Comparing the Influence of the Swift Creek/Middle Creek Homeowners Association and the Umstead Coalition in Altering Land Use Decisions

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Abstract

This study utilizes a comparative case study method to evaluate the influence of two non-profit organizations active in the mid-1990s on land use decisions. In Wake County, North Carolina, the Middle Creek/Swift Creek Community Alliance and the Umstead Coalition worked to protect a parcels of land considered critical for environmental integrity and water quality. The Middle Creek/Swift Creek Community Alliance was focused on enforcing building regulations for the drinking water watershed and the Umstead Coalition defeated the building of a connector road, the Duraleigh Connector, through the Richland Creek cooridor.

Each organization was evaluated from the perspectives of context, activities and outcomes achieved. Organizational histories and land use histories set the context for conflicts over development in watersheds that were considered environmentally sensitive. A narrative of the conflicts was then developed primarily from newspaper accounts. Using a policy science framework to map the social processes involved in each case, the outcomes were evaluated in terms of relationships between decision makers and organizations. As a final analysis, the outcomes were compared against each other to answer questions about the effectiveness of the activities.

The results of the self-assessment were mixed. One organization expressed frustration and ineffectiveness while the other perceived success. In both of these cases, the effectiveness of actions to stop specific projects was evaluated differently even though in both cases the protested projects were not built. Effectiveness appears to be linked to four parameters: (1) Size of the issue - If the issue a narrowly defined project, like a road or dam, an organization can be very effective at influencing the policy process. However, if the issue a long-term, regional wide issue like watershed water quality protection, there does not appear to be the ability to control the outcomes. (2) Size of the organization – The size of the organization directly affects the influence of an organization. A larger membership has more avenues of contact to the decision makers and they are able to leverage those relationships to get a voice at the decision table. (3) Communication techniques – Dialogue that brings about viable solutions rather than

polarizing positions tends to encourage discourse and bring legitimacy to the decision making process. (4) Use of science – Scientific information was not used in the process to develop viable alternatives. Rather, the tendency was use it to support pre-formed positions. The critical parameter appears to be the size of the membership. A large, well-connected membership has many avenues through which it can pursue influencing the decision making process.

How well an organization manages these parameters can alter the outcomes if the activities lead to achieving a focused objective, such as stopping a road or advocating for a particular solution. However, when a broader objective, such as the protection of watershed water quality, is the goal, organizations tend to have difficulty achieving their outcomes. In each case discussed, when the broader goal of watershed water quality was evaluated, both watersheds were labeled impaired and unable to support the intended biotic functions. This calls into question the ability of non-profit organizations to protect environmental integrity.

Acknowledgements

I wish to thank my advisory committee, Dr. Gary Blank, Dr. Stacy Nelson and Dr. Sarah Warren, for their assistance and guidance in directing my studies: Dr. Blank for the consistent questioning, probing and guiding to clarify issues and broaden my exposure to related areas; Dr. Nelson for providing the GIS data and generous access to Bennett Hawley; and Dr. Warren for her patience and coaching, guiding me through the painful process of organizing my ideas into more structured thinking.

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Table of Acronyms

CAMPO	see Capital Area Metropolitan Planning Organization
CATAC	see Capital Area Transportation Advisory Committee
CATCC	see Capital Area Technical Coordinating Committee

Capital Area Metropolitan Planning Organization (CAMPO) – Wake county planning organization consisting of representatives of 12 municipalities, Wake County and DOT. Its purpose is to serve as a coordinating agency between local governments, NCDOT and Federal Highway Administration (FHWA). It is comprosed of: Transportation Advisory Committee (CATAC), Technical Coordinating Committee (CATCC), and staff.

Capital Area Transportation Advisory Committee (CATAC) – also referred to as Wake County Transportation Advisory Committee, is an advisory committee of 16 members. Develops and directs comprehensive transportation planning and advises CAMPO on status of needs identified through the plan.

Capital Area Technical Coordinating Committee (CATCC) – committee of 30 members including technical representatives from state and local governments to advise CATAC on matters regarding transportation planning.

DWQ	NC Division of Water Quality
EIS	Environmental Impact Statement
EMC	North Carolina Environmental Management Commission
ESA	Raleigh Entertainment and Sports Arena, now known as the Royal Bank of Canada Center or RBC Center
FHWA	Federal Highway Administration
MC/SC Alliance	Middle Creek Swift Creek Community Alliance
NCDOT	North Carolina Department of Transportation
NPO	Non-profit organization, term is also used to describe the MC/SC Alliance which is incorporated as a citizen's corporation but governs itself as a non-profit.
NPS	National Park Service

Project U-2110	NCDOT's official project number for the Duraleigh Connector
SFONSI	State Finding of No Significant Impact
SEA	State Environmental Assessment
SCLMP	Swift Creek Land Management Plan
TLC	Triangle Land Conservancy
TIP	see Transportation Improvement Plan
Transportation Advisory Committee	see Capital Area Transportation Advisory Committee.
Transportation Improvement Plan (TIP)	- State Board of Transportation updates and issues this seven-year highway construction plan.
Umstead Coalition	Nonprofit organizations focused on the protection of Umstead Park
Wake County Commissioners	Wake County local governing body, composed of elected representatives
Wake County Transportation Advisory Committee	see Capital Area Transportation Advisory Committee.
WSWS	Water Supply Watershed
WS-I, II, III, IV	Watershed classification system used by NC Division of Water Quality to rank watersheds. Development is the most restricted in WS-I and least restricted in WS-IV. Each watershed has a critical area which is the land within ½ mile upstream and draining into a river intake. For full explanation go the NC Division of Water Quality website http://h2o.enr.state.nc.us/wswp/wsclasses.html.

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Introduction

Growing Concern over Water Quality

Concern about degradation of environmental systems came to the public forefront in the 1970s. Many highly visible events such as the publication of Rachel Carson's *Silent Spring* (1962*)*, the linking of DDT to weakened bird eggshells (1969), and the Cuyahoga River fire (1969), were forces supporting the rise of the environmental awareness in mainstream America. These events prodded action at the Federal level in the passage of the National Environmental Protection Act in 1969 and subsequent formation of the Environmental Protection Agency in 1970. At a more local level, North Carolina passed the 1973 Sedimentation and Erosion Control Act giving the state authority to regulate construction in an effort to reduce sediment pollution and to protect drinking water. This legislation was followed with the passage of the 1979 Safe Drinking Water Act giving the state primary jurisdiction over drinking water standards. In 1980, the NC Department of Natural Resources released a report, *Promoting Lake Quality Through Local Land Use Management and Control* (The Center for Urban and Regional Studies 1980), that identified urbanization as the major cause of water degradation. With urbanization clearly linked to degradation of water quality, the impacts of growth in Raleigh came under greater review.

Urbanization

From 1970 through 2003, the Raleigh-Durham-Chapel Hill region experienced an average annually compounded population growth rate of approximately 2.7%. In the mid-1980s the growth rate increased to approximately 3.1% and by the mid-1990's, the region was experiencing an annually compounded population growth rate of approximately 3.5% (Real Estate Center 2004). As housing and road development increased to serve the growing population, natural areas originally planned as open space or for low-density building were targeted for development. Along with the development came the degradation of the quality of water resources.

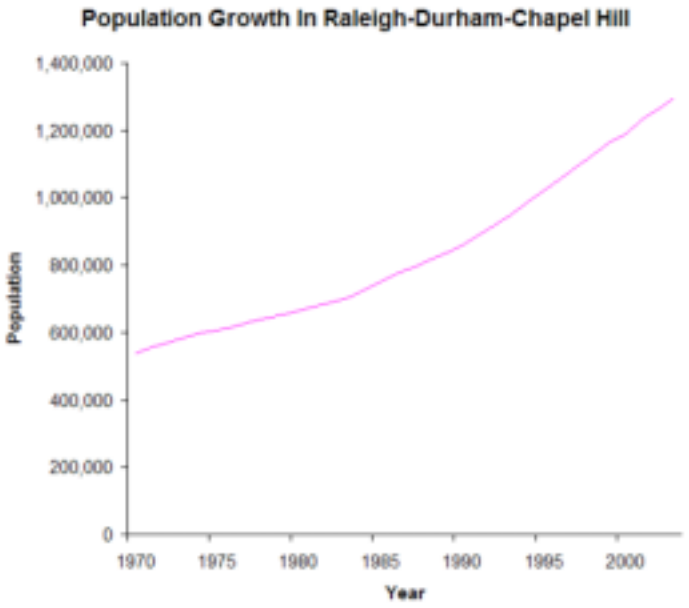

Figure 1. Population Growth
(Source: Real Estate Center 2004)

Citizen Response

In response to the degradation of water resources linked to urbanization, citizen groups formed to attempt to influence land use decisions and thereby protect water quality and natural areas. The monitoring, management and policy making process resided in the county commission, city councils or joint area-wide commissions such as the Capital Area Metropolitan Planning Organization (CAMPO). Many citizens felt these decision-making bodies were biased toward the development industry and, that the citizens concerns were not being heard. The citizen groups hoped to counter the perceived bias that had emerged in the decision making process.

Many of the groups formed as nonprofit organizations or citizens corporations and focused on community education and community involvement in policy decisions. In the 1990s in Wake County, North Carolina, two such organizations were actively working to alter land use decisions: the Middle Creek/Swift Creek Community Alliance (MC/SC Alliance) and the Umstead Coalition. Working in different watersheds within the county, both organizations intervened to alter land use decisions. In both cases, the specific uses they fought against were stopped, though for the MC/SC Alliance the stoppage was not directly attributable to their actions. Moreover, in both cases, later studies by the NC Division of Water Quality described both watersheds as impaired.

Why did the Umstead Coalition consider its activities effective? Why did MC/SC Alliance consider its activities ineffective? What criteria are used to assess effectiveness and are those criteria appropriate? These questions prompted an inquiry into effectiveness.

Evaluating Citizen Organization Effectiveness

Effectiveness is determined by measuring the results achieved against the stated objectives. The goal of this research is to identify the parameters linked to a citizen organizations' ability to effectively influence the land use policy decision-making process.

To accomplish this objective, a comparison of two NPOs, the MC/SC Alliance and the Umstead Coalition, was performed. The MC/SC Alliance was active in the Swift Creek watershed and the Umstead Coalition was active in the Richland Creek watershed. In comparing the activities in these two watersheds, an analysis of the role a non-profit organization (NPO) plays in the land use decision-making process provides insight and guidance to organizations attempting to effect public policy.

The comparison focuses on inquiry into the three areas: context, activities and results. Within each of these areas of inquiry, several questions were asked.

- What is the context in which the organization forms? Who are the founders and members? What issues are the focus of the organizations activities?

- What are the actions and activities of the organization? What goals does the organization set? What are the tactics employed to achieve these goals?

- What are the results of the organizations' activities? Did they meet their stated goals?

From the findings in these areas of inquiry, an overall assessment of effectiveness was derived. In order to assess effectiveness, a representative of each organization was asked to rate their effectiveness. The responses determined how an organization measures its success. Then the individual assessments were compared and areas of commonality and variance are discussed.

Conclusions and Observations

After comparing the patterns and processes of the NPO activities, sources of variation and commonality affecting processes and outcomes were identified. Then the relationship between these parameters and effectiveness was explored. Four parameters were identified as influencers:

- Scale of Issue – If the issue a narrowly defined project, like a road or dam, an organization can be very effective at influencing the policy process. However, if the issue a long-term, regional wide issue like watershed water quality protection, there does not appear to be the ability to control the outcomes.

- Size and Connectedness of Organization – The size of the organization directly affects the influence of an organization. A larger membership has more avenues of contact to the decision makers and they are able to leverage those relationships to get a voice at the decision table.

- Communication Tactics – Dialogue that brings about viable solutions rather than polarizing positions tends to encourage discourse and bring legitimacy to the decision making process.

- Use of Scientific Information – Scientific information was not used in the process to develop viable alternatives. Rather, the tendency was use it to support pre-formed positions.

Project Design and Methods

Untangling the complexity of environmental resource conflicts required the use of multiple research tools. The comparative case study method was utilized in creating a narrative for each NPO. Then land use classification imagery was used to estimate land use changes and to verify NPOs achievements in the watersheds. I then applied an analytic framework from the policy sciences as defined by Clark (Clark 2002) to understand interactions during the policy decision-making process. Finally, interviews were conducted to confirm the findings of the social mapping and to obtain a self-assessment of organizational effectiveness.

Validity of the case study method rests on four criteria outlined by Yin (Yin 2003:34-39): construct validity, internal validity, external validity, and reliability. Construct validity establishes the operational measures and is addressed by selecting and limiting this study to the NPOs' role played in influencing land use decisions and then comparing their stated objectives against the final disposition of the two watershed sites. The internal validity concern involves establishing causal relationships and is addressed through the use of Clark's policy science framework of the social process to map participants and show interactions. External validity, which deals with the extent to which findings can be generalized, is addressed by the construction of the two-case design. There are limits to external validity in this study, as only two cases are compared. The final criterion of reliability or repeatability is addressed by documenting and making available all source documents.

Yin (Yin 2003:52) suggests the comparative case study brings the added benefit of incorporating the concept of replication in the design and provides a mechanism in which variation can be addressed and explored. Thus by comparing the activities of the NPOs and the outcomes in respect to their stated objectives, it is expected that any variances can be analyzed.

Creating the Narratives

To set the context, establishing a brief land use history for the study areas is helpful in order to understand how the properties came to their condition at the time the conflicts over land use developed. For Richland Creek, this history was well documented and was summarized from various planning documents and Umstead Park histories. The Swift Creek watershed history was not as well developed, but an initial history was developed through research at the state archives.

Histories of the two NPOs were constructed to set the context of the organizations, providing insight to the organizational characteristics of each, through the use of newspaper articles, internal organizational newsletters and other internal publications and websites. These histories set the context necessary in understanding the perspectives of the various participants and help identify and explain organizational behaviors. In his summary, Perrow (1979:260) states that organizations are tools used by the leaders to obtain valued outcomes, indicating that it is the leaders and not the individuals within the organization who are key in understanding organizational behavior. Therefore understanding the histories, especially the formation events and role of the leaders, is critical in gaining insight to the organization's rationale.

Newspaper articles from the *News and Observer*[1], the area's paper of record, were utilized to develop a narrative of the activities, actions and outcomes in these two watersheds. From this reporting, a general narrative of the developing the issues surrounding these watersheds was created and key relationships and associations identified. From this narrative, the lead personalities emerged, an interviewee list developed, and specific clarifying questions formulated.

[1] The predecessor to the *News and Observer* was *The Raleigh Times.* The final edition of *The Raleigh Times* was published on November 30, 1989, before this study's beginning period of 1990.

Land Use Changes

To verify land use changes in the study areas, remote sensing data was utilized to identify and quantify change in developed land use. Data used in the analysis were obtained from the NCSU Centers for Earth Observation (CEO) data archive. They were originally purchased from EROS Datacenter and have been processed through a classification filter that returned the categories of water, barren soil, grasslands, forest, urban. Ground truthing is being completed on these data and they are expected to have an accuracy rating of approximately 85%. Imagery from three time periods exists: 1987, 1993 and 2000. These three periods give us snapshots of land use before, during and after the policy development process. Additional data for 2000, obtained from the Wake GIS website, includes, but is not limited to parcel, hydrological features and utilities.

Social Process Mapping

An analytical frame developed by Clark (Clark 2002) will be used to map the social process dimension of the policy processes. This framework consists of four components: social process, decision process, problem orientation and policy-oriented professionalism. Utilization of Clark's policy sciences framework to analyze interactions during the development of the land use policy for the study areas has the dual benefits of being systematic in the approach of mapping categories surrounding policy development and being flexible in allowing focus on specific areas of interest by using each component independently (Clark 2002:9-12). The social process focuses on mapping the social context and is the most critical component for this project. This social process framework provides needed superstructure in which participants, perspectives and strategies can be mapped and analyzed.

Evaluating Effectiveness

Interviewing was conducted to complete the histories, confirm the perspective developed from the newspaper article and uncover additional insights to the workings of the NPOs. The interviewing was limted to one representative from each organization and one representative from county government.

In compliance with North Carolina State Institutional Review Board guidelines, an application for the Use of Human Subjects in Research was submitted along with the interview protocol and initial contact telephone script. Based on the review of these documents, an exemption from the Code of Federal Regulations was granted by the Institutional Review Board on April 1, 2005.

Background to Case Studies

Identification of Study Organizations

The two organizations chosen for this comparative study had temporal and spatial similarities. The Middle Creek/Swift Creek Community Alliance (MC/SC Alliance) focused on development activities in the Swift Creek watershed, located in south Wake County. The Umstead Coalition centered its attention on protecting Umstead Park. As part of the Umstead Coalition's activities, it monitored the areas surrounding Umstead Park to prohibit encroachment on the Park or degradation of Park resources. This monitoring included the Richland Creek watershed, which is located in western Wake County.

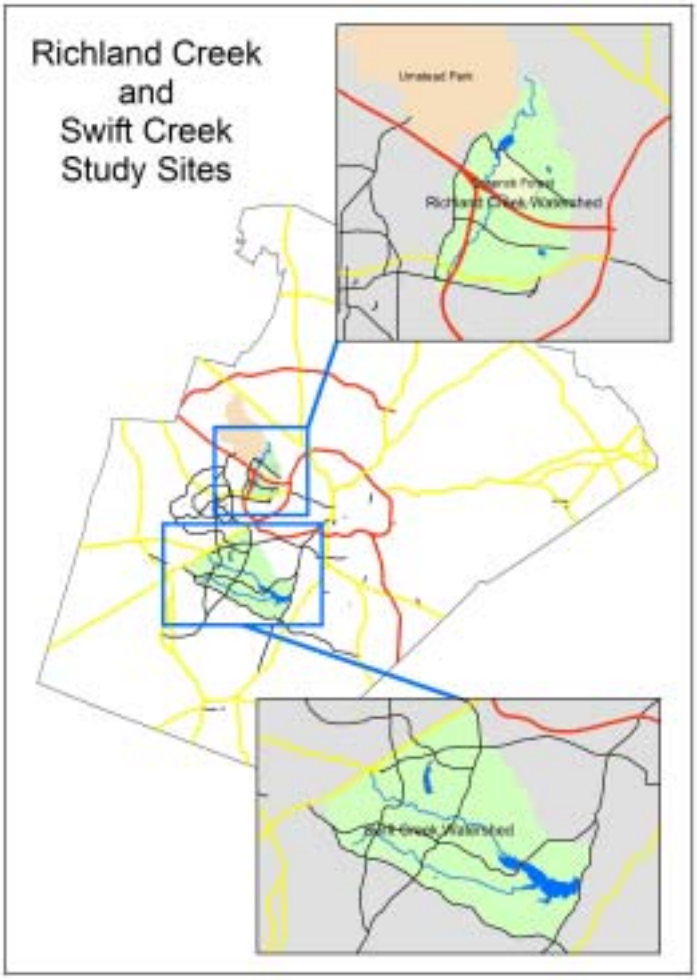

Figure 2. Map of Wake County, showing watershed locations.

The similarities between the organizations and watersheds with which they are concerned are summarized as:

- Both organizations were well established at the time of the study activities and are still active organizations today.

- They both had goals of educating the public and preserving of natural areas.
- The two events compared were concurrent. The MC/SC Alliance activities to enforce existing development density regulations took place in the years 1988 through 1998 and the Umstead Coalition activities to block the development of a road through the Richland Creek corridor occurred in the years 1990 through 1997.
- In both watersheds, North Carolina State University held land for agricultural research and as such had a major influence on land use.

The differences between the organizations and watersheds with which they are concerned are summarized as:

- The size difference of the organizations was significant. The MC/SC Alliance had a membership in the low 100s while the Umstead Coalition had a membership of over 40,000.
- The size of the area of interest varies greatly, with the Swift Creek Watershed encompassing 14,000 acres and the Richland Creek Watershed encompassing 5,000 acres.
- The scope of objectives of the two groups varies as the MC/SC Alliance attempted to protect water quality within an entire watershed while the Umstead Coalition focused on preventing the construction of a road through a portion of the watershed.
- The reach or appeal of the two organizations was different. The MC/SC Alliance, though focused on protection of public drinking water resources, drew very little support outside the watershed and thus the designation of NIMBY (Not-In-My-Backyard) seems appropriate. The Umstead Coalition had with a regional draw because it worked to protect a highly visible, heavily utilized public resource, Umstead State Park.

Watershed Descriptions

Swift Creek Watershed

The Swift Creek watershed is an area of approximately 14,554 acres located south of the city of Raleigh, N.C. This watershed drains an area from Apex south to Lake Wheeler. It then drains into Lake Benson, which is identified as a drinking water water supply reservoir for Raleigh and Garner.

Figure 3. Swift Creek Watershed

At the time of the activities in the case study, the city of Cary had experienced heavy growth along US Highway 1. Also, growth in the unincorporated area southeast of Highway 1 down to Holly Springs road had been intense. To the north of the watershed, before reaching Tryon Road, NCSU maintained an agriculture research farm. As population growth increased pressure to develop housing in south Raleigh, the watershed building regulations were challenged to permit denser building in the watershed.

Richland Creek Watershed

The Richland Creek watershed is an area of approximately 4,493 acres that drains an area immediately to the west of the city of Raleigh, N.C. The landscape of this drainage was subjected to intense modification, as Raleigh grew westward and as North Carolina State University (NCSU) built and sold its land holding in the area. A section of the final two miles of Richland Creek, before it joins Crabtree Creek, is situated between the 5,000 plus acre Umstead Park and NCSU's Carl Alwin Schenck Memorial Forest research forest and is referred to as the Richland Creek Corridor. The Umstead Coalition case study focuses on the role of the Umstead Coalition in the conflict over building a road to connect US-70 to I-40 through the Richland Creek Corridor.

Figure 4. Richland Creek Watershed

Land Use Histories

Swift Creek Land Use History

Settlement of Wake County, North Carolina began around 1741 with creation of the county in 1771 (Cawthorn 1970:116). As with most settlement, topography, land cover,

soil fertility and accessibility played major roles in determining the speed and location of settlement.

The topography in Wake County is variable -- the western portion of the county is the transitional zone from the Piedmont Plateau to the Coastal Plain. The line between Piedmont Plateau and Coastal Plain "begins near the Harnett and Chatham County line, passes near Holly Springs, west of Cary, and continues in a northeasterly direction to the Durham County line at Sycamore Creek" (United States Bureau of Soils 1900:526). While the Swift Creek study area is in the Coastal Plain, the headwaters of Swift Creek lie in the Piedmont Plateau near Apex. At this transition zone, the significant erosion of the Piedmont Plateau has washed down into the Coastal Plain. Originally, Wake County was covered by forests free of dense, brushy undergrowth. Since the arrival of European settlers, these forests have been repeatedly disturbed; cleared for cropping, abandoned when the soil tired and then managed for timber harvest. By the early 1900s all original stands had been cut. The erosion was accelerated by this practice of repeatedly clearing the land.

The soils in the watershed have serious restrictions for septic use due to flooding and percolation rate; and moderate restrictions for housing development due to slope and soil characteristics such as the amount of clay (Cawthorn 1970:97).

In general, within the Swift Creek study area, soil fertility and content of organic matter are low but suitable for growing most of the crops of the area: cotton, corn and tobacco. In Wake County, cotton was the predominant crop as late as 1879, being displaced by corn and later tobacco (Cawthorn 1970:116). While the soil is not the most fertile, it responds well to the application of lime and fertilizer (Cawthorn 1970:66). Business and school district maps from the late 1800s and early 1900s show several gristmills in the watershed, indicating there was sufficient production of grains to justify capital investment in developing and operating the facilities.

Apparently, soils and topography did not present serious obstacles to settlement. However, based on evidence found in the school district and business maps from the late 1800s, a constraint on settlement from late the 1800s to early 1900s appears to be

transportation. This transition zone between the Piedmont Plateau and the Coastal Plain has some steep drainages and many stream crossings that impede travel across the landscape. Until roads - and bridges in particular - were constructed, the movement of goods and services was constrained to the locale in which they were produced.

In 1886, Shaffer's School District and Business Map (Shaffer ca. 1886) shows two rail lines from Raleigh. One line heads west to Cary – Apex – Sanford and beyond, skirting the western edge of the Swift Creek watershed, the second rail line travels east to Goldsboro.

Figure 5. Shaffer's 1886 School District Map

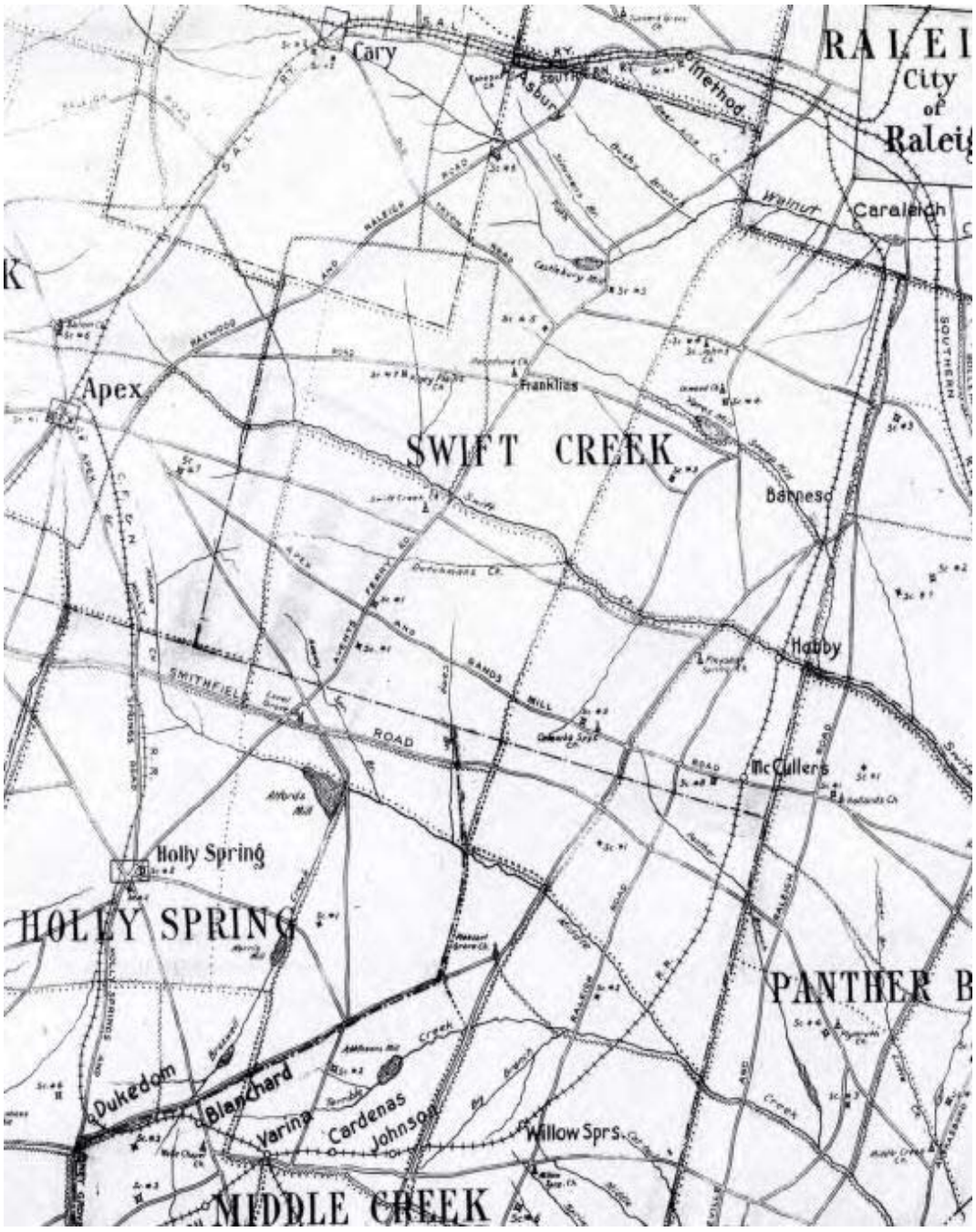

Figure 6. Clememts' 1904 School District Map

A few years later on Clements' 1904 School District map (Clements 1904) an additional rail line from Raleigh to Fuquay-Varina was added approximately 1 to 1.5 miles to the east of what is now Lake Wheeler Road.

Then in 1938 the state highway department produced a map (State Highway and Public Works Commission and Federal Works Agency Public Roads Administration 1938) showing cultural resources such as churches, manufacturing plants, airports, saw mills, mines and uncataloged resources along with the transportation routes. These cultural resources tended to cluster along the railroads and roads, leaving limited development within the watershed. Another factor constraining the southern development of Raleigh was the establishment of the 1,000 plus acre NCSU research farm in 1963. This parcel acted as a barrier to contiguous development like that occurring in northern Raleigh.

As development north moved further away from downtown Raleigh, pressure to develop housing in the watershed continued to rise, but was constrained by the lack of water and sewer utilities in the watershed and the low-density building codes for the watershed. Both of these restrictions were challenged in the early 1990s.

Richland Creek Land Use History

The Richland Creek corridor is unique as a result of the land use history, which tended to isolate it from the pressure of development. A more detailed summary of the history of the area is available in the document *Conservation Plan for the Richland Creek Corridor* by Ann Eberhart Goode (Goode, Flournoy et al. 1997:iii-vi, 7-9).

Archeological research in the Richland Creek Corridor has revealed evidence of occupation since 500 B.C.E. or for at least 2,500 years. But by the time the European settlers arrived in substantial numbers in the 1700s, most native tribes had been decimated by exposure to diseases introduced from Europe. In 1792, when Raleigh was chosen for the capital of North Carolina, the primary industry of the area was agriculture and the waterways were being populated with grist mills to serve the local farmers. By the 1850 census, 10 mills were operating in western Wake County and at least two were located on Richland Creek.

Most of the land ownership in the vicinity can be traced to land grants made in the 1770s and 1780s. Descriptions of the area around Richland Creek from the early 1800s indicate that diverse hardwood forest covered the area. Early residents did well by hunting and

timbering and the old growth was logged by the 1900s. The primary agricultural use that followed the harvesting of the timber consisted of raising cotton and corn with tobacco being grown on the more fertile land to the west. This proved to be a difficult livelihood for the families and disastrous for the landscape as by 1930, one third of the families in the small community were consistently on relief and the thin soil was depleted.

The eastern edge of the Richland Creek watershed, currently bordered by Blue Ridge Road, was the site of a Confederate camp during the Civil War and then in World War I, the site of the only United States Army tank training base. In 1919 after armistice, the base was closed and in 1920, the State of North Carolina acquired the 1,326 acres of privately owned farmland in the Richland Creek corridor for the Camp Polk Prison Farm.

In 1935, with the country in the Great Depression, the Roosevelt Administration nominated the area for a demonstration project. This demonstration project would show the feasibility of establishing parks on unproductive land while relocating the families to more productive land and providing employment for the area's residents. The US Department of Agriculture acquired 5,000 acres of depleted farmland for the National Park Service (NPS) to establish the Crabtree Creek Recreational Demonstration Area.

In the following year, 1936, the State of North Carolina transferred 1,225 acres of depleted farmland from Camp Polk Prison Farm to NCSU for the forest and agriculture research programs with 270 acres of this land dedicated to the Richland Creek Farm Forest.

In 1943, North Carolina acquired Crabtree Creek Recreational Demonstration Area as a state park with the restriction that if the area is converted to any use other than public park, recreation or conservation purposes, the deed for the property would revert back to the NPS. In 1955, this property was renamed the William B. Umstead State Park and the Richland Creek Farm Forest renamed Carl Alwin Schenck Memorial Forest.

Of less land use significance, but significant for protection of the Park, in 1965, the state of North Carolina received Land and Water Conservation Funds (LWCF) for land acquisition and development within Umstead Park. Under the provisions of LWCF Act

of 1965, no property acquired with LWCF assistance can be converted to any use other than public recreational uses (Nygard 1990:41).

The late 1960s and early 1970s was a time of growth and planning. In 1967, the Thoroughfare Plan for Raleigh included a proposed connector between Duraleigh Road and the proposed Wade Avenue extension in the vicinity of Richland Creek. Two years later, Raleigh's *Park With a City in It* master plan for parks and recreation showed the Richland Creek corridor as a proposed greenway connecting to Crabtree Creek. This greenway was repeated in the 1972 *Capital City Greenway* study. In the 1974 NC Division of Parks and Recreation master plan for Umstead State Park, an eastern park entrance off the Duraleigh Connector was proposed. Also expressed in this plan was a serious concern regarding development pressure between I-40 and the park.

Development of the Wade Avenue Extension began in 1978 with the transfer of sixty-one acres of NC Department of Corrections land in the corridor to the NC Department of Transportation (NCDOT). Later, in 1981, four acres of Schenck Forest were transferred to NCDOT to accommodate additional lanes for Wade Avenue and the interchange for the proposed Duraleigh Road Connector. The stage was set.

Organization Histories

Middle Creek/Swift Creek Community Alliance History

The Middle Creek/Swift Creek Community Alliance formed to focus on concerns surrounding impacts of development in the Swift Creek and Middle Creek watersheds. Spurred by a report released in 1980, Promoting Lake Quality Through Local Land Use Management and Control, which stated "Urbanization is a major cause of water quality degradation…urban runoff reaching the water supply may contain a variety of pollutants…" (The Center for Urban and Regional Studies 1980), citizens in the Swift Creek watershed came together to address development in the Swift Creek watershed. The first forum occurred in 1981, titled "The Future of the Swift Creek Community: Land Use Planning in Swift Creek" and attracted 500 citizens (Vass 2002a).

In 1983, the first citizens association, Swift Creek Community Action Association, formed to protect the Swift Creek Watershed and held educational forums throughout the year. The following year, 1984, the association intervened against the developers of the Lochmere sub-division, citing inadequate provisions for containing nutrient runoffs from the golf course.

From 1985 until 1993, the Swift Creek Community Action Association activities focused on efforts to incorporate the Village of Swift Creek and generate political support for statewide policy for protecting watersheds. However, in 1993, after Wake County failed to adopt the Swift Creek Watershed Protection Plan and the Environmental Management Commission (EMC) loosened the building restrictions in the watershed, the association joined Middle Creek citizens to monitor development and attend public meetings on land use.

In 1994, a second citizens association formed, the Middle Creek/Swift Creek Alliance, Inc. (MC/SC Alliance). The MC/SC Alliance incorporated as a citizen's corporation to protect its membership from the increase use of Slapp suits[2] to quiet dissenting opinions during this period. Though not incorporated like a traditional NPO, it is an open, public organization managing itself like a non-profit. For this study, the term NPO is applied to the MC/SC Alliance as it governs itself as a traditional non-profit. One of the governing premises is that the organization is governed with an open internal structure so that the organization cannot be co-opted by a small number of members and dissenting voices silenced (Vass 2005). To its credit, the SwiftCreek.org website even has a link to the opposition's website and visitors are encouraged to research both positions.

Incorporation was finalized June 1995 and the adopted bylaws stated the purpose of the organization was (1) to promote and enhance health, well-being and environmental quality for the Alliance's territory; (2) to educate the residents in matters of land use, zoning, development, extension of municipal boundaries, governmental planning,

[2] A Slapp suit, an acronym for strategic litigation against public participation, is an easy and often relatively inexpensive legal vehicle used to silence members of the public who voice opposition to a

transportation and environmental integrity of the region; and (3) to provide a forum for members to exchange views and encourage communication (Umstead Coalition 2005).

This newly formed association was immediately engaged by the Town of Cary's proposal to increase the density of development in Middle Creek. This was followed by a Cary Town Council request to modify the Swift Creek Land Management Plan to allow water and sewer utilities to be extended into the watershed in support of the Swift Creek Bluffs subdivision. While the request for utilities extension was denied, Wake County approved the development plan, based on the use of a low-pressure sewage system for the subdivision.

In 1977, after setbacks on the development front, the MC/SC Alliance focused on incorporating the Village of Swift Creek by holding a citizen's referendum on incorporation in which 1,800 citizens voted with 63% in favor of incorporation. The MC/SC Alliance felt incorporation would provide protection to the environment because the politicians making the development decisions would be accountable to them. As a result of the vote, a bill for incorporation was successful in getting to the house floor (HB614) but was eventually defeated.

The senate version of the bill (SB 726) remained alive. It called for establishment of a cooperative plan for joint planning in Swift Creek and allowed a non-binding referendum on incorporation in 2000. This bill was ratified in 1998 as HB1114 and in 2000, the referendum on incorporation passed with a 58% majority.

In August 2002, the House Finance Committee killed the bill that would have incorporated the Swift Creek area. While the citizens in the Swift Creek area had twice passed a referendum calling for incorporation, the surrounding municipalities that would lose revenue to the new municipality never supported the incorporation. Incorporation was seen by many of the area residents as an effective approach to regulating development in the watershed and achieving a stronger voice as the neighboring politicians, for whom they can not vote, have failed to support them.

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proposed project. The usual charges are defamation, emotional distress and business interference.

As recently as April 2005, the MC/SC Alliance has rallied once again to oppose the town of Cary's proposal to annex the area. Later in the year, the MC/SC Alliance merged with Stop NC Annexation organization. The focus of this organization was to end the involuntary annexation abuse in North Carolina.

Umstead Coalition History

The mission of the Umstead Coalition is to "Protect the natural integrity of William B. Umstead State Park and the Richland Creek Natural Area" (Umstead Coalition 2005). In support of that mission, the coalition has priorities that range from the protection of the Park to service projects and educational programs.

The Umstead Coalition has its roots in a citizens group, Citizens to Save Umstead Park. In 1966, Margaret Nygard assisted this organization in protecting the park from encroachment due to the expansion of the Raleigh-Durham Airport (Nygard 1990:36). This group was influential in showing that the expansion of the airport threatened the park due to noise intrusion and that the proposed land swap plan was inequitable. The land swap plan offered a parcel of land discontiguous to the park which was to be flooded for what it now Crabtree Lake in exchange for land adjacent to the airport. Through the joint effort of several groups, the proposed expansion plan was altered.

In 1986, under the guidance of Margaret Nygard, the Umstead Coalition was formed drawing on membership from individuals and 12 conservation-focused groups (Nygard 1990:42). The focus of the Umstead Coalition was to challenge the building of Dry Dam 25 of the Crabtree Creek Flood Control Projects due to the adverse impacts it would have on the park. This dam would have periodically flooded the bottomlands of Crabtree Creek including the Piedmont Beech Natural Area and altered the landscape and ecology of the stream. Through the influence of this group, the U.S. Department of Interior ruled that the easement would violate the intent of the original donation for the park and was unacceptable.

A few years later, in the early 1990s, the Coalition led the effort to protect the Richland Creek corridor by defeating the proposed transportation route connecting Duraleigh Road

and I-40. This connector would have separated Umstead Park from the Schenck Forest causing a decline in species variability and degrading the stream ecology of Richland Creek.

In 1998, the Coalition opposed the $300 million Federal Express hub saying the proposed facility and a related road would be detrimental to Umstead State Park. Also in 1998, the Coalition monitored the threat from illegal logging that occurred on property bordering the Park.

In 1999, the coalition fought plans to extend Cary Parkway saying it would bring noise and pollution to the park and spoil the country feel of the neighborhood.

While the initial membership is difficult to document, membership has grown from 12 constituent conservation groups in the 1986 to 16 today. By most recent estimates, the Umstead Coalition represents over 40,000, including independent individuals and members of 16 constituent conservation groups. Still active today, the Coalition continues to monitor threats to Umstead and can rally the membership to influence land use decisions for protecting the park.

Middle Creek/Swift Creek Community Alliance Case Study

The report, *Promoting Lake Quality Through Local Land Use Management and Control*, published by The Center for Urban and Regional Studies, UNC-CH, in 1980, was a catalyst for activity in the Swift Creek watershed for the next 20 years. As a result of the focus on water supply watershed protection, in late 1989, a legislative mandate to protect water supplies based on watershed geography instead of artificial political lines was passed (HB 156, Water Supply Watershed Protection Act) and the EMC was given responsibility and authority to complete this assessment. The result of the work of this commission was a classification system that identified all water supply watersheds and placed them in a category of I, II, III or IV. This classification determined the number of dwelling units permitted per acre. Needless to say, this was a contentious process pitting those who wanted to see property developed against those who wanted to preserve property in an undeveloped or low development density condition.

The Swift Creek watershed was one of the contested areas. Five authorities govern the Swift Creek watershed: the cities of Apex, Cary, Garner, Raleigh and Wake County. In February 1988, these five governing authorities agreed to the development of the Swift Creek Land Management Plan (SCLMP). This plan was envisioned to be the tool guiding growth in the watershed of Lake Benson that is a future water source for Garner.

The SCLMP was completed in September 1991 and recommended that Swift Creek be classified as a Water Supply Watershed II, which allowed one dwelling unit per two acres or 6% built-upon area. In December, the SCLMP became law by authority of the EMC, but only after the watershed was downgraded to a WS-III classification, which allowed 1 dwelling unit per acre or 12%, built-upon area and set the effective date as July 1993.

In late 1994, Joe Thompson of Thompson and Associates, a local engineering firm, submitted a request to the town of Cary asking the town to revoke the SCLMP agreement and extend sewer utilities into the watershed to support the Swift Creek Bluffs housing development. At the last minute, this plan was withdrawn from the Cary Town Council public hearing. However, it soon emerged in a modified form in a request to the Wake

County Planning Board in December 1994. Instead of asking for an extension of city utilities into the watershed, the new plan proposed a private sewer system. The Planning Board subsequently rejected this plan in January 1995 with 35 members of the MC/SC Alliance attending the meeting and voicing opposition to the development plan.

In February 1995, the Wake County Commissioners appointed Joe Thompson to the Planning Board. Then in April, the Swift Creek Bluffs development proposal was sent back to the Planning Board for reconsideration by a 4-3 vote of the commissioners.

Once again, the MC/SC Alliance packed the meeting room in May and the Planning Board rejected the development plan, voting 8-0. There was controversy, and landowners who wanted to develop their land felt the planning board gave into public sentiment. The Planning Board rejected the cluster development because there was no commitment from Cary to provide sewer services.

Then again, in August, for the third time, the proposal was submitted to the Planning Board and again rejected. In this submission, the sewer system proposed was a low-pressure system that the Planning Board rejected due to the high risk of failure. But in November, the Wake County Commissioners overturned the Planning Board's decision and altered the development rules to allow private septic systems in cluster developments, allowing the development of Swift Creek Bluffs to move forward. Cary had stated it would not bring sewer utilities into the watershed and, therefore, the development would have to rely on a low-pressure private system, subject to the approval of the Wake County Department of Health.

1996 marked the turning point in favor of the development of Swift Creek Bluffs. After the Wake County Commissioners overturned the Planning Board's recommendation in the previous year, in April of 1996 they approved the modification of the development rules allowing changes to the cluster development restrictions and allowing septic tanks in cluster developments. The combination of these two changes allowed this project to move forward.

In 1997, after Hurricane Fran, the community sewer systems of six developments failed and Raleigh extended services to them. One of those developments, Yates Mill Run, was located in the Swift Creek watershed. The failure of this community sewer system brought the Swift Creek Bluffs development plan under review and the plan was ultimately turned down (Vass 2005).

In 1998, as population increased in the area, the Wake County School Board announced plans to extend sewer lines into the watershed to support the building of a new elementary school on Yates Mill Pond Road. A mini land rush occurred in 1999 to in-fill the vacant lots in the upper Swift Creek watershed. Until this time, development above Tryon Road had been limited due to the lack of water and sewer utilities, but with the extension of utilities, several developments were able to be completed.

In June 2003, NC Department of Natural Resources (DENR) released a report on the upper Swift Creek Watershed in Wake county which stated "Swift Creek is considered impaired by the DWQ *(Division of Water Quality)* because it is unable to support an acceptable community of aquatic organisms, indicating that the stream does not fully support its designated uses" (NC DENR Division of Water Quality 2003:v). This is a marked divergence from the 1988 goal of creating a WS-II class watershed as outlined in the Swift Creek Land Management Plan (Town of Cary Planning Department 2001:3).

Development seemed to stabilize, with Tryon Road being the dividing line for additional development. But in January 2004, development restrictions within the watershed were again submitted for review to permit exceptions to the existing rules if water, sewer and retention ponds are in place.

The Umstead Coalition Case Study

Project U-2110, as it is known in the NCDOT files, is commonly referred to as the Duraleigh Connector, linking Duraleigh Road and the proposed Wade Avenue extension in the vicinity of Richland Creek. From the beginning in the late 1960s, there were conflicting planned uses of this land known as the Richland Creek Corridor. NCDOT planned to build a road through the corridor; the city of Raleigh parks and recreation planned to use it as a greenway; and the North Carolina Department of Health, Environment and Natural Resources (NCDEHNR) identified some of the acreage to be added to Umstead Park.

In the early 1980s, the city of Raleigh identified the Duraleigh Connector as a top transportation priority (North Carolina Division of Highways Planning and Environmental Branch 1996:10). The project was programmed for construction in the 1985 NCDOT Transportation Improvement Program (TIP) and in 1990, NCDOT issued a State Environmental Assessment (SEA) on the proposed Duraleigh Road Connector with a State Finding of No Significant Impact (SFONSI).

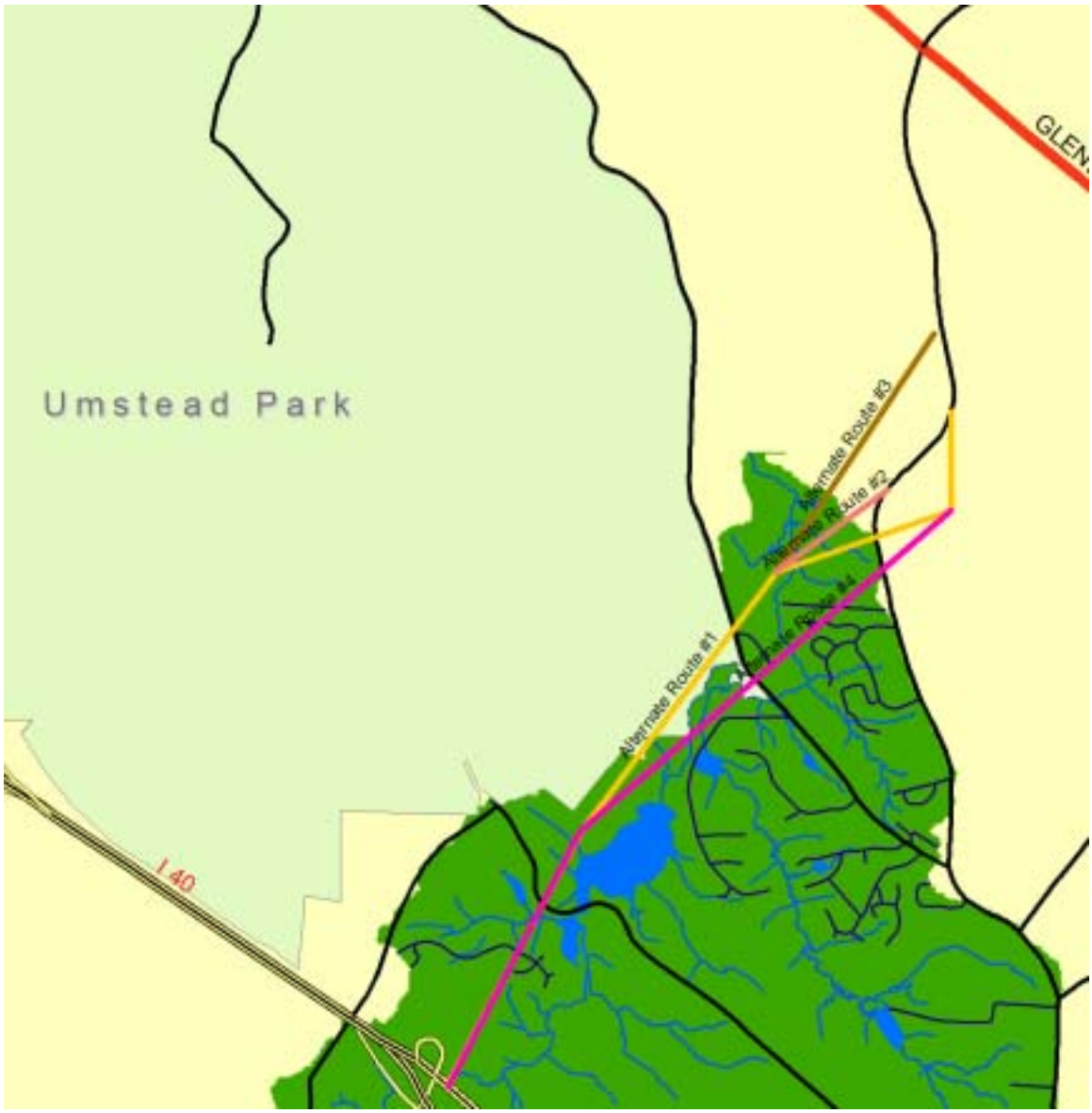

Figure 7. Approximation of Alternate Routes

The SEA evaluated five options, the four routes shown in Figure 8 and a "no build" alternative. All of the routes lay in the Richland Creek corridor with the preferred route and two of the alternate routes cutting through the corner of Umstead Park. A fourth route passed to the east of the park but it was the least preferred due to environmental impacts of the multiple crossings of Richland Creek.

In May 1990, a public meeting on the construction recommendations of the SEA was held. After the public meeting, the NC State Clearinghouse determined NCDOT could proceed with a SFONSI on the proposed Duraleigh Road Connector, though the project was held up until 1991 for right-of-way acquisition. During this waiting period, the NC Department of Administration (NCDOA) released the *Blue Ridge Road Area Master Plan* that resulted in the transfer of 257 acres of NCSU agricultural research and teaching land in the Richland Creek watershed to NCDOA for an office complex development.

Opposition to the connector was centered in the Umstead Coalition, an organization composed of 15 environmental groups representing over 40,000 members. In the early months of 1991, the Umstead Coalition led field trips through the Richland Creek Corridor showing local and state government officials the uniqueness of the corridor. During the tour, coalition members talked about topographical features that could be altered by the road. Jill B. Heaton pointed out that Richland Creek flows through Schenck Forest and commented, “Even after it rains it's clear. It looks almost like a mountain creek." (Sykes 1991)

By the end of March, the opposition to the connector road gained momentum. North Carolina State Senator J. K. Sherron, a democrat from Wake County who maintained a neutral position on the connector, indicated that the NCDOT request for the Duraleigh Connector would probably be denied because it required a three-fifths approval from both houses of the state legislature to remove land from a natural preserve (March 22). In April, the state park officials announced that they would no longer support the thoroughfare and indicated the 1974 park master plan would be modified to remove the eastern entrance. Also in this month, a delegation of state representatives from Wake County voted to oppose the transfer of Umstead Park land to NCDOT for use of the planned Duraleigh Connector, with the expectation that the State General Assembly would follow its recommendation. In a previous meeting between this delegation, the city of Raleigh Mayor Avery C. Upchurch and Thomas J. Harrelson, NCDOT Secretary, Harrelson said he would seek to drop the road from the state’s road plan, although he was not pleased with the decision. In his reply, he ruled out the option of looking at alternative routes around the park. Raleigh Mayor Avery C. Upchurch and State

Representative Margaret Stamey, whose district included the park, felt the city and NCDOT engineers could find another solution and representative Stamey accused Harrelson of playing hardball on this issue (Rawlins 1991). Of the four proposed routes, the fourth route that did not cross Umstead Park property lay east of the park but crossed Richland Creek three times. Harrelson indicated that the city of Raleigh would need to pay the additional costs of bridging the wetlands and creek if it wanted that option. Shortly after this meeting, the City of Raleigh declared official opposition to construction of the Duraleigh Road Connector without a full EIS and recommended alternate road development priorities while the EIS was underway.

In 1992, NCDOT updated the TIP putting the Duraleigh Road Connector on hold. Also during the year, the Triangle Land Conservancy (TLC), Triangle Greenways Council, and the Umstead Coalition received a grant to study the importance of the Richland Creek corridor and propose a conservation plan in cooperation with involved landowners. As the studies moved forward, 13 acres of land between Richland Creek and Umstead State Park, which had been on the Umstead Park Master Plan acquisition list since 1974, became available and was accepted by the TLC with the intent to offer this tract to the park.

The TLC, working with NC Division of Parks and Recreation, officially offered the 13-acre tract along Richland Creek to the State for addition to Umstead Park in 1994. The Capital Area Metropolitan Planning Organization (CAMPO), composed of representatives of Wake County municipal governments, requested that the Duraleigh Road Connector remain on hold and the Edwards Mill Extension Phase II be accelerated.

Also, during the summer of 1994, Senator Sherron, through his real estate firm JK Sherron & Associates, represented the buyer of the Raleigh Corporate Center, a business office complex located between Wade Avenue and I-40 near the proposed Duraleigh Connector. The Sherron & Associates broker marketing the land in the 30-acre business park was Charlie Grady, Wake County representative on the transportation board.

In January 1995, the 13-acre tract from the TLC was accepted for addition to Umstead Park by the NC Council of State. The following month, the Umstead Coalition indicated

its support for the expansion of Edwards Mill Road and Duraleigh Road that would eliminate the need for the Duraleigh Connector. But later in May, NCDOT recommended in the TIP that the Duraleigh Connector be “reactivated” and that Phase II of the Edwards Mill Extension be put on hold. In the following meeting of the Raleigh City Council, the council demonstrated its lack of support for the road by voting against the Duraleigh Connector, making it the fourth council to vote against the road and causing council members to ask why the projects they want are being put on hold and the projects they are given are projects they don’t want (Eisley 1995).

A few days later on May 18, Charles Grady, Wake County State Transportation Board representative, overruled the Raleigh City Council by restoring funding for the Duraleigh Connector in the draft TIP and effectively removing the hold that had been on the project since 1991. While the action of the Wake County transportation planning committee was not final, as public comment would be taken for two months, the committee members argued the worsening traffic in northwest Raleigh outweighed the environmental concerns and neighborhood objections to the connector. In response to this decision, Kate Dixon, the executive director of the Triangle Land Conservancy, stated "That creek is definitely the most important wildlife habitat in the city of Raleigh" (Hoar 1995).

The land transfer from the TLC back in January was another confounding issue. Back in 1991, a delegation of state legislators from Wake County refused to back the connector because it would cut through a portion of Umstead Park, violating conditions in the original deed that transferred the Park from the federal government to the state. While the new alternate route for the connector avoided the 1991 Park boundaries, with the addition of the 13 acres from the TLC in January, the Park boundaries had changed and the new route crossed this addition. There was differing opinion on whether the property had been added to the Park as the recording of the deed at the county courthouse had been held up by a request from NCDOT.

Various activities regarding the Park and connector continued in June 1995. First, the State Property Office offered to return the land to TLC because NCDOT’s proposed route for the Connector would cross that property. In a separate action, all lands in Umstead

Park and originally in the 1943 Crabtree Creek Recreation Demonstration Area were listed on the National Register of Historic Places, further restricting land use options. In the legislature, Sherron linked funding of state parks to a bill that allowed the State Department of Administration to give highway builders rights-of-ways through donated land. This legislative act pressured state parks officials into supporting the Duraleigh Connector. Locally, the Wake County Board of Commissioners voted to support the Duraleigh Connector, but agreed to consider the issue again in the July meeting after approximately 60 members from the Umstead Coalition showed up in opposition to the road.

July 1995 activity started early in the first week of the month with the Board of Realtors voting to support the Duraleigh Connector. Later in the week, CAMPO reversed its position. By a narrow margin, it endorsed NCDOT's plan to move forward with the connector and put the Edwards Mill extension on hold. In the legislature, Sherron said he might hold up funding for the state trust fund until TLC agreed to take back the donated land near Umstead Park and stated the TLC now supported the Duraleigh Connector. This statement was denied by Crawford Crenshaw, president of the TLC, who maintained the organization did not take a position on any road. Later in the month acting again in the legislature, Sherron made a short speech denying any conflict of interest regarding the connector and stated he would withdraw his company from marketing any of the property in the business park.

In their July 17 meeting, the Wake County commissioners reaffirmed their 4-3 vote to support the Duraleigh Connector. Commissioner Adcock, a long time backer of the road, stated this vote was one of the most important votes the commission had ever cast. In the July CAMPO meeting, the council voted to support the Duraleigh Connector even though the ratio of opponents to supporters present at the meeting was 100 in opposition to 6 in support. As a result of this vote, there were accusations that the NCDOT threatened to withhold funding for roads in the municipalities that voted against the road.

At the end of July, a Raleigh resident whose home was located in the right-of-way of the proposed connector complained that Charles Grady had a conflict of interest which

resulted in the North Carolina Board of Ethics opening an investigation of Grady's involvement with the connector. The Board of Ethics ruled in October that Charles Grady created "the appearance of a conflict of interest" when he marketed real estate near the Duraleigh Connector, but the investigation found no compelling evidence that he stood to benefit by the project.

In November and December of 1995, NCSU's officially neutral position, as articulated by the Chancellor's office, met with various challenges. The official position invited questions regarding the influence Sherron exerted as a big WolfPack supporter. Douglas Frederick in the Department of Forestry, whose house stood in the path of the road, drew a parallel between the Schenck Forest and a traditional classroom. He raised concerns about the increased level of noise, disturbance of wetlands and harm to wildlife diversity. The Faculty Senate endorsed a strongly worded statement to Chancellor Monteith and Provost Stiles calling for more consultation with the faculty as a result of the conflicting views on the connector. In a December 7 meeting, the NCSU faculty, via the Physical and Environment Committee, advised to oppose the Duraleigh Connector. They stated the damage to Schenck Forest would include noise from traffic, silt from construction, limitations on controlled burns, loss of diversity in wildlife species, negative impact on faculty and student recruitment, and failure as an institution to demonstration stewardship of entrusted resources (North Carolina Division of Highways Planning and Environmental Branch 1996:D30-D41).

In the January 1996 Capital Area Transportation Advisory Committee (CATAC) meeting which is composed of mayors from all Wake County municipalities, only the Mayor of Raleigh, Tom Fetzer, voted against funding the Duraleigh Connector. This prompted Dr. Jean Spooner, president of the Umstead Coalition, to state, "The mayors have been blackmailed into supporting Duraleigh. They believe NCDOT won't give their towns any road money in the future if they don't support it" (Hackett 1996). Others accused the board of being corrupt and the issue of local control versus state control was raised.

February saw another request to CATAC to remove the connector from the long-range road plan. This time the request was from the city of Raleigh planning director but no

action was taken as the committee awaited the results from an air quality report and the EIS. Also during the month, the NCSU Faculty Senate voted unanimously to oppose the connector.

During the race for Wake County commissioner in April, the connector became a topic of debate. To draw further attention to the issue, the Umstead Coalition organized a protest march against the connector. In the Raleigh City Council, council member Eric Reeves circulated a petition to reject Cary's request to buy additional water from Raleigh unless Cary officials dropped their support for the connector.

May brought a North Carolina Department of Environment, Health and Natural Resources (NCDEHNR) recommendation to add the TLC tract to Umstead Park, remove the Connector from the TIP and develop a conservation plan for the Richland Creek corridor. In the primary elections, Sherron was defeated and he attributed his position on the connector as the deciding issue in his defeat. Also in May, Governor Jim Hunt expressed serious concern about the negative environmental impact the road would have.

In June, opponents of the connector complained to Federal Highway and Transit Authority Administrators about the NCDOT strong-arming local officials to build unnecessary and unwanted roads. These opponents noted that one of the requirements of accepting federal funding was that construction projects be coordinated with local governing bodies.

After several delays, NCDOT released the draft EIS for the Duraleigh Connector in October 1996. By November, NCSU changed its position from neutral to opposition and viewed the connector as a threat to its teaching laboratory. A committee report based the opposition on the increase in noise on 16 acres and not 6 as represented by NCDOT, the increased nighttime light pollution which would diminish visibility at the NCSU Astronomy Lab, and the decline in water quality of Richland Creek due to road construction. Despite the change in position of NCSU, CATAC reaffirmed its support of the road.

In December, the Wake County commissioners voted against the construction of the Duraleigh Connector and DOT's draft EIS came under criticism from state environment regulators who urged consideration of other alternatives. The project was also being challenged by state environmental officials. In 17 pages of comments, state regulators in the DEHNR said the road would pollute Richland Creek with silt; devastate freshwater mussels in the creek; hurt other wildlife; and add significant noise to one of the quietest sections of Umstead State Park. When Governor Hunt expressed his opposition to the road's construction saying the EIS did not make a compelling case in light of the environmental harm, the end of the connector was apparent. Although the decision to delete the road from the state's plans rested with the state Board of Transportation and not the governor, 21 of the board's 23 members were Hunt appointees and the board routinely followed the governor's recommendations.

After the expression of opposition by the governor, the NC Board of Transportation deleted the Duraleigh Connector from the TIP in January 1997 and CAMPO requested the connector be removed from the Thoroughfare Plan. The State Property Office recorded the deed donating the TLC property to the State and allocated management of the tract to the NC Division of Parks and Recreation. Later that year in April, Charles Grady was not reappointed to the Board of Transportation over additional allegations that he used his position to push a land deal. This was the second conflict of interest charge brought against Grady and in July, he pleaded guilty to a misdemeanor conflict-of-interest charge.

Even with the removal of the road, Richland Creek corridor was not protected from degradation due to development. In 1998, the development of the Raleigh Entertainment and Sports Arena (ESA), now known as the RBC Center, on NCSU property bordering the creek, severely impaired the creek by relocating it and lining the channel with rock. Also during the building of the arena, the contractor was cited for allowing significant sediment to wash into the creek. That same year, state records show builders of Cardinal Gibbons High School violated state law by cutting down trees growing on the stream bank and placing a road bed, silt fence and storm water basin in the creek itself. The

result of these poor sediment control actions reduced the life of the flood control reservoir by approximately 50%.

By April 2000 when the NCSU College of Agriculture and Life Sciences proposed the sale of a 159-acre tract that bordered Richland Creek to developers, the state Division of Water Quality had already ranked the stream as biologically impaired. The Umstead Coalition called for NCSU to be a better steward of its land and requested that development restrictions be imposed as the condition of the sale. But James Oblinger, Dean of NCSU's College of Agriculture and Life Sciences, placed no special conditions on how the land should be developed. According to Oblinger, it was up to city zoning officials and state regulators to ensure that the environment is protected. "The university can't control everything," said James Oblinger. "That's not our assigned task" (Shiffer 2000).

The end of project U-2110, the Duraleigh Connector, was recorded in August 2003 when the State Board of Transportation removed the Duraleigh Connector from the thoroughfare maps.

Watershed Development Change Analysis

The following change analyses identify change in the land class for the watershed areas of concern to the NPOs in the case studies. The images have been processed through a classification filter that returned the categories of water, barren soil, grasslands, forest, urban (commercial and residential). The areas for each classification were calculated and the changes derived.

Swift Creek Watershed Development Change Analysis

To identify the changes in land class for Swift Creek watershed from the period 1987 to 2000, three components - fields, urban (commercial and residential) and forest - were compared. The components of bare soil and water are not considered as the water is fairly consistent and bare soil is transitory, indicating a disturbance.

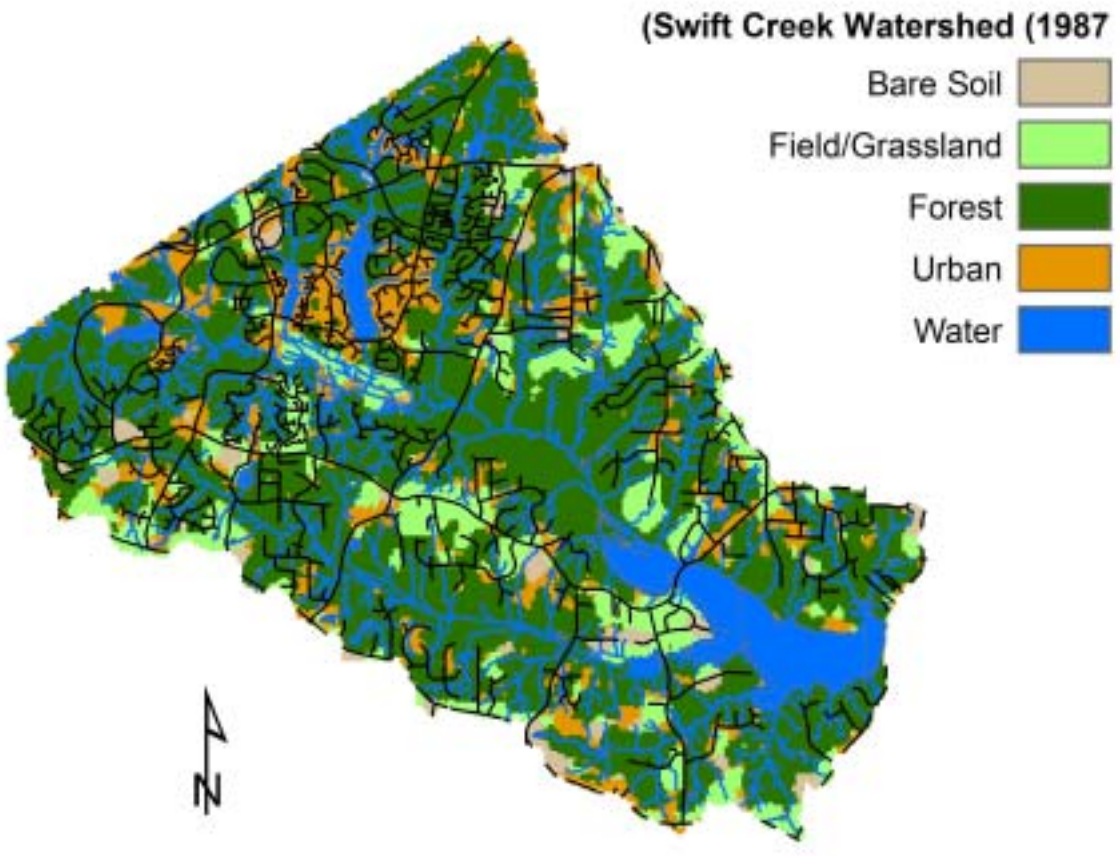

Figure 8. Swift Creek Land Use in 1987

Land Class	Acres		Land Class	Acres
Forest	9,187		Bare Land	452
Urban	2,020		Water	893
Fields	2,002			

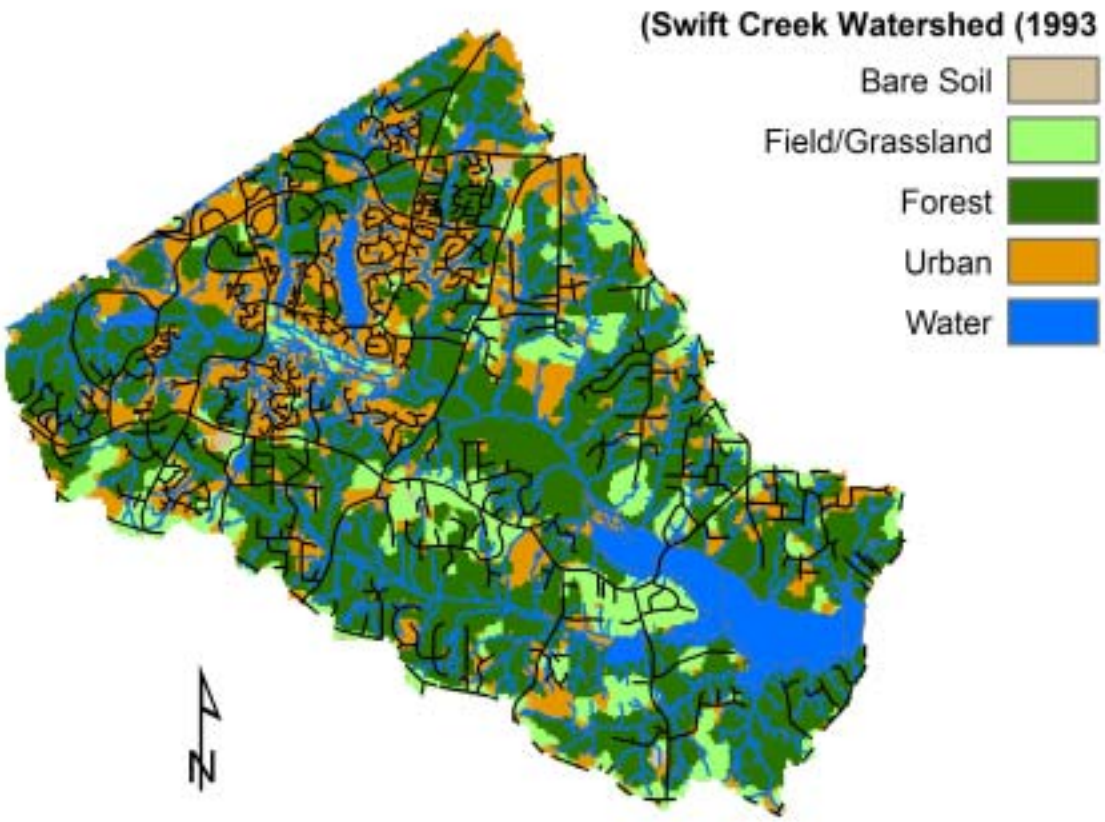

Figure 9. Swift Creek Land Use in 1993

Land Class	Acres		Land Class	Acres
Forest	7,835		Bare Land	52
Urban	3,635		Water	865
Fields	2,167			

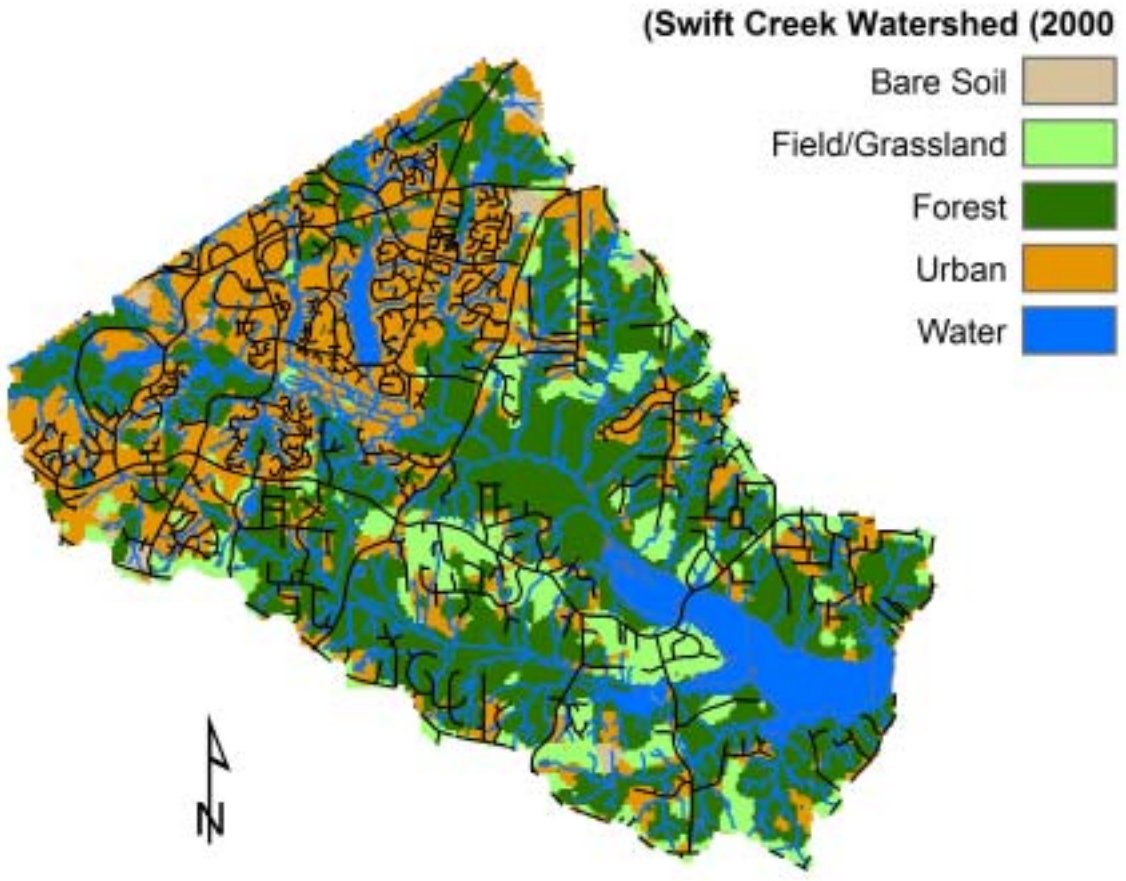

Figure 10. Swift Creek Land Use in 2000

Land Class	Acres		Land Class	Acres
Forest	6,548		Bare Land	174
Urban	4,763		Water	962
Fields	2,106			

Overall from 1987 until 2000, the following changes in land classification occurred:

Table 1. Swift Creek Change Summary

Land Class	1987 Acres	% Total	2000 Acres	% Total	
Fields	2,002	13.8	2,106	14.5	Increased 5%
Urban	2,020	13.9	4,763	32.7	Increased 235%
Forest	9,187	63.1	6,548	45.0	Decreased 29%
Water	893	6.1	962	6.6	Increased 7%
Bare Soil	452	3.1	174	1.2	Decreased 62%
Total	14,554		14,554		

Swift Creek Density Analysis

Figure 11. Swift Creek Density Map
(Source: Wake County 2003 parcel data)

The development density analysis indicates that where public sewer connections are present, as shown by the red lines, density is higher. Where public utilities are not present, the density is much lower.

There are a few areas that show clustering of developed property in the lower right-hand area of the map and these areas deserve additional research to determine how sewage is handled.

Richland Creek Watershed Development Change Analysis

The following maps identify the changes in land class for the Richland Creek watershed from the period 1987 to 2000. While five components are identified, two components, urban (commercial and residential) and forest, are keys to understand the changes over this time period. The changes in the other components are more difficult to interpret.

With the Fields classification, it is difficult to distinguish pasture from urban fields; Bare Soils classifications are transitory, indicating a disturbance. Water fluctuation may be due to variation in rainfall and the addition of a water body in the southeast section of the watershed.

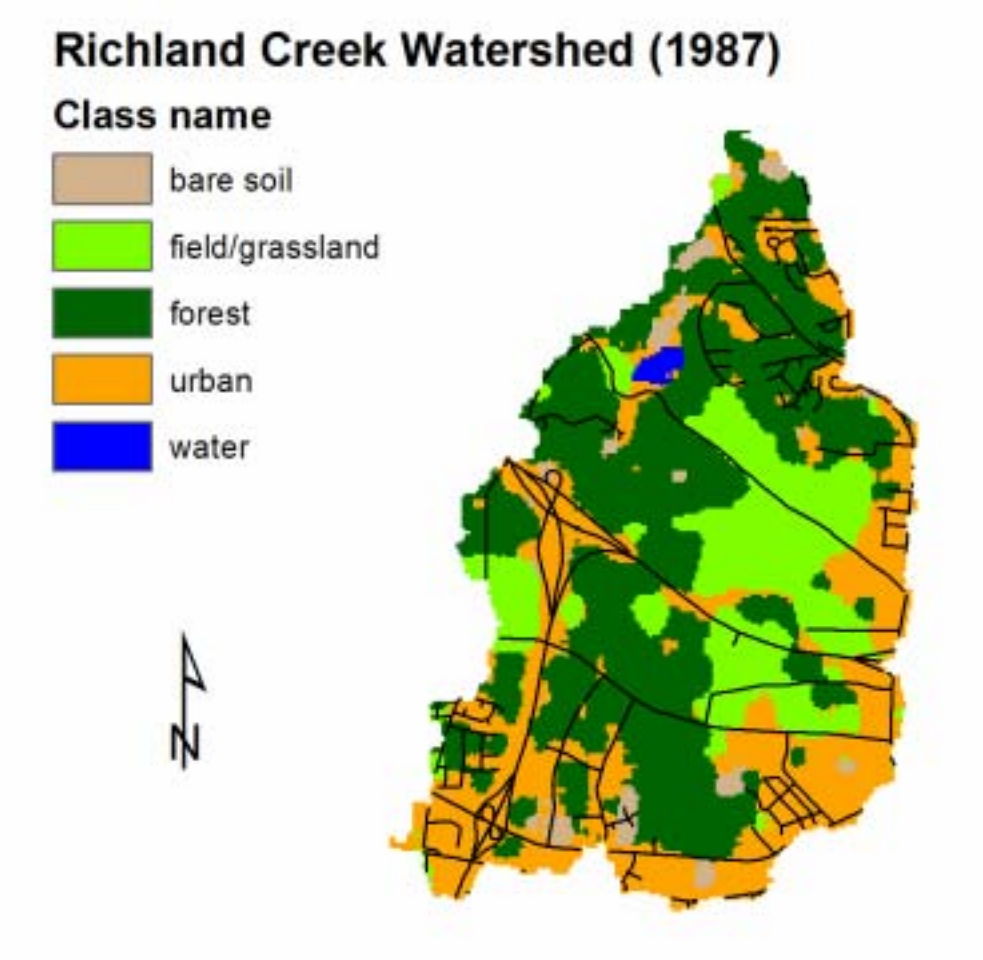

Figure 12. Richland Creek Land Use in 1987

Land Class	Acres		Land Class	Acres
Forest	2029		Bare Land	132
Urban	1446		Water	24
Fields	861			

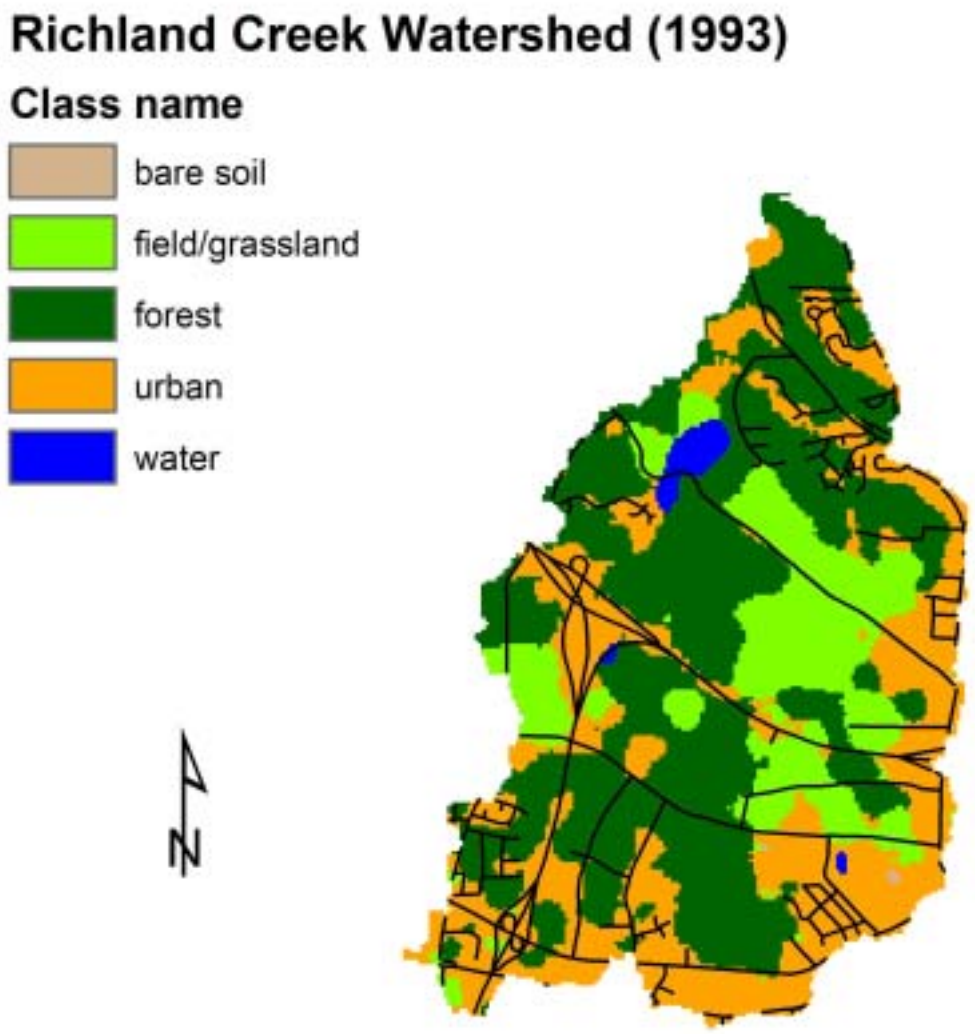

Figure 13. Richland Creek Land Use in 1993

Land Class	Acres		Land Class	Acres
Forest	2101		Bare Land	3
Urban	1546		Water	58
Fields	784			

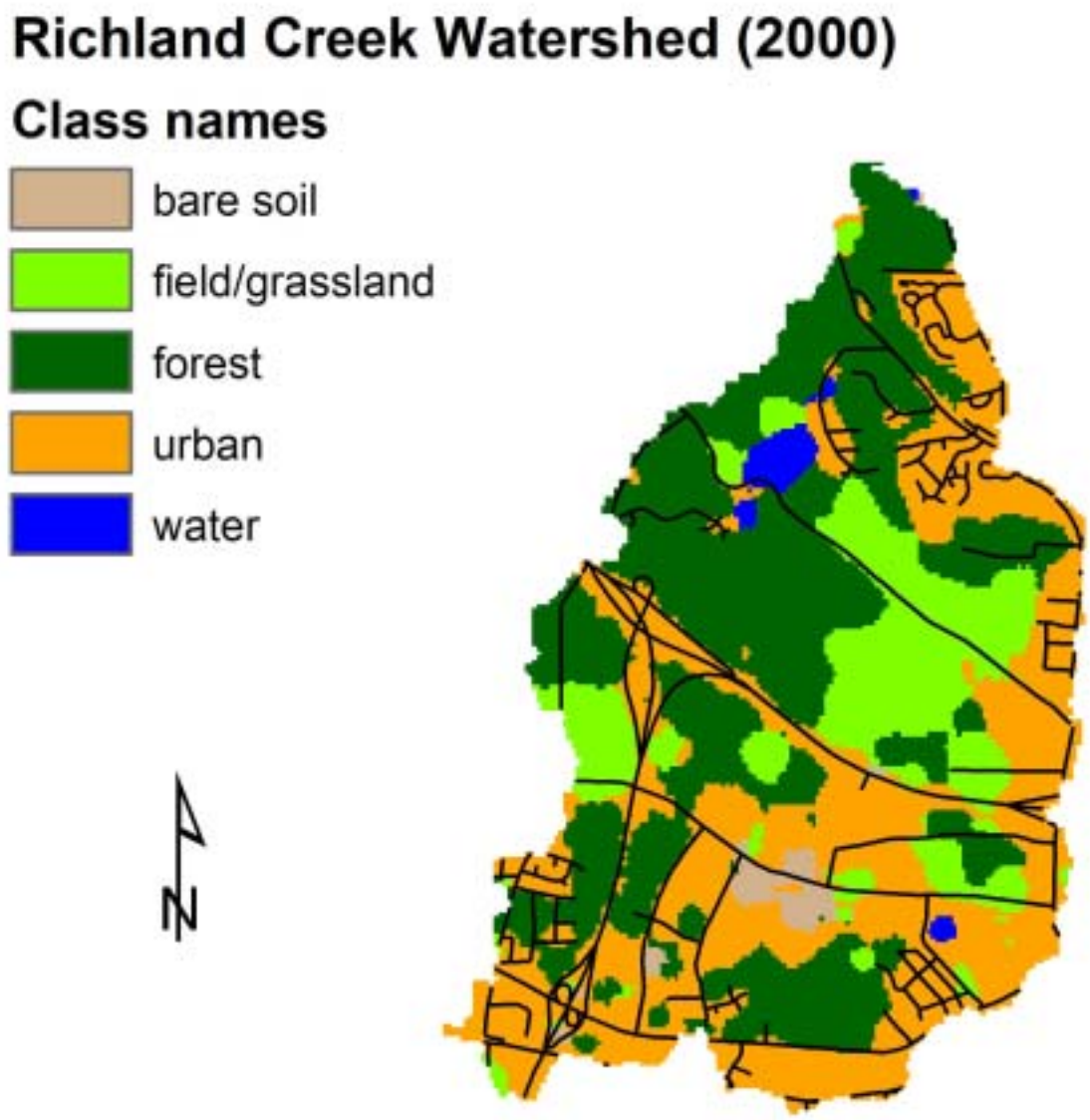

Figure 14. Richland Creek Land Use in 2000

Land Class	Acres		Land Class	Acres
Forest	1793		Bare Land	80
Urban	1838		Water	61
Fields	719			

Overall from 1987 until 2000, the following changes in land classification occurred:

Table 2. Richland Creek Change Summary

Land Class	1987 Acres	% Total	2000 Acres	% Total	
Fields	861	19	719	16	Decreased 16%
Urban	1,446	32	1,838	40	Increased 27%
Forest	2,029	45	1,793	39	Decreased 12%
Water	24	< 1	61	< 1	Increased 150%
Bare Soil	132	< 1	80	< 1	Decreased 39%
Total	4,492		4,491		

(Percentage may not add to 100 due to rounding).

Richland Creek Density Analysis

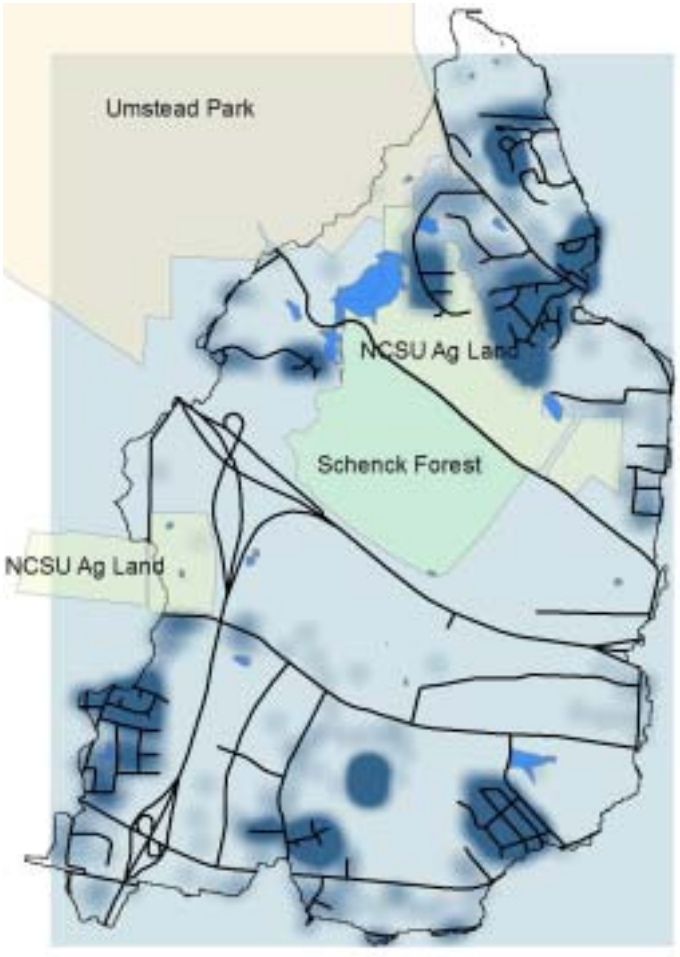

Figure 15. Richland Creek Density Map
(Source: Wake County 2003 parcel data)

The density analysis map for Richland Creek differs from the Swift Creek map in that utility data was not available for this area and the water shed contains more NCSU land holdings.

From this map, it is easy to see how in-fill development is building out the private land holdings around the public land holdings. Two other features not reflected in this map are the RBC Center and the new State Office Complex. The RBC Center and its attendant parking lots greatly affected the water quality of Richland Creek due to the amount of impermeable surface. The State Office Complex construction is in progress and the structures were not available in the parcel data.

Comparison of Change in Two Watersheds

Table 3. Comparative Summary of Changes

Land Class	Swift Creek	Richland Creek
Fields	5% increase 2,002 to 2,106	16% decrease 861 to 719
Urban	235% increase 2,020 to 4,763	27% increase 1,446 to 1,838
Forest	29% decrease 9,187 to 6,548	12% decrease 2,029 to 1,793
Water	7% increase 893 to 962	150% increase 24 to 61
Bare Soil	62% decrease 452 to 174	39% decrease 132 to 80

This comparison summary demonstrates that urbanization in both areas has increased at the cost of forested or open space areas. In the Swift Creek watershed, the urban land class increased 2,743 acres while the forest land class decreased by 2,639 acres, accounting for nearly all the change in urbanization. Similarly, in the Richland Creek watershed, the urban land class increased by 392 acres while the forested land class decreased by 236 acres with losses in fields making up most of the difference.

While the Richland Creek watershed shows a relatively small increase in urbanization, in-fill activity on private holdings is occurring and the State of NC is building the new office complex in the watershed. Also, not reflected in this change analysis is the building of Cardinal Gibbons High School or the RBC Center. This infill activity has been occurring since 2000 and is not reflected in the available GIS data. It will be interesting to see how closely the rates of urbanization compare when additional imagery is available.

Social Process Mapping

Overview

Utilizing Clark's social process model to map the participants and interactions of the participants from the case studies allows us to frame the issues, functions and relationships. This model guides interpretation and understanding of what happened. As the tool is applied, it is important to watch for rightful participants, omitted participants, consistency of words and actions and changing positions. Clark reminds us that well-being, affection and respect are easily overlooked and under appreciated, yet are powerful motivators (Clark 2002:45).

Social Process Mapping Components

The social process mapping components are discussed below and then exhibited in two formats. The first format is a table of social process categories, listing participants and values. The second format is a diagram that shows the relationships among participants.

Participants

Swift Creek		Richland Creek	
Decision Maker	**MC/SC Alliance**	**Decision Maker**	**Umstead Coalition**
EMC Wake County Commissioners Planning Board Wake County School Board Joe Thompson	Some residents in Middle Creek/Swift Creek watersheds	Raleigh City Council CAMPO NCDOT Wake County Commissioners Sen. Sherron Gov. Hunt	Individuals living in corridor Environmental groups Land preservation groups Concerned citizens

Since this study focuses on the influence organizations have on the land use decision process, the participants are grouped into one of two categories: decision maker or NPO member. Because of the relatively small number of decision makers, this grouping appears to work well for that category. Relationships of the decision makers can be mapped with some degree of completeness. On the other hand, due to the large number

of members in each NPO, this grouping has the disadvantage of masking individuals and the varied relationships and values influencing an individual's actions. Individuals tend align with organizations that are striving to achieve outcomes similar to their desired outcomes even if the driving values behind the organization's position differs from theirs. In the end, it is the relationships of individuals as voters, employees, employers and advocates combined with the official recognition of the NPO as the primary advocate for a particular outcome that defines the influence of the NPO. While relationships of the NPO's leaders can be mapped with some certainty, the individual members' relationships are hidden from most discourses.

Perspectives

Swift Creek		Richland Creek	
Decision Maker	**MC/SC Alliance**	**Decision Maker**	**Umstead Coalition**
Listening to constituents Development versus preservation	No change to building rules Protection of watershed	Listening to constituents Real Estate Brokers for development Transportation Planners anticipating traffic growth	Protect environment Protect park lands Build connector somewhere else

Perspectives address the demands, expectations and views of those participating in the process. Perspectives of the decision maker participants are formulated in terms of listening to constituents composed of members of the NPOs, developers who want more freedom to build and business leaders looking to grow their business. The decision makers are also local and state planners who are attempting to position the community to handle anticipated growth. Frequently, a single person holds multiple roles and inherent conflicts in these roles make it difficult to know which perspective is active in a given situation. From the NPO perspective, goals are generally reflected in the mission statement or by-laws of the organization while the individual's goal may range from protecting the environment to removing a threat to personal property.

Situations

Swift Creek		Richland Creek	
Decision Maker	**MC/SC Alliance**	**Decision Maker**	**Umstead Coalition**
Wake County Commissioner appointed Joe Thompson to Planning Board Developer Joe Thompson wanted to alter building rules to support his project Other developers sat as County Commissioners	Voted for county representative Voted for state legislators	Sherron employed Grady as real estate broker Sherron controled budget of state parks Grady voted to fund connector County & city bodies advised NCDOT through CAMPO County and city projects were funded by NCDOT & Grady through Planning Board	Voted for Senator Voted for city councils Voted for county commissioners Voted for Gov. Hunt

Situations where the participants interact are easier to see in the decision maker column, as there are fewer individuals to follow. For example, in the Swift Creek watershed study, we see the County Commissioners appointing a developer to the planning board. It is more difficult to see the employer – employee or business-to-business relationships of the individuals in the NPOs, but as most members are active voters, the relationships to the decision makers are easy to identify. In the public policy arena, the critical relationship is the voter-decision maker relationship and the diagrams (Figure 16 and Figure 17 following this section) show the differences between the two NPOs in this area.

Base Values

Swift Creek		Richland Creek	
Decision Maker	**MC/SC Alliance**	**Decision Maker**	**Umstead Coalition**
Power Wealth Affection Respect	Power Respect	Power Wealth Respect Affection	Power Respect

Values of power and wealth are predominate in a business setting, but affection and respect of family, friends and business associates are also present. For elected officials, respect among peers and voters can be a very powerful driver in the decision making

process. For the NPOs, the values of power and respect, i.e., influence in the decision making process, are present. The values of the individuals in the NPOs are masked by the values of the organizations.

The difficulty in assessing base values is demonstrated by a more detailed view of Senator Sherron. He appears vilified, motivated solely by business interests in this process. Yet that seems to go against his history of being a strong supporter of the park system. During an interview a differing view was offered and maybe more believable but very difficult to substantiate. This alternate view suggests that Sherron was caught between conflicting values of keeping his word to peers or supporting the view of his constituents. In this view, Larry Goode, NCDOT Secretary, made arrangements with the quarry on Duraleigh Road allowing them to move south of Crabtree Creek. DOT would move Duraleigh road to allow this expansion to happen, but it locked DOT into a single solution for the connector. Goode then called on Sherron to implement this plan. When the proposal became contentious, Sherron was unable to get out of the deal without disappointing one of his peers. Rather than fail to fulfill a promise, he tried to obtain a solution against the will of his constituents. While this view does not change the behavior or outcome, it offers a different driving value for Sherron's actions, respect and not money, and to some that is more in line with his character.

This example only undermines the difficultly of getting at the real values which motivate individuals and should act as a caution in being overly confident in assessments developed from a single source.

Strategies

Swift Creek		**Richland Creek**	
Decision Maker	**MC/SC Alliance**	**Decision Maker**	**Umstead Coalition**
Used subcommittee to guide policy Over-rode sub-committee when recommendation is not favorable Listened to constituents	Met with committees Met with city government Met with subcommittee Incorporation	Used power to promote road with direct funding Used funding authority to pressure other officials to support road Used Disinformation	Met with representatives at all levels Applied pressure to NCSU to alter position Used Disinformation

Decision makers responding to constituents must appeal to their power base in order to be re-elected. They avoid difficult decisions by pushing issues to sub-committees, or ignore and override sub-committees in order to satisfy their supporters. NPO membership utilizes the various contacts in local and state government as well as the employer-employee and business relationships to influence decisions in achieving the outcomes they value. Various approaches to monitoring the many committees and decision-making bodies are afforded the NPOs but the ability to track all the activity is constrained by time resources available to the membership.

Outcomes

Swift Creek		Richland Creek	
Decision Maker	**MC/SC Alliance**	**Decision Maker**	**Umstead Coalition**
More power as they appealed to larger constituent base Wealth to developers	Voiceless in the decision making process	Senator not reelected; loss of respect, affection Grady not re-appointed	Power was increased

Outcomes for most participants are mixed. While some developers had the opportunity to pursue their projects, others were not able to achieve their goals. Senator Sherron was not re-elected to the senate. The outcomes achieved by the NPOs are greatly determined by how they viewed the results of their efforts. In the Swift Creek watershed, the blocking of the Swift Creek Bluffs subdivision is credited to Hurricane Fran and not the efforts of the Alliance, so they do not see that as a positive outcome. In the Richland Creek watershed, the stopping of the connector is credited to the efforts of the Umstead Coalition and it is seen as a validation of their ability to influence the decision process.

Effects

Swift Creek		Richland Creek	
Decision Maker	**MC/SC Alliance**	**Decision Maker**	**Umstead Coalition**
Degradation of water supply	Loss of respect for decision making process Sense of disempowerment in citizens of organization	Empowered local authorities to participate more actively in road planning in Wake County	More involvement in policy decisions

Decision makers at the local and state level were forced to modify their behaviors to include more public participation in the decision making process. From the perspective of the NPOs, the long-term effects are polarized. The MC/SC Alliance speaks in terms of disenfranchisement, fatigue and isolation, where the Umstead Coalition talks about altering the public process to make it more open and responsive to the greater public.

Table 4. Social Processes for Decision Makers and Organizations

	Swift Creek		Richland Creek	
	Decision Maker	**MC/SC Alliance**	**Decision Maker**	**Umstead Coalition**
Participants	EMC Wake County Commissioners Planning Board Wake County School Board Joe Thompson	Some residents in Middle Creek/Swift Creek watersheds	Raleigh City Council CAMPO NCDOT Wake County Commissioners Sen. Sherron Gov. Hunt	Individuals lived in corridor Environmental groups Land preservation groups Concerned citizens
Perspectives	Listened to constituents Development versus preservation	No change to building rules Protection of watershed	Listened to constituents Real Estate Brokers for development Transportation Planners anticipating traffic growth	Protect environment Protect park lands Build connector somewhere else
Situations	Wake County Commissioner appointed Joe Thompson to Planning Board Developer Joe Thompson wanted to alter building rules to support his project Other developers sat as County Commissioners	Voted for county representative Voted for state legislators	Sherron employed Grady as real estate broker Sherron controled budget of state parks Grady voted to fund connector County & city bodies advised NCDOT through CAMPO County and city projects were funded by NCDOT & Grady through Planning Board	Voted for Senator Voted for city councils Voted for county commissioners Voted for Gov. Hunt

	Swift Creek		Richland Creek	
	Decision Maker	**MC/SC Alliance**	**Decision Maker**	**Umstead Coalition**
Base Values	Power Wealth Affection Respect	Power Respect	Power Wealth Respect Affection	Power Respect
Strategies	Used subcommittee to guide policy Over-rode sub-committee when recommendation is not favorable Listened to constituents	Met with committees Met with city government Met with subcommittee Incorporation	Used power to promote road with direct funding Used funding authority to pressure other officials to support road Used Disinformation	Met with representatives at all levels Applied pressure to NCSU to alter position Used Disinformation
Outcomes	More power as they appealed to larger constituent base Wealth to developers	Voiceless in the decision making process	Senator not reelected; loss of respect, affection Grady not re-appointed	Power was increased
Effects	Degradation of water supply	Loss of respect for decision making process Sense of disempowerment in citizens of organization	Empowered local authorities to participate more actively in road planning in Wake County	More involvement in policy decisions

Social Mapping Diagrams

While the table of social processes (Table 4) lists the attributes invoked in the social process, visualizing the relationships is often easier when diagramed. However, all diagrams are constrained by abstraction, generalization and simplification in order to present a comprehendible image and these diagrams are no exception. What the following diagrams attempt to portray are the interactions of the various decision makers and members of the NPOs, recognizing that many of the subtleties of interaction are absent.

In comparing the two diagrams, one critical difference between the two is the number of opportunities the members of the NPOs have to interact as constituents with various decision makers. The Umstead Coalition membership has at least five avenues through which they are able to influence decisions, where as a MC/SC Alliance member has only two relationships where they influence decisions as constituents. Additionally, due to the number and geographic dispersion of membership, the Umstead Coalition may reach multiple members on the Wake County Board or speak to multiple municipalities whereas the MC/SC Alliance members are limited to a single county commissioner due to the concentration of the membership in a single geographic area. Because Middle Creek/Swift Creek watersheds are unincorporated areas, they have no representation in any of the municipalities, whereas the Umstead Coalition may have representation in all the municipalities.

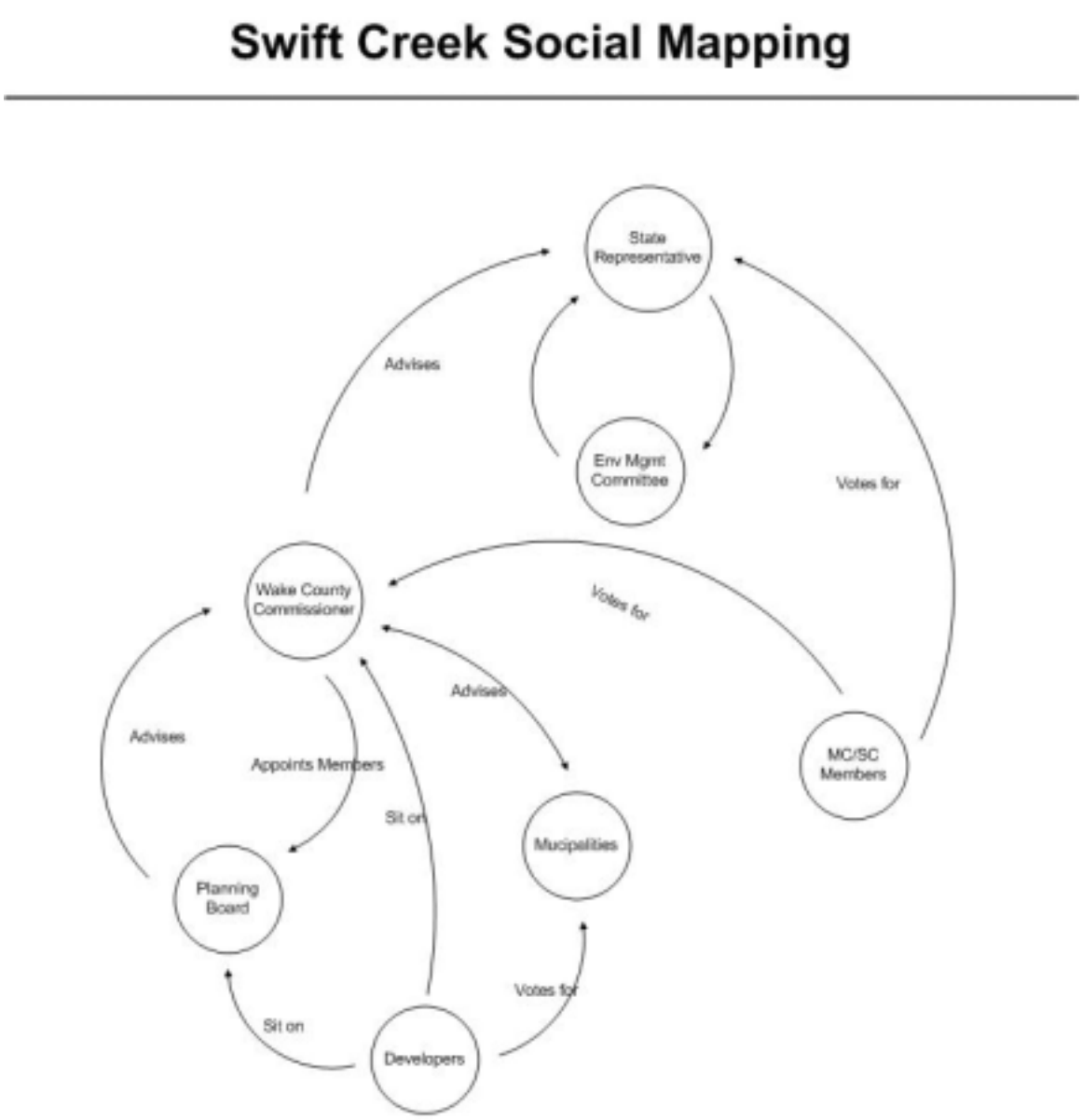

Figure 16. MC/SC Alliance Social Process Map

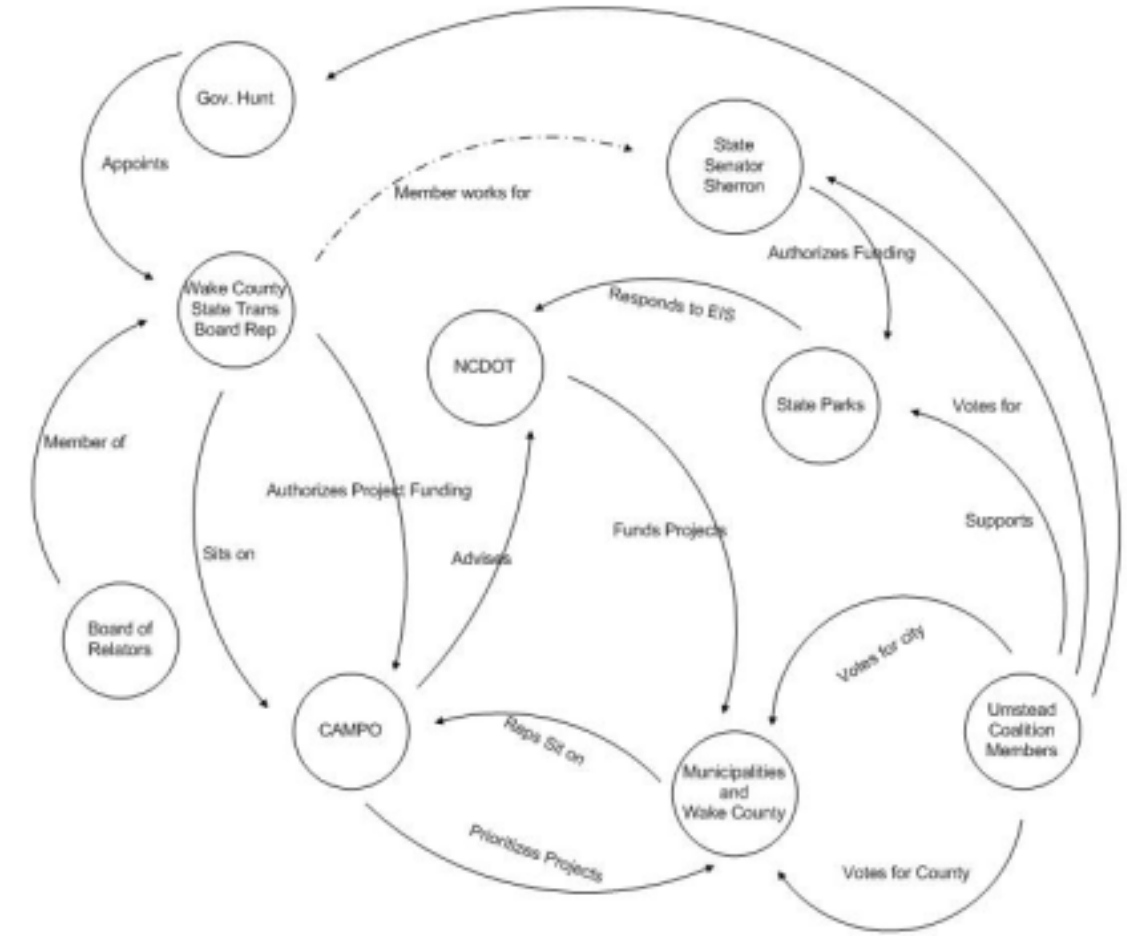

Figure 17. Umstead Coalition Social Process Map

Effectiveness Assessment

MC/SC Alliance Effectiveness

In an interview on April, 2005 with Tom Vass, president during the Swift Creek Bluffs fight and current president of the MC/SC Alliance, he responded that he did not feel the association had been effective in achieving its goals (Vass 2005). They were unsuccessful in obtaining a legitimate voice in the decision making process.

One of the strategies employed by the organization was to identify members to attend the various local government meetings of the town of Cary, the city of Raleigh and Wake County and report back to the larger membership. Vass viewed this process as ineffective as MC/SC Alliance members were not allowed to participate in the meetings except for the Wake County Board meetings where they had a legitimate voice. He also felt the public meetings were for show, as decisions had already been made. These experiences exposed a system of government that eliminated citizen participation. In the end, the citizenship tired of the demands of attending meetings in which they were unable to participate. Unable to sustain a presence against the well-funded developers, members of MC/SC Alliance became discouraged.

Two measures of ineffectiveness cited by Vass were:

- In 1983, 40% of the land was undeveloped and in large tracts of greater than 20 acres. In 2005, only 6% of the land is in large, undeveloped tracts.

- Swift Creek Bluffs subdivision was not built because of the failure of existing community sewer systems as a result of a hurricane. It was not as a result of the work of the MC/SC Alliance.

The analysis of the GIS data supports the trend identified in Vass' first observation. While exact comparisons between the GIS data and Vass's figures cannot be made due to differences in time and units of measure, the trending of urbanization is supported as the

data show urban areas increasing from approximately 14% to approximately 33% of the area and correspondingly, forested land decreased from 63% to 45%.

While the organization appears to have been successful in educating and involving the community in political affairs, the inability to achieve the tangible community goals of controlling development and incorporation leaves the impression of ineffectiveness.

Umstead Coalition Effectiveness

Jean Spooner, current president of the Umstead Coalition, stated the Umstead Coalition had been very effective in the Duraleigh Connector process (Spooner 2005). Through the actions of the Coalition, several achievements beyond saving the park from encroachment by the road were accomplished. At the time this issue became visible, the public policy process was subject to private agreements but because of the efforts of the Coalition, local government processes are now more open. In addition, state government planning is more open and local governments are much more involved in the planning process through the municipal planning organizations (MPO).

Some of the strategies employed by the Umstead Coalition were to (1) build relationships with the state and local staff, (2) follow the public process and enforce the public laws, (3) develop the position of an official information provider, (4) maintain open format of organization for members and (5) form coalitions with other like-minded groups to improve the political exposure of the organizations' positions.

Spooner pointed out one of the constraints of research focused on written documents is that the subtleness of relationships cannot be captured. The public documentation, such as papers and meeting minutes, misses closed meetings, behind-the-scene agreements and other relationships between the decision makers.

In response to inquiries about the general condition of the Richland Creek corridor, Spooner stated the building of Edwards Mill Road *(and the attendant RBC Center)* caused most of the damage. The techniques used to build the road, channelizing Armory Creek, uprooting trees, allowing silt to wash into the creek, and rerouting the stream caused most of the problems. As a result of the severity of the negative impact, the road

construction had on Richland Creek, changes to the way DOT builds roads were implemented.

Overall, the self-assessment remains very effective. Things could have been worse, Jean says but due to the Coalition's actions, they saved the park from encroachment, changed the way the county does business, changed the way roads are built, and opened processes to the public.

Assessment of the GIS data tends to support the position that the coalition did have influence in reducing the rate of development of urban areas. From 1987 to 2000, the increase in urban area was from 32% to 40%, which is a significantly lower development rate than that occurring in other areas. It may be that this slower growth rate also reflects the large land holding of NCSU in the area.

Comparing Effectiveness

Table 5 summarizes the goals of each organization and the outcomes of the specific case study event.

Table 5. Summary of Goal and Outcomes

	Goals	Outcomes
MC/SC Alliance	Promote health, well being and environmental quality	Development in the watershed has exceeded the original design of 1 dwelling unit for every 2 acres and the creek fails to support the biological functioning of a WSWS III classification.
	Educate residents on land use, zoning, development, planning, transportation and environmental integrity of region	Citizens were educated and involved in land use planning issues Citizens were unable to obtain a valid voice in the decisions due to the lack of representation at the various levels of government.
	Provide forum of members to exchange views and encourage community based planning	The organization continues to meet as needed to address issues, but there is a level of frustration due to the inability to influence decisions.
Umstead Coalition	Appreciate, use and preserve Umstead Park	Encroachment on Park property was avoided; additional land from the Richland Creek corridor was added to the park
	Appreciate, use and preserve the Richland Creek natural area	Development on private property in the Richland Creek natural area continues; the stream is considered impaired by DENR/DWQ

In asking Tom Vass and Jean Spooner to assess the effectiveness of the organization they led, Tom Vass stated the MC/SC Alliance was not effective and Jean Spooner stated the Umstead Coalition was very effective. From the table summarizing outcomes, it is easy to see the why the MC/SC Alliance might be frustrated with its results and why the Umstead Coalition feels they were effective.

However, there are similarities of outcomes that challenge these differing self-assessments. When asked about the development affecting the Richland Creek area, Jean responded that while the area is impacted, it could have been worse. Could not this same reasoning be applied to the MC/SC Alliance efforts with a resulting self-assessment of effective? After all, both streams are identified by DWQ as biologically impaired and negative impacts from development continue in both study areas, but without the involvement of the NPOs, both areas could be much worse.

It seems that both organizations focused on a "point solution". For the MC/SC Alliance, it was stopping the Swift Creek Bluffs subdivision and for Umstead Coalition it was stopping the Duraleigh Connector. They focused their energies on a specific issue of interest and achieved different results on their specific issue, which produced the different self-assessments of effectiveness. But at a larger scale of stream quality or watershed integrity, the results are similar and disappointing.

The assessment of effectiveness seems to depend on the scale of problem definition. While NPOs can be effective in influencing specific land use decisions, as issues begin to cover larger geographic areas such as watersheds or broader issues such as water quality, they do not appear to articulate a comprehensive message that assures environmental integrity.

Conclusions

Scale of Issue

As noted in the discussion of assessing effectiveness, the scale of the issue has a large impact on how the outcomes can be viewed. If the objective of the organization is a specific project such a road, bridge or housing development, then the efforts are focused, the membership is engaged and there is a clear delineation of acceptable solutions and outcomes. However, when the scale is broad, such as a watershed or stream water quality, the impact of a specific activity is difficult to evaluate, efforts of an organization are diffused from focusing on a single, tangible objective and the membership tends to disengage over time. As a result, organizations tend to be effective accomplishing what was termed a "point-solution", but less capable of achieving broader based solutions.

Size and Connectedness of Organization

While a small, committed group may be very effective in raising an issue and getting a specific result, to participate in the on-going political decision-making process, the size of the organization matters. In the comparison of the two organizations, the larger membership of the Umstead Coalition gave it access to many more decision-making processes at the various levels of city and county government. The larger membership with a broad geographic dispersion provided access to multiple decision makers in a decision-making process, so the position advocated was heard through multiple decision makers and not viewed as a special interest in a specific geographic area. The larger membership was also effective in expressing its political voice at the polls and effecting outcomes, something that the smaller membership of the MC/SC Alliance was unable to achieve.

Communication Tactics

Another troubling issue is the polarizing language invoked by both sides. For example, in the meeting with the city of Raleigh, the NCDOT official stated that options other than the NCDOT recommended option would not be considered, essentially ignoring the

opinions and requests of the city council and Umstead Coalition. On the other side of the issue, the representative of the Triangle Land Conservancy and member of the Umstead Coalition referred to Richland Creek as "the most important wildlife habitat in the city of Raleigh" which is a rather bold statement. Both statements lock individuals and organizations into fixed positions, with one side refusing to listen to alternative solutions being offered and the other side elevating a piece of land to a position of being a habitat keystone for all Raleigh wildlife. While it is doubtful that either of these statements is true at their extremes, these statements tend to channel efforts to proving specific views and not searching for a common solution. While only one example from each position is referenced here, do not assume both parties invoked this tactic equally. There are many more examples of extreme positions being stated on the NPO side.

David Carter, Director of Wake County Parks, Recreation and Open Space, pointed to a weakness of the NPOs in their tendency to ignore the political realities and instead rely on ideology to carry the issue (Carter 2005). This leads to making unrealistic demands at the decision-making table, which constrains options in the decision-making process and weakens their position as legitimate stakeholders in the process. In this acrimonious environment of promoting ideology and hidden agendas, the outcomes of frustration, polarization and ignoring reasonable alternatives are inevitable.

Use of Scientific Information

The use of science was disappointing in two areas: the lack of public discourse on options supported by science; and, the use and misuse of facts to justify a position. If there were discussions of viable, supportable options, they were not recorded in the documentation that I was able to access.

Carter indicated NPOs are not using technical staff available within government bodies effectively and the ineffectiveness of coordination between the technical staff and NPO results in multiple messages (Carter 2005). Yet this view conflicts with the view of the NPOs where both indicated they felt they used these staffs. It appears there is a disconnect between what is expected and what can be delivered by each party. Carter suggests there are some benefits to both parties in developing strong working

relationships allowing them to partner together for project advocacy, project funding and policy change supported by science.

In these cases, the limited invocation of science was to support an already defined view. It seems the solution may have preceded the options. The effort to justify a position without explaining the real goal appears to encourage the loose use of facts, inconsistency in applying science and general obfuscation of issues.

Other Observations

While this analysis concentrated on the social process, ultimately it is the outcomes of the land use decisions that must be evaluated. It is at the larger scale of stream or watershed protection that the solutions sought by each NPO disappoint. Both organizations set goals that lack in comprehensiveness which resulted in a failure to protect the water quality. They offer "point solutions" where something else is needed. Protect this corridor, do not build that road, or build less dense housing are issues that are concrete enough to get citizens involved. Yet too many times, NPOs have succeeded in achieving the "point solution" only to see the larger context undermine their efforts. The public is fatiguing of the message that the desired "point solution" will protect the environment, only to have the achievement of the goal undercut by activities and attitudes in the larger context that allow continuing degradation of the ecosystem.

In Swift Creek, an example of this undermining action is the school board overruling the agreement between the municipalities by building a school in the Swift Creek watershed. By law, schools must be serviced by public utilities, so water and sewer had to be brought into the watershed. The introduction of utilities created a mini-land rush of infill development further compounding water quality issues.

More troubling is the role NCSU played in undermining the stream quality of Richland Creek. In the Physical Environment Committee (PEC) meeting on November 24, 1995, the University's mission of commitment to stewardship of the land was raised. This view was endorsed and unanimously approved by the PEC as justification in protecting the Schenck forest. However, less than 2 years later, the poor management during the

building of the RBC Center resulted in permanent degradation of Richland Creek as a significant amount of sediment washed into the creek and the creek channel straightened. Yet the University washes its hands of any responsibility by pointing to the Centennial Authority as responsible for not managing the project better even though NCSU has a seat on the Authority. But the Dean of Agriculture and Life Sciences was more direct when he said it was up to city zoning officials and state regulators to ensure that the environment is protected. "The university can't control everything," said James Oblinger. "That's not our assigned task" (Shiffer 2000). If an institution such as NCSU has not embraced a strong land stewardship ethic, then which organization is capable of effectively communicating the value of protecting natural systems?

This points to a problem much larger and difficult to define: How or what is needed to alter the way societies manage their natural resources? If governments, universities and local, issue-based NPOs are unable to consistently affect large-scale resource management concerns, who or what institution can articulate a comprehensive message that assures environmental integrity?

Appendices

Appendix A – Chronology of Swift Creek Watershed Events Since 1988

Year	Month	Description
1988	Feb 8	Agreement between Apex, Cary, Garner, Raleigh and Wake County to prepare SCLMP
1990		EMC adopts minimum regulations to take effect in 1993
1991	Aug 8	Wake County Planning Board proposes relaxing restrictions on Swift Creek Watershed from WS-II (1du/2ac within 1 mile buffer) to WS-III (1du/1ac remainder)
	Sep	SCLMP complete; recommends WS-II classification
	Oct 1	Garner opposes WS-II classification for Swift Creek as 60% of community is in watershed.
	Dec	SCLMP becomes state law by EMC, but Swift Creek is downgraded to a WS-III class watershed.
1992	Feb 14	EMC adopts more lenient rules for the watershed classifications regulations allowing twice as much development as the 1990 rules and sets the effective date July 1993 for towns > 5,000 pop, October 1993 towns < 5,000 pop and January 1994 for counties
	May	EMC completes assignment of watershed classification to state's water supplies and passes the job of protecting the watersheds to local authorities.
	June	Swift Creek identified as "critical habitat" for freshwater mussels under proposal before NC Wildlife Resources Commission.
1993	Apr 28	First Triangle J watershed summit
1994		Second Middle Creek/Swift Creek Community Alliance formed
	Oct 12	Developer asks Cary to annex land in Swift Creek watershed and extend utilities for Swift Creek Bluffs development. This is the first request to breach agreement between Apex, Cary, Garner, Raleigh and Wake County to protect the watershed.
	Oct 15	Thompson & Associates withdraws plans to develop Swift Creek Bluffs
	Dec 10	Joe Thompson leads landowners to request Wake County Planning Board to allow Swift Creek Bluffs development
1995	Jan 5	Wake County rejects Swift Creek Bluffs development proposal
	Feb	Joe Thompson appointed to Wake County Planning Board
	April 7	Wake County commissioners, Gary Pendleton, Stewart Adcock, Les

Year	Month	Description
		Merritt and John Converse vote 4-3 to send Swift Creek Bluffs development proposal back to planning board. No public comments allowed.
	May 18	Wake Planning Board rejects Swift Creek Bluffs development proposal.
	Aug 17	Wake Planning Board rejects Swift Creek Bluffs development proposal for the third time.
	Sept 17	Cary asks Raleigh to back away from agreement to restrict development in Swift Creek watershed. Wake County has already distanced itself from the agreement, although the Planning board has refused the SC Bluffs development. Raleigh wants to make development in watershed more difficult.
	Oct 6	Two proposals for Swift Creek Bluffs development submitted; one to Wake County, one to Town of Cary.
	Nov 21	Wake County Commissioners approves minutes of Oct 16 meeting which overturned Planning Board's decision to deny Swift Creek Bluffs development.
1996	Feb 14	Middle Creek/Swift Creek Community Alliance requests the state Division of Environmental Health to reject the Swift Creek Bluffs development plan unless watershed protection rules can be strengthened.
	Apr 4	Planning Board recommends modifying rules to make it easier to build high density cluster homes: includes land unsuitable for development in calculation, use of septic tanks and less open space.
	Apr 15	Wake County commissioners approve modifying development rules to build on smaller lots if they leave open land, but does not exclude land that cannot be built upon anyway.
	Jun 22	Cary limits town border to I-40, removing the option to provide water and sewer to Swift Creek watershed. Already provides water and sewer to Swift Creek Elementary School, but cannot add owners of surrounding lots to their service. Agrees to this in order to purchase water from Raleigh.
1997	Dec 13	Raleigh plans provide sewer hook-up to county subdivisions which suffer broken community sewage systems, including communities in Swift Creek Watershed.
1998	Sep 10	Senate approves bill restricting sewer pipes near Swift Creek.
	Oct 14	Wake school Board wins permission to build elementary school on Yates Mill Pond Road. Five governing bodies waive the guidelines to allow Cary to provide water and sewage.
1999	Jan 02	Macedonia Village is announced. Although not in the watershed, it

Year	Month	Description
		borders the watershed and this form of infill development is now feasible because utilities are now provided for north of Tryon Road.
2003	June	Entire Upper Swift Creek considered impaired.
2004	Jan 02	Planning commission refuses to strike a provision allowing impervious surfaces to exceed 12 percent in the watershed.

Appendix B – Chronology of Middle Creek/Swift Creek Community Alliance

The following summary of activity of the Middle Creek/Swift Creek Community Alliance was compiled by Thomas E. Vass (Vass 2002a) and is accessible on the Middle Creek/Swift Creek Community Alliance website (www.swiftcreek.org).

This summary is excerpted from three documents authored by Thomas Vass:

> TWO DECADES OF PROTECTING THE CREEK: THE CHRONOLOGY OF EVENTS SURROUNDING THE EFFORTS TO INCORPORATE THE VILLAGE OF SWIFT CREEK: Comments to Wake County Delegation to NC General Assembly in Support of the incorporation of Swift Creek. April 24, 2002, Legislative Office Building, Raleigh, North Carolina (Vass 2002a);
>
> A Twenty Year Chronology of Events (1981-2000) Related to the Protection of the Swift Creek Watershed in Wake County, North Carolina, as Portrayed by Press Clippings and Newspaper Editorials (Vass 2002); and
>
> Update to A Twenty Year Chronology of Events (1981-2000) Related to the Protection of the Swift Creek Watershed in Wake County, North Carolina, as Portrayed by Press Clippings and Newspaper Editorials (Vass 2004).

These documents are archived on the University of North Carolina – Chapel Hill campus in the North Carolina Collection with call numbers of C387 V336t UNC-CH and C387 V336t 2004 UNC-CH.

Year	Description
1980	Promoting Lake Quality Through Local Land Use Management and Control, published by The Center for Urban and Regional Studies, UNC-CH, for NC Department of Natural Resources, contains policy guidelines on protecting NC water supplies. "Urbanization is a major cause of water quality degradation…urban runoff reaching the water supply may contain a variety of pollutants…"
1981	Swift Creek Democratic Precinct #1 establishes citizen forums on issues related to development in the Swift Creek watershed. First forum titled "The Future of the Swift Creek Community: Land Use Planning in Swift Creek." 500 citizens attend forum at Swift Creek School.
1982	"Swift Creek Area Finds Itself in Path of Growth," The Raleigh Times, cites politics in surrounding towns associated with land use decisions in Swift Creek.
1983	First citizens association (Swift Creek Community Action Association) forms to

Year	Description
	protect Swift Creek Watershed. Association holds a series of citizen education forums throughout the year.
1984	Swift Creek Community Action Association intervenes against the developers of Lochmere, citing inadequate provisions for containing nutrient runoffs from the golf course. Consent agreement signed.
1985	Swift Creek Community Action Association holds first forum to consider incorporation of Village of Swift Creek.
1987	Swift Creek Community Action Association begins political support for statewide policy for protecting watersheds.
1988	Mike Jennings, Wake County Planner proposes the creation of the Swift Creek Watershed Protection Plan at Triangle J COG meeting.
1989	NC General Assembly passes HB 156, Water Supply Watershed Protection Act, a cooperative program wherein local governments adopt water supply protection programs.
1990-1992	Several local towns surrounding Swift Creek adopt provisions of Swift Creek Watershed Protection Plan limiting extension of sewer lines into the watershed and maintaining one acre lots for residential development. Wake County fails to adopt plan. EMC adopts watered-down rules for watershed protection after successful law suit from developers of Treyburn in Falls of Neuse watershed.
1993	Citizens in Middle Creek and Swift Creek begin meetings to monitor development activities and attend public meetings on land use.
1994	Second citizens association forms (Middle Creek/Swift Creek Alliance, Inc.). Town of Cary proposes increased density be allowed in Middle Creek.
1995	Cary Town Council contacts other local governments to request possible modifications to Swift Creek Land Management Plan. October 16, 1995, Wake County Commissioners approves plan for subdivision on bluffs of Swift Creek.
1996	MC/SC Alliance intervenes against low pressure sewage subdivision proposed by member of Wake County Planning Board. MC/SC Alliance conducts citizen's referendum on incorporation. 1,800 citizens vote, and 63% favor incorporation.
1997	Representative Sam Ellis, of Wake County, introduces HB 614 to incorporate the Village of Swift Creek. Bill makes it to floor and is defeated 47-62. Senators Miller and Reeves of Wake County keep Senate version SB 726 alive, establishing a cooperative plan for joint planning in Swift Creek. SB 726 is amended to allow a non-binding referendum on incorporation, set for 2000.
1998	SB 726 ratified as HB 1114.
2000	Referendum on incorporation held. 4,220 votes cast, 2,492 (58%) favor incorporation.

Year	Description
2001	Representatives Sam Ellis and Bob Hensley introduce HB 489, Swift Creek Incorporation. Petition delivered to Joint Legislative Commission on Municipal Incorporation.
2002	Joint Commission meets to receive and review Swift Creek petition to incorporate.
2004	Oct, Thomas Vass, President of MC/SCCA files suit against Town of Cary for illegal annexation of land in SC watershed and interference with the incorporation of the Village of Swift Creek.

Appendix C – Chronology of Richland Creek Watershed Events Since 1988

Year	*Month*	*Description*
1967		Thoroughfare Plan for Raleigh includes a proposed connector between Duraleigh Road and the proposed Wade Avenue extension in the vicinity of Richland Creek.
1969		Raleigh's *Park With a City in It* master plan for parks and recreation shows the Richland Creek corridor as a proposed greenway connecting to Crabtree Creek.
1972		Raleigh's *Capital City Greenway* study shows the Richland Creek corridor as a potential connector to Crabtree Creek.
1990		NCDOT issues a State Environmental Assessment (SEA) on the proposed Duraleigh Road Connector with a SFONSI. Does not favor Alternate Route 4.
		NC Department of Administration (NCDOA) releases the *Blue Ridge Road Area Master Plan* which results in the transfer of 257 acres of NCSU agricultural research and teaching land in the Richland Creek watershed to NCDOA for future office complex development.
1991	January	Umstead Coalition leads field trips through the Richland Creek Corridor. During the tour, coalition members talked about topographical features that could be altered by the road.
		Jill B. Heaton pointed out a creek that flows through Schenck Forest. "Even after it rains it's clear," Ms. Heaton says, describing what she feared would become lost once a roadway is cut. "It looks almost like a mountain creek." (*News & Observer*, March 10, 1991)
		NC Department of Environment, Health and Natural Resources (NCDEHNR) reaffirms its position that a new entrance to Umstead Park on the proposed Duraleigh Connector is not necessary and should not be used as justification for the road.
	March 22	Senator Sherron indicates a neutral position on the connector.
	April 17	State park officials announce that they no longer support the thoroughfare and indicate the 1974 park master plan will be modified to remove the eastern entrance.
	April 22	Delegation of Wake county legislators vote to oppose the

Year	*Month*	*Description*
		transfer of Umstead Park property to be used for the planned Duraleigh Connector, so the preferred NCDOT alternative cannot be built.
	April 24	The City of Raleigh declares official opposition to construction of the Duraleigh Road Connector without a full EIS and begins the process of recommending alternative priorities.
		Four routes have been suggested by the state engineers, with three of the four crossing the park. The fourth route lies east of the park but crosses Richland Creek 3 times and impacts more wetlands than the other three. The city of Raleigh has been asked to pay the additional costs of bridging the wetlands and creek.
1992		NCDOT put the Duraleigh Road Connector on hold in its Transportation Improvement Plan.
		The Triangle Land Conservancy (TLC), Triangle Greenways Council, and the Umstead Coalition receive a grant to study the importance of the Richland Creek corridor and propose a conservation plan in cooperation with involved landowners.
		TLC accepts the donation of 13 acres of land between Richland Creek and Umstead State Park. The parcel has been on the Umstead Park Master Plan acquisition list since 1974. TLC works with NC Division of Parks and Recreation to plan the addition of this tract to Umstead Park.
1994		TLC officially offers the 13 acre tract along Richland Creek to the State for Umstead Park.
		The Capital Area Metropolitan Planning Organization (CAMPO) requests that the Duraleigh Road Connector remain on hold and the Edwards Mill Extension, Phase II be accelerated.
	Summer	Rep. Sherron, a real estate broker/owner of JK Sherron & Associates, represents buyer of Raleigh Corporate Center, off US 70, near the proposed Duraleigh Connector.
		Charles Grady works for Sherron & Associates as a broker marketing land in the 30 acre business park.
1995	January	The NC Council of State votes to accept the donation of the 13-acre tract from the TLC as an addition to Umstead Park.
	February	The Umstead Coalition indicates its support for the

Year	*Month*	*Description*
		expansion of Edwards Mill Road and Duraleigh Road which would eliminate the need for the Duraleigh Connector.
	May 5	TLC signs the deed donating the 13 acre tract to the State.
		NCDOT recommends in the TIP that the Duraleigh Connector be "reactivated" and that Phase II of the Edwards Mill Extension be put on hold.
	May 16	Raleigh City Council notes its disapproval of the Duraleigh Connector, the fourth council to vote against the road.
	May 18	Charles Grady, Wake County State Transportation Board representative, restores funding to the Duraleigh Connector after being put on hold in 1991. Wake County transportation planning committee overrules the Raleigh City Council and endorses the Duraleigh Connector by voting for the restoration of funding to the project.
	June	The State Property Office offers to return the land to TLC because NCDOT's proposed route for the Connector would cross that property.
		All lands in Umstead Park and originally in the 1943 Crabtree Creek Recreation Demonstration Area are listed on the National Register of Historic Places.
		Sherron links funding of state parks to a bill that allows the NC Department of Administration to give highway builders rights-of-ways through donated land, pressuring state park officials into supporting the Duraleigh Connector.
		Wake County Board of Commissioners votes to support the Duraleigh Connector.
	July 1	Board of Realtors votes to support the Duraleigh Connector.
	July 6	CAMPO reverses its position on the Duraleigh Connector and Edwards Mill Extension and endorses NCDOT's plan by a narrow margin.
	July	Sherron says he might hold up funding for state trust fund until TLC agrees to take back the donated land near Umstead Park.
		Sherron states the TLC supports the Duraleigh Connector, which is denied by Crawford Crenshaw who states the organization does not take a position on any road.
		Sherron says he will withdraw his company from marketing

Year	*Month*	*Description*
		any of the property in the business park, but states there is no conflict of interest.
	July 17	Wake county commissioners vote 4-3 to support the Duraleigh Connector.
	July 21	CAMPO votes against Raleigh to support the Duraleigh Connector. There are accusations of the state threatening to withhold funding for roads in municipalities that voted against the connector.
	Oct 18	Board of ethics rules that Charles Grady created "the appearance of a conflict of interest" when he marketed real estate near the Duraleigh Connector, but found no compelling evidence that he stood to benefit by the project.
	Nov 11	NCSU maintains neutral position on the connector. One Dept of Forestry faculty member, whose house stands in the path of the road, expresses frustration and bewilderment at the position, citing noise, wetlands harm and wildlife diversity harm.
	Nov 15	NCSU maintains neutral position and Sherron is identified as a big WolfPack supporter.
	Dec 7	NCSU faculty, via the Physical and Environment Committee, advises opposition to the Duraleigh Connector. They cite damage to Schenck Forest – noise, silt, limited controlled burns, and loss of diversity in wildlife species.
1996	Jan 19	Only Tom Fetzer, mayor of Raleigh votes against funding the Duraleigh Connector during the CATAC meeting.
		Issue of local control vs. state control is raised.
	February	Raleigh planning director requests that CATAC delete the connector from the long-range road plan.
		NCSU Faculty Senate votes unanimously to oppose the connector.
	April	Protest march against the connector is held.
		In Wake County commissioner's race, the connector becomes a topic of debate.
		Eric Reeves, Raleigh City Council member, circulates petition to reject Cary's request to buy additional water from Raleigh unless Cary officials drop their support for the connector.
	May	NCDEHNR recommends adding the TLC tract to Umstead

Year	*Month*	*Description*
		Park, removal of the Connector from the TIP and the development of a conservation plan for the Richland Creek corridor.
		Sherron is defeated in primary elections.
		Governor Jim Hunt expresses serious concern about the environmental toll the road will have.
	June	Opponents of the connector complain to Federal Highway and Transit Authority Administrators about the State DOT "strong-arming" local officials to build unnecessary and unwanted roads.
	October	NCDOT releases the draft EIS for the Duraleigh Connector.
	November	NCSU officially opposes construction of the Duraleigh Connector.
		NCSU report says 16 acres will be impacted by noise; DOT says 6.
	December	Wake County Commissioners vote against the construction of the Duraleigh Connector.
		Governor Hunt expresses his opposition to the road's construction.
		DOT's draft EIS comes under criticism from DEHNR.
		Governor Hunt comes out against the connector saying the EIS does not make a compelling case in light of the environmental harm.
1997	January	NC Board of Transportation deletes the Duraleigh Connector from the TIP and CAMPO requests that it be removed from the Thoroughfare Plan.
		The State Property Office records the deed donating the TLC property to the State and allocates management of the tract to the NC Division of Parks and Recreation.
	April	Charles Grady in not reappointed to Board over allegations Grady used his position to push a land deal.
	July	Charles Grady pleads guilty to a misdemeanor conflict-of-interest charge.
1998		Raleigh Entertainment and Sports Arena development severely impairs the creek by relocating it and lining the channel with rock.
		The builders of Cardinal Gibbons High School violates

Year	*Month*	*Description*
		state law by cutting down trees growing on the stream bank and putting a road bed, silt fence and storm water basin in the creek itself, state records show.
2000	April 13	NCSU proposes to sell 159 acre tract along Richland Creek to developers.
		The state Division of Water Quality ranks the stream as biologically impaired.
2003	Aug 8	State Board of Transportation removes the Duraleigh Connector from the thoroughfare maps.

Appendix D – Chronology of the Umstead Coalition

Year	*Month*	*Description*
1966		A group of citizens comes together as Citizens to Save Umstead Park to protect the park from encroachment due to the expansion of the Raleigh-Durham Airport (Nygard 1990:36).
1970s		Under the guidance of Margaret Nygard, the Umstead Coalition forms which draws membership from individuals and other conservation-focused groups.
1991	Jan	Tours of Richland Creek Corridor are given to government officials and newspaper.
1998	March 10	Opposition to a $300 million Federal Express hub intensifies when the Umstead Coalition says the proposed facility and a related road would be detrimental to Umstead State Park.
1999	January	Coalition mobilizes against a road planned for land just south of Umstead State Park. Coalition say plans to extend the Cary Parkway will bring noise and pollution to the park and spoil the country feel of the neighborhood.

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