

Jordan Lake Nutrient Management

Introduction, Background,
and Rules

Where Does Your Drinking Water Come From?

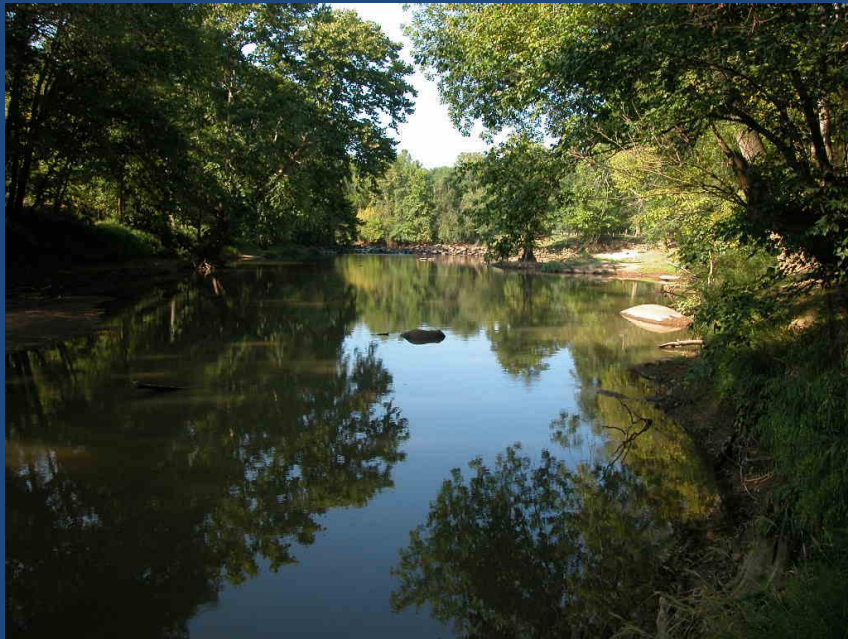


Does it come from here?



Had you Rather Swim In

This



Or This



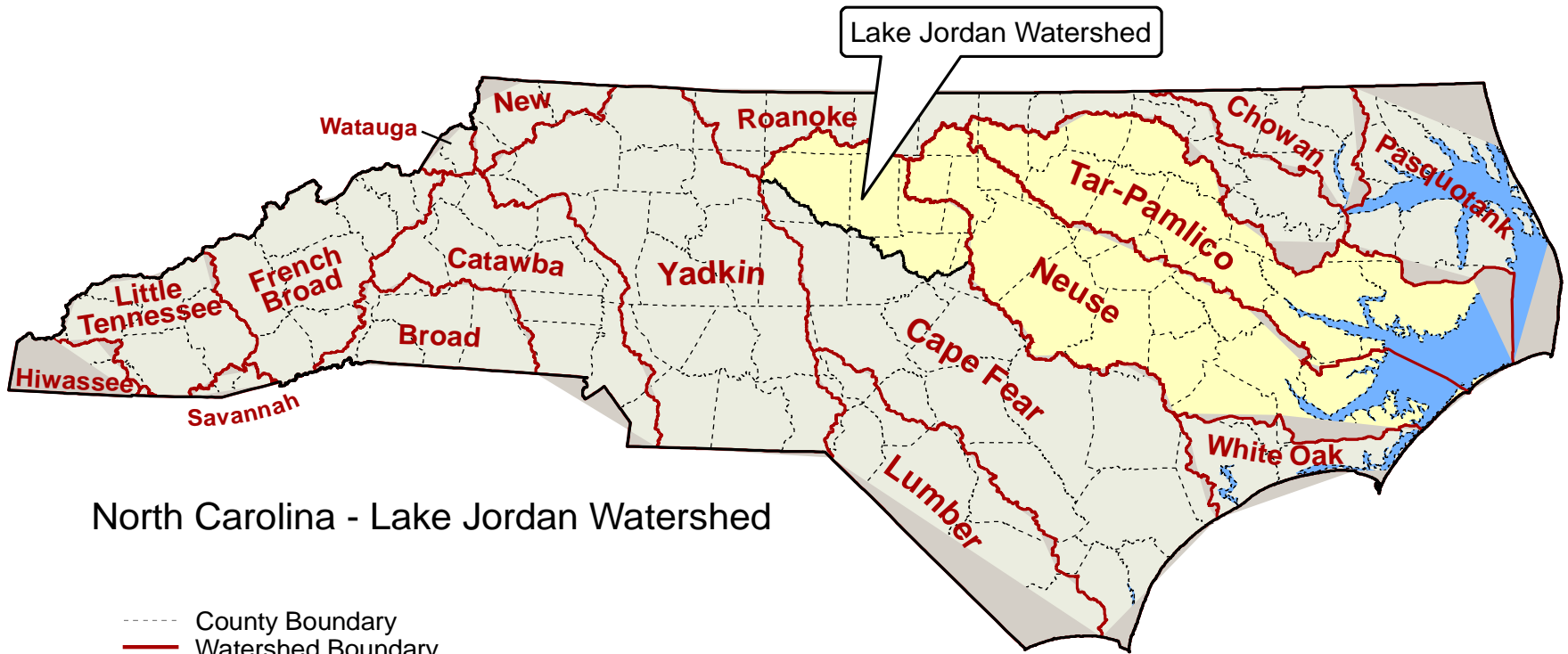
Is Water Related Recreation Important to North Carolina?



Is There a Relationship to Clean Water in Our Culture?



North Carolina Watersheds



North Carolina - Lake Jordan Watershed

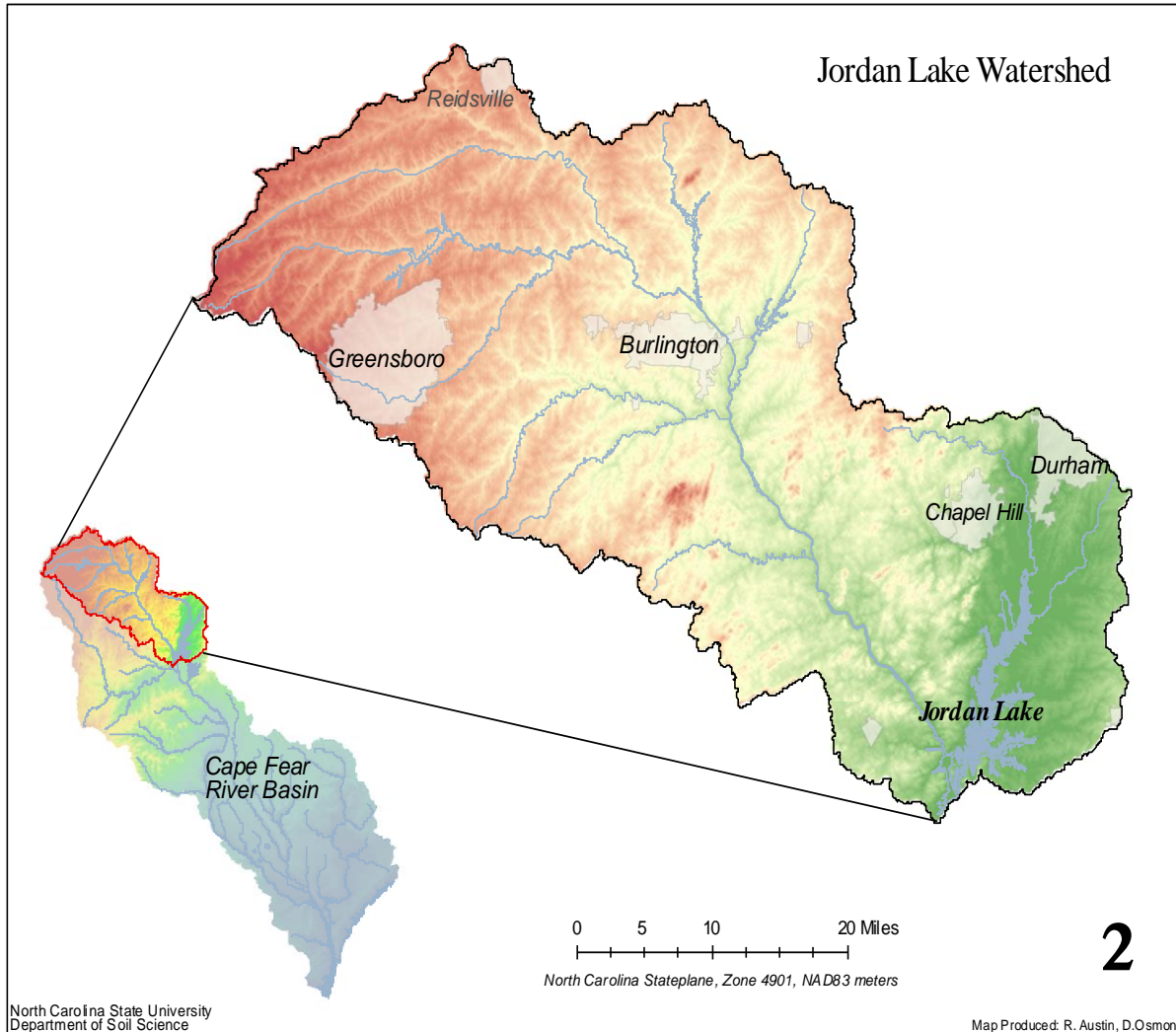
----- County Boundary
— Watershed Boundary

0 37.5 75 150 Miles

Jordan Lake Facts

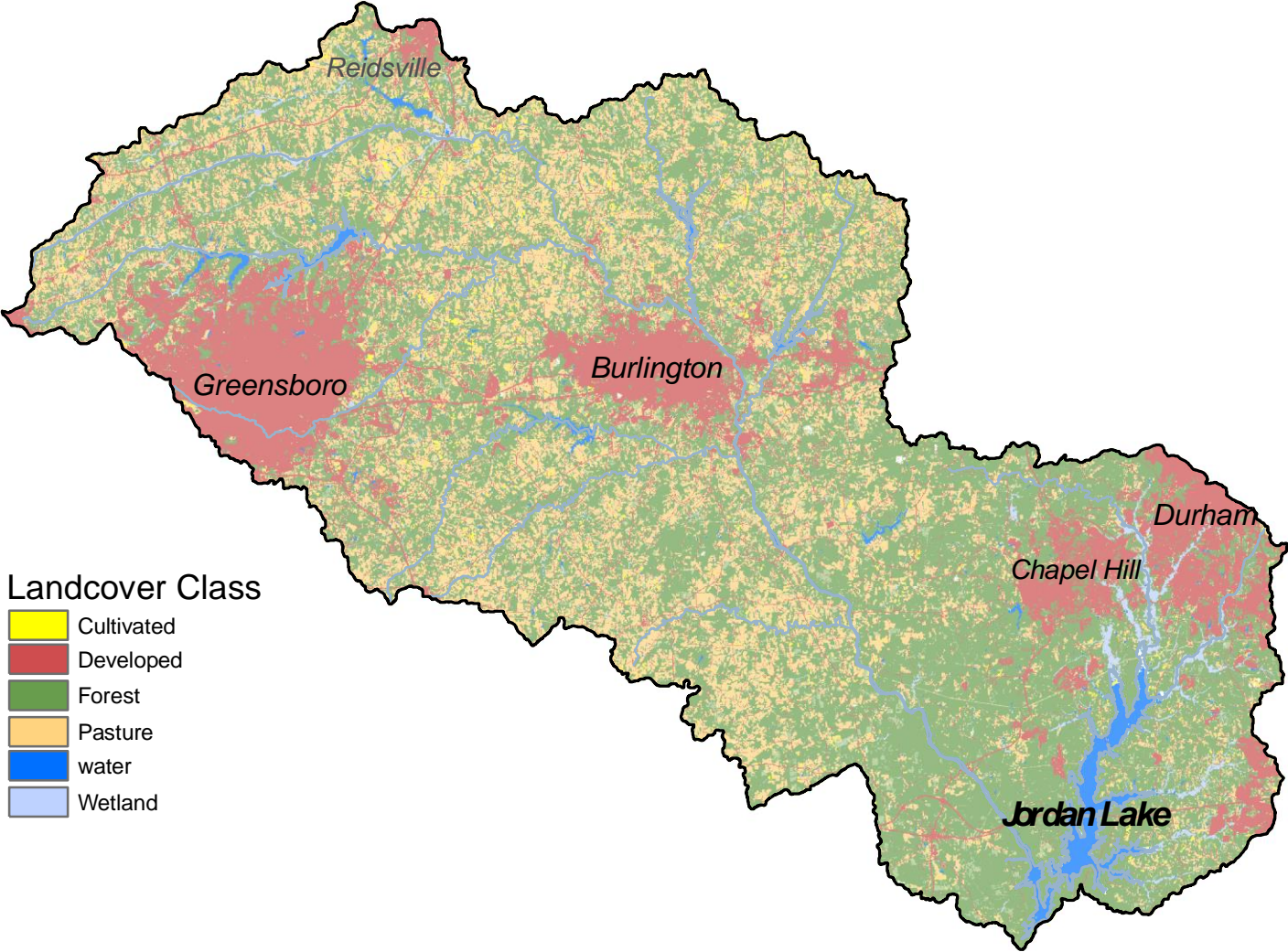
- Created from Haw River and New Hope Creek
- Original name: New Hope Lake
- Named for Senator B. Everett Jordan
- 13,940 acres, 200 miles of shoreline
- Elevation 216 feet, 113 feet above stream bed
- 245 billion gallons of water on a typical day
- The reservoir was developed and is managed by the United States Army Corps of Engineers

Jordan Lake Watershed



Jordan Lake Watershed

2001 Land Use Land Cover



Landcover Class

-  Cultivated
-  Developed
-  Forest
-  Pasture
-  water
-  Wetland

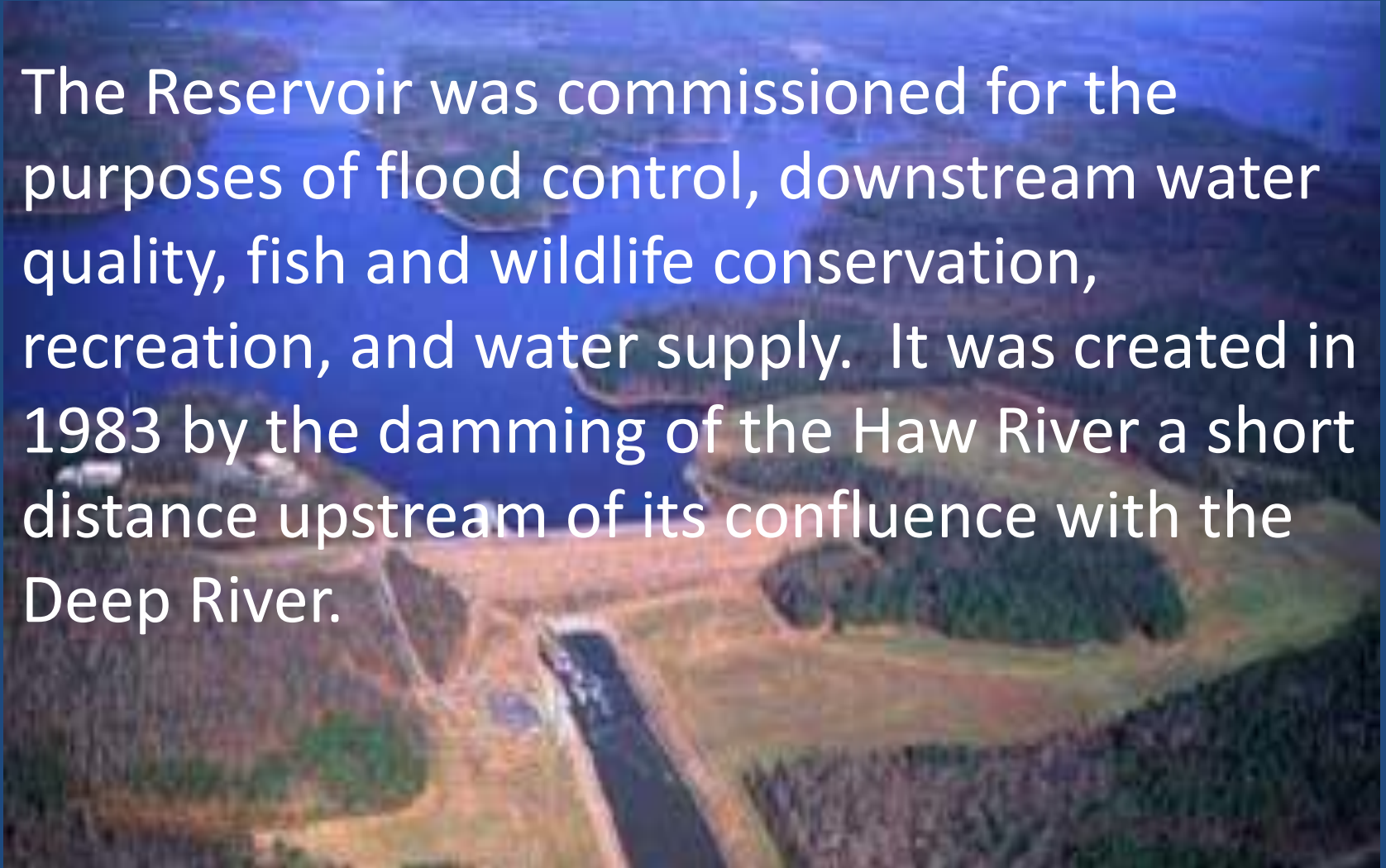
0 5 10 20 Miles

North Carolina Stateplane, Zone 4901, NAD83 meters

Map Produced: R. Austin, D. Osmond

Jordan Lake Purpose

The Reservoir was commissioned for the purposes of flood control, downstream water quality, fish and wildlife conservation, recreation, and water supply. It was created in 1983 by the damming of the Haw River a short distance upstream of its confluence with the Deep River.



Jordan Lake Camping

The screenshot shows the website for Jordan Lake State Recreation Area. The background is a large image of a tree with a bird's nest. The text 'North Carolina State Parks' is in the top left, and 'Naturally Wonderful' is in the top right. Below the tree image, there is a navigation menu with links: Visit, Education, News, Jobs, About Us, Contact Us, and Search. On the left side, there is a search box labeled 'Find a park' and a 'Park Menu' with links: Home, Activities, Current Conditions, Ecology, Events, Facilities & Fees, and Forms & Permits. The main content area features a heading 'Jordan Lake State Recreation Area » Welcome!' followed by a 'Reservations Alert' and a message that reservations can now be made for Jordan Lake SRA. It also provides the address (280 State Park Road, Apex, NC 27523), office phone (919) 362-0586, and email (jordan.lake@ncmail.net). A small image of the lake is shown at the bottom right of the main content area.

North Carolina State Parks

Naturally Wonderful

Goose Creek State Park

Visit Education News Jobs About Us Contact Us Search

Find a park

Park Menu

- Home
- Activities
- Current Conditions
- Ecology
- Events
- Facilities & Fees
- Forms & Permits

Jordan Lake State Recreation Area » Welcome!


Reservations Alert ... details ±

Reservations can now be made for Jordan Lake SRA. ... details ±

Address: 280 State Park Road, Apex, NC 27523
Office Phone: (919) 362-0586

Email: jordan.lake@ncmail.net

Imagine relaxing in a cove, listening to the sounds of water rippling. Then, you feel a firm tug on your fishing line. It's going to be a big one! Picture the surface of the



Done

Internet | Protected Mode: Off

Jordan Lake Boating

The screenshot shows an Internet Explorer browser window displaying the website <http://www.carolinanow.com/recsites/jordanlakesra.htm>. The page has a white background with a repeating pattern of small, light blue boat icons. At the top, there is a navigation bar with links for [Home](#), [Carolina Locator Map](#), [Rec Sites Index](#), [NC Lodging](#), [SC Lodging](#), and [Menu](#). Below this is a search bar with the text "jordan lake boating" and a search button. The main content area features a large graphic with the text "COME! See CAROLINA NOW" and "Recreation Sites". To the right of this graphic are links for [HOTELS Near Airports](#) and [Waterfalls](#). Below the navigation bar is a vertical sidebar on the left with the text "RESERVATIONS" and "1-400 GUIDE 1-800". The main content area has a heading "Jordan Lake State Recreation Area - (near) Apex" and a paragraph: "There are 9 recreation sites in the Jordan Lake State Recreation Area. From I-40 in Raleigh take the US-1 freeway south, through Cary to US-64 (just before Apex). Then follow US-64 west to the Jordan Lake Rec Area. For descriptions and information about available facilities, select the individual site from the following menu:". Below this paragraph is a list of nine recreation sites:

- [Crosswinds Boat Ramp](#)
- [Crosswinds Campground](#)
- [Ebenezer Church](#)
- [New Hope Overlook](#)
- [Parkers Creek](#)
- [Poplar Point](#)
- [Robeson Creek](#)
- [Seaforth](#)
- [Vista Point](#)

At the bottom of the page, there is a link for [View Facilities Map \(.pdf format\) of Jordan Lake SRA](#) and a heading for "Jordan Lake SRA - Campgrounds". The browser's status bar at the bottom indicates "Internet | Protected Mode: Off" and "100%".

Jordan Lake Fishing

The screenshot shows a web browser window displaying the FishingNotes.com website. The browser's address bar shows the URL <http://www.fishingnotes.com/lakeinfo.php?id=19822>. The page title is "B Everett Jordan Lake, North Carolina Fishing Report - fishingnotes.com". The website header includes the logo "FISHINGNOTES.COM" with the tagline "CATCH YOUR LIMIT TODAY" and a search bar with the text "Lake Search: Top Lakes | Updated Lakes". A navigation menu contains links for Home, Lakes, Articles, Records, Boats, Store, News, and Links. The main content area is titled "B Everett Jordan Lake" and features a sidebar with links to conditions, water temperature, weather, fishing reports, news, and links. The main text area includes a "morningstar marinas" advertisement with a "CLICK HERE" link, a map of the lake area, and a welcome message for the fishing report page. The map shows the lake's location near Durham, Chapel Hill, and Cary. The welcome message states: "Welcome to FishingNotes.com B Everett Jordan Lake fishing report page. Here you will find all the information you need to make the best decisions for today's fishing. Current weather including air temperature, barometric pressure, wind speed and direction are continuously updated throughout the day. Vital fishing information for B Everett Jordan Lake, including mean water temperature and moon phase. Help in choosing what time to hit the water with daily sunrise and sunset times plus moon rise and moon set times. We would love to hear how your fishing trip went, feel free to share your days success on the community report page. Good luck and we hope you catch a full bag today!" Below the map, there are links for "Ads by Google" and "B Everett Jordan Lake General". The "B Everett Jordan Lake General" section includes a sub-section for "B Everett Jordan Lake Fish Population" and a paragraph stating: "B. Everett Jordan Lake Dam is located near the geographical center of North Carolina making it one of the Triangles largest open green spaces. The Jordan Lake Project preserves 46,768 acres in the midst of an expanding urban area. Of this total, 13,900 acres have been flooded to form the lake and 32,868 acres are being managed for recreation and wildlife management." The browser's status bar at the bottom shows "Done", "Internet | Protected Mode: Off", and "100%".

Jordan Lake Swimming

Outdoor Recreation at Jordan Lake

Swimming at Jordan Lake

Sponsored Links

[Swimming Outlet](#)

Huge Selection of Swim Gear The Web's Most Popular Swim Shop!
www.SwimOutlet.com

[Cabela's Official Site](#)

Find World-Famous Quality Fishing Gear & Accessories at Cabela's Now!
www.Cabelas.com

[Lake Property Central NC](#)

Lake Property within an hour from Raleigh, Durham and Greensboro, NC
www.HycoLakeProperty.com

Raleigh-Durham Ads

- [Parks Swimming](#)
- [Swimming Camping](#)
- [Maryland Bass Fishing](#)
- [Bass Fishing in the Everglades](#)
- [Bass Fishing with Tube Baits](#)

bass boats, water ski boats, and small sailboats are all commonly used on Jordan Lake . Boat rentals are available from Crosswinds Marina, which is Jordan Lake's only marina. Canoe and Kayak rentals can be arranged from a number of local outfitters, such as [Frog Hollow Outdoors](#).

Jordan lake has several areas designated for swimming, including three public swim beaches and three campground beaches (beaches for use by campers only). Though Jordan Lake's swimming beaches have shower and changing areas as well as life jackets that can be borrowed free of charge, none of them are manned by life guards. No swimming is allowed in areas of the lake not specifically designated for swimming.

Camping at Jordan Lake

Jordan lake has five camping areas and has facilities for tent camping, RV camping, group camping and canoe/kayak camping.

Boating at Jordan Lake

There are 12 boat ramps on Jordan Lake, including four boat ramps that are open 24 hours a day (Ebenezer boat ramp, Robeson boat ramp, Farrington Point boat ramp and Poe's Ridge boat ramp). Canoes, kayaks, pontoon boats, jet skis,

Jordan Lake Drinking Water



Town of Cary Water Treatment

The Town of Cary produces drinking water from Jordan Lake at a treatment plant that it owns with the Town of Apex. Treatment capacity increased to 40 million gallons per day with expansion that was completed in 2002. The plant has been in compliance with regulatory standards since opening in 1993.

The water plant is six miles from Jordan Lake, which is part of the Cape Fear River basin. The lake was created to supply water regionally, control flooding, improve flow downstream, and provide recreation.



Annual Reports

[Drinking Water Quality Report \[text only html\]](#) – This brochure is mailed to all water customers as required by the U.S. Environmental Protection Agency. It summarizes test results and includes information on health effects. The report lists Town contacts and sources of additional information.

[Water Treatment Lab Summary](#) – This comprehensive laboratory report has test results for all parameters for finished water from the Cary/Apex Water Treatment Facility.

Treatment Process

The Cary/Apex Water Treatment Plant uses a relatively new process with special concrete treatment basins called Super-Pulsator Flocculator Clarifiers for removing particles from the water. Each can treat up to 8 million gallons of water a day.



Jordan Lake Wake Quality Problems

- Jordan Lake has been consistently rated as eutrophic or hyper-eutrophic since its impoundment in 1983.
- “Eutrophic” is an over-abundance of nutrients in the lake, primarily nitrogen and phosphorus, which may result in algal blooms and poor water quality.

Jordan Lake Problems

- The state began taking actions to address the nutrient problems early in the lake's history.
- The Environmental Management Commission designated the Reservoir a Nutrient Sensitive Water the year of its impoundment (1983), and imposed phosphorus limits on wastewater dischargers.
- The lake did not respond to these controls.

Jordan Lake Problems - 1998

Local · State · Nation · World · Politics · Obituaries · Green · Tech · Crime · Strange · Edu

Local News

Jordan Lake Swimming Area Closed

Posted: Jun 10, 1998

CHATHAM COUNTY — A beach at Jordan Lake is closed and the Chatham County Health Department doesn't know when it will reopen.

The Vista Point Campground is closed because of an outbreak of shigellosis. Officials suspect contamination in the water and the soil may have made several children who sick after swimming in the water.


It's the first time the serious bacterial infection has been linked to Jordan Lake. Chatham County Health Department Director, Wayne Sherman, says the area is closed to protect the public. "The decision was made to close Vista Point Beach at Jordan State Park due to some confirmed cases of shigella related to some children that were camping."

Fourteen year old Adam Edmonds was one of those kids who, two weeks ago, spent a fun weekend at Vista Point. But ever since then he's been taking it easy, trying to recuperate from the bacterial infection. "I had a great time all weekend and when I got home I had a headache, and my back was hurting from sunburn. And then I woke up the next morning really cold. I had the chills." There are four other confirmed cases of shigellosis in young people who swam in the waters off Vista Point.



Jordan Lake Problems - 2008

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Columnists: John Drescher | Barry Saunders | Ruth Sheehan | Road Worrier | Triangle Troubleshooter

Debris clogs Jordan Lake's coves

Raleigh man spearheads effort to clean up trash

WADE RAWLINS - STAFF WRITER
Published: Thu, Sep. 18, 2008 12:30AM Modified Thu, Sep. 18, 2008 04:55AM

PITTSBORO -- When Tom Colson spotted a great blue heron at Jordan Lake recently, he was first delighted, then horrified.

The bird was standing on a mat of trash so thick it couldn't fish.

Colson, a Raleigh environmental consultant and hobby wildlife photographer, investigated more closely and found an even worse situation. Near where the Haw River flows into the lake, a half dozen shallow coves resemble floating landfills, collecting debris washed down the river over the years.

VOLUNTEERS NEEDED TO CLEAN UP LAKE

There is no land access, so volunteers with boats are especially needed.

What: Help clean up a section of Jordan Lake

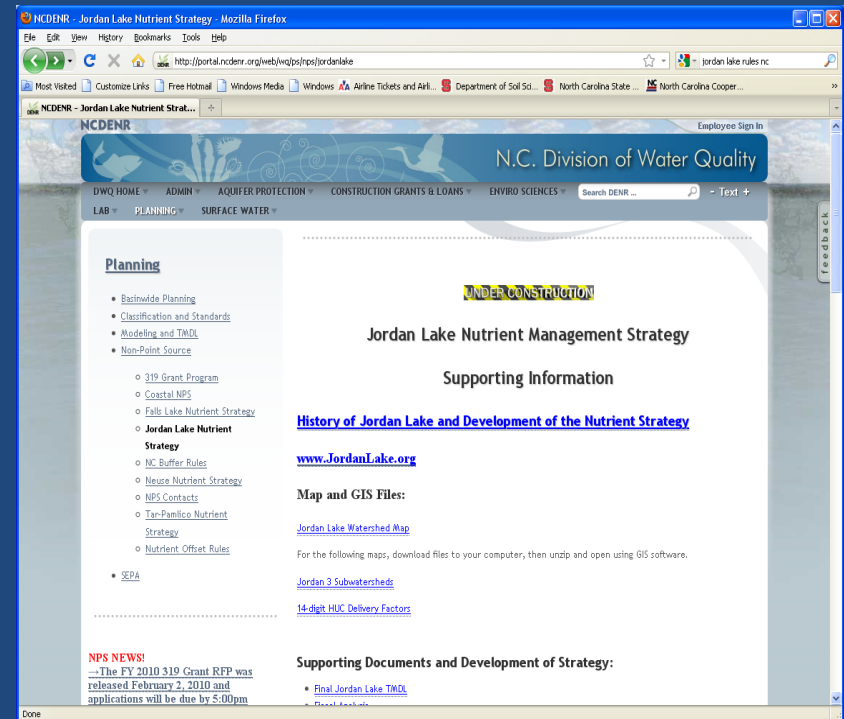
Where: About a 45-minute paddle from the Robeson Creek Boat Ramp, Chatham County's Waste

Jordan Lake is popular with boaters, fishermen and swimmers. It's also a source of drinking water. Near the northern end of the lake, the towns of Cary and Apex draw water and pump it to residents' taps, and other communities such as Durham and Orange County may use it in the future. Although those communities have treatment plants that purify the water, the

BOOKMARK BUZZ UP! E-MAIL PRINT TEXT SIZE: - +

Jordan Lake: Rules Developed to Reduce Nutrient Loading

- In 2006 the Department of Environment and Natural Resources began developing rules to reduce nutrient loading to Lake Jordan
- Rules published 2007, with a 90 day public comment period
- Rules approved November 2008
- Rules signed into law January 2009



Jordan Lake Rules

- Old/New Development
- Waste Water Treatment Plants
- Nutrient Management
- Agriculture
- Buffer Protection

Jordan Nutrient Strategy - Mozilla Firefox

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http://h2o.enr.state.nc.us/nps/JordanNutrientStrategy.htm

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Jordan Nutrient Strategy

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NEW!

Proposed Jordan Reservoir Water Supply Nutrient Strategy

The public comment period for the proposed set of rules comprising the Jordan Reservoir Nutrient Strategy, 15A NCAC 02B .0262-.0272 and .0311, has been extended from the original 60-day period of June 15 to August 14, 2007. The Division of Water Quality will accept comments for an additional month, until September 14, 2007. Please direct your comments to Rich Gannon or Jason Robinson as follows:

US Mail:
1617 Mail Service Center
Raleigh, NC 27699-1617

Fax: (919) 715-5637
Email: Rich.Gannon@ncmail.net or Jason.T.Robinson@ncmail.net

You can also request information from Division staff members Rich Gannon or Jason Robinson at the above contact points or by phone at 919-733-5083, ext. 356 or 537, respectively.

Please share this announcement with others who may be interested.

[History and Strategy Summary](#) (8 pages) updated 06/21/07

[Public Hearing Power Point Presentation](#) updated 07/17/07

Text of the Proposed Rules -

All 12 Rules compiled:

Done

Jordan Lake: Required Nutrient Load Reductions

- Nutrient Load Reductions required by the state of North Carolina from the 1997-2001 baseline period
 - Upper New Hope Sub Basin: 35% Nitrogen and 5% Phosphorus
 - Lower New Hope Sub Basin: 0% Nitrogen and 0% Phosphorus
 - Haw Sub Basin: 8% Nitrogen and 5% Phosphorus



Jordan Lake Rules

- Old/New Development
- Waste Water Treatment Plants
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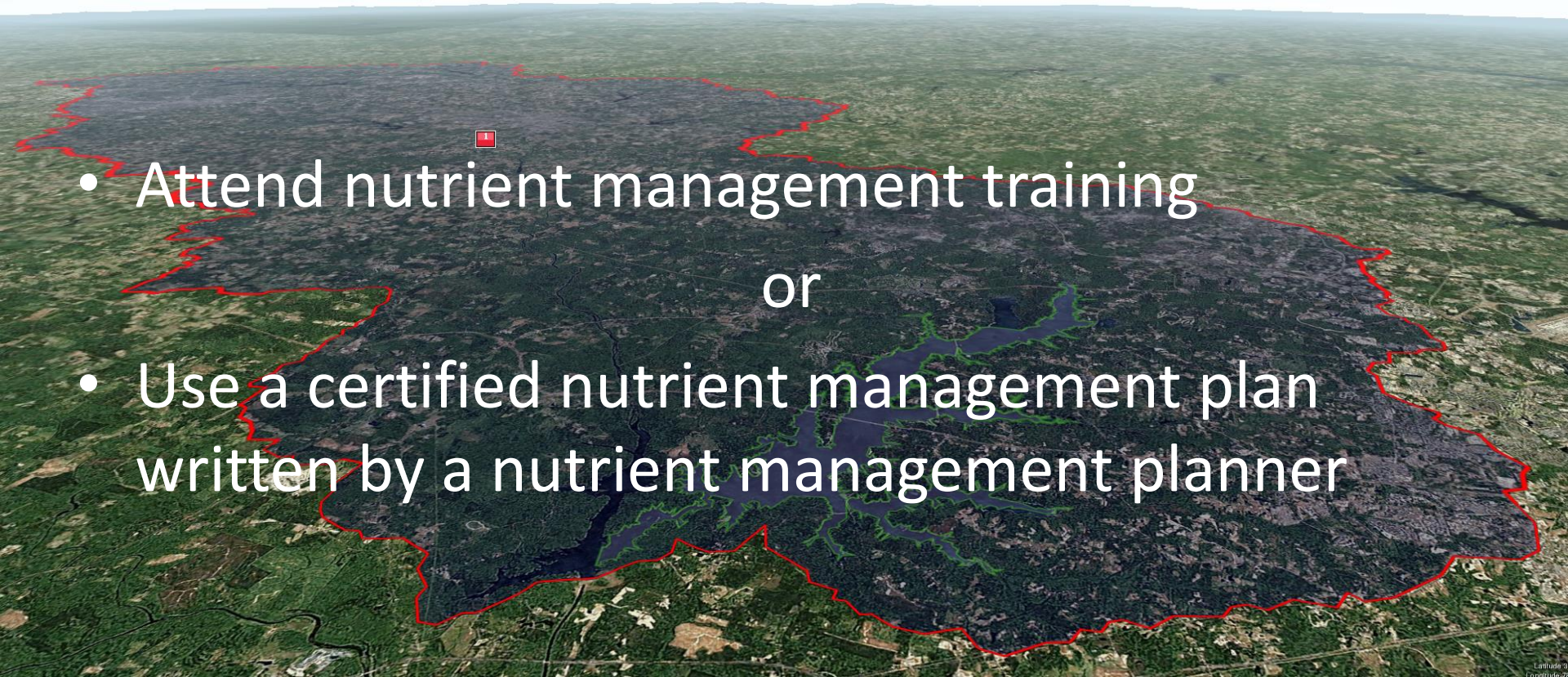
Done

Jordan Lake Nutrient Management Rule: Who Needs to Participate

- Applicators to any of the following lands:
 - Commercial cropland, including pastureland, regardless of acreage.
 - Commercial ornamental, floriculture, or greenhouse operations, regardless of acreage.
 - Golf courses, public recreational lands, road or utility rights-of-way, or other commercial or institutional lands that total at least five acres.
- Hired applicators who apply to a combined total of at least five acres per year.

Jordan Lake Nutrient Management Rule: What Do You Need to Do

Collections editor

- 
- An aerial photograph of a landscape, likely a farm or rural area, with a red boundary line tracing a path across the terrain. A small red square marker is visible on the boundary line. The landscape is a mix of green fields and brownish soil.
- Attend nutrient management training
 - or
 - Use a certified nutrient management plan written by a nutrient management planner

Jordan Lake Nutrient Management Rule: Who Does Not Need to Participate

- Homeowners are exempt if they fertilize their own lawns
- With the exception of homeowners, everyone who hires an applicator must ensure that the applicator has attended and completed the nutrient management class or applies pursuant to a nutrient management plan that has been approved by a designated technical specialist.

Jordan Lake Rules

- Old/New Development
- Waste Water Treatment Plants
- Nutrient Management
- Agriculture
- Buffer Protection

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Text of the Proposed Rules -

All 12 Rules compiled:

Done

Jordan Lake Agriculture Rule: Who Is Covered?

- Applies to all commercial agricultural producers (crop and horticulture) and livestock producers with the following number of animals:
 - 5 horses
 - 20 cattle
 - 20 swine (unconfined) or 150 swine (confined)
 - 650 turkey or 3,500 chickens
 - 120 sheep or 130 goats
 - 20,000 lbs of any combination of species

Jordan Lake Agriculture Rule: What Has to Happen?

- Nitrogen and phosphorus reduction goals have been established and must be met at the subwatershed level.
- County Soil and Water District Offices will calculate nutrient reductions due to conservation practices.



Jordan Lake Rules

- Old/New Development
- Waste Water Treatment Plants
- Nutrient Management
- Agriculture
- Buffer Protection

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Text of the Proposed Rules -

All 12 Rules compiled:

Done

Jordan Riparian Buffer Rules

- 50 foot vegetated buffer required
 - Zone One** = inner 30 feet, undisturbed vegetated area
 - Zone Two** = outer 20 feet, stable vegetated area
- Existing uses next to a stream that are *present* and *ongoing* are grandfathered and do not need buffers

Where Does the Jordan Lake Buffer Rule Apply?

- The riparian buffer applies to the following types of surface waters:

- Intermittent streams
- Perennial streams
- Modified natural streams
- Lakes
- Reservoirs
- Ponds

- Contact your DWQ Regional Office to determine if a surface water is subject to the riparian buffer rules
 - <http://portal.ncdenr.org/web/wq/home/ro>

Next Chapter

Jordan Lake Nutrient Management

How Pollutants Move and
Conservation Practices

Jordan Lake Nutrient Management

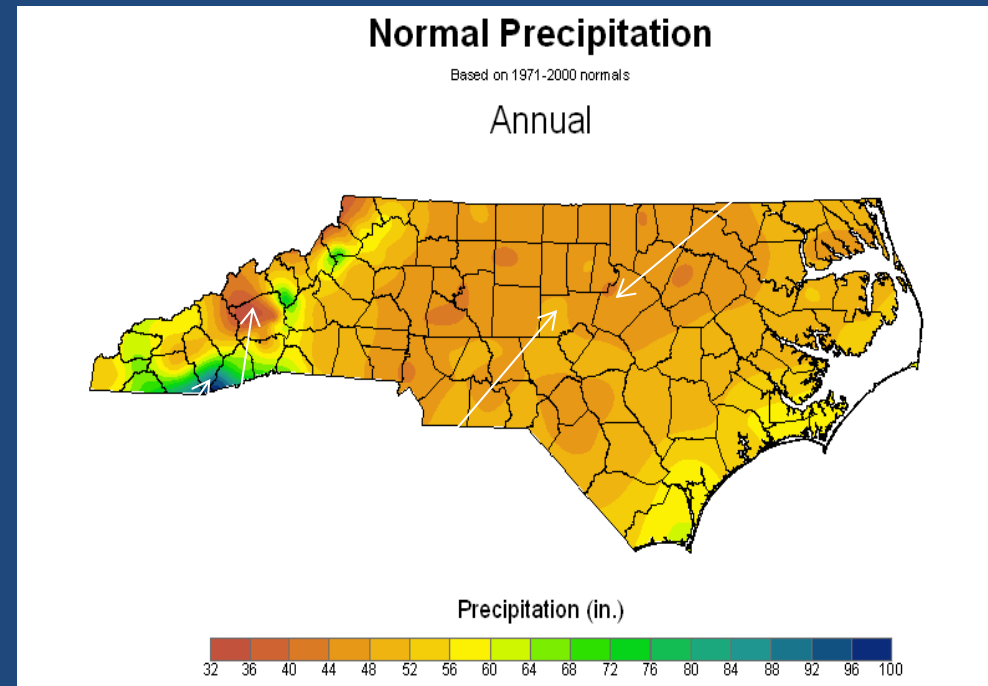
How Pollutants Move and Conservation Practices

Conservation Practices

- Pollutants are valuable resources when kept on the land
- Just as a weed is a 'plant out of place', soil, fertilizer, or nutrients only become pollutants when they move off-site
- Let's review how to keep them on-site in row crops, pastures, and lawns...

North Carolina is Rainy!

- While water is necessary to grow crops, it also provides the transport mechanism for pollutants
- Rainfall in NC is variable and unpredictable!

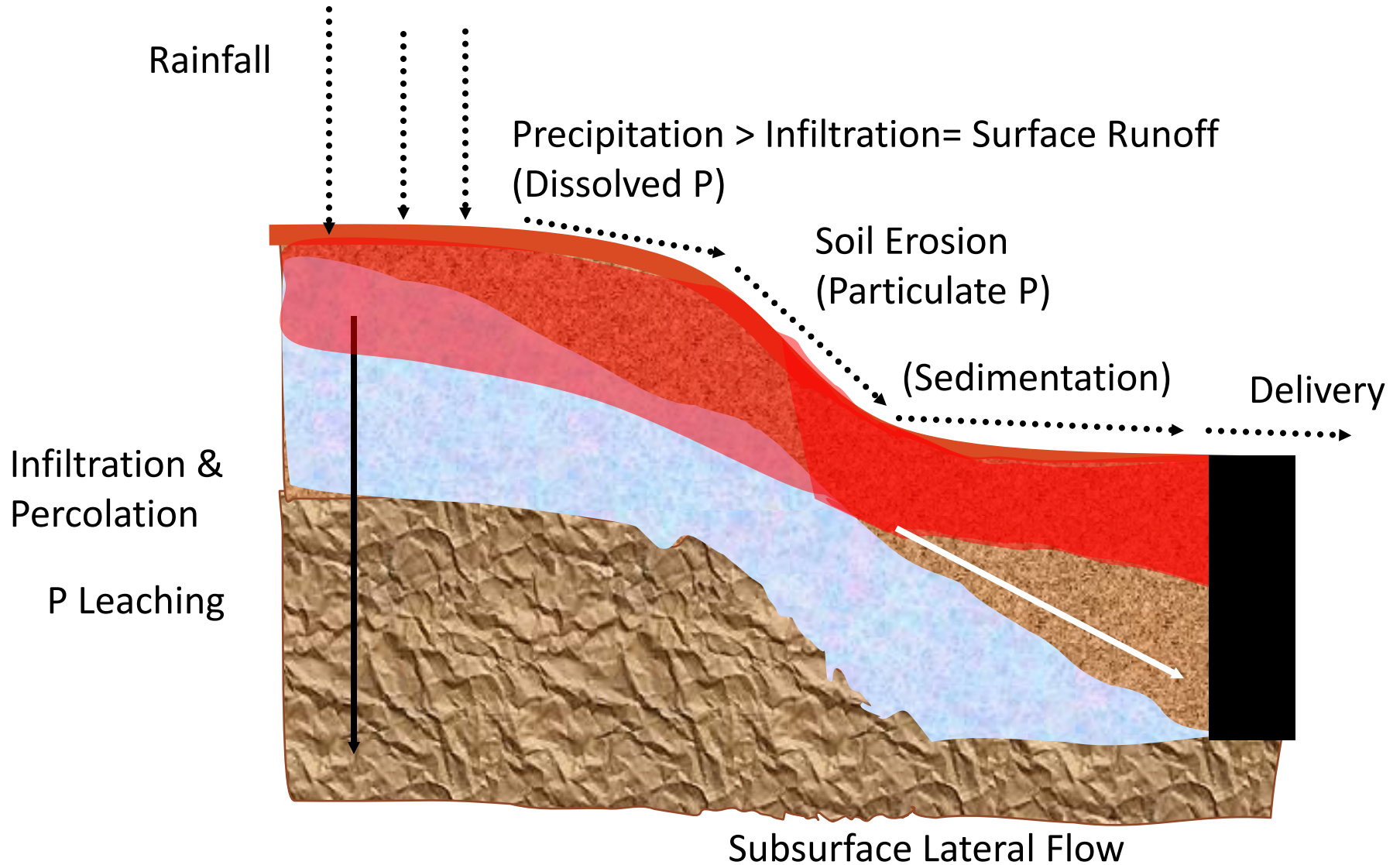


Erosion and Sedimentation

Sediment is the
number 1 water
pollutant in North
Carolina and the
United States....BUT
Nutrients are the
major problem in
Jordan Lake



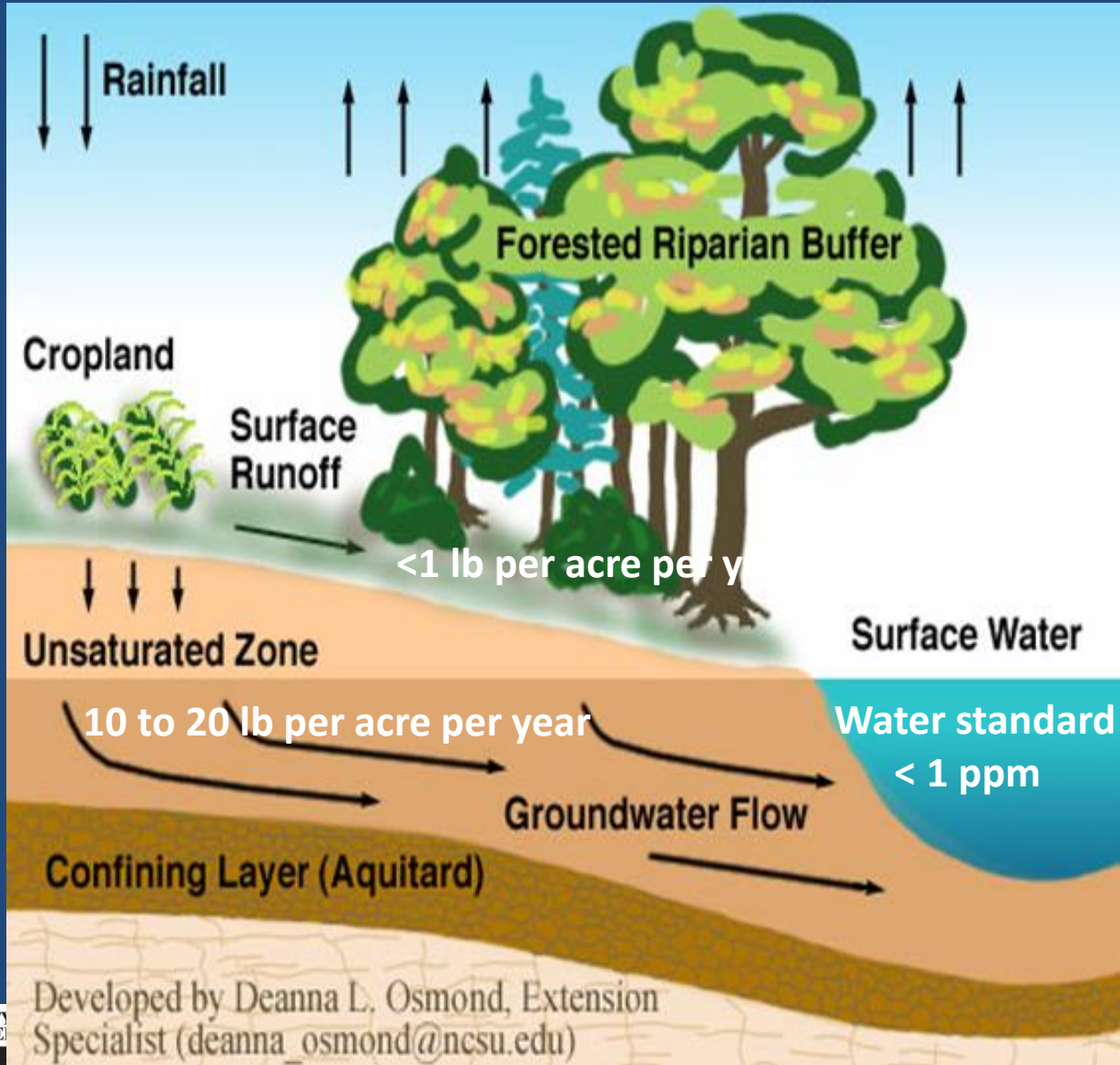
How Does P Move?



EPA Water Quality Criteria for Phosphorus

- 0.05 part per million (ppm)
 - stream that discharges into lake or reservoir
- 0.025 ppm
 - lake or reservoir
- 0.1 ppm
 - streams that do not discharge
- 0.01-0.03 ppm
 - to stop algal blooms

N Leaching Losses



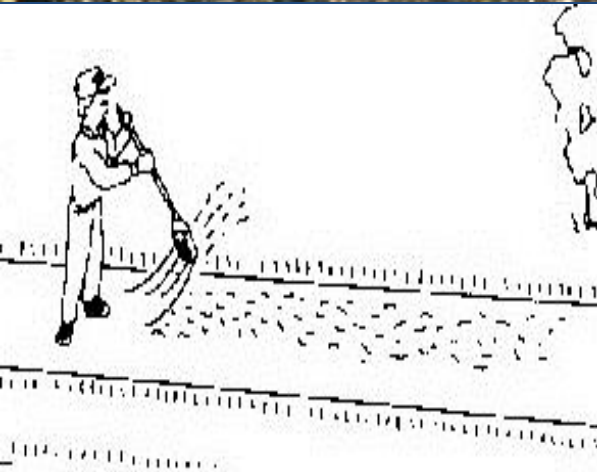
Lawn Conservation Practices

- Nutrient management
- Grass management
- Stormwater management
- Stream restoration



Nutrient Management: Good Housekeeping

- Avoid applying fertilizer to sidewalks and roadways
- Sweep or blow fertilizer onto lawn
- Remember, stormwater flows directly to creeks so any fertilizer on hard surfaces goes directly into streams



Grass Management: Avoid Scalping Grass

- Direct relationship between height of shoot and depth of roots
- Grass management provides cover and keeps the soil in place



Grass Management: Compacted Soils

- Rain water should infiltrate into turf, not run off
- Soil compaction limits turf growth and water infiltration
- When establishing a yard, deep rip the yard to reduce compaction
- Coring will not help with compaction



Grass Management: Turf Selection

- NC is turf transition zone
- Cool season and/or warm season grasses possible depending on location
- Not all grasses are managed the same



Stormwater: Yard Conservation

Raingardens
infiltrate
runoff from
roofs and
driveways



Backyard Stormwater Conservation

- Rain barrels collect roof runoff – reduces stormwater ‘footprint’
- Use water for irrigation or pressure washing



Stream Restoration



Natural Conservation Practices ???



Next Presentation

Jordan Lake Nutrient Management

How to Make Nutrient Decisions

Jordan Lake Nutrient Management

How to Make Nutrient Decisions

Why Do We Have Fertilizer Plans or Nutrient Management Plans?

- Provide nutrients for plant production
- Properly utilize manure or organic by-products as a plant nutrient source.
- Minimize loss of nutrients from agriculture and urban sources to surface and ground water.
- Improve or maintain the physical, chemical, and biological condition of the soil.

How Do We Know the Amount of Nutrient in the Soil Available for Plant Growth?

Soil Testing

Why Do We Soil Test?



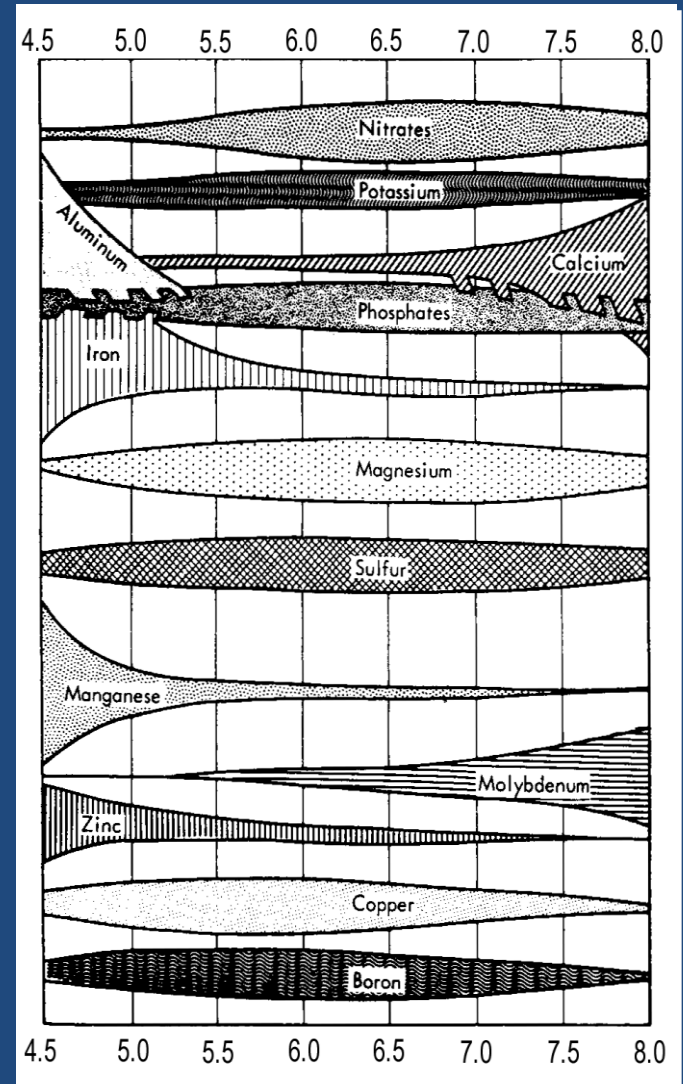
- Maintain high yields or aesthetic quality
- Reduce costs
 - Unnecessary fertilizers just increase costs
- Protect the environment
- Routine monitoring can spot nutrient problems before they become nutrient deficiencies or toxicities

What Does Soil Testing Measure?

- Does NOT measure the total nutrient concentration
- DOES measure the plant available nutrient concentration in a soil sample
- Estimates the ability of the soil to supply nutrients to a crop
- DOES measure pH and acidity for accurate lime recommendations

pH Measures Acidity

Crop	Optimum pH
Lawn	6.0
Centipede Grass	5.5
Corn	6.0
Soybeans	6.0
Pasture (Bermuda)	6.0



Soil Sampling Methods

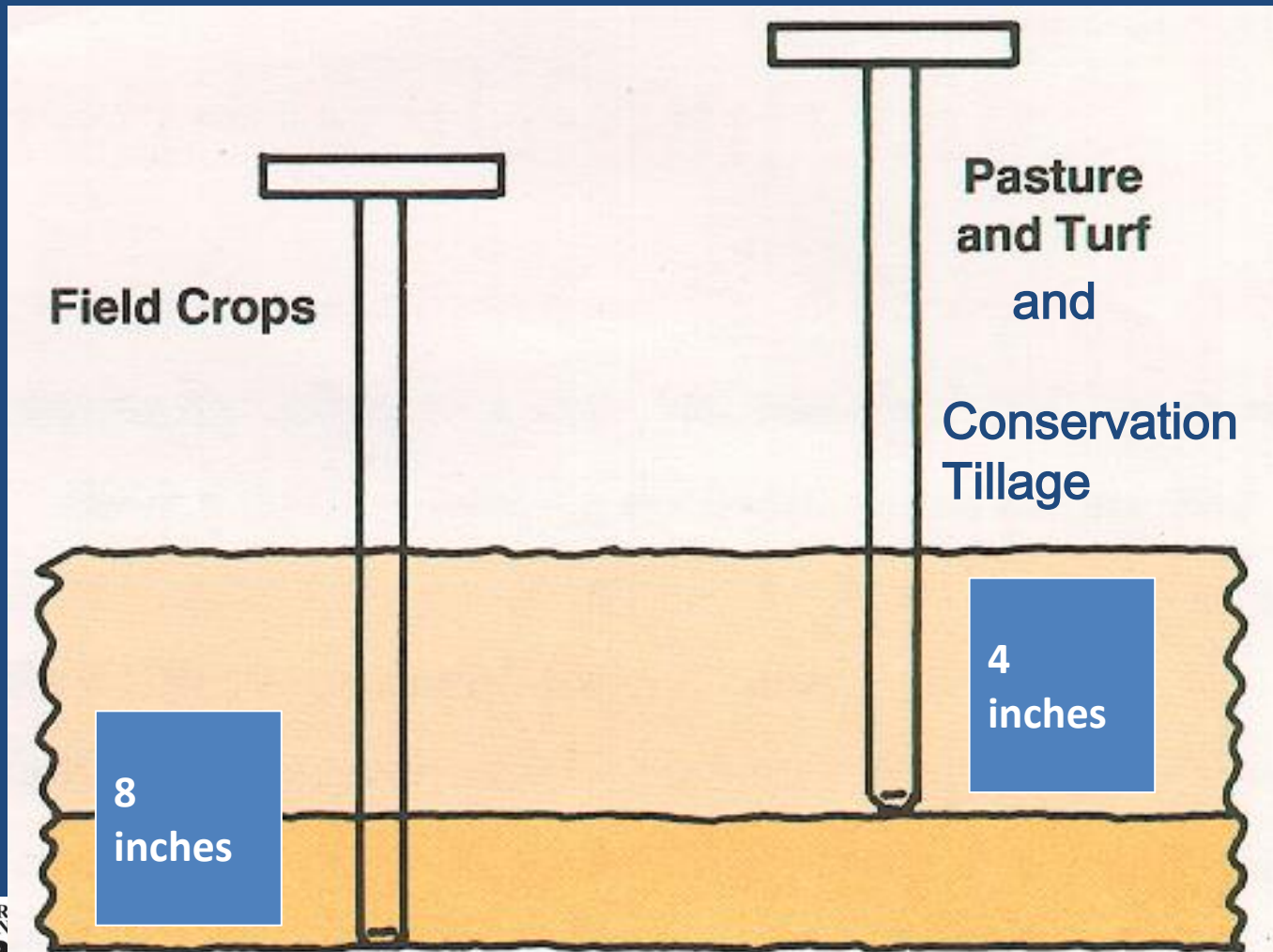


Importance of Collecting a Representative Soil Sample

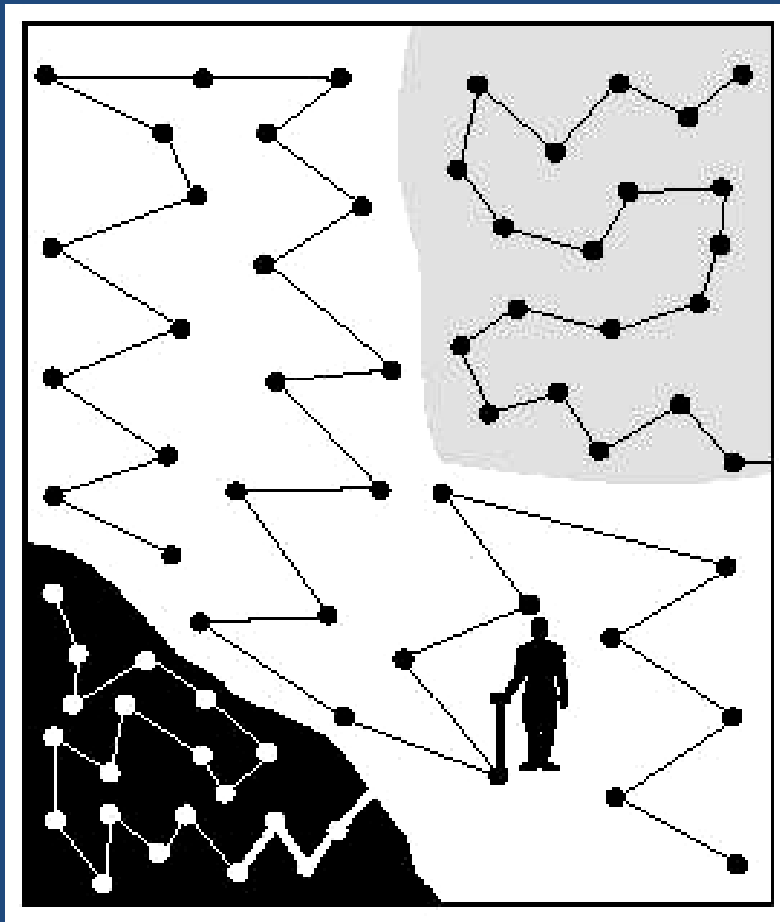
- One acre of soil, 6" deep, weighs about 2,000,000 pounds
- Weight of soil in box about 1 pound
- Weight of sample analyzed is about 2.5 grams (1/10 of an ounce)



Soil Sampling Depth



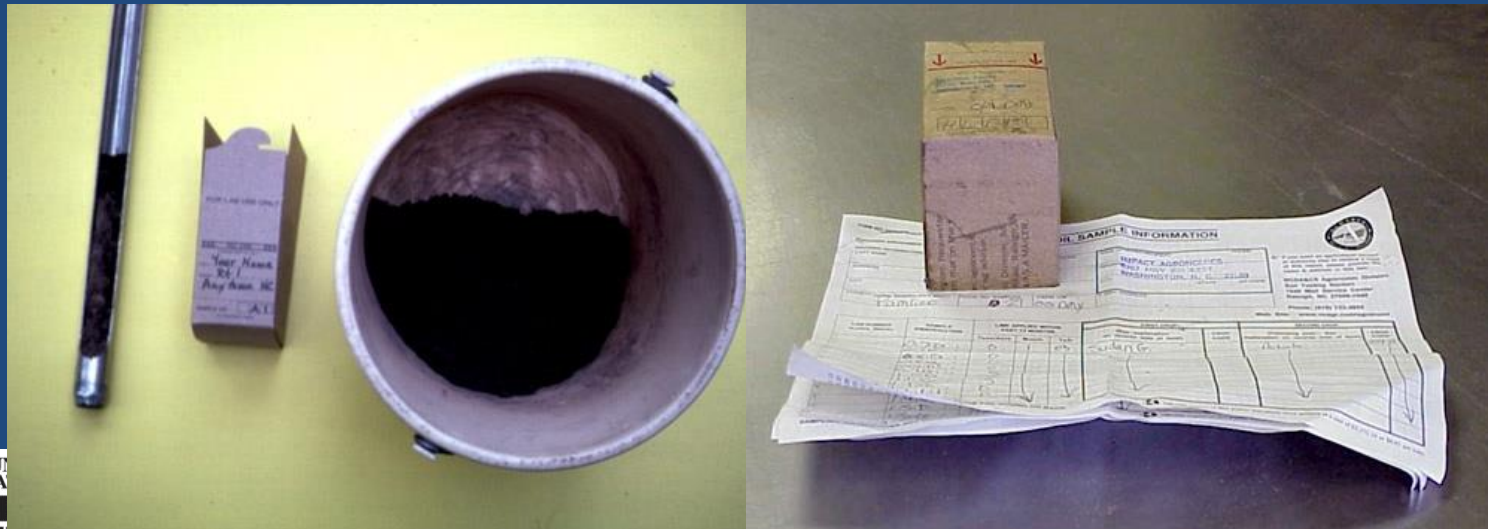
Soil Sampling



- Collect 15 to 20 cores – no more than 10 acres
- Sample different soil types and landscape positions separately
- Soil sample based on NC Cooperative Extension recommendations

Soil Sample Handling

- Obtain sampling boxes from NC Cooperative Extension offices
- Mix cores well in clean plastic bucket
- Fill box to line
- Send sample in for analysis as soon as possible



SOIL SAMPLE INFORMATION

NCD&CS Agronomic Division Soil Testing Section
Mailing Address: 1040 Mail Service Center, Raleigh NC 27699-1040
Physical Address (UPS/FedEx): 4300 Reedy Creek Road, Raleigh NC 27607
Phone: (919) 733-2655 Web Address: www.ncagr.gov/agronomi

FOR OFFICE USE ONLY

REPORT # _____

DATE REC'D _____

INITIAL _____



SAMPLE TYPE

Routine samples only — no fee

SAMPLE INFORMATION

GROWER INFORMATION (please print)

CONSULTANT/OTHER RECIPIENT

FARM ID SAMPLE DATE COUNTY (where collected) NUMBER OF SAMPLES	<p><u>Reminders</u></p> <p><i>Fill sample box to red line.</i></p> <p><i>Select the proper crop code(s) from the list on the back of this form.</i></p> <p><i>Pack samples securely for shipment.</i></p>	LAST NAME FIRST NAME ADDRESS ----- CITY STATE ZIP PHONE () - ----- E-MAIL ADDRESS <input type="checkbox"/> Do Not notify me when report is available.	LAST NAME FIRST NAME ADDRESS ----- CITY STATE ZIP PHONE () - ----- E-MAIL ADDRESS <input type="checkbox"/> Do Not notify me when report is available.
---	--	--	--

LAB NUMBER (Leave blank)	SAMPLE IDENTIFICATION	LIME APPLIED WITHIN PAST 12 MONTHS			You must specify a crop CODE to receive a recommendation (see reverse side of form)			
		Tons/Acre	Month	Year	FIRST CROP	CODE	SECOND CROP	CODE
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

Thank you for using agronomic services to manage nutrients and safeguard environmental quality. — Steve Troxler, Commissioner of Agriculture

Taking a Soil Sample

A soil test is only as good as the soil sample!

Use iron or stainless steel tools. Sample dry soil in areas of 10 acres or fewer. Avoid combining soils of different types and/or treatment histories. Avoid fertilizer bands and corners or end-turn areas. For each sample, collect 20 or more cores at the appropriate depth (0–8" for plowed soils; 0–4" for no-till, sod & lawns). Mix cores in a plastic bucket, then fill the sample box. **DO NOT PUT SOIL IN PLASTIC BAGS.**

REQUIRED INFORMATION

The lab **MUST** have this information.

DESIRABLE INFORMATION

The lab can make better suggestions if this information is provided.

Filling out the Sample Information Form

LAB NUMBER (Leave blank)	SAMPLE IDENTIFICATION	LIME APPLIED WITHIN PAST 12 MONTHS			FIRST CROP	CODE	SECOND CROP	CODE
		Tons/Acre	Month	Year				
1	J 1	1	9	2002	Corn	001	Small Grain	004
2	S 1	2	9	2002	Clover / Grass, M	050	Clover / Grass, M	050
3	S 2	0			Bermuda Hay, E	043	Bermuda Hay, M	044

EXAMPLE

SAMPLE & GROWER INFORMATION — Provide as much information as possible. Print neatly.

CONSULTANT/OTHER RECIPIENT — List name & contact information for anyone else who needs to know about the report.

SAMPLE IDENTIFICATION — Print an identifier (use numbers and/or letters) for each sample on a separate line. The identifier should help remind you where the sample came from (Example: J1, S1). Make sure the sample identifiers on the boxes and on the information form are the same. Use **pencil or waterproof markers**.

FIRST CROP — List the crop for which you want lime and fertilizer recommendations. Be sure to include the appropriate CODE from the list below (e.g., Bermuda hay or pasture establishment, 043).

A. Use **Lawn** (code 026) for all lawn grasses except Centipede. Use one of the **Fine Turf** codes only for golf and athletic field turf.

B. Use **Shrubby** (code 029) for all shrubs, except azalea, camellia, rhododendron and mountain laurel.

C. For all home garden vegetables, use code 024.

LIME APPLIED WITHIN PAST 12 MONTHS — Provide the amount of lime applied in tons/acre, as well as the year and month of the last application, if made during the past 12 months. (50M is equivalent to one ton per acre.)

SECOND CROP — List the name of the crop that will follow the one listed as **FIRST CROP**. Include its CODE from the list below. This will enable us to make suggestions for this crop, assuming that the field is treated as suggested the first year. List the second crop even if it will be grown the same year as **FIRST CROP**.

CROP CODES

E = establishment (1st year)

M = maintenance

SG = small grain

000 No Crop

Field Crops

001 Corn, grain

002 Corn, silage

003 Cotton

004 Small Grain

006 Milo (Grain Sorghum)

007 Peanut

010 Soybean

011 Sunflower

012 Tobacco, burley

013 Tobacco, flue-cured

014 Tobacco, greenhouse

015 SG silage/ Soybean

016 SG silage/ Corn silage

017 Kenaf

018 SG/ Soybean (double crop)

Home Lawn & Garden

020 Azalea

021 Camellia

022 Centipede

023 Flower garden

024 Vegetable garden

025 Mountain laurel

026 Lawn

027 Rhododendron

028 Rose

029 Shrubby

030 Berries/ Fruit/ Nuts

031 Tree, shade

Christmas Trees

034 Leyland cypress

035 Line-out/ Seed Beds

036 Fir/ N Spruce/ Hemlock, E

037 Fir/ N Spruce/ Hemlock, M

038 Pine, White or Virginia

039 Blue Spruce/ Red Cedar

Forage & Pasture

040 Alfalfa, E

041 Alfalfa, M

042 Common bermuda/ Bahia

Forage & Pasture (cont.)

043 Bermuda hay/ pasture, E

044 Bermuda hay/ pasture, M

047 Bluegrass pasture

048 Bluegrass/ White Clover

049 Clover/ Grass, E

050 Clover/ Grass, M

051 Gamagrass

053 Legumes, misc.

054 Fescue/ Orchard/ Timothy, E

055 Fescue/ Orchard/ Timothy, M

056 Prairiegrass

057 Switchgrass

059 Sudan/Sorghum/Millet/Red Crabgrass

060 Sudan/ Sorghum silage

Roadside Areas

061 Critical area

062 Roadside grass, E

063 Roadside grass, M

Wildlife Areas / Food Plots

066 Deer / Turkey

067 Upland game

068 Waterfowl

069 Fish pond

Commercial Hort Crops ONLY

[024 = all Home Vegetables]

070 Asparagus, E

071 Asparagus, M

072 Beans/ Peas

074 Beet

072 Beans/ Peas

074 Beet

075 Blueberry, E

076 Blueberry, M

077 Broccoli/ B. sprouts/Cauliflower

079 Cabbage

080 Cantaloupe/ Watermelon

084 Corn, sweet

085 Cucumber

088 Grape, E

089 Grape, M

090 Kale/ Mustard/ Spinach

093 Okra

095 Pea, southern

096 Pepper

097 Plant bed, vegetable

098 Potato, Irish

099 Sweetpotato

Commercial Hort Crops (cont.)

100 Radish

101 Rape/ Canola

102 Raspberry/ Blackberry, E

103 Raspberry/ Blackberry, M

107 Squash/ Pumpkin

108 Strawberry, E

109 Strawberry, M

110 Tomato

111 Tomato, greenhouse

115 Turnip

116 Vegetables, other

Commercial Nursery & Flowers

120 Dahlia

121 Gladiolus

122 Greenhouse

123 Gysophila (Baby's Breath)

124 Flower, bulbs

125 Flower, roots

126 Nursery, container

132 Rhododendron/ Ginseng/

Native ornamentals

136 Nursery/ Trees

Orchard, Fruit & Nut

130 Apple, E

131 Apple, M

138 Peach, E

139 Peach, M

140 Pecan, E

141 Pecan, M

Forest Trees & Seed

133 Hardwood, E

134 Hardwood, M

137 Nursery, pine

142 Pine, E

143 Pine, M

144 Hardwood, seed

145 Fir/ Spruce, seed

146 Pine, seed

Fine Turf

150 Fairway/ Athletic turf

151 Tee

152 Greens



NORTH CAROLINA DEPARTMENT OF AGRICULTURE & CONSUMER SERVICES

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Agronomic Division
[Home Page](#)
[About the Division](#)

Agronomic Information Sheets

For or print any of the portable document format files, you must have Acrobat® Reader installed on your computer.



Information Sheets to Fill Out and Submit Online

- [Information Sheet](#)
- [Survey Information Sheet](#)
- [Problem-Diagnosis Information Sheet](#)
- [Soil Information Sheet](#)
- [Plant Information Sheet](#)

- [Solution Analysis Information Sheet](#)

UPS or FedEx

Agronom

• [S](#)
 • [P](#)
 • [N](#)
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 • [P](#)
 • [W](#)
 • [S](#)

**NCDA&CS AGRONOMIC DIVISION
 SOIL TESTING SECTION
 4300 REEDY CREEK ROAD
 RALEIGH NC 27607-6465**

[Publications](#)
[Related Sites](#)
[Virtual Tour](#)

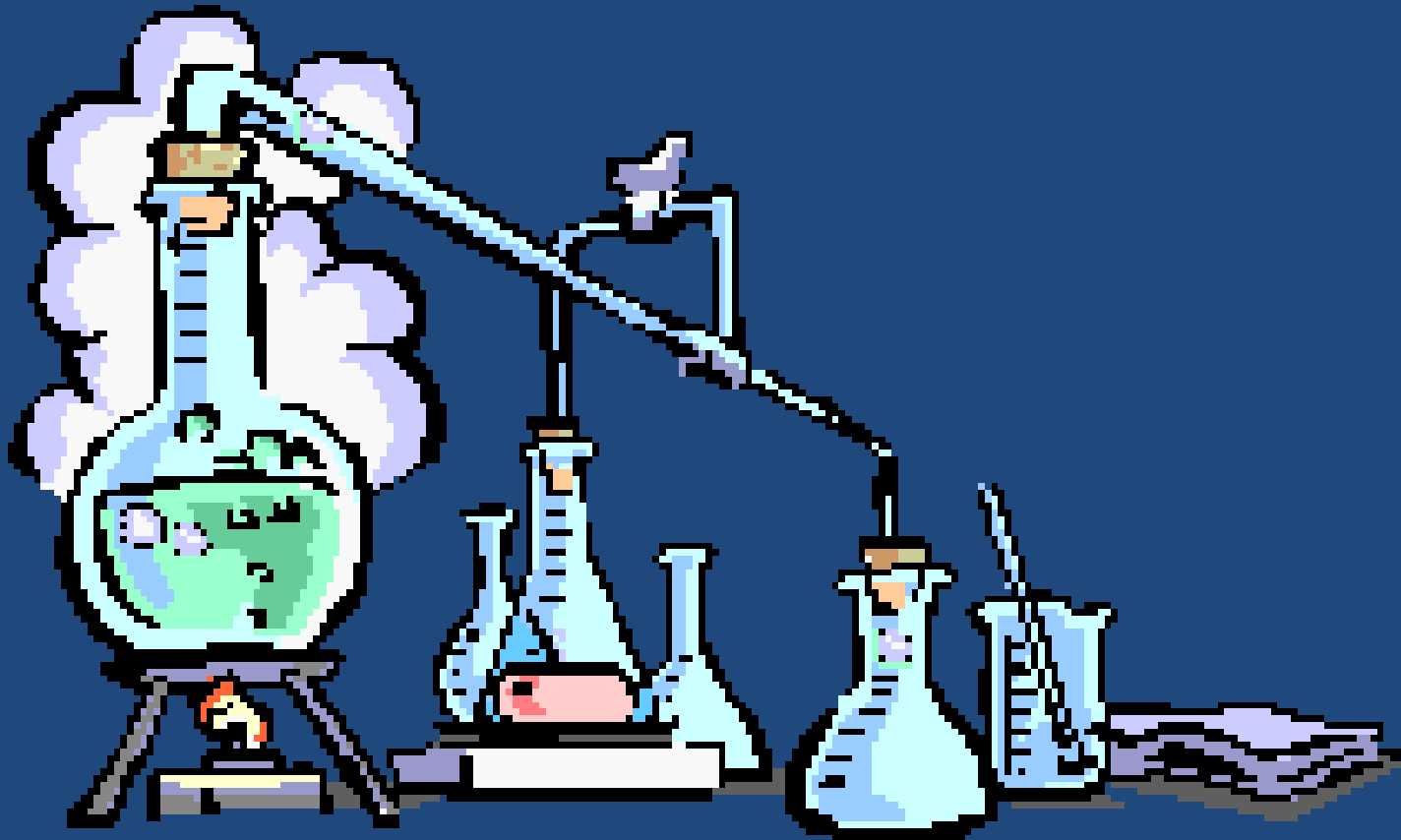
NCDA&CS Agronomic Division, 4300 Reedy Creek Rd., Raleigh, NC 27607-6465; (919) 733-2655

Last Updated October 30, 2001

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<http://www.ncagr.com/agronomi/sthome.htm>

Soil Analysis Basics



Soil Testing Extractant

- NCDA&CS Uses the Mehlich-3 Extractant
- If you use a commercial lab for your soil testing, that lab must use Mehlich-3 Extractant **AND** the fertilizer recommendations must match NCDA&CS to meet legal requirements in the Jordan Lake River Basin



The screenshot shows a web browser window with the title "NCDA&CS - Agronomic Services Division Soil Testing Home Page - Mozilla Firefox". The address bar shows the URL "http://www.agr.state.nc.us/agronom/sthome.htm". The page content includes a navigation menu with links for Home, Programs, Services, Divisions, Newsroom, and Search. The main content area is titled "Agronomic Services — Soil Testing" and features a list of links: "What the Soil Testing Section does", "Soil sample forms and information", "Current estimated sample turnaround time", "Soil testing methodology", and "Data summaries". There is also a logo for "Soil Plant 2008 NAPT Participating Laboratory". At the bottom, contact information for the NCDA&CS Agronomic Services Division is provided, including the name of the Director, Colleen M. Hudak-Wise, and the mailing and physical addresses.

How to Read Your Soil Reports



Lawn Soil Tests

NCDA&CS Agronomic Division Phone: (919)733-2655 Web Site: Report No:



Soil Test

3/15/2010

SERVING N.C. RESIDENTS FOR

Alamance County

Agronomist

B - 4

Field	Applied	Recommendati
Sample Last	Mo Yr	Crop or Year
FRONT		1st Lawn
		2nd

Soil	HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-Al(1)	Mn-Al(2)	Zn-I	Zn-Al	Cu-I	S-I	SS-I	NO ₃ -	NH ₄ -	Na
MIN	0.60	1.32	6.4	47.0	3.4	4.2	287	28	32.0	12.0	112			88	88	133	71				0.1

Field	Applied	Recommendati
Sample Last	Mo Yr	Crop or Year
BACK		1st Lawn
		2nd

Soil	HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-Al(1)	Mn-Al(2)	Zn-I	Zn-Al	Cu-I	S-I	SS-I	NO ₃ -	NH ₄ -	Na
MIN	0.60	0.96	9.7	65.0	3.4	4.4	372	57	43.0	19.0	116			265	265	113	86				0.1

Lawn Lime Recommendations

NCDA&CS Agronomic Division Phone: (919)733-2655 Web Site: Report No:



Soil Test

3/15/2010

SERVING N.C. RESIDENTS FOR

Alamance County

Grower

Copies

Agronomist B - 4

Field	Applied	Recommendati													
Sample	Last	Mo	Yr	Crop or Year	Lime	N	P ₂ O ₅	K ₂ O	Mg	S	Cu	Zn	B	Mn	See Note
FRONT				1st Lawn	120M	1.0 lbs	15-0-14	or EQUIV	PER 1000 SQ	0				.0	4
				2nd						0			.0		

Test Results

Soil	HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-Al(1)	Mn-Al(2)	Zn-I	Zn-Al	Cu-I	S-I	SS-I	NO ₃ -	NH ₄ -	Na
MIN	0.60	1.32	6.4	47.0	3.4	4.2	287	28	32.0	12.0	112			88	88	133	71				0.1

Field	Applied	Recommendati													
Sample	Last	Mo	Yr	Crop or Year	Lime	N	P ₂ O ₅	K ₂ O	Mg	S	Cu	Zn	B	Mn	See Note
BACK				1st Lawn	115M	1.0 lbs	Nitrogen	or EQUIV	PER 1000 SQ	0				.0	4
				2nd						0			.0		

Test Results

Soil	HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-Al(1)	Mn-Al(2)	Zn-I	Zn-Al	Cu-I	S-I	SS-I	NO ₃ -	NH ₄ -	Na
MIN	0.60	0.96	9.7	65.0	3.4	4.4	372	57	43.0	19.0	116			265	265	113	86				0.1

Other Fertilizer Recommendations

Nutrients

- Phosphorus (P)
- Potassium (K)
- Sulfur (S)
- Manganese (Mn)
- Copper (Cu)
- Zinc (Zn)

Fertilizer Rates

- Determined based on yield response to fertilizer
- Strategy is to fertilize the crop, not the soil
- Fertilizer recommendations are in pounds per thousand square feet for turf

Lawn Phosphorus Recommendations

NCDA&CS Agronomic Division Phone: (919)733-2655 Web Site: **Report No:**



Soil Test

3/15/2010

SERVING N.C. RESIDENTS FOR

Alamance County

Grove

Copies

Agronomist

B -- 4

Field		Applied		Recommendati												
Sample	Last	Mo	Yr	Crop or Year	Lime	N	P ₂ O ₅	K ₂ O	Mg	S	Cu	Zn	B	Mn	See Note	
FRONT				1st Lawn	120M	(7.0 lbs 15-0-14 or EQUIV PER 1000 SQ	0						.0		4	
				2nd						0			.0			

Test Results

Soil	HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-Al(1	Mn-Al(2	Zn-I	Zn-Al	Cu-I	S-I	SS-I	NO ₃ -	NH ₄ -	Na
MIN	0.60	1.32	6.4	47.0	3.4	4.2	287	28	32.0	12.0	112			88	88	133	71				0.1

Field		Applied		Recommendati												
Sample	Last	Mo	Yr	Crop or Year	Lime	N	P ₂ O ₅	K ₂ O	Mg	S	Cu	Zn	B	Mn	See Note	
BACK				1st Lawn	115M	(1.0 lbs Nitrogen or EQUIV PER 1000 SQ	0						.0		4	
				2nd						0			.0			

Test Results

Soil	HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-Al(1	Mn-Al(2	Zn-I	Zn-Al	Cu-I	S-I	SS-I	NO ₃ -	NH ₄ -	Na
MIN	0.60	0.96	9.7	65.0	3.4	4.4	372	57	43.0	19.0	116			265	265	113	86				0.1

NCDA Index System

- Unique to North Carolina
- Used for phosphorus (P), potassium (K), manganese (Mn), zinc (Zn), copper (Cu), sulfur (S)
- Converts nutrients to common index value

Index Value	Index Rating	Fertilizer Response
0-25	Low	High
26-50	Medium	Medium
51-100	High	Low
>100	Very High	None

Lawn Phosphorus Recommendations

NCD&CS Agronomic Division Phone: (919)733-2655 Web Site: Report No:



Soil Test

3/15/2010

SERVING N.C. RESIDENTS FOR

Alamance County

Grove

Copies

Agronomist

B -- 4

Field		Applied		Recommendati											
Sample	Last	Mo	Yr	Crop or Year	Lime	N	P ₂ O ₅	K ₂ O	Mg	S	Cu	Zn	B	Mn	See Note
FRONT				1st Lawn	120M	(7.0 lbs 15-0-14 or EQUIV PER 1000 SQ 0							.0		4
				2nd						0			.0		

Test Results

Soil	HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-Al(1	Mn-Al(2	Zn-I	Zn-Al	Cu-I	S-I	SS-I	NO ₃ -	NH ₄ -	Na
MIN	0.60	1.32	6.4	47.0	3.4	4.2	287	28	32.0	12.0	112			88	88	133	71				0.1

Field		Applied		Recommendati											
Sample	Last	Mo	Yr	Crop or Year	Lime	N	P ₂ O ₅	K ₂ O	Mg	S	Cu	Zn	B	Mn	See Note
BACK				1st Lawn	115M	(1.0 lbs Nitrogen or EQUIV PER 1000 SQ 0							.0		4
				2nd						0			.0		

Test Results

Soil	HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-Al(1	Mn-Al(2	Zn-I	Zn-Al	Cu-I	S-I	SS-I	NO ₃ -	NH ₄ -	Na
MIN	0.60	0.96	9.7	65.0	3.4	4.4	372	57	43.0	19.0	116			265	265	113	86				0.1

Zinc and Copper Can Be Toxic

NCD&CS Agronomic Division Phone: (919)733-2655 Web Site: Report No:



Soil Test

Grower: [Redacted]

Copies: [Redacted]

9/9/2010

SERVING N.C. RESIDENTS FOR

Far

Orange County

Agronomist

A -- 3, \$

ATTENTION: This report was flagged with a "C" and/or "Z" to alert you that copper and/or zinc have accumulated in the soil and are approaching a level that could be detrimental to crop production. The C and Z symbols are printed on your report for soil test index levels of 2000 or more; for peanuts with zinc, the level is 300. This note is designed to be a "trigger" that allows enough time to either reduce the rate of application or find another field for application of biosolids and/or waste water. The CTL (critical toxic level) for Cu & Zn has been set at 3000 index; for peanuts with zinc, the level is 500. These levels are used by DENR as a benchmark to determine when application of waste products should be stopped. The CTL for copper and zinc was set to prevent levels from accumulating to the point where they become toxic to crops grown on a field.

David H. Hardy, Agronomist
March 23, 2010

Field		Applied		Recommendati												
Sample	Last	Mo	Yr	Crop or Year		Lime	N	P ₂ O ₅	K ₂ O	Mg	S	Cu	Zn	B	Mn	See Note
ADD1				1st	Corn Grain	0	120-160	50-70	80-100	0	15-20	0	0	0	0	3
				2nd	Soybeans	0	0	50-70	80-100	0	15-20	0	0	0	0	3

Test Results																					
Soil	HMP%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-A1(1)	Mn-A1(2)	Zn-I	Zn-A1	Cu-I	S-I	SS-I	NO ₃ -	NH ₄ -	Na
MIN	0.32	0.89	7.9	89.0	0.9	6.3	33	25	63.0	24.0	73	56	49	129	129	200	25				0.1

Field		Applied		Recommendati												
Sample	Last	Mo	Yr	Crop or Year		Lime	N	P ₂ O ₅	K ₂ O	Mg	S	Cu	Zn	B	Mn	See Note
ADD2				1st	Corn Grain	0	120-160	20-40	60-80	0	0	0	0	0	0	3
				2nd	Soybeans	0	0	20-40	60-80	0	0	0	0	0	0	3

Test Results																					
Soil	HMP%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-A1(1)	Mn-A1(2)	Zn-I	Zn-A1	Cu-I	S-I	SS-I	NO ₃ -	NH ₄ -	Na
MIN	0.27	0.91	8.8	90.0	0.9	6.1	46	34	62.0	26.0	86	67	60	131	131	133	31				0.1

Turf Nutrient Management

- Is turf a crop?
- Is turf a significant crop in the Jordan Lake watershed?
- Is turf expanding?
- How many native turf grasses do we grow?
- Does turf require special management?




Turf Selection

- NC is turf transition zone
- Cool season and/or warm season grasses possible depending on location
- Most grass in Jordan Lake River Basin is fescue

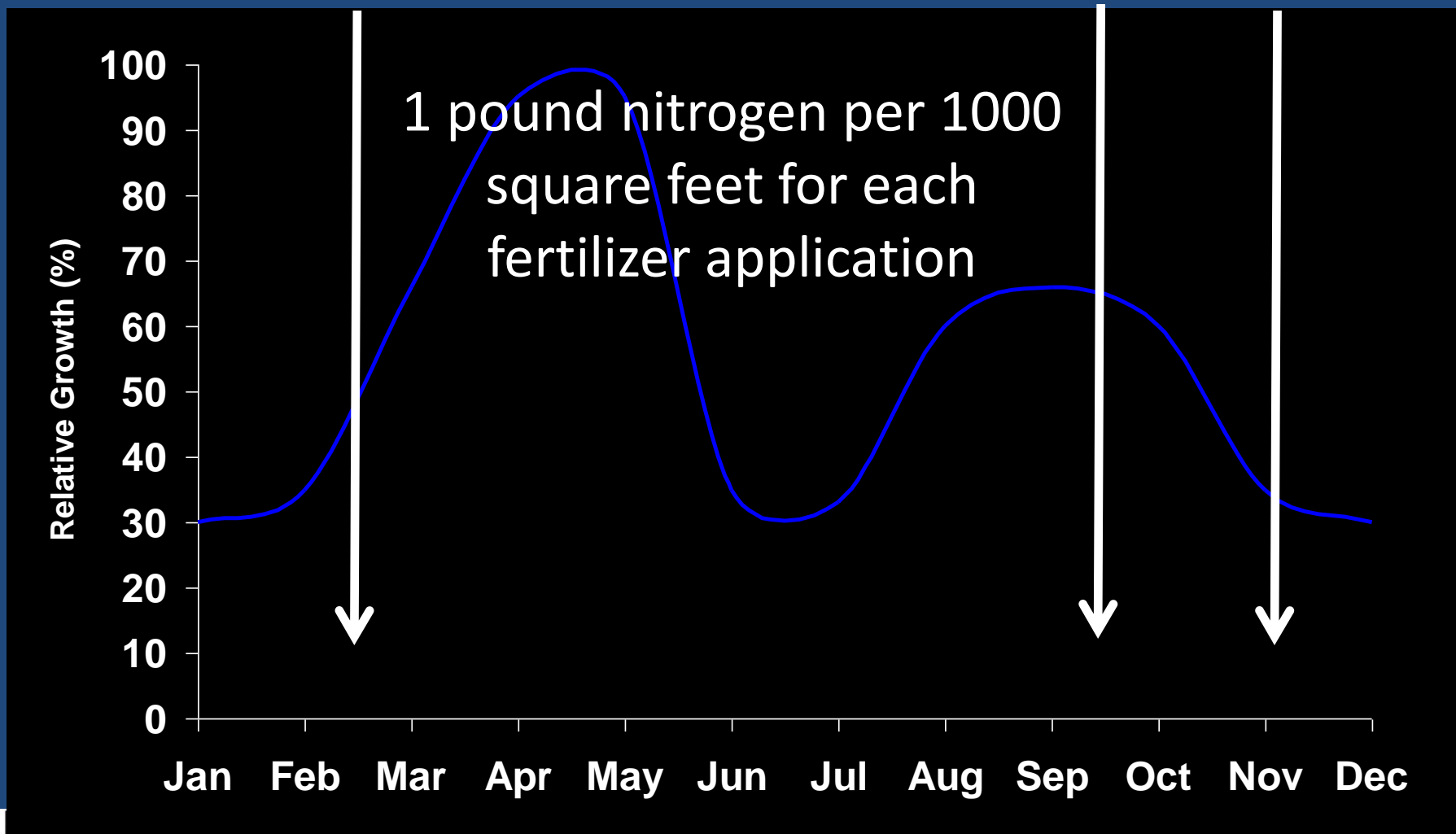


Soil Test to Determine Fertilizer Amounts for Phosphorus, Potassium, and Lime

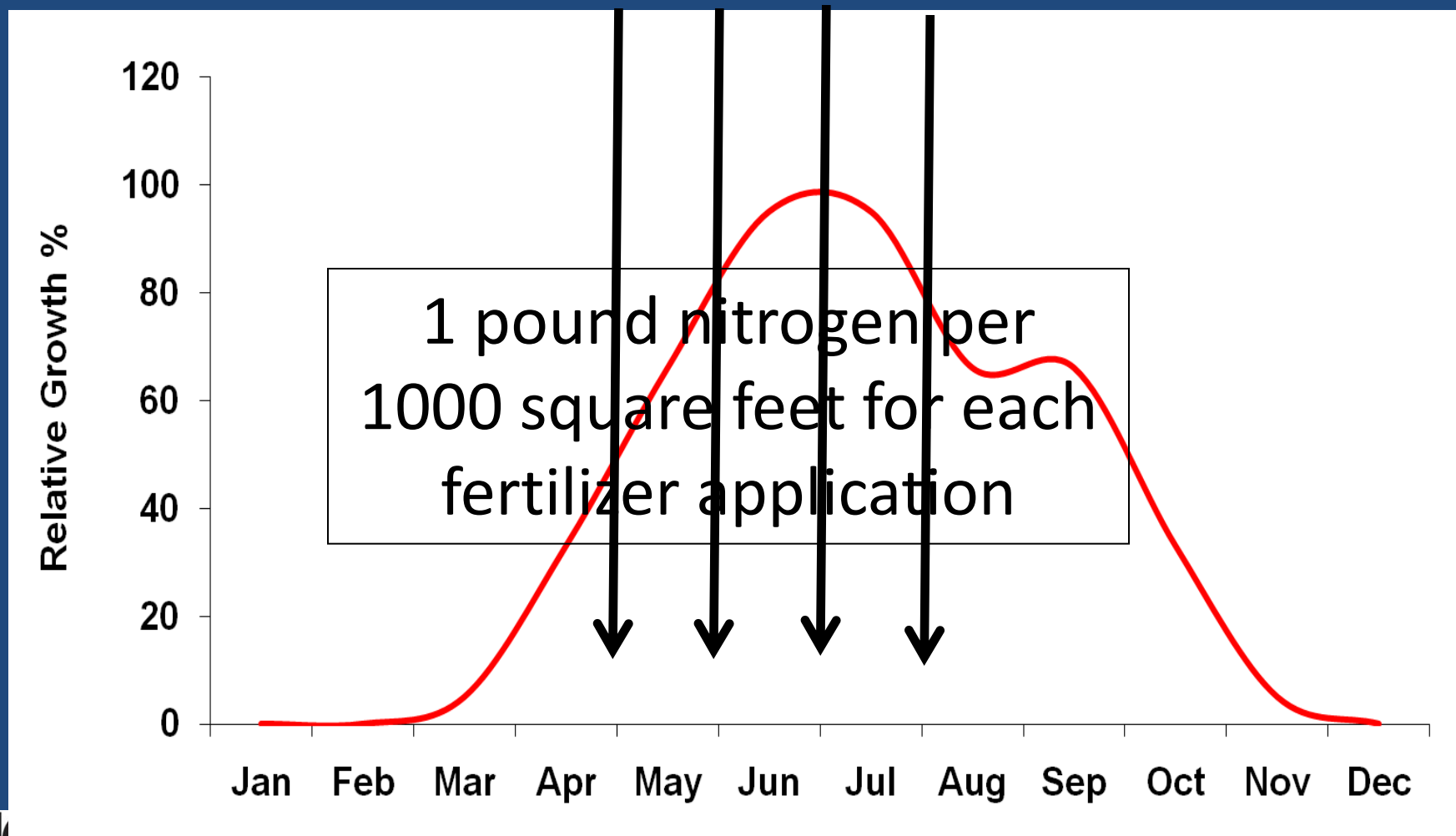
NCDA&CS Agronomic Division Phone: (919)733-2655 Web site: www.ncagr.gov/agronomi/										Report No: 21996											
 <h2 style="margin-left: 150px;">Soil Test Report</h2>										Grower:					Copies To:						
01/14/2009 SERVING N.C. RESIDENTS FOR OVER 60 YEARS										Farm: Wake County											
Agronomist Comments 4																					
Field Information		Applied Lime			Recommendations																
Sample No.	Last Crop	Mo	Yr	T/A	Crop or Year	Lime	N	P ₂ O ₅	K ₂ O	Mg	S	Cu	Zn	B	Mn	See Note					
LORD1					1st Crop: Lawn	0	(1.0 lbs Nitrogen or EQUIV PER 1000 SQ FT)								.0		4				
					2nd Crop:						0				.0						
Test Results																					
Soil Class	HM%	W/V	CEC	BS%	Ac	pH	P-I	K-I	Ca%	Mg%	Mn-I	Mn-Al(1)	Mn-Al(2)	Zn-I	Zn-Al	Cu-I	S-I	SS-I	NO ₃ -N	NH ₄ -N	Na
MIN	0.60	0.90	10.5	86.0	1.5	5.9	65	115	64.0	17.0	201			178	178	72	49				0.2

Does this lawn need Phosphorus? Potassium? Lime?

Nitrogen Fertilizer Rate and Timing: Fescue



Nitrogen Fertilizer Rate and Timing: Bermuda grass



Fertilizer Types

- Grades: N, P₂O₅, K₂O (23-3-3)
- Homogeneous granular (ammoniated)
 - Premixed grades (27-3-3)
 - Uniform (10-10-10)
- Bulk Blend
 - Physical blend of basic materials:
NH₄NO₃, DAP, KCl others

Nitrogen Fertilizer Sources Physical Form and Analysis

Source	% N	Form
Anhydrous	82	Pressurized Gas
Urea	46	Granular
Ammonium nitrate	34	Granular
UAN (urea-ammonium nitrate)	28-32	Liquid
Ammonium sulfate	21	Granular
Sodium nitrate	16	Granular

Phosphorus Fertilizer Sources

Physical Form and Analysis

Source	% P ₂ O ₅	Form
Normal super phosphate	16-22 (11-12S)	Gran.
Triple super phosphate	44-53	Gran.
Monoammonium phosphate (MAP)	48-62 (11-13 N)	Gran.
Diammonium phosphate (DAP)	46-53 (18-21 N)	Gran.
Ammonium polyphosphate (APP)	35-62 (10-15 N)	Liq.

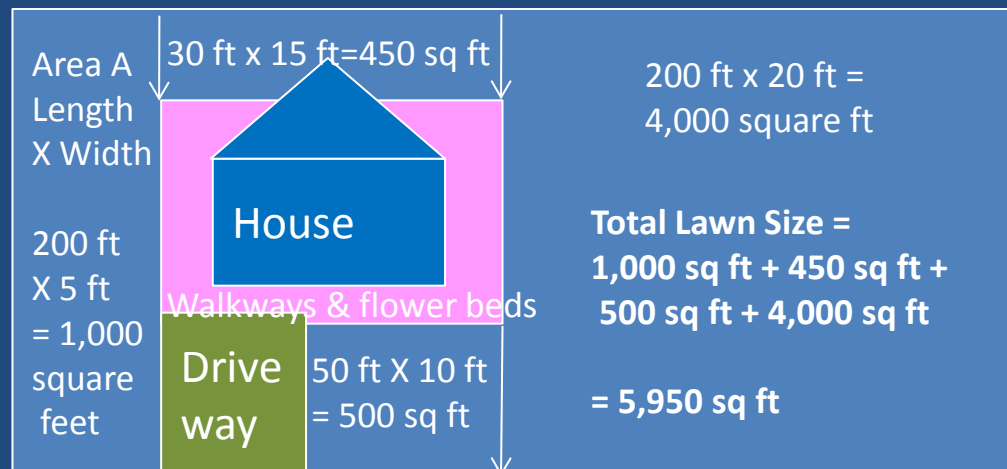
Potassium Fertilizer Sources

Physical Form and Analysis

Source	% K ₂ O	Form
Potassium chloride	60	Gran.
Potassium sulfate	50 (17)	Gran.
Potassium nitrate	(13) 44	Gran.
Potassium magnesium sulfate	22 (22,11)	Gran.

Calculate Granular Fertilizer for Turf

- Need 1 lb nitrogen per 1,000 square feet
- Measure the number of square feet in your lawn.



Calculate Granular Fertilizer for Turf

- Calculate your lawn area in 1,000 square feet
 - 5,950 square feet of lawn/1,000 square feet lawn for your recommendation) = 5.95
 - $5.95 * 1 \text{ lb nitrogen per } 1,000 \text{ square feet} = 5.95 \text{ lb nitrogen/1,000 square feet needed}$
- What fertilizer will you use based on total nutrient needs?
 - 22-0-11 is available (0.22 lb N per lb of fertilizer)
- How much fertilizer do you need to apply if you are using 22-0-11?

5.95 lb of nitrogen

0.22 lb nitrogen per 1 lb fertilizer

= 27 lb of 22-0-11 fertilizer for the lawn

For Help On Nutrient Management, Call Your County Cooperative Extension Office

- Alamance (336) 570-6740
- Caswell (336) 694-4158
- Chatham (919) 542-8202
- Durham (919) 560-0525
- Guilford (336) 375-5876
- Orange (919) 245-2050
- Rockingham (336) 342-8230
- Wake (919) 250-1100

<http://www.ces.ncsu.edu/index.php?page=countycenters>