

### Practical Information For Environmental Professionals

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Volume 37, Number 10

#### New groundwater model 9

A research team led by Fred Ogden, professor of engineering at the University of Wyoming, described a new computational approach to solving three partial differential equations that describe groundwater movement through the vadose zone into the water table.

#### Tampa brownfield 10

The city of Tampa purchased a vacant factory with the intention of rehabilitating it for use as offices and record storage. But first, they have to assess and perhaps cleanup asbestos inside the building, and soil and groundwater contamination on the property.

#### DEP bloom blog 14

The DEP is expanding its efforts to monitor algal blooms statewide, identifying algal species in blooms and passing the results and advisories along to the public through a new blog. Cyanobacteria are the primary focus because these organisms produce algal toxins.

#### Burning cane 16

Activists are calling for an end to sugar cane burning in Palm Beach County, concerned about its impacts on air quality and public health. The Sierra Club wants sugar cane growers to stop burning the cane fields that cover more than 300,000 acres in the western part of the county.

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#### Got a story lead?

Got an idea for a story? Like to submit a column for consideration? Fire when ready. 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 Florida. 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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## Water districts, DEP division under new leadership

By ROY LAUGHLIN

**F**our major changes in Florida's environmental leadership were announced in September.

F. Joseph Ullo was named as the new director of the Florida Department of Environmental Protection's Division of Waste Management. Ullo brings a combination of technical experience and legal expertise to the division.

Between 1994 and 2003, he managed remediation projects throughout Florida and the Southeast. Since 2006, he has been an environmental attorney representing both public and private sector clients, advising them on environmental aspects of waste management, cleanup and site redevelopment.

Ullo's educational background includes a bachelor's degree in civil engineering from Georgia Tech and a bachelor's degree in physics and mathematics from Spring Hill College.

**LEADERSHIP**  
Continued on Page 15



Photo courtesy of Cardno

A sonic core is extruded into a fabricated flute liner core bag during a NAPL investigation of a site in Central Florida. The project will be discussed in depth at the 2015 Florida Remediation Conference by Terry Griffin, PG, a senior project geologist with Cardno in Clearwater. See FRC conference preview below.

## Plan to withdraw more surface water from the St. Johns sparks controversy

By PRAKASH GANDHI

**B**attle lines are being drawn between Northeast Florida and Central Florida over the water in the St. Johns River—water that Central Florida covets to quench the thirst of the growing Orlando area.

Central Florida officials are concerned that the Floridan Aquifer will not

provide enough water for the level of population growth predicted. They claim the aquifer is reaching its limit as a source of water for the Orlando area.

A draft report from the Central Florida Water Initiative identified three locations along the St. Johns River that could be tapped for up to 160 million gallons of water per day.

The report also identified water con-

servation measures that could reduce demand by 36 million gallons per day.

CFWI officials concluded that the St. Johns River must be a source of additional water in the future.

The group proposed a draft plan to pump up to 160 million gallons a day at three locations along the river in Central Florida.

Among those vehemently opposed to the use of river water is Lisa Rinaman, the Jacksonville-based St. Johns Riverkeeper.

"It is very clear that the Central Florida Water Initiative is focused on expanding water supply in an effort to fuel unbridled growth," Rinaman said. "There is very little effort being made on meaningful water conservation."

"You are pulling water from a source that has already experienced less flows. Any further withdrawals will cause significant damage to a waterbody that's already stressed. It's like robbing Peter to pay Paul."

The Riverkeeper and Jacksonville Mayor Lenny Curry both wrote letters objecting to additional surface water withdrawals from the river.

The Putnam County Environmental Council also objects to the use of public money to pump water from the river. A state appeals court has ordered the governor and Cabinet to consider their objection.

In 2009, the St. Johns River Water Management District approved a permit to withdraw up to 5.5 million gallons a day from the St. Johns River, despite strong opposition from Jacksonville officials and activist groups.

Officials with the St. Johns River, the South and Southwest Florida water management districts have met with

#### 2015 Florida Remediation Conference preview:

### FRC offers snapshot of emerging tools, techniques for the cleanup industry

By ROY LAUGHLIN

**T**his year, the focus of presentations at the Florida Remediation Conference tilts towards the cleanup of brownfield sites for the first time in years. Four of this year's talks describe effective remediation projects at brownfield sites and two others describe methods that have been used on brownfield sites.

Brownfield redevelopment has re-emerged as a significant remediation project driver in Florida due both to the economic recovery and an appreciation for real estate development opportunities within Florida's urban areas.

Michael Goldstein, Esq., managing partner with The Goldstein Environmental Law Firm in Miami, will provide the framework for the talks with a presentation on contamination reporting requirements in Florida.

Goldstein, one of the state's most knowledgeable legal experts and advocate for brownfield redevelopment statewide, will discuss reporting and compliance rules, which vary by county.

Terry Griffin, PG, senior project geologist with Cardno in Clearwater, will

describe a site investigation at a former manufactured gas plant where restoration is of particular interest because the surrounding area is undergoing significant redevelopment.

In other brownfield-related talks, Dan Socci, chief executive officer with Connecticut-based EthicalChem, will discuss a creosote remediation method, and Rachel Klinger, PE, a project environmental engineer with Geosyntec in Jacksonville, will bring the brownfield discussion back to Florida with another contaminated MGP site talk.

FRC's annual regulatory panel has become one of the conference's most well attended sessions.

Officials from the Florida Department of Environmental Protection's Petroleum Restoration Program, the state's largest cleanup program, will again be featured during a panel discussion.

DEP PRP Administrator Diane Pickett, PG; John F. Wright, PE, assistant chief engineer with the PRP; and Keith Tolson, PhD, principal environmental scientist with Geosyntec Con-

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**CFWI**  
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# Federal WOTUS, SSM and CPP rules face continuing court challenges

## Staff report

In late August, Judge Ralph Erickson of the federal court for the District of North Dakota in Fargo issued an injunction blocking implementation of the U.S. Environmental Protection Agency's Waters of the United States rule, in effect since June.

The injunction applies to 13 states, most of them between the Rocky Mountains and the Mississippi River, and including Alaska.

Since the ruling, procedural issues regarding the court's action have arisen, including whether the district court has jurisdiction over the rule.

It may be that a federal appellate court is the appropriate venue to address the rule.

Also at question is whether the injunction can be applied to more than the original 13 states that brought the lawsuit.

EPA announced that it will continue to enforce WOTUS in states not party to the North Dakota district court's injunction. The agency has also requested consolidation of other pending lawsuits against WOTUS. A hearing on the consolidation request by a federal judicial panel is scheduled for Oct. 1.

Florida Attorney General Pam Bondi joined nine other states in a WOTUS law-

suit filed in U.S. District Court for the Southern District of Georgia. That suit has yet to be heard.

The plaintiffs in this case claim that the WOTUS rule "involves an attempt by two agencies of the federal government to usurp the states' primary responsibility for the management, protection and care of intrastate waters and lands."

They asked the court to vacate the rule.

### Florida challenges air pollution loophole rule.

In June, the EPA finalized a rule under court order that rescinded the Clean Air Act's startup, shutdown and malfunction rule.

The SSM rule had provided automatic industry exemption to air emission excesses during periods of startup, shutdown and malfunction.

The rescinded rule requires 36 states, including Florida, to likewise withdraw automatic exemptions in their state implementation plans within 18 months.

The EPA's move followed a 2011 petition from the Sierra Club asserting that the

Clean Air Act does not permit industries to exceed permit emission limits under such circumstances.

Florida Attorney General Pam Bondi led 16 other states in a lawsuit against the new rule. The lawsuit generally asserts that the replacement rule violates the CAA's autonomy rights provided to states enforcing their own SIPs.

In Florida, power plants are the emitters most likely to be influenced by the new rule.

### Bondi files suit yet again.

Florida Attorney General Pam Bondi joined 14 other states in a lawsuit filed in mid-August seeking to block the EPA's Clean Power Plan, which aims to reduce CO2 emissions from power plants.

The EPA's new rule targets a 28 percent reduction in long-term greenhouse gas emissions. To comply with the new rule, Florida needs a modified SIP within a year to reduce emissions by 25 percent.

Response to this new rule has been mixed. Frank Jackalone, Florida staff director of the Sierra Club, praised Gov. Rick Scott's response to the Clean Power Plan. And at his confirmation hearing to formally become head of the state Department of Environmental Protection, Secretary Jon Steverson mentioned that Clean Power Plan implementation is among a top priority for his agency.

Procedurally, this rule is mired in uncertainty.

West Virginia Attorney General Patrick Morrisey is heading up this court challenge. It asks for an emergency petition for extraordinary writ to stay the rule.

The lawsuit was filed weeks before the mandatory 60-day waiting required by rule before filing. The 60-day period would end in October.

Morrisey's earlier challenge filed over the summer was dismissed summarily by the Court of Appeals for the District of Columbia Circuit, where this latest suit was also filed.

**EPA proposes measures to cut methane emissions.** The EPA proposed a rule to reduce methane and volatile organic compound emissions from the oil and gas sector. The standards would apply to new and modified sources. Existing gas wells will not be affected by the proposed rule.

The new rule updates the 2012 New Source Performance Standards and will apply to hydraulically fractured wells.

It will also cover equipment in the gas

transmission segment that was not regulated in the 2012 natural gas rules.

The rule also streamlines and clarifies Clean Air Act permitting requirements in Indian country.

The EPA expects the proposed rule to reduce methane emissions by 340,000-400,000 short tons by 2025, corresponding to a 25-30 percent reduction compared to 2012 emission levels.

These targets represent a substantial portion of the Obama administration's goal of reducing U.S. methane emissions from all sources by 45 percent.

The remaining emissions reductions will be obtained by other means.

In related news, the U.S. Department of Energy announced that greenhouse gas emissions from U.S. power plants fell to a 27-year low in April, 2015.

The 141 million tons of CO2 emissions were the lowest since 1988 and comprised about one third of U.S. emissions. The reduction occurred due to fuel conversions from coal to natural gas, the increasing use of renewable power and increased energy efficiency.

**Methane from landfills.** The EPA issued two new proposals to require new, modified and existing solid waste landfills to collect methane gas and better control its emission.

It strengthens 2014 rules for new landfills and updates 1996 guidelines for existing landfills.

The proposals, according to the agency, will reduce methane emissions by 487,000 tons annually by 2025. In 2013, landfill-derived methane emissions comprised 18 percent of total U.S. methane emissions, equal in terms of greenhouse gas effect to about 100 million metric tons of CO2.

The EPA also noted that implementing its proposals will cost \$55 million in 2025, with a benefit of \$750 million nationwide.

The EPA will accept public comment through at mid-October.

**New rules for pharma, haz waste.** Under the first of two newly proposed rules, Management Standards for Hazardous Waste Pharmaceuticals, the EPA will ban the flushing of hazardous waste pharmaceuticals and create a specific set of regulations for healthcare personnel and pharmacists in healthcare facilities.

The agency regulates pharmaceutical wastes under the Resource Conservation and Recovery Act.

The proposed rule will protect surface waters, many of which are drinking water sources.

The EPA estimates that more than 6,400 tons of waste pharmaceuticals are flushed down toilets and sinks annually by healthcare facilities, a disposal method the EPA expects to end with this rule.

The second proposed rule applies to hazardous waste generators and handlers. The EPA characterized it as a much needed update that will close gaps in existing regulations, facilitate better compliance and provide greater flexibility in how hazardous waste is managed.

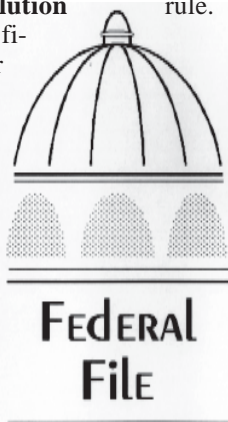
The proposed rule would allow hazardous waste generators to avoid an elevation of status due to an episodic increase in waste production when that waste is properly managed.

It also allows a conditionally exempt small quantity generator to send hazardous waste to a large quantity generator under the control of the same person.

The EPA will accept public comments through October, 2015.

**Gulf Coast restoration update.** In early September, the National Oceanic and Atmospheric Administration's RESTORE Act Science Program awarded \$2.7 million to seven research teams to address short-term priorities relevant to addressing the Deepwater Horizon oil spill.

The University of Miami will receive nearly \$400,000 for a project to expand






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## Environmental groups appeal Sleepy Creek Lands' permit approval

Staff report

In late August, the Sierra Club, the St. Johns Riverkeeper and Florida Defenders of the Environment appealed to the Fifth District Court of Appeal the final order of the St. Johns River Water Management District granting a 20-year water withdrawal permit to Sleepy Creek Lands.

The permit allows the withdrawal of up to 1.46 million gallons a day from the Floridan Aquifer. The environmental groups said the permit will threaten the health of Silver Springs.

In April, Administrative Law Judge Gary Early gave the thumbs up on the permit that led to eventual approval by the SJRWMD Governing Board, despite what activists claim is evidence that Silver Springs would suffer from over-pumping of groundwater and increased nutrient pollution.

**Gun club in the scope.** The Skyway Trap and Skeet club in St. Petersburg is under fire for failing to cleanup lead in the soil.

Officials with the Southwest Florida Water Management District said there are high levels of lead contamination in the soil and in Sawgrass Lake Park. The district owns the park and spent \$25 million to remove 496 tons of lead.

The gun club had agreed to spend \$2 million to cleanup its property and build a protective barrier. But nearby residents, concerned about the lead levels and its effect on human health, said the work has never been done.

The water management district filed an action claiming the gun club is causing serious harm to public health and safety.

**Gas pipeline challenge.** A petition has been filed challenging a state permit for the Sabal Trail natural gas pipeline.

The challenge was filed by the WWALS Watershed Coalition, a group that focuses on the Withlacoochee, Willachochee and other rivers in Georgia and Florida.

The general counsel for the Florida Department of Environmental Protection will decide whether or not to allow the petition to move forward to the Florida Division of Administrative Hearings.

The initial pipeline challenge was rejected by DEP officials who said that the action was brought by a group that was incorporated outside the state of Florida.

WWALS said that 36 of the parent organization's members live in Florida, including Hamilton and Suwannee counties. The proposed pipeline will run through both counties.

Up to one billion cubic feet of natural gas would be carried each day from Alabama through South Georgia and a dozen Florida counties through the proposed 515-mile pipeline.

The pipeline would provide natural gas for Florida Power & Light and Duke Energy power plants here.

Those challenging the project are worried about deforestation and wetlands destruction. Underground drilling could also lead to sinkholes and affect water quality and the flow of springs and rivers, said the group.

The Federal Energy Regulatory Commission will eventually decide whether or not to permit the pipeline.

**Bonds for rail.** About \$1.75 billion in bonds was approved by the Florida Development Finance Corp. to finance the All Aboard Florida rail project.

The passenger rail will connect Miami to Orlando International Airport with two stops in between.

Opponents of the rail project believe it will increase noise levels and cause safety problems. But supporters said it will relieve traffic congestion and create jobs.

Leaders from Martin, Indian River and St. Lucie counties have fought to stop the project without success. The train route would pass through all three counties but would not stop in any of them.

A advocacy group, Citizens Against Rail Expansion, called on the FDFC to postpone the vote, saying it is worried about the potential cost of the project.

All Aboard Florida said the project will help ease travel throughout Central and South Florida, and create about 10,000 construction jobs.

As proposed, the Miami-to-Orlando train will have 16 daily trips and handle 14,000 riders each day by the year 2020.

The service could start operating in early or mid 2017 in South Florida and stretch to Orlando by the end of the year.

**OUC seeks air permit.** The Orlando Utilities Commission is seeking a new five-year air permit for the Indian River power plant. The plant runs for only a part of the day, during peak energy demand periods.

The facility was converted to natural gas after a Houston-based company sold its stake to OUC for \$11.5 million. The company had owned and operated the plant's three fossil fuel-fired steam boilers.

The power plant is not governed by modern air quality rules because it was built before the Clean Air Act took effect.

State environmental officials have fined the plant \$22,000 since 2001 for emissions and thick smoke.

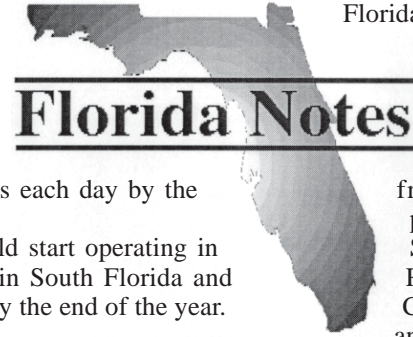
**Corbett resigns.** Richard Corbett resigned as commissioner of the Florida Fish and Wildlife Conservation Commission. He gave no official reason for his resignation.

Robert Spottswood, a hotel builder and attorney from Key West, was appointed to fill the vacancy. Spottswood is one of Gov. Rick Scott's appointees to the Commission on Healthcare and Hospital Funding.

**Acquisitions.** Cascade Environmental Holdings, through its subsidiary Cascade Drilling, acquired TerraTherm Inc., a leader in the development and implementation of in-situ and on-site thermal remediation systems.

TerraTherm designs, builds and oper-

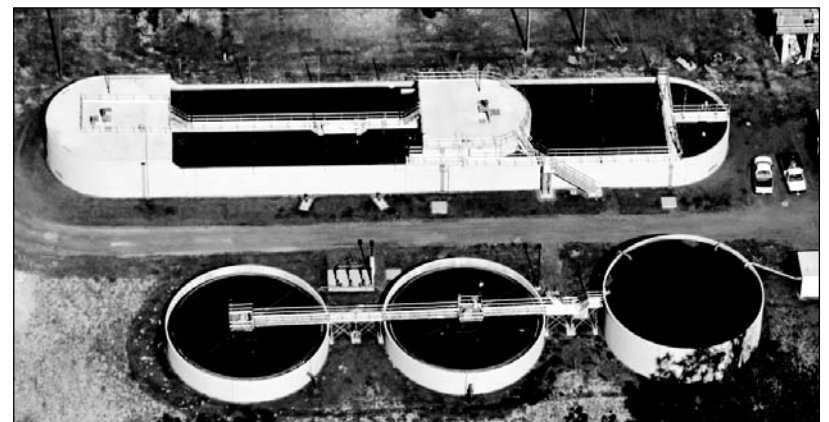
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# Henderson named first executive director of Stetson environmental institute

## Staff report

Clay Henderson has been chosen as the first executive director of Stetson University's newly established Institute for Water and Environmental Resilience.

He brings a broad range of professional experience to the new institute. For the last 15 years, he has been senior counsel at Holland & Knight, focusing primarily on environmental and water law.

Prior to that, he was president of the

Florida Audubon Society. In addition, he has worked with the Nature Conservancy and the Trust for Public Land.



Henderson

Henderson has been an adjunct professor at Stetson University's Environmental Studies/Science Department since 2012, and a member of the College of Arts And Sciences' advisory board at Stetson as well.

He received awards and honors from the Nature Conservancy, the Florida Wildlife Federation, The Sierra Club, the Central Florida Community Partnership, Stetson University and the Florida Bar.

Stetson's Institute for Water and Environmental Resilience will focus on water and environmental research as a basis of policy options to protect natural resources in central Florida and beyond.

Its efforts will include student and faculty research, community engagement and experiential learning.

**Columbia County water expansion.** Columbia County is extending its October Road water main by 8,500 feet and tying it in with the existing distribution system to provide drinking water to the Ellisville area.

The project will also help manage withdrawals from the aquifer, helping to meet recently established minimum flow and levels for the Upper Santa Fe River basin.

The total project cost is about \$451,000. The Suwannee River Water Management District is providing

\$200,000 through its Regional Initiative Valuing Environmental Resources program and the county is picking up the remaining tab.

The project began in mid-August and was expected to be completed by October.

**Mallory Swamp restoration.** The Suwannee River Water Management District began construction on the Middle Suwannee River and Springs Restoration and Aquifer Recharge Project in Dixie and Lafayette counties. The project lies along the southeastern border of the Mallory Swamp.

The district will install hydraulic control structures including culverts, low-water crossings and over a hundred flash-board risers along Mallory Swamp's southeastern margin.

This will restore natural drainage patterns and rehydrate about 1,500 acres of ponds and 4,000 acres of wetlands that the SRWMD acquired in recent years.

The work will raise groundwater levels, improve spring flows along the Middle Suwannee River and help sustain agricul-

**WATCH**  
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**Panama City drinking water project.** Panama City depends on Deer Point Lake as its primary drinking water source.

Until recently, the water system's intake was at the south end of the lake and potentially subject to storm surges from the Gulf of Mexico that could bring a considerable amount of saltwater to the intake.


To lessen the potential for saltwater contamination, the city completed a new intake structure at the northern end of the lake, one that's less likely to be affected by a saltwater storm surge.

The project to develop an alternative water source for Panama City began in 2010. Utility officials briefly considered a developing a wellfield in Bay County, a plan that yielded to opposition by environmental activists and an adverse ruling in a lawsuit.

The project cost \$23.4 million, including about \$5.5 million in grant money from the Northwest Florida Water Management District. Panama City financed the remainder with a loan to be repaid by water system customers.

The project, which began Aug. 1, 2014, was completed on July 30, four months ahead of schedule and \$41,000 under budget.


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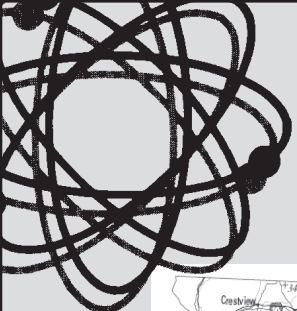


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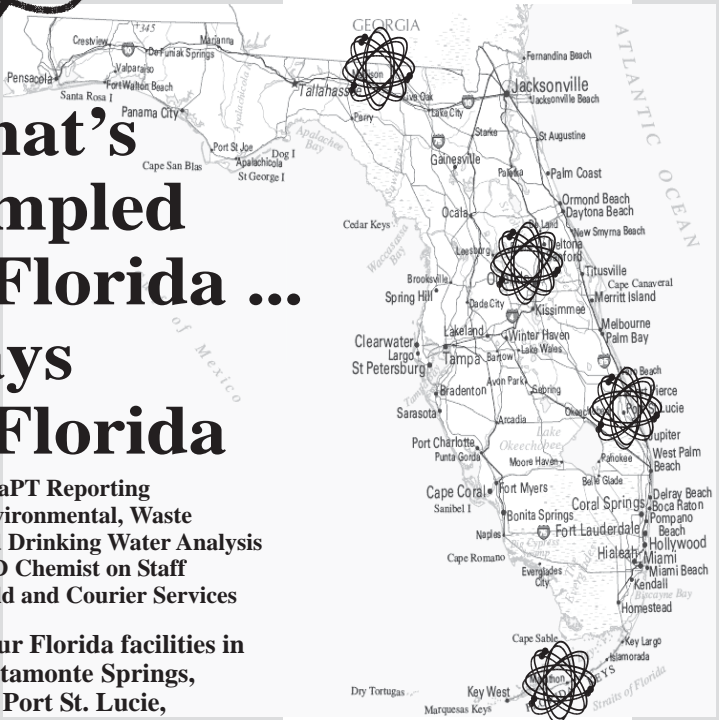


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**WATCH**  
From Page 4

tural and domestic water supply.

The total project cost is \$1.9 million with the Florida Department of Environmental Protection providing \$1,548,000. SRWMD is contributing \$277,000 and Dixie County will provide \$75,000.

Construction efforts that began in August are expected to conclude in three months.

**Stevenson Creek project.** In early August, the U.S. Army Corps of Engineers formally granted an exception to the city of Clearwater allowing it greater financial responsibility for the dredging of Stevenson Creek.

That closed the books on a dredging project in Stevenson Creek, once labeled one of Florida's most polluted waterways. The creek's 6,000-acre basin includes 4,765 acres within Clearwater's city limits. The remaining watershed area is primarily within the city of Dunedin.

Efforts to dredge the creek have been on the books for about a decade. Congressman C.W. Young initially obtained earmarked funding of \$2.4 million for the dredging work.

City officials alleged that the corps diverted that funding to other projects, but additional funding was secured for the project that resulted in two failed dredging contracts and a third that finally succeeded at a cost of well over \$5 million.

The project's construction stage is complete but the books were not closed because of disputes between the corps and the city regarding payments for it.

**Agricultural cost share grant.** A \$94,000 grant from the St. Johns River Water Management District to Brown's Farm in Alachua County will underwrite a more efficient irrigation system to conserve water and maintain the farm's fruit and vegetable output.

The new irrigation system is expected to decrease groundwater withdrawals and nutrient runoff, helping to protect nearby springs and waterways.

Farm Owner Roy Brown intends to use weather station and evapotranspiration data to more accurately manage irrigation of his crops.

The new management practices are expected to conserve more than two million gallons of water a year and reduce nutrient loading by more than 2,000 pounds of total nitrogen and 700 pounds of phosphorus annually.

The water district approved the cost-sharing through its agricultural cost-share program.

**St. Johns cooperative funding.** Late this summer, the St. Johns River Water Management District Governing Board approved \$25 million in cooperative funding for 50 local projects.

With cost-sharing provisions, the total funding will amount to more than \$98 million.

As a whole, the projects are expected to conserve more than 1.7 million gallons of water a day, develop more than 56 million gallons per day of alternative water supplies, reduce total nitrogen loading to waterways and springs by nearly 540,000 pounds per year and reduce total phosphorus loading by more than 113,000 pounds per year.

The projects address one or more of the district's strategic priorities including springs protection and water quality protection in the Indian River Lagoon, northern coastal basins and the Middle and Lower St. Johns River basins.

The district's governing board also directed staff to initiate a second round of solicitations to be funded with an additional \$5 million specifically earmarked for innovative projects and projects in Rural Economic Development Initiative communities.

**Airport drainage project suspended.** A stormwater management project at the Avon Park Executive Airport was suspended in August due to a dispute between

the contractor, L&SF Engineering Consultants Corp. of Palm Harbor, and the city of Avon Park.

The stormwater plan features construction of a 10-acre water storage pond with pump and transmission structures. The project includes drainage structures to discharge water to Lake Anoka. Land clearing, trenching and road construction are also part of the project.

Drainage projects at the airport have been ongoing for the past decade. The current project, funded at more than \$1 million by the Florida Division of Emergency Management and the Federal Emergency Management Agency was intended to prevent flooding that affected the airport and surrounding neighborhoods and a mobile home park southeast of the airport.

L&SF Engineering removed its equipment from the site in mid-July, according to local news accounts, due to high groundwater levels and the company's lack of equipment to successfully dewater the site.

The city is now mulling over its options about whether to come to terms with L&SF, ask the contractor's bonding agent to complete the work, or approve a limited declaration of emergency that would allow rebidding of the project with an abbreviated approval period.

Mudding up their decision is funding from FEMA that requires the project to be completed by Dec. 14, 2015.

**Contract for Hendry County reservoir.** The South Florida Water Management District awarded Blue Goose Construction of Fort Pierce a \$10.8 million contract to construct a 10,000-acre stormwater reservoir west of LaBelle in Hendry County.

The contract funds initial preparation of former agricultural land by removing buried pipes and former pump house structures.

Blue Goose will also move about 1.8 million cubic yards of soil to build seven compacted aboveground earth fill mounds reaching as high as 56 feet. The compacted soil mounds will support planned structures.

Blue Goose will also prepare the foundation for a 16-mile dam to surround the reservoir.

When finished, the reservoir will hold up to 170,000 acre-feet of water from Lake Okeechobee. The water will be released during dry periods to maintain a minimum flow through the Caloosahatchee River to Gulf Coast estuaries in Lee County.

This first phase of the reservoir construction project will take about two years to complete and will provide 78 jobs.

**New IRL Council director.** Duane DeFreese, PhD, who has long been involved with Indian River Lagoon science and management efforts, was named as the

Indian River Lagoon Council's new director. The council hopes to negotiate a three-year plan beginning at an annual salary of \$100,000 so that DeFreese can begin in October.

He has spent most of his adult life in Brevard County and is currently a senior consultant with Indialantic-based HydroPro-Tech LLC.

From 1999-2008, DeFreese served as vice president of Florida research at Hubbs-Sea World Research Institute. From 1991-1998, he was the first program coordinator for the Brevard County Environmentally Endangered Lands Program.

He received his PhD from Florida Institute of Technology and was active in the 1980s in efforts that led to the Indian River Lagoon's inclusion in the National Estuary Program.

Since its inception, the Florida Department of Environmental Protection and its preceding departments administered the Indian River Lagoon National Estuary Program.

Last year, the Indian River Lagoon Council formed to take over the program's management to remove it from direct government agency management.

The change allows the council, through efforts of its administrative staff, to lobby for state and federal funding, with the hope of dramatically improving financial support for lagoon projects and studies.

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Day  
**1**

Thursday, October 8, 2015

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9:00: Keynote Address from the Conference Chair  
Nick Albergo, PE, DEE, Senior Engineer  
GHD, Tampa

9:30: Contamination Discharge Reporting Obligations: Technical, Legal and Ethical Requirements and Implications for the Environmental Professional

Michael Goldstein, Esq., Principal  
The Goldstein Environmental Law Firm PA, Miami

Environmental consultants can be challenged when asked to advise clients on whether a contamination reporting obligation exists and, if so, by whom, to whom and when. These questions, which can involve not only a scientific analysis but a legal analysis, become especially complicated in the context of a real estate deal when the consultant may be representing a buyer who may or may not elect to close and may or may not have obligated itself to share the results of a Phase II investigation with a seller. This discussion will carefully and methodically walk through the contamination reporting obligations under Florida law, as well as certain county ordinances where a local pollution control program has created its own enforcement process, such as Broward, Miami-Dade and Hillsborough counties. We'll address the contamination reporting obligations that apply to owners and operators, buyers, lenders and sellers. Special emphasis will be placed on real estate transactions to help the environmental professional understand what reporting obligations are triggered for the buyer and the seller when the discharge has been discovered by the buyer, if any, which is the typical fact pattern giving rise to these questions. We'll also discuss what contamination disclosure obligations a professional engineer or professional geologist may have by licensure—as opposed to statute—that could create an unanticipated dynamic for the professional and a conflict with whatever confidentiality provisions have been included in the underlying service agreement with the client or even the transaction document itself. We'll also discuss the mechanics of how disclosure must be made, and pursuant to what timeframes, depending on the type of contamination and whether the contamination has migrated off-site or remains completely off-site.

10:00: Break in Exhibit Hall

### Session 2: Assessment Tools

10:30 Session 2A: Multi-Component NAPL Investigation of MGP Waste With Focus on TarGOST® Technology

Terry Griffin, PG, Senior Project Geologist  
Engineering & Environmental Services Division, Cardno, Clearwater



A comprehensive nonaqueous phase liquid investigation was conducted at a site with documented manufactured gas plant free product with a primary focus on the use of Tar-Specific Green Optical Screening Tool, TarGOST®, assessment technology. TarGOST is a laser-induced fluorescence screening tool that is specifically designed to detect NAPL in the subsurface. It responds almost exclusively to the NAPL found at former MGP and creosote/pentachlorophenol sites. It does this by sensing the fluorescence of polycyclic aromatic hydrocarbons found in MGP and creosote NAPL. A preliminary phase of site and NAPL characterization was performed to determine the likely efficacy of using TarGOST technology and to optimize the subsequent TarGOST investigation. The initial assessment phase utilized Flute Liner™ in conjunction with rotasonic drilling and sample screening with Sudan IV dye. The TarGOST system was used in conjunction with Geoprobe™ direct push technology wherein fiber optic cable was run down the DPT drill rods, connecting a sapphire-windowed probe on the downhole drill rods to an above-ground spectrometer. Filters in the instrument allow certain ranges of light to be detected with the fluorescence signal providing immediate information regarding the quantity and nature of the NAPL encountered. The TarGOST investigation included advancement of 64 TarGOST/DPT borings throughout an approximately 3.5-acre study area. Based on this investigation, free product was typically present where the maximum fluorescence signal exceeded 100 percent RE response. Based on this relationship, the area and precise interval of MGP NAPL was fully characterized and delineated, and a total of approximately 35,000 gallons of free product was estimated in the subsurface.

11:00 Session 2B: Reducing the Cost of Meeting Business Goals for Fuel Release Remediation Using Real-Time Web-Based Analysis of High Resolution Site Characterization Data

Roger Lamb, Principal Geologist  
COLUMBIA Technologies, Columbia, MD  
John Sohl, Chief Executive Officer  
COLUMBIA Technologies, Columbia, MD

To reduce the cost of meeting business goals for a fuel release into the environment, real-time analysis of high resolution site characterization data is invaluable. The use of high resolution tools such as the uVost/LIF®, hydraulic profiling tools, membrane interface probes and mobile laboratories to perform site characterization work for chemical release assessment is becoming common practice in the industry. Integrated analysis of these HRSC data sets by all the project stakeholders—regulators, potentially responsible parties and consultants—in real-time is not commonly performed but is critical to ensuring the HRSC program achieves the project business goals at the lowest possible cost. COLUMBIA Technologies has developed a web-based tool that performs this function—Smart Data Solutions®. Smart Data Solutions has been used on 170 projects as of July 2015 including a 400-acre oil refinery, multiple TCE health risk assessment projects, multiple gasoline release remediation designs, railroad yard diesel recovery projects and chlorinated solvent ISCO remediation designs projects. This presentation will provide a project case study on how real-time analysis of uVost/LIF and HPT data via Smart Data Solutions was used by the consultant and regulators to ensure a high resolution LNAPL conceptual site model was developed to aid in determining the feasibility of remediation design and path toward site closure.

11:30 Session 2C: High Resolution Site Characterization of 1,4 Dioxane Sites Using a New On-site, Real-time Analysis

William Davis, PhD, President  
Triad Environmental Solutions Inc., Durham, NC

1,4 dioxane was a widely used stabilizer in chlorinated solvents that is highly soluble and commonly found in large dissolved phase plumes. The U.S. Environmental Protection Agency designated 1,4 dioxane as a potential human carcinogen. Many states are now regulating 1,4 dioxane in drinking water, making it an emerging contaminant of concern for groundwater investigations. Current laboratory methods for 1,4 dioxane use either purge and trap methods (EPA Methods 524.2 or 8260b) or solid phase extraction (EPA Method 522). Due to the high water solubility of 1,4 dioxane, purging methods show high limits of detection and require special method adjustments including heating the sample and/or the addition of salt. Solid phase extraction methods are time consuming with multiple steps including concentration of the final extract to obtain the desired sensitivity. These factors make the use of these methods impractical for rapid, on-site analysis of 1,4 dioxane. The method described here is a new 1,4 dioxane analysis method based on solid phase micro-extraction followed by mass spectrometric analysis using the direct sampling ion trap mass spectrometer. This method has been demonstrated to provide quantitative analysis of 1,4 dioxane to limits of detection of 1-2 ug/L for groundwater and 5-8 ug/kg for soil samples. Due to the extremely simple nature of the SPME extraction and the rapid DSITMS analysis—five minutes—an analyst operating a single DSITMS can provide up to 50 on-site analyses per day. The method has been applied to provide high resolution site characterization at a number of sites. The real-time analysis for 1,4 dioxane allowed project managers to take advantage of Triad Approach site characterization to ensure sampling and analysis results managed site heterogeneity. Case studies will be presented to demonstrate the value of using this new method in the field to provide data densities that have not been possible due to off-site analytical costs.

12:00 Day One Luncheon

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North American Shale Development and the Impacts on Energy & Petrochemical Markets

Chuck Whisman, PE, Vice President, Global Energy Market Leader, CH2M, Philadelphia, PA

This luncheon talk explores how oil and gas development in the U.S. and Canada is creating significant business opportunities worldwide, while also bringing our scientific community together to develop best practices, minimize risks and lead research initiatives. North American crude, natural gas and natural gas liquid markets will be discussed, as well as their impact in the U.S and globally including recent pricing impacts. For example, U.S. NGL production is changing the landscape of the international petrochemical industry, providing a new low-cost feedstock in the U.S. The presentation provides an overview of natural gas liquids, processing and petrochemical markets, as well as current and future initiatives. We will explore the impact on processing, manufacturing, pipelines, rail and exporting and how it impacts the U.S. as well as the world petrochemical industry. Similar impacts of North American crude and natural gas production will also be discussed, including their impacts on U.S. refineries and LNG exporting projects. The presentation will also explore some research and development initiatives in the U.S. related to developing improved best practices, reducing risks and providing enhanced regulatory compliance programs. Examples of research projects will be shared, in addition to information on how stakeholders are working together to share research and best practices.

### Session 3: Enhanced Remediation Technologies

1:30 Session 3A: In-Situ Microcosms for Evaluation of Sulfate-Enhanced Bioremediation

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

This presentation summarizes the field implementation and results of a field treatability study performed to evaluate the anaerobic bioremediation of petroleum hydrocarbons at a site located in the Southeast U.S. Enhanced aerobic bioremediation technologies such as air sparging, oxygen injection, oxygen diffusion or the use of oxygen releasing compounds are commonly used to accelerate naturally occurring degradation of petroleum hydrocarbons and recalcitrant fuel oxygenates such as MTBE and TBA by indigenous microorganisms in the subsurface. However, these indigenous microorganisms do not function well in the high contaminant concentrations of the source area. Therefore, oxygen addition technologies have to overcome the anaerobic conditions first by meeting chemical and oxygen demand of the source area. An evolution in the remediation of petroleum hydrocarbons has occurred that employs a sulfate-enhanced in-situ remediation strategy. Sulfate reduction and methanogenic conditions appear to dominate natural degradation processes at most sites. These processes will cease in the presence of added oxygen. On the other hand, rejuvenating depleted sulfate, anaerobic groundwater bacteria may continue to use PHCs, MTBE and TBA for carbon and energy and thus mineralize them to carbon dioxide and water. This talk summarizes the field implementation and results of a field treatability study performed to evaluate sulfate enhanced bioremediation PHCs using modern molecular technologies. The objective is to compare three approaches for the remediation of PHCs under anaerobic conditions: monitored natural attenuation, sulfate addition and sulfate/nutrient addition. The use of modern molecular technologies allows for the direct monitoring of a site's indigenous microbial population. These techniques can be used to provide a significant insight into current bioremediation activities and provide strong direction in regards to electron acceptor selection and proposed remediation activities at a site. These insights can result in more efficient and effective remediation activities, greater

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bioremediation success and an overall reduction in project lifecycle costs. The presentation provides the results of molecular testing and presents an evaluation of the effectiveness of anaerobic bioremediation of PHCs.

2:00 Session 3B: **Creosote Remediation with Surfactant-Enhanced Product Recovery and In-Situ Chemical Oxidation Technologies**  
 Dan Socci, Chief Executive Officer  
 EthicalChem, South Windsor, CT

A pilot test was implemented using surfactant-enhanced product recovery and surfactant-enhanced in-situ chemical oxidation at a former wood treatment facility in Delaware at which creosote waste and condensate water had been released into an unlined lagoon. Site investigations revealed extensive DNAPL impacts throughout the soil matrix, with only minimal product accumulation in monitoring wells—evidence of the limited mobility of the highly viscous creosote oil. During this pilot test, the SEPR chemical formulation was customized to enhance its effectiveness at emulsifying and thereby breaking apart the creosote oil into easily extractable globules. In addition, the pilot trial examined the relationship of SEPR to the subsequent S-ISCO® polishing phase, to determine the most efficient and effective treatment sequence. VeruSOL®, a customized mixture of plant-based surfactants and co-solvents, is simultaneously injected with low concentrations of peroxide during SEPR implementation to desorb and emulsify DNAPL free product for subsequent extraction. SEPR can be used as a cost-effective measure to enhance the performance of site recovery systems and as a pretreatment for S-ISCO remediation, a treatment that involves injections of VeruSOL to emulsify NAPL into aqueous phase for oxidative destruction by simultaneously injected oxidants. The case study of this pilot is presented, including an overview of the treatment chemicals and the innovative design of the injection and extraction system. Data will also be presented about the relationship between SEPR and S-ISCO and its effectiveness for treatment of sites with extensive DNAPL free product, particularly related to creosote and No. 6 fuel oil.

2:30 Session 3C: **NAPL Source Area to Chic Mixed Use High Rise: Remediation for Redevelopment in Downtown Tampa**  
 Rachel Klinger, PE, Project Environmental Engineer  
 Geosyntec Consultants, Jacksonville

Over 100 years ago, on the outskirts of Ybor City in Tampa, FL, the Tampa Electric Company operated a manufactured gas plant. MGP operations were ceased in 1960 when the property use was modified for natural gas distribution. But the legacy of MGP operations remained in the form of free phase light and dense nonaqueous phase liquids and a stable dissolved benzene and naphthalene groundwater plume. To address remedial activities and position the property for future redevelopment, a Brownfield Site Rehabilitation Agreement with the Florida Department of Environmental Protection was obtained. Due to a recent pending real estate transaction, this project grew exponentially into a \$1.5 million plus, high-profile project that required the expedited design of a 100-gallon-per-minute multi-phase extraction system to recover mobile LNAPL and DNAPL. To maximize mobile NAPL recovery, the MPE system design included modular and flexible design elements to allow for continuous optimization. Design enhancement and optimization strategies included adjustable drop pipe elevations, a zoned manifold design, operation of select MPE wells across the treatment area, reinjection of treated groundwater, a flexible well head design to allow for conversion of injection wells to extraction wells, the ability to control retention times in various treatment components, and multiple discharge points for treated groundwater effluent. This presentation focuses on the MPE system design, implementation, operation and the lessons learned with a focus on design elements and field optimization activities completed to enhance and maximize the mobile NAPL recovery and ultimately position the site for the construction of two 29-story towers.

3:00: Break in Exhibit Hall

**Session 4: New Remedial Approaches**

3:30 Session 4A: **New Developments in the Chemical Fixation of Priority Heavy Metals Using MetaFix™ Reagents**  
 Fayaz Lakhala, PhD  
 Technology Applications Manager  
 PeroxyChem LLC, Philadelphia, PA

High concentrations of heavy metals are found in many soil and sediment environments. At very high concentrations, heavy metals are known to create toxicity to microorganisms. Treatment approaches that rely on microbial process may not function well in an acutely toxic matrix because important processes such as carbon fermentation, oxygen consumption and biological sulfate reduction can be significantly slowed or completely inhibited. The understanding of many metals removal mechanisms operative in soil and groundwater has advanced significantly over the past decade and we are now in a better position to develop a new platform of effective metal remediation products. In toxic environments, treatment reagents that do not depend entirely on microbial activity but rather combine reduction with adsorption and precipitation of heavy metals are advantageous. MetaFix™ reagents represent an entirely new family of products for treatment of soil, sediment, industrial wastes and groundwater contaminated with heavy metals. Treatment mechanisms based on iron, iron sulfides and other iron-bearing minerals have significant advantages due to lower solubility and greater stability of iron-bearing mineral precipitates formed with heavy metals. The new reagents enrich the aquifer with a mixture of reducing agents—ZVI, iron sulfides—and processed reactive minerals—iron oxides and iron oxyhydroxides. This new approach is insensitive to toxicity and can perform well even in environments that have high metals concentrations, high concentrations of organic contaminants such as solvents, high salt content, or high or low pH levels that would inhibit carbon fermentation and sulfate reduction. The approach used is to create an effective blend of reducing agents, reactive minerals, mineral activators, catalysts, pH modifiers and adsorbents for either ex-situ or in-situ applications. Dredge spoils containing high levels of TCLP/SPLP metals can be quickly treated and stabilized before final disposal. In-situ reactive zones can be constructed to prevent migration of heavy metals into sediments or surface water. MetaFix reagents can also be directly delivered into sediments for in-situ stabilization of heavy metals and thereby reduce exposure to aquatic life. Laboratory results showing reduction in TCLP and SPLP of key metals will be presented. Concepts on full-scale application of MetaFix to soil, sediment and groundwater environments will be discussed.

4:00 Session 4B: **The Biogeochemical Reductive Dehalogenation Groundwater Treatment Process: Commercialization Status at Bench, Pilot and Full Scale**  
 James E. Studer, MS, PE, Principal  
 InfraSUR LLC, Albuquerque, NM

Interest in biogeochemical groundwater treatment, a new in-situ treatment category combining biological and abiotic processes, has accelerated with the commercialization of the patented BiRD engineering process. Biogeochemical reductive dehalogenation, or BiRD, is aimed at generating in-situ, amorphous and crystalline forms of iron sulfide, referred to here as FexSy. FexSy can dehalogenate compounds such as PCE, TCE and other chlorinated aliphatics at significant rates. The FexSy reactive zone is created rapidly and can treat passing groundwater over a relatively long period of time. The process can be applied by use of direct injection or trenching techniques using inexpensive nontoxic reactants that are readily available in either liquid or solid form. Both permeable reactive barrier and area-wide treatment can be pursued. Benefits of BiRD include: 1) rapid degradation of a wide range of halogenated compounds; 2) little or no accumulation of undesirable transformation products such as cis-1, 2 DCE and vinyl chloride from PCE and TCE; 3) reduced requirement for labile organic matter and less conversion of that which is applied to methane; 4) implementation using low-cost treatment materials with trench-based or direct injection construction techniques; and 5) compatibility with enhanced bioremediation and ZVI. This biogeochemical technology is currently being tested and implemented at commercial scale as an economically effective alternative to other methods of groundwater treatment. For fractured bedrock or relatively low permeability unconsolidated porous media sites the option to use soluble reactants to create the FexSy reactive zone is attractive in the face of large subsurface coverage requirements and back diffusion potential. Results from several bench scale treatability studies and several field pilot tests are presented. A high percentage of the BiRD projects at bench or pilot level are proceeding to full scale and an update on those projects will be presented.

4:30 Session 4C: **A Technology Platform to Harness Speed, Certainty in Groundwater Remediation**  
 Rick Gillespie, Vice President  
 Regenesys, San Clemente, CA

This presentation focuses on utilizing a technology platform based on combined remedial approaches to maximize speed and certainty to achieve groundwater remediation objectives. The platform has a dual function; it sorbs contaminants quickly removing them from the mobile phase and provides a high surface area matrix favorable for microbial colonization and growth. Contaminant availability within a risk pathway is therefore reduced, while at the same time contaminant destruction is accelerated. A detailed discussion regarding the use of conventional technologies like groundwater extraction, soil excavation and in-situ bioremediation will show how combined technologies can significantly improve remediation efficiency. Data from full-scale field applications with long-term performance monitoring—greater than 18 months—on mixed plumes with chlorinated solvents and petroleum hydrocarbons will be highlighted. The presentation includes a case study featuring a manufacturing facility in the Midwest that utilized the liquid activated carbon solution coupled with a slow release electron donor to control migration of a TCA and TCE plume off-site. Long-term performance data showing up to a 99 percent reduction in contaminant concentrations was observed and will be discussed. In addition, a brownfield redevelopment project in downtown Chicago will be presented. The urban site was planned for redevelopment and future use as a convention center and sports arena. With groundwater contamination as the primary concern and time/cost-sensitive deadlines rapidly approaching, a fast and permanent remediation strategy was required. Performance data and results of the redevelopment will be outlined. The talk will also include representative data from three legacy sites in California in support of the in-situ bio process. The legacy sites to be discussed had been stuck in a monitoring-only phase for several years, but transitioned to a combined approach with in-situ bio and sorption to rapidly reduce contaminant concentrations below regulatory standards. Lessons learned on how to successfully navigate the regulatory process to closure will be presented.



Friday, October 9, 2015

**Session 5: Assessment Tools for Multiple Release Sources**

9:00 Session 5A: **Multiple Source Forensic Assessment Using 13C and 37Cl at a Site Impacted with Tetrachloroethene and Trichloroethene**  
 Aaron Peacock, PhD, Senior Scientist/General Manager, Pace EMD, Pittsburgh, PA

Vapor intrusion issues are now being found to be more of a hazard than previously realized. In many cases, it becomes paramount to understand site forensics and to answer questions regarding the possibility of multiple sources. At one such property, multiple industrial uses resulted in impacts of chlorinated ethenes to the groundwater, and vapor intrusion issues. The subsurface at the site was characterized by complex, three-dimensional structure, with separate lower and upper units in some areas but no such separations in adjoining locations. The forensic study produced two separate lines of evidence: chemical composition and isotopic ratio as one line and a study of the site hydrology and transport as another independent

Conference agenda continued on Page 12



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# It's time to take a close look at issues facing the environmental lab business

By KELLY BERGDOLL

As many of you know by now, after more than 16 years of operation, KB Labs has sold its mobile laboratory and direct sensing services.

I am happy to report that the buyer, COLUMBIA Technologies Inc., will be basing and staffing a certified mobile lab in Florida. So yes, there is still a choice.

I'm writing this column to discuss some of the problems this industry faces—and needs to face up to. I read with interest the articles in the *Specifier's* August issue regarding the current and forecast state of

laboratories and the updates concerning the Florida Department of Environmental Protection's Petroleum Restoration Program.

I noted a remark about how "anecdotally" slowed payments had hurt businesses in the program. Well, folks, I am here to tell you it's not anecdotal. It's a fact.

As I write this in mid-August, my company still has not been paid for invoices we sent to a client in early March. That's moving past the six-month mark.

At least we know that those invoices have been submitted to the DEP, but it did not happen until about thirty days ago.

In fact, when we inquired at the 90-day mark about the status of our invoices, our client stated that they had not invoiced the DEP yet

because they could not do so until all field work had been completed.

And they did not know when this would be. Say what? Well, there was probably going to be some more field effort in the future. At some point.

I think we can all understand the concept of "pay when paid." Okay, so I finish my work, I bill you, maybe you take a month to do your work, you bill your client and they pay within 30 days. That's a 60-day cycle.

It's still hard at 60 days because, in a field service company like a mobile laboratory, you have hotel bills and upfront expenses that you have to pay within 30 days. But you can live with that. You can PLAN for that. You can even finance that.

But you cannot do any of those things with an open-ended system where you have no idea when you will get paid and have no control over the variables. This system is cash flow hell for subcontractors. And it can't be a picnic for the primes either.

It makes no sense.

There are many other ways that this could be handled that would help the contractors and the subcontractors, which would also help them to perform more efficiently and cost effectively. For example, incremental invoicing or monthly invoicing, to name a couple.

At a small business, cash flow is probably the single most important factor between success and failure, and the petroleum program does not appear to be interested in helping the very folks who provide crucial services for it to succeed.

There are other issues, too.

Sometimes the state itself provides its own laboratory services instead of allowing the contractors to use commercial mobile or fixed labs. (And I bet they have a DPT operating, too.)

Given the pressure on labs to provide ever lower rates these days, I have my doubts as to whether the state could justify that it is economically better to perform their own lab work. And given the level of required certifications, it can't be

technically better.

So why do it?

Because they are concerned for their own jobs—which I understand. But is it right? Is it fair? Does the DEP lab have to wait for all the field work to be completed to get paid? Do they have to bid on the job? Maybe they do. I don't actually know how it works.

I hear from Florida labs about out-of-state labs getting contracts with the state. I have heard plenty of stories about how hard it is to get a change order done now, especially in the field.

Hey, whatever happened to the concept of dynamic approach? All those lessons we supposedly learned about long term cost savings when flexibility is applied in the field are being ignored.

And speaking of being ignored, where in the line items for the petroleum program are the best and newest field assessment technologies? Membrane interface probes

made it onto the list, which is interesting considering that the ultraviolet optical screening tool wasn't there at all and neither was any ultra-violet fluorescence screening

or mobile lab technique. Just saying.

The other bane of the field service industry is scheduling. We all understand how difficult it is to get all the pieces into play, but sometimes the lack of consideration for the subcontractors is appalling.

KB Labs was fortunate to have had a lot of clients who treated us as part of their teams, but there were still many instances where we lost work due to sudden, unexpected delays or changes that we could never make up. Sometimes, we had already turned other work away.

Our clients seemed to have no mechanism for cost recovery for their own field teams being pulled off either, so it's definitely a problem across the board.

Somehow there needs to be recognition of the loss to the subcontractor that the client can pass along. If everyone started charging cancellation fees, for example, maybe the schedules would be a little tighter.

I will conclude with the mantra that we used to at KB Labs whenever a program manager delayed three weeks of work—one day from the start date: "Well, they're still getting THEIR paycheck."

I want to thank Mike Eastman for letting me do a little venting. I warned him that it would not be politically correct and, bless him, he said that was perfectly fine. I hope that it will just do a little good for others by raising issues that are significant for all involved.

I truly believe that labs and direct push technology companies need to band together and speak out as a group regarding the slowness of payments and other problems that seem to be unique to our industry.

I will miss all of the wonderful people I have had the good fortune to have met and worked with throughout the years. It is amazing to me how talented, dedicated and hard working almost all of the people engaged in the environmental business are.

I've enjoyed learning constantly and I thank everyone who has had contact with or done business with KB Labs throughout the years.

However, I will not miss struggling to pay the bills, borrowing my subcontractor's money (you know who you are and I thank you and apologize profusely), worrying about trucks and generators, and dealing with worker's compensation issue. (Don't get me started on worker's comp—that would be a whole page worth of diatribe.)

I'm still around if you want to talk about UVF screening. I am a big believer in it and I will happily go to the field again to do it!

Kelly Bergdoll is (still) president of KB Labs Inc., in Newberry. She can be reached at [kellyb@kbmobilelabs.com](mailto:kellyb@kbmobilelabs.com).

## Specifier guest column

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# New vadose groundwater flux model promises to extend capabilities

By ROY LAUGHLIN

Most of the U.S.'s freshwater resources are in underground aquifers and this is particularly the case for Florida. In most regions, the aquifers are replenished by rain.

The vadose zone in soil overlaying the aquifer influences how much rain water reaches the aquifer, the rate at which it gets there and how much runs off or leaves via evapotranspiration.

For water managers, estimating runoff, evapotranspiration and percolation through soil are essential to accounting for groundwater replenishment.

Runoff is relatively easy to measure and evapotranspiration is also generally accurately estimated. But water's percolation rate through soils and the water mass reaching an aquifer is much less easily observed, and has typically been modelled rather than measured.

The Richards' equation, proposed by L.A. Richards in 1931, has remained in use since then because of its sound basis of modeling advection and diffusion, with gravity and capillarity as the primary forces affecting groundwater movement through the vadose zone.

Its drawback is that its estimations were not guaranteed to conserve water mass in the calculations, sometimes leading to solutions that did not converge mathematically.

This summer, a research team led by Fred Ogden, professor of engineering at the University of Wyoming, described a new computational approach to solve three partial differential equations that describe groundwater movement through the vadose zone into the water table.

The model, named "the finite water-content vadose zone flux calculation method," is the result of more than 10 years of effort by Ogden and his team. It includes incremental computational improvements that began in earnest about 1991, to improve the Richards' equation. It also improves a method proposed by Talbot and Nash in 1994.

In their research paper, the Ogden team noted that their new method is based on the fundamental equation of water motion through the vadose zone. It is derived from the same equations as the derivation of the Richards' equation.

## Hernando continues protection of lands

Staff report

More than a quarter of a century after voters gave the go-ahead, Hernando County officials are still doing their part to protect the environment. The county's Environmentally Sensitive Lands program has about \$6 million available to acquire important ecological areas.

Controversy related to the program flared up recently when county commissioners voted to dissolve a committee that reviews land that could be purchased as part of the program.

But the commission later voted to keep the committee in place, albeit with seven members instead of 11, said Dawn Velsor, the county's lead environmental planner.

In 1988, Hernando County voters approved a referendum that created the program. The referendum directed the county to create the program and provide funding by assessing up to a maximum of 0.1 mil of the property taxes on all landowners in the county for a period of 30 years.

The ESL program is guided by criteria set forth in a manual that identifies the kinds of lands that should be protected—lands that are important for the protection of water resources and provide habitat for threatened and endangered species.

County officials said that by having its own ESL program, the people of Hernando County can protect lands that would otherwise be vulnerable to development or other alterations that would destroy or degrade sensitive natural resources.

They said it includes the following improvements: it better characterizes capillary relaxation as water moves from regions of low capillarity to high capillarity; it develops and verifies an equation to describe the effect of water table dynamics on vadose zone water content distribution; it introduces equations that model dynamics of "falling slugs" during periods of rain fall hiatus; and it introduces the concept of "bins," another of the mathematical model's analogies that produces convergence of the equation even with increasing bin numbers.

The concept of bins and slugs is a way of breaking down water moving through the soil column into homogeneous subdomains, which the physics requires to solve equations for advection due to gravity, diffusion and capillarity.

It also allows a term for evapotranspiration from the upper part of the vadose zone where plant roots occur and evaporation takes place.

The current model successfully addresses unsaturated zone water fluxes and the behavior of sharp wetting fronts. Sharp wetting fronts occur as capillarity competes with gravity to influence water as it moves downward through the vadose zone. That is the basis in physics for the modeling of slugs and bins.

Simplification of Richards' original partial differential equations describing the physical processes to ordinary differential equations allowed the use of a summing computational method.

"The fact that our method is arithmetic and an explicit ordinary differential equation solution suggests that it will be amenable to significant improvements in computational efficiency," said Ogden's team.

Current vadose zone water movement models are currently run on supercomputers and take significant amounts of time. Time, one of the terms in the model, is incremented in a range from 10 to 500 seconds and, depending on the number of bins and slugs for each location in the model, the computational complexity rises dramatically.

In their research paper, the team tested the model and calculations against three model systems and a large data set collected in Panama. They tested their model's ability to accurately characterize vadose zone water flux in experimental soil profiles with multiple soil textures.

The most extensive test of the model was based on eight months of 15-minute rainfall data collected in a central Panama Canal watershed. The model included loam soil, shallow groundwater and evapotranspiration. The total rainfall was 2,630 mil-

limeters and evapotranspiration was 540 mm.

In that particular comparison, infiltration flux calculated by the Hydrus-1D implementation of the Richards' equation and the new model were identical, and the researchers characterized the cumulative fluxes as "very similar."

According to Ogden, the model's code, which is available upon request, can be run on a desktop computer with a single CPU for small data sets. The code will also run

on larger computers to handle data sets of regional rainfall and soil data.

Ogden said that he has spoken with one water management district official in Florida, but that as far as he knows, no Florida water management district is currently using the new model.

Now, if computers models could only produce rain in dry years, Florida would be set. But, absent that, a good model that fosters effective conservation will be a boon to water managers.

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## Tampa purchases vacant factory building, initiates assessment efforts

By ROY LAUGHLIN

The city of Tampa purchased a vacant factory building on East Hanna Avenue with the intention of rehabilitating it for use as offices and record storage.

But first, they will have to assess and perhaps cleanup asbestos inside the building, and soil and groundwater contamination on the property.

A preliminary environmental site assessment indicated that the building could contain asbestos materials and lead dust, with the possibility of oil contamination from a 500-gallon tank on the property.

The assessment also reported records of leaking barrels of ethylene glycol and sodium hydroxide waste found in the 1990s.

James Jackson, an architect with the city of Tampa, said that in early September, Progressive Engineering and Construction Inc. received a contract for a Phase 2 site assessment. That assessment and associated planning is expected to take up to eight months to complete.

In the 1950s, General Cable Corp. fab-

ricated telephone and electrical cable at the plant before leaving in 1992.

Between then and 2008, other manufacturing activities took place there. Since a bankruptcy sale in 2008, the factory building has been vacant.

The city of Tampa purchased the building and its parking lot in 2014 for \$1 million, with plans to spend more than \$8 million to refurbish it. Current plans are to provide offices for campus technology and innovation workers.

Jackson said that any remediation needed and some of the refurbishment will run in parallel as the results of the assessment become known.

City officials plan to classify the site as a brownfield, allowing them to potentially recoup about \$450,000 of the estimated \$600,000 they may spend to cleanup the site.

Brownfield cleanup rebates are issued as corporate tax credits available through a Florida Department of Environmental Protection program. Though the city does not pay corporate income taxes, it could sell the credits to other entities that could use them to defray their Florida corporate tax bill.

This is not the first public project in Tampa to take advantage of brownfield opportunities. For the \$6.2 million Water Works Park project, the city received \$460,000 in restoration tax credits. For both public and private projects, Tampa has more than 1,200 acres at 33 sites designated as brownfields.

Tampa's Hanna Avenue building and property is currently vacant and surrounded by a fence.

"We're at the very beginning of the rebuilding process," Jackson said. "We have a long way to go."

## Status of Collier-Hogan frack well uncertain

By BLANCHE HARDY, PG

The Collier-Hogan oil well near Lake Trafford in Collier County remains unplugged as of late summer. The well was drilled by Humble Oil Company (since acquired by ExxonMobil) and abandoned using cement plugs in 1949.

An unsuccessful attempt to redevelop the well was made last year, the handling of which resulted in the filing of a Florida Department of Environmental Protection lawsuit against the company permitted to use the well.

The well is installed in the Sunniland trend, an early Cretaceous formation comprised of an upper layer of porous marlstone that acts as a reservoir and the Lower Sunniland Shale, which contains the oil. The formation is over and underlain by anhydrite that acts as the necessary seal. The Sunniland stretches 145 miles across the state from Lee to Dade counties.

Petroleum exploration has been done in Florida since the 1940s. Production peaked in the 1970s and faded almost entirely from Florida's active industries until recently. But current production from Florida wells is minimal, reported to be less than two million barrels annually.

But where there is oil, there is interest. A number of oil prospectors have tapped into the Sunniland and reports indicate they are finding oil.

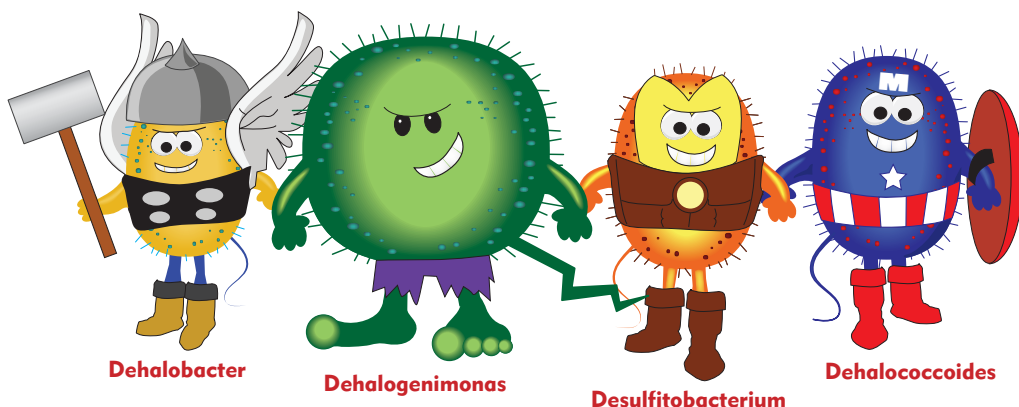
Small trends like Sunniland were considered to contain insufficient recoverable reserves to be profitable until deeper drilling practices, horizontal drilling, hydraulic fracturing and similar technological advances progressed to the point that significantly larger areas within oil-bearing zones could be tapped from the same location.

Texas-based Dan A. Hughes Co. LLP unsuccessfully attempted to reopen Collier-Hogan. Their activities to redevelop

**FRACK**  
Continued on Page 16

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# Calendar

## October

OCT. 3-4 – Course: Backflow Prevention Recertification, 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).

OCT. 3-11 – Course: Backflow Prevention Assembly Tester Training and Certification, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

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

OCT. 5-7 – Course: Asbestos: Inspector, 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).

OCT. 5-7 – Course: Asbestos: Inspector, Plantation, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

OCT. 7 – Course: Hazardous Waste Regulations for Generators, St. Petersburg, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

OCT. 7-9 – Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Lake Buena Vista, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

OCT. 8 – Course: Asbestos: Management Planner, 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).

OCT. 8 – Course: U.S. DOT Hazardous Materials/Waste Transportation, St. Petersburg, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

OCT. 9-10 – Course: Backflow Prevention Recertification, 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).

OCT. 13 – Course: Initial Training Course for Spotters at Landfills, C&D Sites and Transfer Stations - 8 Hour, 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).

OCT. 13 – Course: Refresher Training Course for Experienced Solid Waste Operators-8 Hours, 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).

OCT. 13 – Course: Refresher Training Course for Experienced Solid Waste Operators-4 Hours, 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).

OCT. 13 – Course: DEP SOP For Water Sampling & Meter Sampling, 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).

OCT. 13-14 – Course: Refresher Training Course for Experienced Solid Waste Operators-16 Hours, 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).

OCT. 13-14 – Course: Initial Training Course for Transfer Station Operators and Materials Recovery Facilities-16 Hour, 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).

OCT. 13-15 – Course: Initial Training Course for Landfill Operators and C&D Sites - 24 Hour, 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).

OCT. 13-15 – Course: Initial Training for Operators of Landfills and Waste Processing Facilities-Talla-

hassee, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

OCT. 13-15 – Course: Microbiology of Activated Sludge, 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).

OCT. 14-17 – 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).

OCT. 19-22 – Course: Water Distribution Systems Operator Level 2 & 3 Training, Kissimmee, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

OCT. 19-23 – Course: Asbestos: Contractor/Supervisor, Plantation, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

OCT. 20-21 – Summit: American Water Summit: Scalable Solutions, Denver, CO. Visit <http://americanwatersummit.com>.

OCT. 20-23 – 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).

OCT. 21-23 – Conference: Florida Redevelopment Association 2015 Annual Conference, Tampa, FL. Call (850) 201-3272 or visit [www.floridaplanning.org](http://www.floridaplanning.org).

OCT. 22 – 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).

OCT. 22 – Course: Mid-Atlantic Cross Connection Control Conference, Linthicum, MD. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

OCT. 22-23 – Course: Backflow Prevention Recertification (Courses after May 1), 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).

OCT. 23 – Course: Backflow Prevention Recertification (Courses after May 1), 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).

OCT. 26-30 – Course: 40-hour OSHA HAZWOPER Training Course, 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).

OCT. 27-29 – Course: Activated Sludge Process Control & Troubleshooting, 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).

OCT. 28-30 – Course: 24-hour OSHA HAZWOPER Training Course, 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).

OCT. 28-30 – Meeting: FSEA 2015 Fall Meeting and Technical Session, Fort Lauderdale, FL. Presented by the Florida Society of Environmental Analysts. Call (941) 748-5700 or visit [www.fsea.net](http://www.fsea.net).

## November

NOV. 2-3 – Course: Backflow Prevention Recertification, Altamonte Springs, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

NOV. 2-4 – Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Lake Buena Vista, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

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

NOV. 4 – Workshop: Florida Lake Management Society Fall Workshop. Contact John Walkinshaw [wrc.fl@verizon.net](mailto:wrc.fl@verizon.net).

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

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

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

NOV. 5 – Meeting: The Nature-Technology Nexus Environmental Roundtable for EHS managers, Mel-

bourne, FL. Presented by the Florida EHS Roundtable. Call (321) 543-4414 or visit [www.ehsroundtable.org](http://www.ehsroundtable.org).

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

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

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

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

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

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line. This presentation focuses on the chemical composition and isotopic analysis. The site was impacted with PCE and TCE and was mostly oxic. Though it had been monitored regularly, there had been only sporadic observations of low concentrations of cis-dichloroethene. More than thirty samples of groundwater were collected in locations ranging from presumed sources to distal locations where impacts of PCE and TCE were minimal. Of the 30 samples analyzed, 23 contained enough PCE and 19 contained enough TCE to yield reliable 37Cl and 13C data. Results showed most of the TCE was directly released, and was not a product of the dechlorination of PCE. The ratio of PCE to TCE suggested five sources: two of those sources were represented by only one well each and three others represented by multiple wells. The compound-specific isotope analysis data confirmed a separate source to one of the single wells, showed the other to be impacted both by an independent source and one of the other groups, and helped resolve the three groups into five separate groups that better explained the concentration ratios.

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### 9:30 Session 5B: An Alternate and Multiuse Method to High Resolution Site Characterization that Allows Multi-Technology Treatments

Lance Robinson, PE, Principal Research and Design Engineer  
EN Rx Inc., Flower Mound, TX  
Eric Arenberg, PG, Principal Geologist  
AMEC Foster Wheeler, Jacksonville

High resolution sampling is a key to optimizing all remedial technologies. Increased sampling sets horizontally and vertically via HRSC methods are leading to reduced life cycle costs and more accurate planning and remediation from consultants. High resolution tools, such as membrane interface probes, are also improving the understanding of contaminant distribution at sites. One shortcoming of most of the hi-res assessment tools being used today is that they only provide a snapshot and do not have any treatment use. EN Rx Inc. has developed a method of collecting abundant samples through the use of multi-screen horizontal wells known as Vertebrae™. These Vertebrae wells have the inherent flexibility that allows for any preferred level of discreteness in design. The wells can be used with a variety of technologies and sampled periodically in time to provide additional understanding as site conditions change or as remediation occurs. The horizontal nature of the technology also allows increased sampling frequency in locations inaccessible or where increased disruption limits horizontal sample sets. One site to use this technology is a site in Southeast Florida. As with most sites, a standard assessment was conducted. Due to site conditions, specifically a large active building with limited access, an accurate location and quantity of contamination was not determined and characterization was provided by only one well inside the building. AMEC Foster Wheeler chose to utilize Vertebrae wells for treatment purposes, installing 26 well segments in four horizontal bores. However, the real multipurpose benefit was noticed when the wells were sampled providing a much clearer characterization of the site. This information has led to a more surgical approach and remedy optimization that one would expect after a HRSC tool was used, and should reduce cleanup time and costs.

### 10:00 Session 5C: CSIA Forensics for 1,4-Dioxane

Yi Wang, PhD, Director, Senior Environmental Geochemist  
Pace CSIA Center of Excellence, Pittsburgh, PA

Compound-specific isotope analysis forensics has recently been developed for 1,4-dioxane to supplement chlorinated solvents release site investigations. Obtaining stable isotopic signatures of dioxane along with those for chlorinated solvents helps distinguish between multiple release sources. 1,4-dioxane, often simply called dioxane because the 1,2 and 1,3 isomers of dioxane are rare, is a heterocyclic organic compound. Dioxane is irritating to the eyes and respiratory tract. Exposure may cause damage to the central nervous system, liver and kidneys. Accidental worker exposure to dioxane has resulted in several deaths. The U.S. Environmental Protection Agency classifies dioxane as a probable human carcinogen. Until the end of 1995, dioxane was used primarily as a stabilizer in chlorinated solvents, particularly 1,1,1-trichloroethane. Approximately 90 percent of former production of dioxane was used in this application. Dioxane was typically used at a concentration of about 3.5 percent in chlorinated solvents. Dioxane has also been reported to be used in the production processes of the following product categories: pharmaceuticals/pesticides, magnetic tape and adhesives. Dioxane is completely miscible in water, therefore if released—unlike chlorinated solvents—it can readily migrate away from its source of release in groundwater. When more than one plume exists at a site, it is often difficult for the site managers to identify who contributed dioxane to the specific monitoring wells. The CSIA forensic approach, however, may be able to identify such cases because stable isotope fingerprints of dioxane are basically controlled by (1) the source material being used during the commercial production of dioxane. (In the U.S., it is in a closed system by acid catalyzed conversion of diethylene glycol via dehydration and ring closure by two manufacturers: Dow Chemical, Freeport, TX and Ferro Corp., Baton Rouge, LA); (2) the operating condition temperature range of 130 to 200 °C and the pressure range from a partial vacuum to slight pressure; and (3) any weathering effects like degradation. Microbial degradation of dioxane has been reported ineffective in most cases, which somehow helps preserve CSIA fingerprints. CSIA for dioxane has been technically challenging, due to its high solubility in water. During this presentation, after a brief introduction on the development of CSIA method, a case study is presented to demonstrate how the obtained CSIA fingerprints for dioxane in water from different locations helped distinguish an additional source. Potential contaminant sources could be from a variety of historic industrial activities at the site.

10:30: Break in Exhibit Hall

### 11:00 Session 6: Panel Discussion: Debunking the Myths of Sustainability

Moderator/Speaker: Liza Grudin, PE, Principal  
NovelEolutions Inc., Tampa

Panelists: Qiong Zhang, PhD, Associate Professor  
University of South Florida, Tampa  
Jessica Gattenby, Project Environmental Engineer  
Arcadis US Inc., Tampa

Green, Sustainable, Resilient: This is the nomenclature of our profession. Common perception holds that sustainable design decreases performance or safety—and even that such efforts may increase cost. In actuality, system integration, life cycle analysis and stakeholder engagement increase cost effectiveness, decrease timelines and lead to better solutions. Energy reduction and end-of-life options are a key part of meeting a client's criteria and exceeding their expectations. Part of the solution is to move beyond the conceptual blocks of our experience and look at multi-disciplinary approaches and alternatives. One should not assume that sustainability enters the design at the end but, in execution, green principles should be optimized at the project's initiation. As consultants and engineers, let's veer away from traditional linear thinking to leverage the power of interdisciplinary input and out-of-the-box solutions. This can seem daunting at first. But aren't our most fruitful experiences normally the ones that challenge us the most? As stewards of the environment, we work to reduce our carbon footprint, water footprint and ecological footprint in our daily lives and can apply these same concepts to design and management principles in our workplace. Please join us for an open discussion of possibilities, evolution and synthesis in the application of sustainable principles and green engineering design.

### 12:00 Day Two Luncheon

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### 1:30 Session 7: Regulatory Panel Discussion

Moderator/Speaker: Glenn MacGraw, PG, Principal  
Clean Asset Environmental LLC, Tallahassee

Panelists: Diane Pickett, PG, Administrator, Petroleum Restoration Program  
Florida Department of Environmental Protection, Tallahassee  
John F. Wright, PE, Asst. Chief Engineer, Petroleum Restoration Program  
Florida Department of Environmental Protection, Tallahassee  
Keith Tolson, PhD, Principal Environmental Scientist  
Geosyntec Consultants, Tampa

3:00 Break Pre-Function Registration Area

### 3:30 Session 8: The Use of ZVI in Chlorinated Solvent Remediation

3:30 Session 8A: Synergistic Remediation using EZVI, Carbon Sources and KB-1 to Promote Risk-Based Cleanup of Chlorinated Ethenes at a Historical Train Derailment Site  
Bradley Droy, PhD, President and Chief Executive Officer  
TEA Inc., Santa Rosa Beach, FL

A soil and groundwater remediation design using multiple concepts was effectively developed and implemented at a historical train derailment site in the Southeast U.S. contaminated with chlorinated ethenes. Contaminants of concern included tetrachloroethene, trichloroethene, cis-1,2-dichloroethene and vinyl chloride. Site investigation revealed groundwater contamination was primarily located in the shallow aquifer and underlying clays. In addition, the existence and persistence of dense nonaqueous phase liquids was also indicated in shallow aquifer sediments. A synergistic remediation approach was designed to create a result that exceeded the anticipated "sum of its parts." The approach involved engineering an existing pump and treat remediation system with multiple technologies to achieve a timely, risk-based site closure. EZVI, vegetable oil, lactate, and KB-1® bacteria culture were injected as remediation amendments to enhance the biogeochemistry of the subsurface and accelerate the reductive dechlorination reactions. EZVI was injected to treat the residual DNAPL source in the subsurface, KB-1 bacteria culture was injected to bioaugment the existing dechlorinating bacteria, and vegetable oil and lactate were injected to provide additional carbon for the microbial populations. A detailed soil and groundwater monitoring system was used to assess the effectiveness of the corrective action activities in reducing the concentrations of site COC to health protective levels. Soil and groundwater monitoring results indicate that the concentrations of the site COC have been remediated to levels that are below the cleanup objectives and pose no threat to human health or the environment. Risk assessment, in-situ chemical reduction and the knowledge of the existing remediation system were synergistically combined to expedite site cleanup in a manner that eliminated years of pump and treat operation and maintenance. Based on these results, regulatory approval has been given to develop a site closure plan.

4:00 Session 8B: Comparison of Biological Dechlorination to In-Situ Chemical Reduction at Concord Naval Weapons Station  
Eliot Cooper, National Director Remediation Support Services  
Vironex Technical Services, Golden, CO

A trichloroethene plume at the Concord Naval Weapons Station extends approximately 700 feet down gradient from the source area and up to 100 feet below ground surface. The aquifer consists of unconsolidated silt, sands and clays. Groundwater in the treatment area is highly aerobic. An enhanced anaerobic bioremediation pilot test conducted by CB&I demonstrated complete degradation of the TCE concentration from approximately 5,000 microgram per liter to less than 1 µg/L in approximately 500 days. The U.S. Navy wanted to evaluate a more aggressive approach to achieve site cleanup. CB&I conducted a second pilot test to evaluate enhancement of the biological approach by in-situ chemical reduction. This process was selected to aggressively treat the TCE, reduce the potential for generation of toxic degradation products and provide long lasting substrates to reduce the potential for rebound of the contaminants. ISCR applied abiotic processes by distribution of zero valent iron to provide a long lasting substrate that degrades TCE while minimizing the generation of daughter products. The test incorporated biological degradation processes by amending the ZVI with long lasting organic substrates, Emulsified Lecithin Substrate® from PeroxyChem. Lactate was added to the amendment water to create reducing conditions prior to injection and to help establish the bioaugmentation culture in the aerobic aquifer. Bioaugmentation was conducted using SDC-9™. Substrate distribution was conducted using direct push technology. At each interval, the aquifer was first primed by fracturing the aquifer with the injection solution. Following confirmation of fracture development, ZVI in guar was injected into the interval followed immediately by the remaining injection solution. The EAB and ISCR pilot test data were compared to evaluate effectiveness. The injection process distributed substrates a minimum of 15 feet from the injection point. The ISCR process also degraded trichloroethene, dichloroethene and vinyl chloride to below MCLs within 220 days—less than half the time required for biotic



will participate on the panel.

“John and I are pleased to participate in the (regulatory) panel discussion at the conference,” said Pickett. “Communication and outreach are critical to our program’s success, and this venue allows the opportunity to provide an overview of our revamped PRP as well as valuable updates on program goals and objectives.”

“Interaction with conference participants will also provide valuable feedback and suggestions to enhance the program’s workflow.”

Tolson will provide the latest on the DEP’s Contaminated Media Forum. Glenn MacGraw, principal with Tallahassee-based Clean Asset Environmental will moderate the discussion.

Beyond remediation after-the-fact is an increasing appreciation that green technology, which lowers the risk of resource exhaustion and environmental contamination, can also offer economic and social benefits.

Liza Grudin, PE, principal with NovelEolutions in Tampa, will lead the discussion of “Debunking the Myths of Sustainability.” Additional panelists include Qiong Zhang, PhD, an assistant pro-

fessor at the University of South Florida in Tampa, and Jessica Gattenby, an environmental project specialist with Arcadis U.S. in Tampa.

The concept is that a project’s success depends to a significant degree on optimizing green principles during the design phase. The panelists will discuss a range of “multidisciplinary approaches and alternatives” in applying sustainable principles and green engineering design.

FRC talks always cover a range of emerging techniques and technologies. Topics this year include the use of data gathering, storage and analysis platforms that increase data management and communication efficiency.

Mobile devices and cloud computing have already made significant contributions to project management and, if presentations this year are any indication, the rapid pace of improvement and specialization is hardly near its endpoint.

Three years ago, remediation professionals increasingly referenced biogeochemical pathways as exploitable concepts to aid in the development and optimization of bioremediation methods.

The concepts have been particularly useful in optimizing natural attenuation for in-situ oxidation, then in-situ dechlorina-

tion of chlorinated solvents.

This year, three papers describe successful remediation of recalcitrant compounds or success in difficult matrices by optimizing biogeochemical processes that either add or remove electrons to specific chemical bonds, thereby selectively degrading contaminants.

Last year, Dr. Yi Wang, senior environmental geochemist with Pace Analytical Services, presented a pilot study demonstrating how the analysis of cold isotopes of carbon and chlorine could identify source contamination for plumes of chlorinated compounds.

This year, two talks—one by Wang—discuss studies using stable isotope identification to characterize contamination by chloroethene and 1,4-dioxane. While not currently the garden-variety of chemical analyses, isotopic mass spectrometry gives uniquely useful information to identify the

source of a chlorinated solvent plume when several candidates exist on a site.

The Florida Remediation Conference, now in its 21st year, coevolves with market opportunities, remediation methodologies and the business climate.

Nick Albergo, PE, DEE, senior engineer with GHD in Tampa and FRC chairman, summarized the current situation as follows: “In light of the significant growth anticipated for Florida, the demand for engineering and environmental services will gain momentum, especially within the water resources sector,” he said. “However, competition to provide these services will be strong and it will be extremely important that firms communicate with their staff regarding culture, vision and strategy, and that those practicing professionals get their message out succinctly, manage projects effectively and continue to position themselves for the work to come.”

only approach. TCE degradation appears to be biologically mediated in both approaches. The reduced treatment time in the ISCR approach is attributed to beta-elimination of DCE compared to the hydrogenolysis pathway in the EAB approach. Notably, the ISCR process did not generate arsenic in excess of the MCL as did the EAB process. Based on the successful ISCR pilot test, this approach has been applied for full-scale treatment of the trichloroethene plume.

4:30 Session 8C: Large Diameter Auger Remediation at Wilson Corners on Kennedy Space Center  
Anne Chrest, Remediation Project Manager, NASA/Kennedy Space Center  
Robert Kline, PE, Environmental Control Technician, NASA/Kennedy Space Center

The Wilson Corners site at Kennedy Space Center was used as a rocket engine component cleaning facility and laboratory in support of the Apollo program in the 1960s and 70s. Trichloroethene was used in the laboratory and in an outside cleaning facility. TCE was discharged to a septic system and directly to the ground via direct spills. The first site assessment activities conducted in the 1980s confirmed the presence of TCE and breakdown products in groundwater throughout the site. Since that time, several phases of investigation and cleanup have been conducted, removing approximately 20,000 pounds of chlorinated volatile organic contaminants. Unfortunately, several areas of high concentration CVOCs still remain. Between September 2014 and February 2015, NASA implemented an interim measure, or IM, to treat one of the remaining high concentration areas with the objective of reducing contaminant concentrations to natural attenuation default criteria values or lower. The large diameter auger IM consisted of the following major elements: soil mixing, hot air/steam generation and delivery, vapor extraction and conditioning, off-gas vapor treatment, recovered-liquid treatment and discharge, and zero valent iron mixing and delivery. The treatment system includes a monitoring system for real-time data evaluation that assists in controlling the process parameters to maximize CVOC removal and supports decision making for operation of the LDA and injection systems. Real-time data monitoring is an integral part of the treatment technology because it is utilized to enhance the efficiency of treatment and maximize the results. The effectiveness of the LDA IM will be evaluated through the comparison of pretreatment and posttreatment discrete groundwater samples. Due to the expected elevated subsurface temperatures following the IM, performance monitoring is expected to begin six months after completion. Initially, samples will be collected through direct push technology sampling with monitoring wells to follow once subsurface temperatures subside. The first round of data is expected to be collected in August, 2015.

5:00: 2015 Conference adjourns

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# DEP monitors, reports on algal bloom incidents statewide with new blog

By ROY LAUGHLIN

During a scheduled monthly water sampling exercise between Crescent Lake and the Jacksonville Naval Air Station, Florida Department of Environmental Protection field staff observed an algal bloom at the confluence of Dead Lake and Bull Creek in Flagler County.

They collected water samples that were later analyzed at DEP's toxic algae and algal toxins analytical lab.

A week later in its new biweekly blog, DEP reported the results: "The sample collected from that lake (Dead Lake) was dominated by *Dolichospermum circinale* and the sample contained low levels of microcystins."

The online blog, North Florida Algal Bloom Monitoring and Response (July, 2015), posted additional information on several other sampling locations where algal blooms were also observed and samples taken.

In the majority of cases, microcystins and saxitoxin were at low levels or levels just above detection, requiring no public advisories to avoid contact.

This is one example of an expanding DEP effort in full swing since April this year to monitor algal blooms statewide, quickly identify algal species in blooms and pass the results and advisories along to the public.

Cyanobacteria are their primary focus because these organisms occur in freshwater algal blooms and produce algal toxins.

Routine sampling exercises are the first step and they occur in selected locations including the Lower St. Johns River. Other locations are sampled when algal blooms are observed.

Early this spring, an algal bloom occurred at Port Mayaca in Lake Okeechobee, where control structures release water to the St. Lucie River. For a few days, cyanobacteria in that bloom produced sufficient algal toxins to cause the U.S. Army Corps of Engineers to temporarily close

the control structure, preventing algae release to the St. Lucie River.

DEP's environmental laboratory in Tallahassee is an essential component of the department's expanding algal monitoring efforts statewide. Dee Ann Miller, DEP deputy press secretary, said that the DEP Tallahassee lab has had the capability to perform analyses for microcystins for several years.

"We are in the process of expanding the suite of toxins that we will analyze in-house to include Cylindrospermopsin and anatoxin-a," said Miller.

DEP also contracts with GreenWater Laboratories in Palatka for analytical support for algal toxins as needed.

David Whiting, DEP's Biology Section administrator, said that 2015 is shaping up as a busy year for freshwater algal blooms. He plans to make good use of the new blog for notifications.

The vast majority of algal blooms do not involve harmful algae or significant algal toxin production—apparent when reviewing the report provided by DEP so far this spring.

When algal toxins occur at concentrations above thresholds, the Florida Department of Health issues public advisories to avoid contact with the water.

DEP's new blog includes a link to the DOH's page and both sites provide additional information about algal blooms.

## Green Cove Springs Park restoration to proceed in spite of governor's veto

By BLANCHE HARDY, PG

Three days after the Florida Legislature approved the state's budget for the 2015-2016 fiscal year, Gov. Rick Scott signed the budget, vetoing \$461.4 million through line-item cuts. Among those cuts was \$400,000 approved for improvements to Spring Park in Green Cove Springs.

"Tax revenue is generated by Floridians who are working hard to provide for their families," said Scott. "We are committed to effectively using these dollars by investing them in areas with proven results. That is why I vetoed \$461.4 million in special projects."

Legislators on both sides of the aisle believe the line item vetoes are strategic retribution for unresolved differences.

In the case of Green Cove Springs, the governor said he cut the park's funding "because they circumvent the grant review process, such as the Florida Recreation Development Assistance Program."

The program's maximum \$200,000 cap—half the Legislature's approved allocation—was not mentioned. Nor was the fact that the grants are reimbursement-based.

There is also a local match requirement for grants over \$50,000. Because Green Cove Springs and Clay County are allocating significantly more in local funds than the \$400,000 requested from the Legislature, one might assume that the match, well in excess of the proposed allocation, was incidental in considering the line-item cut.

In spite of the governor's veto, Green Cove Springs officials plan to proceed with

the \$2.1 million restoration and will make adjustments to the improvement schedule and project scope.

The city approved an inter-local agreement with Clay County in July to accept a \$700,000 county grant to begin improvements to the park.

Immediately planned activities include design, planning and bid specification development for an activity building including staff offices and a concession area, a new spring-fed pool to replace the existing facility, improvements to the spring and its outfall and other improvements including accessibility enhancements.

The city dedicated another roughly \$700,000 to improvements in and around the spring and park. Among improvements to be undertaken is the demolition of the old spring house.

Green Cove Spring, formerly known as White Sulfur Spring, has been a Florida attraction since 1816 when George I.F. Clark first developed the area under a Spanish land grant.

By the mid 1800s, Green Cove Spring had become the "watering hole of the rich" with such notable visitors to the community's well appointed winter residence hotels as Henry Flagler, the Astors and the Vanderbilts.

The city may pursue state funding again next year.

Given the potential that Spring Park restoration has for job creation, the opportunity to reestablish the prominence of one of the state's significant historic tourism areas and the opportunity to educate visitors about the importance of Florida's springs, many hope that funding assistance would survive another veto.

### FEDFILE From Page 2

observing system evaluation techniques to include biogeochemistry and ecosystem observations. The goal is to improve recommendations on the type and location of observations needed for monitoring and managing the Gulf ecosystem.

Most of the grants provided approximately \$400,000 to each of seven institutions, except for one to the Louisiana Universities Marine Consortium that received about \$310,000.

The money comes from a statutory set aside of 2.5 percent of the Gulf Coast Restoration Trust Fund, established with civil penalties from responsible parties after the oil spill.

In a related milestone, the Gulf Coast Restoration Council released a list of proposed restoration projects to be funded with \$140 million also provided by the RESTORE Act.

These projects target a wide range of restoration goals, from wildlife management and conservation planning, to habitat improvement and plugging abandoned oil and gas wells.

It will also fund an \$8 million Gulf Coast Conservation Corps to provide both job skills training and education in the region.

The council invites public comment on its priority list and has planned public meetings throughout the Gulf Coast region.

### FIU joins urban water networks.

Florida International University has acquired a large stake in the U.S. effort to ensure resiliency of urban water supplies in light of changing climate and sea level rises.

Earlier this year, the National Science Foundation awarded \$12 million to the Sustainability Research Networks program. FIU is part of that consortium that is dedicated to infrastructure resiliency in the face of weather extremes.

More recently, the NSF awarded the Urban Water Innovation Network \$12 million to "address the challenges that threaten urban water systems throughout the nation and around the world."

Researchers at 14 academic institutions and key partners led by Colorado State University will develop technological, institutional and management solutions to address water problems.

In the past couple of years, Southeast Florida has experienced extreme heat and episodic rainfall shortages that have affected drinking water wells and created power plant cooling problems.

FIU is participating in two of three national programs addressing climate change affecting urban environments. These efforts support the university's plans to establish a center dedicated to examining sea level rise.

Southeast Florida is considered the most vulnerable area in the country to potential impacts from sea level rise.

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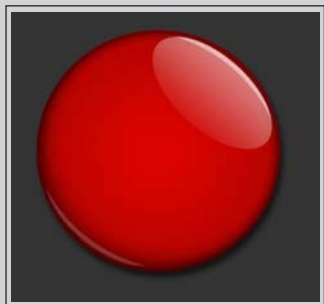
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## LEADERSHIP

From Page 1

He received his master's degree in civil engineering from Florida State University's College of Engineering, and his juris doctor degree from FSU's College of Law.

His experience as an engineer includes serving as engineering manager under contract with Florida Department of Environmental Protection's hazardous waste and dry-cleaning cleanup programs.

More recently in his law practice, he dealt with real estate transactions and other land issues where properties were compromised due to environmental contamination. He also represented clients in matters involving brownfield redevelopment, CERCLA cost recovery and toxic tort litigation.

He brings with him one of the strongest combinations of technical and legal backgrounds of recent appointments.

## CFWI

From Page 1

local utilities for several years as part of the initiative.

The initiative focuses on an area that includes Orange, Osceola, Seminole and Polk counties and part of Lake County.

The five-county Central Florida region consumes about 800 million gallons of water daily that number is expected to increase to 1.1 billion gallons over the next 20 years, according to projections.

Only about 50 million gallons of the 300 million gallons of extra water that's needed can come from the Floridan. This means the region must account for the balance through water conservation efforts and alternative water supply development.

The draft plan identified three possible locations for surface water withdrawals from the St. Johns River:

- A \$637 million project that would draw up to 60 million gallons daily from the river at State Road 520 and transfer it into the Taylor Creek Reservoir, where it would be treated and then piped to customers.

- A \$584.3 million project that would withdraw up to 50 million gallons per day from the river near State Road 46 in Seminole County.

- A \$501.5 to \$565.8 million project that would withdraw up to 50 million gallons daily from the river near the existing Yankee Lake system in Seminole County.

The draft report claims the surface water withdrawals could be done at all three sites without harming the river.

The permit approved in 2009 for the Yankee Lake site limits withdrawals to 5.5 million gallons per day. But an intake structure was built there to handle up to 50 million gallons daily if the permit is expanded in the future.

The project would require reverse osmosis treatment to remove salt and minerals from the brackish water.

"Instead of focusing on true long-term conservation, there seems to be more of an effort to fuel growth," Rinaman said. "You start pulling saltwater further and further upstream."

"This leads to damage of critical wetlands, submerged grasses and trees that are critical for water quality and habitat. The river has already suffered from decades of unintended consequences that have led to more saltwater intrusion and fewer wetlands."

SJRWMD officials have taken steps in the past to require water conservation. But Rinaman said much more conservation work needs to be done. "Millions of dollars are being spent to restore the St. Johns River. Withdrawing water from the river undermines that effort," she said.

The group has met with leaders from the Central Florida Water Initiative and the St. Johns district and asked them to remove what they believe are unsustainable surface water withdrawal projects from their future plans. But so far, little progress has been made, Rinaman said.

"We have been given no firm assurances that anything will change or happen," she said. "We believe our concerns continue to fall on deaf ears."

Calls for comment from the CFWI were not returned.

Ullo replaces Jorge Caspary, PG, who resigned last month after serving as the division director for four years and leading the division during some of its leanest budget years in recent memory while overseeing reform of the department's Petroleum Restoration Program.

### Valenstein named SRWMD chief

The Suwannee River Water Management District Governing Board selected Noah Valenstein as their new executive director. For the last three years, he served as the environmental policy coordinator in the Office of the Governor, where he advised on policy and budget issues relating to energy, agriculture and the environment.

The SRWMD's board selected Valenstein without discussion, according to news accounts. During the process of selecting new leadership, the district extended the deadline for application by one week, an extension during which Valenstein applied.

Three other candidates made the short list for the job: Carlos Herd, the district's acting director; Columbia County Manager Dale Williams; and Stan Posey, former environmental manager for PSC Phosphate.

For two years, Valenstein was director of legislative affairs for The Everglades Foundation and one of their lobbyists in Tallahassee. He has been president of three different consulting companies that provided polling and consulting services.

He grew up in Gainesville and has an environmental policy degree from the University of Florida and a law degree from the Florida State University.

Valenstein, clearly a Scott administration insider with substantial republican street cred, brings with him a substantial background of Tallahassee lobbying experience and Everglades environmental advocacy in South Florida.

### Antonacci now SFWMD director

Pete Antonacci, former general counsel to Gov. Rick Scott, will take over as executive director of the South Florida Water Management District on Oct. 1, replacing Blake Guillory, who resigned suddenly the week after Labor Day.

Antonacci is currently with the law firm GrayRobinson in Tallahassee. Prior to joining the firm, he registered as a lobbyist to represent Corizon, a private prison healthcare company, currently under fire from lawmakers for providing for prisoner care and then overcharging the state for its services.

Antonacci's experience with water resources includes a seat on the governing board of the Northwest Florida Water Management District from 2006 to 2012.

Guillory reportedly delivered a verbal resignation sometime before the board's September meeting, and a few days after his chief of staff, Daniel DeLisi, resigned.

The board unanimously accepted Guillory's resignation and quickly named Antonacci, who was not present at the meeting, as their new ED. The position was never advertised and qualified candidates were never sought. For the first time, one of the largest water management entities in the world is being led by a non-technically trained director.

Environmental activists expressed divided opinions about the recent leadership shakeup. Eric Draper, executive director of Audubon Florida, praised Guillory and bemoaned the loss of his expertise. David Guest, managing attorney of Earthjustice's Florida regional office, said the appointment weakens the district's independence, but said that it could be an improvement if the new director improves the handling of district staff.

### Everett appointed to WMD board

Ted Everett, a local businessman and president of Washington County's Chamber of Commerce, was appointed to the board of the Northwest Florida Water Management District, filling the seat left vacant when Jon Steverson became secretary of the Florida Department of Environmental Protection last summer.

Everett has a bachelors degree from Augusta College and an associate's degree in forestry from Abraham Baldwin Agricultural College.

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# Activists call for a halt to sugar cane burning in western Palm Beach County

By PRAKASH GANDHI

Environmental activists are calling for an end to sugar cane burning in Palm Beach County, concerned about impacts on air quality and health.

The Sierra Club wants sugar cane growers to stop burning cane fields that cover more than 300,000 acres in the western part of the county.

They claim the burning worsens air pollution and leads to asthma and other health problems.

"The sugar industry does not have to

pay for the health burden the rest of us experience," said Julia Hathaway, organizing representative for the Sierra Club's "Stop Sugar Fields Burning" campaign.

Sugar cane fields are burned just prior to harvest. Each year, usually between October and April, sugar cane growers set fire to their fields to burn away the leafy portions surrounding the stalk.

The fires, smoke and ash are most noticeable in the Glades communities but the effects can drift east to Wellington and Royal Palm Beach, and even further depending on the wind.

The Sierra Club said that instead of burning the leafy material, sugar growers could cut it and leave it as mulch and lessen the need for fertilizer. The material could also be burned at sugar industry waste-to-energy plants.

Other sugar cane-producing regions have abandoned the burning practice, said the advocates.

Hathaway said there are real environmental and health concerns related to sugar cane burning. "We have found there is a substantial impact," she said.

But sugar industry officials dispute the claims. The Palm Beach County Health department said that prescribed burning of sugar cane fields does not impact air quality, according to Judy Sanchez, a spokesperson for U.S. Sugar Corp.

"There is no measurable difference in the air quality during the burning season and the off-season," she said.

## FRACK From Page 10

the well brought their practices into question by Collier County officials and local environmental groups.

Hughes conducted an acid stimulation of the well in an attempt to increase the oil flow. However, DEP had not authorized the procedure and issued an immediate cease and desist order, eventually entering into a consent order with Hughes to monitor and remediate any contamination of groundwater that may have occurred.

Hughes didn't consider the process as fracking or detrimental in any way, and defended their environmental practices. The situation eventually degraded to the point that DEP pulled the Hughes permits and filed suit in Collier County for enforcement of the consent order.

Then in July 2014, Hughes notified DEP of their intent to abandon their Florida exploration efforts leaving the status of groundwater quality and whether or not the well had been fracked unresolved.

DEP has since hired a consultant to evaluate Hughes' activities and determine if the well had been fracked, and if contamination of groundwater had occurred through related saltwater intrusion or other means.

By December, it was determined that the Collier-Hogan well had been fracked. Two abandoned wells were found in the vicinity that were probably not contaminated or had not acted as conduits for the materials introduced into Collier-Hogan.

The length of time the well has remained open has become controversial. At the time of publication no status on the proper abandonment of the well was available from DEP.

"Efforts to stop sugar cane burning are just part of a well-funded and carefully orchestrated campaign to drive farmers off their land," she said. "In the midst of all this smoke and mirrors, Palm Beach County continues to have some of the highest air quality in the state."

Sanchez said air quality in Florida, particularly in Palm Beach County, is rigorously monitored to ensure compliance with state and federal air quality standards.

"Data from the monitoring shows that the air quality is meeting all the state and federal standards," she said.

## NOTES

### From Page 3

ates projects using thermal conduction heating, steam enhanced extraction, electrical resistance heating and combinations of these technologies.

**Office opening.** Orlando-based environmental services company FECC Inc. opened three new offices in the Southeast and Mid-Atlantic. Jim Brannigan will serve as vice president/operations for the new Mid-Atlantic branch in Pennsylvania. David Thibodeaux will operate the new Louisiana location and Larry Copeland will manage the new Kentucky office.

**People news.** Stan Warden, PG, joined The Goldstein Environmental Law Firm. Most recently, Warden spent 10 years with the Florida Department of Environmental Protection representing the agency on solid waste, coastal construction, air, and oil & gas permitting matters as well as providing legal support to the petroleum, dry-cleaning and brownfields programs.

Stan is a state of Florida Certified Contract Manager and was an administrative and contract manager for DEP's Petroleum Restoration Program overseeing 30 program agency term contractors.

Stephen Berry joined Jones Edmunds as senior project manager of Jacksonville operations, bringing more than 35 years of environmental and project management experience to the firm.

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