

AGENDA

Commission for the Environment December 9, 2013 7:30 p.m.

Orange County Environment and Agricultural Center
306 Revere Road, Chapel Hill

-
- | <u>Time</u> | <u>Item</u> | <u>Title</u> |
|--------------------|--------------------|---|
| 7:30 | I. | Call to Order |
| 7:32 | II. | Additions or Changes to Agenda |
| 7:35 | III. | Approval of Minutes – November 11 (Attachment 1) |
| 7:45 | IV. | Community Garden Proposal
Brian Belting and Matt Ballard (University United Methodist Church) will present plans for an urban community garden on the former Umstead Farm along Bolin Creek. They request feedback and guidance from the CFE for this environmental initiative (Attachment 2) |
| 8:00 | V. | Committee Meetings - State of the Environment report
The CFE will break out into its standing committees (Air & Energy and Water & Biological) to discuss proposed revisions to the draft State of the Environment report (Attachment 3)

Draft #4 of SOE report sections is available from a special CFE link to the DEAPR webpage |
| 8:45 | VI. | Committee Reports
The committees will report back and discuss next steps for completing the SOE Report |
| 9:10 | VII. | Election of Officers
CFE members are scheduled to elect a new Chair and Vice-Chair for the upcoming year in accordance with the CFE policies and procedures. (Attachment 4) |
| 9:20 | VIII. | Updates and Information Items
Staff and/or CFE members will provide updates on the following items: <ul style="list-style-type: none">➤ 2014 Meeting Calendar (Attachment 5)➤ CFE appointments (Attachment 6)➤ CFE Annual Report and Work Plan: 2013-14 (Attachment 7)➤ CFE Resolution – Food Waste Diversion (Attachment 8)➤ Industrial Hemp film screening update➤ Seismic testing for fracking to begin in NC (Attachment 9)➤ Fracking leads new energy boom in the US (Attachment 10)➤ Jordan Lake rules update (Attachment 11)➤ OWASA Mitigation Tract forestry update (Attachment 12)➤ Duke Forest newsletter (Attachment 13)➤ Triangle Land Conservancy newsletter (Attachment 14) |
| 9:30 | IX. | Adjournment

<i>Next meeting: January 13 (Hillsborough)</i> |

**Orange County
Commission for the Environment**

Draft Meeting Summary

November 11, 2013

Solid Waste Management Administration Building, Chapel Hill

PRESENT: Jan Sassaman (Acting Chair), Lucy Adams, May Becker, Peter Cada, Loren Hintz, Donna Lee Jones, Steve Niezgoda, Jeanette O'Connor, Tom O'Dwyer, David Welch

ABSENT: David Neal, Terri Buckner, Susie Enoch, Gary Saunders

STAFF: Rich Shaw, Tom Davis

- I. **Call to Order** – Sassaman called the meeting to order at 7:30 pm. He thanked Hintz for running as a candidate for Chapel Hill Town Council. He congratulated Jenn Weaver (Neal's spouse) for being chosen to serve on the Hillsborough town board.
- II. **Additions or Changes to Agenda** – Becker asked to present a draft food waste resolution that she shared with CFE members earlier. Sassaman recommended adding this item to the agenda prior to the State of the Environment report. The CFE agreed.
- III. **Approval of Minutes** – Sassaman asked for comments on draft September 9 meeting summary. Hintz recommended adding a sentence on Page 2 to explain the bulleted comments were some of the issues that were raised during the discussion. O'Dwyer motioned to approve as amended; Niezgoda seconded. Approved unanimously.
- IV. **Industrial Hemp Film** – O'Dwyer discussed his ongoing continued interest in the CFE sponsoring a screening of a documentary film ("Bringing it Home") that advocates for the legal production of industrial hemp in the United States. He said some CFE members watched the film at his home and others are welcome to borrow it for viewing. He noted several states now support hemp production, which could be regulated and taxed like tobacco to help support other public needs.

Sassaman asked what concerns people about hemp. O'Dwyer said aside from the myth that hemp is similar or equivalent to marijuana, the problem is there is not a marketplace for this product although there is enough demand to establish a system. China and Canada sell hemp products in the US; they also sell bales for manufacturing goods.

O'Dwyer said a few years ago North Carolina passed a law allowing NC State University to experiment with hemp, but there is currently a hold on that research. He said many farmers in Orange County are looking for a better large-scale crop to replace corn. O'Dwyer added that hemp can improve soil by adding beneficial nutrients while removing heavy metals. Jones recalled that "phytoremediation" is one of the beneficial qualities discussed in the Congressional Research Service white paper ("Hemp as an Agricultural Commodity") that O'Dwyer provided earlier.

Hintz supported having a constructive dialogue about hemp production. Welsh said the CFE should identify potential environmental benefits rather than purely economic considerations. O'Dwyer said he would enlist other boards to examine the other issues, such as Agricultural Preservation Board and the Economic Development Commission.

CFE members identified questions about hemp's effects on the environment:

- What are the net effects of hemp on the soil, including soil nutrients? (Cada)
- What effect does hemp farming have on native wildlife? (Cada)
- Could hemp serve as a fast-growing wind break? (Cada)
- Could hemp be considered an invasive species? If so, what affects could hemp have on native plant species? (Adams)
- What else does hemp remove from the soil besides heavy metals? (Adams)
- Is it true that hemp does not require herbicides or pesticides?

O'Dwyer motioned that the CFE authorize him to find answers to those environmental questions, and if he can answer the questions satisfactorily he would then ask CFE members to decide on whether to sponsor a screening of the film. O'Connor seconded the motion and it carried unanimously.

CFE Resolution on Food Waste Diversion [Added to agenda] – Sassaman asked Becker to introduce the draft resolution she shared with CFE members via email.

Becker said her proposal follows up on the presentation by Gayle Wilson and Cody Marshall (Orange County Solid Waste Management) to the CFE in April, and on the Solid Waste Forum that the CFE co-sponsored with the Chapel Hill Sustainability Committee in May. Becker said she discussed how the County could improve its food waste program with Gayle Wilson, Blair Pollock and others.

Becker thanked CFE members for their comments thus far and asked if there were other questions. O'Connor suggested the County look at other successful programs around the county, including curbside composting in New York City. She asked whether the resolution aimed to expand only commercial composting or to include residential too.

CFE members discussed the merits of including residential compost collection along with the larger, commercial establishments. Most members suggested focusing the current push on commercial collection of food waste. Shaw said his notes from the April presentation was that Orange County currently diverts 2,000 tons of waste from the landfill each year rather than 4,000 tons as stated in the draft resolution. He recommended the CFE check that figure.

O'Dwyer motioned to approve the resolution with the noted changes. Cada seconded the motion and it was approved unanimously. Sassaman asked staff to send the signed resolution to the BOCC and the towns with the CFE's April 2013 memo on Orange County's Integrated Recycling Program.

- V. **State of the Environment 2014** – Shaw provided an overview of the report progress. He and Davis described the changes made to the Land Resources and Water Resources sections respectively since the last meeting. Shaw asked CFE members to provide critical feedback on the format and contents, and to help staff assess the current trends and identify what the County can do to improve in the different subject areas. Shaw reported that he had not received edits to the Air and Energy section. He recalled that members of the Air and Energy Committee had offered to simplify some of the technical narrative and to reformat the section for CFE consideration. He thanked all CFE members for volunteering their time toward this project, but noted staff still needs a lot of assistance to complete the report on schedule.

Hintz noted that some of the Internet links do not work properly and recommended that they all be checked before final report publication.

Sassaman asked for volunteers from both committees to work closely with Shaw and Davis on identifying specific findings and recommendations to highlight in the report from the CFE. Cada and Becker offered to work on the Water section; Welsh, Hintz and O'Connor on the Land section. Niezgoda offered to read the document for clarity, flow and content. Jones recommended putting complex tables in an appendix.

Sassaman suggested a fourth draft be sent to CFE two weeks prior to the next meeting.

The CFE members agreed that at this stage it is too late to consider wholesale changes to the basic report format. Doing so would require re-editing all sections again.

- VI. **Updates and Information Items** – Sassaman introduced a topic that will be placed on the December meeting agenda. He said the University Methodist Church in Chapel Hill recently purchased eight acres for an urban garden along Bolin Creek. He has invited representatives to describe the project and its potential environmental impacts.

Information on the following other subjects was included in the meeting materials and summarized by staff: a) CFE meeting calendar for 2014, b) OWASA forest management at Cane Creek Mitigation Tract, c) wood pellets being used for fuel, d) Carrboro's energy and climate action plan, e) the relative certainty of climate change, f) new guidance for permitting of solar projects, g) Orange County's recycling of oyster shells, h) a legislative scorecard from the NC League of Conservation Voters, i) Fracking wastewater study findings by Duke researchers, j) US Forest Service water quality BMP newsletter, and k) the winners of "The Nature of Orange" photography contest.

O'Dwyer urged CFE members to continue paying attention to plans for future forest management activities on OWASA's Cane Creek Reservoir properties.

- VII. **Adjournment** – Sassaman adjourned the regular meeting at 9:07. He asked members to meet with staff members of their respective committee to discuss sections of the State of the Environment report.

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Committee Meetings – Members of the Water and Biological Committee met with Davis and Shaw to discuss the draft State of the Environment report and to decide on how they would provide edits and other feedback.

Summary by Rich Shaw, DEAPR Staff

ORANGE COUNTY



Department of Environment,
Agriculture, Parks & Recreation

MEMORANDUM

To: Commission for the Environment
From: Rich Shaw and Tom Davis
Date: December 5, 2013
Subject: Orange County State of the Environment 2014

A fourth draft of the State of the Environment report 2014 is ready for your review and comments.

Since your November meeting Rich has revised the Land Resources section using extensive input from members of the Water and Biological Resources Committee. There have been a few changes to the Water Resources section, but (again) no revisions as of yet to the Air and Energy Resources section.

Once again, we ask CFE members to read the draft document and provide your thoughts to fill out the following for each environmental indicator: *“What is the Trend in Orange County?”* and *“How Can Orange County Improve?”*

We also need you to identify what you believe are the key issues and recommendations of the report as whole, which will be summarized in the introductory pages.

The following is a revised schedule for the project.

May 2013	DEAPR hires graduate Research Associate (M. Munkittrick)
May-June 2013	Munkittrick verifies data sources, investigates new potential data sources, discusses with staff and CFE members
June-July 2013	Munkittrick collects data, reports to staff & CFE committees. CFE comments on proposed new style/format and new/deleted environmental indicators and emerging issues
August 2013	Munkittrick and DEAPR Staff present initial draft SOE report to CFE. Identify needs for further input/text from CFE and outside entities.
Sept-Oct 2013	Staff completes the data entries for remaining indicators. CFE provides further input/text for each indicator. CFE identifies those indicators it would like to highlight in the report overview and executive summary.
Nov-Dec 2013	Staff creates revised draft (proposed final) SOE report. CFE reviews draft, makes final edits/changes. Staff incorporates changes into final report.
January 2014	CFE reviews draft, makes final edits/changes. Staff incorporates changes into final report.
Feb/March 2014	Document is made “camera-ready.” SOE report prepared for on-line viewing. A limited number of reports are printed for libraries and other entities.
March 2014	CFE hosts Environmental Summit, SOE report presented

ORANGE COUNTY



Department of Environment,
Agriculture, Parks & Recreation

MEMORANDUM

December 4, 2013

TO: Commission for the Environment
FROM: Rich Shaw, Land Conservation Manager
SUBJECT: Election of Officers

It is that time of year for the CFE to elect its officers—Chair and Vice Chair—as specified in the CFE policies and procedures.

Please see the following excerpt from the procedures for your information and guidance:

SECTION III: MEMBERSHIP

- A. Authority ...
- B. Composition ...
- C. Officers
 - 1. The elected officers of the Commission for the Environment shall consist of a Chair and a Vice Chair.
- D. Election Procedures and Terms of Office
 - 1. The Officers shall be elected by the Commission for the Environment from among its members at the regular meeting in November of each year. They shall take office at the following regular meeting.
 - 2. The candidate for each office receiving a majority vote of the Commission for the Environment members present shall be declared elected.
 - 3. The officers shall be elected for a term of one year. They shall be eligible to succeed themselves for not more than three consecutive terms.
 - 4. Appointment to serve for any actual period of one (1) year or more will constitute a full term. Appointment for any actual period of less than one (1) year will constitute a partial or unexpired term.

NATURAL and CULTURAL RESOURCES DIVISION

Orange County Department of Environment, Agriculture, Parks & Recreation
PO Box 8181, Hillsborough, NC 27278
Phone: (919) 245-2510 Fax: (919) 644-3351



Orange County Commission for the Environment

2014

Department of Environment,
Agriculture, Parks & Recreation
306-A Revere Rd.
Hillsborough, NC 27278
Phone: 919-245-2510
www.orangecountync.gov/deapr/

**All meetings begin at 7:30 p.m.*

MEETING DATES

- January 13
- February 10
- March 10
- April 14
- May 12
- June 9
- *July – No Meeting*
- August 11
- September 8
- October 13
- November 10
- December 8

LOCATIONS

Hillsborough
Chapel Hill
Chapel Hill
Hillsborough

MEETING LOCATIONS:

Chapel Hill: Southern Human Services Center, 2501 Homestead Rd., Chapel Hill, NC
Hillsborough: Environment and Agricultural Center, 306 Revere Rd., Hillsborough, NC

JANUARY

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Orange County
COMMISSION FOR THE ENVIRONMENT
(updated November 2013)

NAME OF MEMBER HOME ADDRESS/TELEPHONE	POS #	DATE OF APPOINTMENT COMMITTEE (Representation)	TERM ENDS	BUSINESS TELEPHONE E-MAIL	TOWNSHIP OF RESIDENCE
Lucy Adams 5128 Green Meadow Rd. Hillsborough, NC 27278	#2	3/21/06 Air & Energy (Air Quality)	12/31/13	919-316-3916 lhadams1@mindspring.com	Chapel Hill
May Becker 511 Cotton Street Chapel Hill, NC 27516	#1	9/21/2010 Air & Energy (At Large)	12/31/14	919-969-7439 tomatocutter@yahoo.com	Chapel Hill
Terri Buckner 306 Yorktown Drive Chapel Hill, NC 27516	#6	11/8/2012 Air & Energy (At Large)	12/31/13	919-672-8271 tbuckner@ibiblio.org	Chapel Hill
Peter Cada 420 Coach House Lane Hillsborough, NC 27278	#10	9/21/2010 Water & Biological (At Large)	12/31/14	919-485-8278 peter.cada@tetrattech.com	Hillsborough
Susie Enoch 4002 McGowan Creek Road Efland, NC 27243	#8	5/21/2013 Water & Biological (At Large)	12/31/13	336-260-7694 enochts@aol.com	Cheeks
Loren Hintz 804 Kings Mill Rd. Chapel Hill, NC 27517	#4	1/27/2009 Water & Biological (Biological Resources)	12/31/13	919-933-8987 ldhintz@bellsouth.net	Chapel Hill
Donna Lee Jones 3035 Carriage Trail Hillsborough, NC 27278	#5	5/21/2013 Water & Biological (Water Resources)	12/31/15	919-541-5251 donnaleejones13@hotmail.com	Eno
David Neal (Chair) 323 West Queen Street Hillsborough, NC 27278	#13	9/21/2010 Air & Energy (At Large)	12/31/15	919-732-2156 David.L.Neal@gmail.com	Hillsborough
Steven Niezgoda 524 Patriot's Pointe Dr. Hillsborough, NC 27278	#14	5/21/2013 Water & Biological (At Large)	12/31/15	716-998-1490 steve.niezgoda@gmail.com	Hillsborough
Jeanette O'Connor 117 S Peak Dr. Carrboro, NC 27510	#12	5/21/2013 Water & Biological (At Large)	12/31/14	703-678-6893 jeanette.oconnor@gmail.com	Chapel Hill
Rebecca Ray 5617 Jomali Drive Durham, NC 27705	#3	11/19/2013 TBD (Land Resources)	12/31/14	919-383-0685 bbray@nc.rr.com	Eno
Jan Sassaman (Vice Chair) 201 Bolinwood Drive Chapel Hill, NC 27514	#7	12/13/2011 Air & Energy (At Large)	12/31/13	919-933-1609 jan.sassaman@gmail.com	Chapel Hill
Gary Saunders 103 Woodshire Lane Chapel Hill, NC 27514	#9	1/27/2009 Air & Energy (Engineer)	12/31/15	919-707-8413 gary.saunders@ncdenr.gov	Chapel Hill
Lydia Wegman 5704 Cascade Drive Chapel Hill, NC 27514	#15	11/19/2013 TBD (At Large)	12/31/15	919-886-8775 lnwegman@gmail.com	Chapel Hill
David Welch 20 East Drive Chapel Hill, NC 27516	#11	9/21/2010 Water & Biological (At Large)	12/31/14	919-406-2101 davwelch@hotmail.com	Chapel Hill
David Stancil Rich Shaw Tom Davis	245-2522 245-2514 245-2513 245-2510	Director, Dept. of Environment, Agriculture, Parks & Rec. Land Conservation Manager Water Resources Coordinator Administrative Assistant		dstancil@co.orange.nc.us rshaw@co.orange.nc.us tdavis@co.orange.nc.us	

NAME OF BOARD/COMMISSION: Commission for the Environment

Report Period: 2013 - 2014

**ORANGE COUNTY ADVISORY BOARDS & COMMISSIONS
ANNUAL REPORT / WORK PLAN FOR THE COUNTY COMMISSIONERS**

The Board of Commissioners welcomes input from various advisory boards and commissions in preparation for its annual planning retreat. Please complete the following information, limited to the front and back of this form. Other background materials may be provided as a supplement to, but not as a substitute for, this form.

Board/Commission Name: Commission for the Environment

Persons to address BOCC at work session and contact information:

Chair:	David Neal	919-732-2156	David.L.Neal@gmail.com
Vice-Chair:	Jan Sassaman	919-933-1609	jan.sassaman@gmail.com

Primary County Staff Contact:

Department of Environment, Agriculture, Parks and Recreation
Rich Shaw (Land Conservation Manager) 245-2514 rshaw@orangecountync.gov
Tom Davis (Water Resources Coordinator) 245-2513 tdavis@orangecountync.gov

How many times per month does this commission meet, including any special meetings and sub-committee meetings?

One meeting per month (2nd Monday); committees as needed during regular meeting

Brief Statement of Commission's Assigned Charge and Responsibilities.

Purpose: to advise the BOCC on matters affecting the environment, with particular emphasis on environmental protection and enhancement. Other duties include:

- Perform special studies/projects on environmental issues as requested by BOCC
- Recommend environmental initiatives to the BOCC, especially of local importance
- Study changes in environmental science and environmental regulations in the pursuit of the CFE's duties
- Educate the public and local officials on environmental issues

What are your Commission's most important accomplishments?

- Published the Orange County State of the Environment reports (2000, 2002, 2004, 2009); and will complete an updated SOE report in early 2014
- Convened Orange Co. Environmental Summit in 2005, 2009, and planning for 2014
- Hosted a Solid Waste Forum with the Chapel Hill Sustainability Committee (2013)
- Advised the BOCC to expand the County's commercial food waste pickup and composting services, thereby reducing food waste in the solid waste stream (2013)
- Co-sponsored the annual *Nature of Orange* photography contest (2012-13)
- Advocated for ½ cent sales tax referendum for Triangle Region public transit (2012)
- Advised the BOCC to protect public health and sensitive lands from fracking (2012)
- Compiled annotated bibliography of the effects of forestry on water quality (2012)
- Initiated project to identify native plant habitat along roadways for protection from

- herbicides in collaboration with NC Botanical Garden, NCDOT, utility providers (2012)
- Provided comments on draft UDO amendments for permitting solar arrays (2012)
- Advised BOCC to preserve areas in developments for solar energy production (2012)
- Initiated effort to create incentives for energy efficient construction/renovation (2012)
- Developed a Sustainable Landscaping Policy for County-owned facilities (2010)
- Developed a Forest Management Policy for County properties (2010)
- Assisted County staff in completing the Natural and Cultural Systems Element of the Orange County Comprehensive Plan (2008)
- Helped draft Environmental Responsibility in County Gov't. Goal (2005)
- Worked with Board of Health and staff on determining best ways to implement the Water Resources Initiative (adopted in principle by BOCC in 2005)
- Assisted with County's Greenhouse Gas Emissions Reduction Inventory (2005)
- Worked with Orange County Schools to introduce local environmental indicators/ trends and issues into middle and high school science curriculum (SOE 2004, 2009)

List of Specific Tasks, Events, or Functions Performed or Sponsored Annually.

- Review and comment on environmental issues (e.g., fracking, biosolids application, water pollution, air quality, forest mgmt..) and other issues assigned by the BOCC
- Identify priorities for the Lands Legacy Action Plan (natural areas and wildlife habitat)
- Conduct special studies pertaining to Orange County environment (e.g., energy efficiency/sustainability, forestry effects on water quality, herbicides and native flora)
- Develop recommendations on implementation of ground water studies of the 1990s and the integration of ground water and surface water quality and quantity
- Conduct environmental education outreach at events (e.g., Last Fridays, Festifall)

Describe this commission's activities/accomplishments in carrying out BOCC goals/priorities, if applicable.

BOCC Goal Five: Create, preserve, and protect a natural environment that includes clean water, clean air, wildlife, important natural lands and sustainable energy for present and future generations.

- Presented findings and recommendations to BOCC on selected environmental issues: effects of forest mgmt. on water quality; effects of herbicides on roadside native plant habitat; potential effects of hydraulic fracturing ("fracking") in Orange County; problems caused by hydrilla in the Eno River (BOCC Priorities #1 and #12)
- Stayed abreast of ongoing and developing env. issues of importance to the County, such as Falls & Jordan Lake nutrient mgmt. rules, permitting of biosolids on farmland, and reducing commercial food waste in solid waste stream (Priorities #12 and #16)
- Provides comments on proposed master plans for future parks/preserves

If your commission played the role of an Element Lead Advisory Board involved in the 2030 Comprehensive Plan preparation process, please indicate your activities/accomplishments as they may relate to the Comprehensive Plan's goals or objectives. *(Element Lead Advisory Boards include: Planning Board, Commission for the Environment, Historic Preservation Commission, Agriculture Pres. Board, and Parks & Recreation Council)*

- The CFE provided extensive input into DEAPR staff development of the *Natural and Cultural Systems Element* of the Comprehensive Plan—specifically the chapters on Air and Energy Resources, Water Resources, and Natural Areas and Wildlife Habitat

Objective AE-1:

Assess and implement the current countywide greenhouse gas emissions inventory and action plan target reductions.

- The CFE helped to initiate a countywide inventory of greenhouse gas emissions (2005), and continues to advise on ways to reduce the County's "carbon footprint."

Objective AE-15:

Foster participation in green energy programs such as installation incentives for solar hot water/solar generation/solar tempering in residential or commercial construction. The County should develop programs that will link citizens and businesses with options for alternative and sustainable energy sources.

- The CFE's Air and Energy Resources Committee has developed proposals that address energy efficiency and renewable power issues, and will continue to expand its efforts in collaboration with other advisory boards and stakeholders.

Objective NA-3:

Develop a more detailed and consistent methodology for monitoring changes in forest cover throughout the County, and specifically the extent of mature hardwood forest.

- The CFE's State of the Environment 2014 will report on the significant reduction in mature hardwood forest that occurred from 2003-2012 and since 1988. Further refinements to the methodology are still needed for future applications.

Objective NA-11:

Develop a comprehensive conservation plan for achieving a network of protected open space throughout Orange County, which addresses 1) threats to important natural areas; 2) connectivity between protected areas; 3) coordination with neighboring counties; and 4) sustainable management of critical natural resources.

- The CFE's Biological Resources Committee prepared a draft scope of work and is considering how to proceed as follow up to the updated Parks & Rec Master Plan

Objective NA-16:

Create a system of public and private open space and conservation areas, including parks, nature preserves, and scenic vistas representative of Orange County landscape.

- The CFE advises County's Lands Legacy program in its efforts to protect the most important natural and cultural resource lands through a variety of means.
- The CFE's Biological Resources Committee prepared a draft scope of work and is considering how to proceed as follow up to the updated Parks & Rec Master Plan

Objective WR-5:

Promote and participate in regional efforts to plan for use of water supplies in the region in an equitable manner, including contingency planning for water supplies during droughts. [Also Objectives WR-9, WR-10, and WR-15]

- CFE is staying abreast of Jordan Lake Partnership and advising staff as needed
- CFE is advocating full implementation of the Water Resources Initiative to ensure planning for an adequate water supply for current and anticipated future needs

Objective WR-11:

Provide incentives and educational information to landowners to increase protection of watersheds and ground water supplies and their inter-relationships.

- The CFE distributes groundwater and surface water educational materials at Festifall and Last Fridays events and as part of its State of the Environment reports

Identify any activities this commission expects to carry out in 2014 as they relate to established BOCC goals and priorities. If applicable, is there a fiscal impact (i.e., funding, staff time, other resources) associated with these proposed activities (list).

- Complete the Orange County State of the Environment 2014 report
- Convene an Environmental Summit, showcasing findings from the SOE 2014
- Convene an Energy Task Force (or equivalent work group) to improve the County's ability to foster local sustainable energy production and energy efficiency strategies.
- Recommend ways to reduce the County's "carbon footprint" and implement the County's Environmental Responsibility Goal (BOCC Priority #10)
- Collaborate with others to identify significant roadside habitat for native plants; work with NCDOT and utilities to protect roadside habitats (BOCC Priority #1)
- Stay abreast of Jordan and Falls Lake nutrient reduction rules, and Jordan Lake Partnership (water supply allocations); advise County staff and BOCC as needed
- Develop surface water monitoring plan for county in coordination with other entities
- Continue to review/comment on plans to expand the Orange Well Net program
- Initiate efforts to create a detailed water budget for Orange County
- Advise County staff on implementing selected objectives of the Comprehensive Plan
- Help develop a comprehensive conservation plan for Orange Co (BOCC Priority #1)
- Co-sponsor the annual DEAPR photography contest: *The Nature of Orange*

What are the concerns or emerging issues your board has identified for the upcoming year that it plans to address, or wishes to bring to the Commissioners' attention?

- The CFE requests BOCC approval to convene Renewable Energy & Efficiency Work Group (or equivalent group) to improve the County's ability to foster local sustainable energy production and energy efficiency strategies [Jan. 2013 memo to BOCC]
- The CFE will advocate for an expansion of the County's commercial food waste pickup and composting services to reduce food waste in the solid waste stream
- The CFE remains interested in collaborating with the Planning Board and others (with appropriate direction from the BOCC) on developing new requirements or incentives for developers of residential and commercial properties to reserve areas for solar energy generation [Dec. 2011 memos to BOCC]
- The CFE remains interested in collaborating with the Planning Board (with appropriate direction from the BOCC) on developing incentives for increasing energy efficiency in all new construction [Jan. 2012 memo to Planning Board]
- The CFE recognizes the ongoing need to fully implement the Water Resources Initiative to ensure planning for an adequate water supply for current and anticipated future needs (e.g., expand the Orange Well Net groundwater monitoring program; initiate efforts to create a detailed Water Budget for the county.)
- The CFE will continue its collaboration with the NC Botanical Garden and others to identify significant roadside habitat for native plants and work with NCDOT and other utilities to protect those roadside habitats [authorized by BOCC June 2012]
- The US EPA is likely to revise Federal Air Quality standards for ozone and particulate matter in 2013. The CFE will stay up to date with any regulatory changes and advise the BOCC on any policy implications for Orange County's transportation planning.

ORANGE COUNTY



Department of Environment,
Agriculture, Parks & Recreation

November 19, 2013

Donna Baker
Clerk to the Board of County Commissioners
200 South Cameron Street
Hillsborough, NC 27278

Dear Donna:

The Commission for the Environment (CFE) approved the enclosed resolution at its November 11 meeting, and directed me to provide it to the Board of County Commissioners in advance of the Assembly of Governments meeting on November 21.

The resolution pertains to the County's efforts to reduce the volume of food waste delivered to the local landfill and future solid waste transfer station.

The CFE also asked me to provide you a copy of the April 2013 memorandum that the CFE provided to the Board of County Commissioners last spring. That memorandum is also enclosed for the Board's consideration of solid waste and recycling issues.

Thank you for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Rich Shaw". The signature is fluid and cursive, with a large, sweeping loop at the end.

Rich Shaw
Land Conservation Manager

cc: David Neal, Chair
Jan Sassaman, Vice Chair
David Stancil
Gayle Wilson

ORANGE COUNTY COMMISSION FOR THE ENVIRONMENT

RESOLUTION

Diversion of Food Waste

WHEREAS, a significant percentage of the waste (generated within Orange County), which is currently deposited into the landfill is soon to be sent to a transfer station, is organic material that can be composted for valuable reuse; and

WHEREAS, the Orange County Commission for the Environment together with the Chapel Hill Sustainability Committee hosted a Solid Waste Forum including consideration of means of minimizing waste at the source, maximizing re-use of waste, and efficient disposal of remaining waste; and

WHEREAS, participants at the Solid Waste Forum recommended that Orange County prioritize expanding commercial composting programs and should implement programs for diversion of organic waste as soon as it becomes economically feasible; and

WHEREAS, Approximately 2,000 tons of organic waste are diverted from the local landfill each year by Orange County Solid Waste Management working with a local contractor to collect food waste and other compostable material from about 30 local restaurants, food-services, establishments, and grocery stores; and

WHEREAS, the aforementioned program for collection of commercial food waste represents only a small percentage of the potential number of commercial establishments participating in Orange County;

NOW, THEREFORE BE IT RESOLVED that the Orange County Commission for the Environment urges the Orange County Board of County Commissioners to expand commercial food-waste pickup and composting services, as currently serviced by an aforementioned private contractor, and that the Board of Commissioners allocate necessary staff time in Solid Waste Management in order to develop a workable program for such reduction in volumes of food waste delivered to the local landfill and future transfer station.

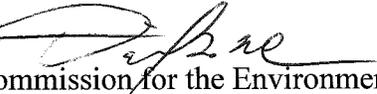
This the 11th day of November, 2013.



David Neal, Chair
Orange County Commission for the Environment

**ORANGE COUNTY
COMMISSION FOR THE ENVIRONMENT**

MEMORANDUM

To: Orange County Board of Commissioners
From: David Neal, Chair 
Orange County Commission for the Environment
Date: April 8, 2013
Subject: Orange County's Integrated Recycling Program

The Orange County Commission for the Environment (CFE) is writing to urge the Orange County Board of Commissioners to work together with local governments to preserve our successful, integrated recycling program.

The Orange County Solid Waste Management Department is recognized as the leader in the state for waste reduction, reaching 59% of its 61% aggressive reduction goal. The County is disposing only 0.56 tons per person compared to the base-level year of 1991-92, when the disposal rate was 1.36 tons.

The director of the State Recycling Program has recognized Orange County's investments in recycling services and waste reduction achievements. He noted that "Orange County's diversion of valuable materials from disposal is helping us to create jobs and rebuild North Carolina's economy."

According to the National Recycling Coalition, manufacturing recycled products requires, on average, 17 times less energy than manufacturing the same products from virgin materials. Conserving energy reduces the emission of greenhouse gases that contribute to climate change. According to the US EPA, recycling results in a net reduction for ten major categories of air pollutants (such as nitrogen oxide, particulates, and sulfur oxides) and eight major categories of water pollutants. Recycling also conserves natural resources, such as timber, water and mineral ores. By diverting recyclable materials from the solid-waste stream, we also reduce the need for landfill space.

Our integrated recycling system takes advantage of economies of scale. The waste reduction achieved through the County's recycling program would be jeopardized by moving to a subscription-based system. Participation in recycling would likely decrease with a subscription-based system and the County would then be faced with additional solid waste to transfer out of county.

The CFE urges the County and town governments not to take precipitous actions that could threaten unraveling the successful integrated recycling and waste reduction programs that have served our residents so well. We urge the towns and County to work together to maintain the integrated recycling program.

The CFE has reviewed the Solid Waste Advisory Board (SWAB) resolution in support of preserving Orange County's integrated recycling program dated April 1, 2013. The SWAB proposal of a single solid waste tax district (pursuant to N.C. Gen. Stat. § 153A-301(a)(5)) could serve as the nucleus of a solution to preserve the integrated recycling system that has served our county so well.

The CFE celebrates the commitment made by Orange County to promoting recycling and waste reduction and encourages the Board of County Commissioners and local town governments to carefully consider how any changes to our recycling system might affect the progress made in waste reduction.

The CFE strongly encourages the Board of County Commissioners to find a way to finance the County's recycling program that will not threaten the continued success of the program. Even if the 3-R Fee is subject to legal challenge, the County and towns must work together to find an alternative to bring in the money needed to continue our county's successful program.

cc: Frank Clifton, Jr., Orange County Manager
John Roberts, Orange County Attorney
The Honorable Mark Kleinschmidt, Mayor of Chapel Hill
Roger Stancil, Chapel Hill Town Manager
The Honorable Tom Stevens, Mayor of Hillsborough
Eric Peterson, Hillsborough Town Manager
The Honorable Mark Chilton, Mayor of Carrboro
David Andrews, Carrboro Town Manager
David Stancil, Orange County DEAPR Director

NFO
4/19/13

Seismic testing to start in N.C.

Exploratory steps in Lee County will gauge fracking potential

By JOHN MURAWSKI
jmurawski@newsobserver.com

Energy speculators from Texas are quietly preparing to take ultrasound images of Lee County's underground geology and gauge the region's potential for fracking. The seismic testing will mark the beginning of a sequence of exploratory steps that could lead to the first five wells producing shale gas by

2015, said James Womack, chairman of the N.C. Mining and Energy Commission.

Seismic testing is expected to get underway later this month and continue into January, Womack said. The exact areas identified for the sound-wave analysis are a closely guarded secret as energy explorers seek to protect their tactical advantage against competitors.

Last week, Womack laid out North Carolina's fracking scenario to the N.C. Environmental Review Commission, an advisory body of state lawmakers, and predicted that

the state could have as many as 140 wells producing natural gas by 2018.

He said later that Tar Heel Triassic Resources, the local subsidiary of Dallas-based Industry Petroleum, is securing agreements with Lee County property owners, scoping out the Triangle for office space, and conducting site surveys for a potential rail siding and storage areas to offload steel, pipe and other materials.

"Their landmen at some point will be kicking into gear," Womack said. "Those landmen will be

knocking on doors and making phone calls to secure leases."

Industry Petroleum officials did not return emails and calls seeking comment. The company's seismic testing contractor, Missouri City, Texas-based Global Geophysical Services, also did not return calls. Global Geophysical would do the actual seismic work.

The companies may end up not developing North Carolina's derricks and wellheads but instead could sell their seismic data to the highest bidder in the oil-and-gas

SEE FRACKING, PAGE 7B

FRACKING

CONTINUED FROM PAGE 6B

industry.

N.C. a low priority

North Carolina is presumed to have a relatively small region with potential for natural gas trapped in shale rock formations. The gas-rich zone is believed to be concentrated in Lee, Moore and Chatham counties.

The absence of gas lines and other infrastructure, the relatively low market price for natural gas, and the uncertainty of the state's resource have put North Carolina far down on the energy industry's priority list.

"It doesn't make any sense compared to the Marcellus Shale (in Pennsylvania) or Barnett Shale (in Texas) and those other areas that have an established infrastructure," said Rep. Pricey Harrison, a Democrat from Guilford County. "It precipitates a faster track for drilling."

Fracking, an industry shorthand for hydraulic fracturing, involves drilling laterally through shale rock and blasting the formations apart to release the gas with

several million gallons of water and additives.

The prospect of shale gas exploration remains highly divisive, with critics predicting ecological doom and supporters saying it will provide a much-needed boost to the state's economy.

"I believe fracking is a gift from God to North Carolina, and it's going to do wonders for our economy," said Environmental Review Commission member Bill Cook, a Republican state Senator who represents parts of eight coastal counties.

Ultrasound on wheels

The seismic testing will require the use of three "vibroiseis" trucks that will stop every several hundred feet to send sound waves below and take underground readings, said Marty Tillman, a field engineer with the N.C. Department of Transportation. He said the state's transportation agency has oversight to make sure Global Geophysical provides flagmen for traffic control and also to monitor for damage to local roads and bridges.

Womack described the 41,000-pound trucks as "ultrasound machines on

wheels" that can perform the seismic procedure without detonations or tremors or other disruptions besides the thrum of diesel engines. He said the test results will help drillers pinpoint where to set up their rigs to make sure their drills pierce the densest concentrations of gas or oil, rather than probe blindly into barren rock.

"Vibroiseis is used in lieu of drilling hundreds of shot holes and setting off dynamite-type charges," said Steve Heron, exploration manager for the south region of Cabot Oil & Gas, which is not involved in this project.

"They will also evaluate with the seismic data how deep the basin is," he said.

The seismic test results will produce three-dimensional images of a mile-thick slice of earth below Lee County, including faults, bends, folds and other invisible hazards. The data could indicate the presence of energy fluids below, such as "wet" gas or oil.

Heron said that in Texas, seismic testing costs about \$40,000 to \$60,000 per square mile.

Murawski: 919-829-8932

Fracking leads new energy boom in U.S.

U.S. is slated to surpass Saudi Arabia in oil production by 2015

By SEAN COCKERHAM
McClatchy Washington Bureau

MIDLAND, Texas All along the highway that leads into this city in West Texas, the rows of black pump jacks seem endless, bobbing up and down as they pull crude oil from beneath the parched scrub desert.

The pump jacks have long been here, in good times and bad – a symbol of this city's long status as the heart of America's petroleum industry. Even when U.S. oil production was dropping and many feared the Permian Basin, which feeds Midland's oil economy, was all but exhausted, the pump jacks continued their work.

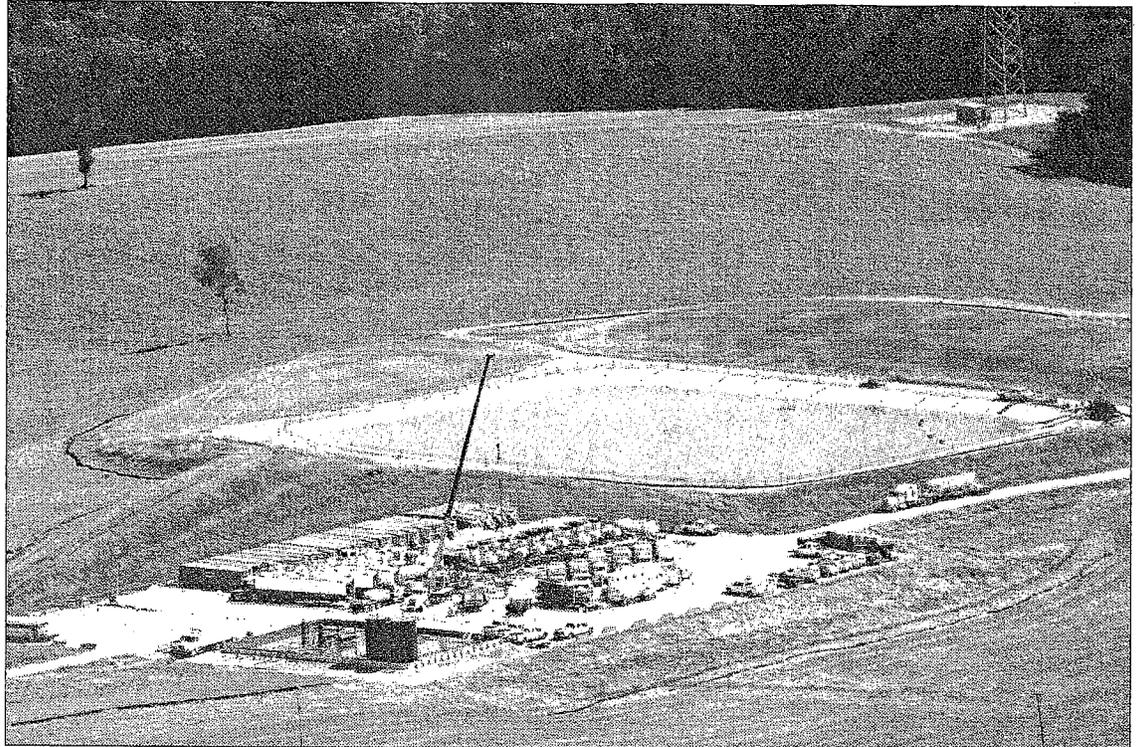
Now, their up and down motion seems all but unstoppable, a symbol of an energy revolution that seems likely to transform the globe.

"Everything has changed," said Jim Henry, 78, who's worked in the oil fields of Texas most of his life.

A surge in U.S. oil production has in just a few short years propelled the United States from a country largely dependent on oil imports to one that soon could become the world's top oil producer. The goal of North American energy self-sufficiency, the holy grail of American politics since the Arab oil boycott of 1973, seems to be within grasp.

The revolution has taken place almost unnoticed – and in a way that few foresaw less than a decade ago, when the emphasis on breaking America's foreign oil dependence relied almost entirely on persuading Americans to drive less, turn the thermostat up in the summer and down in the winter, and open protected areas to oil exploration.

No one, it seemed, predicted what actually happened – a production revolution that in the past five years has seen the amount of crude oil produced in the United States shoot up 40 percent after declining every year for the previous 20. The



JASON COHN - MCT

A pit containing fresh water or fresh water with chemicals for fracking sits next to a drilling site in Butler County, Pa. Fracking only became a viable option in the last decade.

'New and unanticipated energy abundance is within our reach.'

JAMES JONES

FORMER NATIONAL SECURITY ADVISER
TO PRESIDENT BARACK OBAMA

International Energy Agency predicts the United States will overtake Saudi Arabia as the world's top oil producer by the year 2015. America already has become the largest producer of natural gas.

In October, the United States started producing more oil than it imports for the first time since 1995.

And the American energy turnaround isn't expected to stop there.

Citigroup's head of global commodity research predicts that by the end of the current decade the only foreign oil the U.S. might need

will flow from Canada. Other analysts agree the potential is vast.

"New and unanticipated energy abundance is within our reach, and it provides a historic opportunity to solve some of our country's most difficult economic challenges," James Jones, a former national security adviser to President Barack Obama, declared at this year's Deloitte Energy Conference in Washington.

Boom owed to fracking

Questions remain about how quickly the U.S. fields will decline

and whether the boom can last. The production surge is owed in large part to use of a controversial drilling process known as fracking – hydraulic fracturing – in which high-pressure water and chemicals are pumped underground to break up shale rock and release the oil and gas trapped inside. Environmental groups argue it poses a threat to air and water.

Deep disposal of fracking waste has been linked in some studies to small earthquakes. Four cities in Colorado voted to ban fracking earlier this month. New York and North Carolina don't permit the technique, and other states are still debating the subject.

The drilling is also under attack from those who fear that the expansion of oil and gas supplies will simply increase the world's dependence on fossil fuels, speeding global warming and cutting the incen-

U.S. energy boom's impact

The shale oil and gas boom has benefited businesses far and wide; some examples:

Energy jobs

Oil and gas extraction

'03 102,200
'12 186,800

Oil and gas support

'03 121,200
'12 282,000

Freight rail

Carloads of crude oil moved

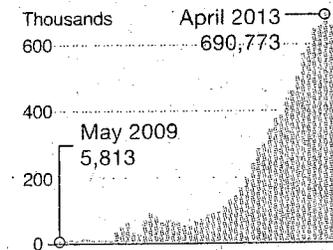
'09 9,500
'12 234,000

Carloads of industrial sand used in fracking moved

'09 112,000
'12 293,000

North Dakota rail oil exports

Barrels per day each month transported by rail from Bakken oil field



Source: McClatchy Washington Bureau, North Dakota Pipeline Authority

MCT

tive to find renewable energy alternatives. Cheap natural gas increases the challenge of attracting investment to develop solar and wind energy.

“Those who might have relied on the fact that we would run out of this resource and therefore be forced by lack of available resource to switch to something cleaner – this is not going to happen. Not in

SEE ENERGY, PAGE 16A

Triangle faces upstream fight for Jordan Lake rules

Legislative review panel is split along regional lines

By ANDREW KENNEY
 akenney@newsobserver.com

RALEIGH The inter-regional political fight over Jordan Lake is churning again, and upstream legislators who want to delay or loosen environmental rules in favor of “technological solutions” may hold the advantage in the next phase.

Elected officials from Greensboro and Burlington are the largest voting bloc on the legislature’s Committee on Jordan Lake, making up half the panel that will guide a revamp of the multi-billion-dollar Jordan Lake rules environmental program.

The areas that use or plan to use Jordan Lake’s drinking water will be outnumbered on the board, holding three of its 10 regular seats.

To Elaine Chiosso, an environmentalist who heads the Haw River Assembly, the board’s makeup doesn’t adequately represent downstream users.

Downstream representation is important, Chiosso said, because upstream cities are heavily affected by pollution-control rules and have greater incentive to undo them.

“It’s an interesting watershed, in that the biggest city by far ... is Greensboro, which sits at the headwaters,” she said.

“So they have always seen Jordan Lake as sort of a nuisance. ... They’re too far away to use it for drinking water, or even much for recreation.”

The new committee, named Oct. 29, is charged with analyzing Jordan Lake and other polluted waters, reviewing state law about watershed management, gathering comment and recommending a new clean-up strategy, which would need approval from the General Assembly.

In all, five regular members represent the upstream cities, while three represent Durham, Chatham and western Wake counties, which draw water from the lake.

Another member, Sen. Neal Hunt, comes from Raleigh and voted to delay the rules; and Sen. Thom Goolsby, also a delay supporter, represents Wilmington, at the end of the Cape Fear River downstream of Jordan Lake.

Sen. Rick Gunn says members of the Triad delegation are just as determined as their Triangle colleagues to improve water quality in the 16-mile-long reservoir. He led the charge to repeal the rules this summer and now is a chairman of the study committee.

Voting records show Gunn can expect support in the new group.

In all, seven of the 10 regular members voted this summer to delay the rules for three years – a victory for upstream legislators and Triad developers who had pushed against the pollution controls.

The vote also illustrated a regional split. Almost 80 percent of upstream legislators voted for the delay, while about 75 percent of the Triangle delegation voted against it.

Pollution controls

Gunn, of Burlington, is skeptical of the state’s current approach to Jordan Lake, which relies heavily on pollution controls that aim to keep nutrients like nitrogen and phosphorous out of the lake. Development of upstream land – grading, clear-cutting, and paving – allows more of these nutrients to flow into creeks and streams, feeding algae in the lake that make the water murkier and more alkaline, diminishing its quality.

To prevent this, the current rules call for runoff control on thousands of new and existing properties, most often in upstream areas like the Triad. Gunn’s hope and claim is that technology, such as a fleet of water circulators that churn the lake, can help clear the water.

“High nutrients in itself is not a bad thing,” he said last

week. “How we manage those nutrients is what’s important. I have been, and I still am, very skeptical that the policies that were put in place in Jordan Lake would have a material effect.”

Triad advantage

Rep. Tom Murry, a Republican who represents western Wake County, fought for the current rules during this year’s debate, joining a counter-push by Triangle legislators that stopped a full repeal.

Murry acknowledged that the board’s geography may favor the Triad over the Triangle, with a caveat.

“While it might look like it’s an uphill battle based on the makeup of the committee, there’s always a way to make sure that the interests of Cary, Morrisville ... and western Wake County are well-represented,” he said. His goals, he said, are to avoid “wasting taxpayer dollars on technology that might not be effective,” and “to make sure that we’re not doing any harm to the quality of Jordan Lake at the same time through the relaxation of rules.”

Murry also pointed out that he had the backing of Rep. Nelson Dollar, a lead Republican budget writer from Cary.

(OVER)
 →

Rep. Rick Glazier, a Democrat representing Cumberland County, had harsher words about the new committee and the revision of the lake clean-up plan.

"It's not been a particularly transparent, fair or deliberate process, so it's not all that surprising to me that the committee's not all that balanced," said Glazier, who did not seek a seat on the committee.

Like all such groups, the Jordan Lake committee is part of the legislative research commission, led by

state Sen. Tom Apodaca and Rep. Tim Moore, both of whom are ex-officio members of all research groups. Neither legislator returned a call for comment.

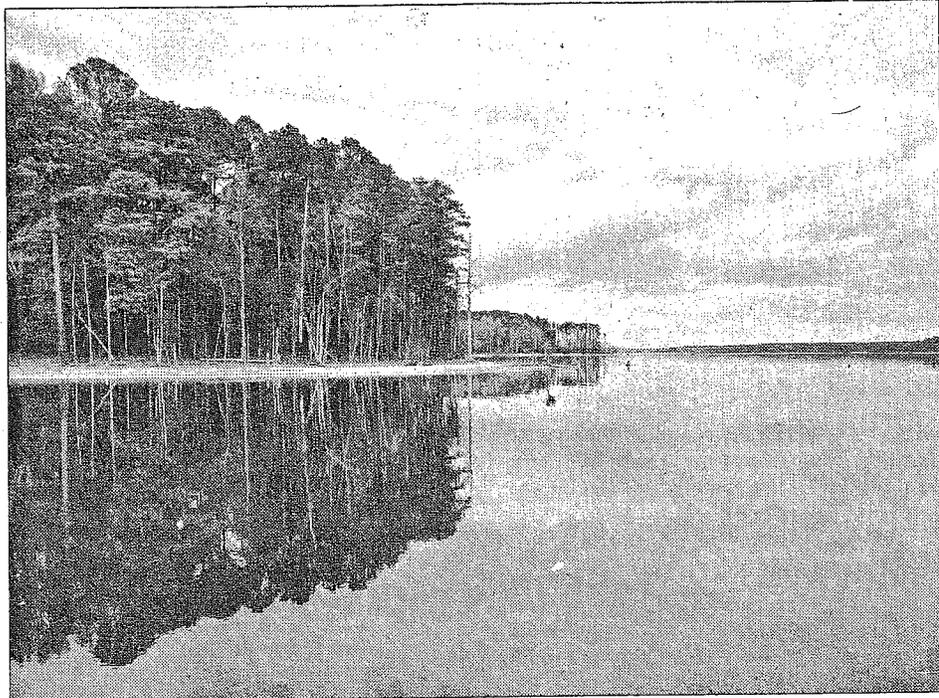
Gunn argued that his new group's mentality, not its geography, would determine its course. He said some parts of the current rules could make it into his committee's recommendation.

"We are going to work together to find the best way to resolve, both from a quality-management and regulation standpoint, to do what's best," he said.

Start of a long process

The committee will begin meeting in December, returning a report during the legislative short session next year, he said.

That may only begin a long process. The current Jordan Lake program was debated for six years before



CHUCK LIDDY - cliddy@newsobserver.com

A becalmed Jordan Lake near the Parker's Creek Recreation area off of Highway 64.

Gov. Bev Perdue signed it into law in 2009.

Sen. Floyd McKissick Jr., a Durham Democrat and committee member, says the new panel's work could affect the state's strategies for Falls Lake and other crucial water supplies.

But the outcome, McKissick said, can't be predicted by the group's membership.

"There's certainly what I would call a geographical, a careful geographical balancing ...," he said.

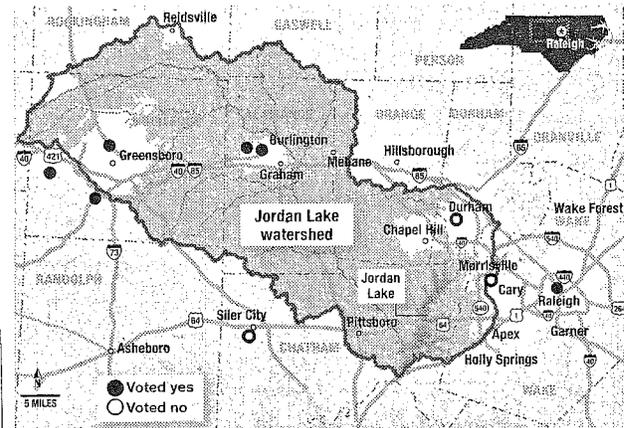
"But the thing I'd be concerned about more than geographical balance is ideological open-mindedness."

Asked how that was looking, he laughed and said, "Yet to be determined."

Jordan Lake committee members

*Excludes two ex-officio members

The General Assembly this summer approved a delay of the Jordan Lake rules. The delay's supporters are more prevalent on the Jordan Lake study committee than the delay's opponents.



Note: Sen. Thom Goolsby, of Wilmington, not shown, voted for delay.

The News & Observer

Kenney: 919-829-4870;
Twitter: @KenneyNC



ORANGE WATER AND SEWER AUTHORITY

*A public, non-profit agency providing water, sewer and reclaimed water services
to the Carrboro-Chapel Hill community.*

December 3, 2013

Dear Neighbor:

**RE: UPCOMING WORK ON OWASA'S 491-ACRE CANE CREEK RESERVOIR MITIGATION
PROPERTY NEAR BUCKHORN ROAD**

I am writing to follow up on my letter of September 20 in which we informed you that OWASA had selected a contractor to implement the forest management plan provided by the North Carolina Wildlife Resources Commission (WRC) for our 491-acre Cane Creek Reservoir Mitigation Tract. This work is being performed to comply with the requirements of the 404 permit issued by the US Army Corps of Engineers to construct Cane Creek Reservoir.

In the September letter, we indicated that work would likely begin in late October or November. The timbering company actually plans to begin work sometime during the week of December 9. All work will be completed in accordance with *North Carolina Rest Practices Guidelines Related to Water Quality* and recommendations described in *North Carolina Forestry Best Management Practices (BMP) Manual to Protect Water Quality* as amended in September 2006.

We anticipate two main impacts to neighbors:

1. Noise – neighbors may be able to hear equipment during hours of operation.
2. Vehicular traffic – all trucks will enter and exit the site via Martin Road; we anticipate six to eight truckloads of timber per day during normal harvest operations.

We will continue to keep you informed about our forestry management activities. If you did not receive e-mail notification (with this same letter attached) please send me an e-mail (see below) and I will add your name to our distribution list. Conversely, if you prefer not to be contacted about our activities at this site please notify me and I will remove your name from our list.

Please contact me at 919-537-4214 or at rrouse@owasa.org if you have any questions or would like more information regarding our forestry management activities at the Cane Creek Reservoir Mitigation Tract.

Thank you very much.

Sincerely,

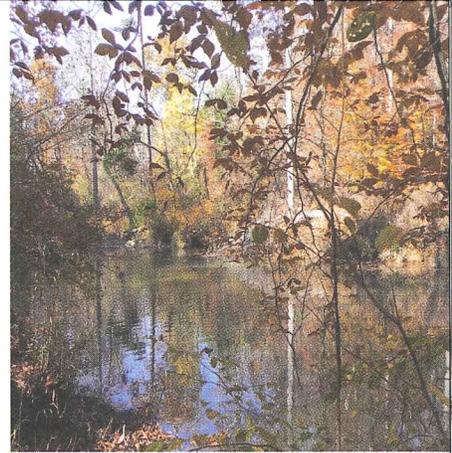
Ruth C. Rouse, AICP
OWASA Planning and Development Manager

THE DUKE FOREST

LOG

A bulletin from the
Office of the Duke Forest

Fall 2013



Teaching Spotlight

Professor Rebecca Vidra teaches to restore

For the second fall in a row, Professor Rebecca Vidra has worked with Duke Forest Staff to identify student projects for her Restoration Ecology: Theory and Applications course. Trained as a restoration ecologist at NC State and UNC-Chapel Hill, Professor Vidra offers Duke students real-world experience working through the web of biological, political, and social factors relevant to ecological restoration. With the Duke Forest nearby, this task is made a little easier. Professor Vidra says:

Teaching restoration ecology is about both theory and applications. The theory is easy to cover in the classroom but the applications can really only be taught through practice. Duke Forest provides an incredible resource to learn about restoration of many different ecosystem types, from shortleaf pine stands to New Hope Creek. My class also benefits from the knowledge and resources that the Duke Forest staff provides, making it an ideal location to learn about how the theory of restoration can be applied right down the road from Duke!

During the semester, students work in teams to develop a restoration plan that includes a site assessment and history, restoration strategies and expected outcomes, and a monitoring plan. With guidance from Duke Forest Staff, Duke

Faculty, and other area professionals, students have developed plans for the Rhododendron Bluffs, a Shortleaf Pine community, a Piedmont Prairie, and an abandoned road. This year students are exploring the possibility of modifying the low-water concrete bridge at New Hope Creek to improve aquatic habitat for mussels and other wildlife.

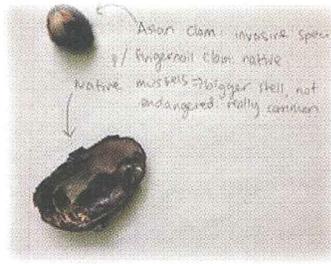
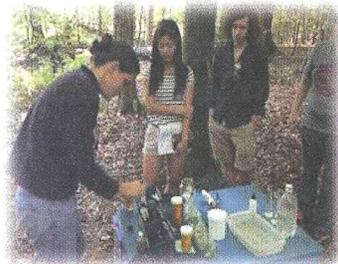
Duke Forest Staff uses the information generated by the students to help prioritize, plan, and implement restoration efforts. In return, students walk away with a memorable and useful learning experience. So for professor, forest, and students alike, the situation is a win!

I am already in my third year at Duke, and I cannot believe it has taken me this long to realize how invaluable the forest is as a resource to us students! Being able to directly explore and learn from the environment surrounding us has taught me more than sitting in a classroom ever could.

-Silvia de Denaro Vieira, Class of 2015

Working in the forest and with the forest staff gives us a feel for the actual process of ecological restoration, which I think adds another dimension to learning about restoration in the classroom or on my own.

-John Hare-Grogg, Class of 2016



(From L to R) Water from New Hope Creek flows over the concrete bridge in the Korstian Division. Students from this year's class participate in the New Hope Creek Stream Watch, a citizen science effort to monitor water quality, to learn about aquatic habitat and species. John Kent, Stream Watch coordinator, points out the difference between mussels that are native to New Hope Creek and those like the Asian Clam (top left) that are exotic invaders.

Do you want to continue receiving the LOG? In print or PDF?

This will be the last LOG you receive unless you update your contact information and format preference by visiting: WWW.NICHOLAS.DUKE.EDU/DUKE-FOREST-LOG. New subscribers may also use this link to sign-up to receive the LOG. If you do not have internet access and wish to continue receiving the LOG, please call the Office at 919-613-8013.

THE DUKE FOREST comprises over 7,000 acres of land in Durham, Orange, and Alamance counties and has been managed for research and teaching purposes since 1931. The mission of the Forest is to facilitate research that addresses fundamental and applied questions concerning forested and aquatic ecosystems and to aid in the instruction of students so that they will be informed citizens and effective stewards of our natural resources. In addition to supporting education at local universities, the Forest also participates in community outreach through tours and other events.

INSIDE:

Greetings

Year in Review

Project Updates

Upcoming Events



www.dukeforest.duke.edu

From the Resource Manager

DUKE FOREST STAFF:

Judson Edeburn, Resource Manager

Sara Childs, Program Director

Michael Burke, Forestry Technician

Beverly Burgess, Administrative Assistant

George Pendergraft, Grounds and Maintenance Supervisor

ADVISORY COMMITTEE:

Bill Chameides
Dean of the Nicholas School of the Environment - Chair

Emily Bernhardt
Associate Professor of Biogeochemistry

Norm Christensen
Research Professor and Founding Dean of the Nicholas School

Pat Halpin
Associate Professor of Marine Geospatial Ecology

Bill LeFevre
Executive Director, Sarah P. Duke Gardens

Ram Oren
Nicholas Professor of Earth System Science

Dan Richter
Professor of Soils and Forest Ecology

David Singleton
Associate University Counsel

David Stein
Senior Program Coordinator for Community Affairs

CONTACT INFORMATION:

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E-MAIL: dukeforest@duke.edu

WEBSITES:

www.dukeforest.duke.edu
dukeforestproject.wordpress.com
www.facebook.com/dukeforest

TO SUBSCRIBE to and/or UPDATE contact information for the LOG:

www.nicholas.duke.edu/duke-forest-log

Hello to All:

We are wrapping up a very good year for the Duke Forest, and as usual, it has been a busy one. An outstanding staff, student assistants, and many dedicated volunteers have enabled several important projects to be conducted smoothly and efficiently. I want to sincerely thank all who have contributed so much to the Forest over the year.

A major trail relocation and rehabilitation project was undertaken in the Korstian Division. If you have visited the Rhododendron Bluffs area off of Whitfield Road over the years, you may have noticed substantial degradation of the trail down to the Bluffs and a decline in the Rhododendron population. In order to curb further erosion, improve conditions for the Rhododendrons, and provide a safer trail experience, Program Director Sara Childs initiated a project in this Significant Natural Heritage Area. Phase I is now complete, and we anticipate Phase II to be underway and completed in the next few months. This marks the first major trail work ever conducted on the Forest. An excellent description and chronology of the project can be found on our WordPress site: dukeforestproject.wordpress.com.

Another first for the Forest has been the creation of a 1-year management internship position, held this year by Nick Biemiller, a December 2012 graduate of Warren Wilson College. The position is designed to focus on a particular project with additional time spent learning about the various aspects of managing a teaching and research forest. This year's special project involves designing and conducting a recreational study, which has been done approximately every 10 years over the past several decades. In addition to determining the number of recreational users on the Forest, a questionnaire is being administered to collect information on the types and frequency of recreational use, problems that users encounter, and opportunities for improving recreational experiences while also protecting the Forest's

resources. If you are a visitor to the Forest over the next ten months, you may see Nick or one of us at a Forest gate and be asked to complete a questionnaire. We will certainly appreciate your input.

Additionally, many of you are aware that the Duke Forest maintains a Forest Management Certificate based upon Forest Stewardship Council™ guidelines, a set of standards designed to assess forests for responsible management (FSC® C008350). I am very pleased to say that the 2012, and the recently completed 2013 audit, went extremely well and no outstanding issues, or 'non-conformities', remained at their completion.

In this issue of the LOG, Sara has summarized the management, academic, outreach, and volunteer projects undertaken during the past year. We are very happy to have had 179 volunteers who collectively put in over 600 hours of work in the Forest. Much of this time was spent on the trail project at the Rhododendron Bluffs. I should also highlight the 64 active research projects and instruction of over 600 students that demonstrates the Forest's enduring value for teaching and research.

Lastly, I would like to extend an invitation to this year's Annual Gathering - our opportunity to share an evening with friends of the Forest. It will be held November 14th at the New Hope Improvement Association Building on Whitfield Road. Our annual research tour will be December 13th. Check out the details for these and other upcoming events on our website. And please do update your contact information and mailing preferences for the LOG if you have yet to do so. It's an important part of our efforts to streamline costs and reduce waste.

Thanks for your continued support of the Duke Forest.

Judd Edeburn
Resource Manager



Phase I of the Korstian Trail Project involved a lot more than just trail building. New signs were installed; an observation platform was constructed; and fencing to protect sensitive areas was put in place. Many thanks go out to the volunteers, Duke Forest Staff, and Stewart Bryan of Native Trails that made this project possible.

Year in Review

July 2012 - June 2013

Management

Every year Duke Forest Staff manages hundreds of acres to support teaching and research, to protect and enhance natural habitats, to generate revenue for operations, and to provide recreation opportunities for the public. In the past fiscal year, these efforts involved over 250 acres. Activities included thinning of overstocked stands, removal of invasive species, commercial harvests, and road maintenance. With the help of numerous volunteers we completed Phase I of the Korstian Trail Project, which protects the Rhododendron Bluff area and improves the recreation experience. Our management operations, certified by the Rainforest Alliance to Forest Stewardship Council™ guidelines, ensure that the Duke Forest remains a healthy resource for years to come.

 AT A GLANCE	2012 - 2013	
	Harvesting	144 acres
	Clearcut	20
	Commercial thinning	27
	Seed tree harvest	44
	Seed tree removal	33
	Selection harvest	20
	Pre-commercial Thinning	48 acres
	Hardwood Control (Herbicide Application)	41 acres
	Invasive Control (Herbicide Application and Manual Removal)	25 acres
Road Work	6 miles	

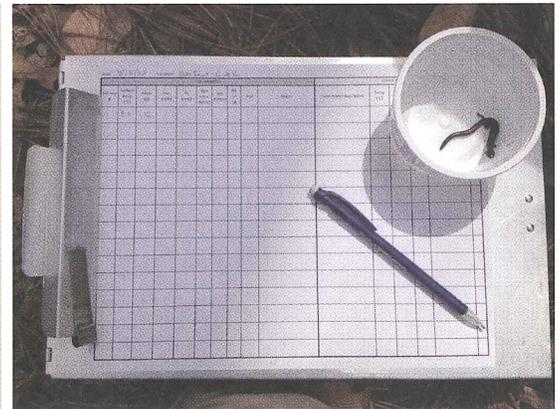


An abandoned farm field planted in Loblolly Pine in 1931 and 1938 undergoes a final regeneration harvest. "Seed trees" are left in place to allow the area to seed in naturally with Loblolly Pine. The opening created by the harvest and the retention of dead snags benefits a variety of wildlife. Recent harvest areas are often a hotspot for bird watching, especially during the migration season.

Research and Teaching

Duke Forest fulfills its primary mission by hosting a wide variety of researchers, educators, and students. Twenty-one new research projects came online this year, including research on the effects of urbanization on riparian forests and the ability of salamanders to adapt to climate change. Teachers and students from all levels of study, from K-12 to post-secondary, took advantage of learning opportunities at Duke Forest. NC School of Science and Math students used New Hope Creek to explore aquatic ecology; Duke undergrads participated in an "Into the Woods" class; and Nicholas School of the Environment graduate students developed their tree ID and forest measurement skills. Gigabytes of geospatial data maintained and shared by the Duke Forest also supported undergraduate and graduate group projects, as well as research.

 AT A GLANCE	2012 - 2013	
	Number of research projects	64
	Number of primary investigators	48
	Number of research affiliations	15
	Total research dollars (29 of 64 reporting)	\$3,786,458
	Number of teaching activities	23
	Number of educators	18
	Number of visits	118
	Number of students	608



Brenna Forester, a Ph.D. student in Dr. Dean Urban's Landscape Ecology Laboratory - Nicholas School of the Environment, Duke University, studies Red-backed Salamanders (*Plethodon cinereus*) in the Duke Forest to understand their capacity for adapting to changing climate conditions, particularly elevated temperature and changes in moisture.

Year in Review

July 2012 - June 2013

Community Outreach

From hosting visiting professors from China to welcoming Duke Alumni from around the country, the Duke Forest had an exceptionally wide reach this year. With the help of local community member and geologist Bill Kaiser, the Duke Forest offered a special tour on the geology of the New Hope Creek area. Members of the public and the Duke Community also participated in the Forest's annual tours about flora and fauna, research, and management.



The Office of the Duke Forest looks forward to offering more events in the coming year. To receive notifications about upcoming activities, **sign-up for the events list serve at: www.dukeforest.duke.edu/events/index.html.**

Volunteers

Over 150 individuals dedicated their time and energy to support projects on the Duke Forest. Much of this effort was focused on bridge building and trail closure for Phase I of the Korstian Trail Project. Local Boy Scout troops, Nicholas School students, and members of the community spent over 400 volunteer hours collecting and placing debris for closure and hammering in nails for bridges. Teachers from the Maureen Joy Charter School also contributed valuable time to help eradicate invasive plants from a Natural Heritage area, and Durham Academy High School students took time to sweep Mud Creek of trash and other debris.



AT A GLANCE

2012 - 2013 Outreach

Number of tours and activities	18
Number of participants	501
Total outreach hours	43



The Office of the Duke Forest relies on volunteer efforts to get important work accomplished; look for more opportunities to participate on the website, or **submit a volunteer interest form at: www.dukeforest.duke.edu/volunteer/info.htm**

AT A GLANCE

2012 - 2013 Volunteers

Number of volunteer events	15
Number of participants	179
Total volunteer event hours	47

Project Updates

Korstian Trail Project

In April 2013, we officially completed Phase I of the Korstian Trail Project within the New Hope Creek Natural Heritage Area. With the help of 145 volunteers, we built 3 bridges, 2 boardwalks, and closed over 3,000 square feet of steep, eroding slope. We created a new trail to the popular Rhododendron Bluff overlook and formalized a high water route around New Hope Creek. In total, Stewart Bryan of Native Trails designed and built 2,070 feet of new pedestrian trail.

We are eager to continue work downstream but recognize that the long-term success of this project depends on the cooperation of our recreational community. The areas we have added signs to, fenced off, or placed debris on are critical spots in which we want to prevent further vegetation and soil loss and allow the ecosystem to recover. More information on Phase I (including a downloadable map of new trails) and upcoming Phase II can be found on our WordPress site: dukeforestproject.wordpress.com/korstian-trails-project.



Once blanketing this north facing slope, the Duke Forest's Catawba Rhododendron population is in severe decline due to a combination of natural and manmade causes. Phase I sought to minimize the latter by removing human and dog traffic from the main face of the slope.



Stewart Bryan of Native Trails built the new "maintainable" pedestrian trails by working with the land's natural contours to ensure that they properly shed water and resist widening. Phase II work will involve a mix of new trails and rehabilitation of existing trails.



Deer Herd Reduction Program

The 6th season of the Duke Forest's Deer Herd Reduction Program is currently underway. You have likely noticed that the weekday closure is in place and will be through December 13, 2013. We are working with the same groups of hunters and hope that their familiarity with the woods translates into increasing success. Last year, hunters took 75 deer, but the spotlight survey performed earlier this year showed that deer numbers were slightly up from 2011 and 2012 (but still down from 2010). We will continue to monitor this trend and remain confident that hunting is a necessary tool for reducing the negative impacts of overabundant deer on the Forest. You can do your part by obeying all closure signs and always staying on authorized roads and trails.

Recreation Study

Since the 1970s, a recreation study has been conducted on the Forest roughly once a decade. These studies have provided useful information about recreational use of the Duke Forest, but the methods have varied greatly. The current yearlong study (begun September 2013) is the first one to be designed and carried out in-house, and we have worked with Nicholas School faculty to establish clear, consistent, and defensible procedures. It consists of a visitor count and questionnaire. The information collected in this study will help inform management decisions by documenting patterns of recreation use and the experiences of visitors. While the Duke Forest is first a teaching and research laboratory, providing recreational opportunities for the community has always been important. So if you see us out in the woods collecting data, please take a few minutes to fill out a survey.

TLC's mission is to protect important open space – stream corridors, forests, wildlife habitat, farmland and natural areas – in Chatham, Durham, Johnston, Lee, Orange and Wake Counties to help keep our region a healthy and vibrant place to live and work.

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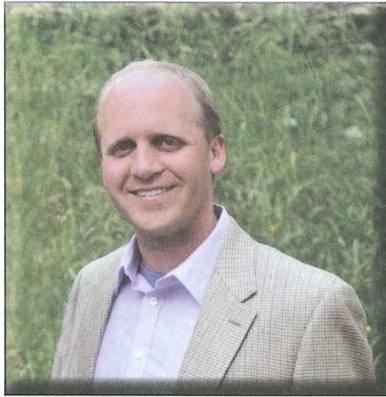
A nature photography workshop led by photographer David Blevins was held in May at White Pines Nature Preserve in Chatham County. David took this photo of participant Kim Hawks capturing the overhead canopy. Join us on Facebook for more great photos!

**"Between every two pines is a doorway to a new world."
~ John Muir**

Legacy, Urgency and the Future

by Chad Jemison, Executive Director

Last month a woman shared a story on Triangle Land Conservancy's Facebook page about a powerful memory she had of White Pines Nature Preserve back when TLC was just getting started. She told of how on a cold February day in the mid-80s, a group went out to the Preserve on the day that TLC purchased another key parcel of land that added significantly to the total acreage. She recalled how the group tromped joyfully through a foot of snow down to the confluence of the Rocky River and the Deep River in celebration of what had been accomplished.



I suspect there was a great deal of pride that the nascent TLC was truly able to accomplish big things and protect amazing places. I also imagine they may have felt humility, knowing that generations upon generations would be able to visit this site to connect with its natural wonder and awe. This dynamic – the urgency to protect and the long-term legacy TLC's work provides our fast-growing region – is a key reason that I am so passionate about community-based conservation.

Together we are building on TLC's incredible 30-year legacy. Our six Nature Preserves in five counties are open to the public year-round, offering a variety of opportunities for visitors to engage in activities such as paddling, bird-watching, photography and enjoying nature trails. One preserve – Irvin Farm – has received national recognition for how TLC promotes educational, environmental and agricultural programming through innovative partnerships. To date TLC has protect-

ed over 16,000 acres of strategically important land. And perhaps most impressive, you – TLC's community of supporters – donated an incredible \$5.5 million during the Our Water, Our Land capital campaign to ensure that TLC would thrive in the years to come. Thank you!

And thrive we will.

Of course half the fun in building movements to accomplish big things is tackling herculean challenges together in the years ahead. And there is no shortage – believe me!

The Triangle is one of the fastest growing regions in the country, so our window of time to protect key areas is, essentially, now. Our major drinking water supplies (Jordan Lake and Falls Lake) are severely impaired and challenged by recent droughts, while projections estimate another million people will depend on them in the near future. Yet, we face 90% cuts in state funding, and state tax incentives for conservation easements will expire on December 31, 2013. Similar legislation is pending at the federal level.

One of the things that I have heard again and again from people during my first year as executive director is that they wish me great success – I know that it's obviously not about me personally. They believe there is such a sense of urgency that they desperately hope TLC is successful in accomplishing its mission in the coming years: safeguarding clean water, supporting farmers and local food, protecting wildlife habitat and connecting people with nature. I deeply believe that TLC can and will accomplish wonderful

things in the years ahead as we work to be ever more relevant to the communities of the Triangle.

Over the last century, North Carolina's population has shifted from 80% rural and 20% urban to just the inverse. In order for people to care about nature and conservation in the future – from the mountains to the coast – we need to provide ample opportunities now to build a love for nature near where they live. With the Triangle's population nearing two million, a vibrant economy requires smart development in smart places and critical conservation lands protected.

This is where we come in! In order to have a greater impact on the Triangle and its residents, we have plans to improve our internal organization to take it to the next level. These plans include: stabilizing and strengthening our finances in the coming 18 months; sharpening our program goals and priorities; building deeper partnerships with local governments, corporations and other NGOs; and continuing to attract and retain outstanding volunteers, members and staff who want to be part of this important movement.

As we reflect on the past 30 years, we embrace the spirit of the mission and enthusiasm that prompted our founders 30 years ago. A new energy is evident as we work to reconnect with our most passionate and dedicated supporters (you!). We encourage you to join us and recommit to this critically important and meaningful venture. Thank you for your years of support that has led to TLC's many successes. We couldn't have done it without you!

A handwritten signature in black ink, reading "Chad Jemison". The signature is fluid and cursive, with a long, sweeping underline that extends to the right.

Wildlife Spotlight

Spring Chapel Hill Bird Count at Johnston Mill Nature Preserve

by Bo Howes

Each spring, fall and Christmas, in conjunction with the National Audubon Society, the Cornell School of Ornithology and local bird clubs, a count of all birds seen and heard is conducted across the country. The Christmas Bird Counts garner the most attention, but the spring and fall counts tend to have the widest variety of migratory species as they pass through the count areas.

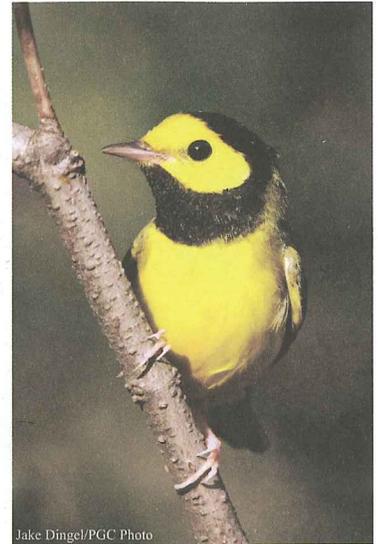


TLC's Johnston Mill Nature Preserve is part of the Chapel Hill bird count area. This year's Spring Chapel Hill Bird Count in May tallied 59 species and 366 individual birds in the area. Highlights from Johnston Mill include Prairie Warbler, Indigo Bunting and Hooded Warbler.

A wide variety of habitat for birds exists at Johnston Mill Nature Preserve. New Hope Creek is a water source that attracts both migrant and year-round birds; the

Duke Power line provides a prairie like habitat that attracts a whole different variety of species; and the upland woods provide a unique habitat particularly attractive to woodpeckers and nuthatches.

Bo Howes has been with TLC for five years and is the Senior Land Project Manager.



Visit triangleland.org to learn more about our periodic outings with staff and volunteers!

TLC Chosen to Monitor Carolina North

Carolina North is a 947-acre portion of the University of North Carolina at Chapel Hill campus that currently houses the Horace Williams Airport. The University plans to close the airport and develop a portion of this land for new academic uses. As part of this development process, the University has set aside 258 acres of the parcel for permanent conservation to be comprised of three "conservation areas." The selection of these sites was based on a comprehensive ranking of the most sensitive natural areas of Carolina North.

TLC entered into a fee-for-services contract with UNC-CH in January for two district functions. First, TLC will produce a Baseline Documentary Report (BDR) for the Conservation Areas of Carolina North. A baseline documentary report is a written record or snapshot of the condition of a property at a certain date and will serve as the starting point for gauging any changes to the property. Second, TLC will annually monitor the conservation areas to ensure the University upholds the agreed upon conservation principles. TLC's contract with the University runs for three years.