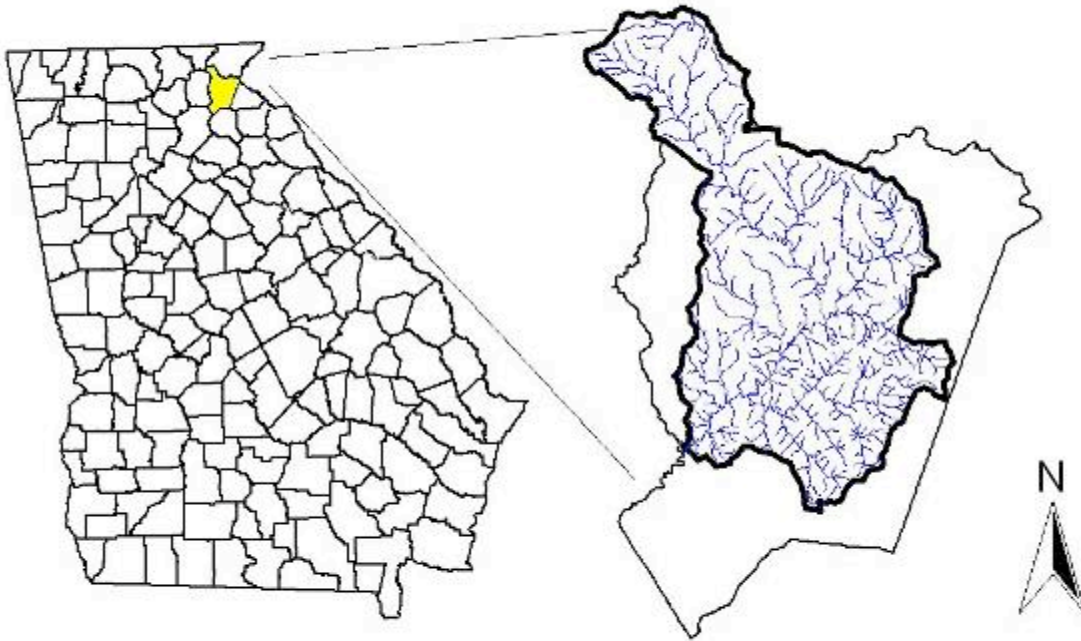


Local planning and implementation for watershed protection: The Soque Partnership in Habersham County

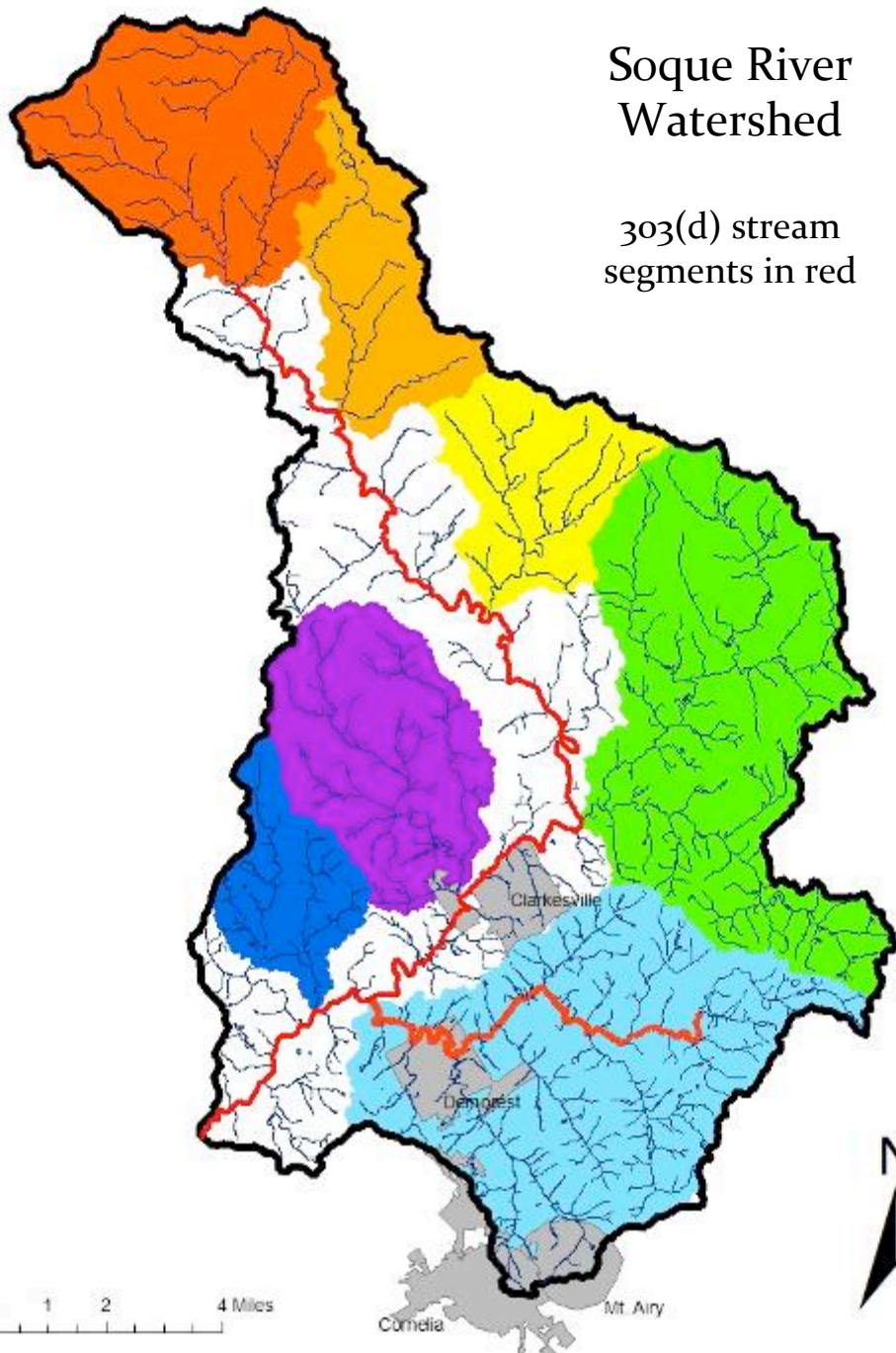
Georgia Planning Association

May 12, 2011

Watershed Location



- 160 square miles
- Tributary to Chattahoochee River
- Beneficial uses



Background

- 303(d) listed streams
 - fecal coliform
 - biological (sediment)
- 319(h) grants
 - assessment
 - protection plan
 - implementation

Soque Partnership



Objectives

- Perform a comprehensive baseline watershed assessment
- Characterize non-point source (NPS) pollution inputs in the watershed
 - bacteria
 - sediment
 - stormwater
- Build consensus about water protection practices
- Develop a watershed protection plan
- Implement the plan
- Document water quality improvement

We in the Soque are not alone...

- U.S. EPA National Water Quality Inventory (2009)
 - 72,305 stream miles do not meet state water quality standards for pathogens
 - 29% of all impairment
- Georgia EPD 305(b)/303(d) list (2010)
 - 4,320 stream miles 303(d) listed for pathogens
 - 55% of all impairment
- Sediment / biological impairment

Fecal coliform

Indicator of pathogen presence – cheap and easy

- Sources

- stormwater (urban) runoff
- leaking/broken sewer lines
- domestic pets
- livestock
- failing septic systems
- illegal connections
 - straight pipes
 - combined sewers
 - downspouts
- wildlife



Credit: Alan Cressler

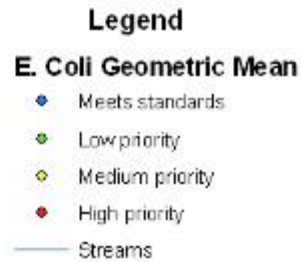
- Implications

- human health (primary contact recreation)
- environment (aquatic life)

Success with bacteria

- Identification of bacterial “hot spots”
 - consistently high levels over time
- Prioritization of corrective action locations
 - based on data and accessibility
- Implementation of management/protection measures
 - e.g. best management practices
- Documentation of water quality improvements
 - routine monitoring
- Attainment of water quality standards
 - fecal coliform

Bacteria Data 2005-2010



Hot spot ID

- *E. coli* as indicator
- Quarterly samples at 75 locations
- Collected by subwatershed
- Minimize spatial and temporal variation

Farm projects

- 16 farm conservation plans:
 - 765.1 acres under contract;
 - 46,442 linear feet of exclusion and cross fencing;
 - 111,756 square feet of HUA;
 - seven stream crossings;
 - six water wells;
 - Approximately 549 animals (predominantly beef cattle) have been excluded from surface waters.



To delist for bacteria...

- Sixteen grab samples are required, specifically:
 - four samples collected within a 30 day period;
 - over four calendar quarters;
 - to calculate four geometric means;
 - that meet WQ standards



Sampling to delist

- To minimize potential bias, all samples were:
 - collected at the same location;
 - on the same day of the week;
 - at approximately the same time of day;
 - regardless of weather conditions
- Samples were transported to the city of Clarkesville WWTP for fecal coliform analysis
 - certified laboratory analysts

Sediment



Stormwater management

- Raingardens = infiltration
- Rainwater harvesting
- Site design



Rain Garden Construction









The Clarkesville Greenway



Model of Better Stormwater Management



Some models exist

Some we have to build from
scratch.

Purpose of Community Garden

- Way to expand use and enjoyment of the Greenway
- Tool for teaching sustainability
- To preserve Habersham County's agricultural heritage
- Demonstration project for native plants, water conservation, soil building and soil conservation.
- Place to teach organic gardening / farming principles
- Way to increase the availability of local organic food
- Great Activity for meeting people and creating community





Learning to Grow

3 more ways



In a greenhouse
from seed to plant



On a
streambank
to hold soil in
place



On barren
soil
-
reclamation
and
rebuilding

Fairview Elementary



June 20th, 2010





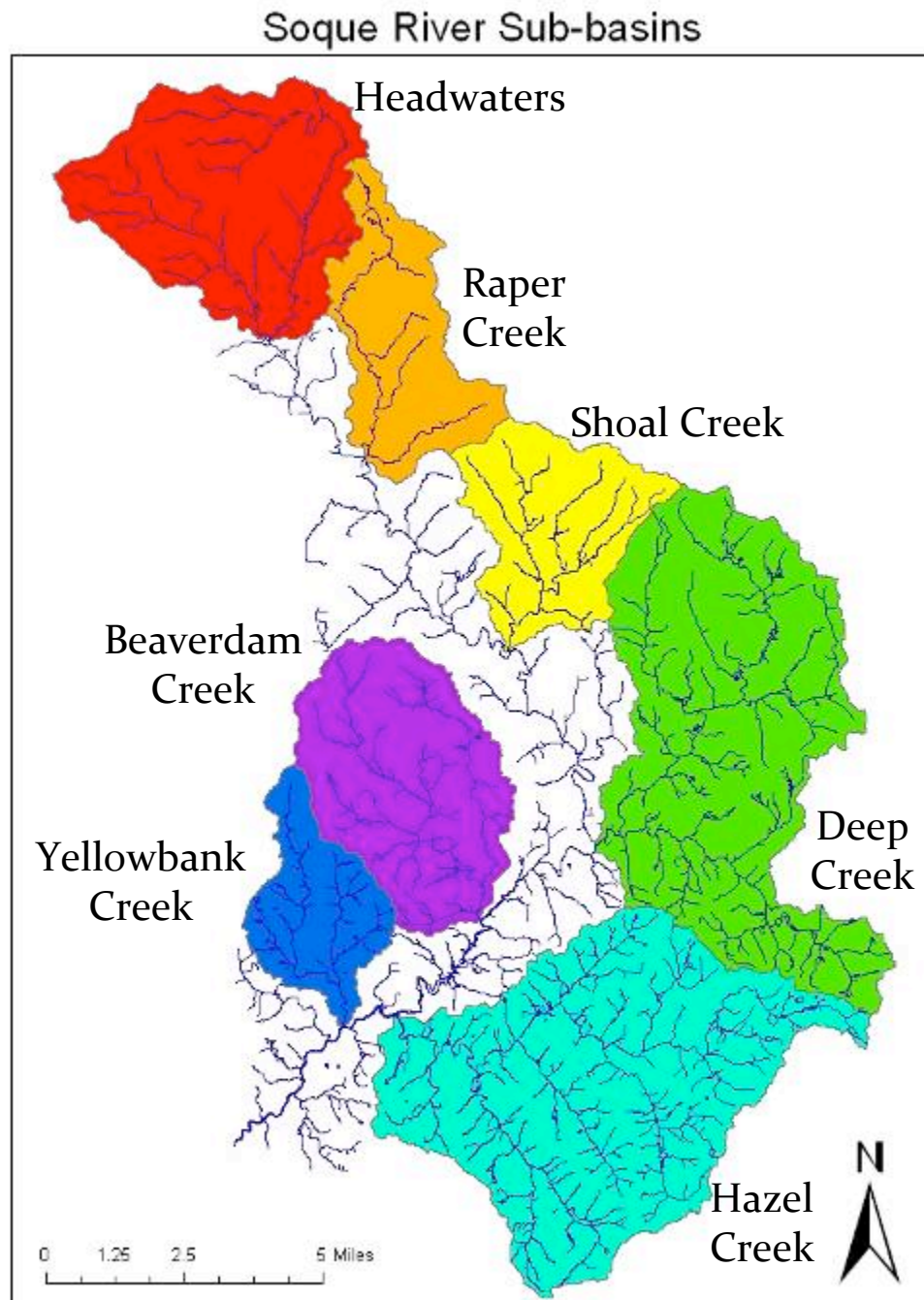
June 20th, 2010

Assessment - building watershed science

Protection begins with understanding the problem

Landcover for subwatersheds of the Soque River

Sub-watershed	Area Square miles	% Forest	% Agriculture	% Urban
Headwaters	17.3	90.9	5.4	3.1
Raper Creek	9.6	91.2	4.2	3.7
Shoal Creek	9.8	82.9	5.9	6.5
Deep Creek	30.2	57.5	23.6	11.3
Beaverdam Creek	14.6	59.7	23.7	7.5
Hazel Creek	31.9	46.8	24.5	16.3
Yellowbank Creek	6.7	48.3	28.9	7.9
Total Watershed	159.8	64.3	18.3	9.6

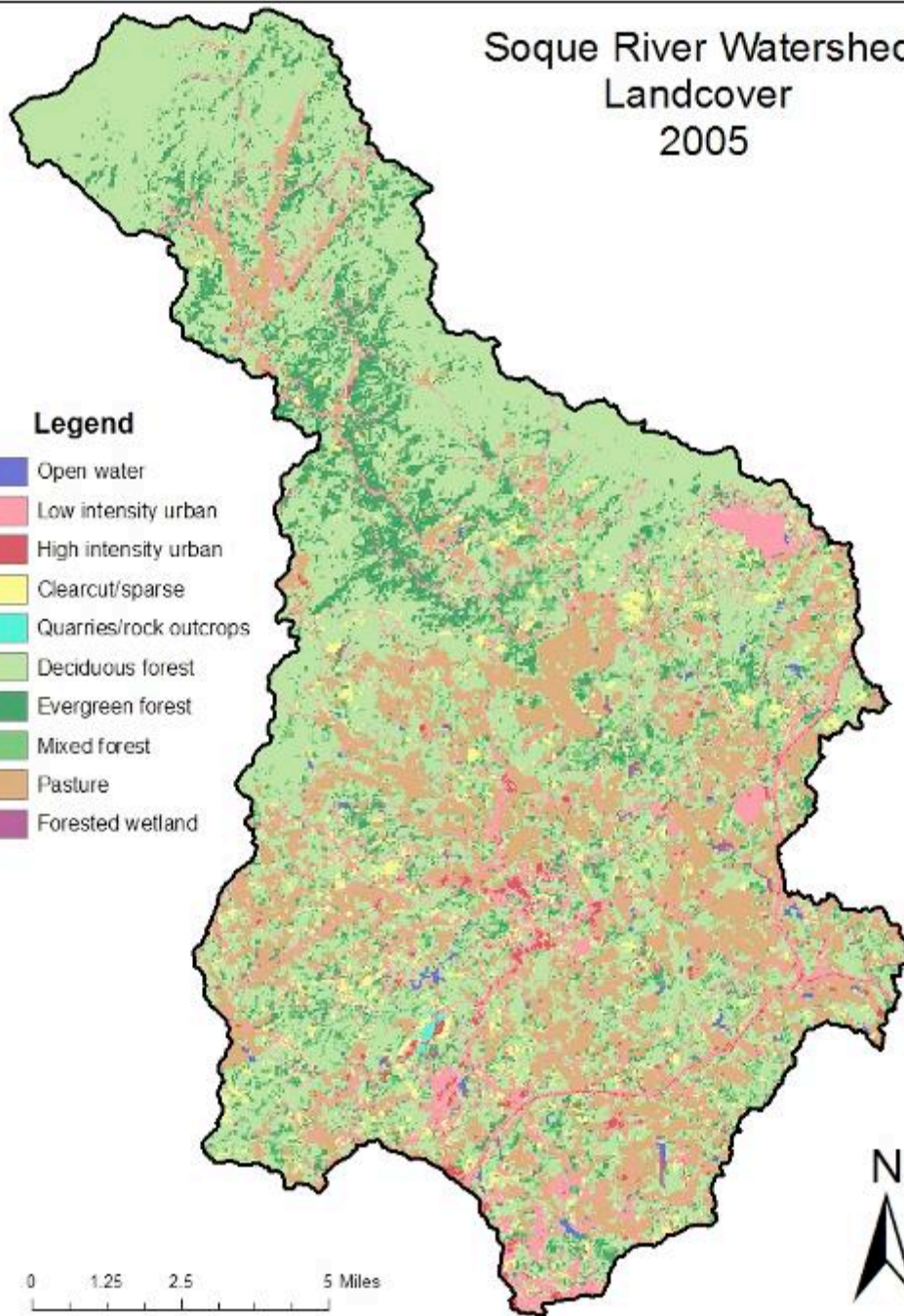


Soque River Watershed Landcover 2005

Legend

- Open water
- Low intensity urban
- High intensity urban
- Clearcut/sparse
- Quarries/rock outcrops
- Deciduous forest
- Evergreen forest
- Mixed forest
- Pasture
- Forested wetland

0 1.25 2.5 5 Miles



Educational activities

- **6th Grade Water Field Days (2)** have been held, hosting a total of more than 500 students;
- **Middle School Water Quality Summer Camps (2)** (1 week long) have been held with 22 students attending;
- **Brochures** have been developed and distributed on:
 - Raingardens
 - Rainbarrels
 - Cattle exclusion projects

***Public meeting November 18,
2010 – Courthouse @ 7:00 p.m.**

6th Grade Field Day

- 280 students
- 12 stations



Summer Day Camp 7th-8th Grade







Southeast Watershed Forum

Model Water Quality Projects and Codes that Encourage them

What are your challenges?



Stormwater problem in downtown
Cornelia

What are your successes?



Stormwater problem in downtown
Cornelia

Building Land Based Economies

Locally Grown
Market



Northeast GA Locally Grown

Safari File Edit View History Bookmarks Window Help Northeast, Ga. — LocallyGrown.net

http://northeastgeorgia.locallygrown.net/market

Search: x-men first class

(1663 unread) Yahoo! M... Donkey Kong Country - ... Northeast, Ga. — Locally... Northeast, Ga. — Locally... Netflix Taking Screenshots in ...


- Prepared Foods (0)
- Processed Foods (0)
- Seeds (0)
- Vegetables (7)
- Bath & Beauty (8)
- Books, Etc. (0)
- Candles, Etc. (0)
- Emu Oil (0)
- Farm Crafts (0)
- Gardening Supplies (0)
- Holiday Decorations (0)
- Pet Care (1)
- Wood (0)
- Event Reservations (0)
- Gift Certificates (1)


Display Options

- Hide New Products
- Show Order History
- Show Specific Growers
- Subscribe to an RSS Feed


All Products


Search by all or part of product name: Search!




[edit](#) **10 Grain Bread 1/2 Loaf** [Edit Product](#)
Grower: Brookside Farms Homemade [Copy Product](#)
Price: [edit](#) \$2.75 (**Market Surcharge:** [edit](#) \$0.0) ([edit](#) 9 oz.) [Make Unavailable](#)
Available (Exact): [edit](#) 1 [Add to cart:](#) 
[Add Nutritional Info](#)


Good to the last slice. Helen GA Nora Mill products (their special blend 10 grain cereal and coarse stone ground ... [more](#)



[edit](#) **10 Grain Full Size Loaf** [Edit Product](#)
Grower: Brookside Farms Homemade [Copy Product](#)
Price: [edit](#) \$5.5 (**Market Surcharge:** [edit](#) \$0.0) ([edit](#) 1 lb. 3 oz.) [Make Unavailable](#)
Available (Exact): [edit](#) 4 [Add to cart:](#) 
[Add Nutritional Info](#)

Good to the last slice. Helen GA Nora Mill products (their special blend 10 grain cereal and coarse stone ground ... [more](#)



[edit](#) **10 Grain Rolls** [Edit Product](#)
Grower: Brookside Farms Homemade [Copy Product](#)
Price: [edit](#) \$6.75 (**Market Surcharge:** [edit](#) \$0.0) ([edit](#) 11 oz) [Make Unavailable](#)
Available (Exact): [edit](#) 1 [Add to cart:](#) 
[Add Nutritional Info](#)

Same recipe as the 10 grain half loaf bread. Helen GA Nora Mill products (their special blend 10 grain cereal ... [more](#)

These Projects Share One Thing



Community Garden



Streambank planting



Rain Gardens



Site stabilization
of school sites



Local Food Market



Greenhouse
propagation of organic
starts, rain garden and
streamside plants

Conclusions

- Local involvement
- Data
- Funding
- Watershed approach
- Process
 - ID causes
 - Prioritize
 - Implement
 - Monitor



Questions

- Duncan Hughes
dhughes@northgatech.edu

