

**North Carolina Turnpike Authority**  
**and NC 540- Southeast Corridor Extension:**

**How Policy Is Paving the Road**

by

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## ABSTRACT

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The Piedmont area of North Carolina is growing at a rapid rate. In response to transportation, economic and social demands placed on the area, The North Carolina Turnpike Authority is moving ahead with its plans to complete the thirty mile extension of the Triangle Expressway through southern and eastern Wake County. This expressway would connect the towns of Clayton, Garner, Fuquay Varina, Holly Springs, Apex, Cary and Raleigh. In addition, it would ease congestion on secondary roads by connecting major roads such as I-440, I-40, NC-42, NC-55 and Ten-Ten Road. Following mandatory guidelines of the National Environmental Policy Act (NEPA) process, the Turnpike Authority has analyzed a number of routes under consideration in addition to the preferred corridor.

Alternative routes have drawn much attention and are under consideration for the 2012 decision deadline. These alternative routes have key policy issues or problems associated with them. The “orange route”, the long-term protected route of the Department of Transportation (DOT) since the mid-1990s, runs across major streams known to be the habitat of the endangered dwarf wedge mussel or *alasmidonta heterodon* (US Fish and Wildlife Service, U.S. Fish and Wildlife Service: <http://nc-es.fws.gov/mussel/dwmussel.html>).

Secondly, the “red route”, one of the alternative routes proposed by the DOT, running through the Town of Garner as well as Lake Benson, will have major impacts on businesses, residential neighborhoods, parks and greenways (NC Turnpike Authority, 2011). This paper analyzes the possible impacts of these two corridors in the framework of a National Environmental Impact Statement.

## Table of Contents

Introduction.....	1
The Legislative History of NEPA.....	3
Implementing the NEPA Process.....	3
NEPA Documents.....	5
Environmental Assessments.....	6
Environmental Impact Statements.....	7
Definition Issues.....	8
Project History.....	10
Project Setting.....	14
Geographical and political description.....	14
Community Descriptions.....	15
Wake County.....	15
Raleigh.....	16
Garner.....	16
Johnston County.....	17
Clayton.....	17
Project Study Area Demographics.....	17
Population Growth.....	17
Median Incomes.....	18
Limited English Proficiency.....	18
Study Area Community Characteristics.....	18
Housing.....	19
Direct Community Impact Area.....	19

Impacted Water Bodies.....	19
Local Planning Initiatives and Documents.....	19
Wake County Land Use Plan.....	20
Farmland and Agriculture.....	20
Funding.....	20
Preliminary Alternatives Concepts.....	21
Qualitative First Screening.....	22
Options.....	23
Protected Corridor.....	26
Environmental Impacts.....	27
Noise Impacts.....	33
Human and Community Impacts.....	34
Alternative Routes to the Protected Corridor.....	34
Red Corridor.....	35
Commercial Impacts.....	37
Impacts to Water Quality.....	38
Impacts to Residential Areas.....	40
Garner’s First Roundabout.....	40
Impacts to Parks and Recreational Facilities.....	40
Impacts to Long Range Growth Plans.....	41
Legislation.....	41
Project in Jeopardy.....	42
NCTA Response.....	44
The Merger Process.....	44

Merger Members.....46

Concurrence Points.....46

Newly Proposed Routes.....47

    Timetable to Win Regulators Approval.....47

Conclusions.....48

Appendix/Timeline.....49

References.....50

## TABLES

Table 1.1	Ability of Alternatives to meet Purpose and Need.....	25
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## LIST OF FIGURES

<b>Figure 1:</b>	The NEPA Process flow chart.....	6
<b>Figure 2:</b>	Project Map.....	12
<b>Figure 3:</b>	Phases I and II of the Southeast Corridor.....	13
<b>Figure 4:</b>	Improve Existing Roads Option.....	24
<b>Figure 5:</b>	Protected and Alternate Routes for the Southeast Corridor.....	35
<b>Figure 6:</b>	Economic District of Garner.....	36
<b>Figure 7:</b>	Residential and recreational areas.....	39
<b>Figure 8:</b>	The Lilac and Plum Routes.....	47

## **Introduction**

As populations across the United States continue to increase, so does urban sprawl, pushing rural and semi-rural communities, including open space, forests, and agricultural areas, to convert to more urban and suburban land uses. In addition, the Triangle region has witnessed a tremendous increase in its workforce numbers. The area has seen an increase in the number of employed residents from 456,000 in 1990 to 667,000 in 2001, a 46 percent increase. This increase is not surprising, as it reflects a worldwide shift from manufacturing to service-oriented jobs. Population forecasts for Wake County indicate that the population will exceed 1 million people by 2020.

With population increases come increases in transportation demands. Projections used by the NC Office of State Planning, North Carolina Department of Transportation and the Capital Area Metropolitan Planning Organization (CAMPO), indicate population totals will increase 70 percent (North Carolina Office of State Budget and Management website: [www.osbm.state.nc.us](http://www.osbm.state.nc.us)). Additionally, average travel times within the Triangle increased from 20 minutes in 1990 to 25 minutes in 2000 according to the 2000 Census journey-to-work survey.

In response to increased traffic, the region's overall transportation system's long range plan includes (1) the completion of the Raleigh Outer Loop, I-540 and NC 540 as a six-lane toll facility, (2) to improve efficient travel throughout the Triangle region, and (3) to improve poor levels of service (LOS) on current roadways to allow for the safety and

efficient travel of commuters throughout the region (North Carolina Office of State Budget and Management, 2012).

The NC-540 Southeast Extension, the final phase of the I-540 Raleigh Outer Loop, has been a part of the State Transportation Improvement Program (TIP) since the mid-1990s, when the preferred route was placed on the Transportation Official Map by NCDOT. As alternative routes have been proposed, controversies have arisen over ensuing impacts, both socio-economically and environmentally. Business displacement, home displacement, conflict with local long range growth plans, as well as endangerment to protected wetland areas and wildlife, have been among the arguments against route options. My paper will examine these issues and the players involved through the NEPA process.

There are several key issues involved with the bypass project. First, NCDOT made plans to reserve the southern outer loop in the 1990s. By so doing, they essentially protected the area and allowed natural ecosystem to flourish. Thus species such as the dwarf wedge mussel, which was declared endangered in 1990, continued to thrive in the region, while to become more impaired in other developed parts of the county. Second, the town of Garner, tried to pre-empt the EIS process, in contravention of the federal law, which adversely affected the resolution of the process. Third, the EIS process must consider social and economic criteria, not just environmental components.

## **The Legislative History of NEPA**

In the 1950s and 1960s, mounting pressure from the public arose in their concerns over environmental well being. In response, congressional debates ensued. The results of these debates led to a declaration of a national policy act. This act, introduced by James E. Murray in the 86<sup>th</sup> Congress, was modeled after the Resources and Conservation Act of 1959. In addition, the act included an Executive-level board to advise the president regarding the state of the environment. Ultimately, this act became known as the National Environmental Policy Act (NEPA) and was signed into law by President Richard M. Nixon on January 1, 1970. This act was the first of its kind supporting the conservation of our natural resources at the federal level (Luther, "The National Environmental Policy Act: Background and History." *CRS Report for Congress* (2005)).

## **Implementing the NEPA Process**

When NEPA was passed, it became the leading ecological act defining our country's push for environmental protection as well as establishing environmental policy process law for environmental agencies. NEPA established the framework for integrating environmental considerations into Federal actions, but did not provide the details for the process to meet its goals. Therefore, the Council on Environmental Quality (CEQ), which disseminates regulations implementing the act, was formed to interpret the law for Federal agencies through regulations and guidance. CEQ is within the Executive Office of the President along with three members appointed by the President, but does not have the responsibility of enforcing NEPA requirements. Agencies must integrate NEPA reviews

with other agency planning and review processes and coordinate with other federal agencies and with similar state processes when appropriate. Each agency is expected to elaborate on how to comply with NEPA in the context of its own duties. Agencies generally issue regulations specifying their NEPA review process. When more than one federal agency is involved in an action, the regulations provide for the responsibilities of a “lead agency” and “cooperating agencies”. These regulations, outlined within CEQ, emphasize communication with the public, reduction of delays of federal projects, and making better, informed decisions.

There are goals for agency actions outlined by NEPA. Agencies are required to “use all practical means” to improve and coordinate federal actions to assure “safe, healthful, productive, and aesthetically and culturally pleasing surroundings” and to “attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences.” (Alexander, *Overview of NEPA Requirements*. 10 Apr 2007. ncseonline.org).

Additionally, NEPA requires certain practices, including using a “systematic, interdisciplinary approach using natural and social sciences and environmental design in planning and decision-making. The most significant of these practices are the requirements in Section 102(2), which states that “for proposals for legislation and other major Federal actions significantly affecting the quality of the human environment” the agency must prepare a detailed environmental review discussing the following components:

- i. the environmental impact of the proposed action,

- ii. any adverse environmental effects which cannot be avoided should the proposal be implemented,
- iii. alternatives to the proposed action,
- iv. the relationship between the local short-term users of man's environment and the maintenance and enhancement of long-term productivity, and
- v. any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. (Alexander 2007).

Such reviews are to be conducted well in advance in the decision-making process so that it becomes part of the process and not a justification of the action for decisions already made. My paper analyzes this process to provide a better understanding of the practical applications of the NEPA process at the local level.

### **NEPA Documents**

As dictated by this law, federal agencies, under the Council on the Environmental Quality regulations implementing NEPA, must undertake an assessment of the direct, indirect and cumulative environmental effects of any proposed action prior to making any decisions, even those that impact private agencies. As part of this process, three components must be considered as part of the evaluation of a federal undertaking including its alternatives: a categorical exclusion (CE); an environmental assessment (EA); or an environmental impact statement (EIS). Figure 1 below summarizes how the NEPA process flows from the proposed action to the final product of implementation and monitoring.

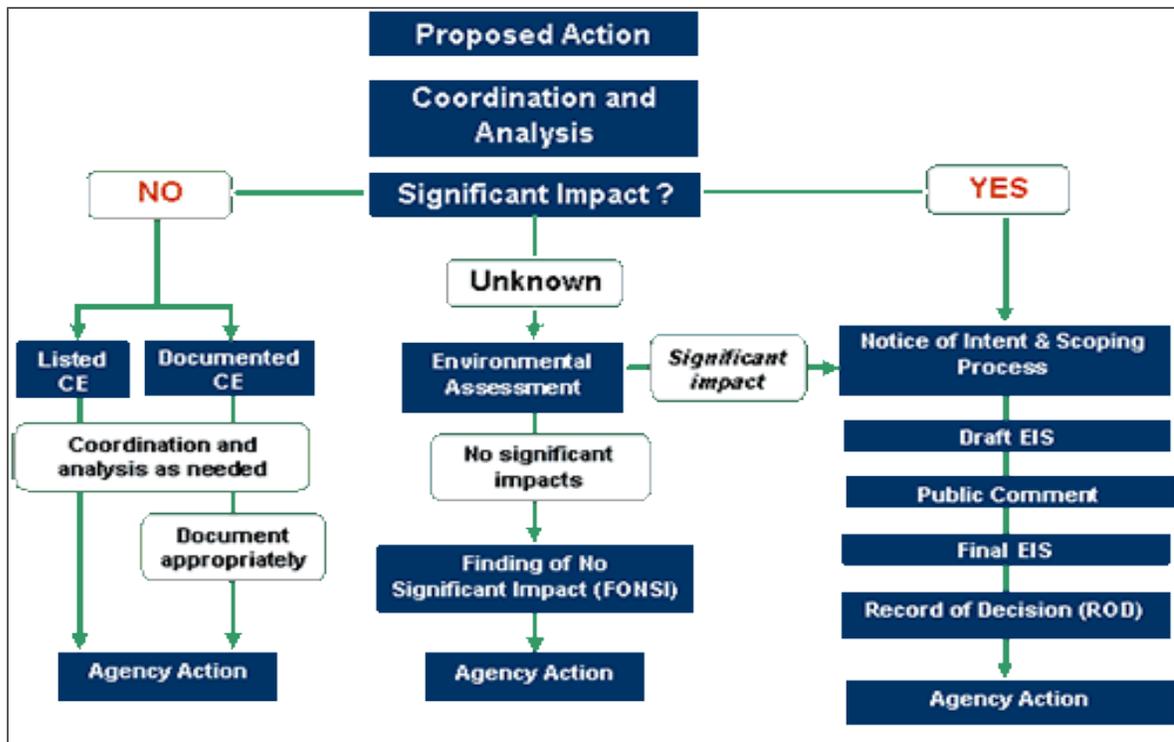


Figure 1: The NEPA Process flow chart (Center for Environmental Excellence by AASHTO, 2012)

*Environmental Assessments.* When an agency is uncertain whether an action’s impacts on the environment will be significant, it must prepare an environmental assessment (EA). An EA is used to clarify issues and determine the extent of the agency’s actions. CEQ regulations define an EA as a “concise public document that (1) provides sufficient evidence and analysis for determining whether to prepare an EIS or a finding of no significant impact (FONSI), (2) aids agency compliance with NEPA when no EIS is required, and (3) facilitates preparation of an EIS when one is necessary” (Luther, *The National Environmental Policy Act: Background and History. CRS Report for Congress.* 2005). CEQ does not require a set format to conduct EAs but it does require agencies to include a brief discussion of the need for the proposal, any alternatives, the impacts of the

proposal and alternatives, and a list of agencies and individuals consulted. If at any time during the preparation of the EA, a project's impacts are determined to be significant, an EIS should begin. If the actions are determined not to be significant, the lead agency must prepare a FONSI. A FONSI is the agency's record in support of its decision regarding the project's impact and must be made available to the public.

*Environmental Impact Statements.* Environmental Impact Statements (EISs) are among the most complex environmental documents to produce. An EIS must document and thoroughly analyze the direct, indirect and cumulative effects of each proposed action, including alternatives, by each agency involved in the proposed project. EISs can be quite lengthy and can take years to complete. Different types of EISs are produced under NEPA and are written in the following order: DEIS (draft EIS) and is circulated for comment; FEIS (final EIS); SEIS (supplemental EIS); DSEIS (draft supplemental EIS) and is also circulated for comment. The most important function of an EIS is to document the impacts of the alternatives. A successful EIS will fully document all impacts, along with input from citizens, so that agencies can make educated decisions about route selection (Alexander, 2007).

A majority of North Carolina state transportation projects involve federal funding or financial assistance, are subject to federal regulation or permitting, and are often planned and implemented with the direct involvement of the Federal Highway Administration (FHWA) and are subject to NEPA (State of North Carolina, Department of Transportation/Department of Environment and Natural Resources, *Guidance for Assessing*

*Indirect and Cumulative Impacts of Transportation Projects in North Carolina, Vol. I, Guidance Policy Report.* Cary: The Louis Berger Group, Inc., 2001). Under NEPA, the North Carolina Department of Transportation (NCDOT) must publish a detailed statement on the environmental impact of any anticipated actions and unavoidable adverse environmental effects for any transportation project proposal. NCDOT's process is to focus on future urbanization and the resulting environmental effects. A majority of the ecological effects correspond to land development and its effects on water resources as well as to threatened and endangered species and habitat fragmentations. Some of the socioeconomic effects include traffic congestion and overcrowded schools (Deaton, *Indirect and Cumulative Effects of Transportation Projects on Land Use and Local Government.*" *NEPA Education and Certificate Capstone Papers* (2011): 60-73).

### **Definition Issues**

Currently, there are limited standardized and comprehensive rules, legislation, procedures or guidance available to implement these requirements. In addition, there is confusion regarding the basic definitions and terms, and in the extent of corporal and temporal boundaries, affecting the understanding of what defines "indirect and cumulative" effects in the EIS and related documents throughout the country as well as in North Carolina. The North Carolina State Environmental Policy Act was passed in 1976 (SEPA) and has adopted the federal definitions of indirect and cumulative effects under NEPA. While this definition irregularity is evident, there are two sections dealing with indirect effects and concerns Federal agencies should attend to while conducting these

assessments. First, in Section 101 (b), NEPA makes it the responsibility of the Federal Government to:

*“...assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings...attain the widest range of beneficial uses of the environment without the degradation, risk to health or safety, or other undesirable and unintended consequences...[and] preserve important historic, cultural and natural aspects of our natural heritage...”* (NEPA 1969, 42 USC 4331 Section 101 (b)).

In addition, it also states that:

*“...the Federal Government shall include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on the environmental impact of the proposed action [and] any adverse environmental effects which cannot be avoided should the proposal be implemented.”* (NEPA 1969, 42 USC 4332 Section 102 (c)).

These section meanings were clarified when CEQ issued its NEPA regulation in 1978, as part of its mission to provide assistance to Federal agencies on how to implement NEPA. Most of the focus of this clarity dealt with the definitions of “*effects*.” There are two components dealing with this term: direct and indirect. Direct effects “*...are caused by the action and occur at the same time and place,*” and indirect effects “*...are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable*” (CEQ 1986, 40 CFR 1508.8).

The CEQ distinguishes direct and indirect effects from the term “*cumulative impact,*” which “*...is the impact on the environment which results from the incremental impact of the action*

*when added to other past, present, and reasonably foreseeable future actions...*" The United States Department of Transportation defines "cumulative" effects or "secondary" effects as "*those effects which can foreseeably occur due to the proposed action.*" An example of the NEPA process, as well as the direct, indirect and cumulative effects transportation projects can have on the natural environment, can be seen in a case study for a transportation project in North Carolina.

**Case Study: Tri-Ex Southeast Extension STIP Numbers: R-2721, R-2828, and R-2829, Wake and Johnston Counties, North Carolina.**

**Project History**

The Research Triangle of North Carolina, the area comprised of the cities of Raleigh, Durham and Chapel Hill, was the area with the highest growth rate in the nation between the years 2000-2009. During this time period, the population grew from 804 thousand to 1.125 million, a 40 percent increase (Koebler, 10 Metro Areas with the Largest Population Growth. *U.S. News and World Report*. 06 Apr. 2011). Furthermore, Raleigh is predicted to set the fastest pace of growth for any metropolitan area in the United States by the year 2025 at 1.9 million, equating to an annual growth rate of 3.5 percent (Thomas, The Biggest U.S. Metro Areas in 2025." *msnbc.com Bizjournals*, 07 June 2009). Due to transportation, social and economic demands, the need for improved infrastructure in southern Wake County is part of the plans for The North Carolina Turnpike Authority. More specifically,

this “Southeast Extension” will connect the towns of Clayton, Garner, Fuquay Varina, Apex, Holly Springs, Cary and Raleigh.

To meet increasing population demands, the North Carolina Turnpike Authority (NCTA), NCDOT, along with the cooperation of the Federal Highway Administration (FHWA) proposes an extension of the Triangle Expressway (NC 540) from NC 55 Bypass near Holly Springs to US 64/US 264 Bypass south of Knightdale. This project was divided into three separate projects through the North Carolina Department of Transportation (NCDOT) *2009-2015 State Transportation Improvement Program (STIP)* - R-2721, R-2828, and R-2829. Together, these STIP projects would complete the I-540 Outer Loop around the Raleigh metropolitan area. The purpose and goal of this three-tiered project is, first, to improve transportation mobility for trips within or through the project study area during peak driving periods. The second purpose of the project is to reduce forecasted congestion the current roadways within the study area. Additionally, NCDOT hopes to improve roadway linkage network in the study area (Lochner, Final community Characteristics Report: STIP Project Nos. R-2721, R-2828, and R-2829, 5 May 2011). Figure 2 illustrates the Project Map for the Southeast Extension.

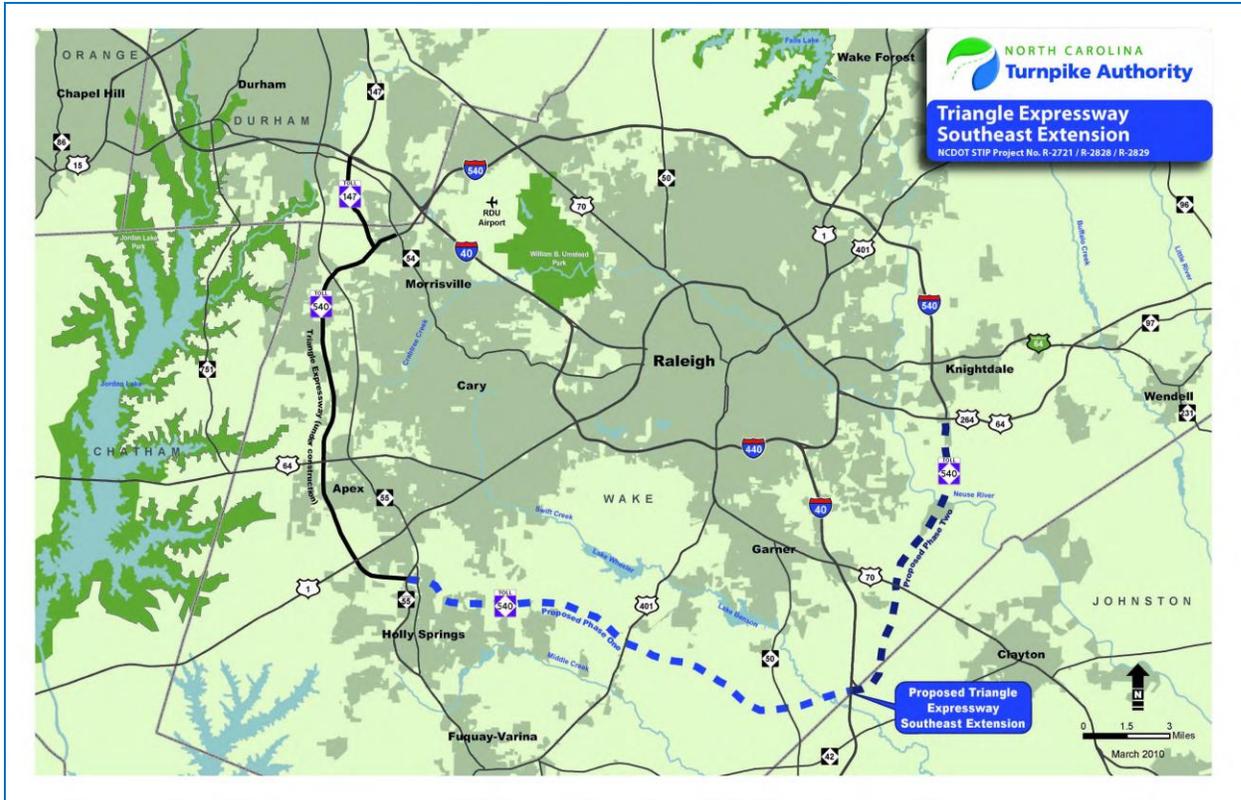


Figure 2: Project Map (NC Turnpike Authority, 2010)

Figure 3 illustrates the study area for the Southeast Extension. It has the following borders: the western edge of Holly Springs, US 1/US 64 in the northwest, I-40/I-440 to the north, US 64/US 264 Business to the northeast, the Town of Clayton in the southeast, and the Town of Fuquay-Varina to the southwest. Adjacent to or within these borders are the towns of Apex, Holly Springs, Cary, Fuquay-Varina, Garner, Raleigh, Knightdale, and Clayton, as well as unincorporated Wake and Johnston counties.

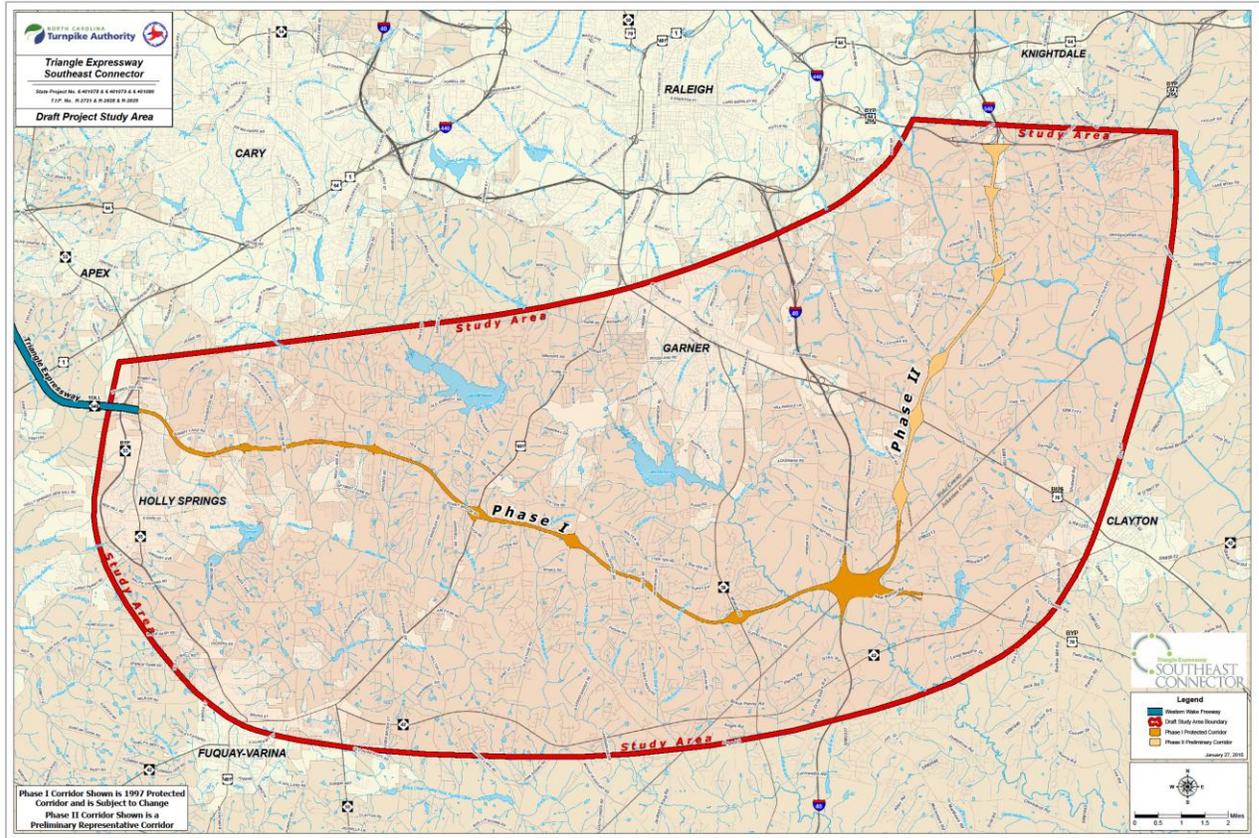


Figure 3: Phases I and II for the Southeast Corridor (NCDOT, 2011)

Within southern and southeastern Wake County and northern Johnston County, there are limited alternatives exist for efficient local and long distance travel. Many of the routes have unlimited access primary and secondary roads containing lower speed limits and multiple traffic signals. Interstate 40 (I-40), the primary east-west travel corridor for traffic throughout this area, already operates at unacceptable levels of service (LOS) and is expected to worsen significantly with projected population increases. This new project will be a controlled toll-access roadway.

## **Project Setting**

### *Geographic and political description:*

As seen in Figure 3, the proposed study area is located in southeastern Wake County and northern Johnston County. It consists of the eight incorporated municipalities-- Apex, Holly Springs, Cary, Fuquay-Varina, Garner, Raleigh, Clayton and Knightdale. Its boundaries consist of NC 55 to the west, the existing I-540 interchange at US 64/US 264 Bypass to the east, NC 42 to the south, and the southern outskirts of Raleigh and Cary to the north.

Most of the project area lies in the Neuse River basin and touches the southwestern corner of the Cape Fear basin. The Neuse River flows north to south through Wake and Johnston counties and stretches across the eastern edge of the study area. Within the Neuse River basin is the Swift Creek subbasin, Lake Wheeler and Lake Benson. These two expansive lakes provide drinking water to the surrounding areas. Tributaries to the Swift Creek subbasin are White Oak Creek, running north to south east of I-40, and Middle Creek, running across the southeastern corner of the study area near Holly Springs. Swift Creek and Middle Creek are included on the North Carolina 303 (d) list. This list identifies impaired waters required under section 303 (d) of the Clean Water Act of 1972 (NC Department of Environmental and Natural Resources website: <http://portal.ncdenr.org/web/wq/ps/mtu/assessment>). However, none of the water bodies within the project study area is classified as High Quality Waters or Outstanding Resource Waters (ORW). ORW classification indicates these waters are of exceptional water

quality, are of recreational or ecological significance, and meets strict qualifications to attain this classification.

Wake and Johnston counties are located at the eastern edge of the area known as the “Triangle” region of North Carolina. The other points of this triangle consist of the cities of Durham/Durham County and Chapel Hill/Orange County. One of the oldest and largest science and industrial parks in North America, known as Research Triangle Park (RTP), is located in the center of the Triangle. RTP is located on 7,000 acres and is comprised of more than 170 corporations and employs 42, 000 full-time and 10, 000 contract employees (Research Triangle Park website: <http://www.rtp.org/about-rtp>).

*Community Descriptions:*

Parts of seven of Wake County’s thirteen incorporated municipalities are within the project area: Apex, Holly Springs, Cary, Fuquay-Varina, Garner, Raleigh and Knightdale. Clayton is the only incorporated municipality from Johnston County in the study area. Each of these municipalities has varying and unique characteristics, neighborhoods, and land management plans. Land Management Plans will be discussed in greater detail later.

*Wake County:*

Wake County is the largest county in the Research Triangle region of North Carolina and is the ninth fastest growing county in the United States (Lochner, Final community Characteristics Report: STIP Project Nos. R-2721, R-2828, and R-2829, 5 May 2011). It ranks second to Mecklenburg County in population in 2012. The two largest cities in Wake

County are Raleigh, North Carolina's capital and Cary as well as many smaller communities throughout the county. The county and its many communities consistently rank high in national surveys for livability and economic growth (Lochner 2011).

An extensive system of public parks and greenways allow for a high level of connectivity within Wake County. Sensitive natural resources, including Lake Wheeler, Lake Benson, the Swift Creek watershed, are part of the landscape within the study area. These protected natural resources, as well as those plans for a new park and greenway resources, are key components of the *Wake County Land Use Plan*.

*Raleigh:*

As the capital, Raleigh is the largest city in Wake County and is the eighth fastest growing city in the United States (Lochner 2011). Its close proximity to RTP allows for exposure to high technology industries such as technology, biotechnology and nanotechnology. Raleigh's *2030 Comprehensive Plan* outlines its vision of promoting neighborhood quality, environmental sustainability, and strong downtown development. These components promote the area's strong livability.

*Garner:*

Garner is a growing community experiencing an increase in population growth due to its lower housing prices and an increase of expanding newer housing. The central portion of Garner, located within the study area contains a very high concentration of minority and low-income residents.

*Johnston County:*

Johnston County is located southeast of Wake County, is North Carolina's fastest growing county, and is largely an agricultural hub (Lochner 2011). It is located along Interstate 95, providing commercial, transportation and travel-oriented development to varied parts of the county.

*Clayton:*

Clayton, located in northern Johnston County near the Wake County border, is Johnston County's fastest growing community (Lochner 2011). It is located near I-40 and US-70, two of the region's most important corridors. Not only has Clayton experienced high residential growth, it has seen increases in its commercial and industrial development as well. Clayton is known for its small town feel, its livability, affordability and good schools.

## **Project Study Area Demographics**

*Population Growth:*

Between 1990 and 2000, the population within the Demographic Study Area grew by 77 percent-faster than Wake and Johnston Counties' growth and much faster than North Carolina's average. The fastest growth occurred in Holly Springs (more than 900 percent), Apex (more than 300 percent) and Knightdale (more than 200 percent). These areas of high growth occur along the periphery, particularly Apex, Holly Springs, and Clayton. The

older areas are located in central Garner and south Raleigh and have experienced slow growth or population decline (Lochner 2011).

*Median incomes:*

The lowest median incomes are located in the north central and northeastern part of the study area, in Garner, southeast Raleigh and Knightdale. The central areas of Clayton and Fuquay-Varina contain lower incomes and also feature higher than average concentrations of minority residents. The northwestern and western edges of the study area that include southern Cary, Apex and Holly Springs, contain the highest median incomes.

*Limited English Proficiency:*

Over 3 percent of the individuals within the study area have limited English proficiency. This is slightly less than Johnston County at 4 percent. Most of these individuals reside in Garner, southeast Raleigh, Knightdale, Clayton and near Wake Technical Community College.

**Study Area Community Characteristics**

Formerly, land use within the Demographic Study Area was primarily agriculture and rural residential in nature. Recently, the area has become increasingly popular for suburban development as residents commute to jobs in Research Triangle Park and Raleigh are choosing to live in affordable housing, open spaces, and improve their quality of life that Wake and Johnston Counties have to offer.

*Housing:*

Over 1000 subdivisions are found within the Demographic Study Area along with numerous smaller, rural residential neighborhoods. Most are single-family residential subdivisions and a number of mobile home parks. Most of these subdivisions are in the western part of the Demographic Study Area with many newer developments are located north of Fuquay-Varina and Clayton.

*Direct Community Impact Area:*

Numerous schools, places of worship, parks and other community centers are located throughout the Direct Community Impact Area (DCIA) for the project. Many public services are within the DCIA such as police, fire and rescue, post offices and libraries.

*Impacted Water Bodies:*

Middle Creek and Swift Creek are located within the study area. Swift Creek is known to contain populations of the endangered Dwarf Wedge mussel. Both of these creeks are listed on the North Carolina 303 (d) list as impaired water bodies.

**Local Planning Initiatives and Documents**

Many municipalities have adopted comprehensive plans that include future land uses. Many of these plans affected by the proposed route have included special land use categories or overlays for the route. Wake County, Garner, Holly Springs, Knightdale, Johnston County and Clayton have also adopted transportation plans.

### *Wake County Land Use Plan:*

Wake County had adopted the *Wake County Land Use Plan* for the Swift Creek watershed area. The plan had identified the Swift Creek basin as a Watershed Critical Area. Watershed buffer areas limit development activities and are considered a low-density land use category for the surrounding areas.

### *Farmland and Agriculture:*

Wake and Johnston Counties each have Voluntary Agriculture District (VAD) program. VADs are contracted agreements between farmland owners and county governments. Farmers agree to reserve a portion of their land (of at least 20 acres) for non-farm use for ten years in exchange for economic and other benefits. These benefits include recognition and public education about agriculture, increased protection from nuisance suits, waiver of water and sewer assessments, public hearings required for proposed condemnation, possible eligibility for farmland preservation funds as local, state, or federal funds are available, and an official role in county and city government (North Carolina Department of Agriculture: <http://www.ncadfp.org/documents/VADBro.pdf>).

### **Funding**

As necessary as a project of this importance is to Raleigh and its suburbs, it has local support in its inclusion in the overall transportation plans for the area, traditional funding through taxes and fees are not included. However, they will be used to fund the maintenance of the roads. This source of funds would not adequately fund the overall cost

of a project this size. Therefore current legislation requires that tolls be included in the funding plans. Yet, it also requires that tolls be removed once the debt has been paid. Toll rates will be based on vehicle size and distance traveled. All revenues would be used to cover the cost of operating and maintaining the road but will cease once they are paid for. This plan will apply to all proposed routes for this project.

### **Preliminary Alternatives Concepts**

The Federal Highway Administration (FHWA) recommends that basic alternative concepts listed below should be considered “when determining reasonable alternatives” (FHWA Technical Advisory T6640.8A, 1987). The following are options within the NCDOT portfolio when evaluating possible alternatives:

- *No Build*: making no changes or additions to the current road system.
- *Mass Transit/Multi-Modal*: improvements through the use of railway systems.
- *Transportation System Management (TSA)*: includes activities which maximize the efficiency of the present transportation system.
- *Travel Demand Management (TDM)*: includes measures and activities that change traveler behavior rather than altering the roadways.
- *Improvements to Existing Roadways*: making improvements to current roadways.
- *New Location Roadways*: adding additional roadways.
- *New Location/Improve Existing Roadways Hybrid*: the combinational use of road improvement and adding additional roadways.

## Qualitative First Screening

To evaluate options under consideration for the project purpose and needs, project leaders consider possible options through a “first screening” process. All options are evaluated to determine those that would meet the demands posed by current traffic problems. Options are chosen based upon their effectiveness at meeting project goals of the Southeast Extension such as:

- Does the alternative address the need to improve transportation mobility within the study area?
- Does the alternative enhance connectivity between growing areas south and east of Raleigh and major employment centers within the Triangle?
- Would the alternative reduce congestion on existing roadways?
- Is the alternative consistent with the NC Strategic Highway Corridor program vision?
- Would the alternative improve system linkage within the region?
- Would the alternative decrease commute times for residents in southern and eastern Wake and western Johnston County, enhancing livability and sustainability?

The following five plans are under consideration by the NCTA to address the growing traffic issues in southern Wake County, three of which involve building or expanding the current roadway system. The options of not building a new road, as well as expanding the current road, are also under consideration.

## **Options:**

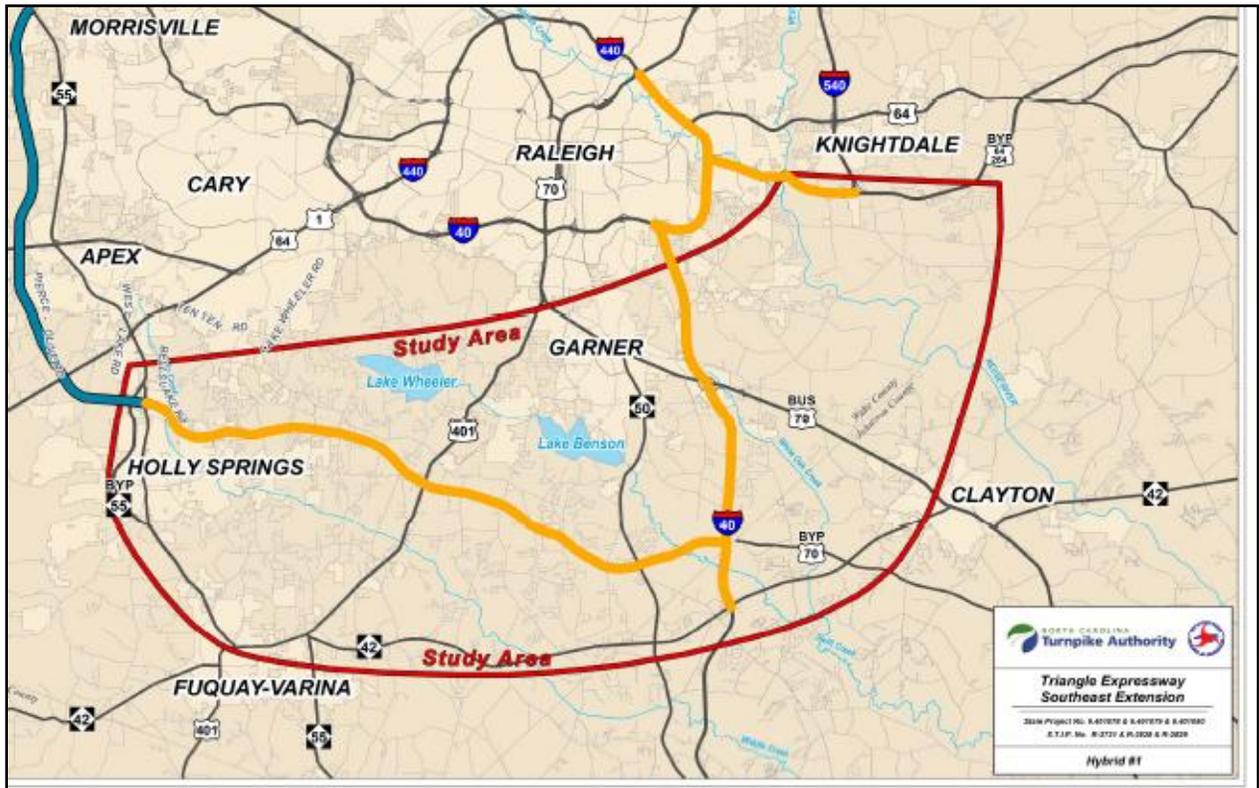
### ***1) Build a New Roadway:***

This option would construct a new roadway between NC 55 near Apex to the US 64/US 264 Bypass in Knightdale. Several other routes are under consideration as new location build alternatives. Each individual route would have its own environmental and socio-economic impacts on surrounding areas. It has a number of interchanges, increasing the chances of negative impacts on water quality due to increased impervious surfaces.

### ***2) Improve Existing Roadways:***

The improve existing roads option would allow existing roads to be used and widen Interstate 40 from west of Raleigh to the Clayton area, Interstate 440 from Interstate 40 to the US 64/US 264 Bypass, and the US 64/US 264 Bypass from Interstate 440 to the eastern study area boundary. It would be less costly and will have fewer environmental and socio-economic impacts on the surrounding areas than the construction of new roads option. Conversely, it would only meet one of the six needs for the project. The lone goal of “increasing mobility” would be met, but it stands to reason, that this will have minimal improvement at best.

3) *New Road Construction/Improve Existing Road Hybrid Option:*



**Figure 4: Improve Existing Roads Option (NCDOT, 2010)**

As seen in Figure 4 above, this option will construct a new roadway between NC 55 near Apex to Interstate 40 near the Wake/Johnston County line; and widen Interstate 40 from Interstate 440 to the Clayton area, Interstate 440 from Interstate 40 to the US 64/US 264 Bypass, and the US 64/US 264 Bypass from Interstate 440 to the eastern study area boundary.

Table 1 below indicates the transportation alternatives NCDOT has considered in order to meet the purposes and needs for the Southeast Corridor and how they meet the demands for the purpose and needs shown horizontally at the top of the table. These options do not

take into consideration costs involved or the impacts on surrounding areas. The “no-build” option refers to a “do-nothing stance’, or a leave things alone option. This would indicate that neither additional costs nor additional impacts would be imposed as seen in the top row of table 1. However, it also indicates that it would not meet the needs or goals of the project. In the case of the population growth in this area, it would not be a viable option.

**Table 1: Ability of Alternatives to meet Purpose and Need \***

<i>Alternative</i>	<i>Improves Transportation Mobility</i>	<i>Enhances Connectivity</i>	<i>Reduces Congestion</i>	<i>Consistent with NC SHC Vision</i>	<i>Improves System Linkage</i>	<i>Decreases Commute Times</i>
<i>No-build</i>	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>
<i>Improve Existing Roadway</i>	√	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>
<i>New Location Highway</i>	√	√	√	√	√	√
<i>New Location/ Improve Existing Roadway Hybrids</i>	√	√	√	√	√	√

\*Note: *x*- means the alternative cannot be designed to meet this element of purpose and need

√- means the alternative could be designed to meet this element of purpose and need

As seen in Table 1, the “New Location” and “New Location/Improve Existing Roadway Hybrid” Alternatives are the only options that meet the goals outlined in the project purpose and will therefore be considered as alternatives by NCDOT (NCDOT, Triangle Expressway Southeast Extension, 2010).

## Protected Corridor

At the General Assembly 1996/1997 general session, NCDOT filed for the protected corridor for the Southeast Extension, as part of the Transportation Corridor Map Act. STIP #R-2721 was filed on Aug. 2, 1996 and #R-2828 was filed on Mar. 7, 1997. This act protected the corridor for Phase 1 of the Southeast Extension between NC 55 in Apex and I-40 near the Wake/Johnston county line. This action initiates the NEPA process. The Transportation Corridor Official Map Act Program is a document adopted by the North Carolina Board of Transportation allowing the reservation of roadway corridors as provided by G.S. 136-44.5 through 136-44.54 (NCDOT, 2011).

“Within one year following the establishment of a transportation corridor official map or amendment, work shall begin on an environmental impact statement or preliminary engineering. The failure to begin work on the environmental impact statement or preliminary engineering within the one-year period shall constitute an abandonment of the corridor, and the provisions of this Article shall no longer apply to properties or portions of properties embraced within the transportation corridor. Failure of the Department of Transportation, a city, or a regional transportation authority to begin work on an environmental impact statement or preliminary engineering as required by this section; or (2) Deletion of the corridor from the transportation corridor official map by action of the Board of Transportation, or deletion of the corridor from the long-range transportation plan of a city or regional transportation authority by action of the city or regional transportation authority governing Board.” (Transportation Corridor Official Map Act,

Article 2E, 2010). Interstate 540 is only one of two projects where advanced acquisition has been purchased. The other being the “outer loop” around Charlotte (Federal Highway Administration: Transportation Corridor Preservation, 2000. <http://www.fhwa.dot.gov/>).

Through archived records within the NC Department of Transportation, environmental screenings were conducted in April and August 1995 for TIP No. R-2721, spanning from NC 55 to US 401 and TIP No. R-2828, spanning from US 401 to I-40. Together, these two projects comprise Phase 1 of the protected corridor, or “orange” route as commonly called. Data on soil types, water resources, protected species and habitats were collected. These screenings are a form of scoping, and are merely an overview but are not considered a complete environmental assessment.

*Environmental Impacts:*

Analysis of wetland impacts by the orange or proposed corridor indicate the corridor will cross a number of tributaries, each leading into the Neuse River basin and classified as “C-NSW” (Nutrient Sensitive Waters) since 1992. This classification is intended for waters needing additional nutrient management due to excessive microscopic and macroscopic growth. These NSWs are protected for aquatic life propagation and biological integrity (including fishing and fish), wildlife, secondary recreation, and agriculture. However, there are no restrictions on watershed development or types of discharges associated with Class C.

Tributaries within the Neuse River Watershed include: A. Mills Branch, Panther Branch, Little Creek, Juniper Branch, a tributary to Guffy Branch, Guffy Branch, a Buffaloe Creek tributary, and Swift Creek. Potential wetland sites are located at each stream crossing and may be evident from other existing mapping. The National Wetlands Inventory does map extensive wetlands in the corridors. These potentially impacted wetlands would be under the jurisdiction of the Army Corps of Engineers listed under Section 404 of the Clean Water Act as well as the Division of Environmental Management under Section 401 of the same act, based on further specific wetland delineation analyses. In addition, Wake County, as well as local city and town governments, is charged with implementing the “*Neuse River Basin-Nutrient Sensitive Waters Management Strategy: Basinwide Stormwater Requirements*” to address point/nonpoint and stormwater pollution control criteria (NCDENR, Division of Water Quality, *Total Maximum Daily Load for Addressing Impaired Biological Integrity in the Headwaters of Swift Creek Watershed, Neuse River Basin*. February 2009).

Ecological communities change constantly. Impacts from transportation projects can have consequences on habitats that may not be noted until much later. Such disruptions can result in lethal results to vulnerable habitats. When combining transportation impacts with the effects from human actions, the long term effects, or cumulative effects, can be significant. The following indirect and cumulative effects from transportation projects have important consequences on ecosystems:

- Habitat fragmentation from physical alteration of the environment;
- Lethal, sub-lethal and reproduction effects from pollution;

- Degradation of habitat from pollution;
- Disruption of ecosystem functioning from direct mortality impacts; and
- Disruption of natural processes such as hydrology, species competition, predator-prey relations, from altered energy flows.

During natural resource studies, as required by the NEPA process, NCDOT consults with information sources to determine impacts on endangered species. This consultation includes the North Carolina Natural Heritage Program (NHP) database of rare plant and animal species as well as the US Fish and Wildlife Service in the determination of Critical Habitats (PCH) for any species that could occur in the project area. These habitats are essential for the survival of endangered or threatened aquatic wildlife species.

A number of standard measures are used in mitigation by NCDOT when projects involve mussels. The goal is to develop measures that reduce adverse impacts during the Section 7 process as well as avoiding Section 7 consultations involving 'take' of an endangered species. "The 'taking' of an endangered species refers to actions resulting in harm or the killing of the named species". In this example, 'taking' refers to the Dwarf Wedge Mussel. "Additionally, 'harm' may also include habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife." (USFWS, Definition and Policies, 2012).

Three standard measures are used by NCDOT in which transportations projects could potentially harm the Dwarf Wedgemussel. The first is the use of High Quality Water (HQW) Erosion Control standards. This sedimentation control program is used in

conjunction with the Department of Environmental Health and Natural Resources (DEHNR) protects surface waters as part of the Best Management Practices (BMPs). NCDOT protects aquatic species as HQW, regardless of the DEHNR waterbody classification (Savidge, 1998).

Secondly, Elimination of Direct Discharge from Bridge Deck Drainage into the Water Body minimizes the potential impacts of highway runoff to mussels. Filtering devices are placed strategically in the project area so that discharge drains via outlets, such as an erosion control stone, and not over the waterbody. However, due to some safety concerns, direct drainage may be necessary in some cases (Savidge, 1998).

Lastly, prior to construction, NCDOT personnel meet with the contractor to review design and construction specifications, or to discuss special provisions that need to be addressed. Also in attendance, representatives from the USFWS and NC Wildlife Resources Commission are present to collaborate on projects that contain listed species. Furthermore, resource agency representatives are given opportunities to make unannounced visits to the construction site to be sure required provisions are met during the construction phase (Savidge, 1998).

Swift Creek and the surrounding watersheds, is known to be the habitat of the freshwater Dwarf Wedge Mussel (*Alasmidonta heterodon*), an endangered species listed under Section 7 of the Endangered Species Act on March 14, 1990 (U.S. Fish and Wildlife Service website: <http://nc-es.fws.gov/mussel/dwmussel.html>). Section 7 requires federal agencies to ensure

that their actions, or any activities they authorize or fund, will not harm the existence of the listed species or their habitat (USFWS website: [www.fws.gov/endangered](http://www.fws.gov/endangered)).

Mussels have important roles in the balancing of ecosystems. As filter feeders, mussels act as water filtration systems and consume bacteria in sediments. They capture organic material from the water to build body and shell and deposit the remaining organic material to the sediment to make it available to other invertebrates and fish to consume. As this process occurs, they filter the water by removing phytoplankton, bacteria and fungi that are attached to the nonliving organic particles they removed from the water. In addition, because mussels are generally present in large numbers, and firmly anchor themselves to a lake or stream bed, they can stabilize the scouring effects of floods or wave action. Finally, mussels are important food sources for a variety of terrestrial and aquatic animals, including muskrats, raccoons and fish (Minnesota Department of Natural Resources website: <http://www.dnr.state.mn.us/mussels/importance.html>).

The 1993 Recovery Plan for the Dwarf Wedge Mussel (DWM) identified four primary factors responsible for Dwarf Wedge Mussel population decline: impoundments, pollution, riverbank alteration and siltation (USFWS website). Preliminary data from DWM habitats in North Carolina, specifically, the Neuse River Basin, indicate continued population declines as a result of habitat loss, modification and/or destruction. Road construction, and the resulting increased development, will continue to have further indirect and cumulative impacts on DWM habitat (U.S. Fish and Wildlife Service, Dwarf Wedgemussel 5-Year Review: Summary and Evaluation, 16 Feb 2007). It is unclear, after transportation activities

have taken place, how well DWM habitats will resist (the ability to withstand variation) and recover (respond after being altered from these activities).

Although a full analysis has not been available to the public at this time, in a preliminary analysis conducted during a similar NCDOT transportation project in Clayton, NC, a town adjacent to Garner, NC, concerns arose over the same water quality and DWM habitat in Swift Creek, a tributary of the Neuse River, as a result of the cumulative impacts of the proposed Highway 70 Business bypass road. The USFWS felt the water quality near the project area would be degraded over time due to the increase of impervious surfaces such as parking lots, driveways, and rooftops, which contribute to increased storm water runoff. Storm runoff contributes to increased sediment and pollutants, decreasing water quality and endangering DWM habitat.

Due to these concerns, the USFWS urged NCDOT and local governments involved in the project to discuss ways to mitigate these impacts through the adoption of ordinances and development of regulations to protect water quality in the surrounding areas. These discussions, as outlined in the NEPA process, allowed all agencies involved to conduct a more thorough analysis of the cumulative impacts of the project. As part of this analysis, using a combination of geographical information systems (GIS) mapping, future land use models, and a model known as "AnnAGNPS", an agricultural computer model used to evaluate various land types and their ability to convey runoff with sediment and nutrients, NCDOT was able to quantify the direct and cumulative effects of this particular project.

This analysis allowed for the development of an Environmentally Sensitive Area (ESA) to protect the water system and subsequently, DWM habitat. This included using 100 foot riparian buffers along the boundaries of Swift Creek, in addition to applied limits to impervious surfaces throughout the ESA, for the Clayton bypass project (Deaton, 2011). Because the Town of Garner is in close proximity to Clayton, and shares the same watershed basin, Swift Creek, it was encouraged to develop and adopt similar ordinances due to the presence of DWM in the Town of Garner. On July 22, 2003, the Town of Garner adopted the *Unified Development Ordinance*. It states,

*“The standards of both the Swift Creek Conservation District and the underlying zoning district shall apply to each parcel. Where the standards of the overlay district and the underlying district differ, the more restrictive standards shall control development in new projects created after effective date of the Swift Creek Conservation District which is May 31, 2005. Additionally, “The maximum impervious surface coverage of the new residential development projects and new non-residential development projects, which are defined as those projects approved or permitted after the above noted effective date of the Swift Creek Conservation District are...for new non-residential development projects, shall be limited to a maximum of 70 percent of total of impervious surface..”* (Town of Garner. *Unified Development Ordinance*. Article 4, section 4.43. <http://www.garnernc.gov/departments/Planning/UnifiedDevelopmentOrdinance.aspx>).

Through the environmental example set throughout this specific project, and given the fact that it occurred in the same watershed as the Southeast Extension project, it can be strongly assumed that the indirect and cumulative impacts shown here will very likely occur in this project as well.

### *Noise Impacts*

Noise impact analysis is performed as part of the detailed study alternatives. These impacts will be determined based on road conditions, proximity to nearby homes and

traffic volumes in accordance to federal standards set by the Traffic Noise Abatement Policy. However, this analysis has not taken place at this point in time (NCDOT website, Project documents for SE extension).

### *Human and Community Impacts*

Corridor preservation through the Transportation Map Act allows transportation agencies and coordinating agencies to keep housing relocations at a minimum but requiring a cessation of building permits for three years. According to the Environmental Screening completed on April 28, 1995, several individual homes are located in the proposed right-of-way in the vicinity of NC 55, SR 1152 and McCullers Road. A mobile home park is also located within the corridor. Additionally, at Deer Meadow Drive, a subdivision will be split by the protected corridor.

### **Alternative Routes to the Protected Corridor**

After the first screening process was completed, NCDOT selected multiple corridors as alternatives routes in addition to the long-term preferred route, also known as the Orange Route as required by NEPA and presented this information to the public for review. Its purpose is a part of the Best Management Practices that NCDOT and other transportation governmental groups employ to find the least impacting option and one that meets the needs and goals of the project. Figure 5 displays the options selected by the NCDOT and FHWA as of March 2011 presented to the public and were available for comments and concerns about these corridor alternatives. Although seven routes are displayed in Figure

5 below (as of March, 2011), this project will primarily focus on the proposed route (orange) and the red route through Garner, as the controversies over these two routes predominate.



Figure 5: Protected and Alternative Routes for the Southeast Corridor (NCTA, 2011)

*Red Route*

On occasion, route alternatives can disrupt the functioning of a town or area and thus debates ensue. Controversy arose when, in 2010, one particular route, known as the “Red Route”, was shown to run through the middle of the Town of Garner, dividing the town in half. It created such upheaval among town officials and its citizens, that after a push through NC General Assembly, legislation was passed on March 18, 2011, banning the study of the red route as an I-540 corridor alternative.

In a letter to the Turnpike Authority, titled “Town of Garner-Fact Sheet-Why studying the ‘Red Route’ is a Bad Idea” and dated April 21, 2012, Garner town officials and other town representatives, and supported by its citizens, outlined the reasons why the Town of Garner could not support study of the red route for the Southeast Extension through their town. Environmentally, this alternative could have met with the approval of agencies whose main concerns involve low impacts to the environment such as USFWC, NC Wildlife Resources Commission, and the Division of Water Quality. However, in providing alternatives that are required as part of the NEPA process, the human and economic side was heavily impacted. The following summary points were made, as described below.

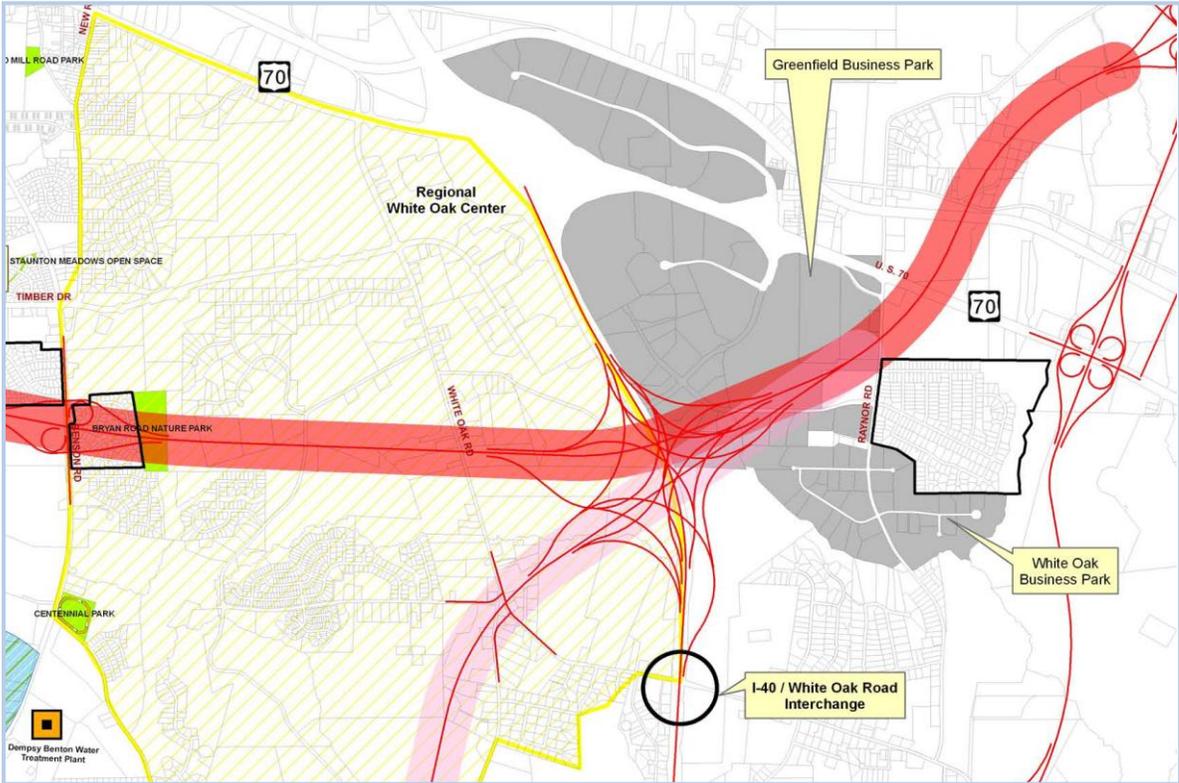


Figure 6: Economic district of Garner (Town of Garner, 2011)

*Commercially:*

In an economic sense, major investment decisions were based upon the decision regarding the orange route being rejected. Strategic Behavioral Health, LLC of Memphis, Tennessee made plans to build a new residential behavioral center on ten acres in the Greenfield Business District, which lies in the direct path of the red route, pending the decision to remove it as an alternative to the proposed route. This decision, an \$8 million investment, was finalized after the passing legislation through the NC General Assembly to ban the studying of this particular corridor. This investment meant 200 jobs for local residents with an average wage of \$50,000. Not only is this a beneficial business for the Town of Garner, it provides a long-term treatment program for adolescents, a service that is lacking in the area due to the closure of the Dorothea Dix hospital in Raleigh in 2010 (Bracken, David. "Garner lands facility for kids." *The News and Observer*. 29 Mar 2011).

Penske Truck Leasing Service Center has built a new facility equaling \$3 million investment and added twelve permanent jobs to the area. This decision was based on passed legislation, as was the Penske decision, to "ban" the red route from consideration. Additionally, there are 26 commercial/industrial lots, both developed and vacant, that will be impacted by the red corridor. This will amount to a tax value of over \$30 million. With these corporations combined total economic impact and opportunity costs of building the red route totals \$16.6 million and 212 permanent jobs for the Town of Garner, along with numerous construction jobs and other intangibles notwithstanding (Town of Garner.

“Town of Garner-Fact Sheet-Why Studying the Red Route Is a Bad Idea.” April, 2012).

Figure 6 illustrates the economic hub for the Town of Garner.

### *Impacts to Water Quality*

As seen in Figure 3, the red corridor will cross critical watershed areas upstream of Lake Benson, Swift Creek, and crosses the majority of tributaries feeding into Lake Benson. Lake Benson provides drinking water to residents of Garner, Raleigh and surrounding vicinities. Direct, indirect and cumulative impacts from road construction, storm water runoff from impervious surfaces and potential sedimentation will likely be extensive and will be a substantial source of contamination for the potable water supply. There are concerns over surface water quality as well due to the close proximity of the red corridor (Town of Garner, 2010).

Concurrently, Raleigh’s newest water treatment plant, Dempsey E. Benton Water Treatment Plant, opened on May 12, 2010. It is located on 55 acres near Lake Benson within the Swift Creek watershed. It has the capacity to treat up to 20 million gallons of water per day from Lake Benson 500-acre reservoir and Lake Wheeler 650-acre reservoir. The plant is expected to meet the needs of 175,000 residential and business customers throughout Raleigh, Garner, Rolesville, Wake Forest, Knightdale, Wendell and Zebulon through the year 2018 (City of Raleigh website: [www.raleighnc.gov/home/content/PubUtilAdmin/Articles/DempseyEBentonWTP.html](http://www.raleighnc.gov/home/content/PubUtilAdmin/Articles/DempseyEBentonWTP.html). 2012).

Its uniqueness is its green design to meet standards set by the Leadership Energy and Environmental Design (LEED). Features include a flowing recycled water decorative pool feature, energy efficient heating and cooling systems and the use of natural light and recycled materials. The City of Raleigh and surrounding local government entities near Swift Creek watershed have joined in a partnership to protect the two lakes (Lake Benson and Falls Lake) and maintain their water quality so they may be used for drinking water now and in support of future growth (City of Raleigh, 2012).

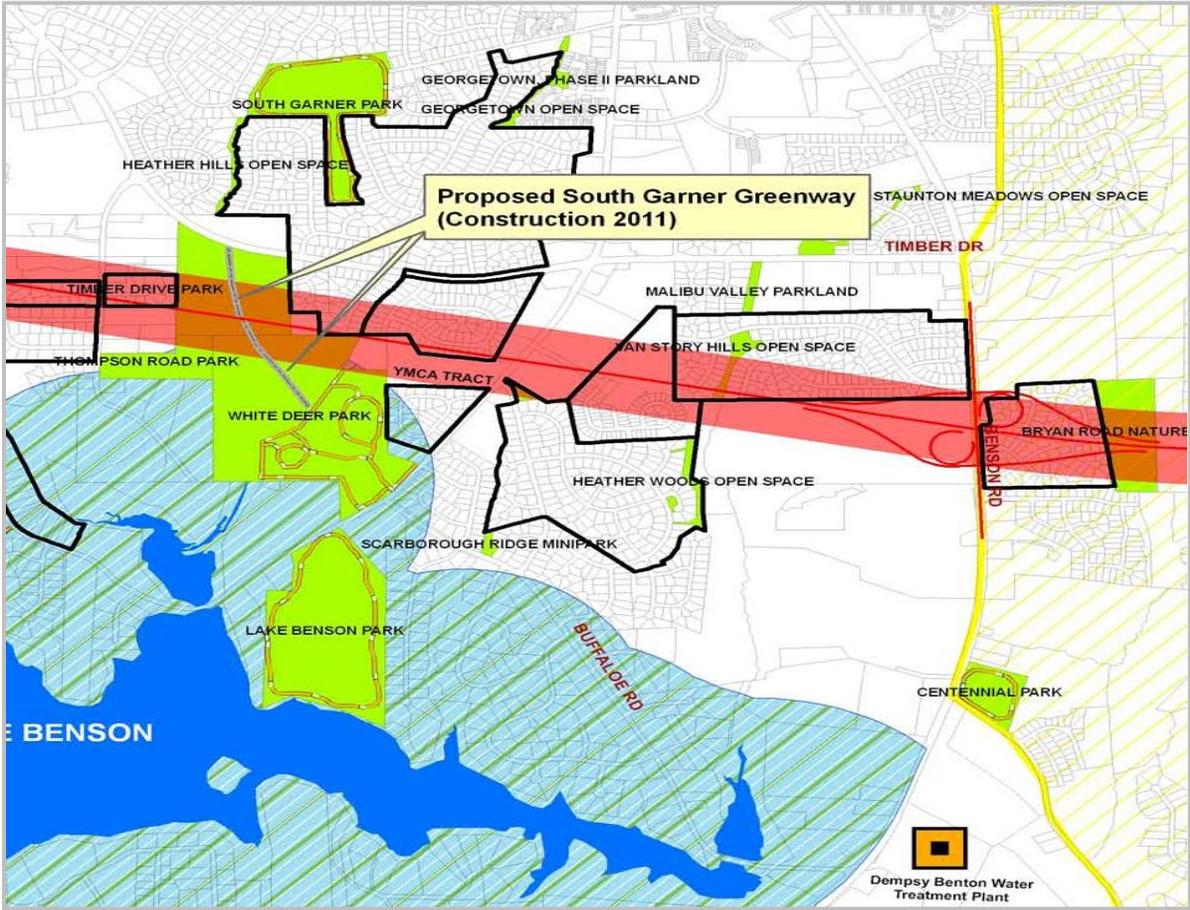


Figure 7: Residential and recreational areas (Town of Garner, 2011)

### *Impacts to Residential Areas*

NEPA's goals include impact analysis of residences as well as properties. Although there are several programs to support any necessary and unavoidable relocations, such as relocation assistance and tax breaks, it has the Best Management Practices (BMPs) to keep these to a minimum. However, the red route has large impacts on thirteen housing developments as seen in Figure 7 above. It is estimated that 510 residential lots within Garner that potentially be impacted, resulting in a yearly assessed tax value of over \$106,500,000. Not only does this revenue source have direct impacts on families, it will cause additional impacts to an economic base (Town of Garner, 2010).

### *Garner's First Roundabout*

Starting Sept. 17, the intersections of Buffaloe Road and Vandora Springs Roads will be closed for work to begin on Garner's first roundabout. This intersection has been deemed dangerous and several studies have found that roundabouts are safer than traditional intersection. Its estimated cost will be \$450,000-\$500,000. If the red route is selected as the preferred route, its corridor will intersect with this necessary project in this area (Garner Chamber of Commerce. *Garner to Offer Peek at Roundabout. 18 Aug 2012*).

### *Impacts to Parks and Recreational Facilities*

If the Red Route were to become the preferred route, it would impede a number of parks and recreational facilities as seen in Figure 6. It would touch on the northern edge of White Deer Park, the Town's first LEED Gold certified facility, featuring a "green"

environmental education center, trails, picnic shelters, and playgrounds. It would cross into the George W. Bryan Nature Park, a 20 acre nature park located east of Highway 50 near the South Creek neighborhood, as well as the newly opened South Garner Greenway, leading from Timber Drive to White Deer Park. It connects a 4.2 mile loop in central Garner with a 2.8 mile greenway trail through White Deer and Lake Benson Parks. In addition, it would impact the Town's 35 acre Timber Drive Park property that is designated as a future aquatics and/or community center. Further, the red corridor will intersect with a tract of property owned by the Triangle Area YMCA being considered for a future community recreational facility.

#### *Impacts to Long Range Growth Plans*

The Town's major future growth area lies south of US 70, west of 1-40, east of Highway 50 and north of Clifford Road. Over \$3 million in capital investments have been made in roads, major water lines, and sewer trunk lines in this area. The red route will bisect this area. On top of this are the *2010 Garner Transportation Plan* and the *Comprehensive Growth Plan's* recommendation for a new interchange at 1-40 and White Oak Road serving a Regional White Oak Mixed Use Center. The red route would prevent this interchange from occurring and cause a major restructuring of the future growth plans for this area.

#### **Legislation**

On March 2, 2011, Senators Dan Blue, D-Raleigh, and Richard Stevens, R-Cary, introduced a bill to restrict the NC Turnpike Authority from selecting corridors north of the

orange route (the protected corridor), known as bill #S165. It eliminates the red route from consideration for the first stage of the southern portion of the I-540 loop around Raleigh. This bill passed unanimously in the North Carolina Senate. Furthermore, the house version of the same bill, H.B. #225, was introduced to the NC House by Rep. Rosa Gill, D-Raleigh, Rep. Darren Jackson, D-Raleigh, and Rep. Deborah Ross, D-Raleigh at the request of the Town of Garner. It is fully supported by Steve DeWitt, the NCTA's chief engineer. It is also noted that this bill is viewed as a "jobs bill" by Sen. Stevens, as it impacts very strongly in support of the economic impact and future growth on the town (Mercier, Rick. "Red Route Bill Advances in House." Town of Garner News Release. 15 Mar 2011). The bill proceeded to be passed through the House and became law on March 18, 2011. This law, North Carolina Session Law 2011-7 (N.C.S.L. 2011-7), states that the Triangle Expressway Southeast Extension project shall not be located north of the existing protected corridor established by the NCDOT in 1995, except in the area of Interstate 40 East.

### *Project in Jeopardy*

In March, 2012, the Federal Highway Administration, North Carolina Division, issued a notice to David Joyner, Executive Director of the North Carolina Turnpike Authority, stating that NCSL law #2011-7 will not meet the requirements outlined by NEPA and other Federal laws, since it is essential for Federal agencies to prepare environmental documents that explore and evaluate *all* reasonable alternatives. Therefore, any elimination of alternatives prior to full analysis is unlawful and therefore the Red route alternative will remain open for evaluation (Federal Highway Administration 2012). The Draft Alternatives

Development and Analysis Report (DADAR) were distributed by the FHWA on January 13, 2012 for review by federal resource agencies to review with comments due back by February 16, 2012. Overall comments showed concerns and disagreements on DADAR's recommendation to eliminate the Red Route from consideration, as it compromises its ability to satisfy statutory requirements including NEPA. It has hindered detailed study of the Red Route for the following areas of impacts:

- Analysis of Traffic, Noise, Natural Resources, Community Impact and Indirect and Cumulative Effects
- Wetland and stream delineations through field reconnaissance
- Quantitative data on residential and business relocations
- Functional design, including adequate study to determine if alignments north of the protected corridor could avoid Section 4(f) resources

The memo further states that, because the State law limited the location of alternative routes, the project cannot proceed further and meet Federal requirements. Notice of Intent (NOI) will be withdrawn 60 days after the date on the memo (March 20, 2012) and the FHWA will no longer develop the EIS and federally fund the project. Consequently, the decision can be reversed if further actions support NEPA requirements. If, however, the current NOI is officially withdrawn, a new NOI can be requested if regulations will be in compliance with NEPA.

*NCTA Response*

The NCTA responded to this decision in a memo dated May 17, 2012 (within the 60 day response period), addressed to Edward Parker of the FHWA, with documentation to find ways to keep the project active. The Regional Transportation Alliance (RTA) business group hired Dawson and Associates, an environmental policy firm from Washington, D.C., to analyze the work completed up to this point. Meetings involving RTA, CAMPO, and area elected leaders and staff from local municipalities have taken place and led to discussions and ideas on how to move the project forward. There were adjustments that were suggested in a memo to the FHWA in order for the project to continue. They include the following:

- Refinement of the project purpose and need statement: suggesting that the purpose and need statement be determined at the time of the Detailed Study Alternatives.
- Elimination of the Red Corridor based on more robust documentation and clearer presentation: It is suggested that a more economic and human impact emphasis be placed on evaluation of corridor alternatives.
- Development of additional new build corridor alternatives. Identification of corridors that are reasonable comparisons to the protected (Orange) corridor in the Draft Environmental Impact Statement (EIS). One new corridor has been identified whose wetland impacts are 30 percent lower than the Orange corridor. It is suggested that NCTA work more closely with FHWA to evaluate new alternatives.

## **The Merger Process**

As seen in this case study, the timeline between project ideas to the final product can be quite lengthy. This particular transportation project started in the mid-1990s and is still in progress. This is partly due to numerous legislation steps and approvals as well as the

difficulty in the coordinating of many different players and agencies throughout the length of the project.

In an attempt to streamline project development as well as navigating NEPA and requirements set by Section 404 of the Clean Water Act, the Federal Highway Administration (FHWA), US Army Corps of Engineers (USACE)-Wilmington District and the North Carolina Department of Transportation signed a Memorandum of Agreement (MOA) entitled “An Interagency Agreement Integrating Section 404/NEPA” on May 14, 1997, giving them the title of “primary signatories” during this process. This agreement provided a “merger process” for transportation projects requiring a Section 404 permit.

In April of 2005, these three agencies along with NCDENR signed the Memorandum of Understanding (MOU) for the Merger Process Implementation Guidelines. This document allows for agency representatives to discuss and reach consensus to facilitate meeting the regulatory requirements of Section 404 of the CWA during the decision making phase for transportation projects and allow for compromise based decisions before moving to the next phase of the project. In addition, it allows agencies to converse and comply with the abundant laws and mandates dictated by their respective agencies as they apply to transportation or other environmentally altering projects.

Key advantages to this process are: early stakeholder involvement during planning, better quality decisions, and less likelihood of permit issuance delays. Not only does this aid in shortening the timeline at the planning phase, it can also speed up the project at the

development and environmental analysis phase (PD&EA) as well (NCDOT website: [connect.ncdot.gov](http://connect.ncdot.gov)).

### *Merger Members*

In addition to the primary signatories, FHWA, USACE, and NCDOT, numerous partnering agencies and sponsors are involved, and include: the Environmental Protection Agency; National Marine Fisheries Service; N.C. Wildlife Resources Commission; Tennessee Valley Authority; National Park Service; U.S. Coast Guard; U.S. Forest Service; N.C. Department of Cultural Resources; Metropolitan Planning Organizations (MPOs); and the Eastern Band of Cherokee Nation.

### *Concurrence Points*

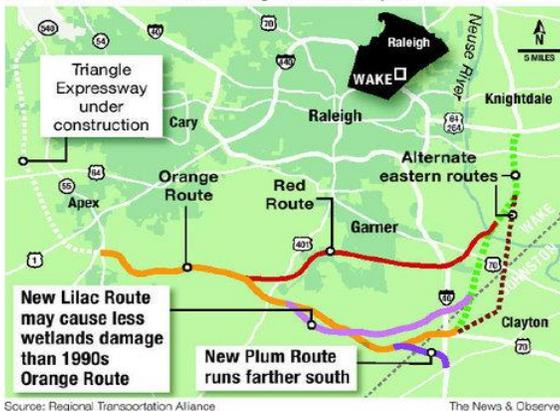
Concurrence points are periodic points throughout the Section 404/NEPA process in which members and their agencies agree to the decisions made at that point in the process. Each point is sequential and seven concurrent points occur throughout the process. They occur at the following points: Purpose and Need and Study Area Defined, Detailed Study Alternatives Carried Forward (DSA), Bridging Decisions and Alignment Review, Preferred Alternative Selection, Avoidance and Minimization, 30 Percent Hydraulic Review, and Permit Drawings Review.

## Newly Proposed Routes

Under the recommendation of Dawson and Associates, the Regional Transportation Alliance released two additional routes that could assist in the difficult navigation of legislation and satisfy requirements from federal environmental regulators.

### Orange Route good, Lilac Route better?

Two new colors offer options for the 540 Outer Loop / Triangle Expressway path through southern Wake. The proposed Lilac and Plum routes are believed to cause less environmental harm than the old Orange Route, but more homes might be affected. State law eliminated the Red Route through Garner last year.



Source: Regional Transportation Alliance

The News & Observer

**Figure 8: Lilac and Plum Routes**

The newly proposed Lilac route runs farther north than the protected corridor and is thought to have a 30 percent decrease on wetlands than that of the orange route, but full analysis is not complete at this time. (Siceloff, Bruce. "TriEx map adds Plum, Lilac options." *News and Observer*: Section 1B. 22 Aug 2012). NCDOT has already begun analysis on the impacts on the newly proposed route. In addition, it also runs farther south than the red route and avoids the numerous water quality issues that are key impacts to the Town of Garner. On the other hand, the Lilac route would have more impacts on communities, as it runs through more neighborhoods than the Orange route. The Plum Route breaks from the lowest point of the Orange Route, eventually connecting with I-40.

## Timetable to Win Regulators Approval

State and local planners have devised a timetable for Phase 1, from Highway 55 in Holly Springs to I-40 in Garner in hopes that it will satisfy regulator demands and affected residents of current proposed routes. At this time, no timetable has been set for Phase 2,

from I-40 to Hwy 1/64 in Knightdale. The following timeline was printed in the *News and Observer* on Aug. 22, 2012.

**October-November 2012:** Evaluate possible route corridors, including eliminated routes. These evaluations would include project costs, environmental and community impacts.

**December 2012:** Public meetings to discuss route evaluations

**April 2013:** New report showing elimination of some routes, leaving 2 to 3 remaining.

**November 2013:** Draft EIS, with possible recommendation for one route. Public hearings will follow.

**2014:** Final EIS and approval from state and federal regulators. This would be followed by route design, engineering, land acquisition and construction.

### *Conclusions*

The NEPA process involves many regulations, agencies, and stakeholders at each step. It allows for the evaluation of many alternatives at both the environmental and community levels to make decisions that involve the fewest impacts. This process can take many years as agencies navigate the numerous regulations throughout the process. The Merger Process allows agencies to convene at regular intervals throughout the course of a project to share policy requirements, discuss options, and hopefully to move forward. However, some projects can cause such dissension among stakeholders that projects result in an impasse. Such is the case of the I-540 Southeast Extension. One proposed route has high impacts on wetlands and endangered species, while the other has high impacts on the humans and communities. Placing a value on either the environment or on communities is

nearly impossible. The Merger Process is a way to alleviate concerns early in the planning stages and throughout so as to keep dissention at a minimum.

Although no formal conclusions can be formed at this juncture, the analysis of the routes of the NC-540 Southeast Extension can be used as a learning tool to illustrate the NEPA process, prospective problems, and perhaps to identify conflicts that could be avoided. Three key conclusions were made after completing this analysis.

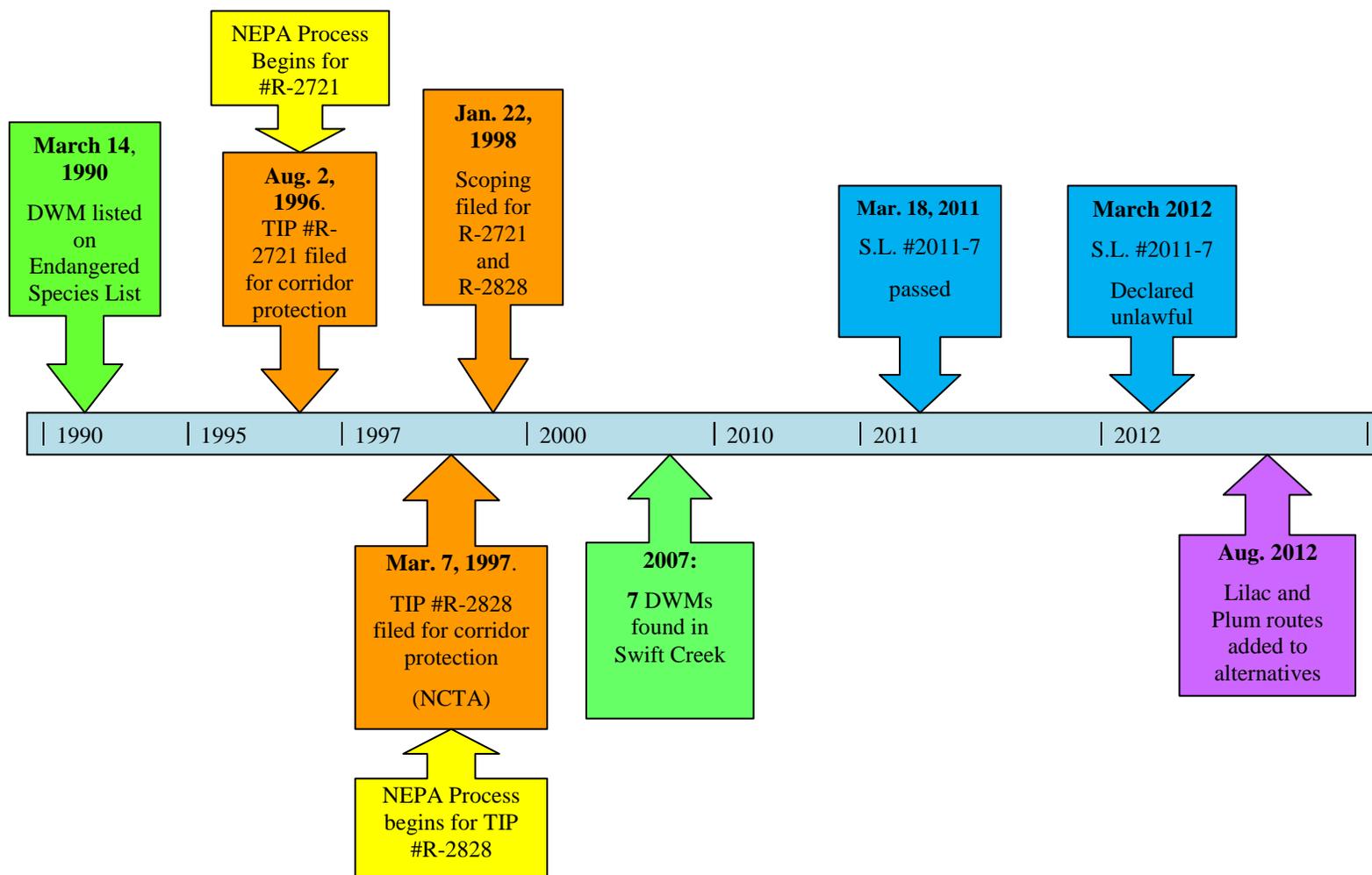
First, setting aside the protected corridor, where known habitat for the DWM is located, not only protected it from increased infrastructure, it allowed the species to thrive. Isn't this the goal of the Endangered Species Act? This is a prime example of a positive, unforeseen result through corridor protection in this transportation project. The deliberate multi-stakeholder processes implemented eventually could be a model to avoid these problems in future projects.

Second, Garner's pre-emptive actions singlehandedly disrupted the NEPA process by allowing those unfamiliar with this process to support and pass laws that halted progress of the entire project and tied the hands of those agencies involved in the project. State laws cannot override the federal NEPA process. It prevented agencies from analyzing all possible routes and make the best decision regarding this project.

Third, a complete EIS will fully analyze all impacts, not just those that affect the natural environment. Analysis of socio-economic impacts is thoroughly evaluated and is weighted in the decision process. These types of impacts include those on neighborhood cohesion,

community services, parks and recreation, long-range plans, as well as impacts to Voluntary Agricultural Districts.

# Project Timeline



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