

# Florida Specifier

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## IRL committee formed 12

In response to concerns for the ailing health of the Indian River Lagoon and Lake Okeechobee basin, a Senate select committee was created last month to study water quality and look into the wildlife die-offs that have been occurring.

## Broward lawsuit 13

The cities of Sunrise, Weston, Hollywood, Fort Lauderdale, Lauderhill, Lauderdale-by-the-Sea, Lighthouse Point, Tamarac, Davie, Plantation and Coconut Creek are suing Broward County for not holding up its end of a contract to divvy up earned money and property valued at more than \$100 million.

## Climate change initiatives 14

President Obama recently outlined a broad set of policy initiatives to reduce atmospheric carbon emissions at the root of climate change and to prepare for climate change effects on the nation's economy, landscape and security.

## Recycling rates 15

A few years ago, a change in calculating county recycling rates was made by adding a waste-to-energy component. While that change improved the overall picture, the long term state recycling goal of 75 percent will not be reached unless there is a major change in recycling habits within the commercial sector.

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### Got a story lead?

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

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Photo courtesy of Hubbs-SeaWorld Research Institute

Field investigators from Hubbs SeaWorld Research Institute and NOAA examine a dead dolphin before autopsy as part of inquiry into an unusual mortality event in the Indian River Lagoon. See story on Page 12.

## State water supply plan reflects positive impact of water management district efforts

By ROY LAUGHLIN

Water use planning in Florida is primarily the responsibility of the state's five water management districts coordinated broadly by the state Department of Environmental Protection.

Every five years, DEP assembles an integrated 20-year planning document with information provided by each water management district. Earlier this year, DEP released their most recent water supply plan, projecting water needs and plans to meet those needs through 2030.

This year's planning document highlights two aspects of Florida's water supply over the next 20 years. First, water supplies are expected to be adequate in most districts because efforts made since 2000 have tapped new water sources.

Recent economic conditions that slowed population growth and dramatic reductions in per capita water use are also responsible. In addition, water reuse projects have contributed.

In the next five-year planning interval, Florida residents will see additional efforts across the state to extend conservation and to address some areas where water withdrawals are too large.

Many local utilities have now embraced tiered water rates: the first few thousand gallons per month cost less with increasing per-gallon fees for additional usage.

Establishment of cooperative programs between water management districts is one of the more significant new scenarios now influencing water supply planning. St. Johns River WMD has a cooperative agreement with the Suwannee River WMD in North Florida.

Additionally, Central Florida's Cooperative Planning Project involves three water management districts: the St. Johns River, South Florida and Southwest Florida districts. Coordination and joint rule making is the intent of these cooperative programs where water resources including both surface water and aquifers, need to be managed across the bound-

aries of any single water district.

Each WMD has its own set of circumstances that influence its water supply planning.

### SFWMD

The South Florida Water Management District—Florida's largest—saw water consumption decline between 2005 and 2006 and per capita use stabilized over the last three years, according to Mark Elsner, water supply administrator at the district.

Elsner credited local utilities that began in the early 1990s to implement tiered rate structures and encourage other conservation methods, often with cooperative grants from the district.

"We're completing the East Coast Plan. Those investments, originally made to meet 2025 water demands, are carrying them through 2030," said Elsner.

Those investments include new

## SFWMD hires Guillory as new ED

By SUSAN TELFORD

The South Florida Water Management District hired Blake Guillory, 52, the current director of the Southwest district, as its new executive director.

Guillory will be the south district's third director in just over two years.

The SFWMD Governing Board approved hiring Guillory with little discussion by board members, except for their confidence in his background and qualifications. The two dissenting votes were from board members Jim Moran and Glen Waldman.

Moran said that by selecting Guillory, who had the approval of Gov. Rick Scott and Florida Department of Environmental Protection Secretary Herschel Vinyard, the board was "abdicating its authority" and that "the executive director will report to Tallahassee rather than to us."

Moran was critical of the hiring process and the evaluation of the pool of 10 candidates who applied for the job. Moran supported hiring acting Execu-

## Judge approves Cabot-Koppers cleanup plan

By PRAKASH GANDHI

The long-delayed cleanup of the controversial Cabot-Koppers Superfund site in Alachua County could start as soon as next year.

A federal judge has paved the way for remediation to begin by approving the cleanup plan for the site that has been riddled with delays.

The news was welcomed by county officials.

"This thing has stalled for so long, especially the cleanup of the residential area," said Chris Bird, director of the Alachua County Environmental Protec-

**KOPPERS**  
Continued on Page 13

source development exploiting the Floridan Aquifer's brackish water, purified using reverse osmosis, adding 240 million gallons per day capacity to drinking water supplies in the district.

Additionally, some utilities are now using aquifer storage and recovery systems, injecting treated potable water or treated surface waters underground. Plus, water reuse is offsetting the use of as much as 235 million gallons per day.

### SRWMD

The Suwannee River Water Management District is the most unique of Florida's districts. Public drinking water supplies are a low volume component of its water use scenario, as it has only a few urban areas. The primary water use categories in the district are agricultural and industrial.

**WATER**  
Continued on Page 5

tive Director Ernie Barnett, a long-term employee of the DEP and former district director of legislative affairs.

Guillory was hired by the Southwest district in 2011 as its executive director. He restructured the agency, cutting staff from 768 to 590 employees.

Prior to his employment with SWFWMD, he was vice president and Florida area manager at Brown and Caldwell. He also worked for PBS&J for nine years, earning the title of vice president of their water resource division.

He earned a bachelor's degree in petroleum engineering from Texas A&M University and a master's degree in civil engineering and business administration from the University of South Florida.

Guillory replaces Melissa Meeker, who left the \$165,006 position in June to become a vice president at CSA Ocean Sciences Inc. in Stuart.



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# After long wait, McCarthy confirmed as new EPA administrator

Staff report

After half a year's delay, the Senate finally approved a number of President Obama's second term nominees, including Gina McCarthy as U.S. Environmental Protection Agency chief.

McCarthy moves up to the EPA administrator's position from the head of the agency's Office of Air and Radiation, a post she held during most of Obama's first administration.

As head of that office, she was directly involved with some of the administration's most bruising regulatory struggles, including rules for increased vehicle mileage standards to reduce carbon dioxide emissions, ozone and smog, mercury and the cross-state rule for emissions from large stationary emitters such as power plants.

Two days after her confirmation, McCarthy returned to her home town of Boston and in a speech to Harvard Law School laid out in clear but appropriately nuanced language three goals for the agency and their justifications.

The first she mentioned came in a paraphrase taken from Obama's climate speech when he told the EPA to move ahead with rules to reduce greenhouse gas emissions from new and existing power plants for the benefit of future generations.

The two other EPA programs mentioned in McCarthy's Harvard speech were the brownfield program and increased vehicle mileage standards. For both programs, she justified the goals based on public health benefits and on industrial competitiveness.

She noted among other things that, since 1993, brownfield programs have converted 41,550 acres of contaminated property to reusable condition, provided more than 93,100 jobs in remediation and redevelopment activities, and leveraged more than \$20.8 billion in economic development.

In what may be a first, she promoted fuel economy standards by saying the standards are beneficial to the economic prospects of American automobile manufacturers. "On the brink of collapse four years ago ... the auto industry will add 35,000 jobs in 2013," she said.

Quoting the *Wall Street Journal*, she said that U.S. auto exports are expected to exceed more than a million cars and light truck this year. Then she noted that the *WSJ* failed to give the EPA any credit for demanding U.S. auto makers design and manufacture passenger autos that are more competitive in foreign markets.

Throughout her speech, she emphasized that the agency will make decisions

that have economic and public health benefits in the near term and, by addressing needs today, turn those challenges into the basis for a strong, sustainable economy that serves the needs of our current and future generations.

Unfinished EPA business includes, according to some accounts, a need to draft a legal definition of wetlands for use under the Clean Water Act to sharply curtail their continuing loss. Other interests want to see a stricter smog and ozone rule passed, an effort that foundered during Obama's first term of office.

Issues associated with natural resource extraction, including fracking, mining on the north slope in Alaska, and peripheral involvement with the Keystone pipeline are among the other issues to be addressed.

Opponents who claim that EPA's rules are unaffordable or merely too expensive are going to face an EPA administrator with convictions that economic benefits for the present generation and a legacy of a clean and sustainable exploitation of environmental resources for future generations are neither unaffordable nor merely too expensive. Expect her to hold that a bargain's best price is obtained with early purchase.

**Wetlands case decided.** In July, the EPA won a criminal case involving illegal dredging and felony wetlands violations against a Panama City developer and his corporation. The judge ordered Brian Raphale D'Isernia and Lagoon Landing LLC to pay fines totaling over \$2.25 million.

Lagoon Landing will pay \$2.15 million plus a \$1 million community service payment. Individually, D'Isernia was fined \$100,000 and given a term of three years probation.

The \$1 million community service payment will go to the National Fish and Wildlife Foundation, which will use the money to fund projects for conservation, protection, restoration and management of wetlands, marine and coastal resources.

The fines resulted from Lagoon Landing's guilty plea for knowingly violating the Rivers and Harbors Act. Between 2005 and 2010, Lagoon Landing employees and contractors used heavy equipment to alter and fill wetlands without obtaining a permit.

They also dredged and cut an upland ship launching basin near Allanton and a channel connecting it to East Bay.

The EPA's prosecution also targeted other businesses that D'Isernia owns. D'Isernia and three other companies he controls, Northwest Florida Holdings Inc., Peninsula Holdings LLC and Bay Fabrication Inc., entered into four separate but related civil settlements.

In combination, those settlements resulted in a total of \$17,500 in civil fines to be paid to the Ecosystem Management and Restoration Trust Fund.

Northwest Florida Holdings will restore approximately 60 acres of wetlands and upland buffers, and grant a conservation easement. The company will also withdraw its application to convert a launching basin at the Allanton Shipyard into a marina.

Under the settlements, the other companies will participate in complementary ways to fund and perform stormwater corrective actions and water quality studies at the Allanton and Nelson Street Shipyards in

Panama City.

Additionally, Northwest Florida Holdings will pay \$94,718 to the Florida Internal Improvement Trust Fund and Bay Fabrication will pay \$76,923 in severed dredge materials fees to the Florida Internal Improvement Trust Fund.

**Environmental technology toolkit.** The U.S. Department of Commerce believes that the U.S. is the global leader in the environmental products and services sector, generating approximately \$312 billion in annual revenues and employing nearly 1.7 million workers.

To make that technology and expertise more accessible and available to international markets, the Commerce Department partnered with EPA in creating and operating an on-line Environmental Solutions Toolkit.

Its purpose is to offer interested parties in other countries "a broad perspective on the U.S. approach to specific environmental issues."

The web-based resource emphasizes user-friendliness, easily negotiated interactive menus, effective search capability and adaptive formatting, making it useful to those viewing the site with mobile devices.

**National stormwater calculator.** In late July, EPA released its National Stormwater Calculator. The agency describes it as an "innovative addition to the administration's virtual climate resilience toolkit."

The software's purpose is to show how land-use decisions affect stormwater runoff's potential to cause pollution in receiving waterways. The calculator does this by estimating the annual amount of stormwater runoff from a site based on local soil conditions, slope, land cover and historical rainfall records.

The new software allows users to examine how tools and techniques such as rain barrels, rain gardens and green infrastructure could reduce stormwater runoff in cost-effective ways.

The EPA described this version of the Stormwater Calculator and Climate Assessment Tool package as phase 1 of President Obama's climate action plan, which he announced in June.

The agency expects to release an update to the Stormwater Calculator by the end of this year. The updated version will include the ability to incorporate several future climate scenarios expected as a result of climate change.

**Rule change for PCBs.** The EPA proposed the development of a new rule that will revise existing authorized uses of PCBs, if necessary.

Current rules, drafted more than 30 years ago, may not reflect current conditions affecting liquid-filled PCB use autho-



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## Florida to sue Georgia over Apalachicola withdrawals

### Staff report

Florida Gov. Rick Scott said in August that he will sue Georgia for drawing too much water from the Apalachicola River system. The river flows south from Georgia 106 miles across the Florida's Panhandle into Apalachicola Bay and the Gulf of Mexico.

For over two decades, Florida, Alabama and Georgia have fought over fair allocation of the river's water, now consumed by power plants, the agricultural industry and many Georgia cities for drinking water.

The Metro Atlanta area gets most of its drinking water from the Chattahoochee River, which eventually flows into the Apalachicola.

Georgia's water consumption is expected to nearly double by 2035.

Vast wetlands along the Apalachicola have been in decline for years because there is too little fresh water flowing into Florida from the river. Sharp declines in the river's flows have also triggered a rise in salt content in the bay, affecting fisheries there.

**Air quality improvement.** Air emissions from Florida's industrial facilities hit an all-time low in 2012.

Officials said that oversight by the Florida Department of Environmental Protection and facilities' use of new technology to curb pollutants brought about the reductions.

Since 2010, annual air emissions have declined nearly 22 percent to 412,628 tons.

A decade ago, Florida's industrial facilities emitted nearly 1.1 million tons of pollutants annually. Officials said that Florida's air quality is now among the best in the nation.

Earlier this year, a study by the American Lung Association showed that Florida experienced zero unhealthy days for ozone pollution during the three-year study period.

In addition, the association ranked four Florida counties among the 16 cleanest nationwide for both year-round and short-term particle pollution.

One successful initiative led by DEP in 2012 was the Title V fee holiday, which reduced emissions by nearly 1,900 tons while saving Florida small businesses more than \$300,000.

The department's initiative allowed businesses that curbed emissions to have a \$5,000 fee waived. Ultimately, 281 businesses kept their 2012 air emissions low enough to qualify for the fee holiday.

This year, if major industrial facilities emit lower levels of air pollutants than authorized by permit, the department will allow those facilities to pay fees only on the pollutants actually emitted. In the past, some facilities would pay fees on permitted levels of emissions.

**Brownfield update.** The U.S. Environmental Protection Agency will award \$1.3 million in supplemental funding to help clean up contaminated brownfields properties in the Southeast. The revolving loan funding will help four communities carry out cleanup and redevelopment projects.

In Florida, about \$140,000 in funding will be used to clean up the site of the former H.D. King Power Plant in Fort Pierce. In addition, \$160,000 in funding will be used to address petroleum groundwater contamination at the Northwood CRA site in West Palm Beach.

The Central Florida Regional Planning Council will use supplemental funds of \$300,000 to address the cleanup of two sites: the Old Cigar Factory in Bartow and Old Lincoln Space Apartments in Lakeland.

In other brownfield news, the Osceola County Commission has voted to designate parts of west U.S. 192 as a brownfield. The designation will allow the area to qualify for state funds to help clean up the area and spark growth.

The designation paves the way for state dollars to be used for potential environmental cleanup efforts. It also increases guar-

antees on business loans and speeds up permitting for renovations and building.

Of Florida's 67 counties, 45 have a brownfield area and they all share \$5 million a year for environmental cleanup funds.

Meanwhile, the city of Hawthorne has turned down a chance to accept a brownfield designation for several areas of the city. Officials say the proposal for a brownfield designation will not benefit the city

state's most important natural gas hub.

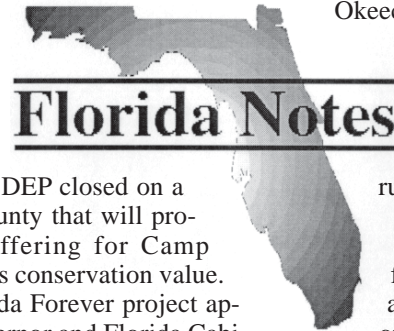
The state's largest electric utility has tried for several years to build a third major gas pipeline into Florida.

The project being proposed would include a 465-mile segment from Alabama through Georgia to Orlando. A second section would extend 125 miles from the Orlando hub to an FPL complex near Okeechobee.

State energy experts fear the two pipelines now in use—both carrying gas from the Gulf of Mexico region—are vulnerable to supply disruptions.

The new FPL pipeline would import 1.1 billion cubic feet per day. This would be added to the average daily flow of 3.1 billion cubic feet through Florida Gas Transmission's Panhandle pipeline and the 1.3 billion cubic feet routed beneath the Gulf of Mexico through the Gulfstream pipeline.

FPL officials filed their application for the pipeline with the Florida Public Service Commission and will seek a permit from the Florida Energy Regulatory



## Florida Notes


**Buffer property closes.** The DEP closed on a parcel in Clay County that will provide military buffering for Camp Blanding as well as conservation value. It's part of a Florida Forever project approved by the governor and Florida Cabinet in March.

The purchase was approved as part of a collaborative effort between DEP and the U.S. Department of Defense.


The total cost of the acreage is \$2.1 million with the state paying \$600,000 and the DOD picking up the balance.

**Gas pipeline in the works.** Florida Power & Light wants to build a \$3.6-million pipeline that may turn Orlando into the


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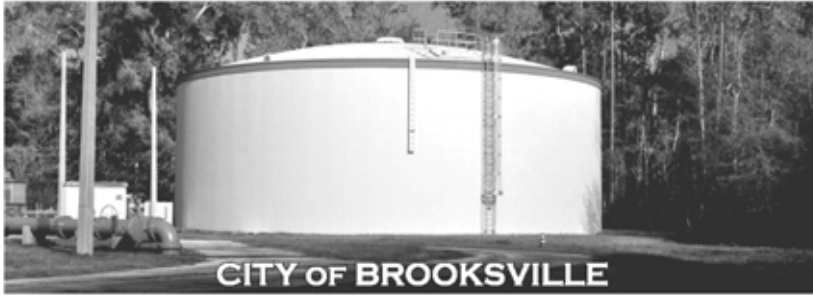
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# SRWMD provides cost share funding to counties to repair water plants

## Staff report

The Suwannee River Water Management District is providing \$37,480 in cost-share funds to help with improvements to Hamilton County's ailing water treatment plant as part of the district's Regional Initiative Valuing Environmental Resource program.

The cost-share funds will aid the county with pumping efficiency improvements to eliminate unnecessary storage tank flushing and to provide more consistent pressure flows within the system.

The project will conserve approximately one million gallons of water monthly by improving operational capabilities of the treatment plant located at State Road 6 and I-75.

Hamilton County was one of 14 local governments that were approved for RIVER program funding through a ranking process based on various criteria, including the effectiveness of the proposed project to protect, conserve or restore water resources.

Elsewhere, the district is providing \$23,040 in cost-share funds to assist the

town of Lee with repairs to their water supply well through the RIVER program.

Last year during the drought, the town's wells experienced cave-ins. The town repaired one well, but was unable to fully fund the \$46,080 repair cost for the second well.

The cost-share funds will cover the cost for the well to be drilled deeper and to make other improvements to stabilize the well.

The district set aside close to \$1.5 million in cost-share funds for Fiscal Year 2012-13 to assist local governments with water conservation, alternative water supplies, flood protection, ecosystem restoration and water quality improvement projects as part of the RIVER program.

Regional Water Supply Authority Board of Directors awarded almost \$130,000 in matching grants for water conservation projects in Hernando, Citrus and Marion counties.

Hernando received \$48,000 for its water conservation program, Citrus received \$40,250 and Marion received \$38,600 for water conservation programs.

The authority has provided assistance since 1999 to local governments for water

supply projects that are within the authority's jurisdiction, relate to water conservation and are approved by the local government's elected body.



**DeLand sludge to Sanford.** The DeLand City Council approved a temporary inter-local agreement with the city of Sanford for the treatment of biosolids.

In an effort to find a more sustainable and economical method of disposal, DeLand city officials agreed to a six-month trial period for disposal using Maxwest-Sanford LLC where the wastewater treatment system utilizes a process that eliminates all moisture, lightening the load and cubic yardage.

The biosolids are then converted to ash, which is readily disposed of in landfills, reducing costs.

Although initially a more costly treatment option, the city hopes to save several thousand dollars in shipping costs over the six-month trial period.

**ECUA sells main street lot.** Emerald Coast Utilities Authority board members voted 4-1 to sell a 19-acre site, considered to be the cornerstone of Main Street downtown redevelopment, for \$7.6 million to Texas developer Aaron Wiese, president of HT Land Company.

This was Wiese's second attempt to purchase the former wastewater treatment plant site, a key piece in the downtown redevelopment plan.

The cash transaction will not be finalized until minor changes in the contract have been approved by Wiese and the board. However, the major terms have been worked out.

**Hollywood water system upgrade.** The city of Hollywood is slated to begin construction on a \$2.26-million water main replacement project on Hollywood Boulevard to Johnson Street between North 46th Avenue and 52nd Avenue.

The area was characterized in the city's 2007 water system master plan as aging infrastructure in need of modernization. According to city officials, the work will be done in sections and work crews will take steps to minimize the impact on residents and traffic.

**Farm requests water permit increase.** Sturgeon AquaFarms LLC requested permission from the North Florida Water Management District to withdraw 7.2 million gallons of water per day from the Floridan Aquifer—5.7 gallons more than its current permit allows.


Local residents fear the large increase will reduce flow to other farms in the area, as well as private wells and ponds, and will negatively impact Blue Springs.

A request has been sent to the U.S. Environmental Protection Agency requesting an environmental impact study before any decision is made regarding the permit request.

**Manatee County utilities director.** Manatee County selected Mike Gore as its new utilities department director. He was formally appointed by the Manatee County Commission last month.

Gore worked his way up from the trenches to solid waste division manager over his 14 years at the county.

He will replace Dan Gray who retired in July after 30 years of service to the county.




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## WATER

From Page 1

Two activities dominate this district's water supply planning. The first is setting minimum flow and level requirements for surface waters. In past years, the district neglected to do this as required by state law. The district is attempting, over the next five years, to establish MFLs for all of its water resources.

Special legislation, Senate Bill 244, will allow DEP to use technical information provided by the district to directly set MFLs without the district having to go through a protracted rulemaking process.

"We are in peer review for the lower Santa Fe River, Ichetucknee River and major springs for our district," said Carlos Herd, PG, director of the Water Supply Division at the district.

That peer review is expected to be complete by October and by the end of the year could be ready for approval in the next legislative session.

The lower Suwannee River, other streams and smaller springs within the district are also slated for MFL rules, but those rules, according to Herd, will probably not be completed until 2016.

MFLs that are in peer review now received priority because they will be the basis for further action by the North Florida Regional Water Supply Partnership, established in 2012. This is the cooperative effort between the Suwannee River and St. Johns River WMDs.

Since 1981, the Floridan Aquifer within the Suwannee River district dropped about six feet. This assessment does not account for significant aquifer drawdown that occurred prior to 1981, before measurements for accurate characterization were taken.

Water consumption within the St. Johns River district has been identified as the primary cause of the cross-boundary aquifer drawdown.

Setting minimum flows and levels in the Suwannee River district is an essential prerequisite for developing the regional partnership's water management plan.

Establishment of MFLs by the district is particularly important because the lower Santa Fe River is designated as "in recovery," in part due to severe declines and aquifer levels feeding the river.

### SJRWMD

The St. Johns River Water Management District is in many ways similar to its sister district to the south.

Water demand declined substantially from prior expectations during the past few years. It now seems that water supplies developed through 2012 may be sufficient through the 2030 planning time horizon.

Reductions in population growth have been a primary reason for reductions in water demand expected through 2030.

Meeting water requirements for planning purposes was aided substantially by instituting tiered pricing requirements in consumptive use permits for public drinking water utilities.

The goal of this pricing, intended to reduce the use of water for landscape irrigation in particular, has been successful for the same reasons it was successful in the South Florida district.

"Water reuse has gained traction," said Hank Largin, public communications coordinator for the St. Johns district. Not only are reuse systems being expanded but some communities have initiated price tiering for reuse water used to irrigate landscape.

"We are changing our approach to water supply planning to be more regional (entire district in the past, but now four separate planning regions)," noted Tom Bartol, water supply bureau chief with the district.

He said that the district hopes to have their plans posted on web pages that can be updated on a regular basis as new water use, population estimates and water demand projects are completed.

"As we reach the sustainable limits of fresh groundwater in multiple areas of SJRWMD, we will be developing MFL prevention and recovery strategies to ensure future water demands are met while protecting the water resources of the district," he said.

### SWFWMD

The Southwest Florida Water Manage-

ment District has both a large agricultural use component and a large public drinking water supply component to account for in its water use planning. Agriculture is the larger of the two use categories.

"We have done a really nice job over the last 10-15 years of reducing water use in agriculture ... through best management programs," said Jason Mickel, water supply manager at the Southwest district.

The Facilitating Agricultural Resource Management Systems program, is an agricultural best management practice cost-share program that involves both water quantity and water quality aspects.

The FARMS program has funded over 100 projects over the past decade. The district has approved 64 more.

Currently, water conservation projects on agricultural land account for groundwater offsets estimated to be 24.5 mgd in the district.

In this district, its southern counties are the focus of agricultural activities. Its middle and northern counties are population centers.

Florida's recent growth stabilization has reduced the pressing need for new water supplies, as has been the case elsewhere in the state.

Polk County is one exception. This county is growing rapidly and needs new water supply development.

In Polk, several water supply projects will occur over the five-year planning period. One will be a deep well with brackish water desalination that, it is hoped, will provide about 10 million gallons per day.

Another will be a wellfield located in South Florida WMD territory that will produce 30 million gallons per day.

A cooperative project is a third component. SWFWMD is part of the cooperative Central Florida Water Initiative, partnering with the St. Johns River and the South Florida WMD.

This partnership is the larger of Florida's two regional water supply planning initiatives. Like the one in North Florida, this initiative's has been working in its present form for just a couple of years.

The entire district is planning to increase its reuse potential. There is the potential to identify public, industrial, power plant and agricultural users willing to take reuse water to offset groundwater withdrawals.

Water reuse within the district so far has focused primarily on providing treated wastewater to electric utility plants for cooling water.

"These can take the large majority of reclaimed water with only a little bit of treatment," said Mickel.

In addition, the district has worked with homeowners and others with landscape irrigation needs to use soil moisture sensors and choice of plants to reduce irrigation

needs.

The district has heavily promoted the Florida Water Star program, which promotes water conservation through the use of more efficient appliances and practices.

A unique program within the SWFWMD has been a partnership with local utilities in a leak detection program for public drinking water supplies. The district's field staff work with local utilities' staff to locate leaks that become increasingly prevalent as water distribution systems age.

In summing up his district's focus in the


next few years, Mickel said that creative partnerships will be very important as they determine how much water is needed.

With specific reference to reuse water, a source that is expected to be a significant contributor in all water management districts, Mickel noted that two factors will be of primary concern.


The first will be reusing water enough to meet minimum flows and levels requirements. The second is a factor still in its in-

## WATER


Continued on Page 14



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# FLORIDA REMEDIATION CONFERENCE

## The Premier Soil and Groundwater Cleanup Conference of the year in the Southeast is back!

Oct. 10-11, 2013  
Caribe Royale Resort  
Orlando, FL

### Day One, Thursday, Oct. 10

8:00 Exhibits open

8:45 Welcome

Mike Eastman, Conference Manager

9:00 Keynote Address from the Conference Chair

Nick Albergo, PE, DEE, Principal  
HSA Engineers & Scientists, Tampa



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#### Session 1: Improving Remediation through High Resolution Site Characterization

Moderator: Drew Baird, PG, East Region Manager, Regenesys, Greenville, SC

9:30: Use of Innovative Fluorescence Technology for Total Recoverable Petroleum Hydrocarbon Screening

Jennifer Deal, PE, Senior Environmental Engineer, Tetra Tech Inc., Orlando  
Kelly Bergdoll, President, KB Labs Inc., Gainesville

A field investigation was conducted using high resolution site characterization to delineate the vertical and horizontal extent of total recoverable petroleum hydrocarbon contamination following the removal of four underground storage tanks of varying fuel types on a site in north Florida. The property is an active industrial property and rapid assessment methodologies were warranted to minimize business disruption. The ultraviolet fluorescence screening method was chosen to allow for expedited delineation of TRPH concentrations to determine the vertical and horizontal boundaries. One hundred and five soil samples were collected and screened in the field over a two-day period. Confirmation soil samples were collected at locations determined in the field based on real time UVF screening data and sent to a certified fixed-base laboratory for TRPH analysis by FL-PRO. Review and comparison of screening and laboratory data revealed a strong correlation between the fixed-based lab data and the UVF screening data. The cost of on-site UVF analysis on site totaled less than \$4,000. TRPH costs for standard turnaround TRPH are generally \$80 per sample. The cost to expedite the analysis (48-hour turnaround), which was necessary at this site to meet the schedule set forth by the client, generally results in a 100% upcharge to the standard rate per sample. The cost to run 105 soil samples under standard turnaround time would have been approximately \$8,400 and would not have met the schedule deadlines. The cost to run 105 samples under an expedited time frame would have resulted in an associated cost of approximately \$16,000. In addition to the cost savings, time was also saved by using this near real-time method, as it was not necessary to wait 48 hours for the results from a fixed base laboratory.

10:00 Evaluation of TarGOST® Investigations for Multiple Hazardous Waste Sites in the Southeast

Ernest Mott-Smith, PE, Senior Technology Consultant, Black & Veatch Special Projects Corp., Tampa  
Cal Butler, PG, Geologist VI, Black & Veatch Special Projects Corp., Tampa

Laser-induced fluorescence is a key site investigation technique for detection of nonaqueous phase liquids. As with many high-resolution characterization tools, this technology provides continuous, real-time vertical data streams albeit at a lower accuracy than some traditional approaches. The Tar-Specific Green Optical Screening Tool, TarGOST®, is a specialized version of LIF that was developed for the detection of heavy oils such as creosote, coal tars, tank bottoms, or heavy crudes. Black & Veatch has employed TarGOST on seven EPA Region 4 CERCLA hazardous waste sites since 2009, including wood treating facilities and an oil processing facility. This assessment approach has been instrumental in successfully delineating the extent and nature of NAPL on each of these sites. This presentation will provide an overview of the technology and its application, followed by a series of site case studies to illustrate the overall effectiveness of the approach. The TarGOST data will be correlated with soil photo-logs, soil contaminant concentrations, NAPL well accumulations and the exact lithologic context. In addition, the TarGOST results will be examined in contrast with residual NAPL saturation laboratory studies from several sites. Finally, a novel technique for using TarGOST data for preparing a NAPL mass estimate will be presented.

10:30 Using Reductive Dechlorination in a Phased Approach for Source Area Treatment to Meet Risk-Based Cleanup Goals

Nicole Scroggins, Geologist, AECOM, Orlando

Site assessment activities completed at a former industrial facility identified a dissolved chlorinated solvent plume extending into the limestone drinking water aquifer at depths of up to 180 feet below land surface. A phased approach for site restoration is underway. The long-term site restoration objectives are to reduce plume size and contaminant concentrations to allow for risk-based closure. The primary COCs identified are chlorinated ethenes. TCE concentrations exceeding 1% solubility were detected in groundwater during assessment activities and provided presumptive evidence of NAPL to depths up to 80 feet bls. Historical TCE concentrations exceeded 10% solubility at locations up to 30 feet bls. Low concentrations of chlorinated ethanes were also present; groundwater was analyzed for 1,4-dioxane but not detected. Following the completion of site construction and initial interim measures (oil emulsion injection performed by others), supplemental assessment, including groundwater quality assessment and limited high resolution site characterization was performed to confirm remnant source mass distribution, and an approach for additional remedial measures was developed. The selected approach incorporated source area and limited dissolved phase treatment designed to reduce contaminant concentrations to risk-based targets, coupled with the use of institutional controls to eliminate exposure pathways. Client requirements included a design without trenching or other features that would damage surface pavement and a work plan to minimize disruption to multiple site tenants with 24-hour operations. Reductive dechlorination through organic substrate and zero valent iron injections was selected for source area and limited dissolved phase treatment. The organic substrate and ZVI slurry was injected at multiple locations and vertical intervals (46 locations and 137 intervals) using direct push technology. Multi-interval, nested, permanent injection wells (34) were also installed for substrate injection events that minimized the number of monitor well manholes visible at the surface. HRSC was used to design vertical intervals and planned injection locations. A bromide tracer was injected with the substrate and, along with total organic carbon, used as an indicator to monitor substrate delivery. Microbial parameters (DHC CENSUS, methane, ethane, ethene, and carbon dioxide), field parameters and COCs were monitored to evaluate performance. Source area TCE concentrations have been reduced by approximately 85% compared to groundwater quality data collected prior to this most recent phase of work. TCE concentrations are currently below detection limits in the majority of treated intervals. Vinyl chloride is now the predominant COC in groundwater; remnant vinyl chloride concentrations in groundwater are limited and consistent with the requirements for risk-based closure. This presentation will provide details of the design/field implementation, logistical considerations, lessons learned in addressing stakeholder concerns, evaluation of value earned through the use of institutional controls/risk-based targets and plans for future site work. Verification of substrate dose rate, delivery, and reductive dechlorination performance will also be presented.

11:00 Break

Concurrent sessions: 11:30 - 12:30 2A: Successful Amendment Delivery  
2B: Inside Florida's Cleanup Industry: The Way Forward

#### Session 2A: Successful Amendment Delivery

11:30 Using Shear Thinning Fluids to Improve Amendment Delivery in Heterogeneous Systems  
Donovan Smith, PE, President, JRW Bioremediation LLC, Lenexa, KS

The addition of carbon substrates to enhance in-situ bioremediation has become a well-accepted and successful remedial option. Like all in-situ methods, the overall success of a project many times is directly related to how effectively the amendment is delivered to the target contaminants. An incomplete understanding of the hydrogeology is one issue that hampers the ability to deliver substrate effectively. Even with good site characterization, heterogeneity and preferential flow paths in the subsurface also tend to hinder distribution to the most contaminated portions of the site. Over time, tighter silts and clays can hold higher soil concentrations of contaminants than more permeable adjacent sand and gravel layers as the more conductive regions wash out the contaminants. Even when injecting directly into, above and below these silt and clay lenses in a heterogeneous system, it is difficult to distribute a high proportion of substrate into these low conductivity layers and minimize the amount of substrate washed out of the source area via high permeability preferential pathways. Most ISB amendments are either soluble in water or are oil in water emulsions. Typically they are designed to be low viscosity at injection concentrations to maximize the radius of influence per injection point. One approach to deliver a higher proportion of substrate to the lower permeability matrix in heterogeneous systems is to add a shear thinning fluid to the injection fluid. We prepared combinations of ISB amendments (neat vegetable oil, vegetable oil emulsion, reverse phase soy oil microemulsion, and water soluble substrate) in shear thinning fluids to characterize physical properties, including dynamic viscosity and droplet size. This talk includes theory on shear thinning fluids, results and implications from the various formulations tested, lessons learned about successful mixing and injection of shear-thinning fluids combined with oil amendment, successful delivery to the target treatment zones, and ability to create and sustain anaerobic conditions and corresponding TCE dechlorination reactions in the aquifer.

12:00 Field Application of Electrokinetic Enhanced Bioremediation of PCE Source in Low Permeability Materials

James Wang, PhD, PE, Environmental Engineer, Geosyntec Consultants, Columbia, MD

Effective delivery of remediation reagents is a critical component for successful implementation of in-situ remediation technologies such as bioremediation. Traditional injection methods are generally based on hydraulic advection mechanisms and often faced with limitations in areas with low-permeability materials and/or highly heterogeneous geology. Transport of ionic substances such as lactate in an electric field is relatively independent of hydraulic properties and fluid flow. Therefore, effective delivery using electrokinetics can be achieved in areas where permeability is limited and heterogeneous. A field demonstration of electrokinetic enhanced bioremediation for tetrachloroethene source remediation was implemented to assess the ability of the technology to treat PCE DNAPL source materials in interbedded glacial deposits of sand and clay till. The highest PCE concentrations (up to 21,000 mg PCE/kg) have been observed in clay till between three and seven meters below ground surface. The results of the field application show that EK can facilitate the transport of amendments (lactate and dechlorinating bacteria) through clay soils. Microbiological monitoring showed Dehalococcoides and vinyl chloride reductase gene levels increased significantly across the test area compared to baseline levels. Increases in vcrA counts within the clayey materials in the test area confirmed that EK operation was successful in distributing the microorganisms capable of PCE dechlorination to ethene. The test results provided the basis for design and implementation of full-scale implementation of this technology.

#### Session 2B: Inside Florida's Cleanup Industry: The Way Forward

11:30 Time for a Change: Contaminated Soils Forum Revisited

Richard Lewis, PhD, PE, Principal Engineer, HSA Engineers & Scientists, Fort Myers

Over a decade ago, the state of Florida used the Contaminated Soils Forum to develop global risk-based corrective action by incorporation into Chapters 62-780 and 62-777, FAC. These documents provided the first internally consistent method for calculating risk-based cleanup values for a wide range of chemicals using a number of detailed risk management options. In addition, we developed FL UCL, institutional controls, de minimis cleanup and many other ideas. Currently, there are a range of issues—some controversial—that remain before us. We need a balanced approach like the CSF that considers a broad range of perspectives to ensure that we are using resources wisely and protecting



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public health and the environment. The list of items could include more flexibility in using risk assessment, development of a regional background for chemicals in soil and groundwater, updating toxicity values, vapor intrusion, inclusion of incremental sampling methodology and modified active gas sampling, and what to do about arsenic on golf courses and agricultural land. The history and potential future of the CSF will be discussed.

**12:00 Low-Scored Site Initiative Program: An Industry Success Story**

Mike Scaringella, Director of Operations, Handex C&R LLC - Southeast, Winter Park  
When the Florida Department of Environmental Protection, the Florida Legislature and the cleanup industry work together, good things get done. The Low-Scored Site Initiative has been a success and is working as designed. It was created via a joint effort between industry and DEP, and passed unanimously in the House and Senate in 2010. Despite being vetoed by the governor, it came roaring back to life with a unanimous veto override during special session. In the last three years, the LSSI program has closed 24% of the sites put in the program within the \$30,000 cost cap. It has also changed the way the consultants and DEP perform site assessments.

**12:30 Day One Luncheon**  
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**Session 3: Brownfields Cleanups in FL: Policy, Practice, Metrics, Mechanics & Economics**

**1:30 The Financial and Liability Management Case for Redeveloping and Closing Contaminated Sites through the Florida Brownfields Program**

Michael Goldstein, Esq., Managing Partner, The Goldstein Environmental Law Firm, Miami  
Michael will kickoff this panel with a talk that emphasizes the tax credits and refunds that can help subsidize cleanup costs as well as the statutory protections against cost recovery and pollution litigation that can provide the assurances that developers, lenders, and investors need to green light projects. Michael will also present a concise economic and project-based summary of the 16-year history of the Florida Brownfields Program. This discussion will have an emphasis on the increasingly important role that environmental consultants play in the access to economic incentives as a result of the new Brownfield Site Rehabilitation Agreement created by SB 406 in the 2013 Florida Legislature.

**2:00 Preparing the Technical Brownfields Redevelopment Case for Review and Expedited Approval & Coordination with Project Team Members and Principals to Comply with Technical Requirements of Brownfield Incentives**

David Goldman, Senior Vice President, Kimley-Horne & Associates, Jacksonville  
David will present a talk designed to educate environmental consultants on how to properly set expectations of usability, relevance and success with private and public sector clients, design due diligence and remedial action strategies that leverage the closure options that the Florida Brownfields Program and Chapter 62-780, FAC, make available, and work in harmony with environmental regulators and local government officials to achieve Site Rehabilitation Completion as quickly and cost-efficiently as possible. The second part of this discussion will focus on environmental consultant strategies for complying with the technical requirements associated with brownfield related economic incentives.

**2:30 The Local Government Perspective on Brownfields and the Florida Brownfields Program**

Chris Bird, Environmental Protection Director, Alachua County BOCC, Gainesville  
Chris will provide his perspective on brownfields as board chairman for the National Association of Local Government Professionals and will discuss his involvement with two local brownfield sites as the director of the Alachua County Environmental Protection Department.

3:00 Break

Concurrent sessions: 3:30 - 5:00 4A: Biostimulation and Bioaugmentation  
4B: Case Histories: Regulatory and Construction Challenges

**Session 4A: Biostimulation and Bioaugmentation**

**3:30 Proliferation of vcrA across a Large TCE Plume in Florida following Biostimulation and Bioaugmentation**

Jeff Roberts, MSc, Laboratory Manager, SIREM, Guelph, Ontario, Canada  
Trichloroethene contamination in groundwater was discovered at a site in Florida in 1995. Remedial actions have been performed at the site since that time, including excavation of contaminated soil, zero valent iron treatment in the source area and more recently, enhanced in-situ bioremediation using biostimulation with vegetable oil and bioaugmentation with KB-1. The source area was also injected with emulsified zero-valent iron. In 2011, Dehalococoides and vinyl chloride reductase were detected at some areas of the site, however geographical distribution was limited. Ethene was also detected at certain areas indicating that the complete reductive dechlorination of TCE was occurring at the site. The site conditions were ideal for EISB, with reducing conditions in the sulfate reducing and methanogenic range already present. However, the distribution of vcrA and ethene production across the site was limited. This led to the full scale implementation of EISB including the use of KB-1 to increase the distribution of vcrA, as well as to promote complete dechlorination across the site. In the fall of 2012, approximately 40,000 gallons of vegetable oil, 20,000 gallons of EZVI and 472 liters of KB-1 culture were injected at the site. Six months after amendment injection and bioaugmentation with KB-1, greater than 50% reduction in TCE has been observed with corresponding increases in ethene. Bioaugmentation led to at least a 60% geographical proliferation of vcrA across the site from baseline. The vcrA has reached levels as high as 7x10<sup>7</sup> gene copies per liter, which is above the level required for high rates of in-situ reductive dechlorination and ethene production. Results are very promising in other locations and further proliferation of vcrA and complete reductive dechlorination to ethene is expected.

**4:00 Making Biostimulation Work in the Real World: A Process Approach**

Joel Parker, Senior Engineer, Environmental Consulting & Technology Inc., Flint, MI  
In-situ biostimulation of halorespiring bacteria for the complete sequential reduction of chlorinated ethenes has been implemented at two dramatically different field sites and demonstrated to be successful. The primary contaminants of concern are aqueous trichloroethene and associated daughter products, and the technology employed is in-situ biostimulation. Indigenous halorespiring bacteria (Dehalococoides) were stimulated by periodic delivery of an electron donor to establish and maintain a permeable, biologically active zone. In-situ biostimulation of halorespiration is site-specific and does not lend itself to one universal deployment. Rather, application of this process in complex settings requires a systematic approach predicated on an understanding of the physical, chemical, and biological mechanisms involved. A 90-95% reduction of chlorinated ethenes has been achieved in a groundwater plume that is predominantly

daughter products, which is a particularly challenging environment due to low halorespiring bacterial yield in the absence of parent compounds. While the two sites are dramatically different in hydrogeologic setting, the implementation of this low impact, low energy technology has been part of an integrated treatment train involving an upgradient source area strategy as well. In one case, an aggressive chemical oxidation was successfully implemented in a manner that was aggressive but not detrimental to the downgradient anaerobic biology. In both settings, this low impact, low energy technique has allowed a former industrial property to be transferred and reused for manufacturing while protecting adjacent residential neighborhoods from the underlying groundwater contamination.

**4:30 Utilization of Biostimulation and Augmentation for an Effective Site Remedy Including Enhanced Attenuation at a Florida Drycleaning Site**

Steven Folsom, PE, BCEE, Sr. Environmental Engineer, HSA Engineers & Scientists, Tampa, *Invited*  
Many cleanup sites require a combination of remedies over time. These treatment train components utilize the remedial applications best suited for a particular site relative to contaminant behavior, geochemical and geologic properties, site logistics and implementation costs. A major challenge in this sequence is determining how and when to transition from more active treatments to monitored natural attenuation or, conversely, when to intervene at a site in MNA. Enhanced attenuation encourages energy efficiency and developing the best solutions for the environment. Deploying enhanced attenuation technologies results in naturally sustainable treatment that require less energy and investment to reach environmental cleanup goals. This case study will present the conceptual site model development, remedy evaluation and use of enhanced attenuation techniques at a drycleaning facility in Sarasota, FL.

FRC 2013 Agenda  
Continued on Page 8

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Session 4B: Case Histories: Regulatory and Construction Challenges

3:30 Design-Build Project Considerations for New Coal Ash Landfills  
Sean Rome, Vice President, Tetra Tech Inc., Orlando

The current regulatory climate challenging the core business of U.S.-based power companies is overwhelming. New and proposed environmental regulations have forced numerous power companies to literally shut down coal-fired power units to meet impending regulatory deadlines. One of these regulatory challenges, the U.S. Environmental Protection Agency's Coal Combustion Residuals rule, has the potential to significantly impact the coal-burning power generation industry and literally force U.S.-based, coal-burning, power providers to re-think and re-strategize the industry's futures on how to deal with coal ash in the country. To that end, this presentation will cover regulatory drivers, project considerations and a case history of a new RCRA Subtitle D coal ash landfill design-build project in Florida.

4:00 Ensuring Contaminants Cooperate with the Construction Schedule  
Jeffrey Northrup, PG, PSSC, CHMM, Vice President, Cherokee Enterprises Inc., Miami Lakes

Fort Lauderdale-Hollywood International Airport is currently undergoing over a billion dollars in renovations associated with terminal modernization and runway expansion programs. In preparation of the expansion, the Broward County Aviation Department tasked Cherokee Enterprises with investigating a former rental car facility that was in the footprint of the Terminal 4 Expansion. During CEI's investigation, a petroleum plume was found in the pathway of the proposed terminal expansion that could jeopardize the construction schedule. The new terminal was targeted for construction in the summer of 2013 and BCAD assigned CEI with the mission of obtaining an unconditional site closure before construction commenced. A budget was prepared and a work order was issued, with the understanding that CEI would complete the investigation, conduct the cleanup and complete the required post remediation monitoring. After the investigation was completed, it was determined that a methyl tertiary butyl ether plume splintered off from the main petroleum plume and was found at a depth of 45 feet below land surface, influenced by a nearby facility irrigation well. The main petroleum plume, less mobile than MTBE and less influenced by the irrigation well, was moving in another direction with the general groundwater flow.

5:00 Day One, Exhibits Close  
FRC Reception at Caribe Royale

Day Two, Friday, Oct. 11



7:30 Exhibits open

Session 5: Alternative Approaches to Effective Remediation

8:30 A BTEX Remediation and Water Quality Restoration Strategy Following Failed In-Situ Persulfate Injections

David Laughlin, PE, Project Manager, ETEC LLC, Washougal, WA  
As a result of multiple ISCO injection events using a proprietary persulfate-based product, water quality at a site in Northwest Florida was significantly degraded, while groundwater BTEX concentrations remained elevated across the site. In the target treatment area, BTEX concentrations in groundwater ranged from 1,500 to 13,000 parts per billion. Water quality issues included depressed pH values ranging from 3.5 to 4.5 standard units, and extremely high dissolved sulfate concentrations approaching 1,000 mg/L in several site wells. To address the elevated BTEX concentrations in groundwater as well as the pH and sulfate issues, a unique remediation approach combining iron-catalyzed hydrogen peroxide (Fenton's reagent), pH buffering and nutrient stimulation was applied in four separate injection events over a two-year period. Cleanup goals for the site groundwater are the Florida Natural Attenuation Default Concentration Levels. Each injection event included four days of alternating iron and peroxide solution injections, followed by one day of injection of alternating pH buffer (potassium hydroxide) and nutrient (N, P, K, micronutrients) solutions. Over a two-year treatment time frame, the site data shows average groundwater BTEX reductions of 90% or greater in the target treatment area. Equally important, pH values throughout the target plume area were raised by an average of 1.5 standard units, resulting in pH conditions that facilitated in-situ biological activity. Finally, sulfate concentrations have decreased 70-90% across the site as a result of the pH adjustment and nutrient stimulation, which has facilitated in-situ microbial utilization of the sulfate as a secondary electron acceptor. These results demonstrate that a combined ISCO/bioremediation process can be an effective remediation alternative for both primary site cleanup as well as site polishing to achieve stringent cleanup standards for both primary and secondary water quality constituents. This project was implemented as a performance-based contract with specific negotiated cost and performance limits, which are also summarized and discussed in detail.

9:00 Rapid Perchlorate Destruction in Soil and Groundwater Through Bioaugmentation

Michael Saul, Principal, CL Solutions LLC, Cincinnati, OH  
Perchlorate, a propellant used in flares, rockets and fireworks, is a contaminant at more than 400 sites across the country, including six drinking water systems in Florida. To date, in-situ biological treatment of perchlorate has been attempted with anaerobic species using various carbon substrates with limited success. Irwin Engineers and CL Solutions collaborated on the novel idea that CL-Out® cultures could be used to treat high concentration perchlorate in soil and groundwater. Irwin undertook bench-scale microcosm testing for proof of concept and showed that addition of CL-Out to site groundwater achieved reduction of 100 mg/L perchlorate to less than 1 mg/L after two months while stimulation of native cultures under control conditions achieved reduction to just 60 mg/L. Subsequently, a six-month pilot study of recirculating water with CL-Out applied for in-situ treatment of about 30 cubic yards of soils in the vadose zone achieved 99.96% perchlorate reduction to meet the applicable residential soil standard. Scaling up from the pilot study, CL-Out injection in wells aligned across the groundwater plume has bifurcated the plume, persistently reducing perchlorate at the injection lines to less than 1 mg/L while upslope concentrations entering the injection line were measured in the range of 60 to 100 mg/L. Injections of CL-Out into bedrock wells reduced groundwater concentrations from a range of 2 to 7 mg/L to less than 0.01 mg/L within four months. Adjustment of the aquifer pH to greater than 5.5 standard units is necessary for optimal cell metabolism, and application of a weak base provided effective pH buffering. The presentation describes the early results of the full-scale field application of this new approach to reduce high perchlorate concentrations by orders of magnitude rapidly and economically.

Session 6: Improving the Performance of Soil Vapor Extraction and Air Sparge Systems

9:30 Recent Advances in Optimization and Evaluation of Soil Vapor Extraction Systems

Lloyd "Bo" Stewart, PhD, Vice President, Praxis Environmental Technologies Inc., Burlingame, CA  
Techniques and criteria for evaluating the performance of soil vapor extraction systems have ranged widely, as have operational strategies. Recent tools and approaches have been developed to more realistically judge SVE performance. This presentation describes the pitfalls of more traditional approaches, identifies appropriate data collection requirements and operational strategies and presents information on an innovative tool, PneuLog®, that can assist in optimization and evaluation of SVE systems. Traditional approaches to SVE evaluation included soil sampling. The results were compared to fixed concentration standards or calculation of mass remaining versus the original estimate. This approach involved the limitations of volatile organic mass loss during sampling and the complications due to the natural heterogeneities of contaminants in soil. In other cases, operators looked only at the mass removed by the entire system. Shut down was proposed when concentrations reached an asymptotic limit. In many cases, these systems were inadequately designed using a radius-of-influence approach and as such left inadequately treated soil. The low airflow generated at distance from the extraction wells or near stagnation zones provided inadequate treatment. Measurement of soil gas concentrations (and vacuums) from both extraction wells and multi-depth-monitoring probes provide a much better picture of the subsurface performance of the SVE system because of the relatively low detection limits. Once soil gas levels in extracted gases reach an asymptote, the extraction can cease and measurements of concentration rebound taken from available wells and probes over weeks or even months. When little rebound occurs, the residual mass probably resides in diffusion-controlled low permeability materials that are less likely to leach significant mass to the groundwater or other features. Modeling of the rebound, as described in this presentation, aids in characterizing the extent of the diffusion controls. The PneuLog tool more discretely identifies zones yielding air to the extraction wells and estimates of contaminant concentrations from productive soil horizons. This information can be used along with rebound testing information and transport modeling to estimate mass in place in both advection- and diffusion-controlled zones, time to cleanup, recommend changes to most efficiently remove the mass and impact to groundwater. This presentation includes case studies from sites located across the country that illustrate the utility of the PneuLog technology. Examples will be drawn from unique contamination problems discernible as a result of using PneuLog and contaminant transport modeling to estimate the contaminant loading on the water table.

10:00 ART Single Point AS/SVE Technologies

Todd H. Giffrow, MS, Senior Scientist, Accelerated Remediation Technologies Inc., Stanchfield, MN  
Building on the multiple remediation concepts combined within the ART technologies, ART has engineered an alternative to traditional air sparging and soil vapor extraction remedial systems. This patent-pending alternative utilizes similar processes as traditional AS/SVE, but is applied differently. The ART AS/SVE well consists of two screens separated by a solid section. The lower screen is positioned near the bottom of contamination. The upper screen intersects the water table. An innovative, specially designed packer will be strategically positioned in the solid riser portion, between the two screen zones, to force injected air to exit the well via the lower screen. The vapors are captured through the upper screen along with additional vapors captured from the vadose zone, thus reducing or eliminating vapor intrusions issues. In addition to reduced drilling cost, savings also include reduced trenching and piping installations and maintenance activities. Traditional AS/SVE methods may cause uncontrolled air sparging into the formation that is difficult to recapture allowing possible expansion of plume boundaries and vapor intrusion into nearby structures. However, the ART AS/SVE well utilizes one below grade structure to achieve greater control of component processes as well as decreased costs due to initial construction and long term operation and maintenance. The ART AS/SVE design allows for a more controlled recapture of the sparged air as the vapor extraction component is included within the same sub-grade structure. Furthermore, the ART Innovative AS/SVE allows for the addition of amendments to the subsurface through the sparging screen if it becomes necessary.

10:30 Break

Session 7: Successfully Addressing FDOT Roadway Construction Remediation Challenges

Moderator: Vincent Fusconi, PE, District Contamination Impact Coordinator  
Florida Department of Transportation, Ft. Lauderdale

11:00 Case Study: Application of an Injectable Groundwater Barrier on a Roadway Construction Project to Prevent Contaminant Plume Migration and Exacerbation During Dewatering and Resulting Effects on Groundwater Remediation System Performance

Timothy Harman, PE, General Manager, Handex Consulting & Remediation - SE LLC, Ft. Lauderdale  
The Florida Department of Transportation District Four installed an injectable resin groundwater barrier to prevent the migration and exacerbation of a groundwater contaminant plume adjacent to a roadway reconstruction project in Palm

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Beach County. The barrier was to act as an engineering control during the construction dewatering required for the installation of a 48-inch diameter stormwater pipe and the associated drainage structures. The groundwater contaminant plume is associated with an active retail petroleum facility with an operating groundwater treatment system funded and administered by the Florida Department of Environmental Protection and managed through the contracted local program, Palm Beach County Department of Environmental Resources Management. As sister agencies, project coordination and sharing of resources and information was instrumental for a successful implementation of the barrier and the construction of the FDOT project. The injectable resin barrier, previously evaluated and utilized on similar roadway construction projects, was installed to encase the contaminated groundwater plume within the source area property along the FDOT roadway right-of-way/project boundary. Prior to construction, the data for the contaminated site was reviewed and evaluated along with contemporary data collected for evaluation of impacts within the roadway construction project corridor. In addition, groundwater within the project corridor was monitored for hydraulic and chemical parameters to evaluate and confirm the efficacy of the groundwater barrier as an engineering control during construction dewatering. Furthermore, contaminated groundwater plume data was evaluated to determine if there were beneficial effects related to the plume containment as a remediation system enhancement.

**11:20 Fast-Track Remediation of Arsenic at a Proposed Stormwater Detention Pond Combining Soil Excavation with Ex-situ Groundwater Adsorption, Utilizing an Activated Alumina Media and an Injectable Impermeable Barrier**

Stephen Starke, PG, CHMM, LEP, REPA  
Senior Project Manager, AECOM, Ft. Lauderdale  
The Florida Department of Transportation is improving State Road 7 in Broward County. The roadway design includes detention ponds to collect, treat and attenuate

FRC 2013 Agenda  
Continued on Page 16



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# Deepening project will allow Port Everglades to accommodate larger vessels

By DAN MILLOTT

Revisions to the U.S. Army Corps of Engineers' plan for deepening the shipping channels at Port Everglades have been scaled back slightly, but in the eyes of port officials, the changes won't have an adverse impact on capacity handling and will save taxpayers about \$7

million.

Glenn Wiltshire, deputy director of Port Everglades, said the changes have the proposed depth of the outside channel at 55 feet as opposed to 57 feet, and the inside channel at 48 feet instead of 50 feet.

Port Everglades, like many ports in the country, is deepening its shipping channels to accommodate larger ships that will be

passing through the wider spaces of the expanded Panama Canal locks.

The Panama Canal lock expansion is due to be completed in 2015. The planned deepening at Port Everglades is scheduled for 2017.

And while those time frames doesn't exactly mesh, Wiltshire emphasized that even when the canal work is done, there will be a period of testing before the larger ships will routinely pass through the wider locks.

The Port Everglades deepening project is now estimated to cost \$313 million, about \$7 million less than the original planned port improvement. The project will be funded with federal monies, port user fees and possible state funds.

The channel project falls under the purview of the U.S. Army Corps of Engineers, but there are additional changes that the port authority will institute.

To make room for the larger vessels, there will be an expansion of the turning notch from 900 feet to 2,400 feet.

Part of this project involves the creation of 16.5 acres of new mangroves.

Bob Musser, environmental administrator for the port, said that effort is now moving through the permitting process.

The clearing of land for the mangrove planting is due to start in early 2014. Once the 50,000 new mangroves are planted,

there will be a one-year waiting period to make sure they are growing properly.

"If the mangroves are growing—and we think they will—we will remove 8.7 acres of mangroves from the turning notch area," Wiltshire said. "That would take place in the latter half of 2015."

Construction of the turning notch would follow and be complete by 2017.

Wiltshire pointed out that Port Everglades is already servicing larger ships. "We are getting those larger ships now," he said. "We recently had a large tanker from India that had gone through the Suez Canal."

Port Everglades is South Florida's destination port for refined gasoline. Tankers transport the product to retail outlets in the region. In addition, there is some unrefined product that is shipped out of the port—crude oil that is trucked in from the Sunniland oil field in Collier County.

Other projects underway to upgrade port operations include a joint project with the Florida East Coast Railroad to build an intermodal container transfer facility. Work started in early 2013 and is scheduled for a mid-2014 completion.

That project involves the extension of a rail line to the port, permitting the transfer of international containers from ship to rail instead of having trucks haul containers to and from off-rail terminals in Hialeah and Fort Lauderdale.

Port officials estimate that the ICTF project will remove 40,000 trucks a year from local roadways, reducing air pollution and traffic congestion, and saving fuel.

Officials note that over the years the impact of port operations on mangroves has been reduced by 98 percent through innovative engineering design and study.

Early plans would have impacted 40 acres of mangroves, but that number has been reduced by 58 percent.

## Ocala to upgrade plants to advanced standards

By PRAKASH GANDHI

Officials with the city of Ocala are looking to address the daunting challenge of complying with advanced wastewater treatment standards while at the same time keeping close tabs on the purse strings.

Ocala has three wastewater treatment plants that now meet secondary treatment standards, said Jeff Halcomb, director of the city's water and sewer department. One plant opened in 1947, another in the 1970s and the third began operating in 2005.

City officials have been looking at ways to modify their plants to meet the advanced treatment standard of 3.0 mg/L nitrates in effluent. That level is tighter than the amount of nitrogen permitted in drinking water, 10 mg/L.

Although the city's sewer plants and water reclamation facilities are in compliance with their permit requirements, Halcomb said they don't meet advanced wastewater treatment standards. Ocala doesn't discharge effluent that is consistently below 3 mg/L of nitrogen.

"Initially, we were looking at spending about \$150 million to bring the three plants up to advanced wastewater treatment standards," he said. "But there are only 50,000 people living in the city of Ocala, so imagine what kind of hit the ratepayers would take if we ended up spending \$150 million. From the outset, we looked at reducing costs."

The most recently built plant was constructed to higher standards but officials are concerned about the two older plants. The city is examining those plants and may take the oldest plant completely off line.

Halcomb said the two newer plants could handle the flow from the older plant if it were to be shut down.

The city has hired a consulting engineering to evaluate the oldest plant.

"An engineering study is being con-

**Ocala**  
Continued on Page 11

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# Calendar

## September

SEPT. 6-7 – Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Venice, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

SEPT. 7-15 – Course: Backflow Prevention Assembly Tester Training & Certification, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

SEPT. 9 – Course: Asbestos Refresher: Project Design, 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).

SEPT. 9 – Meeting: Managing Florida's Aquifers: Aquifer Storage Recovery and MFLs, Orlando, FL. Presented by the American Ground Water Trust. Call 1-800-423-7748 or visit [www.agwt.org](http://www.agwt.org).

SEPT. 10-11 – Course: Water Reclamation & Treatment Processes, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

SEPT. 10-13 – Conference: 2013 American Planning Association Florida Chapter Annual Conference, Orlando, FL. Call (850) 201-3272 or visit [www.florida.planning.org](http://www.florida.planning.org).

SEPT. 10 – 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).

SEPT. 10 – 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).

SEPT. 11 – 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).

SEPT. 11-13 – Conference: 2013 Florida Association of Environmental Professionals Annual Conference, Orlando, FL. Visit [www.fae-pf.org](http://www.fae-pf.org).

SEPT. 12 – Exposition: 6th Annual Southwest Florida Water & Wastewater Exposition, Fort Myers, FL. Hosted by the Florida Section of the American Water Works Association, the Southwest Chapter of the Florida Water Environment Association and Region 8 of the Florida Water & Pollution Control Operators Association. Contact Cherie Wolter at (239) 278-7996 or visit [www.fsawwa.org](http://www.fsawwa.org).

SEPT. 13 – Course: Backflow Prevention Recertification Review, 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).

SEPT. 13 – Seminar: New Approaches for Achieving Permit Compliance, Orlando, FL. Presented by the Florida Stormwater Association. Call 1-888-221-3124 or visit [www.florida-stormwater.org](http://www.florida-stormwater.org).

SEPT. 13 – Meeting: The Real Estate Market Revival – Let's Get Ready to Roll, Estero, FL. Presented by the Florida Chapter of the American Planning Association. Call (850) 201-3272 or visit [www.floridaplanning.org](http://www.floridaplanning.org).

SEPT. 14 – Course: Backflow Prevention Recertification Exam, 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).

SEPT. 14 – Meeting: Fall FGWA Quarterly Membership Meeting, Daytona Beach Shores, FL. Presented by the Florida Ground Water Association. Call (850) 850-205-5641 or visit [www.fgwa.org](http://www.fgwa.org).

SEPT. 16 – Course: Basic Water and Wastewater Pump Maintenance, 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).

SEPT. 16-18 – Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, City of 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).

SEPT. 16-18 – Course: Backflow Prevention Assembly Repair and Maintenance Training and Certification, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

SEPT. 17-18 – Course: Pumping Systems Operation and Maintenance, 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).

SEPT. 17-19 – 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).

SEPT. 17-19 – Conference: 51st Annual WASTECON Conference, Long Beach, CA. Presented by the Solid Waste Association of North America. Call 1-800-467-9262 or visit [www.swana.org](http://www.swana.org).

SEPT. 17 – Course: Globally Harmonized System (GHS) of Hazard Communication-The New Requirement, Jacksonville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

SEPT. 18-19 – Course: Initial Training Course for Transfer Station Operators and Material Recovery Facilities- 16 Hour, Jacksonville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

SEPT. 18 – Course: 4-Hour Refresher Course for Spotters at Landfills, C&D Sites and Transfer Stations, Jacksonville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

SEPT. 18 – Course: 8-Hour Training Course for Spotters at Landfills, C&D Sites and Transfer Stations, Jacksonville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

SEPT. 18 – Course: Lead Refresher: Renovation, Repair & Painting, Jacksonville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

SEPT. 19 – Course: Unidirectional Flushing Workshop, 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).

SEPT. 20 – Course: Backflow Prevention Recertification Review, West Palm Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

SEPT. 20 – Meeting: Bimonthly Meeting of the Florida Section of the American Water Resources Association, St. Augustine, FL. Contact Garrett Wallace at (561) 504-6877 or visit [www.awraflorida.org](http://www.awraflorida.org).

SEPT. 20-28 – Course: Backflow Prevention Assembly Tester Training & Certification, Fort Myers, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

SEPT. 21 – Course: Backflow Prevention Recertification Review, Jacksonville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

SEPT. 21 – Course: Backflow Prevention Recertification Exam, West Palm Beach, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

SEPT. 22 – Course: Backflow Prevention Recertification Exam, Jacksonville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570 or visit [www.treeo.ufl.edu](http://www.treeo.ufl.edu).

SEPT. 23-24 – Conference: 2013 Florida Air & Waste Management Association Annual Conference,

Tallahassee, FL. Contact Becky Heilman at (904) 359-1337 or visit [www.flawma.com](http://www.flawma.com).

SEPT. 23-25 – 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).

SEPT. 25-27 – Course: Respiratory Protection, Gainesville, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

SEPT. 26 – Course: Backflow Prevention Recertification Review, 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).

SEPT. 27 – Course: Backflow Prevention Recertification Exam, 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).

SEPT. 28 – Course: Backflow Prevention Recertification Review, 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).

SEPT. 29 – Course: Backflow Prevention Recertification Exam, Tampa, FL. Presented by the University of Florida TREEO Center. Call (352) 392-9570.

## October

OCT. 1 – Course: Introduction to DEP SOP's for Surface and Groundwater 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. 1-4 – Course: Wastewater 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. 3 – Course: Backflow Prevention Recertification Review, 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).

## OCALA

### Continued on Page 11

ducted to see if we can put a manufactured wetlands there," Halcomb said. "As water slowly flows through the wetlands, the vegetation sucks in the nitrogen and reduces the water's nitrogen level."

The second oldest plant will likely be modified and may make use of oxidation tanks to bring it into compliance with the tighter standards. That upgrade would cost between \$17 million and \$23 million.

If the city needs additional capacity, it could upgrade the capacity of the newest plant from 4 million gallons a day to 8 mgd.

Combined, the three plants have a 12.5 mgd capacity. The city currently uses only 5.5 mgd, leaving 7 mgd in excess treatment capacity.

The city uses reclaimed water from the treatment plants to irrigate parks, baseball and soccer fields, agricultural land and golf courses.

Halcomb said the city is on a fast track to finish the work. "We want to have everything completed within two years," he said.

The city will receive about \$3.8 million in grant assistance from the St. Johns River Water Management District towards the cost of the work and will dig into reserves to cover the balance.

## Florida Specifier

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# Senate committee created to study Indian River Lagoon wildlife die-off

By SUSAN TELFORD

In the past year, 112 manatees have died from unknown causes, as well as over 50 dolphin and 250 pelicans in the 156-mile Indian River Lagoon along the Atlantic coast from Titusville to Stuart.

Residents and activists are frustrated with the mysterious deaths and the lack of funding to study the toxic algae blooms and seagrass die-offs associated with high levels of nitrogen and phosphorus.

The 2013-2014 state budget set aside \$2 million to conduct water quality moni-

toring that would have helped with the research regarding wildlife die-offs. However, that request was among the \$27.3 million in water projects vetoed by Governor Rick Scott.

But in response to concerns for the ailing health of the Indian River Lagoon and Lake Okeechobee basin, a Senate select committee was created last month to study water quality and look into the wildlife die-offs.

According to Senate President Don Gaetz, the eight-member Senate select committee will review policies and spend-

ing related to the Indian River Lagoon and the Lake Okeechobee basin.

The IRL is recognized by the state Department of Environmental Protection as a priority water body. DEP spokesman Patrick Gillespie said that millions of dollars are now being spent on restoration activities there.

Sadly, just months after oyster beds have been restored, the U.S. Army Corps of Engineers—the agency responsible for adhering to the federal law regarding the dikes and water level of Lake Okeechobee—is required by law to dump excess water from the phosphorous rich lake into the St. Lucie River, which flows into the Indian River Lagoon causing massive die-offs of newly restored beds.

Flow from Lake Okeechobee affects mainly the St. Lucie River Estuary in the southern portion of the lagoon, but high phosphorous is not the only cause of the high death count and toxic algae blooms. Many of the wildlife die-offs have occurred

in the northern lagoon, where fertilizer and septic tanks contribute to nutrient pollution.

According to researchers and scientists, the alarming number of deaths requires marine experts to help determine the underlying factors that tie the deaths together—to help identify the toxins, contaminants and infectious diseases that don't normally occur in the populations in the lagoon.

The wildlife die-off could be due to a number of factors, starting with the lack of seagrass that used to populate lagoon, to the dolphin in the river that depend on the fish that are dependent on the seagrass.

"The federal government and the state of Florida have invested vast sums and spent a number of years developing water policies for the Indian River Lagoon and Lake Okeechobee Basin," wrote Gaetz in a press release. "The purpose of this select committee is to determine what progress has been made and what changes in policy, if any, should be recommended to the Legislature and the Congress."

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### FEDFILE

From on Page 2

rizations, PCBs in fluorescent-light ballast and PCBs in natural gas pipelines, according to the EPA.

The agency also needs to clarify regulatory language in some cases.

EPA officials are now seeking nominations for their Small Business Advocacy Review panel—a panel representing small businesses, local governments and small not-for-profit organizations.

Panel members may also represent other groups such as trade associations that are substantially or potentially regulated small entities.

Under the Regulatory Flexibility Act, the EPA must establish an SBAR panel for rules that may have a significant economic impact on a substantial number of small entities.

**Prospects dim for coastal communities.** Two scientific papers recently published predict a grim future for hundreds of Florida's coastal communities. Rising sea levels may flood them out within the next two millennia.

The first paper, authored by Benjamin Strauss, said that in the next four decades, increasing atmospheric carbon dioxide concentrations will pass irreversible thresholds and cause sea level increases that will flood coastal cities.

Investigators have calculated a future

date by which the expected atmospheric carbon dioxide concentration will lock in significant flooding of coastal urban areas.

Each city and area of the coast has a different elevation and other characteristics that affect when sea level rise will overwhelm it. Miami's date, for example, is 2041.

Florida is the state most at risk. Threshold dates for hundreds of this state's communities will occur well before the end of this century, a time frame in which little effective reduction of carbon dioxide emissions is expected.

The second study, conducted by a team led by Anders Levermann, concluded that for every 1°C temperature rise, global sea level will rise by 2.3 meters in the next 2000 years. These authors note that current elevated carbon dioxide concentrations already ensure about a 1.3 meter global sea level rise.

Strauss noted that there is still time to reduce carbon dioxide emissions to save approximately 1000 U.S. coastal cities, even though Florida will be heavily impacted by the already locked-in rise in sea level. More than 100 Florida cities are already at substantial risk from the expected 1.3 meter sea level rise.

These reports are consistent in portraying the likelihood of these events, and both also agree that at that future time, all useful opportunities for remedial action will be long passed.

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# Corps completes Jeep Range munitions search, removal in Orange County

By ROY LAUGHLIN

While school was out at Odyssey Middle School this summer, the U.S. Army Corps of Engineers was also out—out on the playground digging for World War II-era ammunition.

They found some, but not where they expected to, continuing the legacy of the state's many abandoned military bases.

The area around Tivoli Gardens, Lee Vista Square residential subdivisions, adjacent wetlands and Orange County's Odyssey Middle School was once part of the Pine Castle Jeep Range, a World War II munitions training and demonstration facility.

After the war ended, the U.S. Army closed the base, buried some munitions and suggested the isolated parcel of land, now designated as a "formerly used defense site," be used for agricultural purposes.

That recommendation was forgotten in the 1990s when housing developments and the school were built on the property. Shortly thereafter, abandoned munitions were found.

In 2007–2008, local residents found a few buried munition shells that had worked their way to the surface, adjacent to the Odyssey Middle School.

"It prompted immediate action to protect students, faculty and staff at the school," said Nancy Sticht, public affairs officer with the corps. "It began a time critical action."

Sticht said that most munitions are

found deeply buried and often are not recognized by non-experts as munitions because the metal cases are so corroded or weathered. She said that detonation is the primary hazard of these old munitions, even though they will not explode spontaneously. To detonate, some form of kinetic energy has to be directed against the ammunition—a hammer blow, for example.

When munitions were found at the surface, corps investigators did a careful metal detector search of the school grounds and adjacent neighborhoods. At that time, survey results were positive for munitions under at least a part of the athletic running track on the school playground.

The corps found that the base operated a munitions dump that, after school construction, was adjacent to the running track.

During the initial time critical action, that ground was excavated and a substantial amount of buried munitions was removed. In the 2007–2008 time frame, the corps obtain permission and searched all the residential properties in Lee Vista Square and about 60 percent of the residential properties in Tivoli Gardens.

The current cleanup is part of an established site ranking and cleanup scheduling protocol. Sticht explained that the corps ranks formerly used defense sites that may pose public health risk for a variety of reasons. Sites with the highest ranking when this process began in the 1990s receive attention first.

The Jeep Range Site received a priority ranking and would have been investi-

gated when its ranking reached the top of the list. But when munitions were found in 2007–2008, immediate action was required. Follow-up actions, occurring now, are based on the initial ranking of this site.

This summer, investigation and removal teams returned to the school playground to follow up on metal detector responses that indicated some munitions could still be under the playground. After a summer of digging, it appears that the metal that caused the positive detector response was in the asphalt itself, not munitions buried underneath the track.

Between now and the end of the current project, the corps will use metal detectors to investigate the remaining residen-

tial properties in Lee Vista Square and adjacent wetlands.

When on-site investigations are complete, the corps will present a report at a public meeting so residents will understand progress to date.

"We never walk away," said Sticht. "We come back on a periodic basis to ensure whatever remedy we took is protective of the public." The corps will evaluate the site status every five years.

"There's never a 100 percent guarantee that we got everything," she said. "Technology isn't available, for example, to search under a building. There is always a chance people will come upon old munitions."

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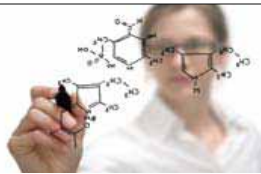
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## Cities sue Broward over waste dollars

By SUSAN TELFORD

Eleven cities are suing Broward County for not holding up its end of a contract to divvy up earned money and property valued at more than \$100 million.

The cities of Sunrise, Weston, Hollywood, Fort Lauderdale, Lauderhill, Lauderdale-by-the-Sea, Lighthouse Point, Tamarac, Davie, Plantation and Coconut Creek retained a law firm to pursue the return of money and property that they claim rightfully belongs to them.

The cities and county entered into a garbage pact agreement 25 years ago whereby the cities paid above-market tipping fees to dispose of their waste to cover the costs necessary for landfills and other facilities.

The county created the Resources Recovery Board to represent the cities, oversee the operation and set the tipping fees that member governments were charged.

Last month the agreement ended, the county took control of the board and the cities are no longer required to dispose of their garbage at the county facilities.

### KOPPERS

From Page 1

tion Department.

"There are some residences that have elevated levels of dioxins in their yards. To me, that is the biggest thing that comes out of this cleanup plan," he said.

The Cabot-Koppers Superfund site is located near the intersection of Northwest 23rd Avenue and North Main Street in the heart of Gainesville on about 170 acres.

A wood treatment plant operated on the Koppers portion of the site from 1912 until 2010. In the first part of the 20th century, creosote was used to treat utility poles and timber there. During its final decades of operation, the plant replaced creosote with chromated copper arsenate for treatment.

Nearly a century of wood treatment activity and illegal dumping are responsible for contaminated groundwater and soil. The burning of contaminated waste resulted in additional contamination.

The Cabot-Koppers acreage was declared a Superfund site by the U.S. Environmental Protection Agency in 1983 and added to the National Priorities List for cleanup in 1984.

The primary contaminants are dioxins, creosote compounds, benzene, naphthalene

"The fees that accumulated over the term of the inter-local agreement are to be equitably distributed to the cities upon the termination of the agreement, however the county blocked equitable distribution instead taking all of the money and real property for itself, necessitating the filing of the action," stated the complaint, City of Sunrise et al. v. Broward County, filed in the Seventeenth Judicial Circuit Court of Florida.

The original agreement stipulated that the values of the assets were to be dispersed among the participating governments at the end of the pact on July 2, 2013, including purchased property and cash reserves.

The county already transferred over \$30 million in system reserves into county solid waste accounts. According to Broward officials, the properties are in the county's name and any disbursement should come only if they are sold, which is not anticipated any time in the near future.

County officials also approved a \$15.4 million disbursement earlier this year, stating that a large portion is needed to cover future costs and potential liabilities.

and chromated copper arsenate.

Test results from 2010–2011 confirmed extremely high levels of dioxins in homes within a two-mile radius of the site.

Under the remediation plan, contaminated soil will be stored underneath an impermeable covering at the site. The soil will also be removed from as many as 90 nearby homes.

The cleanup plan is expected to cost about \$50 million, which will be paid for by Beazer East, the owner of the property.

The first phase of off-site cleanup is expected to start in January, with the on-site cleanup taking several more years.

Bird said that cleaning up the site will be a boon to long-suffering Gainesville residents.

"It has been very hard for people to sell these properties, so it is very encouraging that this cleanup will begin," he said. "And that would not have happened without the federal judge's approval of the consent order."

The county does have some questions about the on-site cleanup, Bird said. "We are still skeptical about whether some of the components will work. But there is a requirement for a five-year review so there is an opportunity for the cleanup remedies to be adjusted," he said.

# Obama announces broad range of initiatives to slow climate change

By ROY LAUGHLIN

In a speech on July 25, President Barack Obama outlined a broad set of policy initiatives to reduce atmospheric carbon emissions at the root of climate change; and prepare for the climate change effects on the nation's economy, landscape and security.

The president noted that carbon dioxide is the primary climate change driver and in the U.S., electricity production from fossil fuels, particularly coal, is the number one source of CO2 emissions.

Combustion of transportation fuels is

responsible for 28 percent of CO2 emissions. Industry, at 20 percent, is a distant third-place contributor.

Reducing carbon emissions from power plants is the low hanging fruit and was the primary focus of the president's proposals. He directed the U.S. Environmental Protection Agency to draft rules to reduce CO2 emissions from both new and existing power plants.

In Florida, natural gas is responsible for about 62 percent of the state's electricity generation. Currently, only 14.9 percent comes from three nuclear power plants. These proportions are in flux and will likely

tilt more toward natural gas and away from coal and nuclear.

Nuclear's contribution may fall to just below 10 percent when Duke Power takes its Crystal River nuclear power plant off line.

Renewable power accounts for just a few percent of Florida's total electricity production.

For plants located in Florida, coal-fired generating plants are significant emission contributors but are not easily replaced. Orlando, Pensacola and Jacksonville all rely significantly on coal-powered generating plants.

New EPA rules on atmospheric carbon emissions from power plants are expected to be revisions of similar rules proposed but then withdrawn in 2012. Revised rules are expected to be released this fall.

The Obama administration reiterated its commitment to renewable power generation. The president pledged a 30 percent increase in funding for clean energy technology in the 2014 federal budget. Clean energy runs the gamut from advanced biofuels to nuclear and clean coal.

In 2009, the administration approved 28 utility-scale solar facilities on public lands. Obama directed the U.S. Department of the Interior to permit enough renewable generation facilities to power more than six million homes, with 100 megawatts to be available for federally subsidized housing by 2020.

This would imply a doubling of clean energy technologies by 2020. The U.S. may be on its way to meeting that goal.

In 2012, the DOI issued permits for 10 gigawatts of renewable power production facilities on federal lands. The U.S. Department of Defense, the single largest consumer of energy in the country, is committed to deploying three gigawatts of renewable energy on military installations by 2025.

The Obama administration set strict new fuel efficiency standards for private automobiles early in its first administration to address CO2 emissions by part of the transportation sector.

In 2011, EPA proposed somewhat weaker standards for freight and commercial vehicles, to be phased in by 2018. Obama proposed continued support for the development and application of advanced efficiency engine technologies for freight-carrying vehicles.

Next generation biofuels may also contribute by extending the use of diesel engines using biofuels without a net increase in CO2 emissions to the atmosphere.

## NOTES

From Page 3

Commission. Construction would start in 2016 and finish by mid-2017, with an initial capacity of 400 million cubic feet a day.

The northern segment would generate more than 15,000 construction-related jobs and 328 permanent positions, according to one economic analysis.

The Sierra Club has been campaigning nationally against expanding the number of U.S. power plants that run on natural gas. But Eric Draper, executive director of Audubon of Florida, said he supports FPL's project as environmentally friendly.

**Winter Park solar.** Construction of a small, four-acre array of solar panels will start this fall in Winter Park. When it's done, residents will get a portion of their power from the sun and the city will become only the second utility to have a solar operation in Metro Orlando.

The city commission has approved an agreement with solar company Clean Footprint that calls for the city to buy solar power from the array for the next 25 years for 6.5 cents per kilowatt hour.

Clean Footprint will cover the costs for building the array and the city can cancel the deal at fixed points during the contract's term.

Power from the array will start flowing early next year. The initial output will be small, with the 2.25 megawatt facility able to power 22,500 100-watt light bulbs at the same time.

Expanding energy efficiency has been a fix favored by many environmental advocates and can be broadly implemented immediately.

In the fall of 2013, the U.S. Department of Agriculture, through its Rural Utilities Service, will provide \$250 million for its Energy Efficiency and Conservation Loan Program.

The administration specifically addressed closer working relationships through 2022 to "support and encourage adoption of state and local policies to cut energy waste."

The administration will draft electricity system efficiency standards that it expects to reduce carbon pollution by no less than three billion metric tons of CO2 by 2030 from the entire electricity system.

Methane and hydrofluorocarbons are a lesser but still significant source of greenhouse gases. The Obama administration proposed to further restrict the use of hydrofluorocarbons and develop an inter-agency strategy to reduce methane releases.

The oil and gas sector will be expected to build and upgrade gas pipelines and storage systems that will reduce methane releases. State and local governments will be important partners in efforts to reduce other greenhouse gas emissions.

Noting that since 2008 federal agencies have modified their activities to reduce greenhouse gas production by 15 percent, the president pledged that through 2020, the federal government will obtain 20 percent of its electricity from renewable sources, more than double its current 7.5 percent consumption from renewable sources.

The third prong of effort to deal with climate change will be to lead international efforts in working with other countries. The U.S., even though it is the number two atmospheric carbon emitter behind China, could end all its carbon emissions but still not greatly influence the course of climate change mediated by greenhouse gases.

The plan listed some fairly straightforward efforts such as reducing emissions of short-lived climate pollutants, phasing out subsidies to fossil fuels, and programs to expand clean energy use and increase efficiency.

Reducing deforestation was another separate item for international negotiations.

Other policy initiatives range from specific restrictions discussed above to arranging finance to help international partners adjust to climate change or to avoid practices that are causing it.

## WATER

From Page 5

fancy. With new numerical nutrient criteria now in place throughout almost the entire state, nutrient removal from treated wastewater may emerge as a significant treatment requirement for some plants.

### NWFWM

The Northwest Florida Water Management District subdivided itself into seven water planning districts and two of those, Santa Rosa and Okaloosa, will need up to six and over 11 million gallons a day of water, respectively.

Flood plain remapping, particularly in the western half of the district, is active. It enhances the district's ability to protect and manage flood plains without acquiring land or making structural modifications, a benefit characterized in the district's 2013 Consolidated Annual Report.

In its annual report, the Northwest district ranked the Apalachicola-Chattahoochee-Flint Basin Technical Support as its number one item of focus.

Planning is tricky business for water management districts. Expectations of change become part of the process for change.

Recognizing that, an official with the South Florida district said, "I don't want you to walk away thinking we're okay for the next 20 years. We need to be diligent with our water supply. It has taken a lot of effort to get to this point. It will take a lot of effort to be good stewards and take care of the future."

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# State maintains leadership in recycling but more work remains to be done

By DAN MILLOTT

In 2008, the Florida Legislature implemented a new way of measuring the state's volume of recyclables, adding the amount of material that goes to waste-to-energy plants to produce electricity to the traditional forms of recycled materials.

Ron Henricks, environmental administrator in the Waste Reduction Section of the state Department of Environmental Protection, said until that change in calculating recycling rates was made, the state rate had plateaued at about 30 percent.

By adding the WTE component, the rate increased to 48 percent.

And while that change improved the overall picture, Henricks said the long term state recycling goal of 75 percent will not be reached unless there is a major change in the recycling habits of the commercial sector.

Environmental interests criticized the state's addition of WTE materials to recycling calculations. Dwight Adams, chair of the Sierra Club's waste minimization campaign coordinating committee, said "the idea of counting burned materials as recycling is wrong from the outset."

The Sierra Club's objections are not limited to the recycling calculation. They also claim that the method is using more energy than would be used in a normal recycling operation. They also said it creates more pollution.

Henricks points out that material that goes to WTE plants is not calculated by tonnage delivered but by the number of megawatt hours of electricity produced. Each megawatt hour produced translates to a one-ton recycling credit.

He said that the amount of energy produced by WTE facilities is not significant. "It might be enough to serve the electrical needs of a small city," he said. "But nobody is going to build a waste-to-energy plant just for the energy it produces because the economics just don't support that."

When the state started including materials that go to WTE plants along with regular recycling materials, they set up two tables—one for counties that have WTE plants and one for those that don't.

Alachua County, for example, topped the state's list for traditional recycling at 54 per cent, as reflected in the recently released DEP annual recycling report. But when including WTE plants in the calculation, Alachua dropped to number eight, and Martin County moved to the top of the list with a 75 percent recycling rate.

Florida leads the nation in waste incineration, burning 18,000 tons a day.

In 2008, the Florida Legislature set the goal of reaching a 75 percent recycling rate by 2020. Henricks said that if the commercial waste stream for recyclables does not increase substantially, meeting that lofty goal will be impossible.

"Two-thirds of the waste stream comes from schools, hospitals, business buildings and regional malls," he said. "If these sources don't improve, 75 percent will never be reached."

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- Environmental Resource Permit
- Industrial Water Permit
- Joint Coastal Permit
- NPDES Stormwater Construction Generic Permit
- NPDES Stormwater Multi-Sector Generic Permit
- NPDES Stormwater Municipal Separate Storm Sewer System
- RCRA Operating Permit
- RCRA Post Closure or HSWA Corrective Action Permit
- Underground Injection Control
- Used Oil Permit
- Waste Water Treatment Plant/Drinking Water Plant/Distribution System Operator Certification

If your business requires a DEP permit, your input will serve as a valuable tool for assessing the effects of permitting on the economy. The survey, located on DEP's Business Portal home page, is available at [www.dep.state.fl.us/secretary/portal/default.htm](http://www.dep.state.fl.us/secretary/portal/default.htm) until October 31.

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## Stormwater system installed in Tampa's Encore District

By BLANCHE HARDY, PG

Tampa's 28-acre inner-city Encore District recently completed another leading edge technology project, installing an underground stormwater management, harvesting and irrigation system that incorporates a solar array at the community park within the former Central Park area. Harvested rainwater will be used to provide irrigation in the district.

Encore is a \$450-million sustainable mixed-use mixed-income master planned community replacing Tampa's Central Park Village public housing development demolished in 2007. The community is a joint venture between the Tampa Housing Authority and the Bank of America Community Development Corporation.

The harvested stormwater collection, treatment and irrigation system is an integral part of the community and a significant component in the restoration of Tampa's Perry Harvey Park.

Terrance Brady, THA's director of energy services and special projects, said the stormwater vault is 33,000 cubic feet and will hold 24,684,000 gallons of water.

"There will be no stormwater runoff," said Brady. The stormwater vault is designed to contain all the stormwater for the entire 28-acre site.

Oldcastle Precast both designed and provided the underground stormwater retention structure comprised of 146 ten-foot-tall modules. The system was engineered by Cardno TBE of Clearwater.

The system is considered one of the most unique in Florida due to its capacity.

The system preserved three developable sites that would have been lost if conventional stormwater management techniques had been used.

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stormwater runoff from the corridor. Pre-construction sampling revealed that one of the proposed pond parcels (former used auto dealership) exhibited arsenic levels in exceedance of 62-777 FAC CTLs. Soil results were above the residential SCTL only. Groundwater results for total/dissolved arsenic were above the GCTL, but below the NADC. Subsequent delineation sampling indicated that the arsenic was restricted to the southern portion of the parcel. Multiple alternatives were evaluated for remediation of the soil including excavation, solidification and stabilization, and groundwater including membrane filtration, adsorption and ion exchange. Excavation/disposal was selected for soil remediation, while adsorption was selected for remediation of the groundwater. Groundwater from the pond excavation is pumped into an aboveground treatment system utilizing activated alumina media. Treated groundwater is returned to the open excavation where it is recaptured and retreated to ensure attainment of cleanup standards. An

impermeable groundwater cut-off curtain was installed to provide a hydraulic barrier, which promoted efficient capture of the contaminant plume, as well as preventing off-site migration during remediation system operation. The barrier is constructed of a rigid geotechnical polyurethane grout system, which employs a hydro-insensitive two-part polymer that is injected through 1/2" diameter rods. Treatment time is estimated to be 28 days at 250 gpm, with a total treated volume of approximately 10,080,000 gallons.

11:40 **Panel Discussion: Assessment & Remediation on FDOT Construction Projects - A Primer**

12:00 **Day Two Luncheon**  
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**Session 8: Regulatory Panel Discussion**

1:30 **Moderator:** Glenn MacGraw, PG, Vice President, The FGS Group, Tallahassee

Jorge Caspary, PG, Director, Division of Waste Management, DEP, Tallahassee  
Admiral Valerie Huegel, Program Administrator, Petroleum Restoration Program, DEP, Tallahassee  
Robert Cowdery, PE, Environmental Engineer, DEP, Tallahassee  
*Additional DEP officials TBA*

3:00 Break

3:30 Exhibits close

**Session 9: Incorporating Biogeochemistry in Remedial Approaches**

3:30 **Removal of Ethylene Dibromide from Groundwater by Biogeochemical Reductive Dehalogenation**

Jim Studer, PE, President  
InfraSUR, Albuquerque, NM  
Groundwater contamination by uncontrolled release of leaded fuels containing ethylene dibromide or EDB (1, 2 Dibromoethane) is extensive. EDB is highly mobile in groundwater, recalcitrant to natural attenuation and a potent carcinogen. The maximum contaminant level for EDB is very low at 0.05 ug/L. Petroleum hydrocarbon plumes containing EDB represent environmental remediation challenges. EDB is biodegradable under anaerobic and certain aerobic conditions and can undergo abiotic transformation by contact with reactive sulfides such as iron sulfide. Its presence in groundwater above the MCL at thousands of sites suggests that natural attenuation processes are ineffective. In-situ approaches that preferably enhance the natural processes are in demand. One such approach is biogeochemical reductive dehalogenation, BiRD. This technology was developed and patented with a primary view towards chlorinated solvents like tetrachloroethylene and metals like hexavalent chromium and arsenic. Research conducted by the U.S. Environmental Protection Agency documents removal kinetics and efficiencies against the brominated EDB comparable to TCE. BiRD involves creation of an in-situ FeS reactive zone or permeable reactive barrier using relatively low cost direct injection or trench-based construction techniques and materials. The presence of the halogenated compound within and down gradient of a PHC plume requires special engineering considerations compared to the typical BiRD application.

4:00 **From Pilot to Full-Scale: High Pressure Injection of Calcium Peroxide into Limestone Bedrock**

Brantley Rudd, Vice President  
Exo Tech Inc., Monroe, GA  
Fred Portofe, PG, VP of Environmental Operations  
J2 Engineering, Tampa

BTEX contamination in groundwater was discovered at a site in Sumpter County, FL. A pump and treat system was installed and operated for approximately four years to remediate the petroleum constituents. The system was shut-off after contamination was observed to be below Florida natural attenuation default source concentrations. In an effort to further reduce dissolved benzene to below the contaminant target level of 1 microgram per liter, Exo Tech was contracted to perform a bench-scale treatability study and field pilot study. The treatability study was performed for J2 Engineering to aid in the design and development of an effective remedial strategy utilizing in-situ chemical oxidation or enhanced aerobic biostimulation. A thorough study was performed that included an evaluation of site geochemistry, soil oxidant demand, degradation studies and an in-situ microcosm study to evaluate microbial activity in the groundwater. The results of these studies showed the presence of indigenous BTEX-degrading aerobic bacteria, indicating that PermeOx Plus™ would be able to stimulate an increase in the microbial population. In order to evaluate the feasibility of PermeOx Plus injections, a pilot study was performed. The pilot study consisted of injecting a PermeOx Plus slurry mixture into three injection wells. The injection wells were installed by J2 Engineering, to an approximate depth of 70 feet. The wells were installed into the limestone bedrock utilizing a mud rotary drill rig. A four-inch casing was installed from ground surface to

the top of bedrock, approximately 50 feet below ground surface, and were left "open borehole" for the injection. The injection took place directly into the limestone bedrock using high pressure where a total of 600 pounds of PermeOx Plus was injected into the aquifer. Following the pilot study, monitoring events were conducted to evaluate any degradation in the compounds. All petroleum hydrocarbons were reduced to below laboratory detection limits. Full-scale implementation of PermeOx Plus consisted of the installation of 17 additional injection wells and was completed in June, 2013. Results are pending.

4:30 **Methane Inhibition through Restriction of Enzyme Systems that Catalyze Methanogenesis During Anaerobic Reductive Dechlorination**

Michael Scalzi, President  
Innovative Env. Technology Inc., Pipersville, PA  
Anaerobic reductive dechlorination is a treatment process that has been successfully used to remediate soil and groundwater contaminated with chlorinated solvents. It only occurs in the absence of oxygen and the chlorinated solvent substitutes for oxygen in the physiology of the microorganisms carrying out the process. Almost any substrate that can be fermented to hydrogen can be used by dechlorinating microorganisms to enhance reductive dechlorination. However hydrogen is also used by methanogenic bacteria that convert it to methane. By utilizing hydrogen, the methanogens compete with dechlorinating microbes. This study relates to the use of red yeast extract as an inhibitor of enzyme systems that are responsible for the production of methane and therefore compete with halorespiring bacteria during the anaerobic reductive dechlorination process. Red yeast extract, also known as red yeast rice, contains several ingredients that inhibit methane production, including a number of monacolins, most importantly monacolin K or lovastatin. Lovastatin is the only naturally occurring statin compound. Lovastatin has the ability to block methane production specific enzyme systems. Through the inhibition of methane production, reductive dechlorinating bacteria can become the more dominant bacterial colony. In addition to its methane inhibition properties, red yeast also includes mono-unsaturated fatty acids that can stimulate bacteria in the subsurface. Preliminary results from laboratory studies showed that the red yeast extract was effective in decreasing the methane production in a system containing TCE contaminated soil, while increasing the removal of TCE at the presence of a remedial material.

5:00 Conference Adjourns

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