconsistent application of methods that tend to increase observed concentration variations. It is currently unknown how much variable sampling techniques, or even personnel, effect long term trend monitoring difficulties. But the ESTCP project underway seeks to measure aspects of these sources of error. Four techniques being tested in the ESTCP project include a standard low flow purging technique where field parameters are measured to determine appropriate sampling time; an alternative low flow technique that uses a low but fixed volume water removal without regard to measured "parameter" water chemistry; and two passive techniques that require no well purging. One of the passive methods is the Snap Sampler, a method that seals VOC samples downhole, so there is no surface handling of collected water. It is unclear whether the primary source of sampling error is surface handling or downhole phenomena either naturally occurring or induced through purging activities. The intent of the ESTCP project is to see if these factors can be isolated and whether simple user techniques can be employed to limit negative effects.

10:15 **Distinguishing Chlorinated Solvent Releases by Stable Isotope Analysis**  
Alan Jeffrey, PhD, Senior Environmental Forensics Consultant  
Zymax Forensics / Pace Analytical Services, Escondido, CA

Identifying different releases of chlorinated solvents such as PCE in groundwater is complicated because the compounds are chemically identical no matter the source. However, work in the last decade or so has shown that chlorinated solvents from different manufacturers may be distinguished by differences in their carbon and chlorine isotope ratios. Compound Specific Isotope Analysis is becoming a widely used analytical technique for measuring these isotopic ratios in chlorinated solvents in concentrations in the low ppb level in groundwater. Where there has been little degradation of the chlorinated solvent that was released, differences in its isotope ratios can be inferred to indicate different releases. However, degradation of a chlorinated solvent, eg. PCE degraded to TCE, then to cis-1,2-DCE, can result in a significant alteration in the isotope ratios of the residual PCE. This can result in PCE from the same release, but degraded to different extents in different portions of a plume, having very different isotope ratios. This also complicates the identification of different releases. Under certain circumstances it is possible to reconstruct the isotope ratios of the initial, undegraded solvent. A case study in Florida will be presented where measured carbon isotope ratios of PCE in a groundwater plume were unable to distinguish releases from two different sources due to degradation of PCE in the downgradient plume. However, when the initial isotope ratios of PCE were reconstructed from the measured PCE, TCE, and cis-1,2-DCE ratios in downgradient wells, the ratios were similar to each other and to the PCE from one of the sources.

10:45 *Late Morning Break*

*Session 7*

11:00 **Update: Contaminated Media Forum**  
Richard Lewis, PE, PhD, Principal Engineer  
CRA, Fort Myers

The former Contaminated Soils Forum, now the Contaminated Media Forum, has reunited to document some of the lessons learned over the last decade

*Continued on Page 19*

and to recommend specific changes. As an example of lessons learned, the CMF has proposed developing databases of existing background studies and alternative cleanup target levels that have previously been approved. Such information could be used at similar sites to streamline the regulatory process by limiting the amount of duplicated effort that might be occurring through a lack of transparency in the process. There are numerous such transparency issues that will be discussed. Secondly, an example of the recommended changes being discussed as guidance and/or rule change to allow for the accommodation of Incremental Sampling Methodology, an innovative sampling methodology. Numerous other documentation, transparency and streamlining issues brought to the table through two in-person meetings and numerous conference calls will be discussed, along with providing some insights into the path forward.

12:00 Conference adjourns

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The Narcotics Overdose Prevention & Education Task Force is our 2014 Florida Remediation Conference charity. All proceeds from this year's FRC-South Beach Walk and FRC-Orlando Charity Golf Tournament this fall will go to this organization.

NOPE is a non-profit organization that was formed in Palm Beach County in 2004. NOPE's mission is to diminish the frequency and impact of drug overdose death through community education, family support and purposeful advocacy. NOPE provides innovative substance abuse prevention programs that are comprised of community partners such as: law enforcement agencies, addiction/prevention professionals, treatment providers, businesses and loved ones who have lost family members to drug related deaths. The NOPE program empowers youth to become peer advocates to prevent substance use among our youth. NOPE has established 14 chapters across Florida and Pennsylvania.

**Feds approve plan for Port Everglades deepening**

By DAN MILLOTT

While some environmental activists still have concerns over damages to coral and other sensitive species that deepening the Port Everglades shipping channel might cause, federal authorities approved plans for the project in early March.

Miles Croom, Southeast deputy regional administrator for the National Oceanic and Atmospheric Administration's National Marine Fisheries Service, said that the plan put forth for the Port Everglades project mitigates the destruction of any coral and mangroves that will be caused by the deepening.

The mitigation plan calls for relocating 11,500 corals from the port entrance. An additional 35,000 to 50,000 coral will be raised in nurseries on shore and eventually moved to where the others are relocated.

"We had to come up with mitigation plans that allow the project to proceed, but at the same time retain all the environmental safeguards," Croom said.

The proposed deepening of the main

shipping channel into the port has been on the wish list of county leaders and port officials for years.

The Fort Lauderdale port and other ports in the state are pursuing deeper channels in anticipation of the widening of the Panama Canal, a massive project now underway.

Last summer, the U.S. Army Corps of Engineers revised plans for deepening the main channel at Port Everglades, reducing the depth of 57 feet to 55 feet and altering the turning basin inside from 50 feet to 48 feet.

Glenn Wiltshire, deputy port director of Port Everglades, said at the time it would not alter the port's objective but it would cut about \$7 million from the project's cost.

Environmental activists have voiced concerns with the plan that calls for removing coral reefs and mangroves. They also fear permanent damage to the reef system in general.

The March 7 decision moves the project a step closer to reality. Croom said the action was a biological opinion falling under the Endangered Species Act.

The opinion followed several months

of discussions.

"We have been working with the corps and the applicant (Port Everglades) for a number of years," he said. "It has been a balancing act."

The Port Everglades channel deepening is targeted to start in 2017 and is expected to be complete by 2022.

The \$315 million project will be an economic stimulus for Broward County, creating an estimated 11,000 jobs.

Sixty percent of the cost of the deepening will come from federal funds and 40 percent from port revenue.

The federal money is part of a water bill that Congress must approve before the funds will be available to the project.

Cynthia Perez, project manager for the Port Everglades project, said initial funding for the project's feasibility study has already been approved.

While the deepening project will not be completed to coincide with completion of the Panama Canal work, officials emphasized that Port Everglades already accommodates the larger ships now, but they arrive without being fully loaded because of the current channel depth.

Each August, we turn our attention to the environmental laboratory business in Florida. As part of this special issue of the *Florida Specifier*, we include a directory of environmental labs providing services in the state.

You're invited to complete the form below, providing details about your lab and your analytical capabilities. **There is a fee of \$200 to list your lab this year.** (*Fee waived for advertisers and FRC exhibitors.*) In addition to your listing in the directory, **your lab will also be included in a special lab section of our Enviro-Net Web site.**

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What single issue has most affected labs in Florida over the past year?  
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 \_\_\_\_\_

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# Flatwoods Initiative aims to restore sheet flow, water balance to Charlotte Harbor

By DAN MILLOTT

A project now underway, the Flatwoods Initiative, is expected to return sheet water flow to Charlotte Harbor as it existed before all the new highways and railroads were constructed.

The multi-jurisdictional project managed by the South Florida Water Management District is a partnership between the district, the Florida Department of Transportation and the Florida Department of Environmental Protection. Also involved

are both the Lee and Charlotte county governments, the Southwest Florida WMD and the city of Cape Coral.

Surface water from the north and west once flowed into the Babcock-Webb Wildlife Preserve and was supplemented by rainfall. From there, it sheet flowed southwest eventually reaching Charlotte Harbor.

U.S. Highway 41, the rail lines, FP&L transmission lines and the addition of Interstate 75 in the 1980s altered that.

Charlotte County Environmental Specialist Bill Byle said that one solution for redirecting water flow involves piercing

barriers on canals to redirect some of the water. But it has to be implemented carefully.

"There has to be a balance of fresh and salt water in the streams near Charlotte Harbor because the fingerling snook, trout and tarpon have to have the right mix to survive," he said.

Phil Flood, intergovernmental & outreach representative with SFWMD, said the district decided a few years back to pull

together a number of studies conducted over the years and to target a 90-square-mile area in Charlotte and Lee counties.

Mike Kemmerer, a biological scientist with the Florida Fish and Wildlife Conservation Commission, said the goal of the initiative is to return the flow of the water to as close to its natural state as possible.

"We won't get the flow back to normal, but we will get it close to what it should be," he said.

## CHITINOSAN

From Page 16

pH conditions, and then the ions would be desorbed from chitosan by decreasing the solution's pH.

Electroplating would then be used to recover copper desorbed into a solution suitable for that final recovery step.

The concentration of copper ions in the solution being cleaned, the duration of exposure and the surface area of the granules are factors that can be manipulated to enhance copper binding, according to pub-

lished research on the use of chitosan to remove metal ions from solution.

More than to simply to show chitosan's capability, the project will set up the supply chain for raw materials—from crab shells from the seafood producers, through the company that will fabricate a granular chitosan with desired properties and on to the electronics fabricators as end users.

If the R&D effort yields a product more broadly useful to other industries such as metal finishing, it will be available for licensing internationally.

## ST MARYS

From Page 1

to the water management district opposing the proposal.

They later voted in favor of doing so. "You have to go on record," said Myers. "If you don't, it's possible they could take some license. We don't want that to

happen."

Large water withdrawals and the level of dissolved oxygen are the top concerns.

Studies have shown that oxygen content in both the Kingsland and St. Marys rivers is fine now, but there is concern over what the impact would be should there be large withdrawals from the rivers.

"It's a pristine black water river," said Roger Weaver, planning director for the city of St. Marys.

Weaver is opposed to any withdrawals from the St. Marys and sent a letter to the SJRWMD stating his opposition to the proposal.

According to Jim Gross, program manager for the water management district, the plan is simply a conceptual proposal and deemed the proposal as "pump and pipe" should Florida require more water in the future.

"The overall goal is to work cooperatively with anyone who has a stake in the river," said Gross. "It is unlikely that Florida would unilaterally pull water from the St Marys."

## NOTES

From Page 3

vice president and will head up business development and operations for the office.

Brown has over three decades of environmental remediation experience in the petroleum, chemical, mining and energy industries.

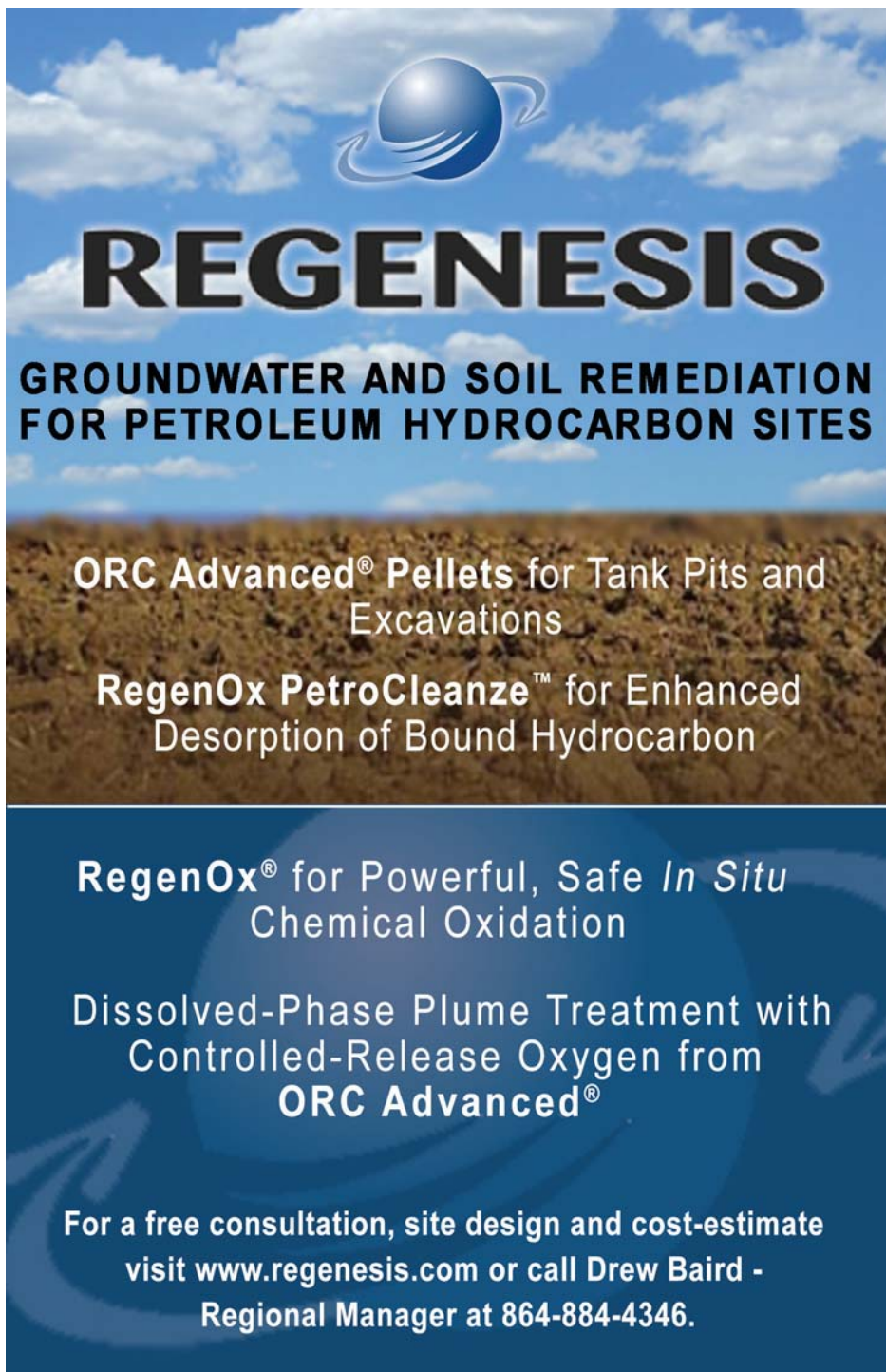
**Names in the news.** Mark Wilfalk has been named the city of Tampa's new solid waste director. Wilfalk most recently served as chief of operations in the department. Tampa's solid waste department serves more than 81,000 accounts, has an annual budget of nearly \$100.8 million and has 215 authorized positions.

Dana West has joined Environmental Consulting & Technology Inc. as a new senior vice president and southeast regional managing director. In addition, Erin Browning has joined the company as a vice president and national director of business development.

Paul Nowicki, PE, was named as director of Gannett Fleming's Southeast region. He is a senior vice president for GF and a member of the company's board of directors.

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