

1st COAST PLANNER

The Bi-monthly e-Newsletter of the First Coast Section, Florida Chapter, American Planning Association



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Issue 1, Volume 3

June 2006

First Coast APA

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Hard science, 'virtual river' – a planning and resource management tool

By Josh Sweigart and Kraig McLane, AICP

Planners often dream of having state-of-the-art tools to assist us in our work to plan and create a better future. Through our knowledge gathered over the years and new tools, we now have a significant understanding of the lower St. Johns River processes and ability to assimilate wastes — primarily nutrients — such as nitrogen and phosphorus. *Please see the Virtual River, on Page 2, Column 2.*



Microcystis Bloom - St. Johns River mid-channel south of the Buckman Bridge - 08.19.05 - 2:04pm
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Throw AICP Certification into the Mix

The First Coast Section's 2006 AICP Short Course will kick off with a mixer Thursday, **July 13 from 5:00 until 6:00**. Refreshments will provided at the offices of Prosser Hallock, Inc., 13901 Sutton Park Drive South in Jacksonville. The mixer will offer an opportunity for those interested in taking the exam in November to meet Short Course facilitators, learn about available study resources, as well as discuss preparation techniques with members who have taken the exam and lived to tell the tale. Attendance at the mixer is not mandatory for those planning on attending the course. APA members interested in participating in facilitating the course or just telling war stories are more than welcome to attend as well.

The testing window for the November exam will be November 6-20, 2006. Applications must be received by AICP no later than **September 1, 2006**. Those interested in participating in the First Coast Short Course should mark their calendars for Saturday **August 19 and 26** as well as Saturday **September 9 and 16**. Topics for each session as well as the location(s) they will be presented at the July 13 mixer. For more information please contact Tony Robbins at (904) 739-3655 or trobbins@prosserhallock.com.

FIRST COAST EVENTS

First Coast APA Board Meeting
Prosser Hallock
4:30 am, Thursday
July 13, 2006

First Coast APA
AICP Short Course Mixer
Prosser Hallock
13901 Sutton Park Drive South
Jacksonville, FL 32224
5:00 pm, Thursday
July 13, 2006

First Coast APA
AICP Short Course
Saturday, August 19, 2006

First Coast APA
AICP Short Course
Saturday, August 26, 2006

First Coast APA
AICP Short Course
Saturday, September 9, 2006

First Coast APA
AICP Short Course
Saturday, September 16, 2006

FAPA State Conference
Marco Island, FL
September 27-30, 2006

*First Coast APA Board Meetings are held at
England, Thims & Miller
14775 St. Augustine Road
Jacksonville, FL 32258*

COOL LINK OF THE MONTH

www.cyburbia.org

A great resource for
planners and urbanophiles

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Retell your best (and most terrifying)
AICP exam stories to a new audience...

AICP SHORT COURSE MIXER

Thursday, July 13, 2006

5:00 p.m.

Offices of Prosser Hallock

13901 Sutton Park Drive South

Jacksonville, FL 32224

RSVP to Tony Robbins

trobbsin@prosserhallock.com

Open to all First Coast Section Members...

This is not just for short course attendees!

From the Chairman...

Mark Major, AICP

Chairman – First Coast Section

"We'll set a target of 30 attendees but be happy if we get 20..."

I'll admit it, that is what I said to the First Coast APA Board during the early stages of planning the June 1, 2006 Spring Luncheon. So believe me when I say I was ecstatic with the turnout of 46 attendees at the Spring Luncheon held at the University of North Florida. It always nice to exceed your expectations of success by more than 200%! Not bad after 3 years, more or less, of inactivity. The talks by Stephen Tocknell and Jeff Alexander were insightful, everything ran on time, the food was excellent, and the University of North Florida ably served as host. A special thanks to Donald Smith, our Treasurer, and Lori Hodges of England, Thims and Miller for helping to organize the event. I would also like to thank England, Thims and Miller for their sponsorship of the event as well as the following organizations that sponsored tables for the luncheon: Pulte Homes, Northeast Florida Regional Council, PBS & J, Prosser Hallock, and Reynolds, Smith and Hills. I would also like to thank Florida Planning and Zoning Association and the Urban Land Institute for distributing our luncheon flyer to their membership.

The First Coast APA Board was so pleased with the success of the luncheon that we have already blocked out **October 5, 2006** for our **Fall Luncheon. We will also be holding an AICP Short Course Mixer at the Prosser Hallock offices (located on Sutton Park Drive near the Hodges/JTB interchange) on July 13 at 5:00 pm.** All members and short course participants should make an effort to attend. Please RSVP to Tony Robbins at trobbsin@prosserhallock.com.

In other news, at its June meeting, the First Coast APA Board approved Associate Memberships in First Coast APA for non-planners such as architects, engineers, public officials, real estate developers, and land use attorneys (see the flyer attached to this month's newsletter). This is an initiative I'm very excited about because I feel it is crucial to the long-term viability of the First Coast Section to increase our membership, secure our finances, and expand the pool of talent we can draw from for the organization, and, hopefully, a future bid to host the State FAPA Conference here in Jacksonville. So encourage your colleagues who have a vested interest in First Coast planning to join up and participate in the Section.

Also, I heard from a few people who want to get involved and run for a Section office in the September elections. If you want to get involved, now is the time to let me know because September will here before you know it and we will have to get the ballots out to our members. Don't miss your chance! I hope to see you at our July mixer, and have a great summer!

The Virtual River, continued from Page 1

Most importantly, we have also identified the need to reduce discharges to the lower St. Johns River to allow room in the pollution allocation that will be needed for additional growth (growth management) in the region and this removed discharge will be made available as "reuse" to assist in managing our water supplies. This is how a resource management tool becomes a sustainability tool — reduce nutrient loading to allow for growth and providing reuse to replace freshwater irrigation demand.

Creating a Virtual River

The year was 2003. St. Johns River Water Management District (SJRWMD) staff had spent eight years in crafting a "virtual river," and it was done. It was a computer model of the Lower St. Johns River Basin so complex that its designers often didn't know why it acted as it did. The program existed solely to create two numbers: The percentages that nitrogen and phosphorus must each be reduced. Once identified, these numbers could help keep dissolved oxygen and chlorophyll levels below a certain amount in the river.

It took about two weeks for the computer model to provide the answers. The SJRWMD then had its pollutant load reduction goals (PLRGs), the cornerstone of an ongoing effort to restore the basin. The Florida Legislature required SJRWMD to establish PLRGs for several water bodies in December 1990, but scientifically valid numbers would have been impossible to establish without the model, according to Pete Sucsy, Engineering at SJRWMD. "I don't think you could ever get the right answer without the model," he says.

The program breaks the lower basin into 12,000 three-dimensional segments. SJRWMD field scientists measured a slew of factors, including salinity, velocity, depth and water chemistry to make sure each segment accurately represented the river's makeup. Sucsy and other modelers plug in hypothetical amounts of phosphorus and nitrogen that discharge into the river. Then, they let the model "flow." "After that, it's on its own," says Sucsy.

A complicated interaction takes place in each segment. Virtual phytoplankton takes up the virtual nitrogen. An algal bloom occurs, blocking sunlight to virtual plants. The algae die as the tidally influenced river takes in salt water from the ocean. This causes dissolved oxygen to sag. Virtual eutrophication occurs, and the water's chemistry changes. "All that stuff is calculated in each segment," says Sucsy. The portions interplay with each other as the computer does thousands of floating-point calculations in each segment. It takes three days of constant running for the computer to simulate five years. Finally, it gives staff the resulting concentrations of chlorophyll and dissolved oxygen.

Synthesizing nature

Sucsy's description of how the model works makes his fascination with the river's mysteries evident. While most freshwater bodies are influenced primarily by rainfall, the St. Johns River is at the mercy of wind, tidal influences and storm surges that are barely detectable with the naked eye. This is because the river is nearly flat. These factors cause the river to flow backwards sometimes, or to not flow at all, resulting in an odd estuarine environment "unlike any in the world," says Sucsy.

The river's perplexities dictate the model's limitations. It can synthesize science, but it cannot replace scientific observation. For example, a summer algal bloom in 1999 completely defied the model's predictions by producing more chlorophyll and nitrogen than expected. Staff realized that the bloom's unusual species of alga was interacting with or fixing nitrogen in the atmosphere differently than most species. Correcting the model required an extensive field study of the algae.

Please see The Virtual River, continued on Page 3

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The virtual river itself was built on the back of observable data. The computer model simulates the river in the years from 1995 to 1999, when SJRWMD scientists undertook an extensive study of all of the factors the model needed.

Research is ongoing, as biologists and hydrologists study how wildlife reacts to pollutant discharges in the river's intricate system. Staff are continually updating the model. "This is a synthesis of field research and cutting-edge technology," says Casey Fitzgerald, assistant director of Water Resources at SJRWMD. "An effort like this would be impossible without the top-notch scientists and engineers we have at the District."

Though Lake George is in the river's middle basin, it will soon be added to the model due to the large role it has in interacting with the river downstream. A massive information-gathering effort is under way.

TMDLs established

The PLRGs established by SJRWMD were used by the Florida Department of Environmental Protection (FDEP) and the U.S. Environmental Protection Agency to form total maximum daily loads (TMDLs).

TMDLs are basically the other side of the PLRG coin. While the latter determines how much reduction is necessary in pollutants, the former simply determines the remaining balance of how much is allowed in. "The TMDL is founded on the concept of sustainability," says John Hendrickson, Environmental Sciences at SJRWMD. Hendrickson and Sucsy received a meritorious service award from the District's Governing Board in 2004 for their work in modeling water quality in the lower basin. "In the TMDL approach, scientists and regulators start by asking, 'What is the total amount of pollutant that a water body can assimilate and still meet its recreational ecological uses,'" says Hendrickson. "When this amount is determined, it is allocated to various beneficial uses based on the need and the public interest."

A legal challenge stalled the original adoption of the TMDLs, but they will likely be adopted this year. The original TMDLs called for a 30 percent reduction in nitrogen and phosphorus flowing into the freshwater portions of the river. For the river's predominantly saltwater portion north of Green Cove Springs, a 22 percent reduction was decided upon. Those numbers are likely to increase before they are adopted by FDEP.

TMDLs are a central aspect of the river's restoration and represent the real thrust the lower St. Johns River program at SJRWMD has been aiming for 10-15 years. The next step is to implement these reductions, which is a regional effort that will involve public, private, local and national agencies.

Another computer program was used to help devise the implementation. This latest technology optimization model is currently calculating the costs of projects, time frames, and geography. The resulting plan is estimated to cost \$95 million to meet the TMDL and \$500 million to exceed the TMDL allocation — allowing room for regional growth and providing significant reuse. Both move us closer to a sustainable St. Johns River. Funding wise — the 2006 Florida legislative session awarded the Lower St. Johns River \$10 million toward nutrient reduction and reuse and SJRWMD is planning to contribute \$10 million annually for reuse projects over the horizon of this 10-year plan.

Reducing the nutrient output from roughly 20 wastewater treatment plants along the river is a major aspect of this plan. Great strides have been made in previous decades to cut back on those discharges. Additional reductions can be made by treating water to reduce nutrients further or by using treated water as reclaimed water.

Plans also include reducing nutrients in stormwater discharges. SJRWMD is working with communities to develop and fund comprehensive, stormwater treatment systems, including such measures as ponds and sediment traps. These projects will be required to participate in the TMDL nutrient reductions, however due to higher cost of stormwater treatment projects and their lower removal efficiencies portions of their reductions can be made by wastewater utilities through pollutant trades.

The technological aspects of TMDL development may sound like the stuff of science fiction, but getting this far has taken numerous practical steps by SJRWMD employees, Florida Department of Environmental Protection, and the several stakeholder groups — one being the TMDL Executive Committee, according to Fitzgerald. "We've used state-of-the-art science to determine what has to be done," he says. "Now, it's just time to do it."



Microcystis Bloom - St. Johns River mid-channel south of the Buckman Bridge - 08.19.05 - 2:04pm
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Interested in contributing to the 1st Coast Planner?
Contact Lindsay Stevens at Lindsay.stevens@tpl.org

✦
We're off for the Summer!
See you soon - Stay Cool!

First Coast Section APA AICP Preparation Course

Are you ready to take the AICP exam this November? Now in its fourth year, the First Coast Section of APA is providing active members with free, interactive instruction that can assist you in your preparation for the exam.

Join other First Coast Section members July 13 for a mixer to kick-off this year's sessions at 13901 Sutton Park Drive South, Jacksonville 32224 from 5:00 until 6:00. Come put names with faces, hear how others took the exam and lived to tell the tale, and learn what not to do in order to maximize your study time.

Even if you cannot attend to kick-off mixer, you are more than welcome to attend one or all of the prep sessions. Each session is held at the same place as the mixer at times that does not interfere with your work schedule or consume your entire weekend. The session topics are as follows:

Saturday August 19

- Planning History
- Planning Theory
- Planning Law
- Quantitative Methods

Saturday August 26

- Plan Making
- Transportation
- Environmental Planning
- Planning Ethics

Saturday September 9

- Zoning Regulation
- Water
- Citizen Participation
- Management and Budget

Saturday September 16

- Scenarios
- Practice Exams
- Exam Format and Tips

If you are interested in the prep course and have not already notified the Section, please contact Tony Robbins at 904.739.3655 or trobbsins@prosserhallock.com.



ASSOCIATE MEMBERSHIPS

The First Coast Section of the American Planning Association (First Coast APA) has introduced Associate Memberships for architects, engineers, landscape architects, real estate and land use attorneys, public and elected officials, real estate developers, and other professionals and citizens who have an interest in the latest planning and development issues in the First Coast Region of Duval, St. Johns, Clay, Nassau, Baker, Flagler and Putnam County.

Annual membership is \$35. This includes email notification of First Coast APA events, meetings, and luncheons. Associate members are also entitled to receive the *1st Coast Planner*, the bi-monthly eNewsletter of First Coast APA with the latest public policy and private industry news in the area of planning and development.

If you want to stay up-to-date on the latest news and people in planning in the First Coast Region, then join First Coast APA today!

Please make checks/money orders payable to First Coast APA, c/o Lori Hodges, England, Thims and Miller, Inc., 14475 St. Augustine Road, Jacksonville, FL 32258.

Name: _____

One-Year Individual \$35

Organization: _____

Two-Year Individual \$70

Address: _____

Public/Non-profit Level \$120

City: _____ State: _____

5 Associate Memberships
30% of the Individual Rate

Day Phone: _____ Cell: _____

Corporate Level \$150

5 Associate Memberships
15% off the Individual Rate

Email: _____

Conditions of Membership:

Associate Members are non-voting members of the First Coast APA.
Associate Members of First Coast APA are not members of the Florida Chapter of the American Planning Association (FAPA) or the American Planning Association (APA), and do not enjoy the benefits of membership in FAPA or APA.

For Public/Non-profit and Corporate Associate Memberships, please attach business cards of members or an additional sheet with names and contact details. Thank you.

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