BIOLOGICAL ASSESSMENT of CAROLINA HEELSPLITTER (*Lasmigona decorata*) and DESIGNATED CRITICAL HABITAT, SCHWEINITZ'S SUNFLOWER (*Helianthus schweinitzii*), MICHAUX'S SUMAC (*Rhus michauxii*), and SMOOTH CONEFLOWER (*Echinacea laevigata*)

MONROE CONNECTOR/BYPASS

MECKLENBURG and UNION COUNTIES, NORTH CAROLINA

FEDERAL AID PROJECT NUMBER STP-NHF-74(90)
WBS ELEMENT 34533.1.TA1
STIP PROJECT NUMBER R-3329/R-2559

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ACRONYMS & ABBREVIATIONS

ARRA	American Recovery and Reinvestment Act
ATV	All Terrain Vehicle
BA	Biological Assessment
BMPs	Best Management Practices
BOD	Biochemical Oxygen Demand
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
DO	Dissolved Oxygen
DSAs	Detailed Study Alternatives
E	Endangered
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Element Occurrence
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESI	Environmental Services Inc.
FHWA	Federal Highway Administration
FLUSA	Future Land Use Study Area
FONSI	Finding of No Significant Impact
FSC	Federal Species of Concern
GIS	Geographic Information System
gpm	Gallons Per Minute
GPS	Global Positioning System
ICE	Indirect and Cumulative Effects Analysis
km	kilometers
mgd	Million Gallons per Day
mi	miles
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
MUMPO	Mecklenburg-Union Metropolitan Planning Organization
NCDENR	North Carolina Department of Environment and Natural Resources
NCDWQ	North Carolina Division of Water Quality
NCGS	North Carolina General Statutes
NCNHP	North Carolina Natural Heritage Program
NCTA	North Carolina Turnpike Authority
NCWRC	North Carolina Wildlife Resources Commission
NOI	Notice of Intent
NOV	Notice of Violation
NPDES	National Pollution Discharge Elimination System
NPS	Nonpoint Source
PSA	Project Study Area
ROW	Right of Way
RPA	Recommended Preferred Alternative
SC	State Special Concern

SR	State Significantly Rare
STIP	State Improvement Transportation Program
T	Threatened
TCG	The Catena Group
TEAC	Turnpike Environmental Agency Coordination
TMDL	Total Maximum Daily Load
TSR	Total Suspended Residue
TSS	Total Suspended Solids
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
WET	Whole Effluent Toxicity
WWTP	Wastewater Treatment Plant

1.0 INTRODUCTION

The North Carolina Turnpike Authority (NCTA), a division of the North Carolina Department of Transportation (NCDOT), in cooperation with the Federal Highway Administration (FHWA), proposes to construct a project known as the "Monroe Connector/Bypass" in Mecklenburg and Union Counties, North Carolina. The purpose of this Biological Assessment (BA) is to review the project to determine whether the proposed action may affect federally listed species that occur in the Action Area (Figure 1).

The proposed roadway is included in the NCDOT's *2009-2015 State Transportation Improvement Project* (STIP), project numbers R-3329 (Monroe Connector) and R-2559 (Monroe Bypass), as a controlled-access toll road extending from US 74 near I-485 in Mecklenburg County to US 74 between the towns of Wingate and Marshville in Union County, a distance of approximately 20 miles. NCDOT previously studied these as two separate projects; however, the two projects are now being advanced by NCTA as a single project at the request of the Mecklenburg-Union Metropolitan Planning Organization (MUMPO). On January 19, 2007, FHWA issued a Notice of Intent (NOI) in the Federal Register (Vol. 72, No. 12, page 2582 to 2583) announcing its intention to prepare a Draft Environmental Impact Statement (EIS) for the combined Monroe Connector/Bypass project. The Draft EIS was issued on March 31, 2009.

This BA addresses likely effects to federally protected species associated with the proposed Monroe Connector/Bypass. This BA is prepared in accordance with legal requirements established under Section 7 of the Endangered Species Act (ESA) (16 U.S.C. 1536 (c)), and is consistent with the standards established in U.S. Fish and Wildlife Service (USFWS) Region 4 guidance (USFWS 2005), FHWA guidelines (USDOT 2002), and NCDOT guidance (NCDOT 2002).

The species evaluated in this Biological Assessment include:

- Carolina heelsplitter (*Lasmigona decorata*) and its designated Critical Habitat
- Schweinitz's sunflower (*Helianthus schweinitzii*)
- Michaux's sumac (*Rhus michauxii*)
- Smooth coneflower (*Echinacea laevigata*).

This Biological Assessment was prepared by The Catena Group, Inc. (TCG). The preparers' credentials are included in Appendix I.

1.1 Statutory Authority of Action

Section 7(a)(2) of the ESA (16 USC 1531-1544 and Section 1536) requires that each Federal agency shall, in consultation with USFWS, insure that any action authorized, funded, or carried out by such agency, is not likely to jeopardize the continued existence

of an endangered or threatened species, or result in the destruction or adverse modification of critical habitat.

NCDOT derives their statutory authority via North Carolina General Statutes (NCGS) 143B-345 and 346 and FHWA derives their statutory authority via 49 US Code (USC) 104.

As defined in 50 Code of Federal Regulations (CFR) Part 402.02, "actions" include all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies in the United States or upon the high seas. Since the proposed project includes both funding by FHWA and approval by the U.S. Army Corps of Engineers (USACE) pursuant to the Clean Water Act, it is subject to consultation under Section 7 of the ESA.

1.2 Consultation History

This section describes the consultation history of the two projects separately as well as the present single project to provide a thorough project consultation history.

Monroe Bypass (R-2559)

An Environmental Assessment (EA) was issued on March 14, 1996, and a Finding of No Significant Impact (FONSI) was completed on June 20, 1997 for the Monroe Bypass (a new location freeway facility from US 601 to US 74 near Marshville in Union County). As part of that FONSI, comments concerning the Monroe Bypass were solicited from various agencies, including the USFWS. In letter dated April 18, 1997 the USFWS issued a concurrence that the project is "not likely to adversely affect" the federally endangered Carolina heelsplitter or Schweinitz's sunflower. However, the USFWS subsequently rescinded their "not likely to adversely affect" concurrence for the USACE's determination of effect. In a letter dated August 8, 2002, written in response to the public notice issued for the Section 404 Permit Application, the USFWS stated that based on "new information and a changed condition" their previous concurrence was no longer valid (Appendix II).

Monroe Connector (R-3329)

NCDOT began the planning process in 1999 for the Monroe Connector (from near I-485 in Mecklenburg County to US 601 in Union County). A Draft EIS was issued on October 17, 2003, and released for review and comment by the public and environmental resource and regulatory agencies in November 2003. Based on comments received from the various federal and state agencies and the public, and due to concerns regarding logical termini of the Monroe Connector and Monroe Bypass projects, the 2003 Draft EIS was rescinded on January 30, 2006 by notice in the Federal Register (Vol. 71, No. 19, page 4958). The notice stated that FHWA, NCDOT and NCTA plan to prepare a new Draft EIS for the combined Monroe Connector/Bypass project.

2005 Draft BA

A Draft BA was originally prepared on October 28, 2005 which assessed effects from both the Monroe Bypass (R-2559) and the Monroe Connector (R-3329) on the Carolina heelsplitter and Schweinitz's sunflower. Consultation with USFWS was not initiated due to the rescission of the Monroe Connector Draft EIS.

Monroe Connector/Bypass Draft EIS

A Draft EIS, prepared by PBS&J (2009) was issued for the Monroe Connector/Bypass on March 31, 2009. It included discussion of federally-protected species in the project area, including biological conclusions for potential effects to these species as follows:

- Carolina heelsplitter (*Lasmigona decorata*) and its designated Critical Habitat – Unresolved
- Schweinitz's sunflower (*Helianthus schweinitzii*) – May Affect/Not Likely to Adversely Affect
- Michaux's sumac (*Rhus michauxii*) – No Effect
- Smooth coneflower (*Echinacea laevigata*) – No Effect

USFWS commented on the Draft EIS via letter dated June 12, 2009 (Appendix II). USFWS comments relating to the ESA and NCTA responses to those comments follow:

Schweinitz's sunflower

- USFWS stated, "*…it is premature to determine that there will be no impacts to the Schweinitz's sunflower (Helianthus schweinitzii) from this project. Until more specifics about design and any changes that may result from public comment or other information are available we believe the appropriate conclusion for this species is 'unresolved.'*"
- NCTA responded that two populations of Schweinitz's sunflower were identified near Interchange 3 and per Draft EIS comments; a subsequent interchange redesign changed the configuration to a compressed urban diamond. FHWA and NCTA are coordinating with USFWS in accordance with Section 7 of the ESA in the preparation of this BA.

Goose Creek

- USFWS stated, "*We remain concerned about the overall impacts to streams and wetlands and wildlife habitat…in particular, the potential for impacts to the Goose Creek watershed, which is occupied by and designated critical habitat for the federally endangered Carolina heelsplitter.*"
- NCTA responded with reference to Section 2.3.3 of the Final EIS which includes measures to avoid and minimize impacts to streams and wetlands as well as a Section PC, which includes a special project commitment to implement BMPs based on NCDOT's *Design Standards in Sensitive Watersheds*. NCTA further

stated that the DSAs would not be located within the Goose Creek watershed and that indirect and cumulative land use and impervious surface changes were analyzed in the Quantitative ICE.

Forest / Habitat Fragmentation

- USFWS stated, "*Forest fragmentation is described as an indirect effect of highway projects, but we believe that the impacts of fragmentation are direct effects that should be quantified.*"
- NCTA responded that habitat fragmentation has been addressed in the Quantitative ICE.

Indirect and Cumulative Impacts

- USFWS stated, "*Indirect and cumulative impacts continue to be a great concern for this project. … This is a significant omission in determining environmental impacts from the project, especially regarding potential impacts to the Carolina heelsplitter and its critical habitat.*"
- NCTA responded, stating that the USFWS comment refers to the Qualitative ICE. Subsequently, a Quantitative ICE and a Water Quality ICE were prepared to quantify indirect and cumulative impacts. These reports are summarized in Section 2.5.5 of the Final EIS.

Habitat Protection

- USFWS stated, "*Any new development that occurs without measures adequate to protect the species and its habitat is likely to result in extirpation of the species and adverse impacts to its designated critical habitat.*"
- NCTA responded by referencing Section 7 coordination and the development of this BA. They also referenced the Quantitative ICE which found no measurable differences in percent impervious surface between the Preferred Alternative and the No Build Alternative for the FLUSA as a whole, and no change in the Goose Creek Watershed.

On July 22, 2009, representatives of NCTA, FHWA, and USFWS met to discuss design revisions incorporated into the Preferred Alternative as a result of public comments on the Draft EIS. This included revising the proposed interchange configuration at Unionville-Indian Trail Road to reduce the footprint of the design. Two populations of Schweinitz's sunflower were identified along Secrest Shortcut Road in the vicinity of this proposed interchange. USFWS indicated that based on the design change, which would increase the potential for future development adjacent to the interchange, it would be highly likely that the populations would be lost due to indirect impacts of this project, either related to future road improvements along Secrest Shortcut Road or to future development. USFWS recommended formal Section 7 consultation for these impacts to Schweinitz's sunflower. Minutes from this meeting are attached in Appendix II.

Additional coordination with USFWS occurred during TEAC meetings and various other meetings and types of correspondence regarding the ESA and protected species. This information is summarized below.

- May 17, 2007, TEAC meeting: In identifying potential corridors/study alternatives, the study area was developed to avoid direct impacts to Goose Creek basin in an effort to minimize impacts to Carolina heelsplitter. It was suggested that impacts to Stewarts Creek be minimized as it feeds Lake Twitty and the Goose Creek watershed. Additionally, USFWS planned to provide information about the Schweinitz's sunflower population near Secrest Shortcut Road. USFWS suggested the team consider a new approach to indirect and cumulative impacts which may be useful. NCTA planned to follow up with USFWS.
- June 29, 2007, Meeting: FHWA and NCTA met with USFWS and WRC to discuss the scope of work, study area, and methodologies for the ICE study. USFWS stated that previous ICE studies have used a standard five to seven mile distance from interchanges as an assumed study area for induced growth. NCTA stated that the assumption would be revisited as part of this study. FHWA and NCTA asked USFWS to provide input on which indicators should be used for analyzing impacts to the mussels. USFWS noted that impact analysis will be influenced by NPDES permit decisions. USFWS also suggested NCTA determine the current status of land use controls and regulations in the project area. WRC requested analysis of impervious surface increase for the land use analysis. WRC also stated that stormwater and 303(d) streams may be issues. NCTA addressed these comments and incorporated these suggestions into the project documents.
- December 5, 2007, TEAC Meeting: USFWS suggested that NCTA consider eliminating the interchange at US 601 with new location alternatives to reduce potential indirect impacts on the Goose Creek watershed. NCTA has moved forward with the project considering both with the US 601 option and without the US 601 option in the quantitative ICE analyses.
- September 23, 2008, TEAC Meeting: NCTA noted that two populations of Schweinitz's sunflower were identified near the proposed Unionville Indian Trail Road interchange. No direct impacts are anticipated; however, the biological conclusion in the Draft Natural Resources Technical Report will be "unresolved" until NCTA/FHWA and USFWS coordinate on this issue.
- August 12, 2009, TEAC Meeting: NCTA noted that formal Section 7 consultation for Carolina heelsplitter and its designated critical habitat and Schweinitz's sunflower is anticipated. USFWS clarified that a decision to enter formal consultation has not yet been made and a final decision will be based on results of the quantitative land use studies / ICE analyses. It was noted that the FLUSA would be expanded to include the entire Goose Creek watershed. USFWS suggested that localities should be asked specifically about how the *Site Specific Water Quality Management Plan for the Goose Creek Watershed* will be implemented. NCDWQ responded that their agency will be implementing the

plan initially and that training will be provided to the local governments. USFWS also stressed the importance of documentation of assumptions and rationale regarding future land use. USFWS suggested that the water quality component of the ICE may be useful for Section 7 consultation. The agencies will identify which parameters they will require in the final water quality analysis.

- September 8, 2009, TEAC Meeting: Per USFWS request, NCTA agreed to evaluate ICE with and without the US 601 interchange in the Quantitative ICE study. (US 601 is the closest major interchange to the Goose Creek watershed.) USFWS requested more information about the water quality ICE model (i.e. input parameters, adaption to suburban landscapes, groundwater, etc.). Sixmile Creek watershed was suggested to be included in the modeling efforts.
- October 31, 2009, TEAC Meeting: The Generalized Water Loading Function (GWLF) model was presented to describe water quality modeling and analysis. Agencies were requested to identify and provide stressors in addition to those presented. USFWS suggested NCTA review the Goose Creek watershed management plan for other sources of impairment. NCTA will proceed with the study area as identified for water quality modeling. If the Quantitative ICE indicates indirect impacts in Sixmile Creek watershed, NCTA will reevaluate whether to include more of the watershed in the analysis and/or perform additional analysis.
- November 11, 2009, TEAC Meeting: Preliminary results of the Quantitative ICE were presented at this meeting. Several agency representatives expressed uncertainty as to the accuracy of the projections and NCTA asked if there were any suggestions for another method to determine future growth that would be defensible. None were offered. Agencies were requested to provide opinions / recommendations regarding methodologies throughout the planning process (see June 29, 2007 meeting, above). USFWS requested a discussion on how the Hartgen method was used to perform validation. NCTA hosted additional meetings to discuss and explain methodologies and associated reports also included detailed discussions regarding chosen methodologies.
- February 2, 18, 22, 2010, Telephone Correspondence: USFWS provided updated data from the Draft 5-year Status Reviews for smooth coneflower and Michaux's sumac (Suiter 2010a and 2010b, USFWS, pers. comm.).
- February 10, 2010, Email Correspondence: USFWS provided updated data (narrative from a recent Biological Opinion) for Schweinitz's sunflower (Wells 2010, USFWS, pers. comm.).
- February 10-11, 2010, Email Correspondence: USFWS stated that a previous relocation of Schweinitz's sunflower from Secrest Shortcut Road (Natural Heritage Program Element Occurrence #77) to Cane Creek Preserve was associated with a NCDOT Division level project with no federal nexus to trigger Section 7 consultation (Buncick 2010a, USFWS, pers. comm.).

- March 30-April 1, 2010, Email Correspondence: USFWS provided details about other Section 7 consultations in the Action Area (Buncick, 2010b, pers. comm.) (Section 1.3).

1.3 Other Consultations in Action Area

There have been five previous consultations within the Action Area (as defined in Section 3.0) of the project:

1) B-2647 (Carolina heelsplitter): Bridge No. 3 on SR 1547 over Goose Creek in Union County (TIP B-2647) was replaced during 1998. The findings of an informal consultation were transmitted to the USFWS in a letter dated May 14, 1998.

2) R-2123 (Carolina heelsplitter): During the 1990s and early part of the present decade, the Charlotte Outer Loop (TIP R-2123) was designed and constructed within the Goose Creek Subbasin. There were several consultations and re-initiations throughout the development and construction of the project.

3) (Carolina heelsplitter): Wal-Mart Real Estate Business Trust development of a commercial center (Wal-Mart Supercenter) on an approximately 50-acre site near the intersection of US Hwy 521 and SC 160, within the Sixmile Creek watershed in Lancaster County, South Carolina. The project site drains into the North Carolina portion of Sixmile Creek, and the entire Sixmile Creek watershed was evaluated in the Biological Assessment (TCG 2007) that concluded that the project was "Not Likely to Adversely Affect" the Carolina heelsplitter.

4) U-2506 (Carolina heelsplitter): Involved the extension of Rea Road (SR 3624) on new alignment from its former terminus at the then proposed Charlotte Outer Loop (I-485) in Mecklenburg County, NC to NC 16 in Union County, NC. The roadway extension involved a new crossing of Sixmile Creek in between the NC 16 and SR 3635 (Marvin Road) crossings. Although the project itself is located outside of the Action Area, the Sixmile Creek watershed as a whole was evaluated in the consultation. Freshwater mussel surveys were conducted in 1999 prior to the authorization of the USACE 404 permit, for a standard distance of 1,312 feet below and 328 feet above the proposed crossing. A large number of mussels, primarily the eastern elliptio, were found during this survey effort; however, typical Carolina heelsplitter habitat is not present in this reach of the stream. Based on the survey results, and the lack of typical habitat, it was concluded that the project was "Not Likely to Adversely Affect" the Carolina heelsplitter. The USFWS concurred with these findings, and the project was let for construction later that year and completed the following year. NOTE: Schweinitz's sunflower was also addressed as part of this project, but its occurrence was outside of the Action Area.

5) U-2510 (Carolina heelsplitter): Involved the widening of NC 16 from the intersection with the Rea Road Extension in Union County, NC north to I-485. The widening of the roadway involved replacing the existing culvert over Sixmile Creek with a bridge. As with the Rea Road Extension project, mussel surveys were completed for this project in August 2004, with similar results and a concurrence of "Not Likely to

Adversely Affect" was issued by USFWS. As a result of the discovery of Carolina heelsplitter in Sixmile Creek, the USFWS asked NCDOT to reinitiate consultation in April 2006, and perform additional surveys. These surveys were conducted later that month, with similar results to the previous surveys. Again a "Not Likely to Adversely Affect" conclusion was reached and concurred with by USFWS.

6) R-5114 (Carolina heelsplitter): Involved the rehabilitation of NC 218 in Mecklenburg, Union, and Anson Counties. This was an American Recovery and Reinvestment Act (ARRA) project which involved repairing deteriorated sections of the existing roadway, overlaying with asphalt and several culvert replacements (Duck Creek).

7) (Carolina heelsplitter): USFWS consulted on a natural gas pipeline project that involved crossings of Goose and Duck Creeks. Based on results of surveys for listed plants and measures incorporated into the project to avoid impacts to the Carolina heelsplitter, USFWS concurred with the determination of a "Not Likely to Adversely Affect" conclusion.

8) (Carolina heelsplitter): USFWS consulted with NCWRC in the past on several restoration projects in the Goose Creek watershed. A "Not Likely to Adversely Affect" conclusion was reached and concurred with by USFWS.

The USFWS was consulted regarding previous consultations in the Action Area. No additional species consultations have occurred or are recently planned in the Action Area (Buncick 2010b, pers. comm.).

1.4 Habitat Conservation Plans In Action Area

There have been no Habitat Conservation Plans developed for the Carolina heelsplitter within the action area.

2.0 PROJECT DESCRIPTION

The Monroe Connector/Bypass is proposed to be a controlled-access toll road extending from US 74 near I-485 in Mecklenburg County to US 74 between the towns of Wingate and Marshville in Union County, a distance of approximately 20 miles. The project will occupy approximately 1,240 acres within the proposed right of way (ROW). The proposed facility will allow for high-speed regional travel consistent with the designations of the North Carolina Strategic Highway Corridor Program and the North Carolina Intrastate Highway System, while maintaining access to properties along existing US 74.

Design criteria and typical sections were established for the functional engineering designs based on existing (2008) and projected (2035) traffic forecasts and the long-range vision for the US 74 corridor as defined by the NC Strategic Highway Corridor program and the NC Intrastate Corridor System. The roadway typical section for new location portions of the project has four 12-foot travel lanes with a 70-foot median and 4-foot inside paved shoulders. The ROW needed for this typical section would be

approximately 300 feet, with additional ROW required for interchanges, frontage roads, and improvements to intersecting roads. In addition, a one-mile segment of existing US 74 (from Independence Commerce Drive to 1,500 ft east of Union West Boulevard) would be upgraded to a controlled-access highway facility with frontage roads (Figure 1A). The typical roadway section for this segment would be six lanes for the upgraded US 74 facility and include two- or three-lane, one-way frontage roads on either side, for a total of ten to twelve lanes. The number of lanes on the frontage roads would vary depending on the proximity to on and off ramps. The current assumption for the six-lane tolled highway portion of US 74 includes reconstructing US 74 on fill with retaining walls to allow the frontage roads to be built immediately at the base of the retaining walls. The ROW required for this section would be approximately 260 feet. Further details of the project description can be found in Section 2.1 of the Final EIS (PBS&J 2010a).

This project currently has design criteria and typical sections established for the functional engineering designs. Since none of the protected species or critical habitat addressed in this BA occur within the ROW limits (see Sections 4.4.1, 5.2.1, 6.2.1, and 7.2.1 of this report), no further design-related information is needed for this consultation as the ROW limits will not be affected by further refinement of the design.

2.1 Avoidance and Minimization

Consideration was given to the location of endangered species throughout the alternatives development and design process, based on the best available information at the time regarding the known locations of the protected species populations. As stated in Section 2.3.1 in the Draft EIS (excerpt below), all alternatives were purposely kept from encroaching on the Goose Creek watershed in an effort to avoid direct effects to the Carolina heelsplitter and its designated critical habitat (Figure 2) (PBS&J 2009).

> *To the north, the boundary does not encroach on either the Goose Creek watershed or on Lake Twitty (a water supply). Previous studies included these areas, but because of concerns surrounding the presence of the federally-endangered Carolina heelsplitter mussel in Goose Creek and because Lake Twitty is a critical watershed, these areas were eliminated from the current project study area. Previously identified corridors for the Monroe Connector and Monroe Bypass that would result in direct impacts to the Goose Creek watershed or Lake Twitty are not included in this analysis.*

Additionally, alternatives were kept outside of the Waxhaw Creek watershed, known Carolina heelsplitter habitat, as stated in Section 2.3.1 in the Draft EIS (PBS&J 2009):

> *A corridor south of the Lake Lee critical watershed would not be reasonable or practical due to substantially greater length and potential impacts to the Waxhaw Creek watershed, which is also a known Carolina heelsplitter habitat.*

The Final EIS includes the project commitments which place restrictions on construction staging, storage, refueling, borrow pit, or spoil areas (PBS&J 2010a). These interrelated activities are discussed in further detail in Section 8.1 of this BA.

3.0 DESCRIPTION OF ACTION AREA

The action area, as defined in 50 CFR 402.02, means all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. The defined Action Area for the proposed project includes several area types: those directly impacted by construction activities; those potentially impacted by indirect effects or cumulative effects; and those in which conservation measures are utilized to offset any impacts are proposed outside of the construction areas and the identified zone of indirect impacts. The Action Area for this Biological Assessment consists of the limits of the Recommended Preferred Alternative (RPA), combined with the Future Land Use Study Area (FLUSA) (Figure 1).

Defining the Action Area was coordinated with the environmental regulatory agencies at the January 25, 2007 Turnpike Environmental Agency Coordination (TEAC) meeting. The limits of the Action Area was also discussed at the February 14, 2007 TEAC meeting, with discussions concluding at the March 22, 2007 TEAC meeting.

3.1 Areas of Direct Effects

Direct effects are caused by the proposed action and generally occur at the same time and place as the project. Areas of direct effects will include, but are not limited to: the footprint or ROW of the facility, construction areas, or any other activity that causes ground disturbing activities that can be directly associated with the project. Direct effects of the proposed action are documented in the Final EIS Section S-8 (Table S-2) (PBS&J 2010a).

Direct effects also refer to other activities that are interrelated or interdependent with the proposed action. Interrelated actions are defined as federal actions that are part of a larger action and depend on the larger action for their justification [50 CFR 402.02]. Interrelated action areas include project-associated utility relocations, as well as construction borrow pits, haul roads, and staging areas. Interdependent actions, defined as federal actions having no independent utility apart from the proposed action [50 CFR 402.02], were evaluated with regard to direct effects to endangered species and critical habitat. No indirect interdependent actions are anticipated.

3.2 Areas of Indirect Effects

Areas of indirect effects will include, but are not limited to: those areas that are impacted by or will result from the proposed action and are later in time, but are still reasonably certain to occur [50 CFR 402.02]. These types of impacts can include natural responses to the proposed action's direct impacts, or can include human induced impacts associated with the proposed action.

In order to evaluate potential indirect effects of the project, several studies have been conducted including:

1. Qualitative Indirect and Cumulative Effects Assessment (Qualitative ICE) prepared by HNTB, January 2009, (HNTB 2009)
2. Indirect and Cumulative Effects Quantitative Analysis (Quantitative ICE) prepared by Michael Baker Engineering, Draft, February 2010 (Baker Engineering 2010)
3. Indirect and Cumulative Effects Water Quality Analysis (Water Quality ICE) prepared by PBS&J, Draft, March 2010 (PBS&J 2010b).

Potential indirect and cumulative effects were evaluated for projected land use changes within the FLUSA. Using NCDOT ICI Guidance (Louis Berger Group, Inc. 2001), field surveys of local conditions, and interviews with local officials, the FLUSA was defined as a five-mile radius around the proposed project. This is the area within which the project has the potential to induce land use changes. In addition, the FLUSA was expanded to include the entire Goose Creek watershed to allow for evaluation of potential indirect and cumulative effects on the Carolina heelsplitter and its designated critical habitat. The FLUSA radius was discussed with the regulatory agencies at various TEAC meetings as well as the June 29, 2007 meeting.

Indirect effects are described in Section 5 of the Quantitative ICE (Baker Engineering 2010), where federal actions were included with future nonfederal actions that may affect protected species. Indirect effects also refer to activities that are interrelated or interdependent with the proposed action. These actions were evaluated with regard to indirect effects to endangered species and critical habitat in Sections 8.2 and 9.2 of this report.

3.3 Areas of Conservation Measures

Conservation measures are those measures that facilitate conservation of the species and offer some level of protection to the population. All of the proposed conservation measures will occur within the RPA and/or FLUSA boundaries. These will be discussed in detail in Sections 8.6 and 9.5 of this report.

Federal activities intended to conserve listed species or their habitat are one example of a federal action. Having no independent utility apart from the action under consideration, one such interdependent action to conserve listed species includes the preservation of Schweinitz's sunflower populations in the vicinity of Interchange 3 (Indian Trail-Fairview Road), further described in Section 9.5 of this report.

4.0 ENVIRONMENTAL BASELINE – CAROLINA HEELSPLITTER

This section discusses the characteristics and current status of the Carolina heelsplitter throughout its range and within the proposed Action Area.

4.1 Species Description

4.1.1 Designation (Legal Status)

The Carolina heelsplitter, of the family Unionidae, was listed as Endangered on June 30, 1993, under provisions of the Endangered Species Act of 1973 (as amended) (58 FR 34926-34932) (USFWS 1993a). Critical habitat was designated for Carolina heelsplitter on September 2, 2002, (67 FR 44501-44522), described in detail in Section 4.2.

4.1.2 Characteristics

The Carolina heelsplitter (*Lasmigona decorata*), originally described as *Unio decoratus* by (Lea 1852), synonymized with *Lasmigona subviridis* (Conrad 1835, Johnson 1970), and later separated as a distinct species (Clarke 1985), is a federally Endangered freshwater mussel, historically known from several locations within the Catawba and Pee Dee River systems in North Carolina and the Pee Dee, Savannah, and possibly the Saluda River systems in South Carolina.

The Carolina heelsplitter is characterized as having an ovate, trapezoid-shaped, unsculptured shell. The outer surface of the shell ranges from greenish brown to dark brown in color, with younger specimens often having faint greenish brown or black rays. The shell's nacre is often pearly white to bluish white, grading to orange in the area of the umbo (Keferl 1991). The hinge teeth are well developed and heavy and the beak sculpture is double looped (Keferl and Shelly 1988). Morphologically, the shell of the Carolina heelsplitter is very similar to the shell of the green floater (Clarke 1985), with the exception of a much larger size and thickness in the Carolina heelsplitter (Keferl and Shelly 1988).

Prior to collections in 1987 and 1990 by Keferl (1991), the Carolina heelsplitter had not been collected in the 20th century and was known only from shell characteristics. Because of its rarity, very little information of this species' biology, life history, and habitat requirements was known until very recently. Feeding strategy and reproductive cycle of the Carolina heelsplitter have not been documented, but are likely similar to other native freshwater mussels (USFWS 1996).

The feeding processes of freshwater mussels are specialized for the removal (filtering) of suspended microscopic food particles from the water column (Pennak 1989). Documented food sources for freshwater mussels include detritus, diatoms, phytoplankton, and zooplankton (USFWS 1996).

McMahon and Bogan (2001) and Pennak (1989) should be consulted for a general overview of freshwater mussel reproductive biology. Freshwater mussels have complex reproductive cycles, which usually include a larval stage (glochidium) that is an

obligatory parasite on a fish. The glochidia develop into juvenile mussels and detach from the "fish host" and sink to the stream bottom where they continue to develop, provided suitable substrate and water conditions are available (USFWS 1996). Often, this relationship is quite species-specific with a mussel being able to infect only one species of fish or a small group of closely related species. Many of the fish host associations have been documented by direct evidence on wild-caught fishes or implicated in laboratory infestation experiments (Watters 1994).

Until recently, nothing was known about the host species(s) for the Carolina heelsplitter (USFWS 1996, Bogan 2002). Starnes and Hogue (2005) identified the most likely fish host candidates (15 species) based on fish community surveys in occupied streams throughout the range of the Carolina heelsplitter.

Captive propagation efforts for this species had not been attempted in the past; however, due to the critical level of imperilment of the North Carolina populations, acting on recommendations from the NC Scientific Council on Mollusks, the NC Wildlife Resources Commission (NCWRC) funded a life history/captive propagation study, which allowed for salvage of individuals from the Goose/Duck and Sixmile Creek populations to be used in the study. A total of nine minnow species (Cyprinidae) were identified as suitable, and two sunfish species (*Lepomis* spp.) were identified as marginally suitable host species (Eads et al. 2010). All of these species may occur in habitat types known to be occupied by the Carolina heelsplitter; however, "it is always possible that it may use a combination of fish host species and some may not be native to all streams inhabited by this mussel" (Starnes and Hogue 2005).

Another member of the genus *Lasmigona*, the green floater (*Lasmigona subviridis*), perhaps a close relative to the Carolina heelsplitter, has been documented to be capable of in situ early development with glochidia developing within the marsupium of the female (Barfield and Watters 1998), thus it is possible that the Carolina heelsplitter may also be able to propagate by direct transformation.

4.1.3 Distribution and Habitat Requirements

Currently the Carolina heelsplitter has a very fragmented, relict distribution. At the time of listing, it was known to be surviving in only six streams and one small river (USFWS 1996); however, subsequent discoveries have increased the number of known populations to eleven.

Pee Dee River Basin:

1. Duck Creek/Goose Creek – Mecklenburg/Union Counties, NC
2. Flat Creek/Lynches River – Lancaster/Chesterfield/Kershaw Counties, SC

Catawba River Basin:

3. Sixmile Creek (Twelvemile Creek Subbasin) – Union/Mecklenburg Counties, NC and Lancaster County, SC
4. Waxhaw Creek – Union County, NC and Lancaster County, SC
5. Cane Creek/Gills Creek – Lancaster County, SC
6. Fishing Creek Subbasin – Chester County, SC
7. Rocky Creek Subbasin (Bull Run Creek/UT Bull Run Creek/Beaverdam Creek – Chester County, SC

Saluda River Basin:

8. Redbank Creek – Saluda County, SC
9. Halfway Swamp Creek – Greenwood/Saluda Counties, SC

Savannah River Basin:

10. Little Stevens Creek/Mountain Creek/Sleepy Creek /Turkey Creek (Stevens Creek Subbasin) – Edgefield/McCormick Counties, SC.
11. Cuffytown Creek (Stevens Creek Subbasin) – Greenwood/McCormick Counties, SC

All of these populations occur in stream reaches within the Piedmont Physiographic Province, particularly within two northeast trending lithostratigraphic belts of the Carolina Terrane, the Carolina Slate Belt and the Charlotte Belt. The Carolina Slate Belt is a band of greenschist faces metavolcanic rock formations positioned in the central and lower Piedmont province extending from south-central Virginia to extreme eastern Georgia (Howell 2005, Butler and Secor 1991). The Charlotte Belt extends from north central North Carolina to eastern Georgia and is comprised of amphibolite faces metavolcanic and metaplutonic rock (Howell 2005, Butler and Secor 1991). These hard formations strongly dictate the channel morphology and character of stream substrates where they intersect. Starnes and Hogue (2005) describe such reaches as "generally characterized by dark, often tilted, bedrock stream bottom with associated large and small rock rubble interspersed with pockets of sand, silt, and gravel."

Habitat for this species has been reported from small to large streams and rivers as well as ponds. The ponds are believed to be millponds on some of the smaller streams within the species' historic range (Keferl 1991). Keferl and Shelly (1988) and Keferl (1991) reported that most individuals have been found along well-shaded streambanks with mud, muddy sand, or muddy gravel substrates; however, numerous individuals in several of the populations have been found in cobble and gravel dominated substrate in stream reaches intersecting the hard rock formations described above (TCG personal observations). The stability of stream banks appears to be very important to this species (Keferl 1991).

4.1.4 Threats to Species (Particularly Goose/Duck Creek and Sixmile Creek Populations)

Habitat degradation, water quality degradation, and changes in stream flow (water quantity) are the primary identified threats to the Carolina heelsplitter. Specific types of activities that lead to these threats have been documented by the USFWS in the Recovery Plan, Federal Register and other publications (USFWS 1996, 2002a, 2003). These specific threats include the following:

- Siltation resulting from poorly implemented agricultural, forestry and developmental activities;
- Golf course construction;
- Road construction and maintenance;
- Runoff and discharge of municipal, industrial and agricultural pollutants;
- Habitat alterations associated with impoundments, channelization, dredging, and sand mining operations; and
- Other natural and human-related factors that adversely modify the aquatic environment.

These threats, alone and collectively, have contributed to the loss of the Carolina heelsplitter in streams previously known to support the species (USFWS 2002a). In addition, many of the remaining populations occur in areas experiencing high rates of urbanization, such as the Charlotte, NC and Augusta, GA greater metropolitan areas. The low numbers of individuals and the restricted range of each of the surviving populations make them extremely vulnerable to extirpation from a single catastrophic event or activity (USFWS 1996). The cumulative effects of several factors, including sedimentation, water quality degradation, habitat modification (impoundments, channelization, etc.), urbanization and associated alteration of natural stream discharge, invasive species, and other causes of habitat degradation have contributed to the decline of this species throughout its range (USFWS 1996).

Extensive threats to the species, including sedimentation, toxic contaminants, habitat alterations, urbanization/impervious surface area, thermal pollution, invasive species, and other causes of habitat degradation, are discussed in further detail below.

4.1.4.1 SEDIMENTATION

Sedimentation resulting from improper erosion control of various land usage practices, including agriculture, forestry, and development activities, has been recognized as a major contributing factor to the degradation of mussel populations (USFWS 1996, Brim Box and Mossa 1999, Chapman and Smith 2008). Siltation has been documented to be extremely detrimental to mussel populations by degrading substrate and water quality, increasing potential exposure to other pollutants, and by direct smothering of mussels (Ellis 1936, Markings and Bills 1979). Sediment accumulations of less than one inch have been shown to cause high mortality in most mussel species (Ellis 1936).

Accelerated sedimentation and erosion resulting from a bridge construction project in Massachusetts lead to the extirpation of a population of the dwarf wedgemussel (*Alasmidonta heterodon*), a federally endangered freshwater mussel (Smith 1981).

4.1.4.2 TOXIC CONTAMINANTS

The presence of toxic contaminants has been attributed as a contributor to widespread declines of freshwater mussel populations (Havlik and Marking 1987; Bogan 1993; Neves et al. 1997). Toxic contaminants can produce lethal or sub-lethal responses to freshwater mussels. The sensitivities of freshwater mussels to toxic contaminants is variable based on species, life stage (glochidium, juvenile, or adult), and environmental conditions, as well as concentration and exposure route (water column, sediments, etc.), frequency, and duration. Several studies have indicated that freshwater mussels are among the most sensitive aquatic organisms to various toxicants, particularly cadmium, copper and ammonia (Gabarkiewicz and Davis 2008).

Freshwater mussels are extremely sensitive to ammonia, a form of nitrogen (Goudreau et al. 1993; Augspurger et al. 2003, Bartsch et al. 2003, Newton et al. 2003; Wang et al. 2007a; 2007b). Anthropogenic sources of ammonia in surface waters include sewage treatment effluent, industrial wastewater effluent, and runoff and ground water contamination from lawn/turf management, livestock operations and faulty septic systems. Sewage treatment effluent has been documented to significantly affect the diversity and abundance of mussel fauna (Goudreau et al. 1988). Goudreau et al. (1988) found that recovery of mussel populations might not occur for up to two miles below discharges of chlorinated sewage effluent. Similarly, surveys in the Goose Creek watershed show a dramatic absence of mussel fauna below the Oxford Glen WWTP on Stevens Creek for a considerable distance (approximately 1.6 km/1mi) below the discharge point (NCWRC 2010). A study conducted in the Goose Creek watershed documented that baseflow concentrations of chlorine nearly double directly downstream of the Hunley Creek WWTP located on Goose Creek (Allan 2004).

Recent studies indicate that current federal and state water quality standards for many pollutants commonly found in wastewater discharges and stormwater runoff are likely not protective of freshwater mussels and current regulations controlling the discharge or runoff of these pollutants are not protective (Augspurger et al. 2003). The U.S. Environmental Protection Agency (EPA) has been evaluating potential revision of the current federal standards (acute and chronic standards) for ammonia, but has yet to revise them to a protective level (USFWS 2007). Water quality monitoring by the North Carolina Division of Water Quality (NCDWQ 2002) identified average and maximum concentrations of ammonia in Goose Creek as being among the highest of any monitored sites in the Yadkin/Pee Dee River Basin.

In addition to ammonia, several other pollutants have been identified as exceeding levels of concern in Goose Creek, including, but not limited to, sediment/suspended solids (NCDWQ 2000; Chen et al. 2001; Allan 2005), copper (NCDWQ 2002), chlorine (NCDWQ 1998), and phosphate, a form of phosphorus (Chen et al. 2001; NCDWQ 2002,

2003; Allan 2005). While phosphate itself is not toxic, concerns with extremely high concentrations of phosphate pertain to increased biological production, such as algal blooms, which can result in lowering of dissolved oxygen (Binkley et al. 1999).

Concentrations of several of these pollutants in Goose Creek, including ammonia, appear to be on an increasing trend (Chen et al. 2001; Service et al. 2005). Currently there are no water quality standards, or monitoring requirements for ammonia, copper and phosphorus in North Carolina (USFWS 2007); however, the Goose Creek Site Specific Management Plan (NCDENR 2009) requires that any direct or indirect discharge that may cause ammonia toxicity to the Carolina heelsplitter, action shall be taken to reduce ammonia (NH3-N) inputs to achieve 0.5 milligrams per liter or less of total ammonia based on chronic toxicity defined in 15A NCAC 02B .0202. This level of total ammonia is based on ambient water temperature equal to or greater than 25 degrees Celsius (NCDENR 2009).

In addition, recent studies indicate other toxicants present in wastewater effluent such as pharmaceuticals and personal care products (fluoxitine, estrogenic compounds, opiate derivatives etc.) cause a wide array of neurotoxicological (Gagné et al 2007a), reproductive (Bringolf et al. 2007, Gagné et al 2007b) and behavioral (Heltsley et al. 2006) impacts to freshwater mussels.

Other sources of toxic contaminants in surface waters arise from highway and urban runoff. Numerous pollutants have been identified in highway runoff, including various metals (lead, zinc, iron, etc.), sediment, pesticides, deicing salts, nutrients (nitrogen, phosphorus), and petroleum hydrocarbons (Yousef et al. 1985, Gupta et al. 1981). The sources of these runoff constituents range from construction and maintenance activities to daily vehicular use. Hoffman et al. (1984) concluded that highway runoff can contribute up to 80% of the total pollutant loadings to receiving water bodies. Petroleum hydrocarbons, polycyclic aromatic hydrocarbons, lead, and zinc were some of the pollutants identified in this study.

The toxicity of highway runoff to aquatic ecosystems is poorly understood. A major reason for this poor understanding is a lack of studies focusing solely on highway runoff. Potential impacts of highway runoff have often been inferred from studies conducted on urban runoff; however, the relative loadings of pollutants are often much greater in urban runoff, because of a larger drainage area and lower receiving water dilution ratios (Dupuis et al. 1985). The negative effects of urban runoff inputs on benthic macroinvertebrate communities have been well documented (Garie and McIntosh 1986; Jones and Clark 1987; Field and Pitt 1990). Lied (1998) found the macroinvertebrate community of a headwater stream in Pennsylvania to be highly degraded by urban runoff via a detention pond. Improvements were observed at continual distances downstream from the discharge point, however all sites examined were still impaired compared to a reference community.

The few studies that examined actual highway runoff show that some species demonstrate little sensitivity to highway runoff exposure, while others are much more

sensitive (Dupuis et al. 1985). Maltby et al. (1995) found elevated levels of hydrocarbons and metals in both stream sediments and the water column below a heavily traveled British motorway. They demonstrated that the benthic amphipod (*Gammarus pulex*) experienced a decrease in survival when exposed to sediments contaminated with roadway runoff. However, this species showed no increase in mortality when exposed to water contaminated with roadway runoff. Unfortunately, most of these studies only measured acute toxicity to runoff and did not examine long-term effects.

The effects of highway runoff on freshwater bivalves have not been studied extensively. Augspurger (1992) compared sediment samples and soft tissues of three eastern elliptio (*Elliptio complanata*), a relatively common species upstream and downstream of the I-95 crossing of Swift Creek in Nash County, North Carolina. The sediment samples as well as the mussels exhibited higher levels of aliphatic hydrocarbons, arsenic, lead, zinc, and other heavy metal contaminants in the downstream samples. Because of the small sample size, the effect on the health of these mussels was not studied. In another study, contaminant analysis of stream sediments showed an increase of polycyclic aromatic hydrocarbons and some metals downstream of road crossings, although there was no direct correlation found between increasing contaminant levels and decreasing mussel abundance at these crossings (Levine et al. 2005). The eastern elliptio was the only mussel species that was found in large enough numbers for statistically valid comparisons. The eastern elliptio is generally considered more tolerant of water quality degradation than many other mussel species. Further research is needed before the effects of highway runoff on sensitive mussel species such as the Carolina heelsplitter can be determined.

In addition, contamination of surface water from toxic spills along roadways is known to have significant impacts to aquatic communities. A toxic spill resulting from a tanker truck accident that was carrying Octocure 554 (a chemical liquid used in the rubber making process), killed several miles of mussel populations in the Clinch River near Cedar Bluff, Virginia. The spill killed thousands of fish and mussels, including three federally protected species. The Clinch River contains one of the most diverse mussel faunas in the United States. The stretch of the river affected by the spill was one of the few remaining areas that contained a reproducing population of the Endangered tan riffleshell (*Epioblasma florentina walkeri*). The toxic spill is believed to have eliminated this population (Richmond Times Dispatch 1998).

4.1.5 Habitat Alterations

The impact of impoundments on freshwater mussels has been well-documented (USFWS 1992a, Neves 1993). Dam construction transforms lotic habitats into lentic habitats, which results in changes within aquatic community composition. Muscle Shoals on the Tennessee River in northern Alabama, once the richest site for mussels) in the world, is now at the bottom of Wilson Reservoir, covered with 19 feet of muck (USFWS 1992b). Large portions of all of the river basins within the Carolina heelsplitter's range have been impounded; this is believed to be a major factor contributing to the species decline (USFWS 1996). This is especially true in the larger river habitats within the species

historic range, such as the Catawba and Savannah Rivers, where impoundments have significantly altered habitat. The two extant populations in the Savannah River Basin are functionally isolated from each other by an impoundment on Stevens Creek, as such, there are considered two separate units for management (USFWS 1996).

4.1.5.1 URBANIZATION/IMPERVIOUS SURFACE AREA

The correlation of increasing development within a watershed and decreasing water quality is well documented (Lieb 1998, Crawford and Lenat 1989, Garie and McIntosh 1986, Lenat et al. 1979), and is largely associated with increases in impervious surface area. These increases in impervious surface area can indirectly affect water quality in a variety of ways, particularly with regard to changes to stream flow, water temperature, total suspended sediment, and pollutant loadings.

Multiple studies have demonstrated that water quality and stream ecosystem degradation begins to occur in watersheds that have approximately 10% coverage by impervious surfaces (Stewart et al. 2000, Schueler 1994, Arnold and Gibbons 1996). The NCWRC recommendations for management of protected aquatic species watersheds are to limit imperviousness to 6% of the watershed (NCWRC 2002).

The percentage of impervious surface has increased dramatically in the Goose Creek watershed in recent years. The current baseline of 13% imperviousness (Baker Engineering 2010) has increased by 6.1% since 2003 when the impervious surface area in the basin was calculated to be 6.9% (HNTB 2003), far exceeding the threshold proposed by NCWRC. This trend is expected to increase, and a 17% level of imperviousness is predicted for the year 2030 (Baker Engineering 2010). Similarly, Sixmile Creek far exceeds the 6% threshold, as the current baseline is 25% imperviousness, which is expected to increase to 30 % by 2030 (Baker Engineering 2010).

Increases in impervious surface area within a watershed can result in extremes in peak discharge, runoff volume and base flow conditions. The Carolina heelsplitter may inherently be more susceptible to the consequences of these extremes than other mussels. While most mussels will usually dig into the substrate such that only the siphons are exposed or the very top of the shell, the Carolina heelsplitter is usually found with about 1/3 of its shell lodged in the substrate (TCG personal observations). As a result, it is much more prone to dislodgement during high base flows and less able to bury itself in the substrate during low flow conditions. This factor likely makes the heelsplitter more prone to predation and desiccation, even during periods of normal precipitation, than other freshwater mussels.

- *Peak Discharge*

Peak discharge is the maximum rate of stormwater flow expected from a storm event, measured in cubic feet per second. Peak discharge is often one metric used in analyzing impacts from development. Peak discharge affects channel stability (or instability),

which is one of the identified constituent elements (Section 4.2). Increases in peak discharge equates to higher velocity, which in turn increases the scouring effect (surface erodibility) of the runoff. Accordingly, sedimentation will increase as erosion rates increase. Allan (2005) documented dramatic increases in sediment and nutrient concentrations during high flow events in the Goose Creek subbasin.

Increases of peak discharge rates, coupled with deforestation, have been shown to result in stream narrowing and incision and subsequent loss of ecosystem function (Sweeney et al. 2004). Increased runoff volume and peak discharge (from typical and atypical storm events) destabilize the stream channel.

- *Runoff Volume*

Runoff volume is the amount of stormwater expected from a storm event, measured in acre-feet. Like peak discharge, runoff volume is another metric often used in determining impacts of development, especially on the aquatic environment. For example, increases in the amount of runoff normally equates to increased sediment. While the two indicators are related, when analyzed separately, both are useful in assessing impacts to aquatic systems.

In a stable system, an increase in the velocity may have little impact if volume does not change, provided that measures to slow the increased velocity have been implemented. However, the increased runoff volume may have enough sediment to cause detrimental impacts. Regardless, it is important to consider both the rate (peak discharge) and the amount (runoff volume) when assessing impacts to aquatic systems. Again, sufficient stormwater controls accompanying future development activities in any given watershed is essential for conservation of sensitive aquatic species such as the Carolina heelsplitter.

- *Decreased Base Flow*

Increases of impervious surface lead to decreases in infiltration and base flow (groundwater flow) within adjacent streams. This can result in the following:

- During periods of reduced base flow, there is less water to cover the stream bottom.
- Widened streams have less overhanging tree cover and are exposed to more sunlight, resulting in increased water evaporation and temperature, especially in areas with shallower water.
- If base flow is reduced, yet WWTP discharge remains constant or increases, it takes longer for the stream to dilute the nutrients and other toxins in the effluent, thereby extending the WWTP effluent “plume” further downstream.
- Permitted and un-permitted water withdrawals for crop and turf/lawn irrigation further exacerbate this effect. Currently, there is an irrigation withdrawal from Goose Creek at approximately mid-length of its course for a golf course at approximately mid-length of its course. During summer months withdrawals of

up to 188 gallons per minute (gpm), or 0.42 cubic feet per second (cfs) can significantly affect the available dilution for downstream dischargers (Belnick, 2001).

4.1.5.2 THERMAL POLLUTION

Concerns over affects of thermal pollution from urban runoff on aquatic systems have increased in recent years. Elevation of stream temperature can raise Biochemical Oxygen Demand (BOD), lower dissolved oxygen (DO), and alter faunal composition (Roa-Espinosa et al. 2003, Poole et al. 2001). Typically, runoff from a developed impervious area will have a temperature similar to the temperature of the impervious area. During the hot summer months, this could potentially make the stormwater runoff reach temperatures up to and above 90°F, which could be detrimental to the aquatic life. Traditional structural stormwater controls, such as open storm-water detention ponds/basins that do not allow for infiltration, do not protect receiving water bodies against adverse temperature effects. For these and other reasons, the USFWS feels that the Goose Creek Site Specific Management Plan (NCDENR 2009), will not provide adequate protection to the Carolina heelsplitter, because the plan states that although measures to promote infiltration and groundwater recharge are to be "considered," such measures will not be required (USFWS 2008). Various stormwater BMPs have been shown to be effective in ameliorating temperature effects (NC State Cooperative Extension 2006a). Bioretention devices were shown to reduce runoff temperature by 5-10°F in Greensboro, NC (NC State Cooperative Extension 2006b).

The loss of riparian buffers as well as peak discharge-related channel widening can also contribute to stream temperature increases, by increasing sunlight exposure and decreasing water depth.

4.1.5.3 INVASIVE SPECIES

The introduction of exotic species such as the Asian clam (*Corbicula fluminea*) and zebra mussel (*Dreissena polymorpha*) has also been shown to pose significant threats to native freshwater mussels. The zebra mussel is not known from any waterbodies supporting the Carolina heelsplitter (USFWS 1996); however, the Asian clam is established in most of the major river systems in the United States (Fuller and Powell 1973), including those streams still supporting surviving populations of the Carolina heelsplitter (USFWS 1996).

Concern has been raised over competitive interactions for space, food, and oxygen with the Asian clam and native mussels, possibly at the juvenile stages (Neves and Widlack 1987, Alderman 1997). In addition, under high densities, Asian clam beds are subject to large die-offs, which have been shown to dramatically increase porewater ammonia, and reduce DO during low-flow summer months (Cooper et al. 2005).

4.1.5.4 Other Causes of Habitat Degradation

Loss of riparian buffers can lead to degradation of adjacent aquatic habitats. The role of forested riparian buffers in protecting aquatic habitats is well documented (NCWRC 2002). The Recovery Plan for the Carolina heelsplitter (USFWS 1996) identifies the establishment of stream buffer zones as a major Recovery Objective (Task 1.4). Riparian buffers provide many functions including pollutant reduction and filtration, a primary source of carbon for aquatic food web, stream channel stability, and maintenance of water and air temperatures. Numerous studies have recommended a range of buffer widths needed to maintain these functions. Recommended widths vary greatly depending on the parameter or function evaluated. Wide contiguous buffers of 100-300 feet (30-91 meters) are recommended to adequately perform all functions (NCWRC 2002). The NCWRC recommends a minimum of 200 foot (61 meter) native, forested buffer on perennial streams and a 100 foot (30 meter) forested buffer on intermittent streams in watersheds that support federally endangered and threatened aquatic species (NCWRC 2002). Although not officially adopted, the USFWS uses the NCWRC recommendations as guidance when addressing federally protected aquatic species in North Carolina. The Site Specific Water Quality Management Plan for the Goose Creek Watershed (NCDWQ 2009) requires undisturbed riparian buffers within 200 feet of waterbodies within the 100-year floodplain and within 100 feet of waterbodies not within the 100-year floodplain. The USFWS feels that this level of protection is not sufficient to protect the Carolina heelsplitter, as Rule 15A NCAC 02B.0607 exempts or potentially allows (with NCDWQ approval) numerous activities within the "undisturbed" buffers, with no requirement for mitigation (USFWS 2008).

Another human-related factor adversely impacting habitat of the Carolina heelsplitter is recreational all terrain vehicle (ATV) use. ATV tracks have been noted crossing streams as well as traveling stream channels within Carolina heelsplitter habitat, in particular in several segments of Goose Creek. In addition to directly running over mussels, ATVs destabilize stream banks and floodplains, causing sedimentation and buffer degradation. While there is no quantitative data available on ATV use, locally, this can have significant impacts.

4.1.5.5 Identified Action Area Threats

The Goose Creek and Sixmile Creek populations of the Carolina heelsplitter are threatened by numerous sources of degradation. Both of these watersheds have experienced rapid urbanization in recent years (TCG 2007, HNTB 2009, Baker Engineering 2010), which have contributed to, or exacerbated these threats. Specific threats to Carolina heelsplitter populations in these two watersheds are listed in Table 1.

Table 1. Threats to Carolina Heelsplitter in the Goose Creek Basin and Action Area

Threat/Concern	Specific Problems	Potential Sources
Water Quality Degradation	Fecal coliform Ammonia Nitrate/Nitrite Chlorine Phosphorus Dissolved oxygen Copper Pesticides Other toxicants	Wastewater treatment facilities Agricultural runoff Golf course runoff Lawn care chemicals Urban runoff Fertilizer applications Isolated spills
Habitat Degradation	Sediment Total suspended solids Riparian buffer loss Stream scour Stream/bank instability	Changes in stream flow Increased stormwater runoff Construction Land development Recreational use (ATV) Poor land management practices
Water Quantity Degradation	Mussel dislodgement Drought mortality (desiccation and increased predation)	Increased stormwater volume/velocity Reduced infiltration and ground water recharge Increased impervious cover
Invasive Species	Competitive interactions, water quality effects	Asian clam

4.2 Designated Critical Habitat

In accordance of Section 4 of the ESA, Critical Habitat for listed species consists of:

(1) The specific areas within the geographical area occupied by the species at the time it is listed in which are found those physical or biological features (constituent elements) that are:
   a. essential to the conservation of the species, and
   b. which may require special management considerations or protection
(2) Specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of the Act, upon a determination by the Secretary that such areas are "essential for the conservation of the species."

When designating Critical Habitat, the USFWS identifies physical and biological features (primary constituent elements) that are essential to the conservation of the species and that may require special management considerations or protection. The primary constituent elements essential for the conservation of the Carolina heelsplitter (USFWS 2002a) include:

1. permanent flowing, cool, clean water
2. geomorphically stable stream and river channels and banks
3. pool, riffle, and run sequences within the channel
4. stable substrates with no more than low amounts of fine sediment
5. moderate stream gradient
6. periodic natural flooding
7. fish hosts, with adequate living, foraging, and spawning areas for them.

Critical habitat for the Carolina heelsplitter was designated in 2002 (USFWS 2002a). The designated area totals approximately 148 kilometers (92 miles) of nine creeks and one river in North and South Carolina (Figure 3). These areas are considered essential to the conservation of the Carolina heelsplitter. Six areas (Units) have been designated as critical habitat, as shown on Figure 3, and a description of each follows.

Unit 1. Goose Creek and Duck Creek (Pee Dee River system), Union County, NC

Unit 1 encompasses approximately 7.2 km (4.5 mi) of the main stem of Goose Creek, Union County, NC, from the N.C. Highway 218 Bridge, downstream to its confluence with the Rocky River, and approximately 8.8 km (5.5 mi) of the main stem of Duck Creek, Union County, NC, from the Mecklenburg/Union County line downstream to its confluence with Goose Creek. Details regarding recent surveys in Goose/Duck Creeks, and conditions within the Critical Habitat Unit are discussed in Section 4.4.

Unit 2. Waxhaw Creek (Catawba River system), Union County, NC

Unit 2 encompasses approximately 19.6 km (12.2 mi) of the main stem of Waxhaw Creek, Union County, NC, from the N.C. Highway 200 Bridge, downstream to the North Carolina/South Carolina state line. Very few Carolina heelsplitter individuals have been found in Waxhaw Creek since they were first discovered in 1987. Keferl (1991) found one live individual in 1987 and two in 1990. Subsequent surveys failed to find any individuals until one weathered shell was found in 1996, followed by one live individual in 1998, one weathered shell in 2005, and three live individuals at three separate sites in 2006 (NCWRC Database). Surveys of Waxhaw Creek in South Carolina, conducted in 2004, documented only two live individuals at a single site – one of only a couple of sites in the stream below the North Carolina/South Carolina state line that appeared to provide suitable substrate for the Heelsplitter (USFWS 2007).

Unit 3. Gills Creek (Catawba River system), Lancaster County, SC

Unit 3 encompasses approximately 9.6 km (6.0 mi) of the main stem of Gills Creek, Lancaster County, SC, from the County Route S-29-875, downstream to the SC Route 51 Bridge, east of the City of Lancaster. One 88.0 mm fresh shell and one 67.0 mm live individual discovered in 1998, represent this population (Alderman 1998). No additional surveys have been completed in this section of Gills Creek since 1998. In 2006 TCG discovered the species (two live and one shell) at three sites in Cane Creek, a tributary to

Gills Creek (USFWS 2007). While Cane Creek is not within the boundaries of Unit 3, Gills Creek and Cane creek are considered a single population from a management perspective, as there are no physical barriers that would isolate the two areas. The discovery of the Carolina heelsplitter in Cane Creek demonstrates that this population has been reduced to small pockets of habitat in the watershed.

Unit 4. Flat Creek (Pee Dee River system), Lancaster County, SC, and the Lynches River (Pee Dee River system), Lancaster, Chesterfield, and Kershaw Counties, SC

Unit 4 encompasses approximately 18.4 km (11.4 mi) of the main stem of Flat Creek, Lancaster County, SC, from the SC Route 204 Bridge, downstream to its confluence with the Lynches River, and approximately 23.6 km (14.6 mi) of the main stem of the Lynches River, Lancaster and Chesterfield Counties, SC, from the confluence of Belk Branch, Lancaster County, northeast (upstream) of the U.S. Highway 601 Bridge, downstream to the SC Highway 903 Bridge in Kershaw County, SC. Within this unit, the Lynches River local population is represented most recently (2005 to 2007) by 14 live and two fresh dead shells (54-87mm) found above SC 265 Chesterfield/Lancaster Co. SC in 2007 (TCG 2005, TCG 2007). Between 1994 and 1997, the Flat Creek local population was represented by 28 live individuals ranging in length from 54.15 to 94.1 mm and by four shells ranging in length from 41.0 to 86.1 mm (Alderman 1998). In 2007, Alderman conducted surveys of two reaches of Flat Creek, one in upper Flat Creek and one in middle-lower Flat Creek, and documented 16 live Carolina heelsplitters, including several age classes, some likely less than five years of age based on shell measurements USFWS 2007). In 2010, Alderman found 42 live and one weathered shell in Flat Creek, with a large number of size classes represented (Alderman 2010, pers. comm.).

Unit 5. Mountain and Beaverdam Creeks (Savannah River system), Edgefield County, South Carolina, and Turkey Creek (Savannah River system), Edgefield and McCormick Counties, SC

Unit 5 encompasses approximately 11.2 km (7.0 mi) of the main stem of Mountain Creek, Edgefield County, SC, from the SC Route 36 Bridge, downstream to its confluence with Turkey Creek; approximately 10.8 km (6.7 mi) of Beaverdam Creek, Edgefield County, from the SC Route 51 Bridge, downstream to its confluence with Turkey Creek; and approximately 18.4 km (11.4 mi) of Turkey Creek, from the SC. Route 36 Bridge, Edgefield County, downstream to the SC Route 68 Bridge, Edgefield and McCormick Counties, SC. Within this unit, only a single shell of the Carolina Heelsplitter has been found in Beaverdam Creek (Alderman 1995) and additional surveys of the stream have failed to locate any individuals (USFWS 2007). This portion of the population may be extirpated or exist only in very low numbers (USFWS 2007).

The Turkey Creek local population is represented by a few shells discovered in 1995 and by one live individual discovered in 1997 (Mcdougal 1997) (none seen since then); and the Mountain Creek local population is represented by 15 live individuals ranging in length from 38.7 to 84.9 mm and by 15 shells ranging in length from 53.0 to 98.0 mm

(Alderman 1998, 2002). During 2002, two additional local populations of Carolina heelsplitter were discovered within the Turkey Creek Subbasin, one in Little Stevens Creek represented by a shell fragment, and one in Sleepy Creek represented by seven live individuals ranging in length from 51.1 to 73.0 mm and by three shells ranging in length from 61.4 to 71.0 mm (Alderman 2002). Most recently, seven live and one moribund individuals were documented in Little Stevens Creek in 2007 (USFWS 2007).

Unit 6. Cuffytown Creek (Savannah River system), Greenwood and McCormick Counties, SC

Unit 6 encompasses approximately 20.8 km (12.9 mi) of the main stem of Cuffytown Creek, from the confluence of Horsepen Creek, northeast (upstream) of the SC Route 62 Bridge in Greenwood County, SC, downstream to the U.S. Highway 378 Bridge in McCormick County. Within this unit, the population is represented by five live individuals (three discovered in 1998 and two discovered in 2001) with lengths ranging from 53.5 to 71.5 mm and by one shell discovered in 1998 with a length of 63.0 mm (Alderman 1998, 2002).

Five of the eleven Carolina heelsplitter populations listed in Section 4.1.3: Sixmile Creek, Fishing Creek, Rocky Creek, Redbank Creek, and Halfway Swamp Creek, were discovered after Critical Habitat was designated. These populations are all limited in size and distribution.

4.3 Potential Effects of Roadway Projects on Freshwater Mussels and Habitat

A number of potential direct and indirect effects to the freshwater mussels and their habitat, which could result from roadway projects, are identified here. Potential cumulative effects are also discussed in this section. While several threats to the Carolina heelsplitter are recognized (Section 4.1.4), potential roadway-related threats fall into three main categories:

1) physical effects (habitat degradation , direct mortality of individuals),
2) water quality effects (chemical, temperature, and biological pollutants),
3) water quantity effects (changes in peak and base flows).

4.3.1 Potential Direct Effects

Direct effects refer to consequences that can be directly attributed to the project. Direct impacts associated with road construction include, but are not limited to, land-clearing, loss of habitat, stream re-channelization, hydrologic modification, and erosion associated with construction in the project corridor as well as within fill/borrow areas, and construction staging/access areas outside of the project corridor. The potential effects of these activities on aquatic species, especially freshwater mussels, include degradation of

habitat due to siltation, substrate disturbance (resulting in physical injury to individual mussels, and reduced habitat suitability), temporary, and permanent alteration of flows (temporary dewatering, causeway construction, channel restriction etc.), and runoff of pollutants, that originate from the project corridor during construction, and once in operation, that result in mortality, or harm (stress, adverse behavioral responses, or limited viability etc.) to individual mussels. Potential impacts to mussel habitat include channel and stream bank scouring, erosion, and runoff of pollutants that originate from the project corridor during construction, and once in operation.

4.3.2 Potential Indirect Effects

Indirect effects are those effects that are caused by, or will result from, the proposed action and are later in time, but are still reasonably certain to occur [50 CFR 402.02]. These types of impacts can include natural responses to the proposed action's direct impacts, or can include human induced impacts associated with the proposed action.

4.3.2.1 INDIRECT EFFECTS ON LAND USE

Project-induced changes in land use are also considered part of the indirect impacts of a proposed action. These types of land use changes are not direct consequences of the road construction, but result from modifications in access to parcels of land and from modifications in travel time between various areas (Mulligan and Horowitz 1986). Indirect land use impacts of highway projects include residential, commercial, and industrial developments and linear urban sprawl along a highway corridor or in the vicinity of interchanges.

Economic development is often used as a criterion in highway funding (Eagle and Stephanedes 1987). Historically, transportation has been viewed as a necessary precursor to economic development (Anderson et al. 1992), and transportation infrastructure is "one of the principle policy levers that state and local governments can use to increase their attractiveness to business investors" (Forkenbrock 1990).

On the other hand, depending upon local land development regulations, development demand, water/sewer availability, and other factors, roadway improvements can also result in encouragement of additional unintended development and sprawl. Improvements to levels of service, better accommodation of merging and exiting traffic, and reductions in travel times can have land development impacts outside of the direct project area. Any induced growth and development within this area has the potential to degrade water quality, scenic values, and recreational opportunities unless proper planning and development regulations are utilized. This potential increases in areas with minimal or no planning programs and virtually non-existent development controls

4.3.2.2 INDIRECT CHANGES IN TRAFFIC PATTERNS

Project-induced development has the potential to effect traffic patterns on the existing road network within the action area of roadway construction projects. Increased traffic

volumes on the road networks traversing the watersheds could potentially affect the associated aquatic communities, including freshwater mussels, by causing water quality degradation, while decreases in traffic volume could have a potential beneficial effect, by decreasing concentrations of toxicants originating from roadway runoff, and/or toxic spills along roadways.

4.3.3 Potential Cumulative Effects

Cumulative effects are those effects of future state or private activities, not involving federal actions, which are reasonably certain to occur within the action area of the proposed federal action. Cumulative effects to mussels and their habitat include continued non-federal development pressures, and their subsequent environmental consequences in the watersheds that are independent of the federal action.

4.4 Presence within Action Area

The Action Area encompasses streams within two major River Basins, the Catawba and Yadkin/Pee Dee. As the Carolina heelsplitter is known to occur in water bodies ranging in size from large rivers to headwater streams, all perennial streams within the action area were evaluated for presence of this species.

4.4.1 Project Alignment

All 31 perennial streams within the project alignment were evaluated for the presence of this species (TCG 2009). These streams occurred within the following subbasins: Crooked Creek (North and South Forks), Stewarts Creek, and Richardson Creek (includes Ray Fork, Salem Branch and Meadow Branch). The Carolina heelsplitter was not found in any of these water bodies (TCG 2009).

4.4.2 FLUSA

The FLUSA encompasses portions of the subbasins within the alignment, as well as others that are not within the project alignment including McAlpine Creek (Irvins Creek, Campbell Creek, and Fourmile Creek), Goose Creek (Stevens Creek, Duck Creek, and Paddle Branch), Sixmile Creek, Twelvemile Creek (West Fork, Davis Mine Creek and East Fork), Bearskin Creek, (Horsepen Creek, Camp Branch and Lick Fork), and Lanes Creek (Henry Branch and Barkers Branch). These watersheds are depicted in Figure 4.

4.4.3 Mussel Fauna in Action Area Streams

Existing mussel survey data within the Action Area streams was reviewed by TCG. Data sources consulted included the NCWRC Aquatic Species database (NCWRC 2010), which was reviewed in January 2010, the NC Natural Heritage Program (NCNHP) database (NCNHP 2010), reviewed in February 2010, and Johnson (1970), and surveys conducted by TCG. Habitat evaluations/mussel surveys were conducted in all of the perennial streams within the project alignment in 2009 (TCG 2009). TCG also conducted

surveys in the following Action Area streams that were outside of the project alignment but needed updated survey information to determine the presence/absence of the Carolina heelsplitter: Lanes Creek, Richardson Creek upstream of the project alignment, and Crooked Creek downstream of the project alignment (TCG 2009, 2010).

A total of 15 freshwater mussel species have been recorded in the action area watersheds (Table 2). In addition to the Carolina heelsplitter, other rare freshwater mussel species known from Action Area streams include the Federal Species of Concern (FSC) and State Endangered (E) Atlantic pigtoe (*Fusconaia masoni*), brook floater (*Alasmidonta varicosa*), Carolina creekshell (*Villosa vaughnaniana*), and Savannah liliput (*Toxolasma pullus*); the state Threatened (T) creeper (*Strophitus undulatus*); the State Special Concern (SC) notched rainbow (*Villosa constricta*); and the State Significantly Rare (SR) Eastern creekshell (*Villosa delumbis*).

Table 2. Freshwater Mussel Species in Action Area Streams

Scientific Name	Common Name	Federal Status	State Status	Action Area Streams*
Alasmidonta varicosa	Brook floater	FSC	E	RC
Elliptio angustata	Carolina lance	~	~	CC,GC
Elliptio complanata	Eastern elliptio	~	~	All
Elliptio icterina	Variable spike	~	~	BC,GC,LC,RC,XC,TC
Elliptio producta	Carolina spike	~	W	GC,XC,TC
Fusconaia masoni	Atlantic pigtoe	FSC	E	GC,LC
Lasmigona decorata	Carolina heelsplitter	E	E	GC,XC,TC**
Pyganodon cataracta	Eastern floater	~	~	BC,CC,LC,RC,SC,XC,TC
Strophitus undulatus	Creeper	~	T	GC,BC,LC
Toxolasma pullus	Savannah lilliput	FSC	E	CC, LC, RC
Uniomerus carolinianus	Florida pondhorn	~	~	BC,CC,LC,RC,TC
Utterbackia imbecillis	Paper pondshell	~	~	CC,RC,SC
Villosa constricta	Notched rainbow	~	SC	GC,TC
Villosa delumbis	Eastern creekshell	~	SR	All
Villosa vaughaniana	Carolina creekshell	FSC	E	CC,GC,LC,RC,XC,TC

*BC, CC, GC, LC, MC, RC, SC, XC, and TC denote Bearskin Creek, Crooked Creek, Goose Creek, Lanes Creek, McAlpine Creek, Richardson Creek, Stewarts Creek, Sixmile Creek and Twelvemile Creek subbasins, respectively.

**Historic Record

Based on location, geology, life history and distribution, it is likely that the Carolina heelsplitter occurred in portions of most, if not all, of the subbasins in the Action Area at one point in time. However, within the Action Area, it is currently limited to the Goose Creek and Sixmile Creek subbasins.

4.4.3.1 DISTRIBUTION IN GOOSE/DUCK CREEK

The Carolina heelsplitter was first discovered in Goose Creek in 1987 (Keferl 1991) and in Duck Creek in 2000 (NCWRC Database). Between 1993 and 1999 a total of 15 live individuals had been recorded in Goose Creek. NCWRC surveys in early 2002 found 16 live individuals in Duck Creek (NCWRC Database); however, following extreme drought conditions in late 2002, where much of the streambed in both creeks was totally dry, status surveys in Duck Creek yielded only four live and more than 40 fresh dead. One fresh-dead shell was also found in Goose Creek during the 2002 drought surveys just below US 601. Pools and wet streambeds were much more common in lower Goose Creek, apparently providing refuge from desiccation during the drought.

Between 2004 and 2005, four live individuals were found at two locations within Goose Creek, and 12 live individuals were found at six locations within Duck Creek. Prolonged severe drought conditions persisted in the Goose Creek watershed in 2006 through 2007, resulting in additional declines to the Carolina heelsplitter population. A total of nine individuals, have been found in Duck Creek between 2006 and 2009. Three of the individuals were found on more than one occasion. Four of these individuals were taken into captivity, as much of the stream channel was totally dry when they were found. Although no live individuals have been found in Goose Creek since 2004 time, two fresh dead individuals were found in Goose Creek near the US 601 crossing, in early 2009, suggesting that the species may still persist in the stream in very low numbers.

In addition to declining numbers, the occupied range of the Carolina heelsplitter in both Goose and Duck Creeks has declined from an estimated 4.3 miles to less than 0.5 miles in Goose Creek, and from 3.0 miles to 2.3 miles in Duck Creek. Distribution and relative abundances (based on Catch Per Unit Effort), of all nine freshwater mussel species known to occur in the Goose Creek watershed have declined dramatically since 2003, to the extent that mussels in general are increasingly rare in the subbasin, to the extent that species like the Atlantic pigtoe and notched rainbow may be extirpated (NCWRC Database).

4.4.3.2 DISTRIBUTION IN SIXMILE CREEK

The Carolina heelsplitter was first discovered in Sixmile Creek in 2006 (TCG 2007). A total of 16 live individuals and 3 dead shells were found in the creek extending from near the confluence with Twelvemile Creek in Lancaster County, SC upstream to the vicinity of the Marvin Road (SR 1312) crossing on the Mecklenburg/Union County line. The

most recent surveys were conducted in 2009, where two live individuals were found between the SC/NC state line and the Marvin Road crossing (NCWRC Database).

4.5 Watershed Conditions

Characteristics and conditions of the two watersheds within the Action Area supporting the Carolina heelsplitter, Goose Creek and Sixmile Creek are discussed below.

4.5.1 Goose Creek Subbasin (03-07-12)

The Goose Creek subbasin occupies an area of 29 square miles in Union and Mecklenburg Counties. There are 163 miles of identified perennial streams within the subbasin. From the headwaters in Mecklenburg County approximately 7.5 km (4.7 mi) east of the town of Matthews to the confluence with the Rocky River 5.2 km (3.2 mi) south of Midland on the Union/Stanly County line, Goose Creek is approximately 25 km (15.5 mi) in length. Major tributaries include Stevens Creek, Paddle Branch and Duck Creek.

Over the past two decades, residential growth has increased in the watershed as a result of strong economic growth of the Charlotte/Mecklenburg area and construction of the I-485 bypass around Charlotte (HNTB 2009, Baker Engineering 2010). The population of Mint Hill, which occurs within the Goose Creek watershed, increased by 39% between the year 2000 and 2008 (Baker Engineering 2010). Continued growth is projected in this area to year 2030. This past and projected exponential growth has caused several municipalities to modify their approach to managing growth, especially in Union County, which currently has a moratorium on new sewer connections (Baker Engineering 2010).

4.5.2 Water Quality

4.5.2.1 BEST USAGE CLASSIFICATION

The NCDENR assigns a best usage classification to all waters of North Carolina. These classifications, which are the responsibility of NCDWQ, provide a level of water quality protection to ensure that the designated usage of that water body is maintained. Class C imposes a minimum standard of protection for all waters of North Carolina. Table 3 lists the streams in the Action Area within the Goose Creek Subbasin and their Usage Classification and NCDWQ Index number (#).

Table 3. Streams Within Goose Creek Subbasin (NCDENR 2009)

Steam Name	Usage Classification	DWQ Index #	
Stevens Creek	C	13-17-18-1	
Paddle Branch*	C	13-17-18-2	
Duck Creek	C	13-17-18-3	
Goose Creek	C	13-17-18	

* Paddle Branch is a tributary to Duck Creek

Class C waters are protected for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, agriculture, and other uses suitable for Class C. There are no restrictions on watershed development or types of discharges.

4.5.2.2 IMPAIRED 303(D) LISTING

As mandated in Section 303(d) of the Clean Water Act., states, territories, and authorized tribes are required to develop lists of impaired waters, which are defined as water bodies that do not meet water quality standards that states, territories, and authorized tribes have set for them, even after point sources of pollution have installed the minimum required levels of pollution control technology. These water quality standards include designated uses, numeric and narrative criteria, and anti-degradation requirements as defined in 40 CFR 131. Failures to meet standards may be due to an individual pollutant, multiple pollutants, or unknown causes of impairment, originating from point and non-point sources and/or atmospheric deposition. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop Total Maximum Daily Load limits (TMDLs) of identified pollutants for these waters.

Under existing conditions, both Goose and Duck Creeks in Union County are listed as impaired by NCDWQ. Goose Creek (from SR 1524 to the Rocky River) and Duck Creek (from its source to Goose Creek) are on the state's Section 303(d) Category 5 list of impaired streams. Category 5 waters are those impaired for one or more designated uses by a pollutant(s), and require a TMDL for the pollutant(s). Since 1998, Goose Creek has been on the 303(d) for various impairments. Currently, it is listed as "Biological Criteria Exceeded" (NCDENR 2009). This is also the listed impairment for Duck Creek, which was included on the 2008 draft list for the first time. All 303(d) streams in the Action Area are depicted in Figure 4.

4.5.2.3 NONPOINT SOURCE POLLUTION

Nonpoint source (NPS) pollution refers to runoff that enters surface waters through stormwater or snowmelt. There are many types of land use activities that are sources of NPS pollution including land development, construction activity, animal waste disposal, mining, agriculture and forestry operations, and impervious surfaces such as roadways

and parking lots. Various nonpoint source management programs have been developed by a number of agencies to control specific types of nonpoint source pollution (e.g. forestry, pesticide, urban, and construction-related pollution etc.). Each of these management programs develops Best Management Practices (BMPs) to control the specific type of NPS pollution.

The NPDES Stormwater Permitting program institutes permitting requirements for municipal separate storm sewer systems (MS4) and also established post-construction stormwater management requirements in both incorporated and unincorporated areas for development activities outside of the permitted MS4s (NPDES Phase II). Development activities in these areas must meet post-construction requirements. Within the Action Area, Mecklenburg County enforces the Phase II and post-construction requirements within the county while NCDWQ currently enforces these regulations within Union County and any communities which do not have Phase II permits. The post-construction ordinance allows NCDWQ to implement undisturbed riparian buffer rules within the Goose Creek, Sixmile Creek, and Waxhaw Creek watersheds, which are habitat to the Carolina heelsplitter. These buffer requirements are only implemented when NCDWQ receives a permit application, whether stormwater or Section 401 (Randall 2010, pers. comm.). The NCDWQ requires that permits in the Goose Creek watershed include post-construction requirements of 200 foot undisturbed riparian buffers on perennial streams, 100 foot riparian buffers on intermittent streams, and a ten percent impervious surface threshold for engineered stormwater controls (NCDWQ 2009).

NCDWQ also implements the buffer requirements from the Goose Creek Site Specific Management Plan (NCDENR 2009), which requires all projects disturbing more than one acre of land to control stormwater as described in Rule .0602 of the plan (see Section 4.5.2.7 of this report).

4.5.2.4 Point Source Pollution

Point source discharges of pollution are defined as pollutants that enter surface waters through a pipe, ditch, or other well-defined point of discharge. These include municipal and industrial wastewater treatment facilities, small domestic discharging treatment systems (schools, commercial offices, subdivisions and individual residents), and stormwater systems from large urban areas and industrial sites. The primary pollutants associated with point source discharges include nutrients, solids/sediments, oxygen demanding wastes, and toxic substances such as chlorine, ammonia and metals.

There are five permitted wastewater discharges in the Goose Creek subbasin: Oxford Glen Wastewater Treatment Plant (WWTP) on Stevens Creek (Permit NC0063584); Ashe Plantation WWTP on Duck Creek (NC0065749); and Fairfield Plantation (NC0034762), Country Wood (NC0065684), and Hunley Creek (NC0072508) WWTPs on Goose Creek (Figure 5). These facilities currently fall under the Goose Creek Site Specific Management Plan (NCDENR 2009) NPDES Permitting Policy, which was implemented by NCDWQ in conjunction with other resource agencies.

The NPDES Permitting Policy includes limits on various parameters, including, but not limited to chlorine (since October 2002), ammonia, fecal coliform, BOD, DO, flow, and temperature, for the existing facilities. Compliance reports from the 2005-2010 review period show routine problems with several parameter limits exceeded at the Fairfield Plantation and Hunley Creek WWTPs. A summary of violations obtained from NCDENR Central Files on April 6, 2010 is provided below, while detailed compliance information obtained from Central Files is included in Appendix III.

Ashe Plantation (Aqua North Carolina)

- A notice of violation (NOV) from DWQ was documented on March 1, 2010 due to exceeding the daily maximum of total suspended solids (TSS) in the November 2009 self-monitoring report. No civil penalties were assessed.

Hunley Creek (Union County)

- Numerous NOVs and civil penalties were documented throughout 2005-2006 monitoring period due primarily to exceedences of BOD, with occasional exceedences of flow, fecal coliform, TSS, and total suspended residue (TSR). Civil penalties assessed included approximately $30,510.11 while receipts of payment received included approximately $24,436.08.
- No NOVs were identified for this WWTP throughout 2007-2010.

Fairfield Plantation (Goose Creek Utility Company)

- DWQ sent a memorandum to the Attorney General's Office on January 13, 2010, requesting Injunctive Relief with regard to the Fairfield Plantation WWTP. DWQ described how the WWTP is in a "state of disrepair" with questionable structural integrity and a history of deteriorating conditions. Improvements to the structure were not made due to the fact that connection to the Union County Public Works sewer system was imminent; however, those plans have been recently dropped.
- DWQ sent a letter to NC Utilities Commission dated February 4, 2010, requesting its advice, counsel and assistance in addressing the situation with this WWTP:
    - This WWTP currently operates under the terms of a NPDES permit issued in 1994. As such, effluent limitations and monitoring requirements are not as stringent as those found in contemporary permits for facilities discharging to Goose Creek. This WWTP has deteriorated to the point that its structural integrity is questionable and its owners attest that it cannot consistently meet currently applicable (1994) permit limits.
- Numerous NOVs and civil penalties were documented throughout 2009-2010 monitoring period due primarily to exceedences of flow, with occasional exceedences of fecal coliform, DO, and ammonia. Civil penalties assessed included approximately $12,899.37 for this period. No receipts of payment were documented for these penalties.

- Several NOVs were documented during the 2005-2008 monitoring period due to slight exceedences of flow, fecal coliform, and TSR. No civil penalties were assessed during this period.

In addition to chlorine limits, a moratorium on new facilities or expansion of existing facilities within the Goose Creek watershed has been instituted under the Goose Creek Site Specific Management Plan (NCDENR 2009).

4.5.2.5 ECOLOGICAL SIGNIFICANCE

The NCNHP maintains a database of rare plant and animal species, as well as significant natural areas, for the state of North Carolina. The NCNHP compiles the NCDENR priority list of "Natural Heritage Areas" as required by the Nature Preserves Act (NCGS 113A-164 of Article 9). Natural areas (sites) are inventoried and evaluated on the basis of rare plant and animal species, rare or high quality natural communities, and geologic features occurring in the particular site. These sites are rated with regard to national, state, and regional significance. This list contains those areas which should be given priority for protection; however, it does not imply that all of the areas currently receive protection (NCDENR 2009). The Goose Creek Subbasin Aquatic Habitat is considered to be of "National Significance".

The Goose Creek Subbasin supports several other rare aquatic species besides the Carolina heelsplitter. They are listed Table 4 along with their state and federal status.

Table 4. Rare Aquatic Species in Goose Creek Subbasin

Scientific Name	Common Name	NC Status	Federal Status	Species Type
Etheostoma collis collis	Carolina darter	SC	FSC	Fish
Fuscanaia masoni	Atlantic pigtoe	E	FSC	Mussel
Lasmigona decorata	Carolina heelsplitter	E	E	Mussel
Strophitus undulatus	Creeper	T	~	Mussel
Villosa vaughaniana	Carolina creekshell	E	FSC	Mussel
Villosa delumbus	Eastern creekshell	SR	~	Mussel
Villosa constricta	notched rainbow	SC	~	Mussel

E = Endangered, T = Threatened, FSC = Federal Species of Concern, SC = Special Concern, SR = Significantly Rare, ~ = no rating (NCNHP 2010)

The Goose Creek watershed is considered to be a globally significant ecosystem; as such several efforts have been undertaken by USFWS, NCDOT and NCWRC to preserve this ecosystem. NCWRC has acquired 23 conservation easements on 156 acres along Goose Creek and Duck Creek, using a $1.8 million NC Clean Water Management Trust Fund grant specifically awarded to address Goose Creek's water pollution problems. In addition to buying conservation easements, NCWRC has used grants to fund other projects, including the stream restoration and stabilization of five streams and ditches in the watershed (PBS&J 2010b). NCDOT has acquired, or funded stream mitigation

projects in the Goose Creek watershed; however, those projects were utilized towards mitigation requirements associated with other NCDOT projects.

4.5.2.6 CONDITIONS WITHIN CRITICAL HABITAT UNIT 1

Water quality and stream habitat conditions within the Goose Creek have deteriorated significantly in recent years, to the level that several of the Constituent Elements have been significantly altered to the extent that they may no longer be present. The habitat degradation has coincided with the rapid urbanization of the watershed, which was discussed in Section 4.1.5.1. Each of the Constituent Elements of Unit 1 and the way they have been compromised are discussed below:

1) permanent flowing, cool, clean water: The mainstems of both Goose and Duck Creeks have experienced several prolonged periods of interrupted flow (TCG personal observations, John Fridell, pers. comm.). This has resulted in mortality of several individuals (John Fridell, pers. comm.). In addition, various toxic contaminants have been reported in the watershed (Section 4.1.4.2), and both Goose and Duck Creeks are listed as impaired (Section 4.5.4.2).

2) geomorphically stable stream and river channels and banks: The effects of urbanization on peak discharge and channel stability were discussed in Section 4.1.5.1. Channel inscision, headcutting, and numerous streambank failures leading to new channel cuts have occurred in the Goose Creek watershed in recent years, especially in the mainstem of Goose Creek (TCG personal observations, John Alderman and John Fridell, pers. comm., Allen 2005).

3) pool, riffle, and run sequences within the channel: While these habitat sequences are still present within the Critical Habitat Unit, large accumulations of fine sediments occur in many of these areas (see below).

4) stable substrates with no more than low amounts of fine sediment: As a result of channel instability, and erosion from the landscape, large accumulations of fine sediment occur throughout the channel of Goose Creek, and to a lesser extent Duck Creek (TCG personal observations, John Alderman and John Fridell, pers. comm., Allen 2005). As stated above, Allan (2005) documented dramatic increases in sediment concentrations during high flow events in the Goose Creek subbasin.

5) moderate stream gradient: This constituent element is generally still present; however significant channel incision has occurred throughout much of the Goose Creek channel (see below).

6) periodic natural flooding: The effects of urbanization on stream channel scour, and the subsequent effects on freshwater mussels and mussel habitat are discussed in Section 4.1.5.1. The mainstem of Goose Creek has incised significantly in recent years to the level that in many areas the floodplain is inaccessible from the channel except during

extremely high flows (TCG personal observations, John Alderman and John Fridell, pers. comm.), which further contributes to channel instability and habitat degradation.

7) fish hosts, with adequate living, foraging, and spawning areas for them: There have been no documented extirpations of any fish species within the Goose Creek watershed, and Starnes and Hogue (2005), found several of the species of cyprinids (minnows) in the watershed, which have been identified as fish hosts for the Carolina heelsplitter (Eads et al. 2010). However, the habitat degradation (high levels of silt, channel scour etc.) discussed above may be compromising spawning habitat for the host species.

4.5.2.7 GOOSE CREEK WATERSHED SITE SPECIFIC WATER QUALITY MANAGEMENT PLAN

In 2009, a Site Specific Management Plan for the Goose Creek Watershed was adopted to protect the Carolina heelsplitter (NCDENR 2009). The stated purpose of the subject rules (15A NCAC 02B .0601) is for the "maintenance and recovery of water quality conditions required to sustain and recover the federally endangered Carolina heelsplitter." During the drafting of the Management Plan, the USFWS noted that they believed the management plan is insufficient to protect the Carolina heelsplitter, and does not allow for recovery of the species in the creek, as was stated as the purpose of the plan (USFWS 2008). Specifically, the USFWS stated that "the subject rules: (1) affect primarily only certain future development activities within the Goose Creek watershed, and, it is the Service's belief, are inadequate to prevent further decline of water quality and the Carolina Heelsplitter from the effects of the future development activities subject to the rules; (2) fail to address the likely detrimental effects to water quality associated with numerous other potential future land use activities within the watershed; and, (3) do practically nothing to address the affects of existing landuse activities affecting water quality within the watershed which have contributed the decline of the Carolina Heelsplitter within the Goose Creek watershed" (USFWS 2008).

4.5.3 Sixmile Creek Subbasin (03-08-38)

Sixmile Creek arises in Mecklenburg County, approximately three miles west of Stallings, and flows in a general southwest direction for approximately 8.8 miles before entering Lancaster County, SC. The stream then flows approximately 10 miles before entering Twelvemile Creek near Hancock, SC, which in turn flows approximately six more miles before entering the Catawba River near Van Wyck, SC. Sixmile Creek and Twelvemile Creek are included in North Carolina Catawba River Subbasin 03-08-38 (NCDWQ 2004) and are located within Union and Mecklenburg Counties, NC. Sixmile Creek forms the boundary between these two counties for much of its course. The Sixmile Creek watershed drains the southeastern and southwestern portions of Mecklenburg and Union Counties, respectively, while Twelvemile Creek drains southwestern Union County (NCDWQ 2004). Both streams have very low flows during the summer months and may stop flowing during periods of drought (NCDWQ 2004).

The Sixmile Creek watershed has undergone a significant amount of economic development, including residential, commercial and office space has occurred along the

US 521 corridor between I-485 in Mecklenburg County, NC and US 160 in Lancaster County, SC. Over the eight-year period between 1998 and 2006, developed land use increased by approximately 18 percent. Agricultural lands decreased by a total of 1,996 acres and forested lands decreased by 2,579 acres between 1998 and 2006 (TCG 2007). The agricultural and forested lands were replaced with residential properties, industrial / commercial properties and paved roads. The residential land use category increased by 4,017 acres and the industrial / commercial and paved roads categories increased by 400 acres and 200 acres, respectively (TCG 2007). High density residential areas increased by approximately 6.6 percent whereas moderate and low density residential areas increased by almost 5 and 3 percent, respectively from 1998 to 2006 (TCG 2007). The population of Stallings and Weddington, which occur within the Sixmile Creek watershed increased 287% and 117% respectively between the year 2000 and 2008 (Baker Engineering 2010) Continued growth is projected in this area to year 2030 (Baker Engineering 2010).

4.5.4 Water Quality

4.5.4.1 Best Usage Classification

In North Carolina Sixmile Creek is assigned a Best Usage Classification of C from its source to the NC/SC state line. The South Carolina portion of Sixmile Creek is contained within the Twelvemile Creek subbasin (classification 03050103-030).

Water quality standards are assigned and assessed using basically similar methods to those described in North Carolina (SCDHEC 2005).

4.5.4.2 Impaired 303(d) Listing

Currently the 8.8-mile segment of Sixmile Creek from its headwaters to the South Carolina border is classified as “Impaired for Aquatic Life” due to Fair bioclassification (NCDENR 2010). The South Carolina portion of Sixmile Creek has been on the 303(d) list for several years. In the mid 1990’s, zinc levels exceeded impairment thresholds and the creek was placed on the 303(d) list of impaired waters. By 2002, the zinc level was sufficiently reduced and the stream was fully supporting of aquatic life; however, the recreational use was not supported due to fecal coliform levels. Additionally, trends of decreasing DO, increasing pH, increasing BOD, increasing turbidity, and increasing total phosphorus and total nitrogen were identified (SCDHEC 2005).

4.5.4.3 Nonpoint Source Pollution

Nonpoint source pollution, runoff that enters surface waters through stormwater or snowmelt, is identified as a major source of water quality degradation in this subbasin (NCDENR 2004, NCDENR 2008). Land development, construction activities, animal waste disposal, mining, forestry operations, agriculture, and impervious surfaces (urban runoff) are examples of land uses that contribute to NPS pollution. Many NPS management programs have been developed to control runoff with BMPs for stormwater management.

The naturally low flow of Sixmile Creek indicates stream sensitivity to nonpoint source runoff (NCDENR 2004).

4.5.4.4 Point Source Pollution

Point source pollution includes discharges of pollutants directly to surface waters through a pipe, ditch, or other well-defined point of discharge. Point sources include municipal and industrial WWTPs, small domestic discharging treatment systems, and stormwater systems from municipal areas and industrial sites.

One major municipal National Pollutant Discharge Elimination System (NPDES) facility was located on Sixmile Creek (NPDES Permit NC0066559/001). Between 1997 and 2003 Union County this site failed two effluent toxicity tests. Since that time the NPDES point source has been removed from Sixmile Creek (NCDENR 2004). However, despite the removal of the NDPES point source, Sixmile Creek received the highest conductivity rating (185 µmhos/cm) of any stream in the basin during the 2004 sampling effort (NCDENR 2004).

4.5.4.5 Point Source and NPS Pollution Control

Stormwater management to control point and nonpoint source pollution is implemented by NCDWQ under the NPDES stormwater permitting Phase II requirements [Session Law 2006-246]. These requirements are implemented in the Sixmile Creek watershed through the City of Charlotte's NPDES municipal separate storm sewer system (MS4) permit in Mecklenburg County and through the NCDWQ's post-construction stormwater permitting in Union County and the Village of Marvin (NCDWQ 2009).

Projects that disturb an acre or more of land within Union County and the Village of Marvin are subject to NCDWQ stormwater review under the post-construction stormwater permitting program (NCDWQ 2009). NCDWQ requires that projects meet not only the post-construction requirements but also the more stringent buffer and stormwater requirements for the protection of the Carolina heelsplitter within the Sixmile Creek watershed, similar to the Goose Creek Site Specific Management Plan (Randall 2010, NCDWQ Stormwater, pers. comm.). These buffer requirements are only implemented when NCDWQ receives a permit application, whether stormwater or Section 401 (Randall 2010, pers. comm.). The NCDWQ requires that permits in the Sixmile Creek watershed include post-construction requirements of 200 foot undisturbed riparian buffers on perennial streams, 100 foot riparian buffers on intermittent streams, and a ten percent impervious surface threshold for engineered stormwater controls (NCDWQ 2009).

4.5.4.6 Ecological Significance

The Sixmile Creek Subbasin supports several other rare aquatic species besides the Carolina heelsplitter. They are listed Table 5 along with their state and federal status.

Table 5. Rare Aquatic Species in Sixmile Creek Subbasin

Scientific Name	Common Name	NC Status	Federal Status	Species Type
Etheostoma collis collis	Carolina darter	SC	FSC	Fish
Lasmigona decorata	Carolina heelsplitter	E	E	Mussel
Strophitus undulatus	Creeper	T	~	Mussel
Villosa vaughaniana	Carolina creekshell	E	FSC	Mussel
Villosa delumbus	Eastern creekshell	SR	~	Mussel

E = Endangered, T = Threatened, FSC = Federal Species of Concern, SC = Special Concern, SR = Significantly Rare, ~ = no rating (NCNHP 2010)

5.0 ENVIRONMENTAL BASELINE – SCHWEINITZ'S SUNFLOWER

This section discusses the characteristics and current status of the Schweinitz's sunflower throughout its range and within the proposed action area. There have been no 5-year status reviews completed for this species as of the date of this report; therefore, most of the following text has referenced personal communication with USFWS and older documents, including the 1994 USFWS Recovery Plan for Schweinitz's sunflower.

5.1 Species Description

A detailed description of characteristics, habitat requirements, legal status, and primary threats to the species are summarized below.

5.1.1 Designation (Legal Status)

Schweinitz's sunflower was listed as Endangered on May 7, 1991, under provisions of the Endangered Species Act of 1973 (as amended) (FR 56(88): 21087-21091) (USFWS 1991). Currently there is no critical habitat designated for Schweinitz's sunflower.

5.1.2 Characteristics

Schweinitz's sunflower is a rhizomatous perennial herb described from North Carolina by Torrey and Gray (1841) that grows 1 to 2 meters tall from a cluster of carrot-like tuberous roots (USFWS 1994, Radford et al. 1968). Stems are usually solitary, branching only at or above mid-stem, with the branches departing from the stem at about a 45-degree angle. The stem is usually pubescent but can be nearly glabrous and is often purple in color.

The leaves are opposite on the lower portion of the stem, changing to alternate above. In shape, the leaves are lanceolate, wider near their bases, but variable in size, being generally larger on the lower

portion of the stem, and gradually reduced upwards. Lower stem leaves average 10 to 20 centimeters long and 1.5 to 2.5 centimeters wide (about 5 to 10 times as long as wide). Upper stem leaves (subtending branches of the inflorescence) average about 5 centimeters long and 1 centimeter wide. Leaf margins are entire with a few obscure serrations and are generally also somewhat revolute.

Texture of the leaves is rather thick and stiff and the pubescence of the leaves is distinctive. The upper surface of the leaves is rough, with the broad-based spinose hairs directed toward the tip of the leaf. The lower surface is more or less densely pubescent, with soft white hairs obscuring the leaf surface. From September to frost, Schweinitz's sunflower blooms with comparatively small heads of yellow flowers. The nutlets are 3.3 to 3.5 millimeters long and are glabrous with rounded tips. (NC-ES 2010, USFWS 1994)

The pubescence of the leaves is distinctive and is one of the best characteristics to distinguish Schweinitz's sunflower from its relatives. Additionally, the following characteristics separates Schweinitz's sunflower from all other eastern North American species in the genus: the heads are generally small (the involucre is less than 1 centimeter across), stems are generally sparsely strigose or hirsute below the inflorescence, the leaves are typically sessile to short-petiolate (petiole less than 1.5 centimeter long, very rarely to 3 cm long), scabrous above with dense soft white hairs below, lanceolate, and broadest near the base (USFWS 1994).

5.1.3 Distribution and Habitat Requirements

Schweinitz's sunflower is endemic to the Piedmont physiographic region of North and South Carolina. At the time of its listing in 1991, Schweinitz's sunflower was distributed across five counties in NC and one county in SC. As of 2006, the global range of Schweinitz's sunflower included more than 85 populations distributed across Anson, Cabarrus, Davidson, Gaston, Mecklenburg, Montgomery, Randolph, Richmond, Rowan, Stanly, Stokes, Surry, and Union Counties, NC, and Lancaster and York Counties, SC (Wells 2010, pers. comm.). There are currently 75 extant populations in NC (NCNHP 2010) and 41 extant populations in SC (Holling 2010, SCDNR pers. comm.), all known from the aforementioned counties.

Historically, it is believed that Schweinitz's sunflower occupied open prairie and Post Oak-Blackjack Oak Savannas that were maintained by relatively frequent fire (USFWS 1994). Current habitats include roadsides, periodically disturbed or maintained utility rights of way, old pastures, and sunny or semi-sunny woodland openings. While the plant occurs on a variety of soils, it is generally found on shallow, poor, clayey or rocky soils, especially those derived from mafic rock. Where Schweinitz's sunflower occurs in relatively natural (undisturbed) areas, the natural community is considered a Xeric Hardpan Forest (Schafale and Weakley 1990).

NatureServe (2010) characterizes Schweinitz's sunflower habitat as "clearings in, and edges of, upland oak-pine-hickory woods and piedmont longleaf pine forests in moist to dryish sandy loams." In addition, Schweinitz's sunflower requires the "full to partial sun

of an open habitat, which was formerly maintained over the species' range by wildfires and grazing by herds of bison and elk" (NatureServe 2010). Now most occurrences are confined to roadsides and utility rights of way that are periodically maintained or disturbed and/or managed for the species.

5.1.4 General Threats to Species

Schweinitz's sunflower is endangered by the loss of historic levels of natural disturbance (i.e. fire, grazing by herbivores), development, mining and encroachment by exotic species (USFWS 1994). The species requires fire or other vegetation management to maintain an open canopy (NatureServe 2010). Primary threats to this species occur from direct habitat loss, degradation, and fragmentation due to residential, commercial, and industrial development, highway construction and improvement, and intensive maintenance of roadsides and utility rights of way (USFWS 1994).

5.1.5 Roadway-Related Threats to Species

A number of potential direct and indirect effects to plant species resulting from road construction projects were evaluated for this BA. These potential effects are discussed within their respective sections below.

5.1.5.1 POTENTIAL DIRECT EFFECTS

Direct effects refer to consequences that can be directly attributed to a project. Direct effects associated with roadway projects include, but are not limited to, land clearing and loss, degradation, and/or modification of habitat in the project corridor, in fill/borrow/spoil areas, and in construction staging/access areas outside of the project corridor. Potential direct effects to plant species associated with transportation projects include habitat modification and/or destruction resulting from highway construction and improvement, utility relocation, and intensive maintenance of roadside and utility ROWs. Intensive maintenance includes herbicidal treatments, mowing, and ground disturbing activities, particularly during critical growth periods of the species.

5.1.5.2 POTENTIAL INDIRECT EFFECTS

Indirect effects, together with the effects of other activities that are interrelated or interdependent with the action, have been evaluated in this assessment. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur [50 CFR 402.02]. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification while interdependent actions are those that have no independent utility apart from the action under consideration [50 CFR 402.02]. These types of indirect effects can include natural responses to the direct effects of the proposed action, or can include human-induced effects associated with the proposed action.

Potential indirect effects to plant species associated with transportation projects include the loss, degradation, destruction, fragmentation, or modification of habitat resulting from land conversion induced by roadway construction. Land conversion (changes in land use) includes residential, commercial, and industrial development as well as linear urban sprawl along the highway corridor or in the vicinity of interchanges. Also included as indirect effects are reasonably foreseeable local roadway improvements (e.g. widening) necessitated by increased traffic associated with the proposed action. These types of land use changes are not direct consequences of road construction, but rather a result of modifications in access to parcels of land and modifications in travel time between different areas (Mulligan and Horowitz 1986).

Economic development is often used as a criterion in highway funding (Eagle and Stephanedes 1987). Historically, transportation has been viewed as a necessary precursor to economic development (Anderson et al. 1992), and transportation infrastructure is "one of the principle policy levers that state and local governments can use to increase their attractiveness to business investors" (Forkenbrock 1990). Thus, planned or forecasted project-induced changes in land use are considered to be indirect effects of a proposed action.

Alternatively, depending on the extent of local land development regulations, development demand, and water/sewer availability, among other factors, roadway improvements may result in unintentional development and sprawl. These unintended land use changes are also project-induced and therefore are considered to be indirect effects of the proposed action. Improvements to levels of service, better accommodation of traffic, and reductions in travel times may encourage changes in land development outside of the direct project area. This induced growth and development with limited or no proper planning programs along with unchecked development controls, has the potential to degrade suitable habitat for endangered plant species as a result of a proposed action.

5.1.5.3 Potential Cumulative Effects

Cumulative effects are those effects of future state or private activities, not involving federal activities, which are reasonably certain to occur within the action area of the proposed federal action [50 CFR 402.02]. Cumulative effects within an action area may include foreseeable infrastructure projects independent of the federal action, such as water and sewer service expansion, which have the potential to stimulate land development and associated roadway improvements. Other small-scale adverse effects to plant species may also occur within the project action area. Though difficult to predict or quantify, other potential cumulative effects may also include mismanagement of the species or its habitat by private landowners (i.e. poor conservation maintenance or herbicide use), habitat degradation caused by traffic accidents occurring within roadside populations, private harvesting of the species for medicinal or otherwise personal use, or habitat impairment caused by emergency repair efforts within utility ROW.

5.2 Presence in Action Area

In order to determine presence of the species within the Action Area, the NCNHP (2010) natural heritage database was searched for known populations, suitable habitat was evaluated, and presence/absence surveys were conducted. Species surveys were conducted within the preferred alignment and vicinity (ESI 2007). The NCNHP database search was conducted within the entire Action Area and is summarized below.

The NCNHP records database was accessed using the NC Center for Geographic Information and Analysis to map and evaluate the Natural Heritage Element Occurrences (EO) within the Action Area. NCNHP EOs identify locations of rare threatened and endangered species, exemplary or unique natural ecosystems, and special animal habitats. The NCNHP natural heritage database was searched for EOs of Schweinitz's sunflower within the FLUSA (Figure 6) in January 2010 (NCNHP 2010); Table 6 summarizes Schweinitz's sunflower EOs within the Action Area.

Specific details of the aforementioned Schweinitz's sunflower populations are described below with regard to location within the project alignment, FLUSA, or Conservation Area within the Action Area.

Table 6. NCNHP Schweinitz's sunflower EO populations within Action Area (NCNHP 2010)

EO #	EO Rank*	Population	Status	Last Observed	Details/Comments
5	X	0 stems	Destroyed	Sept. 1957	No suitable habitat identified in 1982 and 1990. Presumed extirpated.
18	C	183 stems	Extant	Oct. 21, 2008	North Fork Crooked Creek Site: Located within utility and roadway ROWs along south side Indian Trail-Fairview Road. Union Electric mows the utility ROW on a 5-yr rotation. NCDOT mows roadside ROW.
31	X	0 stems	Destroyed	July 31, 1995	In 1998, 210 stems transplanted to McDowell Prairie Site.
77	CD	192 stems	Extant	Oct. 11, 2003	South Fork Crooked Creek Site: Located along roadside, southwest bank of Secrest Shortcut Road. "Do Not Mow" sign marks population.
78	D	62 stems	Extant	Nov. 4, 2003	Bearskin Creek Site: Located along south side of Gold Mine Road within utility and NCDOT ROWs.

* EO Rank description: X = extirpated; C = Fair estimated viability/ecological integrity; CD = Fair or poor estimated viability/ecological integrity; D = Poor estimated viability/ecological integrity

5.2.1 Project Alignment

A search of the NCNHP records database (Table 6, Section 5.2) as well as field surveys within the proposed project alignment concluded that there are no known populations within the proposed limits of the project alignment, or ROW. However, there are two populations that occur within approximately 500 feet of the proposed ROW for the RPA (Figure 7). Due to the proximity to the proposed project alignment, these two populations are discussed in this section.

Field Surveys

In 2007, Environmental Services Inc. (ESI) conducted surveys for federally threatened and endangered plant species within the Project Study Area (PSA) (Figure 8). At the time of the surveys, several detailed study alternatives (DSAs) were under consideration and the PSA, or the plant survey area footprint, included an area greater than the RPA alignment, but a much smaller area than the FLUSA (Figure 8). Survey methodologies and results are included in a Nov. 15, 2007 Endangered Plant Survey Update letter (ESI 2007) while pertinent details are summarized below.

Prior to initiating the field surveys, the NCNHP database was reviewed to determine the location of any known populations of Schweinitz's sunflower within the PSA. One known population (EO# 77) was identified by NCNHP within the PSA. The population was studied prior to initiating the field surveys to determine the specific habitat conditions present. Subsequent aerial photograph reviews and Geographic Information System (GIS) analyses of local soils, topography and land use database layers were conducted to evaluate potential suitable habitat. The PSA was segregated into "high", "moderate", and "low" habitat probability areas based on known habitat preferences of Schweinitz's sunflower. Field surveys were conducted in areas of high and moderate probability throughout the entire PSA. Areas of low probability were only surveyed if conditions warranted review due to a change of conditions from the GIS or aerial photograph reviews. Field surveys were primarily conducted along all maintained rights of way (utility lines, sewer lines, roads, trails, etc.), field edges, and other areas of disturbance that appeared to be maintained in natural, early successional stages.

Field surveys were conducted by ESI biologists; their credentials are included in Appendix IV. The Biologists reviewed two reference Schweinitz's sunflower populations on September 3, 10, and 17, 2007, to confirm flowering status prior to initiating field surveys (flowering was confirmed on the latter date) (Petitgout 2010a, ESI, pers. comm.). One reference population was located along Jim Wilson Road near the Edenmoor development in Lancaster County, SC, and the other was the North Fork Crooked Creek population (EO# 18) in Union County, NC. Field surveys in the PSA were conducted prior to the first frost on the following dates: September 24-28, October 1-5, October 8-12, and October 15-17, 2007 (Petitgout 2010a, pers. comm.). All high priority areas were systematically surveyed by walking overlapping transects.

Two Schweinitz's sunflower populations were identified during the 2007 field surveys within the PSA, one of which was not listed in the NCNHP database, referenced as "ESI 1" for this report (Table 7; Figure 6). The extent of each population was flagged and surveyed using Global Positioning System (GPS) equipment (Figure 7). ESI expected to find EO# 77, the South Fork Crooked Creek Site, along the southwest bank of Secrest Shortcut Road with "Do Not Mow" signs marking population, as described in the NCNHP database. However, during the 2007 survey, the population on the southwestern side of the road was not found as this area appeared to have been recently mowed and the "Do Not Mow" signs had been removed (Petitgout 2010b, pers. comm.). Further investigations identified a population directly across the road on the northern side of Secrest Shortcut Road; it was assumed this was simply part of the EO# 77 population.

Table 7. Schweinitz's sunflower populations identified during 2007 PSA field surveys

Population	Location within Action Area	Area/Size
ESI 1	~600 feet from preferred project alignment	0.72 acre
EO# 77	~400 feet from preferred project corridor alignment. Plants found on northern side of Secrest Shortcut Road, but not on the southwestern side of the road.	0.55 acre

ESI revisited EO# 77 and ESI 1 in September 2009 to perform stem/cluster counts (Petitgout 2010b, pers. comm.). During these surveys, plants were identified both on the northern and southwestern sides of Secrest Shortcut Road. The results of the stem counts are provided in Table 8.

Table 8. Schweinitz's sunflower populations identified and counted in 2009

Population	Location within Action Area	Stem Count	NCNHP Status
ESI 1	~600 feet from preferred project alignment	12 stems, 8 plants	N/A*
EO# 77	~400 feet from preferred project alignment Northern bank of Secrest Shortcut Road	103 stems, 11 clusters	Extant
	~400 feet from preferred project alignment Southwestern bank of Secrest Shortcut Road	31 stems, 21 clusters	

*N/A – This population is not listed in the NCNHP database and as such, there is no NCNHP status.

ESI 1

ESI 1 is located on Secrest Shortcut Road (SR 1501), approximately 600 feet west of the intersection with Unionville-Indian Trail Road along the southern side of the road near GPS location 35.0759^{o} N, -80.6136^{o} W (ESI 2007). It was located by ESI in 2007 and is a very small population (12 stems) that occurs primarily between the roadside swale and the power line adjacent to Secrest Shortcut Road (Petitgout 2010b, pers. comm.). Due to its small size and its location in and along a roadside ditch swale (also within the distribution power line ROW), this population has a poor chance of persisting for an

extended period of time, unless specific management actions are undertaken. This population does not currently have a NCNHP EO number.

EO# 77

EO# 77 is located on Secrest Shortcut Road (SR 1501) between Unionville-Indian Trail Road (SR 1367) and the crossing of the South Fork Crooked Creek near GPS location 35.0721°N, -80.6097°W. This roadside population was located in 2003 by Larry Thompson (NCDOT Div. 10) with a total count of 192 stems and a NCNHP element occurrence rank of CD (NCNHP 2010). This 2003 survey is the only survey event NCNHP currently has on record in their database (see Table 6 in Section 5.2).

NCDOT Division-level road improvements on Secrest Shortcut Road associated with a NCDOT "Moving Ahead" project led to subsequent monitoring of EO# 77. A total of 314 stems were counted by NCDOT, all of which were on the southwestern side of the road in 2004 (Frazer 2010, NCDOT-NEU, pers. comm.), earning it an NCNHP EO rank of B. Due to the proximity of the population to the roadway, NCDOT consulted USFWS regarding efforts to protect this population from a combination of impacts during the planned roadway resurfacing and shoulder widening (Buncick 2010a, pers. comm.; Thompson 2010a, NCDOT Div. 10, pers. comm.). Ultimately, in October 2006, NCDOT relocated a total of 418 plants from EO# 77 to the newly developed Cane Creek Park Piedmont Prairie Restoration Area (Cane Creek Park), a five acre conservation easement which serves as a permanent refuge for protected plant species (NCDOT et al. 2006, HARP 2009). NCDOT arranged the creation of the Cane Creek Park conservation / management area with Union County and provided the funds for initial site preparation, maintenance, and monitoring.

Although the EO# 77 population was transplanted from the southwestern bank of Secrest Shortcut Road to Cane Creek Park in October 2006 (HARP 2009), the species was able to re-colonize this area from either germination of remaining seeds, or by vegetative propagation from remaining underground rhizomes as was noted by ESI in the 2009 surveys. The remnant population of EO# 77 includes 103 stems on the northern side and 31 stems on the southwestern side of Secrest Shortcut Road (Petitgout 2010b, pers. comm.). This population is located within NCDOT ROW and within Union Power ROW.

5.2.2 FLUSA

In addition to the two aforementioned occurrences of Schweinitz's sunflower in the Project Alignment Section 5.2.1, a review of NCNHP (2010) database records indicated an additional four EOs. Two of the four EOs are extant populations (EO# 18, EO# 78), one population had been relocated (EO #31), and one is considered extirpated (EO# 5) (See Table 6, Section 5.2; Figure 6).

EO# 18

EO# 18 is the most northern population in the FLUSA and is referred to as the "North Fork Crooked Creek Sunflower Site" by NCNHP. It is located mostly along the southern side of Indian Trail-Fairview Road (SR 1520) approximately halfway between Rocky River Road (SR 1514) and Cunningham Lane (SR 1526) near GPS location 35.1014^{o} N, -80.5985^{o} W. A total of 183 plants were last observed within the utility easement on October 21, 2008 during a survey conducted by J. R. Siler, of Environmental Resources of the Carolinas (NCNHP 2010). This population has a current element occurrence rating of C. Union Power (2010) mows and/or hand clears the utility line ROW as needed, per their agreement with USFWS regarding access to Schweinitz's sunflower restricted sites.

EO# 78

EO#78 is the most southern population within the FLUSA and is referred to as the "Bearskin Creek Sunflower Site" by NCNHP. It is located along the south side of Gold Mine Road (SR 1162) near GPS location 35.1184^{o} N, -80.7790^{o} W (NCNHP 2010). According to NCNHP (2010), the most recent survey was conducted by Larry Thompson (NCDOT Div. 10) on November 4, 2003. A total of 62 stems were observed mostly on the back side of a ditch maintained by the NCDOT; however, some plants are also within Union Power's right-of-way. This population has an element occurrence rating of D. As a management commitment, NCDOT installed "Do Not Mow" signs marking the boundaries of the population and Union Power was notified of the population within their right-of-way (NCNHP 2010, Union Power 2010).

EO# 31

EO# 31 is located along the western end of the FLUSA and is referred to as the Rea Road Sunflower Site by NCNHP. This EO is located along NC 16, approximately 0.05 mile north of the intersection with Rea Road (SR 3624). NCNHP's (2010) current status for this population is "destroyed" since the population (210 stems) was transplanted to McDowell Prairie in 1998. According to NCNHP (2010), this population was reported by NCDOT as having been sprayed with herbicide in September 1993. This population was recognized as extirpated in 2005 (NCNHP 2010), and as such, will not be further discussed in the effects section of this report.

EO# 5

EO#5 is located in the central portion of the FLUSA, just west of US 601, south of its intersection with Sikes Mill Road (SR 1001) and north of the US 601 crossing of Stumplick Branch. It was originally located in 1957 by H. E. Ahles; however, additional surveys by Matthews and Creel in 1982 and Weakley in 1990 failed to confirm an extant population. NCNHP (2010) considers this an extirpated population and as such, this population will not be further discussed in the effects section of this report.

5.2.3 Conservation Areas

Proposed conservation areas do not occur outside of the alignment or the FLUSA. Conservation measures for Schweinitz's sunflower are discussed in Section 9.5.

6.0 ENVIRONMENTAL BASELINE – MICHAUX'S SUMAC

This section discusses the characteristics and current status of the Michaux's sumac throughout its range and within the proposed action area. A 5-year status review was initiated for this species in 2008; however, the review has not been published as of the date of this report. As such, most of the following text references data from the draft 5-year status review, obtained through personal communication with Mr. Dale Suiter, USFWS, in addition to the 1993 USFWS Recovery Plan for Michaux's sumac.

6.1 Species Description

A detailed description of characteristics and habitat requirements, as well as the legal status for Michaux's sumac is provided below. In addition, primary threats to the species are also summarized below.

6.1.1 Designation (Legal Status)

Michaux's sumac was listed as Endangered on September 28, 1989, under provisions of the Endangered Species Act of 1973 (as amended) (FR 54(187): 39853-39857) (USFWS 1989). Currently there is no critical habitat designated for Michaux's sumac.

6.1.2 Characteristics

Michaux's sumac is a rhizomatous shrub that grows 0.2 to 1.0 meter in height. Although it is usually dioecious, monoecious individuals have been reported in some populations (USFWS 1993b). The entire plant is densely pubescent. The narrowly winged or wingless rachis supports 9 to 13 sessile, oblong to oblong-lanceolate leaflets that are each four to nine centimeters long, two to five centimeters wide, and acute to acuminate (USFWS 1993b, NatureServe 2010). The bases of the leaflets are rounded, and their edges are simply or doubly serrate. Flowering occurs in June and the small flowers are borne in a terminal, erect, dense cluster, with each one being four- to five-parted and greenish-yellow to white (USFWS 1993b). The fruit is a red, densely short-pubescent drupe, five to six millimeters broad, and is visible on female plants from August to October (USFWS 1993b). Michaux's sumac can generally be distinguished from other species in the genus due to its small stature, dense

pubescence, and evenly serrate leaflets. Michaux's sumac, also called false poison sumac, is quite harmless compared to poison sumacs of superficial resemblance.

Little information is available on the population biology and reproductive requirements of Michaux's sumac. Most of the surviving populations appear to contain plants of only one sex and therefore reproduce only vegetatively, if at all (USFWS 1993b). Due to the rhizomatous nature of the species, this may mean that the single-sex populations may be clones of one or a few individuals. Limited genetic variation within populations may also contribute to the observed low rates of seed production and seed viability has been shown to be extremely low (Suiter 2010a, pers. comm.).

6.1.3 Distribution and Habitat Requirements

Michaux's sumac was originally described from "Mecklenburg County, North Carolina" as *Rhus pumula* by André Michaux in 1803, but later changed to *R. michauxii* by Sargent in 1895, to correct Michaux's use of a homonym (pullus) and to honor its discoverer (Barden and Matthews 2004). Historically, Michaux's sumac has been documented in Davie, Durham, Franklin, Hoke, Johnston, Lincoln, Mecklenburg, Moore, Orange, Richmond, Robeson, Scotland, Wake, and Wilson Counties in North Carolina; Florence, Kershaw, and Oconee Counties in South Carolina; Columbia, Elbert, Gwinnett, Muscogee, Newton, and Rabun Counties in Georgia; and Alachua County, Florida (USFWS 1993b). Many of theses populations have been extirpated. As of 2009, there are 40 populations range-wide (Suiter 2010a, pers. comm.). The NCNHP currently lists 32 extant populations in NC known from Cumberland, Davie, Durham, Franklin, Hoke, Moore, Nash, Richmond, Robeson, Scotland, Union, and Wake Counties (NCNHP 2010). Four extant occurrences are known in Georgia and four extant occurrences are known in Virginia (Suiter 2010a, pers. comm.). All previously known populations in South Carolina and Florida are currently considered extinct (Suiter 2010a, pers. comm.; Holling 2010, pers. comm.).

Michaux's sumac grows in sandy or rocky open woods on sandy or sandy loam soils with low cation exchange capacities and appears to depend upon some form of disturbance to maintain the open quality of its habitat (USFWS 1993b, Suiter 2010a, pers. comm.). Michaux's sumac can occur on circumneutral soils, loamy swales, or on clayey soils derived from mafic rocks, depending on the physiographic province where it occurs (NatureServe 2010). Most extant populations can be found on open disturbed areas, such as railroad, road, and utility rights-of-way that are periodically maintained and/or managed for the species.

Not much is known about the population dynamics of Michaux's sumac. Fire or some other forms of disturbance, such as mowing or hand clearing (outside the normal flowering and fruiting time), appears to be essential for maintaining the open habitat preferred by Michaux's sumac (USFWS 1993b). Without periodic disturbance, this type of habitat is overgrown by woody vegetation. As this overgrowth occurs, Michaux's sumac begins to decline due to its intolerance of shade. The current distribution of Michaux's sumac demonstrates its dependence on disturbance. Of the remaining

populations, most are located in areas that receive significant disturbance through periodic clearing or maintenance by fire.

6.1.4 General Threats to Species

Michaux's sumac is threatened by fire suppression and ecological succession (competition/shading by woody species) that occurs in areas not burned on a regular basis (Suiter 2010a, pers. comm.). Additionally, forested populations are threatened by timber and utility rights of way populations are threatened by herbicide use, ground disturbing activities, and mowing during critical growth periods (Suiter 2010a, pers. comm.). Multiple observations also suggest that limited seed production continues to be a problem at most populations (Suiter 2010a, pers. comm.).

The greatest threat to Michaux's sumac comes from the loss/degradation or modification of habitat from activities such as development (residential, commercial, or industrial), highway construction and improvement, and intensive and/or untimely maintenance of existing utility and roadside rights of way (USFWS 1993b, USFWS 2010). Other threats include low genetic diversity within the existing populations and hybridization with other species of Rhus.

6.1.5 Roadway-Related Threats to Species

A number of potential direct and indirect effects to plant species resulting from road construction projects were evaluated for this BA. These potential effects are discussed in Section 5.1.5 for Schweinitz's sunflower, and are applicable to Michaux's sumac as well.

6.2 Presence in Action Area

In order to determine presence of the species within the Action Area, the NCNHP natural heritage database was searched for known populations, suitable habitat was evaluated, and presence/absence surveys were conducted. Species surveys were conducted within the PSA (ESI 2007). The NCNHP database search was conducted within the entire Action Area and is summarized below.

The NCNHP natural heritage database was accessed using the NC Center for Geographic Information and Analysis to map and evaluate the Natural Heritage EOs of Michaux's sumac within the Action Area (Figure 6) in January 2010. The following table summarizes Michaux's sumac EOs within the Action Area (Table 9).

Table 9. Michaux's Sumac known populations within Action Area (NCNHP 2010)

EO #	EO Rank	Population	Status	Last Observed	Comments
40	H (Historical)	0 plants	Historic	July 21, 1794	This population is considered the type locality for the species (Barden and Matthews 2004) and is mapped as a large area due to difficulty in determining exact location of the population based on the original survey (Buchanan 2010a, NCNHP, pers. comm.). Surveys in 2004 searched along Michaux's route, but no species were found. Little suitable habitat remains (Barden and Matthews 2004).

Specific details of the aforementioned Michaux's sumac population are described below with regard to location within the project alignment, FLUSA, or Conservation Area within the Action Area.

6.2.1 Project Alignment

A search of NCNHP records database (Table 9, Section 6.2) within the proposed project alignment concluded that there are no known populations within the proposed limits of the RPA ROW. Field surveys were conducted in areas of suitable habitat within the proposed project alignment, as described below.

Field Surveys

Surveys for federally threatened and endangered plant species were conducted by ESI within the PSA, or "project study area." At the time of the surveys in 2007, several DSAs were under consideration and the PSA included an area greater than the RPA, but a much smaller area than the FLUSA (Figure 8). Survey methodologies and results are included in a Nov. 15, 2007 Endangered Plant Survey Update letter (ESI 2007) while pertinent details are summarized below.

Prior to initiating the field surveys, the NCNHP database was reviewed to determine the location of any known populations of Michaux's sumac within the PSA. No known populations were identified by NCNHP within the PSA. Aerial photograph reviews and GIS analyses of local soils, topography and land use database layers were conducted to evaluate potential suitable habitat. The PSA was segregated into "high", "moderate", and "low" habitat probability areas based on known habitat preferences of Michaux's sumac. Field surveys were then conducted in areas of high and moderate probability throughout the entire PSA. Areas of low probability were only surveyed if conditions warranted review due to a change of conditions from the GIS or aerial photograph reviews. Field surveys were primarily conducted along all maintained rights of way

(utility lines, sewer lines, roads, trails, etc.), field edges, and other areas of disturbance that appeared to be maintained in natural, early successional stages.

Field surveys were conducted by ESI biologists; their credentials are included in Appendix IV. The biologists reviewed one reference Michaux's sumac population, the Marston Site (EO# 11) near Rockingham Raceway in Richmond County, NC, on September 19, 2007 (Petitgout 2010a, pers. comm.). The population was reviewed to determine the specific habitat conditions present and to confirm fruiting status prior to initiating field surveys. Field surveys in the PSA were conducted prior to the first frost on the following dates: September 24-28, October 1-5, October 8-12, and October 15-17, 2007 (Petitgout 2010a, pers. comm.). All high priority areas were systematically surveyed by walking overlapping transects.

No Michaux's sumac populations were identified during the 2007 field surveys within the PSA. Based on the results of this survey and the NCNHP natural heritage database search, there are no known documented occurrences of Michaux's sumac within the proposed project alignment.

6.2.2 FLUSA

A review of NCNHP (2010) natural heritage database records indicated one known occurrence (EO# 40) of Michaux's sumac within the FLUSA (Table 9, Section 6.2; Figure 6).

EO# 40

EO# 40 is actually the type locality of Michaux's sumac, as André Michaux discovered it here on July 21, 1794 (Barden and Matthews 2004). This site is located along the southwestern portion of the FLUSA, "probably…no more than a mile or two north of New Town Road (SR 1315), probably along Providence Road (NC 16) or Antioch Church Road (SR 1338)" (Barden and Matthews 2004). Although Michaux described the type locality as Mecklenburg County, this location is now in Union County, which was formed in 1842 from portions of Mecklenburg County and Anson County. As such, the type locality for this species occurs in Union County (Barden and Matthews 2004). The EO is mapped by NCNHP as an area rather than an exact location due to difficulty in determining the exact location of the population based on the original survey (Buchanan 2010a, pers. comm.). Barden and Matthews (2004) spent two days searching along Michaux's route for the population, but did not find the species as little suitable habitat remains. NCNHP (2010) currently ranks this population as "historical", which indicates a lack of recent field information verifying the existence of the EO; this EO is based only on historical collections data.

6.2.3 Conservation Areas

Proposed conservation areas do not occur outside of the alignment or the FLUSA.

7.0 ENVIRONMNETAL BASELINE – SMOOTH CONEFLOWER

This section discusses the characteristics and current status of the smooth coneflower throughout its range and within the proposed action area. A 5-year status review was initiated for this species in 2008; however, the review has not been published as of the date of this report. As such, most of the following text references data from the draft 5-year status review, obtained through personal communication with Mr. Dale Suiter, USFWS, in addition to the 1995 USFWS Recovery Plan for smooth coneflower.

7.1 Species Description

A detailed description of characteristics, habitat requirements, legal status, and primary threats to the species are summarized below.

7.1.1 Designation (Legal Status)

Smooth coneflower was federally listed as endangered on October 8, 1992, under provisions of the Endangered Species Act of 1973 (as amended) (FR 57(196):46340-46344) (USFWS 1992c). Currently there is no critical habitat designated for smooth coneflower.

7.1.2 Characteristics

Smooth coneflower was described from material collected in South Carolina by Boynton and Beadle (1903). It is a rhizomatus perennial herb that grows up to 1.5 meters tall from a vertical root stock and the stems are typically smooth, with few leaves (USFWS 1995). The largest leaves are the basal leaves, reaching 20 cm long and 7.5 cm wide, with long petioles, an elliptical to broadly lanceolate shape, tapering to the base. Texture of the basal leaves is smooth to slightly rough. The midstem leaves, if present, have shorter petioles and are smaller than the basal leaves. Flower heads are usually solitary, consisting of light pink to purplish ray flowers, usually drooping at a length of 5 to 8 cm (USFWS 1995). Disk flowers are approximately 5 mm long and have tubular purple corollas and with generally erect, short, triangular teeth (USFWS 1995, NatureServe 2010).

Information is limited on the life history and species biology of smooth coneflower. Flowering occurs from May through July, and fruits develop from late June to September (USFWS 1995). The fruit is a gray-brown, oblong-prismatic achene, usually four-angled, and 4 to 4.5 mm long (USFWS 1995). Seeds are 0.5 cm long. Reproduction is generally only by sexual means; however, vegetative reproduction has been reported from some of the southern National Forest populations (USFWS 1995).

The smooth coneflower can be distinguished from its most similar relative, the purple coneflower (*Echinacea purpurea*), by its leaves (USFWS 1995). Smooth coneflower leaves are never cordate (heart-shaped) like those of the purple coneflower. In addition, the chaffy scales at the base of the fruit in the smooth coneflower are incurved, while those of the purple coneflower are straight. The vertical rootstock of smooth coneflower also distinguishes itself from purple coneflower, which typically has a horizontal rootstock (USFWS 1995).

7.1.3 Distribution and Habitat Requirements

Smooth coneflower is endemic to the Piedmont or Mountain physiographic provinces. At the time of its listing in 1995, 24 known populations of smooth coneflower was distributed across Virginia, North Carolina, South Carolina, and Georgia (USFWS 1995). As of 2009, there are 23 extant populations in Georgia, eight in North Carolina, 28 in South Carolina, and 16 in Virginia (Suiter 2010b, pers. comm.). Extant populations of smooth coneflower in the Carolinas are located in Durham, Granville, and Mecklenburg Counties, North Carolina (Buchanan 2010b, pers. comm.) and Allendale, Anderson, Barnwell, Oconee, Pickens, and Richland Counties, South Carolina (Holling 2010, pers. comm.).

Smooth coneflower populations naturally occur in xeric hardpan forests and diabase glades natural communities in North Carolina (as described by Schafale and Weakley 1990), in dolomite woodlands or glades natural communities in Virginia (as described by Rawinski 1994) (USFWS 1995) and in distinct physiographic provinces / habitats in open woodlands over marble, sandy loams, chert, and amphibolites in South Carolina (Suiter 2010b, pers. comm.). Smooth coneflower is typically found in open woods, cedar barrens, roadsides, clear cuts, dry limestone bluffs, and periodically maintained utility ROWs (USFWS 1995, Suiter 2010b pers. comm.). The species is usually found on soils rich in magnesium and/or calcium, associated with amphibolite, dolomite, or limestone, gabbro, diabase, and marble (USFWS 1995).

Optimal sites for smooth coneflower include areas with abundant sunlight and little competition in the herbaceous layer, with periodic disturbance (historically by natural fires and large herbivores) to reduce the shade and competition of woody plants (USFWS 1995).

7.1.4 General Threats to Species

Smooth coneflower is threatened range-wide by the suppression of fire and ecological succession (competition/shading by woody species) that occurs in areas not burned on a regular basis (USFWS 1995; Suiter 2010b, pers. comm.). Additional threats include timber operations as well as intensive maintenance of utility ROW populations (herbicide use and/or mowing during critical growth periods). Also a threat to this species, but to a lesser degree, is habitat modification and/or destruction resulting from land conversion or highway construction and residential, commercial, and industrial development (Suiter 2010b, pers. comm.).

7.1.5 Roadway-Related Threats to Species

A number of potential direct and indirect effects to plant species resulting from road construction projects were evaluated for this BA. These potential effects are discussed in Section 5.1.5 for Schweinitz's sunflower, and are applicable to smooth coneflower as well.

7.2 Presence in Action Area

In order to determine presence of the species within the Action Area, the NCNHP natural heritage database was searched for known populations, suitable habitat was evaluated, and presence/absence surveys were conducted. Species surveys were conducted within the PSA (ESI 2007). The NCNHP database search was conducted within the entire Action Area and is summarized below.

The NCNHP natural heritage database was accessed using the NC Center for Geographic Information and Analysis to map and evaluate the Natural Heritage EOs of smooth coneflower within the Action Area (Figure 6) in January 2010. No smooth coneflower EOs are located in the Action Area (NCNHP 2010).

Specific details are described below with regard to smooth coneflower within the project alignment, FLUSA, or Conservation Area within the Action Area.

7.2.1 Project Alignment

A search of NCNHP natural heritage database within the proposed project alignment concluded that there are no known populations within the proposed limits of the project alignment. Field surveys were conducted in areas of suitable habitat within the proposed project alignment, as described below.

<u>Field Surveys</u>

Surveys for federally threatened and endangered plant species were conducted by ESI within the PSA, or plant survey "project study area." At the time of the surveys in 2007, several DSAs were under consideration and the PSA included an area greater than the preferred alternative alignment, but a much smaller area than the FLUSA (Figure 8). Survey methodologies and results are included in a Nov. 15, 2007 Endangered Plant Survey Update letter (ESI 2007) while pertinent details are summarized below.

Prior to initiating the field surveys, the NCNHP database was reviewed to determine the location of any known populations of smooth coneflower within the PSA. No known populations were identified by NCNHP within the PSA. Aerial photograph reviews and GIS analyses of local soils, topography and land use database layers were conducted to evaluate potential suitable habitat. The PSA was segregated into "high", "moderate", and "low" habitat probability areas based on known habitat preferences of smooth coneflower. Field surveys were conducted in areas of high and moderate probability

throughout the entire PSA. Areas of low probability were only surveyed if conditions warranted review due to a change of conditions from the GIS or aerial photograph reviews. Field surveys were primarily conducted along all maintained rights of way (utility lines, sewer lines, roads, trails, etc.), field edges, and other areas of disturbance that appeared to be maintained in natural, early successional stages.

Field surveys were conducted by ESI biologists; their credentials are included in Appendix IV. The biologists reviewed two reference smooth coneflower populations in Mecklenburg County, NC, the Shuffletown site (EO# 20) on June 11, 2007, and McDowell Prairie site on September 18, 2007 (Petitgout 2010a, pers. comm.). The population was reviewed to determine the specific habitat conditions present and to confirm fruiting status prior to initiating field surveys. Field surveys in the PSA were conducted prior to the first frost on the following dates: September 24-28, October 1-5, October 8-12, and October 15-17, 2007 (Petitgout 2010a, pers. comm.). All high priority areas were systematically surveyed by walking overlapping transects.

No smooth coneflower populations were identified during the 2007 field surveys within the PSA. Based on the results of this survey and the NCNHP natural heritage database search, there are no known documented occurrences of smooth coneflower within the proposed project alignment.

7.2.2 FLUSA

A review of NCNHP (2010) natural heritage database indicated no documented occurrences of smooth coneflower within the FLUSA.

7.2.3 Conservation Areas

Proposed conservation areas do not occur outside of the alignment or the FLUSA.

8.0 EFFECTS OF PROPOSED ACTION– CAROLINA HEELSPLITTER AND CRITICAL HABITAT

Potential effects to the freshwater mussels (i.e. Carolina heelsplitter) and mussel habitat discussed in Sections 4.1 and 4.3 were thoroughly evaluated with regard to this project. In order to determine the project effects on the Carolina heelsplitter and its designated Critical Habitat, effects with and without the proposed project (Build vs. No-Build scenarios) were evaluated.

While it is documented that both populations of this species in the Action Area are critically imperiled, adverse effects to these populations associated with the proposed project are unlikely to occur.

8.1 Direct Effects

Based on mussel survey data and habitat evaluations, the Carolina heelsplitter does not occur in any of the waterbodies within the project corridor of the proposed action. However, because of proximity to the project corridor, the contractor may use areas within the Goose Creek and Sixmile Creek watersheds for staging, storage, refueling, borrow pit or spoil areas. Although buffer areas of intermittent or perennial streams within these watersheds would be excluded from being used for borrow/spoil per the Goose Creek Watershed Site Specific Management Plan and the similar post construction ordinance requirements for the Sixmile Creek watershed, borrow/spoil areas outside of the buffers still have the potential to affect water quality and in turn the Carolina heelsplitter from sedimentation,/erosion and introduction of toxic compounds from entering streams via un-regulated storm-water channels, ditches, and overland runoff. The potential for these effects to occur can be eliminated, or minimized by developing measures to control sedimentation, erosion and introduction of toxic compounds from entering streams in these areas. Additionally, although NCTA has committed to not creating staging areas, equipment storage areas, and refueling areas within Goose Creek or Sixmile Creek watersheds for this project (Final EIS Section PC), these areas may be located at pre-existing facilities within those watersheds. If any construction staging, storage, refueling, borrow pit or spoil areas are chosen within the Goose Creek or Sixmile Creek watersheds, the NCDOT Division Environmental Officer will coordinate with the NCTA and USFWS and the contractor to develop BMPs for each site to avoid/minimize the potential for adverse effects (Final EIS Section PC).

8.2 Indirect Effects

Potential project related indirect effects to the Carolina heelsplitter and Critical Habitat that were evaluated include induced land development, and changes in traffic patterns.

8.2.1 Induced Land Development

As discussed in Section 4.3.2.1, roadway construction can influence land use and result in development that would not occur without the road (induced development). While land development itself does not affect freshwater mussels and their habitat, increases in sediment loads and certain pollutants, alterations in flow regime (base flow and peak discharge) and loss of riparian buffers are consequences of development that lead to water quality degradation. How these consequences of land development affect water quality and ultimately freshwater mussels is discussed in Sections 4.1.4 and 4.1.5 of this report.

To assess the indirect induced land use development effects of project construction on the Carolina heelsplitter and its Critical Habitat, projections of quantifiable parameters which are consequences of land development were evaluated in a Quantitative ICE for the year 2030 with and without the project being built (build vs. no-build scenarios) (Baker Engineering 2010). These parameters included amount of and change in level of impervious surface area within the respective watersheds, (Sections 5.1 and 5.2 in Baker

Engineering 2010), annual streamflow (water quantity), total suspended sediment and pollutant loadings of nitrogen, phosphorus, and fecal coliform (Tables 15-21 in PBS&J 2010b). The use of these parameters was discussed at several TEAC meetings with the regulatory agencies (see Section 1.2 of this report) while other indicators (e.g. copper) were not used due to various factors, such as lack of available data. The effects of these parameters on the Carolina heelsplitter and stream habitat were discussed in Sections 4.1.4 and 4.1.5 of this report. While these parameters were projected throughout the FLUSA, only the results within the Goose Creek and Sixmile Creek watersheds were considered in the BA, as these are the only two watersheds in the Action Area that support the Carolina heelsplitter. Figure 9A depicts changes in land use projected to occur under the 2030 No Build scenario as compared to the current Baseline condition, independent of the Monroe Connector/Bypass.

Methodology and results of the land use and impervious surface estimation can be found in Sections 3.3, 3.4, and 4.1 of the Quantitative ICE (Baker Engineering 2010). The land use forecasts were developed using recommended methods as described in NCDOT ICE Guidance, specifically, the Socioeconomic Forecasts developed by MUMPO; therefore, the results are only as accurate as those forecasts. The quantities of projected development and associated levels of imperviousness rely on assumptions about development density and associated assumptions (Section 3.6 in Baker Engineering 2010). The accuracy and certainty of the results of the analyses are described in Section 3.6 of the Quantitative ICE. Throughout the report, Baker Engineering (2010) notes where choices in methodology were necessary, the path chosen led to results that would be conservatively high, rather than potentially underestimating effects.

8.2.1.1 Impervious Surface Area

The Quantitative ICE indicates continued development will occur throughout the Action Area, which is expected to result in subsequent increases in percentage of impervious surface area in both Goose Creek and Sixmile Creek watersheds (Section 5.2 in Baker Engineering 2010). This development will occur at similar levels with and without an interchange at US 601 (Section 5.2 in Baker Engineering 2010). As discussed previously (Section 4.1.5.1), current levels of imperviousness in the Goose Creek and Sixmile Creek watersheds are 13% and 25%, respectively (Table 16 in Baker Engineering 2010), which far exceed the NCWRC recommendations (NCWRC 2003) of 6% for management of sensitive aquatic species. The amount of imperviousness is expected to continue increasing, with levels of 17% and 30% for Goose Creek and Sixmile Creek, respectively, projected for year 2030 No Build (Table 16 in Baker Engineering 2010), which will significantly affect the continued viability of these populations. However, our analysis indicates that these changes are independent of the project as there are no measurable changes in the level of imperviousness between build and no-build scenarios (Table 16 in Baker Engineering 2010). The Quantitative ICE predicts project-induced changes (increases) in amount of impervious surface area to the Rays Fork, Richardson Creek, Stewarts Creek and Crooked Creek watersheds; however, as discussed in Section 4.4.3, the Carolina heelsplitter does not occur within these watersheds (Figure 10A).

A previous ICE analysis for this project (HNTB 2003) predicted induced development to occur within a five to seven mile radius from each of the proposed interchanges, which extended into the Goose Creek watershed. The Qualitative ICE predicted a "low" potential for induced growth in the Goose Creek watershed, and no potential in the Sixmile Creek watershed (Table 9 in HNTB 2009). However, the rapid growth that has occurred in this area, along with various zoning regulations that have been put in place since the 2003 study have exhausted some of the growth potential (Baker Engineering 2009; 2010). This results in more and/or higher density development occurring closer the proposed roadways. While differences in baseline conditions between the 2003 ICE report (HNTB 2003) and the current ICE report (Baker Engineering 2010) are the main reasons for the differences in outcomes, further discussion with regards to these reasons is included in Baker Engineering (2009), which is included as Appendix V of this BA.

8.2.1.2 Water Quality Parameters

As discussed in Section 4.1, the decline of the Carolina heelsplitter and freshwater mussels in general is directly correlated to water quality and physical habitat degradation. In particular, freshwater mussels, including the Carolina heelsplitter are especially sensitive to sedimentation, ammonia (a form of nitrogen), and changes in water quantity (base flow and peak discharge). A Water Quality ICE was completed for this project (PBS&J 2010b), that incorporated two models (GWLF-E and RUNQUAL-E) to reflect the conditions of the watersheds (rural vs. urban). Both GWLF-E and RUNQUAL-E were used to model streamflow, runoff, and pollutant loading in the Study Area. GWLF-E was employed in rural sub-catchments of the Study Area, while RUNQUAL-E was used in urban subcatchments (PBS&J 2010b).

The Water Quality ICE analysis was performed by constructing watershed models for portions of eighteen 14-digit hydrologic units composing the FLUSA using the ArcView Generalized Watershed Loading Functions (AVGWLF) modeling suite (PBS&J 2010b). Model estimates of annual streamflow, runoff, and annual overland pollutant loadings of total nitrogen, total phosphorus, total suspended sediment, and fecal coliform loads produced from three land use scenarios – Baseline Condition, 2030 No Build, and 2030 Build – were analyzed to assess the project effects (PBS&J 2010b). Specifically, model results of the No Build and the Build scenarios were compared with differences in streamflow and pollutant loadings exhibited between these scenarios attributable to the project (PBS&J 2010b).

While the results of the Water Quality ICE indicate an overall continued degradation of water quality in the Goose Creek and Sixmile Creek watersheds, there are no projected differences between Build vs. No-Build scenarios in year 2030 for annual streamflow (water quantity), runoff, total phosphorus, total nitrogen, total suspended sediment, annual total fecal coliform, and mean fecal coliform (Tables 15-21 in PBS&J 2010b). While the pollutant loadings modeled in this analysis do not include all of the pollutants that were discussed in Section 4.1.4.2, such as copper, chlorine, etc., the sources of these contaminants, like the ones that were modeled, are largely anthropogenic and are reflective of land use. Parameters and indicators used in the models were discussed with

the regulatory agencies at various TEAC meetings (see Section 1.2 of this report). Furthermore, sedimentation and runoff as well as point source discharges are the most common pathways for these other pollutants to enter surface waters; therefore, as discussed above, since there are no projected differences with regard to runoff and sediment load (Tables 16 and 19 in PBS&J 2010b), or development patterns (Table 19 in Baker Engineering 2010) within the Goose Creek and Sixmile Creek watersheds, there would be no projected differences of loadings of these other pollutants build vs. no-build.

The results of the Water Quality ICE (PBS&J 2010b) reflect those of the Quantitative ICE (Baker Engineering 2010) which also concluded no differences in build vs. no-build scenarios with regard to development patterns and impervious surface area in the Goose Creek and Sixmile Creek watersheds. Similarly, the watersheds that have projected increases in streamflow, runoff, and pollutant loadings (Crooked, Richardson-Middle, Rays Fork, Stewarts, Richardson-Lower, and Salem Creeks) (Section 5.0 in PBS&J 2010b), are those where project-induced development and increases in impervious surface area are also projected (Table 16 in Baker Engineering 2010).

8.2.2 Changes in Traffic Patterns

Traffic forecasts indicate that induced traffic volumes are not anticipated through the road networks within the Goose Creek and Sixmile Creek subbasins. In fact, truck traffic volume is projected to decrease on NC 218, which traverses the Goose Creek subbasin, after the proposed roadway is completed (Burris, 2009, pers. comm.). This anticipated decrease in truck traffic volume, will likely reduce the amount of roadway pollutants entering the stream, and lessen the likelihood of toxic spills. Similarly, traffic volumes within the Sixmile Creek watershed are not expected to change as a result of project construction, as travelers in these areas would use other routes to access the Charlotte employment and business sectors (Burris 2010, pers. comm.).

Traffic projections for the 2035 Build scenario show a decrease in average daily traffic (ADT), as well as percentage of truck traffic, on parallel roadways north of the project corridor, including NC 218 (20 percent decrease in ADT) and Lawyers Road (7 percent decrease in ADT), both of which cross the Goose Creek watershed. These forecasts do not account for additional traffic resulting from induced growth from the project; however, the findings of the ICE studies found that there would be no change in total developed acres in the Goose Creek watershed as a result of the project. Therefore, it can be concluded that additional road improvements to facilities in this watershed would not be required as a result of the Build scenario.

8.2.3 Summary of Indirect Effects

As discussed above, both the Quantitative ICE (Baker Engineering 2010) and Water Quality ICE (PBS&J 2010) analyses forecast continued degradation in the Goose Creek and Sixmile Creek watersheds. However, both of these studies also indicate that this degradation will occur with or without project implementation, and are thus not indirect

effects of the project action. While the anticipated decrease in truck traffic through the Goose Creek watershed could be considered a beneficial effect as it will likely reduce the amount of roadway pollutants entering the stream, and lessen the likelihood of toxic spills, given the level of non-project related future development and water quality degradation that is forecast in the watershed, any indirect benefits will be minor to insignificant.

8.3 Cumulative Effects

Although the cumulative definition under ESA differs from that under NEPA, the cumulative analysis was performed using the NEPA definition. Therefore, the cumulative effects discussed in this BA, as defined per ESA, may be somewhat overestimated since the Quantitative ICE analysis included the effects of future federal actions *as well as* non-federal actions.

Future state and private activities, including federal actions, are reasonably certain to occur within the Goose Creek and Sixmile Creek watersheds (Section 6.2 in Baker Engineering 2010) that will continue to impact the Carolina heelsplitter. However, as indicated above, these effects are expected to occur with or without (Build vs. No-build) the proposed action.

8.4 Conclusions of Effects – Carolina heelsplitter

While it is documented that both the Goose Creek and Sixmile Creek populations of the Carolina heelsplitter are imperiled and continue to be threatened by future adverse impacts, direct and indirect effects to these populations are very unlikely to occur as a result of the proposed project.

Direct Effects

As discussed in Section 8.1, the project alignment does not occur within either the Goose Creek or Sixmile Creek watersheds; thus, the only potential direct effects associated with project construction would be sedimentation/erosion and introduction of toxic compounds originating from borrow/spoil areas, staging areas, equipment storage areas, and refueling areas and entering Goose Creek or Sixmile Creek via unregulated stormwater channels, ditches, and overland runoff. At this time the locations of potential borrow/spoil sites staging areas, equipment storage areas, and refueling areas have not been chosen. In the event that any of these sites are selected within either the Goose Creek or Sixmile Creek watersheds, existing regulations excluding stream buffer areas from being used for these purposes, and the commitment to adopt measures to avoid/minimize the potential for adverse effects in non-regulated areas within the respective watersheds make it extremely unlikely (discountable) that project-related direct effects could occur.

Indirect Effects

As summarized in Section 8.2, based on the Quantitative ICE (Section 7 in Baker Engineering 2010), and the Water Quality ICE (Section 5.0 in PBS&J 2010b) analyses, project-related indirect effects in the form of increased impervious surface and increased water quality degradation in the Goose Creek and Sixmile Creek watersheds are not projected to occur. In addition, adverse effects to water quality in the Goose Creek and Sixmile Creek watersheds associated with changes in traffic volumes are also not anticipated as traffic forecasts do not predict project-induced increased traffic volumes on the road networks traversing these watersheds. The projected reduction in volume of truck traffic through the Goose Creek watershed may reduce the amount of roadway pollutants entering the stream and lessen the likelihood of toxic spills, which could be considered a slight beneficial effect. As such, while indirect effects to the Carolina heelsplitter populations in Goose Creek and Sixmile Creek are unlikely to occur or would be discountable (unquantifiable), given the proximity of these two watersheds to the project corridor and the levels of uncertainty inherent in ICE analyses, a "No Effect" determination cannot be concluded.

Biological Conclusion

As discussed above project-related direct effects to the Carolina heelsplitter are extremely unlikely (discountable) to occur, in addition project-related indirect effects to the Carolina heelsplitter are also unlikely to occur, or are discountable. Therefore, it can be concluded that the proposed action **"May Affect, Not Likely to Adversely Affect"** the Carolina heelsplitter.

8.5 Conclusions of Effects-Critical Habitat

Portions of Goose Creek and Duck Creek are designated as critical habitat (Unit 1) for the Carolina heelsplitter (See Section 4.2). As discussed in Section 4.5.2.6, water quality and physical habitat conditions in the Goose Creek watershed have deteriorated in recent years to the extent that the constituent elements may no longer be present. As projected in the Quantitative ICE (Section 7 in Baker Engineering 2010), and the Water Quality ICE (Section 5.0 in PBS&J 2010b) analyses, the amount of impervious surface area and water quality degradation is expected to continue to increase in the Goose Creek watershed. However, these increases are anticipated to occur independently of the proposed action. As concluded in Section 8.4, project-related direct effects to Goose Creek and the Carolina heelsplitter are very unlikely to occur, and potential indirect effects are also very unlikely to occur, or are discountable. Therefore, as adverse effects to Goose Creek are very unlikely to occur, it can be concluded that the proposed action **"May Affect, Not Likely to Adversely Affect"** critical habitat-Unit 1.

8.6 Conservation Measures –Carolina Heelsplitter & Critical Habitat

As stated in the Special Project Commitments (Section PC of PBS&J 2010a), if any construction staging, storage, refueling, borrow pit or spoil areas are to occur in the Goose Creek and Sixmile Creek watersheds, the NCTA will coordinate with the NCDOT DEO, USFWS, and the contractor to develop BMPs for each site to avoid and minimize

the potential for adverse effects. Additionally, NCTA will follow NCDOT's *Design Standards in Sensitive Watersheds* for implementing erosion and sediment control BMPs along the entire project.

As part of the project, NCTA is also proposing to renew the funding of the USGS monitoring station at the US 601 crossing of Goose Creek in Union County. In addition, NCTA is proposing to provide funding to the Carolina Heelsplitter Conservation Bank in the Flat Creek watershed in Lancaster County, South Carolina in the amount of $150,000 to support ongoing research and surveying efforts, as well as protect, manage, and monitor land in the conservation bank. These efforts will serve as conservation measures to further ensure a conservative approach to the analysis of the project's impacts on this species and its habitat.

9.0 EFFECTS OF PROPOSED ACTION – SCHWEINITZ'S SUNFLOWER

Potential roadway project-related effects to Schweinitz's sunflower discussed in Section 5.1.1 were evaluated. While populations that occur within the Action Area are vulnerable to future land-use activities, adverse impacts to populations ESI 1 and EO# 77 can be avoided through conservation and population management (Section 9.5, Conservation Measures). In addition, anticipated cumulative effects to EO# 18 and EO# 78 are expected to occur independently of the proposed action.

9.1 Direct Effects

There is suitable habitat for Schweinitz's sunflower in the project alignment; however, there are no known populations within the proposed project alignment, ROW, or clearing limits. Based on NCNHP (2010) EO data as well as project study area surveys (ESI 2007) there are two populations of this species (ESI 1 and EO# 77) within approximately 500 feet of the proposed project alignment in the vicinity of Interchange 3 (Indian Trail-Fairview Road). During the early stages of the roadway development, design changes were made in concert with resource agencies to minimize the footprint of Interchange 3 (Indian Trail-Fairview Road) to avoid encroachment on these two populations (Appendix II). NCTA has further committed to preserving and managing these populations during construction in Section PC (Special Project Commitments) of the Final EIS (PBS&J 2010a).

Though these two populations are located partly within the Union Power utility ROW, it was determined that the only effect of the roadway on the utilities was that the wires above EO #77 would be raised, but kept in the same location (Shumate 2010, NCTA, pers. comm.). Union Power agreed to manage the populations in their utility easement per their agreement with USFWS: Union Power's Schweinitz's Sunflower Restricted Sites Plan (Union Power 2010) (Appendix VI).

Therefore, direct effects to Schweinitz's sunflower are not anticipated to occur as a result of the proposed project.

9.2 Indirect Effects

A Quantitative ICE was prepared for the Monroe Connector/Bypass which evaluated the current (year 2007) land use baseline condition (Baseline) and future year 2030 conditions, including a "No Build" scenario if the project was not constructed, and "Build" scenario if the recommended preferred alternative is constructed (Baker Engineering 2010). Changes in land use resulting from reasonably foreseeable infrastructure projects combined with project-related effects as described in the Quantitative ICE may potentially result in effects to Schweinitz's sunflower. The Quantitative ICE indicates a significant increase in development and residential growth throughout the FLUSA regardless of construction of the proposed project (Figure 14 in Baker Engineering 2010). Figure 9B depicts changes in land use projected to occur under the 2030 No Build scenario as compared to the current Baseline condition, independent of the Monroe Connector/Bypass. Residential development is expected to replace current undeveloped land use in the vicinity of Schweinitz's sunflower populations EO# 77, ESI 1, and EO# 18 while industrial development is expected to replace current undeveloped land use in the vicinity of EO# 78 (Figure 14 in Baker Engineering 2010). No measurable difference between the No Build and Build scenarios is anticipated in the vicinity of EO# 18 or EO# 78 (Figure 15 in Baker Engineering 2010) (Figure 10B). Thus, while these two populations are expected to be impacted by future changes in land use, these impacts will occur independently of the proposed action.

The projected changes in future land use that are dependent on the Monroe Connector/Bypass are concentrated in the vicinity of proposed interchanges (Baker Engineering 2010) (Figure 10B). Two populations (ESI 1 and EO# 77) are situated close to Interchange 3 (Indian Trail-Fairview Road) where variations in future land use are expected (Figure 15 in Baker Engineering 2010). These projected variations in land use include changes from residential to commercial and undeveloped to light industrial / office.

Both ESI 1 and EO# 77 occur in maintained utility (Union Power) and NCDOT ROWs. While these specific locations are not anticipated to incur changes in land use, due to the proximity of these populations to areas projected to incur induced changes in land use, ESI 1 and EO# 77 could potentially be indirectly affected, as they have an increased risk of degradation due to the projected increase in density of nearby development.

Potential infrastructure-related projects (i.e. sewer, water, utility, road widening) typically associated with induced development were also assessed with regard to potential effects to these populations. Water and sewer service is currently available (Baker Engineering 2010; Cockerhan 2010, Union County Engineering, pers. comm.); therefore, installation of potential future infrastructure for these services is not expected. Also, as described previously, Union Power does not plan to relocate their utility lines in the vicinity of these populations for the Monroe Connector/Bypass (Shumate 2010, pers. comm.). Power line relocation is not typically necessary in response to residential, commercial, or light industrial / office development. Lastly, NCDOT Division 10 recently widened the

shoulders of and resurfaced Secrest Shortcut Road and does not foresee a need for further road widening to accommodate future development (Thompson 2010a, pers. comm.).

Since ESI 1 and EO# 77 are at an increased risk of degradation due to nearby project-induced future development, FHWA and NCTA propose on site preservation of these two populations as a conservation measure to reduce the potential for adverse effects to Schweinitz's sunflower. Relocation of these populations to a local Preserve was considered; however, preservation in place was decidedly a preferable, more suitable option. Reasonably foreseeable unavoidable impacts to these populations are not anticipated with on-site preservation and management. A portion of EO# 77 was already moved to a preserve and is flourishing (HARP 2009). Specific details associated with Schweinitz's sunflower conservation measures are discussed in Section 9.5.

9.3 Cumulative Effects

Although the cumulative definition under ESA differs from that under NEPA, the cumulative analysis was performed using the NEPA definition. Therefore, the cumulative effects discussed in this BA, as defined per ESA, may be somewhat overestimated since the Quantitative ICE analysis included the effects of future federal actions *as well as* non-federal actions.

Future state and private activities, not involving federal actions, are reasonably certain to occur throughout the Action Area, specifically in the vicinity of EO# 18 and EO# 78, which will affect Schweinitz's sunflower (Figure 9B). As described above, the area around EO# 18 is expected to incur a change in land use from undeveloped to residential and the area around EO# 78 is expected to incur a change in land use from undeveloped to industrial, independent of the proposed Monroe Connector/Bypass (Figure 14 in Baker Engineering 2010). The anticipated growth will likely affect these populations through the expansion of residential and industrial development in areas currently undeveloped, thus degrading suitable habitat for Schweinitz's sunflower. Additional development in the vicinity of EO# 78 may include future infrastructure projects (i.e. sewer and water expansion) associated with the anticipated land use changes since this area is currently slated for future County sewer service. This future growth is expected to occur through future state, local, and private actions, not requiring federal permits or funds to complete.

Reasonably foreseeable small-scale adverse effects to Schweinitz's sunflower may also occur within the Action Area; however, they are difficult to predict or quantify. Poor conservation management of the species at EO# 77 by the landowner has occurred in the past, namely excessive mowing (Thompson 2010b, pers. comm.). In addition, a past traffic accident caused habitat degradation in the vicinity of EO# 77 (Thompson 2010b, pers. comm.). The NCDOT has since widened Secrest Shortcut Road, which will likely aid in minimizing minor traffic accidents.

9.4 Conclusion of Effects

Direct and indirect effects to these populations of Schweinitz's sunflower are unlikely to occur as a result of the proposed project.

Direct Effects

As discussed in Section 9.1, the project alignment does not occur within the bounds of any known Schweinitz's sunflower populations; therefore, the only potential direct effects associated with the proposed project include the raising of the utility lines above EO# 77, which is not anticipated to adversely affect this population. Given the proximity of these two populations to the project corridor, NCTA has committed to taking extra precautions, such as installing construction fencing around these populations, to ensure construction activities (e.g. worker parking, etc.) do not affect these populations. The Special Project Commitments of the Final EIS (Section PC; PBS&J 2010a) further detail NCTA's commitment to avoid/minimize the potential for project-related adverse direct effects to Schweinitz's sunflower.

Indirect Effects

As summarized in Section 9.2, and based on the results of the Quantitative ICE (Section 7 and Figure 15 in Baker Engineering 2010), indirect effects to Schweinitz's sunflower in the form of project-related changes in land use may potentially occur. Two populations (ESI 1 and EO# 77) are situated close to Interchange 3 (Indian Trail-Fairview Road), where variations in future land use are expected (Figure 15 in Baker Engineering 2010). However, the specific locations of these populations are not anticipated to incur changes in land use (Figure 10B). The proximity of these populations to the interchange could potentially result in ESI 1 and EO# 77 being indirectly affected, as they have an increased risk of degradation due to the projected increase in density of nearby development.

In an effort to minimize the potential for adverse effects to these populations, FHWA and NCTA propose on site preservation of these two populations as a conservation measure. Reasonably foreseeable unavoidable impacts to these populations are not anticipated with on-site preservation and management.

Biological Conclusion

As discussed above, project-related direct and indirect effects to Schweinitz's sunflower are extremely unlikely to occur (or are discountable). Potential effects are anticipated to be avoided by on-site preservation and management, the details of which are provided in Section 9.5. Upon implementation of these conservation measures, it can be concluded that the proposed action "**May Affect, Not Likely To Adversely Affect"** Schweinitz's sunflower.

9.5 Schweinitz's Sunflower Conservation Measures

The Recovery Plan for Schweinitz's sunflower lists several actions needed for the conservation of the species. This includes surveying suitable habitat for additional populations and potential reintroduction sites, protecting known remnant populations and viable populations through various protective management tools (i.e. management and cooperative agreements, acquisition of parcels containing preferred habitat, etc.), monitoring existing populations, conducting research, and implementing management plans on protected populations (USFWS 1994).

Conservation measures are those measures that can be taken to offset potential adverse effects to a protected species. Conservation measures for plant species typically fall into two categories: (1) Protection of extant populations through the use of management / cooperative agreements, and (2) relocation of extant populations to areas where they can be preserved and maintained. Conservation, relocation, or preservation of known populations may help alleviate potential direct, indirect, and cumulative effects to plant species within the Action Area.

The conservation measure of preference is almost always to preserve the species in place, with relocation / transplanting being a viable alternate option if on site preservation is not feasible. After evaluating all of the potential effects, NCTA and FHWA determined on site preservation of ESI 1 and EO# 77 to be a feasible, preferable option, which conserves the species in its present habitat within the Action Area. This population has flourished at its current location, despite the past instances of excessive maintenance by the local landowner, a traffic accident, and even removal and relocation of the original population. The impressive re-growth of EO# 77 leads to the determination of on site preservation as the conservation measure for the species.

9.5.1 On Site Preservation

NCDOT has been protecting roadside populations of rare plants since 1989, marking these populations in order to prevent them from being mowed (AASHTO 2009). NCDOT signed a Memorandum of Understanding (MOU) with NCDENR in 1990 that committed NCDOT to protect populations of threatened and endangered species that occur within NCDOT ROW. Working to protect roadside populations of federal and state-listed endangered and threatened species, NCDOT established general statewide management guidelines for areas marked for rare species (Appendix VII).

On site preservation of ESI 1 and EO# 77 will be the responsibility of NCTA / NCDOT. Funds will be designated for the resources and labor to mark the extent of both populations with "Do Not Mow" signs. Additionally, NCDOT Division personnel and field maintenance crews will conduct vegetation management and maintenance activities per "NCDOT Roadside Vegetation Management Guidelines in Marked Areas" (Appendix VII; AASHTO 2009). Now that NCDOT is aware of the resurgence of EO# 77, the signs will be re-established and future mowing will conform to the

aforementioned vegetation management guidelines. NCDOT Division 10 has committed to preserving the species in place (NCTA 2010a).

NCTA has also notified Union Power of these populations (NCTA 2010b) and Union Power has committed to including these sites in their Schweinitz's Sunflower Restricted Sites plan (Ortiz 2010, Union Power, pers. comm.) (Appendix VI). Letters from NCTA to Division 10 and Union Power requesting onsite preservation are included in Appendix VIII.

In addition, continued NCDOT management of EO# 78 and EO# 18 within the ROW, per "NCDOT Roadside Vegetation Management Guidelines in Marked Areas" as well as continued Union Power management of these populations, would lessen the likelihood of the anticipated impacts to these populations. Union Power currently manages these populations under their Schweinitz's Sunflower Restricted Sites plan.

10.0EFFECTS OF PROPOSED ACTION – MICHAUX'S SUMAC

All potential roadway project-related effects to Michaux's sumac discussed in Section 5.1.5 were thoroughly evaluated. The effects of the proposed action on Michaux's sumac are discussed below.

10.1 Direct Effects

Based on NCNHP (2010) Natural Heritage EO data as well as project study area surveys (ESI 2007), Michaux's sumac is not currently known within the proposed project alignment, ROW, or clearing limits. As such, direct effects to Michaux's sumac are not anticipated.

10.2 Indirect Effects

Based on NCNHP (2010) Natural Heritage EO data as well as project study area surveys (ESI 2007), Michaux's sumac is not currently known within the Action Area. Therefore, indirect effects to Michaux's sumac are not anticipated.

10.3 Cumulative Effects

Cumulative effects to Michaux's sumac are not anticipated as neither direct nor indirect effects are anticipated to occur to this species as a result of the proposed action.

10.4 Conclusion of Effects

Based on NCNHP (2010) Natural Heritage EO data as well as project study area surveys (ESI 2007), Michaux's sumac is not known within the Action Area, and therefore the project is anticipated to have **No Effect** on this species.

11.0EFFECTS OF PROPOSED ACTION – SMOOTH CONEFLOWER

All potential roadway project-related effects to smooth coneflower discussed in Section 5.1.5 were thoroughly evaluated. The effects of the proposed action on smooth coneflower are discussed below.

11.1 Direct Effects

Based on NCNHP (2010) Natural Heritage EO data as well as project study area surveys (ESI 2007), smooth coneflower is not currently known within the proposed project alignment, ROW, or clearing limits. As such, direct effects to smooth coneflower are not anticipated.

11.2 Indirect Effects

Based on NCNHP (2010) Natural Heritage EO data as well as project study area surveys (ESI 2007), smooth coneflower is not currently known within the Action Area. Therefore, indirect effects to smooth coneflower are not anticipated.

11.3 Cumulative Effects

Cumulative effects to smooth coneflower are not anticipated as neither direct nor indirect effects are anticipated to occur to this species as a result of the proposed action.

11.4 Conclusion of Effects

Based on NCNHP (2010) Natural Heritage EO data as well as project study area surveys (ESI 2007), smooth coneflower is not known within the Action Area, and therefore the project is anticipated to have **No Effect** on this species.

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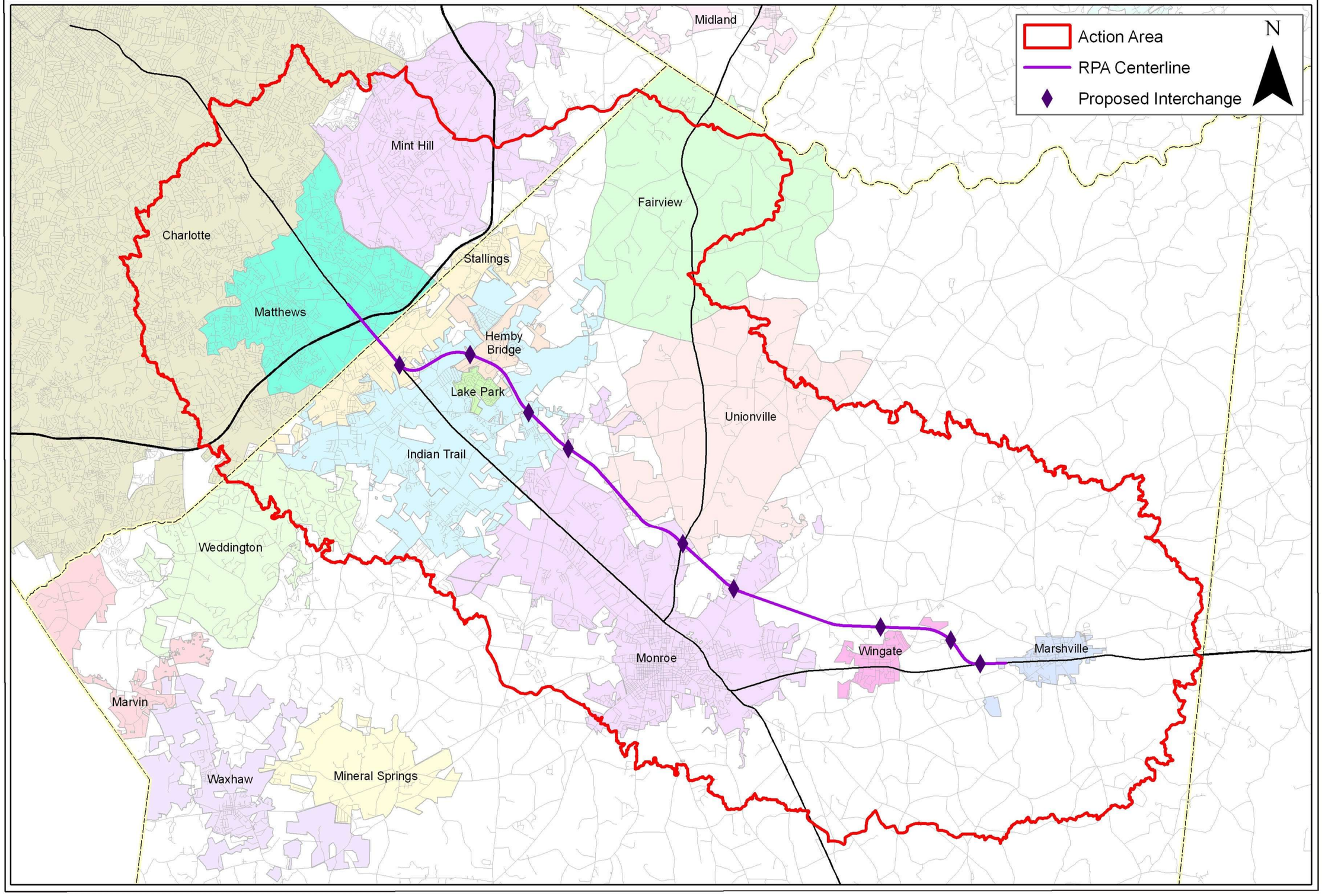


The Catena Group

Date: February 2010

Scale: 0 1 2 Miles

Job No.: 1125

Title:

Monroe Connector/Bypass (R-3329/R-2559)

Action Area

Mecklenburg and Union Counties, North Carolina

Client:

North Carolina Turnpike Authority

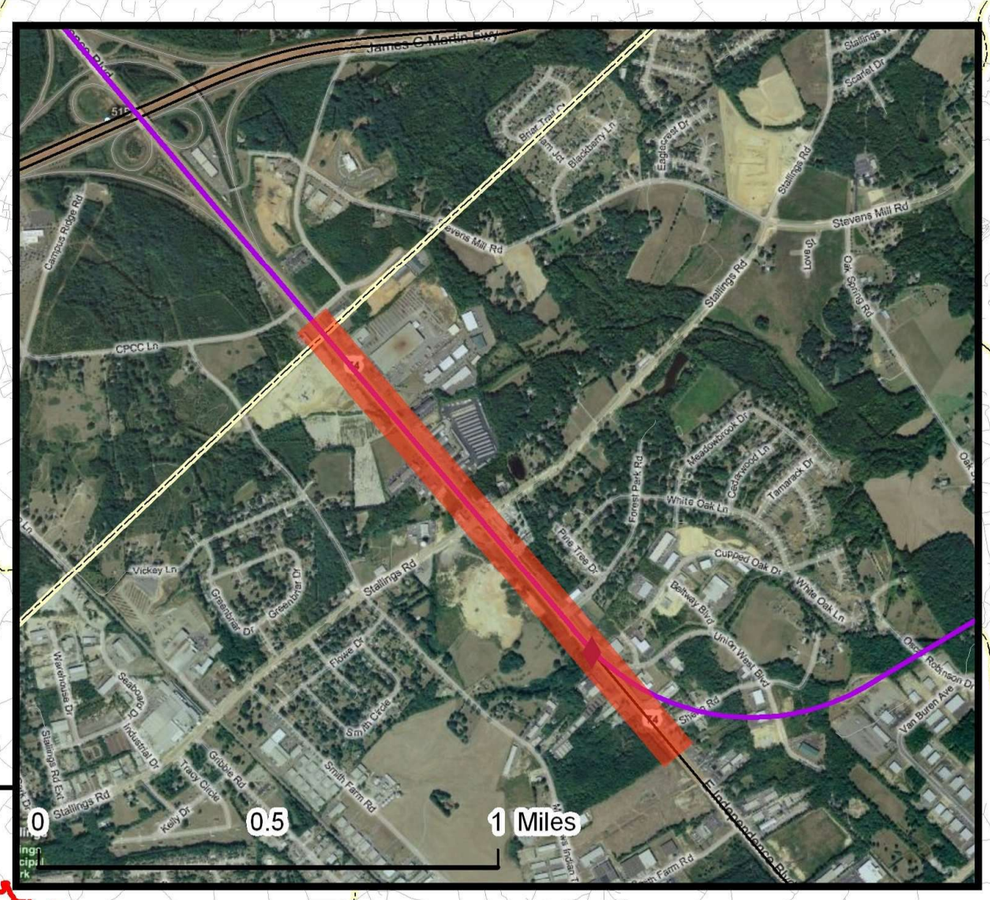
Figure

1

Action Area
US 74 Upgrades
RPA Centerline
Proposed Interchange

N

Midland
Mint Hill
Fairview
Charlotte
Stallings
Matthews
Hemby Bridge
Lake Park
Unionville
Indian Trail
Weddington
Monroe
Wingate
Marshville
Marvin
Waxhaw
Mineral Springs



The Catena Group

Date: April 2010

Scale: 0 1 2 Miles

Job No.: 1125

Title:

Monroe Connector/Bypass (R-3329/R-2559)

US 74 Upgrade to Controlled-Access Facility with FrontageRoads

Mecklenburg and Union Counties, North Carolina

Client:

North Carolina Turnpike Authority

Figure

1A

N

Carolina Heelsplitter Critical Habitat

Schweinitz's Sunflower
ESI 1
Status: Extant

Schweinitz's Sunflower
Status: Extant
EO#: 77

Schweinitz's Sunflower
Status: Extant
EO#: 18

Schweinitz's Sunflower
ESI 1
Status: Extant

Schweinitz's Sunflower
Status: Extant
EO#: 77

Upstream Extent of Carolina Heelsplitter in Six Mile Creek Watershed

Schweinitz's Sunflower
Status: Extant
EO#: 78

- Action Area
- Six Mile Creek Watershed
- Goose Creek Watershed
- Stream
- Road
- Centerline
- Extent of Pavement
- Right of Way
- Carolina Heelsplitter Critical Habitat
- Schweinitz's Sunflower

The Catena Group

Date: March 2010

Scale: 0 1 2 Miles

Job No.: 1125

Title:

Monroe Connector/Bypass (R-3329/R-2559)

Project Proximity to Endangered Species and Critical Habitat

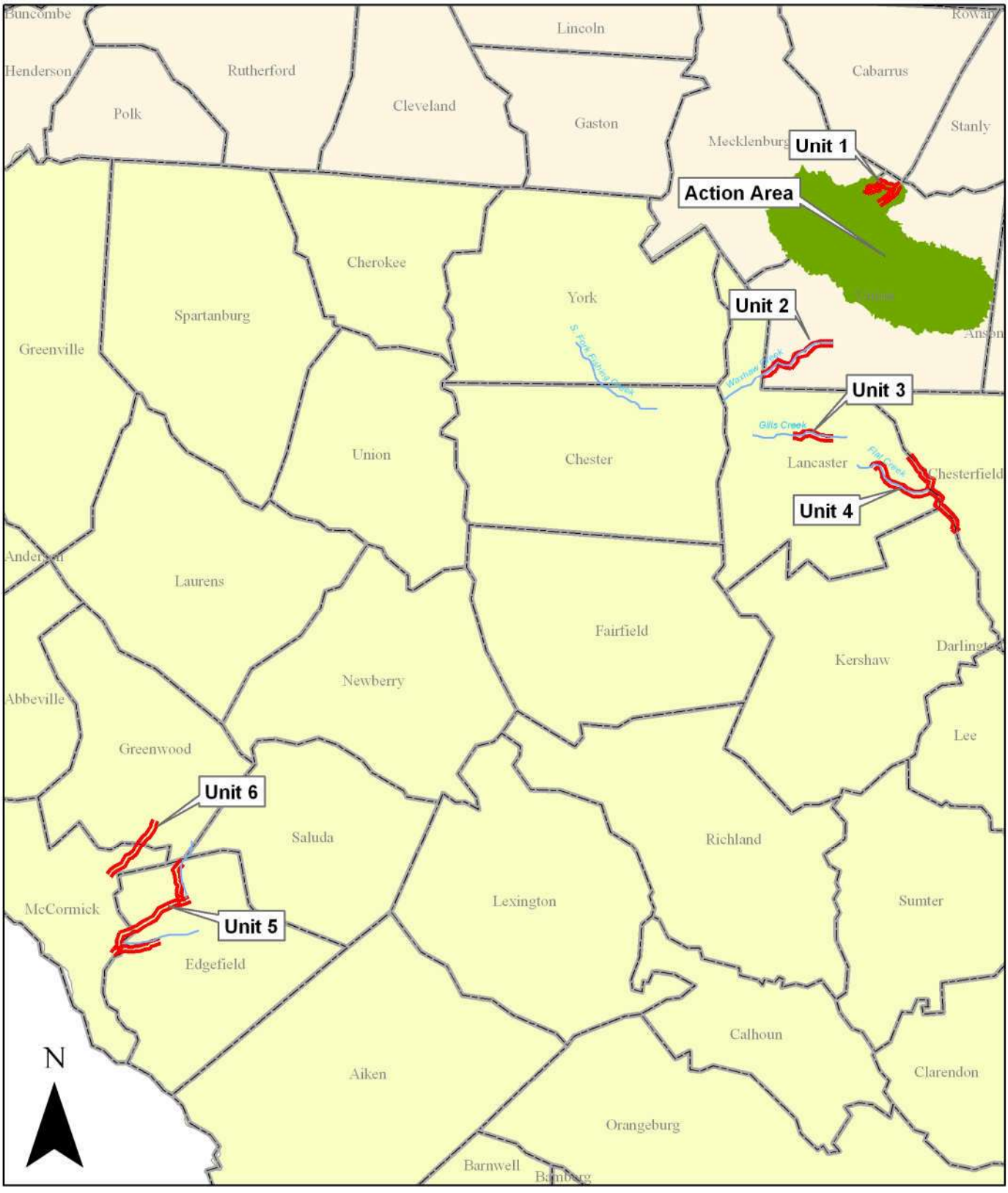
Mecklenburg and Union Counties, North Carolina

Client:

North Carolina Turnpike Authority

Figure

2



The Catena Group

Monroe Connector/Bypass (R-2239/R-2559)

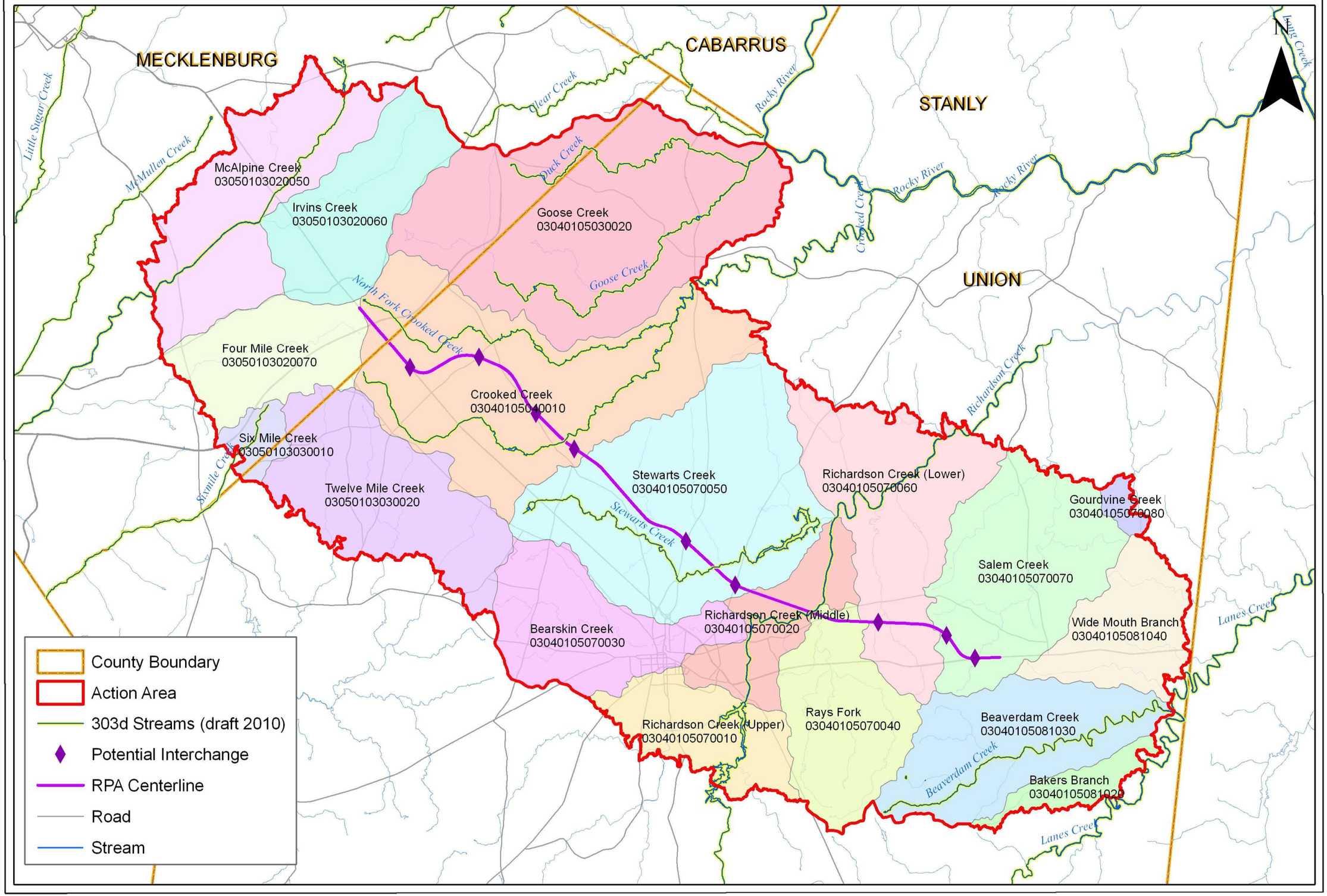
Carolina Heelsplitter
USFWS Critical Habitat Units
North and South Carolina

Date: March 2010

Scale: 0 5 10 Miles

Job No.: 1125

Figure 3



The Catena Group

Date: February 2010

Scale: 0 1 2 Miles

Job No.: 1125

Title:

Monroe Connector/Bypass (R-3329/R-2559)

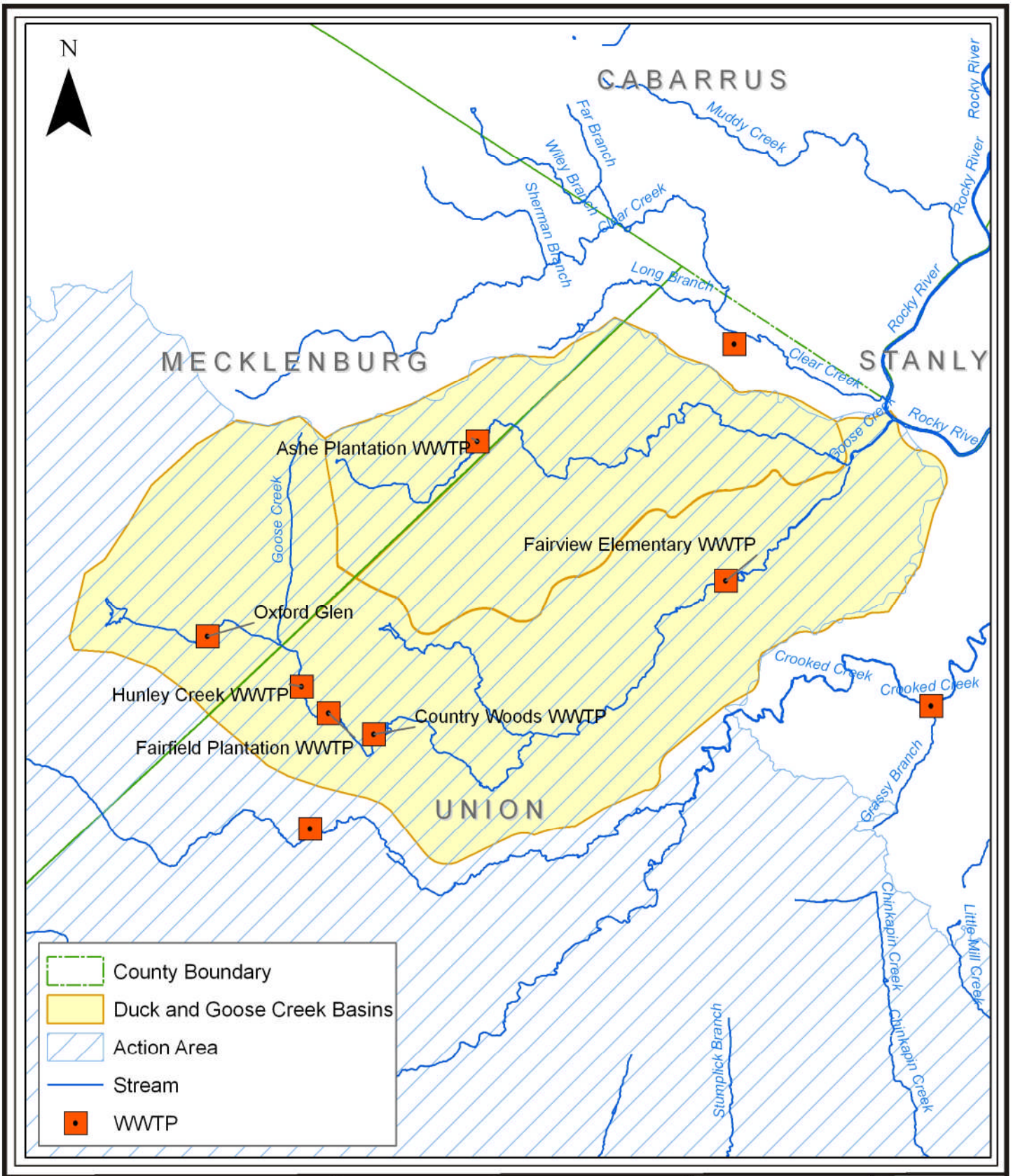
Watersheds and 303(d) Streams

Mecklenburg and Union Counties, North Carolina

Client:

North Carolina Turnpike Authority

Figure 4



The Catena Group

Monroe Bypass/Connector (R-3329/R-2559)

WWTP Locations
Goose and Duck Creek Basins
Union and Mecklenburg Counties, North Carolina

Date: March 2010

Scale: 0 0.5 1 Miles

Job No.: 1125

Figure 5

Midland
Oakboro
N
Carolina Heelsplitter
Status: Extant
EO#: 14
Mint Hill
Fairview
Schweinitz's Sunflower
Status: Destroyed
EO#: 31
Charlotte
Stallings
Schweinitz's Sunflower
Status: Extant
EO#: 18
Matthews
Hemby
Bridge
Schweinitz's Sunflower
Status: Extant
EO#: 77
Schweinitz's Sunflower
ESI 1*
Status: Extant
EO#: N/A
Lake Park
Unionville
Indian Trail
Schweinitz's Sunflower
Status: Destroyed
EO#: 5
Michaux's Sumac
Status: Historic
EO#: 40
Weddington
Monroe
Wingate
Marshville
Schweinitz's Sunflower
Status: Extant
EO#: 78
Mineral Springs
Action Area
RPA Centerline
Proposed Interchange
Carolina Heelsplitter
Michaux's Sumac
Schweinitz's Sunflower
* ESI 1 not included in NHP database

The Catena Group

Date: February 2010

Scale: 0 1 2 Miles

Job No.: 1125

Title:

Monroe Connector/Bypass (R-3329/R-2559)

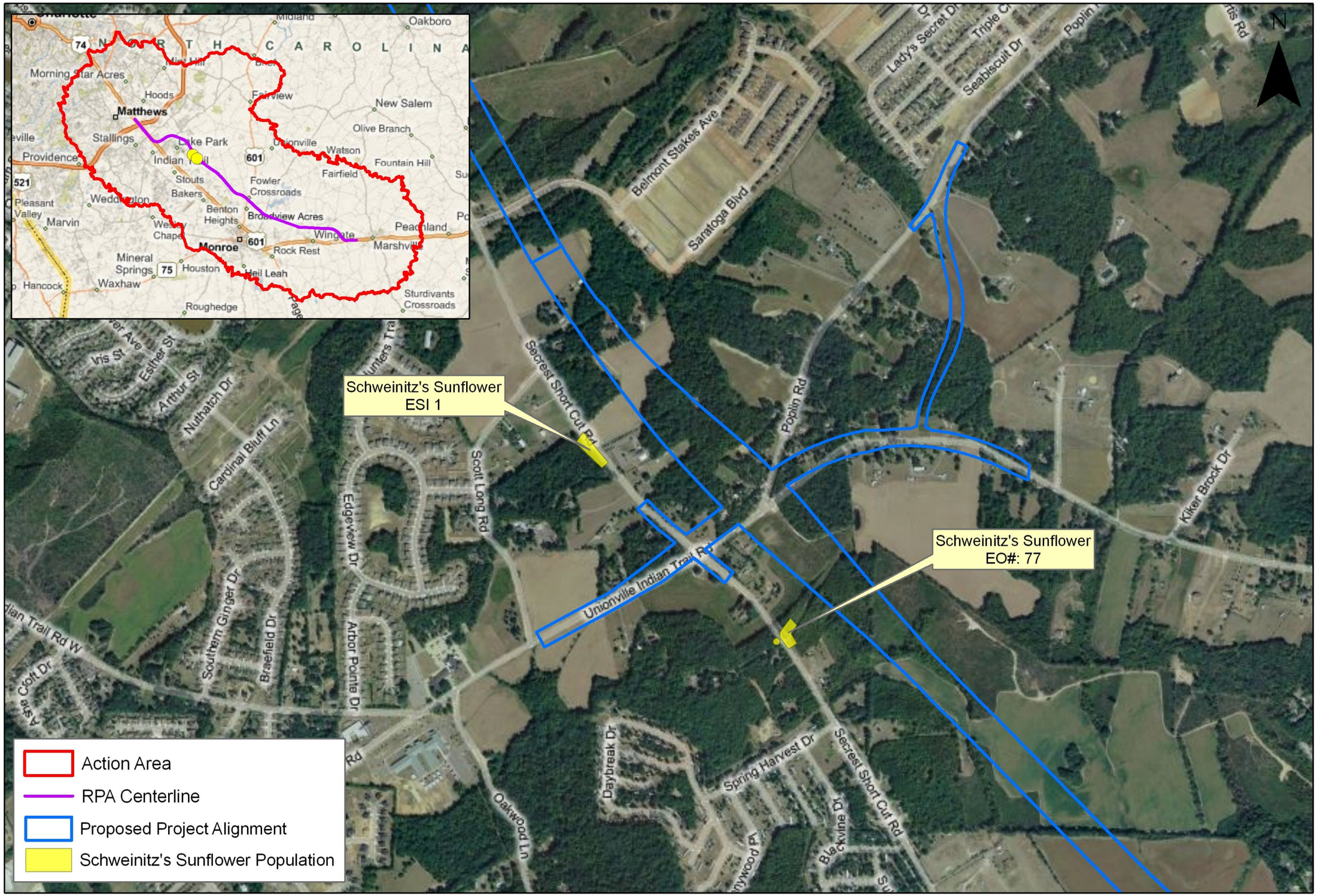
NCNHP Element Occurrences

Mecklenburg and Union Counties, North Carolina

Client:

North Carolina Turnpike Authority

Figure 6



The Catena Group

Date: February 2010

Scale: 0 550 1,100 Feet

Job No.: 1125

Title:

Monroe Connector/Bypass (R-3329/R-2559)

Potential Impact Schweinitz's Sunflower Populations

Mecklenburg and Union Counties, North Carolina

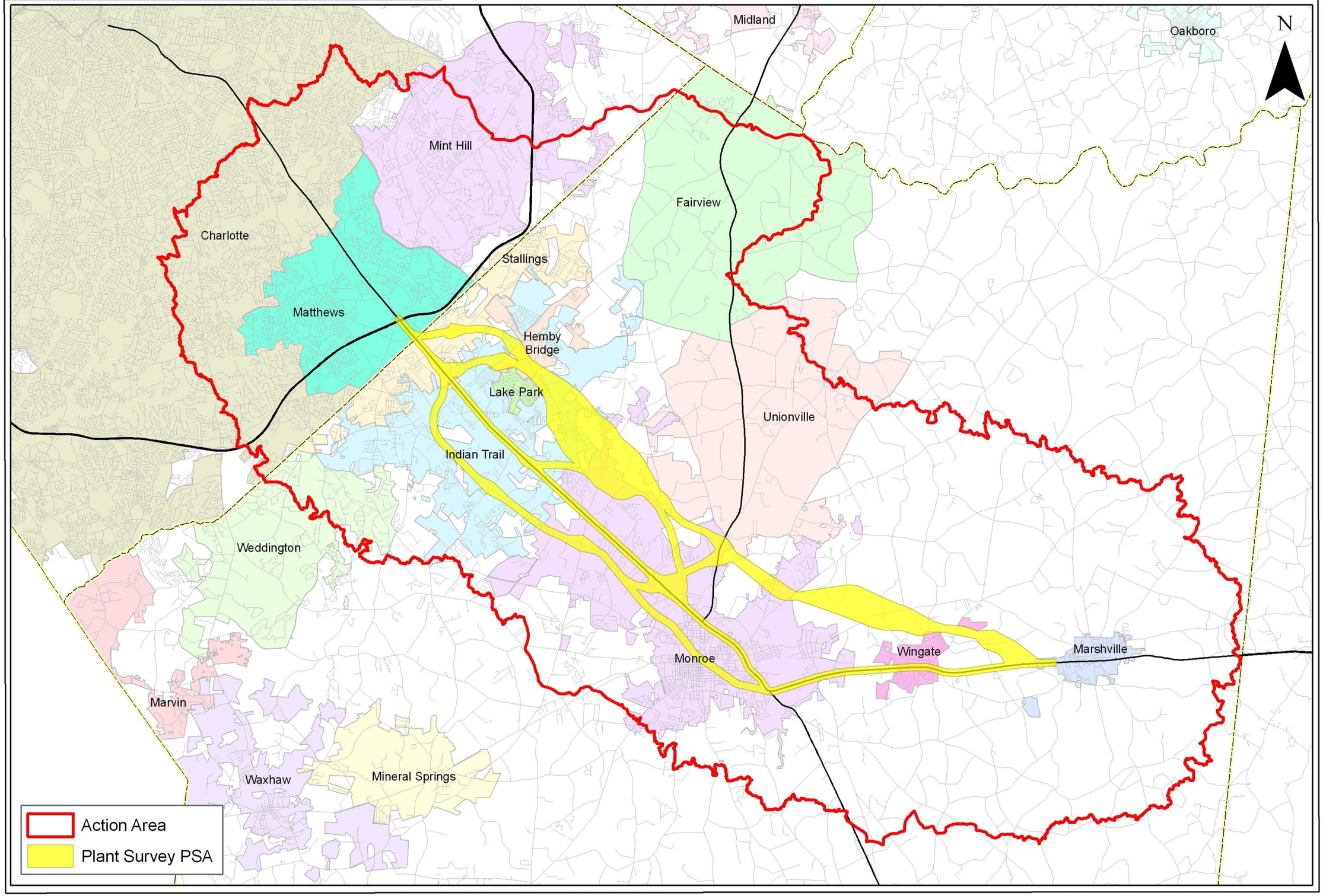
Aerial Photography: www.bingmaps.com

Client:

North Carolina Turnpike Authority

Figure

7



The Catena Group

Date: February 2010

Scale: 0 1 2 Miles

Job No.: 1125

Title:

Monroe Connector/Bypass (R-3329/R-2559)

Plant Survey Project Study Area

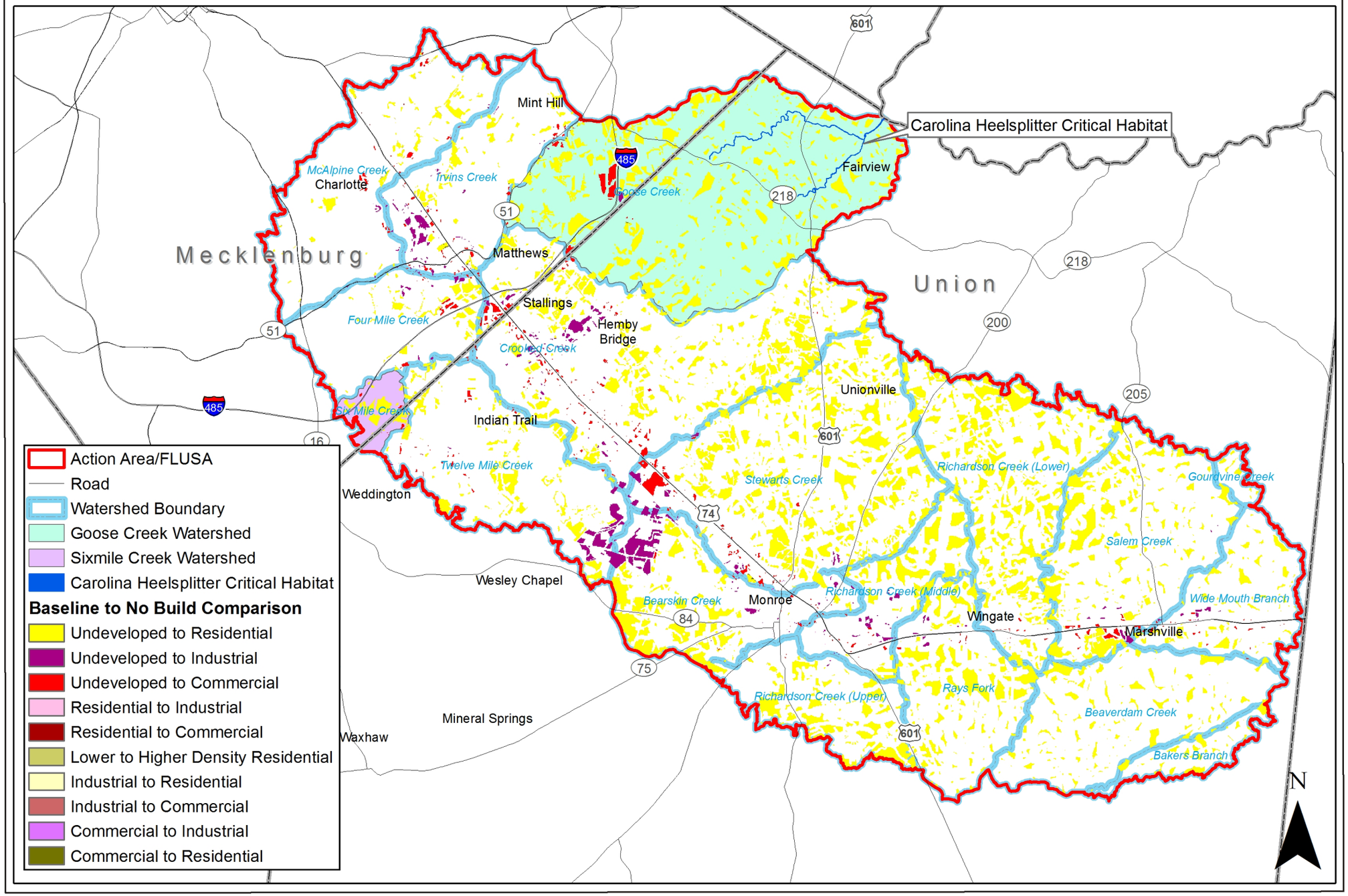
Mecklenburg and Union Counties, North Carolina

Client:

North Carolina Turnpike Authority

Figure

8



The Catena Group

Date: February 2010

Scale: 0 1 2 Miles

Job No.: 1125

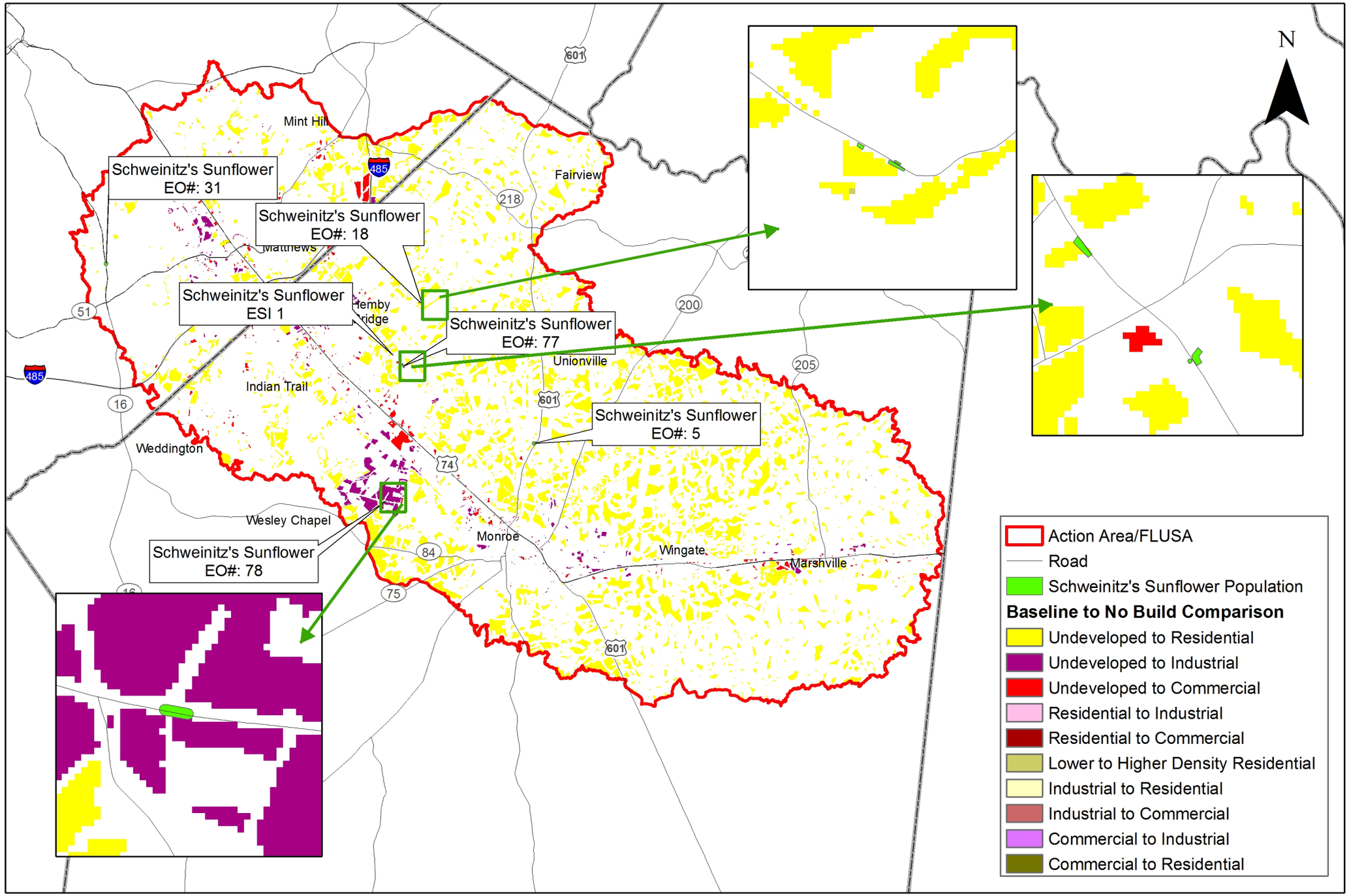
Title: Monroe Connector/Bypass (R-3329/R2559)

Projected Land Use Changes 2030 No Build (as Compared to Baseline) Effects to Carolina Heelsplitter Critical Habitat

Mecklenburg and Union Counties, North Carolina

Client: North Carolina Turnpike Authority

Figure 9A



The Catena Group

Date: February 2010

Scale: 0 1 2 Miles

Job No.: 1125

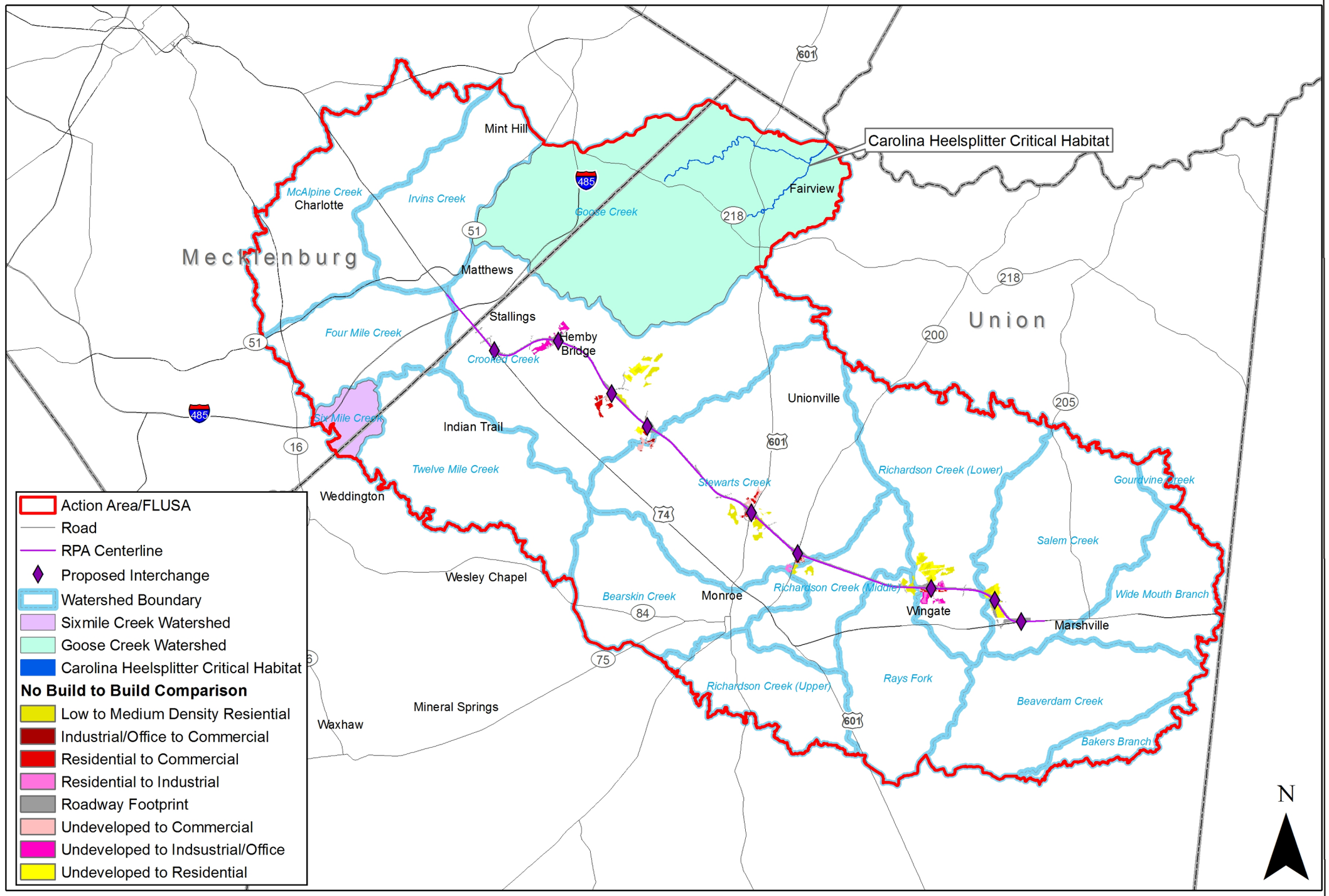
Title: Monroe Connector/Bypass (R-3329/R2559)

Projected Land Use Changes 2030 No Build (as Compared to Baseline) Effects to Schweinitz's Sunflower

Mecklenburg and Union Counties, North Carolina

Client: North Carolina Turnpike Authority

Figure 9B



The Catena Group

Date: February 2010

Scale: 0 1 2 Miles

Job No.: 1125

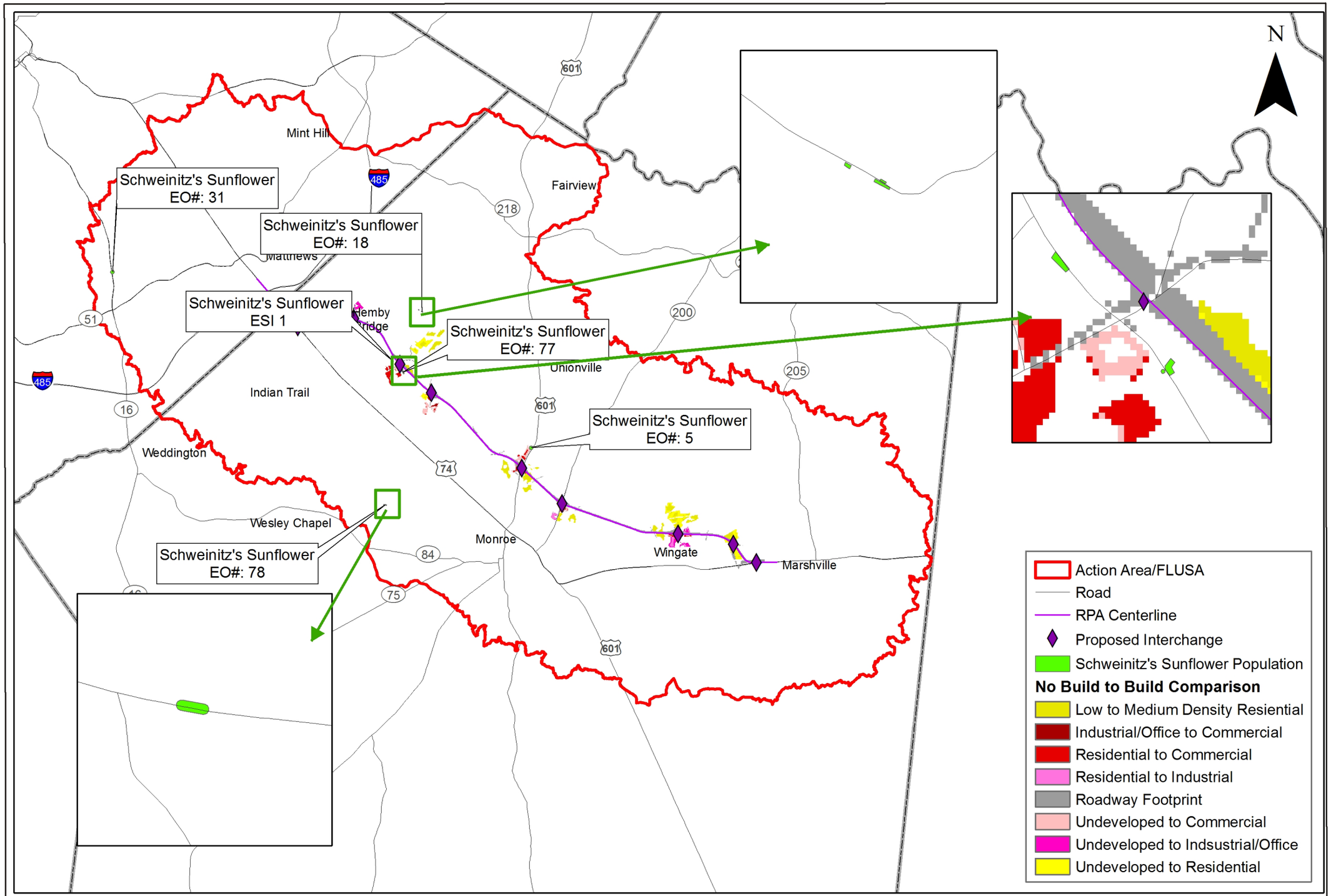
Title: Monroe Connector/Bypass (R-3329/R2559)

Projected Land Use Changes 2030 Build (as Compared to No Build) Effects to Carolina Heelsplitter Critical Habitat

Mecklenburg and Union Counties, North Carolina

Client: North Carolina Turnpike Authority

Figure 10A



The Catena Group

Date: February 2010

Scale: 0 1 2 Miles

Job No.: 1125

Title: Monroe Connector/Bypass (R-3329/R2559)

Projected Land Use Changes 2030 Build (as Compared to No Build) Effects to Schweinitz's Sunflower

Mecklenburg and Union Counties, North Carolina

Client: North Carolina Turnpike Authority

Figure 10B

APPENDIX I

Biological Assessment Preparers' Credentials:

The Catena Group, Inc.

Biological Assessment for the Monroe Connector / Bypass

Preparers' Credentials

TIMOTHY W. SAVIDGE

EDUCATION

M.S. Marine Biology/Biological Oceanography, University of North Carolina at Wilmington, 1998

B.S. Biology, Guilford College, Greensboro, North Carolina, 1987

EXPERIENCE & QUALIFICATIONS

Mr. Savidge is the Environmental Supervisor for The Catena Group. Mr. Savidge regularly coordinates with state and federal agencies with regard to protected species investigations. Mr. Savidge has over 20 years of experience in natural community classification, floral and faunal identification, wetland and stream delineation, SAV identification and relocation, and protected species surveys including, but not limited to, the following plants: dwarf-flowered heartleaf, Schweinitz's sunflower, small-anthered bittercress, Michaux's sumac, Virginia spiraea, rough-leaved loosestrife, small-whorled pogonia, smooth coneflower; and animals: RCW, Cape Fear shiner, spotfin chub, and freshwater mussels. His duties include conducting protected species surveys, aquatic surveys, flora and fauna investigations, and general project oversight.

Although Mr. Savidge is a leading terrestrial wildlife biologist, his specialization lies in the field of aquatic ecology, with particular regard to freshwater mussels. He holds several survey and collection permits for mussels, fish, aquatic snails, and crayfish as well as specific aquatic endangered species, and is certified in aquatic invertebrate collection procedures. Mr. Savidge has lead over 1,500 surveys for freshwater mussels in the southeastern United States, and assisted in numerous others. These surveys have provided fundamental knowledge of species distribution in the state and have led to species range extensions of many federally listed species including the Carolina heelsplitter, dwarf-wedge mussel, Appalachian elktoe and the James spinymussel, which was documented for the first time in NC during surveys lead by Mr. Savidge. In addition to presence/absence surveys, Mr. Savidge has performed numerous distribution/status surveys for listed mussels in the state. Mr. Savidge has developed and implemented mussel relocation efforts to offset impacts to these species resulting from construction projects.

Mr. Savidge has written numerous NRTRs, and BAs for Section 7 Formal Consultations and Informal Consultations. His knowledge of the biology, ecology and habitat requirements of a variety of species along with his familiarity with the NCDOT project development, design and implementation (construction) phases allow him to provide detailed analyses of project-related impacts to the various natural resources of the state, including protected species.

Mr. Savidge's aquatic ecology expertise is highly regarded throughout the Southeast. The curators of the State Museum of Natural History routinely rely on Mr. Savidge to provide voucher specimens for cataloguing and research. He currently chairs the Scientific Council on Mollusks for the Non Game Advisory Committee to the NCWRC.

MICHAEL G. WOOD, L.S.S.

EDUCATION

M.S. Soil Science, University of Rhode Island, Kingston, Rhode Island, 1996

B.S. Recreation Management, University of Vermont, Burlington, Vermont, 1986

EXPERIENCE & QUALIFICATIONS

Mr. Wood is a NC licensed soil scientist and the President of TCG. His duties include wetland delineation and mitigation, evaluation of hydric soils, detailed soil mapping and interpretation, groundwater modeling, environmental permitting, threatened and endangered species surveys (Permit NC-2009 ES 34), as well as project oversight and quality control/assurance. As a former permit coordinator for NCDOT, Mr. Wood performed wetland delineations throughout the state and had extensive coordination with all State and Federal resource agencies in efforts to obtain environmental permits that allow impacts to wetlands in order to construct roadways.

JENNIFER L. CALLAHAN

EDUCATION

M.S., Environmental Pollution Control, Pennsylvania State University, 2004

B.S., Environmental Resource Management, Pennsylvania State University, 2002

EXPERIENCE & QUALIFICATIONS

Ms. Callahan is the Environmental Permitting Specialist of The Catena Group and has seven years of experience conducting environmental studies. Her duties include detailed environmental permitting (404/401, Buffers), environmental and biological assessment preparation, stream classifications, stream and wetland delineation/mitigation, Phase I environmental site assessments, and other NEPA documentation. She is also experienced in protected species surveys, benthic macroinvertebrate surveys, and various natural resource investigations. Ms. Callahan has received training in jurisdictional wetland determinations and the identification of intermittent and perennial streams by NCDWQ as well as taxonomy and ecology of EPT macroinvertebrates. Ms. Callahan also serves in project tracking and oversight and is responsible for keeping projects in compliance with state and federal regulations.

TOM DICKINSON

EDUCATION

B.S. Forestry/Natural Resources, The University of the South, Sewanee, TN, 2001

EXPERIENCE & QUALIFICATIONS

Mr. Dickinson is an Environmental Biologist with The Catena Group. He has eight years of experience in terrestrial and aquatic ecology, freshwater mussel biology, protected species surveys, environmental permitting, and natural resource investigations. His duties include protected species surveys, monitoring and relocation efforts, flora and fauna surveys, and various other natural resource investigations. He is permitted in the collection of protected freshwater mussels in North Carolina (NC 2009 ES 34) and throughout the Atlantic Slope Basins in the Southeast. Additionally, he holds a North Carolina category C scientific fish collection license and is certified by NCDWQ in benthic macroinvertebrate collection protocols.

KATE MONTIETH

EDUCATION

M.S., Environmental Science, University of Rhode Island, 2004

B.A., Biology, Reed College, Portland, Oregon, 2000

EXPERIENCE & QUALIFICATIONS

Ms. Montieth is the GIS Specialist/Graphics Coordinator of The Catena Group. She has seven years of experience with environmental investigations, including jurisdictional area delineations, stream and riparian buffer determinations, stream classifications, wetland and stream mitigation, aquatic surveys, and GIS mapping and analysis. Her primary duties include coordinating GIS databases and providing maps and figures for all TCG projects. In addition, Ms. Montieth has written and prepared environmental documents, including environmental resource technical reports and natural resource technical reports, and assisted in the preparation of environmental and biological assessments. Ms. Montieth has received training in the identification of intermittent and perennial streams under the direction NCDWQ. She has also conducted field research and species inventories for reptiles, amphibians, insects and small mammals.

MICHAEL CALLAHAN, L.S.S.

EDUCATION

M.S., Soil Science, Pennsylvania State University, 2004

B.S., Environmental Soil Science, Pennsylvania State University, 2001

EXPERIENCE & QUALIFICATIONS

Mr. Callahan is a licensed / certified professional soil scientist (NCLSS #1285, ARCPACS). His duties include managing soil and site investigations using knowledge of soil and landscape properties throughout the mountain, piedmont, and coastal plain regions of North Carolina. Investigations include conducting preliminary soil investigations with a hand-turned auger, determining on-site sewage disposal system type and location, performing saturated hydraulic conductivity tests, and managing project spatial data to create spatial products utilizing GIS. Mr. Callahan is also experienced in designing subsurface drip wastewater irrigation systems, determining soil suitability for stormwater infiltration structures, performing detailed soil mapping and interpretation, and evaluating hydric soils. Mr. Callahan is trained in the use of the SWAT model.

APPENDIX II

USFWS Correspondence:

Aug. 8, 2002 Letter Re: Section 404 Public Notice
June 12, 2009 Comments on Draft EIS
July 22, 2009 Meeting Minutes

FILE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

August 8, 2002

Mr. Steve Lund
U.S. Army Corps of Engineers
Asheville Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, North Carolina 28801-5006

Dear Mr. Lund:

Subject: Public Notice Regarding North Carolina Department of Transportation Section 404 Permit Application for Impacts to Wetlands and Waters in the Construction of US Highway 74, Monroe Bypass, Union County, North Carolina, Tip No. R-2559 B/C, State Project No. 8.T690401

We have reviewed the information in the public notice and are providing the following comments in accordance with the provisions the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e), and Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

The North Carolina Department of Transportation (NCDOT) proposes to construct a four-lane road with a 45-foot divided median on new location between the towns of Wingate and Marshville, North Carolina. The project length is 9.1 miles--the B section is 3.5 miles long, and the C section 5.6 miles long. Total impacts from the project include 4.26 acres of wetlands, 6,771 linear feet of stream channel, and 3.72 acres of ponds.

In our April 18, 1997, letter to the NCDOT regarding the subject project, we concurred with a determination of "not likely to adversely affect" for the federally endangered Carolina heelsplitter (*Lasmigona decorata*) and Schweinitz's sunflower (*Helianthus schweinitzii*) under Section 7 of the Act. Our concurrence states that obligations under Section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered. We believe that a number of factors represent new information and a changed condition; therefore, our 1997 concurrence is no longer valid.

While project R-2559, as presently designed, will not directly affect waters known to be occupied by the Carolina heelsplitter in Union County, it is reasonable to predict that the indirect and cumulative effects of proposed transportation improvements and "spin-off" development in the area may combine to create a substantial risk to the species' existence. Additionally, greater than expected impacts to this species have occurred in the upper Goose Creek watershed through increased storm-water discharges and secondary development. Increased impacts, coupled with a current lack of protection for streams in the watershed, create a critical situation for the survival of the imperiled Carolina heelsplitter.

At this time we believe further analysis and initiation of formal consultation is required. Until consultation is completed, we cannot concur with the issuance of a permit.

If you have questions about these comments, please contact Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. In any future correspondence concerning this project, please reference our Log Number 4-2-98-150.

Sincerely,

Brian P. Cole
State Supervisor

cc:
Ms. Marla J. Chambers, Highway Projects Coordinator, North Carolina Wildlife Resources Commission, 12275 Swift Road, Oakboro, NC 28129
Mr. John Dorney, North Carolina Department of Environment and Natural Resources, Division of Water Quality, Wetlands Section, 1621 Mail Service Center, Raleigh, NC 27699-1621
Mr. Chris Militscher, U.S. Environmental Protection Agency, Terry Sanford Federal Courthouse, 310 New Bern Avenue, Room 206, Raleigh, NC 27601

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

June 12, 2009

Ms. Jennifer H. Harris, P.E.
Staff Engineer
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, North Carolina 27699-1578

Dear Ms. Harris:

Subject: Comments on the Draft Environmental Impact Statement for the Proposed Monroe Connector/Bypass Project, Mecklenburg and Union Counties, North Carolina (TIP Nos. R-3329 and R-2559)

This letter responds to a request for our review and comments on the Draft Environmental Impact Statement (DEIS) for the subject project. Our comments are provided in accordance with the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e), and section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

The North Carolina Turnpike Authority proposes to improve US 74 from east of Monroe, North Carolina, to the I-485 Charlotte Outer Loop. The current study combines two projects previously studied separately. We were involved in the review and comments for both of these projects, and complete details of our comments and recommendations for these projects as they were developed can be found in the project files. Our comment letters of February 2007 and December 2007 (included in the DEIS) reiterated our past concerns and comments and provided further general and specific comments about alternatives. We also have attended agency coordination meetings and provided comments and recommendations at those meetings. We remain concerned about the overall impacts to streams and wetlands and wildlife habitat from the new location alternatives proposed and, in particular, the potential for impacts to the Goose Creek watershed, which is occupied by and designated critical habitat for the federally endangered Carolina heelsplitter (*Lasmigona decorata*).

During agency coordination meetings to develop the purpose and need for this project, we questioned the use of "high-speed" as part of the statement. In our opinion, that language narrows the purpose and need and biases the alternatives in favor of those on new location. We believe this bias is highlighted in the elimination of alternatives that include either (1) improving

existing US 74; (2) a hybrid of improvements to existing US 74, with some portions on new location; or (3) employing Transportation Demand Management and Transportation System Management measures to improve mobility and decrease congestion. We still believe that the "Improve Existing US 74 Alternative" is the alternative that would minimize indirect and cumulative impacts to the Goose Creek watershed and the Carolina heelsplitter and its designated critical habitat and could be a viable alternative if the design were altered to minimize impacts to businesses.

In our review we found no data regarding the number of through and local trips. With the number of businesses in the existing US 74 corridor, it will continue to be heavily used by local services and shoppers. Given the amount of development in the existing corridor, it seems unlikely that the new highway will draw much traffic away unless there is significant through traffic. Improvements to the existing US 74 would appear to be inevitable, particularly since it will serve as the free alternative route for the toll road. We believe expected improvements to the existing corridor should be described and analyzed as impacts for this project.

The DEIS describes a screening process that narrowed the number of alternatives to 25 preliminary study alternatives and further screening that resulted in the selection of 16 detailed study alternatives. Finally, Alternative D is the recommended alternative. In the justification for selecting this alternative, the impact numbers in the text on page 2-46 do not match the table on page 2-26 but appear to reference the table on page 6-17. It is unclear how or why the numbers changed so dramatically. For Alternative D, the impact numbers for perennial streams increase almost threefold and impact numbers for intermittent streams decrease by over 10,000 linear feet. Please clarify which set of numbers is correct and explain why they changed from one table to another.

On page 6-13 there is a description of how terrestrial wildlife may be impacted by a highway project in general, but there is no analysis specific to the alternatives proposed. Forest fragmentation is described as an indirect effect of highway projects, but we believe that the impacts of fragmentation are direct effects that should be quantified. If large patches of habitat are being fragmented by the various alternatives, measures to avoid or minimize those impacts should be investigated, particularly if habitat or travel corridors for large mammals or migratory birds will be affected.

We also believe it is premature to determine that there will be no impacts to the Schweinitz's sunflower (*Helianthus schweinitzii*) from this project. Until more specifics about design and any changes that may result from public comment or other information are available we believe the appropriate conclusion for this species is "unresolved."

Indirect and cumulative impacts continue to be a great concern for this project. After reviewing the summary information regarding indirect and cumulative effects (ICE), we requested a copy of the complete ICE document. After reviewing the ICE document we have the following comments and questions.

In the ICE document there is a list and brief description of local land-use plans and ordinances for the municipalities and jurisdictions (state and local) in the study area. However, there is no

graphic or tabular (acres of coverage) display of where in the study area any of the ordinances apply or what extent the land-use plans cover. As such, it is difficult to determine how much of the area is under what type of rules and, subsequently, how much protection there is for streams and wetlands. This is a significant omission in determining environmental impacts from the project, especially regarding potential impacts to the Carolina heelsplitter and its critical habitat. As we have stated in the past, habitat and water quality in the Goose Creek watershed has continued to decline, largely because of development and the lack of protective measures. Any new development that occurs without measures adequate to protect the species and its habitat is likely to result in extirpation of the species and adverse impacts to its designated critical habitat.

We also question the configuration of the future land-use study area (FLUSA) zones. In particular, all of the interchanges between US 601 and I-485 to the west are in Zone 3, but the area or State Road that they serve to the north is in Zone 2. Given that interchanges are known to induce growth (this is acknowledged on page 7-21 of the DEIS), it would seem logical that the interchanges should be analyzed separately or at least in all cardinal directions of the interchange to determine what impacts they might have. In our review of the DEIS, we found no analysis regarding the impacts for interchange locations and configurations. Further, in our December 2007 letter regarding the selection of alternatives to carry forward, we requested that an alternative be developed to include eliminating an interchange at US 601 because this road goes directly to the Goose Creek watershed. This interchange has the potential to induce development closer to Goose Creek and may also create the need to improve US 601 in the future to accommodate growth and congestion. There is no alternative that eliminates this interchange. We still believe that an analysis without an interchange at this location is critical.

Zone 2 of the FLUSA is described as having no major projects planned and as having towns whose land-use plans discourage development. We have reviewed a major gas pipeline and water system extension through the Goose Creek watershed. The water line project, which originates in Anson County, has planned residential developments that it is intended to serve (identified on the project maps), two of which are in the Goose Creek watershed and within the FLUSA. In addition to these infrastructure projects, a housing development with almost 200 houses is proposed and was permitted by the town of Fairview. Do the communities in Zone 2 adhere to the land-use plans that "discourage" development? Have these communities adopted ordinances that further enforce or enable them to adhere to their land-use plans and provide protective measures for the Goose Creek watershed and the heelsplitter?

Page 61 of the ICE document and page 7-17 of the DEIS reference the Schweinitz's sunflower and the possibility of creating habitat with this project. This plant traditionally was found as part of a prairie system maintained through periodic disturbance, mainly fire. It has been relegated to roadsides in many areas because of the openness and lack of competition but not because maintained road shoulders are preferred habitat. Roadside populations are often destroyed by mowing and herbicide applications. Creating more miles of roads and other development would not contribute suitable habitat for the Schweinitz's sunflower in the project area.

We appreciate the opportunity to provide these comments and will continue to participate in the planning process for this project. If you have questions about our comments please contact

Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. In any future correspondence concerning this project, please reference our Log Number 4-2-07-132.

Sincerely,

FOR

Brian P. Cole
Field Supervisor

Electronic copy to:
Ms. Marla J. Chambers, Western NCDOT Permit Coordinator, North Carolina Wildlife Resources Commission, 12275 Swift Road, Oakboro, NC 28129
Mr. Chris Militscher, U.S. Environmental Protection Agency, 1313 Alderman Circle, Raleigh, NC 27603
Ms. Polly Lespinasse, Mooresville Regional Office, North Carolina Division of Water Quality, 610 Easter Center Avenue, Suite 301, Mooresville, NC 28115
Regional Director, FWS, Southeast Regional Office, Atlanta, GA (ES, Attention: Mr. Richard Warner)

Monroe Connector / Bypass

Mecklenburg And Union Counties
STIP Nos. R-3329 / R-2559

MEETING MINUTES

Date: July 22, 2009

Time: 4:30 pm

Place: NCTA Office

Purpose: Discuss Section 7 consultation process and next steps.

Attendees:

Name	Organization	Email Address
Marella Buncick	USFWS	marella_buncick@fws.gov
George Hoops	FHWA	george.hoops@fhwa.dot.gov
Jennifer Harris	NCTA	jennifer.harris@ncturnpike.org
Christy Shumate	HNTB	christy.shumate@ncturnpike.org
Michael Gloden	PBS&J – Ecoscience	mcgloden@pbsj.com
Elizabeth Scherer	PBS&J – Ecoscience	

Summary:

Schweinitz's sunflower
NCTA presented revised designs for the Unionville-Indian Trail Road interchange to USFWS for discussion. Two populations of Schweinitz's sunflower were identified along Secrest Shortcut Road in the vicinity of the proposed interchange. USFWS indicated that it would be highly likely that the populations would be lost due to indirect or cumulative effects of this project – either related to future road improvements along Secrest Shortcut Road or to future development.

USFWS recommended formal Section 7 consultation for these impacts to Schweinitz's sunflower, and noted that this consultation could take place separately from any consultation required for the Carolina heelsplitter. NCTA should prepare a Biological Assessment (BA) for the sunflower. The BA should document the current condition of the sunflower populations, including size and extent of current threat, direct and indirect impacts from the Monroe Connector/Bypass project, and proposed mitigation measures. USFWS suggested a monetary contribution to an existing conservation site to aid with management of the site and/or moving the plans from this population to a conservation site. USFWS noted that NCDOT currently owns a conservation site near Mallard Creek Church Road in Mecklenburg County. Mary Frasier at NCDOT is the contact for this site. USFWS also suggested talking to NCDOT Division 10 about conservation opportunities. USFWS did not recommend trying to preserve and manage these populations in their current location.

A copy of the Endangered Plant Survey Update prepared by ESI, Inc. in November 2007 was provided to USFWS. NCTA asked about a recent BA that USFWS has reviewed, and USFWS suggested the BA for dwarf-flowered heartleaf completed for the Rutherford Bypass project.

Carolina heelsplitter

NCTA is proposing to complete a quantitative indirect and cumulative effects study, including a land use analysis to determine potential induced development. The study will analyze the No-Build Alternative, Build Alternative (with and without US 601 interchange), and Upgrade Existing US 74 Alternative. USFWS noted that the study should also include a comprehensive discussion of the history of, current status of, and projected future implications of local land use regulations and buffer restrictions in the study area. The study should document how these are being applied and enforced.

NCTA will also evaluate effects on water quality by using the results of the land use study to complete quantitative modeling. At this time, NCTA anticipates using the GWLF (generalized watershed loading function) model based on discussions with NCDOT.

A scope of work for these studies is being developed, and a copy will be provided to USFWS for review and comment, as well as discussed at the August 12 agency meeting. NCTA anticipates the land use study will take about 3 months and the water quality modeling will take an additional 5 months.

USFWS noted that NCTA should look into the state's mussel propagation program as well as South Carolina's Carolina heelsplitter conservation bank in the Six Mile Creek watershed as possible mitigation options if needed.

FHWA will determine whether to pursue formal or informal consultation with USFWS. USFWS noted that formal consultation may help to strengthen the project's administrative record.

Carolina heelsplitter critical habitat

USFWS said that impacts to the critical habitat should be evaluated by looking at each of the "constituent elements" that make up the designated habitat and evaluating the impacts. The constituent elements are either "maintained" or have "adverse modification". Adverse modification is essentially jeopardy. This can be included in the same BA as the heelsplitter.

APPENDIX III

NPDES Compliance Documents

NPDES Compliance

Ashe Plantation (Aqua North Carolina)

2010

3/1/10 — NOV — reported value / permit limit — Re: Nov. 2009 self-monitoring report
NOV-2010-LV-0075 — ↳ TSS — 52.8 mg/L / 45.0 mg/l (daily max.)

Hunley Creek (Union County)

2006

4/27/06 — NOV & CP $3,578.95 — Re: Feb. 2006 self-mon. rpt
LV-2006-0114 — ↳ BOD
10/11/2006 Payment received $1,828.95 – satisfies in full

3/30/06
LM-2006-0015 — NOV & CP $3,778.95 — Re: Jan 2006 self-mon. rpt
↳ BOD & failed to monitor temp.
10/11/2006 Payment rec'd. $1,578.95 – satisfies in full

2/27/06
LV-2006-0057 — NOV & CP $3,078.95 — Re: Dec. 2005 self mon. rpt
↳ BOD, flow
3/23/06 Payment rec'd. $3,078.95 – satisfies in full

1/31/06
LV-2006-0029 — NOV & CP $1,016.45
↳ BOD
LV-2006-0037 — 3/8/06 Payment rec'd. $1,578.95 – satisfies in full

1/26/06 — NOV & CP $1,953.95 — Re: Sept 2005 self mon. data
LV-2006-0027 — ↳ BOD

1/17/06 — NOV & CP $2,335.04 — Re: Aug. 2005 self-mon. rpt
LV-2006-0010 — ↳ BOD

2005

11/30/05 — NOV & CP $4,210.04 — Re: July 2005 Discharge Mon. Rpt (DMR)
LV-2005-0457 — ↳ BOD, fecal coliform (Mo. & wkly)

cont.d 2005

Hunley Creek WWTP (Union County) cont.'d

11/22/05 NOV - pH, DO, solids, etc.
NOV-2005-PC-00256 ↳ Record Keeping, Laboratory, Sequential Batch Reactor, Disinfection, Sampling Results, & Effluent Pipe sections of rpt (Compliance Sampling Inspection)
-WRC notified/complaint-heavy solids accum. in Goose Crk (300+ yd downstrm 2'+ of accum. sed.)

1/9/06 NOV follow up. Recussion req. denied. Analytical results from NOV 05 inspection incl. DO & pH in viol. Again DWQ req. Union Co's response.
NOV-2005-PC-00256

10/19/05 NOV & CP $2272.54 Re: June 2005 DMR
LV-2005-0417 ↳ BOD (mo. & wkly)

9/27/05 NOV & CP $1960.04 Re: May 2005 DMR
LV-2005-0375 ↳ BOD (mo. & wkly)

10/12/05 Receipt of check for above C.P. $1,960.04

8/1/05 NOV & CP $1,835.04 Re: April 2005 DMR
LV-2005-0263 ↳ BOD (mo. & wkly)

8/23/05 Receipt of check for above C.P. $1,835.04

7/1/05 NOV & CP $835.04 Re: Mar. 05 DMR
LV-2005-0222 ↳ BOD (mo. & wkly)

10/25/05 Receipt of check for above CP $835.04

5/16/05 NOV & CP $1,585.04 Re: Feb 05 DMR
LV-2005-0178 ↳ BOD & TSS

6/27/05 Receipt of check for CPs assoc w/ these NOV #s: $9,670.08
LV-2005-0178
LV-2005-0207

5/9/05 NOV & CP $1,085.04 Re: Jan. 2005 DMR
LV-2005-0168 ↳ BOD (mo. & wkly)

5/19/05 Receipt of check for above CP $1,085.04

3/7/05 NOV & CP $985.04 Re: Dec. 2004 DMR
LM-2005-0010 ↳ BOD, TSR, fecal coliform; failure to rpt Total Residual Chlorine

3/22/05 Receipt of check for above CP $985.04

central file

NCDENR

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

March 1, 2010

Mr. Thomas J. Roberts, President
Aqua North Carolina Inc.
202 Mackenan Court
Cary, North Carolina 27511

Subject: **Notice of Violation - Effluent Limitations**
Tracking #: NOV-2010-LV-0075
Ashe Plantation WWTP
NPDES Permit No. NC0065749
Mecklenburg County

Dear Mr. Roberts:

A review of the November 2009 self-monitoring report for the subject facility revealed a violation of the following parameter:

Pipe	Parameter	Reported Value	Permit Limit
001	TSS	52.8 mg/l	45.0 mg/l (daily maximum)

Remedial actions, if not already implemented, should be taken to correct any problems. The Division of Water Quality may pursue enforcement actions for this and any additional violations. If the violations are of a continuing nature, not related to operation and/or maintenance problems, and you anticipate remedial construction activities, then you may wish to consider applying for a Special Order by Consent. You may contact Mr. John Lesley of this Office for additional information.

If you have questions concerning this matter, please do not hesitate to contact Mr. Lesley or me at 704/663-1699.

Sincerely,

RBK

Robert B. Krebs
Surface Water Protection
Regional Supervisor

cc: Point Source Branch
Mecklenburg County Water Quality Protection

Mooresville Regional Office
Location: 610 East Center Ave., Suite 301 Mooresville, NC 28115
Phone: (704) 663-1699 \ Fax: (704) 663-6040 \ Customer Service: 1-877-623-6748
Internet: http://portal.ncdenr.org/web/wq

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

April 27, 2006

CERTIFIED MAIL CM#7003 2260 0001 3494 3464
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 North Main Street
Monroe, North Carolina 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Union County Hunley Creek WWTP
Union County
Case No. LV-2006-0114

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $3,578.95 ($3,500.00 civil penalty + $78.95 enforcement costs) against Union County Public Works.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data from February 2006. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Union County Public Works violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Union County Public Works:

$ 2,000.00	For 4 of the four (4) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for BOD.
$ 1,500.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for BOD.
$ 3,500.00	**TOTAL CIVIL PENALTY**
$ 78.95	Enforcement costs.
$ 3,578.95	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. **Submit payment of the penalty:**

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s). Please submit payment to the attention of:

ATTACHMENT A
CASE NO. LV-2006-0114

Pipe No.	Parameter	Reported Value	Permit Limit
001	BOD	*25.2 mg/l	15.0 mg/l (weekly average)
001	BOD	*24.6 mg/l	15.0 mg/l (weekly average)
001	BOD	*20.0 mg/l	15.0 mg/l (weekly average)
001	BOD	*27.4 mg/l	15.0 mg/l (weekly average)
001	BOD	*24.3 mg/l	10.0 mg/l (monthly average)

* Denotes civil penalty assessment

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

October 11, 2006

Mike K. Shalati, County Manager
Union County
P.O. Box 987
Monroe, NC 28111

SUBJECT: Payment Acknowledgment
Civil Penalty Assessment
Hunley Creek WWTP
Permit Number: NC0072508
Case Number: LV-2006-0114
Union County

Dear Mr. Shalati:

This letter is to acknowledge receipt of check number 337719 in the amount of $1,828.95 received from you dated October 5, 2006. This payment satisfies in full the above civil assessment levied against the subject facility, and this case has been closed. Payment of this penalty in no way precludes future action by this Division for additional violations of the applicable Statutes, Regulations, or Permits.

If you have any questions, please call Robert L. Sledge at 919-733-5083 Ext.547.

Sincerely,

Carolyn Bryant

cc: DWQ Mooresville Regional Office Supervisor
Central Files

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

March 30, 2006

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 North Main Street
Monroe, North Carolina 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Union County Hunley Creek WWTP
Union County
Case No. LM-2006-0015

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $3778.95 ($3700.00 civil penalty + $78.95 enforcement costs) against Union County Public Works.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data from January 2006. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Union County Public Works violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Union County Public Works:

$ 700.00	For 14 of the fourteen (14) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by failing to monitor for temperature daily.
$ 1500.00	For 3 of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for BOD.
$ 1500.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for BOD.
$ 3700.00	**TOTAL CIVIL PENALTY**
$ 78.95	Enforcement costs.
$ 3778.95	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. Submit payment of the penalty:

ATTACHMENT A
CASE NO. LM-2006-0015

Pipe No.	Parameter	Reported Value	Permit Limit
001	BOD	*20.60 mg/l (weekly average)	15.0 mg/l (weekly average)
001	BOD	*31.55 mg/l (weekly average)	15.0 mg/l (weekly average)
001	BOD	*20.20 (weekly average)	15.0 mg/l (weekly average)
001	BOD	*21.44 mg/l (monthly average)	10.0 mg/l (monthly average)
001	Temperature	[1]*Failure to monitor temperature	Monitor Daily

* Denotes civil penalty assessment
[1] Failed to monitor on three occasions 01/01-07/2006 (Holiday 01/02/2006)
[1] Failed to monitor on four occasions 01/08-14/2006
[1] Failed to monitor on three occasions 01/15-21/2006 (Holiday 01/16/2006)
[1] Failed to monitor on four occasions 01/22-28/2006

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

October 11, 2006

Christine Putnam, Director Interim
Union County
400 N. Church St.
Monroe, NC 281124804

SUBJECT: Payment Acknowledgment
Civil Penalty Assessment
Hunley Creek WWTP
Permit Number: NC0072508
Case Number: LM-2006-0015
Union County

Dear Ms. Putnam:

This letter is to acknowledge receipt of check number 337718 in the amount of $1,578.95 received from you dated October 5, 2006. This payment satisfies in full the above civil assessment levied against the subject facility, and this case has been closed. Payment of this penalty in no way precludes future action by this Division for additional violations of the applicable Statutes, Regulations, or Permits.

If you have any questions, please call Robert L. Sledge at 919-733-5083 Ext.547.

Sincerely,

Carolyn Bryant

cc: DWQ Mooresville Regional Office Supervisor
Central Files

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

February 27, 2006

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 North Main Street
Monroe, North Carolina 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Union County Hunley Creek WWTP
Union County
Case No. LV-2006-0057

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $3,078.95 ($3,000 civil penalty + $78.95 enforcement costs) against Union County Public Works.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data from December 2005. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Union County Public Works violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Union County Public Works:

$ 1,000.00	For 2 of the four (4) violation(s) of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for BOD.
$ 2,000.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for BOD.
$ 0	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for Flow.
$ 3,000.00	**TOTAL CIVIL PENALTY**
$ 78.95	Enforcement costs.
$ 3,078.95	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. **Submit payment of the penalty:**

ATTACHMENT A
CASE NO. LV-2006-0057

Pipe No.	Parameter	Reported Value	Permit Limit
001	BOD	*** 23.4 mg/l**	15.0 mg/l (weekly average)
001	BOD	15.8 mg/l	15.0 mg/l (weekly average)
001	BOD	15.4 mg/l	15.0 mg/l (weekly average)
001	BOD	*** 19.2 mg/l**	15.0 mg/l (weekly average)
001	BOD	*** 17.0 mg/l**	10.0 mg/l (monthly average)
001	Flow	0.240 MGD	0.231 MGD

* **Denotes civil penalty assessment**

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

March 23, 2006

Christine Putnam, Director Interim
Union County
400 N Church St
Monroe, NC 28111

SUBJECT: Payment Acknowledgment
Civil Penalty Assessment
Hunley Creek WWTP
Permit Number: NC0072508
Case Number: LV-2006-0057
Union County

Dear Ms. Putnam:

This letter is to acknowledge receipt of check number 327328 in the amount of $3,078.95 received from you dated March 16, 2006. This payment satisfies in full the above civil assessment levied against the subject facility, and this case has been closed. Payment of this penalty in no way precludes future action by this Division for additional violations of the applicable Statutes, Regulations, or Permits.

If you have any questions, please call Robert L Sledge at 919-733-5083 Ext.547.

Sincerely,

Frances Candelaria

Frances Candelaria

cc: Enforcement File #: LV-2006-0057
DWQ Mooresville Regional Office Supervisor
Central Files

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P. E., Director
Division of Water Quality

February 7, 2006

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 North Main Street
Monroe, North Carolina 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Union County Hunley Creek WWTP
Union County
Case No. LV-2006-0037

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $1,578.95 ($1,500.00 civil penalty + $78.95 enforcement costs) against Union County Public Works.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data from November 2005. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Union County Public Works violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Union County Public Works:

$ 375.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for BOD.
$ 1,125.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for BOD.
$ 1,500.00	**TOTAL CIVIL PENALTY**
$ 78.95	Enforcement costs.
$ 1,578.95	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. **Submit payment of the penalty:**

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s). Please submit payment to the attention of:

ATTACHMENT A
CASE NO. LV-2006-0037

Pipe No.	Parameter	Reported Value	Permit Limit
001	BOD	*36.60 mg/l	15.0 mg/l (weekly average)
001	BOD	*19.58 mg/l	10.00 mg/l (monthly average)

* Denotes civil penalty assessment

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

March 8, 2006

Christine Putnam, Director Interim
Union County
400 N Church St
Monroe, NC 28111

SUBJECT: Payment Acknowledgment
Civil Penalty Assessment
Hunley Creek WWTP
Permit Number: NC0072508
Case Number: LV-2006-0037
Union County

Dear Ms. Putnam:

This letter is to acknowledge receipt of check number 326671 in the amount of $1,578.95 received from you dated March 2, 2006. This payment satisfies in full the above civil assessment levied against the subject facility, and this case has been closed. Payment of this penalty in no way precludes future action by this Division for additional violations of the applicable Statutes, Regulations, or Permits.

If you have any questions, please call Robert L Sledge at 919-733-5083 Ext.547.

Sincerely,

Frances Candelaria

Frances Candelaria

cc: Enforcement File #: LV-2006-0037
DWQ Mooresville Regional Office Supervisor
Central Files

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

January 31, 2006

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 North Main Street
Monroe, North Carolina 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Union County Hunley Creek WWTP
Union County
Case No. LV-2006-0029

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $1016.45 ($937.50 civil penalty + $78.95 enforcement costs) against Union County Public Works.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data from October 2005. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Union County Public Works violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Union County Public Works:

$ 937.50	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for BOD.
$ 937.50	**TOTAL CIVIL PENALTY**
$ 78.95	Enforcement costs.
$ 1016.45	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. Submit payment of the penalty:

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s). Please submit payment to the attention of:

Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

ATTACHMENT A
CASE NO. LV-2006-0029

Pipe No.	Parameter	Reported Value	Permit Limit
001	BOD	11.23 mg/l	5.0 mg/l

* Denotes civil penalty assessment

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P. E., Director
Division of Water Quality

January 26, 2006

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 North Main Street
Monroe, North Carolina 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Union County - Hunley Creek Subdivision WWTP
Union County
Case No. LV-2006-0027

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $1,953.95 ($1,875.00 civil penalty + $78.95 enforcement costs) against Union County Public Works.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data from September 2005. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Union County Public Works violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Union County Public Works:

$ 937.50	For 3 of the five (5) violation(s) of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for BOD.
$ 937.50	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC00 , by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for BOD.
$ 1,875.00	**TOTAL CIVIL PENALTY**
$ 78.95	Enforcement costs.
$ 1953.95	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. Submit payment of the penalty:

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s). Please submit payment to the attention of:

ATTACHMENT A
CASE NO. LV-2006-0027

Pipe No.	Parameter	Reported Value	Permit Limit
001	BOD	*12.26 mg/l monthly avg.	5.0 mg/l monthly avg.
001	BOD	7.81 mg/l weekly avg.	7.5 mg/l weekly avg.
001	BOD	8.41 mg/l weekly avg.	7.5 mg/l weekly avg.
001	BOD	*9.51 mg/l weekly avg.	7.5 mg/l weekly avg.
001	BOD	*12.95 mg/l weekly avg.	7.5 mg/l weekly avg.
001	BOD	*22.60 mg/l weekly avg.	7.5 mg/l weekly avg.

*** Denotes civil penalty assessment**

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
Alan W. Klimek, P.E., Director

January 17, 2006

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 N. Main Street, Room 925
Monroe, NC 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Hunley Creek Subdivision WWTP
Case No. LV-2006-0010
Union County

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $2335.04 ($2250.00 civil penalty + $85.04 enforcement costs) against the Union County Public Works Department.

This assessment is based upon the following facts: A review has been conducted of the discharge monitoring report (DMR) submitted by the Union County Public Works Department for the month of August 2005. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that the Union County Public Works Department violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against the Union County Public Works Department:

$ 1125.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for Biochemical Oxygen Demand.
$ 1125.00	For 3 of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Biochemical Oxygen Demand.
$ 2250.00	**TOTAL CIVIL PENALTY**
$ 85.04	Enforcement costs
$ 2335.04	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. Submit payment of the penalty:

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s).

Please submit payment to the attention of:

Attachment A

Union County Public Works Department
Hunley Creek Subdivision WWTP
NPDES Permit No. NC0072508
Case Number LV-2006-0010

Limit Violations, August 2005

Monthly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	12.10 *	5.0	mg/L

Weekly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	17.00 *, 12.00 *, 12.71 *	7.5	mg/L

*** denotes assessment of civil penalty.**

JAN 20 06

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
Alan W. Klimek, P.E., Director

November 30, 2005

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 N. Main Street, Room 925
Monroe, NC 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Hunley Creek Subdivision WWTP
Case No. LV-2005-0457
Union County

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $4210.04 ($4125.00 civil penalty + $85.04 enforcement costs) against the Union County Public Works Department.

This assessment is based upon the following facts: A review has been conducted of the discharge monitoring report (DMR) submitted by the Union County Public Works Department for the month of July 2005. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that the Union County Public Works Department violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against the Union County Public Works Department:

$ 1125.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for Biochemical Oxygen Demand.
$ 1875.00	For 4 of the four (4) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Biochemical Oxygen Demand.
$ 1125.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for Fecal Coliform.
$ 0	For 0 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Fecal Coliform.
$ 4125.00	**TOTAL CIVIL PENALTY**
$ 85.04	Enforcement costs
$ 4210.04	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Attachment A

Union County Public Works Department
Hunley Creek Subdivision WWTP
NPDES Permit No. NC0072508
Case Number LV-2005-0457

Limit Violations, July 2005

Monthly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	18.35 *	5.0	mg/L
Fecal Coliform	254 *	200	#/100 ml

Weekly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	16.90 *, 28.55 *, 15.02 *, 16.58 *, 13.24 *	7.5	mg/L
Fecal Coliform	412	400	#/100 ml

*** denotes assessment of civil penalty.**

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P. E., Director
Division of Water Quality

November 22, 2005

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Christine Putnam, Interim Director
Union County Public Works
400 North Church Street
Monroe, NC 28111

Subject: **NOTICE OF VIOLATION**
Compliance Sampling Inspection
Hunley Creek WWTP
NPDES Permit NC0072508
NOV-2005-PC-00256
Union County, North Carolina

Dear Ms. Putnam:

Enclosed please find a copy of the Compliance Evaluation Inspection Report for the inspection conducted at the subject facility on November 8, 2005, by Ms. Donna Hood of the Office. Please inform the facility's Operator-in-Responsible Charge of our findings by forwarding a copy of the enclosed report.

This report is being issued as a Notice of Violation (NOV) because of the violations of the subject NPDES permit and North Carolina General Statute (G.S.) 143-215.1 as detailed in the Record Keeping, Disinfection, and Effluent Sampling Sections of the attached report. Pursuant to G.S. 143-215.6A, a civil penalty of not more than twenty five-thousand dollars (25,000.00) per violation per day may be assessed against any person who violates or fails to act in accordance with the terms, conditions, or requirements of any permit issued pursuant to G.S. 143-215.1.

It is requested that a written response be submitted to this Office by December 7, 2005, addressing the deficiencies noted in the **Record Keeping, Laboratory, Sequential Batch Reactor, Disinfection, Sampling Results, and Effluent Pipe** sections of the report. In responding, please address your comments to the attention of Mr. Richard Bridgeman.

SECTION D: SUMMARY OF FINDING/COMMENTS

Additional Observations:

General Summary

This inspection was precipitated by a complaint call from Mark Fowlkes of the North Carolina Wildlife Resource Commission. Heavy solids accumulation was observed downstream of Hunley Creek's outfall, then traced back to Hunley Creek WWTP by Mr. Fowlkes. Upon receipt of the complaint, the Office completed a compliance inspection accompanied with a sampling of Hunley Creek's effluent. Lab analyses results will be communicated under separate cover when received. Numerous pictures were taken of the heavy solids accumulation in Goose Creek, a critical area for the Carolina Heelsplitter. Goose Creek is also on the 2002 303D List and Draft 2004 303 D List for biological impairment. Solids accumulation was seen over 300 yards downstream. The end of the solids deposition was not observed. The creek was heavily polluted and Mr. Alan Johnson, of this Office, was consulted as the how to best clean up the creek. Mr. Johnson suggested that eddies with heavy accumulation could easily be cleaned up with a vac truck. Deep pools in the creek with more than one foot of solids accumulation could not easily by vacuumed without removing copious amounts of water necessary to the creek. Mr. Johnson suggested it would be more damaging to the stream to try to remove deep pockets than to allow them to dissipate naturally. A key point was to stop additional solids from entering the creek posthaste. A stopgap measure implemented immediately was installing a type of erosion control measure in series down the effluent channel. Mr. Hahn, Union County Utilities Superintendent, bought sediment logs and began installation the day of the inspection.

Union County must implement an acceptable plan for dealing with a WWTP that has inherent problems in a critical watershed. Several options are available to help keep solids out of the creek. Union County could try polymer in the contact chamber to aid settling. Mr. John Hahn stated that polymer had been tried in the past, but not recently. Additional chemicals to aid the process in the SBR could also be tried. For example, the effluent pH at the time of the inspection was 5.88 s.u, which is a violation. More sodium bicarbonate or soda ash could be used. Another option is pumping the chlorine contact chamber out every day, not just once a week. The filter logs could be wrapped with silt fencing to aid filtration. These filter logs must be maintained, daily if necessary. Union County has a myriad of options and must implement some kind of response to prohibit excessive solids from entering the creek. Extremely turbid effluent had been allowed to discharge with little response from Union County. Solids should never reach the accumulation levels seen recently.

Sequential Batch Reactor

Hunley Creek's effluent was very turbid with high solids content. A settleable solids test showed 5 ml/L of solids in the effluent. Hunley Creek can, during high flow events, have a fill event during any point of the SBR's cycle. Both SBR's are run in auto. A limited ability to adjust timed cycles exists because it overly shortens other subsequent cycles, adversely affecting treatment.

Laboratory

During the inspection it was noted that not all days had verifiable calibrations performed on the pH meter used for DMR reporting. Please rectify the record keeping system so that each pH meter has traceable calibration records with a clear user.

Record Keeping

It was noted during the file review that sampling done on 9/8/2005 was reported on 9/07/2005. Please send in an amended DMR for September 2005 noting the corrections.

Disinfection

The contact chamber contains heavy amounts of solids. Mr. Mike Martin, ORC, stated that he pumps out the contact chamber every week. Do this every day if necessary.

Effluent Pipe

Heavy solids were seen down over 300 yards of Goose Creek. Some places had over two feet of accumulated solids. Please clean this up as discussed. Continue to check and clean the creek as often a necessary to keep water quality unaffected.

Sampling Results

Sampling needing laboratory analyses will be sent under separate cover.
Instantaneous sample results are as follows:

Effluent	Results
pH[1]	5.88 s.u. and 5.80 s.u.
Dissolved Oxygen[1]	3.96 mg/L and 3.30 mg/L
Chlorine Residual:	0.03 mg/L
Settleable Solids:	5ml/L
Visual observation:	very turbid with suspended solids and foam

1 Indicates effluent limit violation
2 Indicates stream standard violation

Process Control:

Settlometer:	360 @ 30 minutes with suspended floc
pH	6.67 s.u. and 6.49 s.u.

Stream Samples:

Upstream:

Dissolved Oxygen	9.70 mg/L

Downstream:

Dissolved Oxygen	6.50 mg/L
Dissolved Oxygen[2] (areas with accumulated sludge and sludge worms)[1]	2.0mg/L

1 Indicates effluent limit violation
2 Indicates stream standard violation

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P. E., Director
Division of Water Quality

January 9, 2006

Mr. Mark Tye, Assistant Public Works Director
Union County Public Works
400 North Church Street
Monroe, NC 28111

Subject: Rescission Request of NOV-2005-PC-00256
and Effluent Sampling Analytical Results
Hunley Creek WWTP
NPDES Permit NC0072508
Union County, North Carolina

Dear Mr. Tye:

This letter is in response to Union County's request for rescission of NOV-2005-PC-00256. Enclosed, please find the analytical results of the effluent sampling conducted at Hunley Creek WWTP during the inspection on November 8, 2005.

The subject Compliance Sampling Inspection Report was issued as an NOV because of the following effluent limit violations:

	Analytical Results	Effluent Limit
Effluent pH	5.88 s.u., 5.80 s.u.	≥6.0 s.u.- ≤ 9.0 s.u.
Effluent DO	3.96 mg/L, 3.30 mg/L	≥5 mg/L

A violation of stream standards (15A NCAC 02B .0211) was also noted, with a downstream DO reading of 2 mg/L. The upstream DO reading was 9.70 mg/L.

Citing the above data, Union County's request for NOV rescission is denied.

Union County's response included little or no discussion relative to that requested; instead, the response focused on the request for NOV rescission. It is, therefore, requested that a written response be submitted to this Office by January 23, 2006, addressing the deficiencies noted in the **Record Keeping, Laboratory, Sequential Batch Reactor, Disinfection, Sampling Results, and Effluent Pipe** sections of the report. In responding, please address your comments to the attention of Mr. Richard Bridgeman.

This report should be self-explanatory; however, should you have any questions concerning the report, please do not hesitate to contact Ms. Hood or me at (704) 663-1699.

Sincerely,

D. Rex Gleason

D. Rex Gleason, P.E.
Surface Water Protection Regional Supervisor

Enclosure

cc: Christine Putnam, Interim Director
John Hahn, Public Works Superintendent
Stony Rushing, Union County Board of Commissioners

DH

ANALYTICAL RESULTS SHEET

NAME OF FACILITY: Hunley Creek WWTP	Grab: X Composite:
Sample Date(s): 11/02/2005	NPDES Permit No. NC0072508
Sample Location: Effluent	County: Union

BOD5, mg/l	49.2	Phenols, ug/l	
COD: High, mg/l		Sulfate, mg/l	
COD: Low, mg/l		Sulfide, mg/l	
Coliform: Fecal, #/100 ml	83	Biomass: Dry Weight	
Coliform: Total, #/100 ml		Biomass: Peri Ash Free	
Coliform: Tube Fecal, MPN		NH_3-N, mg/l	5.4
Coliform: Tube Total, MPN		TKN, mg/l	11
Residue: Total, mg/l		$NO_2 + NO_3$, mg/l	5.9
Volatile, mg/l		PO_4, mg/l	
Fixed, mg/l		P: Total, mg/l	8.0
Residue: Suspended, mg/l	163	P: Dissolved, mg/l	
Volatile, mg/l		Ag-Silver, ug/l	
Fixed, mg/l		Al-Aluminum, ug/l	
Settleable Solids, ml/l		Be-Beryllium, ug/l	
pH, s.u.	5.88*, 5.80*	Ca-Calcium, ug/l	
TOC, mg/l		Cd-Cadmium, ug/l	
Turbidity, NTU	61	Co-Cobalt, ug/l	
Chloride, mg/l		Cr-Chromium: Total, ug/l	
Oil and Grease, mg/l		Cu-Copper, ug/l	
Cyanide, ug/l		Fe-Iron, mg/l	
Fluoride, mg/l		Pb-Lead, ug/l	
Hardness: Total, mg/l		Hg-Mercury, ug/l	
MBAS, ug/l		Ni-Nickel, ug/l	
Conductivity, umhos/cm	500	Semivolatiles	
Dissolved Oxygen, mg/l	3.96*, 3.30*	VOC	
Temperature, ^0C			
Alkalinity, mg/L	79 mg/L		
Chlorine, mg/L	<0.5 mg/L		

* denotes a violation of a permit limitation.

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
Alan W. Klimek, P.E., Director

October 19, 2005

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 N. Main Street, Room 925
Monroe, NC 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Hunley Creek Subdivision WWTP
Case No. LV-2005-0417
Union County

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $2272.54 ($2187.50 civil penalty + $85.04 enforcement costs) against the Union County Public Works Department.

This assessment is based upon the following facts: A review has been conducted of the discharge monitoring report (DMR) submitted by the Union County Public Works Department for the month of June 2005. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that the Union County Public Works Department violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against the Union County Public Works Department:

$ 937.50	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for Biochemical Oxygen Demand.
$ 1250.50	For 4 of the four (4) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Biochemical Oxygen Demand.
$ 2187.50	**TOTAL CIVIL PENALTY**
$ 85.04	Enforcement costs.
$ 2272.54	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. **Submit payment of the penalty:**

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s).

Attachment A

Union County Public Works Department
Hunley Creek Subdivision WWTP
NPDES Permit No. NC0072508
Case Number LV-2005-0417

Limit Violations, June 2005

Monthly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	16.91 *	5.0	mg/L

Weekly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	19.3 *, 12.53 *, 22.2 *, 13.63 *	7.5	mg/L

*** denotes assessment of civil penalty.**

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
Alan W. Klimek, P.E., Director

September 27, 2005

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 N. Main Street, Room 925
Monroe, NC 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Hunley Creek Subdivision WWTP
Case No. LV-2005-0375
Union County

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $1960.04 ($1875.00 civil penalty + $85.04 enforcement costs) against the Union County Public Works Department.

This assessment is based upon the following facts: A review has been conducted of the discharge monitoring report (DMR) submitted by the Union County Public Works Department for the month of May 2005. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that the Union County Public Works Department violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against the Union County Public Works Department:

$ 937.50	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for Biochemical Oxygen Demand.
$ 937.50	For 3 of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Biochemical Oxygen Demand.
$ 1875.00	**TOTAL CIVIL PENALTY**
$ 85.04	Enforcement costs.
$ 1960.04	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. **Submit payment of the penalty:**

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s).

Attachment A

Union County Public Works Department
Hunley Creek Subdivision WWTP
NPDES Permit No. NC0072508
Case Number LV-2005-0375

Limit Violations, May 2005

Monthly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	22.71 *	5.0	mg/L

Weekly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	35.2 *, 19.95 *, 35.7 *	7.5	mg/L

*** denotes assessment of civil penalty.**

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

October 12, 2005

Mike Shalati
Union County
500 N Main St
PO Box 987
Monroe, NC 28111

SUBJECT: Payment Acknowledgment
Civil Penalty Assessment
Hunley Creek WWTP
Permit Number: NC0072508
Case Number: LV-2005-0375
Union County

Dear Mr. Shalati:

This letter is to acknowledge receipt of check number 318974 in the amount of $1,960.04 received from you dated October 7, 2005. This payment satisfies in full the above civil assessment levied against the subject facility, and this case has been closed. Payment of this penalty in no way precludes future action by this Division for additional violations of the applicable Statutes, Regulations, or Permits.

If you have any questions, please call Robert L Sledge at 919-733-5083 Ext.547.

Sincerely,

Frances Candelaria

Frances Candelaria

cc: Enforcement File #: LV-2005-0375
DWQ Mooresville Regional Office Supervisor
Central Files

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
Alan W. Klimek, P.E., Director

August 1, 2005

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 N. Main Street, Room 925
Monroe, NC 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Hunley Creek Subdivision WWTP
Case No. LV-2005-0263
Union County

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $1835.04 ($1750.00 civil penalty + $85.04 enforcement costs) against the Union County Public Works Department.

This assessment is based upon the following facts: A review has been conducted of the discharge monitoring report (DMR) submitted by the Union County Public Works Department for the month of April 2005. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that the Union County Public Works Department violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against the Union County Public Works Department:

$ 750.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for Biochemical Oxygen Demand.
$ 1000.00	For 4 of the four (4) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Biochemical Oxygen Demand.
$ 1750.00	**TOTAL CIVIL PENALTY**
$ 85.04	Enforcement costs.
$ 1835.04	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. **Submit payment of the penalty:**

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s).

Attachment A

Union County Public Works Department
Hunley Creek Subdivision WWTP
NPDES Permit No. NC0072508
Case Number LV-2005-0263

Limit Violations, April 2005

Monthly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	43.4 *	5.0	mg/L

Weekly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	25.8 *, 46.9 *, >75.5 *, 25.4 *	7.5	mg/L

*** denotes assessment of civil penalty.**

SO S-2007

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

August 23, 2005

Christine Putnam, Director Interim
Union County
400 N Church St
Monroe, NC 28111

SUBJECT: Payment Acknowledgment
Civil Penalty Assessment
Hunley Creek WWTP
Permit Number: NC0072508
Case Number: LV-2005-0263
Union County

Dear Ms. Putnam:

This letter is to acknowledge receipt of check number 316199 in the amount of $1,835.04 received from you dated August 11, 2005. This payment satisfies in full the above civil assessment levied against the subject facility, and this case has been closed. Payment of this penalty in no way precludes future action by this Division for additional violations of the applicable Statutes, Regulations, or Permits.

If you have any questions, please call Robert L Sledge at 919-733-5083 Ext.547.

Sincerely,

Frances Candelaria

Frances Candelaria

cc: Enforcement File #: LV-2005-0263
DWQ Mooresville Regional Office Supervisor
Central Files

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
Alan W. Klimek, P.E., Director

July 1, 2005

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 N. Main Street, Room 925
Monroe, NC 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Hunley Creek Subdivision WWTP
Case No. LV-2005-0222
Union County

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $835.04 ($750.00 civil penalty + $85.04 enforcement costs) against the Union County Public Works Department.

This assessment is based upon the following facts: A review has been conducted of the discharge monitoring report (DMR) submitted by the Union County Public Works Department for the month of March 2005. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that the Union County Public Works Department violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against the Union County Public Works Department:

$ 750.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for Biochemical Oxygen Demand.
$ 0	For 0 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Biochemical Oxygen Demand.
$ 750.00	**TOTAL CIVIL PENALTY**
$ 85.04	Enforcement costs.
$ 835.04	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. **Submit payment of the penalty:**

   Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s).

Attachment A

Union County Public Works Department
Hunley Creek Subdivision WWTP
NPDES Permit No. NC0072508
Case Number LV-2005-0222

Limit Violations, March 2005

Monthly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	13.78 *	10.0	mg/L

Weekly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	16.6, 16.3	15.0	mg/L

*** denotes assessment of civil penalty.**

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

October 25, 2005

Christine Putnam, Director Interim
Union County
400 N Church St
Monroe, NC 28111

SUBJECT: Payment Acknowledgment
Civil Penalty Assessment
Hunley Creek WWTP
Permit Number: NC0072508
Case Number: LV-2005-0222
Union County

Dear Ms. Putnam:

This letter is to acknowledge receipt of check number 319711 in the amount of $835.04 received from you dated October 20, 2005. This payment satisfies in full the above civil assessment levied against the subject facility, and this case has been closed. Payment of this penalty in no way precludes future action by this Division for additional violations of the applicable Statutes, Regulations, or Permits.

If you have any questions, please call Robert L Sledge at 919-733-5083 Ext.547.

Sincerely,

Frances Candelaria

Frances Candelaria

cc: Enforcement File #: LV-2005-0222
DWQ Mooresville Regional Office Supervisor
Central Files

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
Alan W. Klimek, P.E., Director

May 16, 2005

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 N. Main Street, Room 925
Monroe, NC 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Hunley Creek Subdivision WWTP
Case No. LV-2005-0178
Union County

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $1585.04 ($1500.00 civil penalty + $85.04 enforcement costs) against Union County.

This assessment is based upon the following facts: A review has been conducted of the discharge monitoring report (DMR) submitted by Union County for the month of February 2005. This review has shown the subject facility to be in violation of the discharge limitations found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Union County violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Union County:

$ 750.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for Biochemical Oxygen Demand.
$ 750.00	For 3 of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Biochemical Oxygen Demand.
$ 0	For 0 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for Total Suspended Solids.
$ 0	For 0 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Total Suspended Solids.
$ 1500.00	**TOTAL CIVIL PENALTY**
$ 85.04	Enforcement costs.
$ 1585.04	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Attachment A

Union County
Union County Public Works Department
Hunley Creek Subdivision WWTP
NPDES Permit No. NC0072508
Case Number LV-2005-0178

Limit Violations, February 2005

Monthly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	33.5 *	10.0	mg/L
Total Suspended Solids	34.9	30.0	mg/L

Weekly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	23.7 *, 39.8 * 57.2 *	15.0	mg/L
Total Suspended Solids	46.0	45.0	mg/L

*** denotes assessment of civil penalty.**

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

June 27, 2005

Mike K Shalati
Union County
500 N Main St Ground F
Monroe, NC 28110

SUBJECT: Payment Acknowledgment
Civil Penalty Assessment
Hunley Creek WWTP
Permit Number: NC0072508
Case Number: LV-2005-0178 and LV-2005-0207
Union County

Dear Mr. Shalati:

This letter is to acknowledge receipt of check number 313468 in the amount of $9,670.08 received from you dated June 16, 2005. This payment satisfies in full the above civil assessment levied against the subject facility, and this case has been closed. Payment of this penalty in no way precludes future action by this Division for additional violations of the applicable Statutes, Regulations, or Permits.

If you have any questions, please call Robert L Sledge at 919-733-5083 Ext.547.

Sincerely,

Frances Candelaria

Frances Candelaria

cc: DWQ Mooresville Regional Office Supervisor
Central Files

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
Alan W. Klimek, P.E., Director

May 9, 2005

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 N. Main Street, Room 925
Monroe, NC 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Hunley Creek Subdivision WWTP
Case No. LV-2005-0168
Union County

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $1085.04 ($1000.00 civil penalty + $85.04 enforcement costs) against Union County.

This assessment is based upon the following facts: A review has been conducted of the discharge monitoring report (DMR) submitted by Union County for the month of January 2005. This review has shown the subject facility to be in violation of the discharge limitations found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Union County violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Union County:

$ 750.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for Biochemical Oxygen Demand.
$ 250.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Biochemical Oxygen Demand.
$ 1000.00	**TOTAL CIVIL PENALTY**
$ 85.04	Enforcement costs.
$ 1085.04	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. **Submit payment of the penalty:**

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s). Please submit payment to the attention of:

Attachment A

Union County
Union County Public Works Department
Hunley Creek Subdivision WWTP
NPDES Permit No. NC0072508
Case Number LV-2005-0168

Limit Violations, January 2005

Monthly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	46.4 *	30.0	mg/L

Weekly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	69.6 *	45.0	mg/L

*** denotes assessment of civil penalty.**

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

May 31, 2005

John C Dyer
Union County
400 N Church St
Monroe, NC 28111

SUBJECT: Payment Acknowledgment
Civil Penalty Assessment
Hunley Creek WWTP
Permit Number: NC0072508
Case Number: LV-2005-0168
Union County

Dear Mr. Dyer:

This letter is to acknowledge receipt of check number 311905 in the amount of $1,085.04 received from you dated May 19, 2005. This payment satisfies in full the above civil assessment levied against the subject facility, and this case has been closed. Payment of this penalty in no way precludes future action by this Division for additional violations of the applicable Statutes, Regulations, or Permits.

If you have any questions, please call Robert L Sledge at 919-733-5083 Ext.547.

Sincerely,

Carolyn Bryant

cc: DWQ Mooresville Regional Office Supervisor
Central Files

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
Alan W. Klimek, P.E., Director

March 7, 2005

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Shalati, County Manager
Union County
500 N. Main Street, Room 925
Monroe, NC 28112

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0072508
Hunley Creek Subdivision WWTP
Case No. LM-2005-0010
Union County

Dear Mr. Shalati:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $985.04 ($900.00 civil penalty + $85.04 enforcement costs) against the Union County Public Works Department.

This assessment is based upon the following facts: A review has been conducted of the discharge monitoring report (DMR) submitted by the Union County Public Works Department for the month of December 2004. This review has shown the subject facility to be in violation of the discharge limitations and monitoring requirements found in NPDES Permit No. NC0072508. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that the Union County Public Works Department violated the terms, conditions or requirements of NPDES Permit No. NC0072508 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, D. Rex Gleason, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against the Union County Public Works Department:

$ 0	For 0 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for Biochemical Oxygen Demand.
$ 250.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Biochemical Oxygen Demand.
$ 250.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Total Suspended Residue.
$ 250.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0072508, by discharging waste into the waters of the State in violation of the permit weekly average effluent limit for Fecal Coliform.
$ 150.00	For 3 of the three (3) failures to monitor for effluent Total Residual Chlorine in violation of G.S. 143-215.1(a)(6) and the terms of NPDES Permit No. NC0072508.
$ 900.00	**TOTAL CIVIL PENALTY**
$ 85.04	Enforcement costs.
$ 985.04	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

Attachment A

Union County Public Works Department
Hunley Creek Subdivision WWTP
NPDES Permit No. NC0072508
Case Number LM-2005-0010

Limit Violations, December 2004

Monthly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	34.3	30.0	mg/L

Weekly Average Limit Violations

Parameter	Reported Value	Limit	Units
Biochemical Oxygen Demand	61.0 *	45.0	mg/L
Total Suspended Residue	57 *	45.0	mg/L
Fecal Coliform	1296 *	400	#/100 ml

Monitoring Violations, December 2004

Parameter	Required Monitoring Frequency	Location	Failures to Report
Total Residual Chlorine	2/Week	Effluent	3 *

*** denotes assessment of civil penalty.**

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

March 22, 2005

John C. Dyer
Union County
400 N. Church St.
Monroe, NC 28111

SUBJECT: Payment Acknowledgment
Civil Penalty Assessment
Hunley Creek WWTP
Permit Number: NC0072508
Case Number: LM-2005-0010
Union County

Dear Mr. Dyer:

This letter is to acknowledge receipt of check number 309135 in the amount of $985.04 received from you dated March 7, 2005. This payment satisfies in full the above civil assessment levied against the subject facility, and this case has been closed. Payment of this penalty in no way precludes future action by this Division for additional violations of the applicable Statutes, Regulations, or Permits.

If you have any questions, please call Robert L. Sledge at 919-733-5083 ext.547.

Sincerely,

for Coleen Sullins

cc: Enforcement File #: LM-2005-0010
DWQ Mooresville Regional Office Supervisor
Central Files

NPDES Compliance

2010 **Fairfield Plantation (Goose Creek Utility Company)**

3/23 NOV & CP $1585.37 - review of self monitoring data Dec. 09
LV-2010-0066 ↳ Flow

2/26 NOV & CP $835.37 - rev. of self-mon. data Nov. 09
LV-2010-0066 ↳ Flow

1/20 NOV & CP $5179.12 - rev. of self mon. data Oct. 09
LM-2010-0004 ↳ ammonia, flow, fecal coli, DO AND Failure to Monitor more Parameters

2009

12/18/09 NOV & CP $1772.87 - rev. of self mon. data Sept 09
LV-2009-0445 ↳ DO, flow, Ammonia & failure to rpt

11/23/09
LV-2009-0414 NOV & CP $835.37 - rev. of self mon data Aug 09
↳ fecal coli. & ammonia

9/23/09
LV-2009-0339 NOV & CP $685.37 - RoSM Data June 09
↳ fecal colif + flow

8/27/09
LV-2009-306 NOV & CP $585.30 - ? May 09
↳ flow

8/21/09 NOV & CP $585.30 RoSM Data Apr. 09
LV-2009-0296 ↳ flow

7/6/09 NOV & CP $835.30 ? Feb/Mar? *the violator had not been assessed civil penalties for any previous violations since 2003.
LV-2009-0209 ↳ flow

6/11/09 NOV - Compliance Evaluation Inspection Sampling Rpt conducted 3/31/2009
NOV-2009-PC-0509 ↳ "Secondary clarifier & filtration Sections" viol.

3/28/05 Ltr re: SOC
Special Order by Consent expires May 1, 2006 - allowed for ↑ flow, etc. while WWTP fixed systems
- NCDWQ received $7,658.00 payment on 11/22/04 which satisfies penalty of SOC and settles all outstanding violations, including enforcement cases: LV-2003-0146, 0435, 0509, 0556, 0590, 0616, & 0632

NPDES Compliance

(no photocopies of the rpts on this pg)

Fairfield Plantation

2009

NOV-2009-PC-DWQ Case#	Mo. Ave.	Limit	C.P.
-0262	0.077 mgd	0.07 mgd	No fee
-0234	0.075 mgd	0.07 mgd	No fee
-0182	0.074 mgd	0.07 mgd	No fee

Notes from docs @ Central Files

2008

NOV-2008-LV-0322 — 0.077 mgd / 0.07 mgd

-0266 — 600/100 ml / 400/100 ml — 2/18/08 — fecal coliform — Daily max

? NOV – Failure to submit renewal package — 5/15/08

48 mg/l / 45 mg/l — TSR

2007

NOV-2007-LR-007 — Did not receive DMR (Discharge Monitoring Rpt) for July 2007 — 10/5/07

2006

NOV-2006-LV-0593 — >6,000/100ml / 400/100ml — 12/21/06 — fecal coli.

2005

NOV-2005-PC-194 — NOV – Compliance Evaluation Inspection

↳ Operations & Maintenance, Laboratory, Bar Screen, & Record Keeping

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

March 23, 2010

CERTIFIED MAIL 7008 1140 0002 2716 8267
RETURN RECEIPT REQUESTED

Mr. Paul H. Trotter, President
Goose Creek Utility Company
1515 Mockingbird Lane, Suite 900
Charlotte, North Carolina 28209

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0034762
Fairfield Plantation WWTP
Union County
Case No. LV-2010-0089

Dear Mr. Trotter:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $1585.37 ($1500.00 civil penalty + $85.37 enforcement costs) against Goose Creek Utility Company.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data reported for December 2009. This review has shown the subject facility to be in violation of the discharge limitations found in NPDES Permit No. NC0034762. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Goose Creek Utility Company violated the terms, conditions, or requirements of NPDES Permit No. NC0034762 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, Robert B. Krebs, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Goose Creek Utility Company:

$ $1500.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for flow.
$ 1500.00	**TOTAL CIVIL PENALTY**
$ 85.37	Enforcement costs.
$ 1585.37	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. Submit payment of the penalty:

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s).
Please submit payment to the attention of:

Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

OR

2. Submit a written request for remission including a detailed justification for such request:

Please be aware that a request for remission is limited to consideration of the five factors listed below as they may relate to the reasonableness of the amount of the penalty assessed.

Requesting remission is not the proper procedure for contesting whether the violation(s) occurred or the accuracy of any of the factual statements contained in the civil penalty assessment document. Because a remission request forecloses the option of an administrative hearing, such a request must be accompanied by a waiver of your right to an administrative hearing and a stipulation that no factual or legal issues are in dispute. Please prepare a detailed statement that establishes why you believe the civil penalty should be remitted, and submit it to the Division of Water Quality at the address listed below. In determining whether a remission request will be approved, the following factors shall be considered:

(1) whether one or more of the civil penalty assessment factors in G.S. 143B-282.1(b) were wrongfully applied to the detriment of the petitioner;
(2) whether the violator promptly abated continuing environmental damage resulting from the violation;
(3) whether the violation was inadvertent or a result of an accident;
(4) whether the violator had been assessed civil penalties for any previous violations; or
(5) whether payment of the civil penalty will prevent payment for the remaining necessary remedial actions.

Please note that all information presented in support of your request for remission must be submitted in writing. The Director of the Division of Water Quality will review your evidence and inform you of his decision in the matter of your remission request. The response will provide details regarding case status, directions for payment, and provision for further appeal of the penalty to the Environmental Management Commission's Committee on Civil Penalty Remissions (Committee). Please be advised that the Committee cannot consider information that was not part of the original remission request considered by the Director. Therefore, it is very important that you prepare a complete and thorough statement in support of your request for remission.

In order to request remission, you must complete and submit the enclosed "Waiver of Right to an Administrative Hearing and Stipulation of Facts" form within thirty (30) days of receipt of this notice. The Division of Water Quality also requests that you complete and submit the enclosed "Justification for Remission Request." Both forms should be submitted to the following address:

Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

OR

3. File a petition for an administrative hearing with the Office of Administrative Hearings:

If you wish to contest any statement in the attached assessment document you must file a petition for an administrative hearing. You may obtain the petition form from the Office of Administrative Hearings. You must file the petition with the Office of Administrative Hearings within thirty (30) days of receipt of this notice. A petition is considered filed when it is received in the Office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00 a.m. and 5:00 p.m., except for official state holidays. The petition may be filed by facsimile (fax) or electronic mail by an attached file (with restrictions) - provided the signed

original, one (1) copy and a filing fee (if a filing fee is required by NCGS §150B-23.2) is received in the Office of Administrative Hearings within seven (7) business days following the faxed or electronic transmission. You should contact the Office of Administrative Hearings with all questions regarding the filing fee and/or the details of the filing process. The mailing address and telephone and fax numbers for the Office of Administrative Hearings are as follows:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Tel: (919) 431-3000
Fax: (919) 431-3100

One (1) copy of the petition must also be served on DENR as follows:

Mary Penny Thompson, General Counsel
DENR
1601 Mail Service Center
Raleigh, NC 27699-1601

Failure to exercise one of the options above within thirty (30) days of receipt of this letter, as evidenced by an internal date/time received stamp (not a postmark), will result in this matter being referred to the Attorney General's Office for collection of the penalty through a civil action.

Please be advised that additional penalties may be assessed for violations that occur after the review period of this assessment. If the violations are of a continuing nature, not related to operation and/or maintenance problems, and you anticipate remedial construction activities, then you may wish to consider applying for a Special Order by Consent. If you have any questions about this civil penalty assessment or a Special Order by Consent, please contact the Water Quality Section staff of the Mooresville Regional Office at 704/663-1699.

3/23/10
(Date)

Robert B. Krebs
Regional Supervisor
Surface Water Protection
Mooresville Regional Office
Division of Water Quality

ATTACHMENTS

cc: Water Quality Regional Supervisor w/ attachments
Compliance/Enforcement File w/ attachments
Central Files w/ attachments

jl

ATTACHMENT A
CASE NO. LV-2010-0066

Outfall	Date	Parameter	Reported Value	Permit Limit
001	11/2009	Flow	*0.117 MGD	0.070 MGD

* Denotes civil penalty assessment

STATE OF NORTH CAROLINA

COUNTY OF UNION

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES

IN THE MATTER OF ASSESSMENT)
OF CIVIL PENALTY AGAINST)
GOOSE CREEK UTILITY COMPANY)
)
PERMIT NO. NC0034762)

WAIVER OF RIGHT TO AN
ADMINISTRATIVE HEARING AND
STIPULATION OF FACTS

FILE NO. LV-2010-0089

Having been assessed civil penalties totaling $ **1585.37** for violation(s) as set forth in the assessment document of the Division of Water Quality dated **March 23, 2010**, the undersigned, desiring to seek remission of the civil penalties, does hereby waive the right to an administrative hearing in the above-stated matter and does stipulate that the facts are as alleged in the assessment document. The undersigned further understands that all evidence presented in support of remission of this civil penalty must be submitted to the Director of the Division of Water Quality within 30 days of receipt of the notice of assessment. No new evidence in support of a remission request will be allowed after 30 days from the receipt of the notice of assessment.

This the _____ day of _____, 2010

_____
BY

ADDRESS

_____

_____

_____

_____

_____

TELEPHONE

_____

JUSTIFICATION FOR REMISSION REQUEST

DWQ Case Number: LV-2010-0089
Assessed Party: Goose Creek Utility Company
County: Union
Permit Number: NC0034762
Amount Assessed: $1585.37

Please use this form when requesting remission of this civil penalty. You must also complete the *"Request For Remission, Waiver of Right to an Administrative Hearing, and Stipulation of Facts"* form to request remission of this civil penalty. You should attach any documents that you believe support your request and are necessary for the Director to consider in evaluating your request for remission. Please be aware that a request for remission is limited to consideration of the five factors listed below as they may relate to the reasonableness of the amount of the civil penalty assessed. Requesting remission is not the proper procedure for contesting whether the violation(s) occurred or the accuracy of any of the factual statements contained in the civil penalty assessment document. Pursuant to N.C.G.S. § 143B-282.1(c), remission of a civil penalty may be granted only when one or more of the following five factors applies. Please check each factor that you believe applies to your case and provide a detailed explanation, including copies of supporting documents, as to why the factor applies (attach additional pages as needed).

___ (a) one or more of the civil penalty assessment factors in N.C.G.S. 143B-282.1(b) were wrongfully applied to the detriment of the petitioner *(the assessment factors are listed in the civil penalty assessment document)*;

___ (b) the violator promptly abated continuing environmental damage resulting from the violation *(i.e., explain the steps that you took to correct the violation and prevent future occurrences);*

___ (c) the violation was inadvertent or a result of an accident (*i.e., explain why the violation was unavoidable or something you could not prevent or prepare for);*

___ (d) the violator had not been assessed civil penalties for any previous violations;

___ (e) payment of the civil penalty will prevent payment for the remaining necessary remedial actions *(i.e., explain how payment of the civil penalty will prevent you from performing the activities necessary to achieve compliance).*

EXPLANATION: (*use additional pages as necessary)*

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

February 26, 2010

CERTIFIED MAIL 7008 1140 0002 2716 8199
RETURN RECEIPT REQUESTED

Mr. Paul H. Trotter, President
Goose Creek Utility Company
1515 Mockingbird Lane, Suite 900
Charlotte, North Carolina 28209

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0034762
Fairfield Plantation WWTP
Union County
Case No. LV-2010-0066

Dear Mr. Trotter:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $835.37 ($750.00 civil penalty + $85.37 enforcement costs) against Goose Creek Utility Company.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data reported for November 2009. This review has shown the subject facility to be in violation of the discharge limitations found in NPDES Permit No. NC0034762. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Goose Creek Utility Company violated the terms, conditions, or requirements of NPDES Permit No. NC0034762 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, Robert B. Krebs, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Goose Creek Utility Company:

$ 750.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for flow.
$ 750.00	**TOTAL CIVIL PENALTY**
$ 85.37	Enforcement costs.
$ 835.37	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. Submit payment of the penalty:

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s).
Please submit payment to the attention of:

Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

OR

2. Submit a written request for remission including a detailed justification for such request:

Please be aware that a request for remission is limited to consideration of the five factors listed below as they may relate to the reasonableness of the amount of the penalty assessed.

Requesting remission is not the proper procedure for contesting whether the violation(s) occurred or the accuracy of any of the factual statements contained in the civil penalty assessment document. Because a remission request forecloses the option of an administrative hearing, such a request must be accompanied by a waiver of your right to an administrative hearing and a stipulation that no factual or legal issues are in dispute. Please prepare a detailed statement that establishes why you believe the civil penalty should be remitted, and submit it to the Division of Water Quality at the address listed below. In determining whether a remission request will be approved, the following factors shall be considered:

(1) whether one or more of the civil penalty assessment factors in G.S. 143B-282.1(b) were wrongfully applied to the detriment of the petitioner;
(2) whether the violator promptly abated continuing environmental damage resulting from the violation;
(3) whether the violation was inadvertent or a result of an accident;
(4) whether the violator had been assessed civil penalties for any previous violations; or
(5) whether payment of the civil penalty will prevent payment for the remaining necessary remedial actions.

Please note that <u>all</u> information presented in support of your request for remission must be submitted in writing. The Director of the Division of Water Quality will review your evidence and inform you of his decision in the matter of your remission request. The response will provide details regarding case status, directions for payment, and provision for further appeal of the penalty to the Environmental Management Commission's Committee on Civil Penalty Remissions (Committee). Please be advised that the Committee cannot consider information that was not part of the original remission request considered by the Director. Therefore, it is very important that you prepare a complete and thorough statement in support of your request for remission.

In order to request remission, you must complete and submit the enclosed "Waiver of Right to an Administrative Hearing and Stipulation of Facts" form within thirty (30) days of receipt of this notice. The Division of Water Quality also requests that you complete and submit the enclosed "Justification for Remission Request." Both forms should be submitted to the following address:

Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

<u>OR</u>

3. File a petition for an administrative hearing with the Office of Administrative Hearings:

If you wish to contest any statement in the attached assessment document you must file a petition for an administrative hearing. You may obtain the petition form from the Office of Administrative Hearings. You must file the petition with the Office of Administrative Hearings within thirty (30) days of receipt of this notice. A petition is considered filed when it is received in the Office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00 a.m. and 5:00 p.m., except for official state holidays. The petition may be filed by facsimile (fax) or electronic mail by an attached file (with restrictions) - provided the signed

original, one (1) copy and a filing fee (if a filing fee is required by NCGS §150B-23.2) is received in the Office of Administrative Hearings within seven (7) business days following the faxed or electronic transmission. You should contact the Office of Administrative Hearings with all questions regarding the filing fee and/or the details of the filing process. The mailing address and telephone and fax numbers for the Office of Administrative Hearings are as follows:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Tel: (919) 431-3000
Fax: (919) 431-3100

One (1) copy of the petition must also be served on DENR as follows:

Mary Penny Thompson, General Counsel
DENR
1601 Mail Service Center
Raleigh, NC 27699-1601

Failure to exercise one of the options above within thirty (30) days of receipt of this letter, as evidenced by an internal date/time received stamp (not a postmark), will result in this matter being referred to the Attorney General's Office for collection of the penalty through a civil action.

Please be advised that additional penalties may be assessed for violations that occur after the review period of this assessment. If the violations are of a continuing nature, not related to operation and/or maintenance problems, and you anticipate remedial construction activities, then you may wish to consider applying for a Special Order by Consent. If you have any questions about this civil penalty assessment or a Special Order by Consent, please contact the Water Quality Section staff of the Mooresville Regional Office at 704/663-1699.

2/26/2016
(Date)

RBK

Robert B. Krebs
Regional Supervisor
Surface Water Protection
Mooresville Regional Office
Division of Water Quality

ATTACHMENTS

cc: Water Quality Regional Supervisor w/ attachments
Compliance/Enforcement File w/ attachments
Central Files w/ attachments

jl

ATTACHMENT A
CASE NO. LV-2010-0066

Outfall	Date	Parameter	Reported Value	Permit Limit
001	11/2009	Flow	*0.079 MGD	0.070 MGD

* Denotes civil penalty assessment

Central Files

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

February 4, 2010

Mr. Ken Rudder, Director
NC Utilities Commission – Public Staff
Water & Sewer Division
4326 Mail Service Center
Raleigh, NC 27699-4326

Subject: Request of Assistance & Counsel
Goose Creek Utility Company
NPDES Permit NC0034762
Union County

Dear Mr. Rudder:

The Division of Water Quality is wrestling with a situation involving the subject facility that has potential to have a profound effect on water quality in an environmentally sensitive (and therefore high profile) stream. As this facility is also under the regulative authority of the Utilities Commission and some of the issues in this matter are within the purview of the Commission's mandate, the Division hereby requests its advice, counsel and assistance in addressing this situation.

The following is a very brief summary of the matter. Goose Creek Utility Company, Inc. is the owner and legal NPDES permittee of a wastewater treatment plant serving the Fairfield Plantation subdivision in Union County. The facility discharges treated wastewater into Goose Creek, a small stream in the Yadkin-Pee Dee River basin. Goose Creek is home to one of the few remaining natural populations of the Carolina Heelsplitter, a federally endangered freshwater mussel. This organism is known to be sensitive to the concentrations of ammonia and total residual chlorine in its environment. Both of these are typical constituent characteristics of treated domestic wastewater, but may currently be found in higher than anticipated concentrations downstream of the Goose Creek Utility discharge because of the present condition of the wastewater treatment plant.

The facility currently operates under the terms of a NPDES permit issued in 1994. The terms and conditions of the permit, specifically its effluent limitations and monitoring requirements, are not as stringent as those found in contemporary permits for facilities discharging into Goose Creek. The reason for this is that Goose Creek Utility Company has contested each subsequent permit that has been issued and these matters have been tied up in the Office of Administrative Hearings since 2002. The Division has been somewhat amenable to the continuing nature of this situation because its solution was promised in the form of an imminent connection of the Fairfield Plantation collection system to that of Union County Public Works, along with removal of the discharge to Goose Creek. The degree of certainty attached to this proposed connection was strengthened by the execution of an agreement between Union County and Goose Creek Utility Company that spelled out specific terms for establishment of the connection.

1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6492 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org
An Equal Opportunity \ Affirmative Action Employer

Unfortunately, it now appears the agreement between the two parties has broken down and there is little prospect for the connection to occur soon. We are left with an underperforming wastewater treatment plant that has not received adequate capital reinvestment for a number of years. Its condition has deteriorated to the point that its structural integrity is questionable and its owners attest to the fact that it cannot consistently meet currently applicable (1994) permit limits. Additionally, the facility recently experienced an episode when it was not visited by an operator for upwards of three weeks and its discharge was grossly undertreated.

The Division finds the current state of affairs to be intolerable and has grave concerns about the potential impacts of continuing discharge from this facility to Goose Creek under its current circumstances. To that end, the Division has already requested the Attorney General's Office to review this matter and to take adequate measures, including the seeking of injunctive relief through the Superior Court, that will ensure its prompt and enduring resolution. There has been some discussion that such resolution may be found in the purchase of the Goose Creek Utility Company infrastructure by Aqua North Carolina, Inc. While confidence exists in Aqua's ability to adequately upgrade and operate this system, at best such a solution would involve many months of the status quo, during which time the receiving stream would remain at risk. The Division still believes that connection to Union County's collection system provides the quickest and most permanent solution.

As it directly relates to a utility the Commission oversees and has significant impact on the rates customers pay and the quality of service they receive, the Division respectfully requests your assistance in this matter. We would be appreciative of any assistance (advice, legal opinion, development of strategy, etc.) that your office may be able to provide that may help bring about permanent resolution of this situation. To help you in your understanding of this matter, please find attached to this letter a more detailed overview; a copy of the agreement between Union County and Goose Creek Utility Company; a recent wastewater system annual report to the utility's customers describing the imminent connection and the benefits they would see as a result, and copies of some recent communications from the facility attesting to its current circumstances.

The Division of Water Quality thanks you for your assistance and looks forward to working with you in developing a resolution to this matter. If you have any questions, please contact Rob Krebs, Surface Water Protection Supervisor of our Mooresville Regional Office at (704) 235-2176, or Bob Sledge in our Central Office at 807-6398.

Sincerely,

Tom Belnick, Supervisor
NPDES West Unit

Attachments

cc: PSB/NPDES West
Mooresville Regional Office
Coleen Sullins
Central Files

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

January 20, 2010

CERTIFIED MAIL 7008 1140 0002 2716 8151
RETURN RECEIPT REQUESTED

Mr. Paul H. Trotter, President
Goose Creek Utility Company
1515 Mockingbird Lane, Suite 900
Charlotte, North Carolina 28209

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0034762
Fairfield Plantation WWTP
Union County
Case No. LM-2010-0004

Dear Mr. Trotter:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $5,179.12 ($5,093.75 civil penalty + $85.37 enforcement costs) against Goose Creek Utility Company.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data reported for October 2009. This review has shown the subject facility to be in violation of the discharge limitations found in NPDES Permit No. NC0034762. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Goose Creek Utility Company violated the terms, conditions, or requirements of NPDES Permit No. NC0034762 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, Robert B. Krebs, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Goose Creek Utility Company:

$ 312.50	For __1__ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit daily maximum effluent limit for dissolved oxygen.
$ 312.50	For __1__ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit daily maximum effluent limit for fecal coliform.
$ 625.00	For ___1___ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for flow.
$ 625.00	For ___1___ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for ammonia nitrogen.
$ 187.50	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit effluent monitoring requirement for fecal coliform.
$ 187.50	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit effluent monitoring requirement for pH.
$ 187.50	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit effluent monitoring requirement for dissolved oxygen.
$ 187.50	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit effluent monitoring requirement for BOD.
$ 187.50	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit effluent monitoring requirement for ammonia nitrogen.

$ 187.50	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit effluent monitoring requirement for total suspended solids.
$ 156.25	For __5__ of the five (5) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit effluent monitoring requirement for total residual chlorine.
$ 968.75	For __31__ of the thirty one (31) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit effluent monitoring requirement for flow.
$ 93.75	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit effluent monitoring requirement for temperature.
$ 93.75	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit effluent monitoring requirement for conductivity.
$ 31.25	For __1__ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit effluent monitoring requirement for total phosphorus.
$ 93.75	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit upstream monitoring requirement for temperature.
$ 93.75	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit upstream monitoring requirement for conductivity.

$ 93.75	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit upstream monitoring requirement for dissolved oxygen.
$ 93.75	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit upstream monitoring requirement for fecal coliform.
$ 93.75	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit downstream monitoring requirement for temperature.
$ 93.75	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit downstream monitoring requirement for conductivity.
$ 93.75	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit downstream monitoring requirement for dissolved oxygen.
$ 93.75	For __3__ of the three (3) violations of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit downstream monitoring requirement for fecal coliform.
$ 5093.75	**TOTAL CIVIL PENALTY**
$ 85.37	Enforcement costs.
$ 5179.12	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and

(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. Submit payment of the penalty:

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s).
Please submit payment to the attention of:

Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

OR

2. Submit a written request for remission including a detailed justification for such request:

Please be aware that a request for remission is limited to consideration of the five factors listed below as they may relate to the reasonableness of the amount of the penalty assessed. Requesting remission is not the proper procedure for contesting whether the violation(s) occurred or the accuracy of any of the factual statements contained in the civil penalty assessment document. Because a remission request forecloses the option of an administrative hearing, such a request must be accompanied by a waiver of your right to an administrative hearing and a stipulation that no factual or legal issues are in dispute. Please prepare a detailed statement that establishes why you believe the civil penalty should be remitted, and submit it to the Division of Water Quality at the address listed below. In determining whether a remission request will be approved, the following factors shall be considered:

(1) whether one or more of the civil penalty assessment factors in G.S. 143B-282.1(b) were wrongfully applied to the detriment of the petitioner;
(2) whether the violator promptly abated continuing environmental damage resulting from the violation;
(3) whether the violation was inadvertent or a result of an accident;
(4) whether the violator had been assessed civil penalties for any previous violations; or
(5) whether payment of the civil penalty will prevent payment for the remaining necessary remedial actions.

Please note that <u>all</u> information presented in support of your request for remission must be submitted in writing. The Director of the Division of Water Quality will review your evidence and inform you of his decision in the matter of your remission request. The response will provide details regarding case status, directions for payment, and provision for further appeal of the penalty to the Environmental Management Commission's Committee on Civil Penalty Remissions (Committee). Please be advised that the Committee cannot consider information that was not part of the original remission request considered by the Director. Therefore, it is very important that you prepare a complete and thorough statement in support of your request for remission.

In order to request remission, you must complete and submit the enclosed "Waiver of Right to an Administrative Hearing and Stipulation of Facts" form within thirty (30) days of receipt of this notice. The Division of Water Quality also requests that you complete and submit the enclosed "Justification for Remission Request." Both forms should be submitted to the following address:

Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

OR

3. File a petition for an administrative hearing with the Office of Administrative Hearings:

If you wish to contest any statement in the attached assessment document you must file a petition for an administrative hearing. You may obtain the petition form from the Office of Administrative Hearings. You must file the petition with the Office of Administrative Hearings within thirty (30) days of receipt of this notice. A petition is considered filed when it is received in the Office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00 a.m. and 5:00 p.m., except for official state holidays. The petition may be filed by facsimile (fax) or electronic mail by an attached file (with restrictions) - provided the signed original, one (1) copy and a filing fee (if a filing fee is required by NCGS §150B-23.2) is received in the Office of Administrative Hearings within seven (7) business days following the faxed or electronic transmission. You should contact the Office of Administrative Hearings with all questions regarding the filing fee and/or the details of the filing process. The mailing address and telephone and fax numbers for the Office of Administrative Hearings are as follows:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Tel: (919) 431-3000
Fax: (919) 431-3100

One (1) copy of the petition must also be served on DENR as follows:

Mary Penny Thompson, General Counsel
DENR
1601 Mail Service Center
Raleigh, NC 27699-1601

Failure to exercise one of the options above within thirty (30) days of receipt of this letter, as evidenced by an internal date/time received stamp (not a postmark), will result in this matter being referred to the Attorney General's Office for collection of the penalty through a civil action.

Please be advised that additional penalties may be assessed for violations that occur after the review period of this assessment. If the violations are of a continuing nature, not related to operation and/or maintenance problems, and you anticipate remedial construction activities, then you may wish to consider applying for a Special Order by Consent. If you have any questions about this civil penalty assessment or a Special Order by Consent, please contact the Water Quality Section staff of the Mooresville Regional Office at 704/663-1699.

10/20/2010
(Date)

Robert B. Krebs
Regional Supervisor
Surface Water Protection
Mooresville Regional Office
Division of Water Quality

ATTACHMENTS

cc: Water Quality Regional Supervisor w/ attachments
Compliance/Enforcement File w/ attachments
Central Files w/ attachments

jl

ATTACHMENT A
CASE NO. LM-2010-0004

Outfall	Date	Parameter	Reported Value	Permit Limit
001	10/09	ammonia nitrogen	*5.8 mg/l	5.0 mg/l
001	10/09	flow	*0.0844 MGD	0.070 MGD
001	10/1/09	Fecal coliform	*>6000/100 ml	400/100 ml
001	10/1/09	Dissolved oxygen	*4.5 mg/l	>5.0 mg/l

Outfall/Location	Date	Parameter	Failure to Monitor	Permit Requirement
001	10/09	Fecal coliform	*3X	Weekly
001	10/09	pH	*3X	Weekly
001	10/09	Dissolved oxygen	*3X	Weekly
001	10/09	BOD	*3X	Weekly
001	10/09	Ammonia nitrogen	*3X	Weekly
001	10/09	TSS	*3X	Weekly
001	10/09	TRC	*5X	2/week
001	10/09	Flow	*31X	Continuous
001	10/09	Total Phosphorus	*1X	Quarterly
U	10/09	Dissolved oxygen	*3X	Weekly
U	10/09	Conductivity	*3X	Weekly
U	10/09	Temperature	*3X	Weekly
U	10/09	Fecal coliform	*3X	Weekly
D	10/09	Dissolved oxygen	*3X	Weekly
D	10/09	Conductivity	*3X	Weekly
D	10/09	Temperature	*3X	Weekly
D	10/09	Fecal coliform	*3X	Weekly

* Denotes civil penalty assessment

001 = Effluent

U = Upstream

D = Downstream

STATE OF NORTH CAROLINA

COUNTY OF UNION

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES

IN THE MATTER OF ASSESSMENT)
OF CIVIL PENALTY AGAINST)
GOOSE CREEK UTILITY COMPANY)
)
PERMIT NO. NC0034762)

WAIVER OF RIGHT TO AN
ADMINISTRATIVE HEARING AND
STIPULATION OF FACTS

FILE NO. LM-2010-0004

Having been assessed civil penalties totaling $ **5,179.12** for violation(s) as set forth in the assessment document of the Division of Water Quality dated **January 20, 2010**, the undersigned, desiring to seek remission of the civil penalties, does hereby waive the right to an administrative hearing in the above-stated matter and does stipulate that the facts are as alleged in the assessment document. The undersigned further understands that all evidence presented in support of remission of this civil penalty must be submitted to the Director of the Division of Water Quality within 30 days of receipt of the notice of assessment. No new evidence in support of a remission request will be allowed after 30 days from the receipt of the notice of assessment.

This the _____ day of _____, 2010

_____
BY

ADDRESS

_____

_____

_____

_____

_____

TELEPHONE

_____

JUSTIFICATION FOR REMISSION REQUEST

DWQ Case Number: LM-2010-0004
Assessed Party: Goose Creek Utility Company
County: Union
Permit Number: NC0034762
Amount Assessed: $5,179.12

Please use this form when requesting remission of this civil penalty. You must also complete the *"Request For Remission, Waiver of Right to an Administrative Hearing, and Stipulation of Facts"* form to request remission of this civil penalty. You should attach any documents that you believe support your request and are necessary for the Director to consider in evaluating your request for remission. Please be aware that a request for remission is limited to consideration of the five factors listed below as they may relate to the reasonableness of the amount of the civil penalty assessed. Requesting remission is not the proper procedure for contesting whether the violation(s) occurred or the accuracy of any of the factual statements contained in the civil penalty assessment document. Pursuant to N.C.G.S. § 143B-282.1(c), remission of a civil penalty may be granted only when one or more of the following five factors applies. Please check each factor that you believe applies to your case and provide a detailed explanation, including copies of supporting documents, as to why the factor applies (attach additional pages as needed).

___ (a) one or more of the civil penalty assessment factors in N.C.G.S. 143B-282.1(b) were wrongfully applied to the detriment of the petitioner *(the assessment factors are listed in the civil penalty assessment document)*;

___ (b) the violator promptly abated continuing environmental damage resulting from the violation *(i.e., explain the steps that you took to correct the violation and prevent future occurrences)*;

___ (c) the violation was inadvertent or a result of an accident (*i.e., explain why the violation was unavoidable or something you could not prevent or prepare for)*;

___ (d) the violator had not been assessed civil penalties for any previous violations;

___ (e) payment of the civil penalty will prevent payment for the remaining necessary remedial actions *(i.e., explain how payment of the civil penalty will prevent you from performing the activities necessary to achieve compliance)*.

EXPLANATION: (*use additional pages as necessary)*

central file

Mooresville Regional Office
Division of Water Quality

MEMORANDUM:

DATE: February 25, 2010

FROM: Rob Krebs

TO: Bob Sledge

THROUGH: Marcia Allocco

BY: John Lesley

SUBJECT: Request for Remission
Goose Creek Utility - Fairfield Plantation
NPDES Permit No. NC0034762
Case No. LM-2010-0004
Union County

MRO staff has reviewed the subject request for remission. The permittee does not dispute the violations occurred; however, there are circumstances related to the monitoring frequency violations that the permittee claims was beyond his control. Justification for remission is based on the prompt abatement of continuing environmental damage resulting from the violation, the violations were inadvertant or a result of an accident, and payment of civil penalty would prevent the payment for remaining necessary remedial actions.

1. Violations were inadvertant: With the exception of the flow limit violation, other violations (NH3, fecal coliform, and dissolved oxygen) were due to the unexpected and unauthorized absence of the ORC - Mr. Clayton Oaks.
2. Flow limit violations were the result of unauthorized sewer cleaning by Union County Public Works that led to damages to the collection system.
3. Monitoring frequency violations were the result of the abandonment of the facility by the ORC, Clayton Oaks, without the knowledge or consent of the facility owner. The permittee did not know of the ORC's actions until the lab data collected by K&W Labs was being transferred to the DMR on October 26, 2009. Attempts to contact the ORC failed and a new ORC began operating the facility on November 2, 2009.
4. All available data was reported on the October 2009 DMR, although it was incomplete.

This office recommends that the limits violations (flow, NH3, fecal coliform, and dissolved oxygen) be assessed the full amount. Monitoring frequency violations do appear to be beyond the control of the permittee. The former ORC, Mr. Oaks, failed to attend a show cause meeting in the MRO.

DWQ – CIVIL PENALTY REMISSION FACTORS

Case Number: LM-2010-0004 **Region:** MRO **County:** Union

Assessed Entity: Goose Creek Utility - Fairfield Plantation WWTP **Permit:** NC0034762

☐ (a) Whether one or more of the civil penalty assessment factors were wrongly applied to the detriment of the petitioner;

☒ (b) Whether the violator promptly abated continuing environmental damage resulting from the violation;

☒ (c) Whether the violation was inadvertent or a result of an accident;

☐ (d) Whether the violator had been assessed civil penalties for any previous violations;

☒ (e) Whether payment of the civil penalty will prevent payment for the remaining necessary remedial actions.

Regional Recommendation (Check One)

Request Denied ☐ Full Remission ☐ Partial Remission ☒

Central Office Recommendation (Check One)

Request Denied ☐ Full Remission ☐ Partial Remission ☐

Director's Decision (Check One)

Request Denied ☐ Full Remission ☐ Partial Remission ☐ Amount Remitted $_____

_____ _____

Date Coleen H. Sullins, Director

JUSTIFICATION FOR REMISSION REQUEST

DWQ Case Number: LM-2010-0004
Assessed Party: Goose Creek Utility Company
County: Union
Permit Number: NC0034762
Amount Assessed: $5,179.12

Please use this form when requesting remission of this civil penalty. You must also complete the *"Request For Remission, Waiver of Right to an Administrative Hearing, and Stipulation of Facts"* form to request remission of this civil penalty. You should attach any documents that you believe support your request and are necessary for the Director to consider in evaluating your request for remission. Please be aware that a request for remission is limited to consideration of the five factors listed below as they may relate to the reasonableness of the amount of the civil penalty assessed. Requesting remission is not the proper procedure for contesting whether the violation(s) occurred or the accuracy of any of the factual statements contained in the civil penalty assessment document. Pursuant to N.C.G.S. § 143B-282.1(c), remission of a civil penalty may be granted only when one or more of the following five factors applies. Please check each factor that you believe applies to your case and provide a detailed explanation, including copies of supporting documents, as to why the factor applies (attach additional pages as needed).

___ (a) one or more of the civil penalty assessment factors in N.C.G.S. 143B-282.1(b) were wrongfully applied to the detriment of the petitioner *(the assessment factors are listed in the civil penalty assessment document)*;

_x_ (b) the violator promptly abated continuing environmental damage resulting from the violation *(i.e., explain the steps that you took to correct the violation and prevent future occurrences)*;

_x_ (c) the violation was inadvertent or a result of an accident *(i.e., explain why the violation was unavoidable or something you could not prevent or prepare for)*;

___ (d) the violator had not been assessed civil penalties for any previous violations;

_x_ (e) payment of the civil penalty will prevent payment for the remaining necessary remedial actions *(i.e., explain how payment of the civil penalty will prevent you from performing the activities necessary to achieve compliance)*.

EXPLANATION: *(use additional pages as necessary)*

(See Attachment #1 to Exhibit B)

Exhibit B

STATE OF NORTH CAROLINA

COUNTY OF UNION

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES

IN THE MATTER OF ASSESSMENT OF CIVIL PENALTY AGAINST GOOSE CREEK UTILITY COMPANY	))))	WAIVER OF RIGHT TO AN ADMINISTRATIVE HEARING AND STIPULATION OF FACTS
PERMIT NO. NC0034762	)	

FILE NO. LM-2010-0004

Having been assessed civil penalties totaling $ 5,179.12 for violation(s) as set forth in the assessment document of the Division of Water Quality dated January 20, 2010, the undersigned, desiring to seek remission of the civil penalties, does hereby waive the right to an administrative hearing in the above-stated matter and does stipulate that the facts are as alleged in the assessment document. The undersigned further understands that all evidence presented in support of remission of this civil penalty must be submitted to the Director of the Division of Water Quality within 30 days of receipt of the notice of assessment. No new evidence in support of a remission request will be allowed after 30 days from the receipt of the notice of assessment.

This the 18th day of February, 2010

Goose Creek Utility Company

BY: Paul H. Trotter
President

ADDRESS

1515 Mockingbird Lane, Suite 900

Charlotte, NC 28209

TELEPHONE

704-525-1783

Exhibit A

Goose Creek Utility Company
1515 Mockingbird Lane
Suite 900
Charlotte, NC 28209

G.C. 9.4

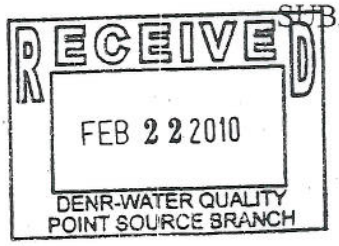
Goose Creek Utility Company

Telephone (704) 525-1783

February 18, 2010

To: Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, NC 27699-1617

From: Goose Creek Utility Company



SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0034762
Fairfield Plantation WWTP
Union County
Case No. LM-2010-0004

This letter and its enclosures are hereby sent to comply with the terms of the letter dated January 20, 2010, from Mr. Robert B. Krebs, Regional Supervisor, Division of Water Quality, regarding violations in the month of October, 2009.

Our response is a written request for remission, including a detailed justification for this request. Therefore, with this letter we are submitting the two forms referred to in Paragraph 2 of Mr. Krebs letter:

a. Waiver of Right to an Administrative Hearing and Stipulation of Facts (attached herewith as Exhibit A)

b. Justification for Remission Request (herewith as Exhibit B, including detailed explanations as Attachment #1 to Exhibit B)

The problems that this Company faces are extremely serious and the lack of funds is real and continuing. Therefore, we urgently request that DENR agree to the remission of this penalty, and also assist us in any possible way to solve this difficult situation.

Sincerely,
Goose Creek Utility Company

Paul H. Trotter, President

Enclosures:
Exhibit A: Waiver form
Exhibit B: Justification for Remission Request
(with Attachment #1)

Copy to: Mr. Robert B. Krebs
Regional Supervisor, DWQ
610 East Center Ave. Ste 301
Mooresville, NC 28115

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

February 23, 2010

Via E-Mail

Mr. Paul H. Trotter, President
Goose Creek Utility Company
1515 Mockingbird Lane; Suite 900
Charlotte, NC 28209

Subject: Remission Request of Civil Penalty Assessment
Fairfield Plantation WWTP
NPDES Permit NC0034762
Case Number LM-2010-0004
Union County

Dear Mr. Trotter:

This letter is to acknowledge your request for remission of the civil penalty levied against the subject facility. Your request will be scheduled for review by the Director and you will be notified of the result.

If you have any questions about this matter, please contact me at (919) 807-6398 or via e-mail at bob.sledge@ncdenr.gov.

Sincerely,

Bob Sledge, Environmental Specialist
Point Source Branch

cc: Enforcement File w/originals
Central Files w/attachments
ec: Mooresville Regional Office w/attachments

1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6492 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org
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JUSTIFICATION FOR REMISSION REQUEST
(February 18, 2010)

(Attachment #1 of Exhibit "B")

EXPLANATION

1. All of the violations were inadvertent; and were things that we could not prevent or prepare for. All of these violations (with the sole exception of Flow) were due to the unauthorized and extraordinary absence of the designated ORC (Mr. Clayton Oaks). Due to his absence (explained below), the WWTP did not receive the routine maintenance and minor repairs which would have prevented these violations. Upon the employment of a new ORC (Mr. Allison) these violations were quickly stopped.

a.) Record Keeping and Absence of ORC . The former back-up ORC (Mr. Clayton Oaks) was recommended to us by the former ORC (Mr. Jerry Sullivan). Consequently, we employed Mr. Oaks prior to September 1st to be the acting ORC. At that time, we understood that Union County was likely to accept the effluent from this system within a few days. Nevertheless, we entered a contract with Mr. Oaks (with monthly payment to be made in advance) for his operation of this WWTP. Under the terms of that contract, we were to pay him one month in advance, in full, for operation of the WWTP. Such advance payments for September and October were made by this Company to Mr. Oaks. About October 26th, we became aware that Mr. Oaks was no longer tending the WWTP, and we were unable to contact him after numerous attempts to reach him by telephone. Furthermore, we found that the telephone number he had given us as his "office" number was actually the home telephone number of his mother and father. His mother told us that Mr. Clayton Oaks (our ORC) was not there, and that she had no telephone number or any other way of communicating with Clayton Oaks.

Our former ORC had normally sent us his monthly report (Forms MR-1 and MR-3) about the middle of the following month. When we realized that this routine reporting would not be forthcoming from Clayton Oaks, we assembled the data available from K & W Laboratories for the month of September and October entered it on the Forms MR-1 and MR-3. We realized that this data was not complete and standard, but it was, under the existing circumstances the best possible effort to piece together the information normally reported monthly.

The record keeping and reporting violations were promptly and completely abated upon our engagement of Mr. James Allison as ORC in early November. Mr. Allison began operating the WWTP as ORC on November 2, 2009.

b.) Ammonia Nitrogen, Fecal Coliform, and Dissolved Oxygen Violations.
The October violations of these permit parameters were due to the unexpected and unauthorized absence of Mr. Clayton Oaks (explained above in paragraph 1(a). The effluent returned to compliant status with regard to these three parameters in November, 2009.

c.) Flow in Excess of Permit Limit.
Excess Flow was a continuing problem in 2009, due to infiltration into the collection system.

(1) Greatly increased flow began and was noticed immediately after a Union County crew had done a root removal job on the system and other intrusion into this collection system, without our prior knowledge or consent. This work was done in the month of February, 2009. Flow had been compliant before that event.

(2) Union County did not have our permission for this work; nor did they give us any advance notification of it. At first, we concluded that the excessive flow was due to the water Union County was using to flush out the lines. But when the cleanout phase by Union County was completed, the flow continued. We then investigated the source of this abnormal flow and found its apparent source. We analyzed the water from this location and found that the flow was constant, clear, and chlorinated.

(3) However, after further analysis of the flow, we no longer believe that the one point source, which we believed to be a potable water leak, is the only source of the excessive flow. Although that one point is surely a significant source of flow, we now conclude that the Union County work done February, 2009, without our permission, has caused significant infiltration of ground water into the system. These new leaks are primarily in the "Phase I" parts of the system. Union County had agreed (in a binding contract) that these collection lines would be accepted after a list of very specific repairs were made. This 2006 contract also specified that the "Phase I" repairs had already been done and were deemed acceptable. The work had been supervised, inspected and approved by the County's designated inspector.

(4) We have expended about $1.3 million on collection system repair and rehabilitation to meet the specific requirements of a contract with Union County. We have no funds or source of financing to make further repairs to this collection system, and therefore we have no solution to the continuing flow violations.

(5) At this time, we are not optimistic that either Union County or a private utility company will take over this system. We have requested guidance from the Division of Water Quality to help us with a solution.

2. Payment of the civil penalty will prevent payment for the remaining necessary remedial actions. This company has been operating at a loss for several years and has exhausted its available funds. Under the current condition of the economy, this company has no source of borrowing or financing to make needed repairs to our WWTP or the collection system. We do not expect to be able to make the major repairs which this WWTP needs. All of the available funds are from monthly revenue and are being used for monthly operating costs.

North Carolina Department of Environment and Natural Resources
Division of Water Quality
Coleen H. Sullins
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

JAN 13 2010

MEMORANDUM

TO: Mr. Jim Gulick, Esq.
Attorney General's Office

FROM: Coleen H. Sullins

SUBJECT: Request for Injunctive Relief
Goose Creek Utility Company, Inc.
Fairfield Plantation WWTP
NPDES Permit NC0034762
Union County

Attached please find a narrative and a set of documents that help describe ongoing problems associated with the subject facility. The WWTP is in a state of disrepair, and there are serious questions as to its structural integrity. DWQ has been aware of the WWTP's deteriorating condition for a number of years, but has to date not moved for substantial improvements to be made due to the fact that connection to county sewer was deemed imminent throughout that time. Very recently, those plans have been dropped, leaving the circumstance of an underperforming WWTP with discharge into a sensitive stream. By its owners' own admission, the existing WWTP cannot consistently meet permit limits established over 15 years ago, much less those that would protect the stream today. A recent episode, in which the operator of the WWTP walked away from his responsibility to operate the plant, led to an extended time of undertreated wastewater being discharged to Goose Creek. Another similar episode could be disastrous to endangered and protected species living in the receiving stream. Under the circumstances, regulatory and administrative means will be inadequate to resolve this matter in a satisfactory time frame. Therefore, the Division requests your assistance in addressing this matter.

Please review this case and initiate actions as appropriate, including but not limited to Injunctive Relief. Copies of relevant support information are attached to this memo. If you have any questions concerning the noted violations, you may contact Rob Krebs at the Mooresville Regional Office at (704) 235-2175. Likewise, please inform Mr. Krebs or Bob Sledge (807-6398) of any documents you might require which reside in our files. Status reports on progress in the matter may be communicated through Mr. Sledge.

Thank you for your cooperation.

cc: Coleen Sullins
Matt Matthews
Jeff Poupart
Rob Krebs
Tom Belnick
Bob Sledge
Central Files

1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6492 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org
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NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

December 18, 2009

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
7008 1140 0002 2716 8120

Mr. Paul H. Trotter, President
Goose Creek Utility Company
1515 Mockingbird Lane, Suite 900
Charlotte, NC 28209

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute (G.S.) 143-215.1(a)(6) and NPDES Permit No. NC0034762
Fairfield Plantation WWTP
Union County
Case No. LV-2009-0445

Dear Mr. Trotter:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $1,772.87 ($1,687.50 civil penalty + $85.37 enforcement costs) against Goose Creek Utility.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data reported for September 2009. This review has shown the subject facility to be in violation of the discharge limitations found in NPDES Permit No. NC0034762. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Goose Creek Utility violated the terms, conditions, or requirements of NPDES Permit No. NC0034762 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, Robert B. Krebs, Division of Water Quality Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Goose Creek Utility:

$ 337.50	For __1__ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit daily maximum effluent limit for dissolved oxygen.
$ 675.00	For __1__ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for flow.
$ 675.00	For ___1___ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for ammonia nitrogen.
$ 0	For __1__ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, for failure to report daily flow values during the month of September 2009.
$ 0	For __1__ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by failure to report the ORC name and WWTP visitation information on self-monitoring report in the month of September 2009.
$ 0	For __1__ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by failure to include an ORC certification statement signature during the month of September 2009.
$ 1687.50	**TOTAL CIVIL PENALTY**
$ 85.37	Enforcement costs.
$ 1772.87	**TOTAL AMOUNT DUE**

ATTACHMENT A
CASE NO. LV-2009-0445

Outfall	Date	Parameter	Reported Value	Permit Limit
001	9/11/09	Dissolved Oxygen	*4.3 mg/l	>5.0 mg/l
001	9/2009	Flow	*.0889 MGD	.07 MGD
001	9/2009	Ammonia Nitrogen	*5.6 mg/l	5.0 mg/l
001	9/2009	Failure to Report	No ORC named	
001	9/2009	Failure to Report	No ORC signature, visitation, or on-site verification	
001	9/2009	Failure to Report	No daily flow values	Continuous recording

* Denotes civil penalty assessment

NORTH CAROLINA DIVISION OF WATER QUALITY

Violator: Goose Creek Utility Company
Facility: Fairfield Plantation WWTP
County: Union
Case Number: LV-2009-0445
Permit Number: NC0034762

ASSESSMENT FACTORS

1) **The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violation;**

No harm has been documented; however, effluent ammonia nitrogen being discharged in excess of permit limits would be predicted to have toxic impacts on aquatic life and lowered available dissolved oxygen in the receiving stream. Flow in excess of the monthly average permit limit would negatively impact the WWTP by reducing treatment capabilities and possibly leading to the discharge of WWTP biomass to the receiving stream. A low dissolved oxygen (<5.0 mg/l) would be likely to lead to even further reduced available oxygen in the receiving water and subsequently stress aquatic life. Failure to properly document ORC visitation, daily flow values, ORC name, and ORC signature brings into question the validity of the September 2009 self-monitoring report and the integrity of operation of the WWTP. The Carolina Heelsplitter is an endangered species that is native to Goose Creek.

2) **The duration and gravity of the violation;**

The violations occurred during the month of September 2009. The facility has a historicially poor compliance record.

3) **The effect on ground or surface water quantity or quality or on air quality;**

No effect is expected on air quality or ground water quantity or quality. Surface water impacts are to expected. Effluent ammonia nitrogen being discharged in excess of permit limits would be predicted to have toxic impacts on aquatic life and decrease available dissolved oxygen in the receiving stream. Flow in excess of the monthly average permit limit could lead to a reduction in treatment capabilities and the potential discharge of WWTP biomass to the receiving stream. A low dissolved oxygen concentration in the discharge would be likely to lead to even further reduced available oxygen in the receiving water and subsequently stress aquatic life. Goose Creek is home to the Carolina Heelsplitter, an endangered species.

4) **The cost of rectifying the damage;**

The cost is unknown.

5) **The amount of money saved by noncompliance;**

A specific amount of money saved by the noncompliance is unknown. The permittee has stated in correspondence that no money is currently allocated to maintain or repair the WWTP.

6) **Whether the violation was committed willfully or intentionally;**

The violation does not appear to be willful nor intentional.

7) **The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and**

Case Number	Description
LV-2009-0209	$835.30 case open remission requested
LV-2009-0296	$585.30 case open
LV-2009-0306	$585.30 case open remission requested
LV-2009-0339	$785.37 case open
LV-2009-0414	$835.37 case open

8) **The cost to the State of the enforcement procedures.**

Staff preparation of enforcement package: 1 hour at $32.54/hour

SWP Regional Supervisor review: 1 hour at $37.83/hour

Clerical Support: 1 hour at $15.00/hour

Total: $85.37

12/18/09

Date

RO Supervisor
Division of Water Quality

DEC 28 09

Central file

Mooresville Regional Office
Division of Water Quality

MEMORANDUM:

Date: January 25, 2010

FROM: Rob Krebs, MRO

TO: Bob Sledge

THROUGH: Marcia Allocco

SUBJECT: Request for Remission
Goose Creek Utility Co. - Fairfield Plantation WWTP
NPDES Permit No. NC0034762
Case No.LV-2009-00445
Union County

MRO staff has reviewed the subject request for remission. Goose Creek Utility Company - Fairfield Plantation WWTP was assessed a civil penalty (including costs) of $835.37 for a monthly average ammonia nitrogen limit violation and daily maximum fecal coliform limit violation in August 2009. The facility does not dispute the violations.
The Permittee claims the following justification for remission:
1. The violation was inadvertent; and was something that could not prevent or prepare for.
a. The claim was made based on the poorly maintained WWTP. According to the remission request (Section 2 Payment of Civil Penalty will prevent payment for remedial actions) regular maintenance of the facility is not being performed on the treatment system.

2. Payment of the civil penalty will prevent payment for remaining necessary remedial actions.
a. The company has exhausted available funds.

The permittee is responsible for the proper operation and maintenance of the facility. Poor operation and maintenance of the facility has been documented in Compliance Evaluation Inspection Reports; furthermore, the permittee states in his request for remission that Goose Creek Utility has no expectations to make necessary repairs to the system as required by the NPDES Permit. The permittee is also required to report any process equipment failures at the facility and failed to do so. The monthly average ammonia nitrogen limit violation would predict toxic impacts on aquatic life and an increased oxygen demand downstream of the discharge. The facility is having adverse impacts affecting the best usage of the stream.

Goose Creek Utility Company has claimed that funding is insufficient to operate and maintain the WWTP. However, there is no indication that a rate increase has been sought from Utilities Commission which would increase funding for this purpose. The remission request also states that the facility will not likely be taken over by Union County or a private utility company.

This Office recommends that the full civil penalty be assessed.

Goose Creek Utility Company
1515 Mockingbird Lane
Suite 900
Charlotte, NC 28209

G.C. 9.4

Goose Creek Utility Company
Telephone (704) 525-1783

January 18, 2010

To: Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, NC 27699-1617

From: Goose Creek Utility Company

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0034762
Fairfield Plantation WWTP
Union County
Case No. LV-2009-0445

This letter and its enclosures are hereby sent to comply with the terms of the letter dated December 18, 2009, from Mr. Robert B. Krebs, Regional Supervisor, Division of Water Quality, concerning our September, 2009, operations.

Our response is a written request for remission, including a detailed justification for this request. Therefore, with this letter we are submitting the two forms referred to in Paragraph 2 of Mr. Krebs letter:

a. Waiver of Right to an Administrative Hearing and Stipulation of Facts (attached herewith as Exhibit A)

b. Justification for Remission Request (herewith as Exhibit B)

The problems that this Company faces are very serious and the lack of funds is real and continuing. Therefore, we urgently request that DENR agree to the remission of this penalty and assist us in getting this sewer collection system connected to the Union County system, without delay.

Sincerely,
Goose Creek Utility Company

Paul H. Trotter, President

Copy to: Mr. Robert B. Krebs
Regional Supervisor, DWQ
610 East Center Ave. Ste 301
Mooresville, NC 28115

Enclosures:
Exhibit A: Waiver form
Exhibit B: Justification for Remission Request

North Carolina Department of Environment and Natural Resources
Division of Water Quality
Coleen H. Sullins
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

January 25, 2010

Via E-Mail

Mr. Paul H. Trotter, President
Goose Creek Utility Company
1515 Mockingbird Lane; Suite 900
Charlotte, NC 28209

Subject: Remission Request of Civil Penalty Assessment
Fairfield Plantation WWTP
NPDES Permit NC0034762
Case Number LV-2009-0445
Union County

Dear Mr. Trotter:

This letter is to acknowledge your request for remission of the civil penalty levied against the subject facility. Your request will be scheduled for review by the Director and you will be notified of the result.

If you have any questions about this matter, please contact me at (919) 807-6398 or via e-mail at bob.sledge@ncdenr.gov.

Sincerely,

Robert L. Sledge

Bob Sledge, Environmental Specialist
Point Source Branch

cc: Enforcement File w/originals
Central Files w/attachments
ec: Mooresville Regional Office w/attachments

1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
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STATE OF NORTH CAROLINA

COUNTY OF UNION

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES

IN THE MATTER OF ASSESSMENT)
OF CIVIL PENALTY AGAINST)
GOOSE CREEK UTILITY COMPANY)
)
PERMIT NO. NC0034762)

WAIVER OF RIGHT TO AN
ADMINISTRATIVE HEARING AND
STIPULATION OF FACTS

FILE NO. LV-2009-0445

Having been assessed civil penalties totaling $ 1772.87 for violation(s) as set forth in the assessment document of the Division of Water Quality dated December 18, 2009, the undersigned, desiring to seek remission of the civil penalties, does hereby waive the right to an administrative hearing in the above-stated matter and does stipulate that the facts are as alleged in the assessment document. The undersigned further understands that all evidence presented in support of remission of this civil penalty must be submitted to the Director of the Division of Water Quality within 30 days of receipt of the notice of assessment. No new evidence in support of a remission request will be allowed after 30 days from the receipt of the notice of assessment.

This the 18th day of January, 2010

Goose Creek Utility Company

BY: Paul H. Trotter

ADDRESS

1515 Mockingbird Lane, Suite 900

Charlotte, NC 28209

TELEPHONE

704-525-1783

Exhibit A

JUSTIFICATION FOR REMISSION REQUEST

DWQ Case Number: LV-2009-0445
Assessed Party: Goose Creek Utility Company
County: Union
Permit Number: NC0034762
Amount Assessed: $1772.87

Please use this form when requesting remission of this civil penalty. You must also complete the *"Request For Remission, Waiver of Right to an Administrative Hearing, and Stipulation of Facts"* form to request remission of this civil penalty. You should attach any documents that you believe support your request and are necessary for the Director to consider in evaluating your request for remission. Please be aware that a request for remission is limited to consideration of the five factors listed below as they may relate to the reasonableness of the amount of the civil penalty assessed. Requesting remission is not the proper procedure for contesting whether the violation(s) occurred or the accuracy of any of the factual statements contained in the civil penalty assessment document. Pursuant to N.C.G.S. § 143B-282.1(c), remission of a civil penalty may be granted only when one or more of the following five factors applies. Please check each factor that you believe applies to your case and provide a detailed explanation, including copies of supporting documents, as to why the factor applies (attach additional pages as needed).

___ (a) one or more of the civil penalty assessment factors in N.C.G.S. 143B-282.1(b) were wrongfully applied to the detriment of the petitioner *(the assessment factors are listed in the civil penalty assessment document)*;

X (b) the violator promptly abated continuing environmental damage resulting from the violation *(i.e., explain the steps that you took to correct the violation and prevent future occurrences)*;

X (c) the violation was inadvertent or a result of an accident *(i.e., explain why the violation was unavoidable or something you could not prevent or prepare for)*;

___ (d) the violator had not been assessed civil penalties for any previous violations;

X (e) payment of the civil penalty will prevent payment for the remaining necessary remedial actions *(i.e., explain how payment of the civil penalty will prevent you from performing the activities necessary to achieve compliance)*.

EXPLANATION: *(use additional pages as necessary)*

(See Attachment #1 to Exhibit B)

Exhibit B

JUSTIFICATION FOR REMISSION REQUEST

(Attachment #1 of Exhibit "B")

EXPLANATION

1. The violations were inadvertent; and was something that we could not prevent or prepare for.

(a.) Flow:

(1) Greatly increased flow began and was noticed immediately after a Union County crew had done a root removal job on the system and other intrusion into this collection system, without our prior knowledge or consent. This work was done in the month of February, 2009. Flow had been compliant before that event.

(2) Union County did not have our permission for this work; nor did they give us any advance notification of it. At first, we concluded that the excessive flow was due to the water Union County was using to flush out the lines. But when the cleanout phase by Union County was completed, the flow continued. We then investigated the source of this abnormal flow and found its apparent source. We analyzed the water from this location and found that the flow was constant, clear, and chlorinated.

(3) However, after further analysis of the flow, we no longer believe that the one point source, which we believed to be a potable water leak, is the only source of the excessive flow. Although that one point is surely a significant source of flow, we now conclude that the Union County work done February, 2009, without our permission, has caused significant infiltration of ground water into the system. These new leaks are primarily in the "Phase I" parts of the system. Union County had agreed (in a binding contract) that these collection lines would be accepted after a list of very specific repairs were made. This 2006 contract also specified that the "Phase I" repairs had already been done and were deemed acceptable.

(4) As indicated above, there is a strong presumption that the February, 2009, work done by the County on this collection system caused new leaks to the system. The condition of these lines had already been accepted by the County. The Phase I work was accepted explicitly by contract in 2006, and the balance (Phase II) was accepted by the County's designated inspectors in 2008. This company has no funds or source of funds to make additional repairs or rehabilitation to this system.

(b) Ammonia Nitrogen, Dissolved Oxygen, and Record Keeping.

(1) These violations are associated with the unexpected and unauthorized absence of the ORC (Mr. Clayton Oaks). Due to his absence (explained below), the WWTP did not receive the routine maintenance and minor repairs which would have prevented these violations. Upon the employment of a new ORC (Mr. Allison) these violations closed.

(2) Record Keeping and Absence of ORC . The former back-up ORC (Mr. Clayton Oaks) was recommended to us by the former ORC (Mr. Jerry Sullivan). Consequently, we employed Mr. Oaks prior to September 1st to be the acting ORC. At that time, we understood that Union County was likely to accept the effluent from this system within a few days. Nevertheless, we entered a contract with Mr. Oaks (with monthly payment to be made in advance) for his operation of this WWTP. Under the terms of that contract, we were to pay him one month in advance, in full, for operation of the WWTP. Such advance payments for September and October were made by this Company to Mr. Oaks. About October 26th, we became aware that Mr. Oaks was no longer tending the WWTP, and we had not been able to contact him after numerous attempts to reach him by telephone. Furthermore, we found that the telephone number he had given us as his "office" number was actually the home telephone number of his mother and father. His mother told us that Mr. Clayton Oaks (our ORC) was not there, and that she had no telephone number or any other way of communicating with Clayton Oaks.

Our former ORC had normally sent us his monthly report (Forms MR-1 and MR-3) about the middle of the following month. When we realized that this routine reporting would not be forthcoming from Clayton Oaks, we assembled the data available from K & W Laboratories for the month of September and entered it on the Forms MR-1 and MR-3. We realize that this data was not complete and standard, but it was, under the existing circumstances the best possible effort to piece together the information normally reported monthly.

2. Payment of this civil penalty will prevent payment for remedial actions. This company has been operating at a loss for several years and has exhausted its available funds. Under the current condition of the economy, this company has no funds, nor any source of borrowing or financing to make needed repairs to our WWTP. We do not expect to be able to repair the conditions causing the infiltration resulting in the excessive flow.

(a) After expenditure of about $1.3 million to meet Union County requirements, our Company has exhausted its funds for capital expenditures, including repairs, to this WWTP and collection system. We are using the current revenue to pay current operating expenses (including timely payments to the ORC). We have now contracted with a new ORC, Mr. James D. Allison. Mr. Allison began operating the WWTP on November 2, 2009. Mr. Allison is a duly Certified Operator, grade4, Certificate # RC 1461. In the period of October 26th through November 1st, Mr. Jerry Sullivan (the former ORC) did some work for us at the WWTP. He was acting for us as consultant.

(b) At this time, we are not optimistic that either Union County or a private utility company will take over this system. We have requested guidance from the Division of Water Quality to help us with a solution.

North Carolina Department of Environment and Natural Resources
Division of Water Quality
Coleen H. Sullins
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

November 23, 2009

CERTIFIED MAIL 7008 1140 0002 2716 8113
RETURN RECEIPT REQUESTED

Mr. Paul H. Trotter, President
Goose Creek Utility Company
1515 Mockingbird Lane, Suite 900
Charlotte, North Carolina 28209

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0034762
Fairfield Plantation WWTP
Union County
Case No. LV-2009-0414

Dear Mr. Trotter:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $835.37 ($750.00 civil penalty + $85.37 enforcement costs) against Goose Creek Utility.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data reported for August 2009. This review has shown the subject facility to be in violation of the discharge limitations found in NPDES Permit No. NC0034762. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Goose Creek Utility violated the terms, conditions, or requirements of NPDES Permit No. NC0034762 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, Robert B. Krebs, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Goose Creek Utility:

$ 125.00	For __1__ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit daily maximum effluent limit for fecal coliform.
$ 625.00	For ___1___ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for ammonia nitrogen.
$ 750.00	**TOTAL CIVIL PENALTY**
$ 85.37	Enforcement costs.
$ 835.37	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. **Submit payment of the penalty:**

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s).
Please submit payment to the attention of:

Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

OR

ATTACHMENT A
CASE NO. LV-2009-0414

Outfall	Date	Parameter	Reported Value	Permit Limit
001	8/11/09	fecal coliform	* >600/100 ml	400/100 ml (daily max.)
001	8/2009	ammonia nitrogen	* 6.7 mg/l	5.0 mg/l (monthly avg.)

* Denotes civil penalty assessment

Central file

Mooresville Regional Office
Division of Water Quality

MEMORANDUM:

Date: January 4, 2010

FROM: Rob Krebs, MRO

TO: Bob Sledge

THROUGH: Marcia Allocco

SUBJECT: Request for Remission
Goose Creek Utility Co. - Fairfield Plantation WWTP
NPDES Permit No. NC0034762
Case No.LV-2009-00414
Union County

MRO staff has reviewed the subject request for remission. Goose Creek Utility Company - Fairfield Plantation WWTP was assessed a civil penalty (including costs) of $835.37 for a monthly average ammonia nitrogen limit violation and daily maximum fecal coliform limit violation in August 2009. The facility does not dispute the violations.
The Permittee claims the following justification for remission:
1. The violation was inadvertent; and was something that could not prevent or prepare for.
a. The claim was made based on the poorly maintained diffused air system. According to the remission request multiple leaks in the diffused air piping led to insufficient treatment.
b. Fecal coliform daily maximum limit was exceeded due to a clogged valve according to the remission request.
2. Payment of the civil penalty will prevent payment for remaining necessary remedial actions.
a. The company has exhausted available funds.

The permittee is responsible for the proper operation and maintenance of the facility. Poor operation and maintenance of the facility has been documented in Compliance Evaluation Inspection Reports; furthermore, the permittee states in his request for remission that Goose Creek Utility has no expectations to make necessary repairs to the system as required by the NPDES Permit. The permittee is also required to report any process equipment failures at the facility and failed to do so. The monthly average ammonia nitrogen limit violation would predict toxic impacts on aquatic life and an increased oxygen demand downstream of the discharge. Fecal coliform in the discharge would be likely to cause public health concerns downstream of the facility affecting the best usage of the stream.

Goose Creek Utility Company has claimed that funding is insufficient to operate and maintain the WWTP. However, there is no indication that a rate increase has been sought from Utilities Commission which would increase funding for this purpose.

This Office recommends that the full civil penalty be assessed.

JUSTIFICATION FOR REMISSION REQUEST

DWQ Case Number: LV-2009-0414
Assessed Party: Goose Creek Utility Company
County: Union
Permit Number: NC0034762
Amount Assessed: $835.37

Please use this form when requesting remission of this civil penalty. You must also complete the *"Request For Remission, Waiver of Right to an Administrative Hearing, and Stipulation of Facts"* form to request remission of this civil penalty. You should attach any documents that you believe support your request and are necessary for the Director to consider in evaluating your request for remission. Please be aware that a request for remission is limited to consideration of the five factors listed below as they may relate to the reasonableness of the amount of the civil penalty assessed. Requesting remission is not the proper procedure for contesting whether the violation(s) occurred or the accuracy of any of the factual statements contained in the civil penalty assessment document. Pursuant to N.C.G.S. § 143B-282.1(c), remission of a civil penalty may be granted only when one or more of the following five factors applies. Please check each factor that you believe applies to your case and provide a detailed explanation, including copies of supporting documents, as to why the factor applies (attach additional pages as needed).

___ (a) one or more of the civil penalty assessment factors in N.C.G.S. 143B-282.1(b) were wrongfully applied to the detriment of the petitioner *(the assessment factors are listed in the civil penalty assessment document)*;

___ (b) the violator promptly abated continuing environmental damage resulting from the violation *(i.e., explain the steps that you took to correct the violation and prevent future occurrences)*;

_X_ (c) the violation was inadvertent or a result of an accident (*i.e., explain why the violation was unavoidable or something you could not prevent or prepare for)*;

___ (d) the violator had not been assessed civil penalties for any previous violations;

_X_ (e) payment of the civil penalty will prevent payment for the remaining necessary remedial actions *(i.e., explain how payment of the civil penalty will prevent you from performing the activities necessary to achieve compliance)*.

EXPLANATION: (*use additional pages as necessary)*

(See Attachment #1 to Exhibit B)

Exhibit B

JUSTIFICATION FOR REMISSION REQUEST
(December 21, 2009)

(Attachment #1 of Exhibit "B")

EXPLANATION

1. The violation was inadvertent; and was something that we could not prevent or prepare for.

   a.) The fecal Coliform count was excessive due to a clogged "smart valve". Upon discovering this noncompliant element, the ORC quickly flushed out the smart valve and restored this parameter to compliance.

   b.) Ammonia Nitrogen was high due to multiple leaks (primarily due to rusted piping) in the air supply system. The ORC (who resigned later that month) had not attempted or recommended the expedient repairs which were later made, resulting in compliance in subsequent months.

2. Payment of the civil penalty will prevent payment for the remaining necessary remedial actions. This company has been operating at a loss for several years and has exhausted its available funds. Under the current condition of the economy, this company has no source of borrowing or financing to make needed repairs to our WWTP or the collection system. We do not expect to be able to make the major repairs which this WWTP needs.

At this time we hope to terminate these violations, through a sale of this sewer system to a utility company with the financial resources to accomplish the needed repairs, etc.

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

September 23, 2009

CERTIFIED MAIL 7008 1140 0002 2716 8106
RETURN RECEIPT REQUESTED

Mr. Paul H. Trotter, President
Goose Creek Utility Company
1515 Mockingbird Lane, Suite 900
Charlotte, North Carolina 28209

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0034762
Fairfield Plantation WWTP
Union County
Case No. LV-2009-0339

Dear Mr. Trotter:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $685.37 ($600.00 civil penalty + $85.37 enforcement costs) against Goose Creek Utility.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data reported for June 2009. This review has shown the subject facility to be in violation of the discharge limitations found in NPDES Permit No. NC0034762. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Goose Creek Utility violated the terms, conditions, or requirements of NPDES Permit No. NC0034762 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, Robert B. Krebs, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Goose Creek Utility:

Mooresville Regional Office
Location: 610 East Center Ave., Suite 301 Mooresville, NC 28115
Phone: (704) 663-1699 \ Fax: (704) 663-6040 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org

$ 100.00	For __1__ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit daily maximum effluent limit for fecal coliform.
$ 500.00	For ___1___ of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for flow.
$ 600.00	**TOTAL CIVIL PENALTY**
$ 85.37	Enforcement costs.
$ 685.37	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. **Submit payment of the penalty:**

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s).
Please submit payment to the attention of:

Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

OR

2. **Submit a written request for remission including a detailed justification for such request:**

ATTACHMENT A
CASE NO. LV-2009-0339

Outfall	Date	Parameter	Reported Value	Permit Limit
001	6/2/09	fecal coliform	*>600/100 ml	400/100 ml
001	6/2009	Flow	*0.077 MGD	0.070 MGD

* Denotes civil penalty assessment

Contrakful

Mooresville Regional Office
Division of Water Quality

MEMORANDUM:

FROM: Rob Krebs, MRO

TO: Bob Sledge

THROUGH: Marcia Allocco

SUBJECT: Request for Remission
Goose Creek Utility Co. - Fairfield Plantation WWTP
NPDES Permit No. NC0034762
Case No.LV-2009-0306
Union County

MRO staff has reviewed the subject request for remission. Goose Creek Utility Company - Fairfield Plantation WWTP was assessed a civil penalty (including costs) of $585.30 for a monthly average flow limit violation in May 2009. The facility does not dispute the violations.

The Permittee claims the following justification for remission:

1. The violation was inadvertent; and was something that could not prevent or prepare for.

a. The claim was made based on the fact that during a single weekend in the month of May 2009 there was rainfall total of 2.5 inches.

b. Union County Public works had damaged the collection system by doing root removal operations. No documentation specifically identifying the damage was presented.

c. Apparent water main leak. It was noted that some chlorine residual was found in clear water flowing in the system. Union County Public Works denied there was a water main leak.

d. Video evaluations of the suspected water main leak on June 29, 2009. The test was "inconclusive".

e. Groundwater intrusion was suspected. No documentation of groundwater intrusion was presented.

2. Payment of the civil penalty will prevent payment for remaining necessary remedial actions.

a. The company has exhausted available funds.

The undocumented suspected damages caused by Union County Public Works (Union County denies the damages) is a matter of civil liability between the County and Goose Creek Utility Company and should not relieve the Permittee of his responsibility to maintain permit limit compliance. 2.5 inches of rainfall over a weekend should not be sufficient to cause monthly average flow limit noncompliance. Goose Creek Utility does not have proper funding could be resolved by adjusting their fee schedule for sewer to the customers. It should be noted that the WWTP has been found to be in a state of disrepair during recent DWQ inspections. This Office recommends that the full civil penalty be assessed.

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

September 29, 2009

Via E-Mail

Mr. Paul H. Trotter, President
Goose Creek Utility Company
1515 Mockingbird Lane; Suite 900
Charlotte, NC 28209

Subject: Remission Request of Civil Penalty Assessment
Fairfield Plantation WWTP
NPDES Permit NC0034762
Case Number LV-2009-0306
Union County

Dear Mr. Trotter:

This letter is to acknowledge your request for remission of the civil penalty levied against the subject facility. Your request will be scheduled for review by the Director and you will be notified of the result.

If you have any questions about this matter, please contact me at (919) 807-6398 or via e-mail at bob.sledge@ncdenr.gov.

Sincerely,

Bob Sledge, Environmental Specialist
Point Source Branch

cc: Enforcement File w/originals
Central Files w/attachments
ec: Mooresville Regional Office w/attachments

1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6492 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org
An Equal Opportunity \ Affirmative Action Employer

Goose Creek Utility Company
1515 Mockingbird Lane
Suite 900
Charlotte, NC 28209

Goose Creek Utility Company
Telephone (704) 525-1783

To: Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, NC 27699-1617

September 18, 2009

From: Goose Creek Utility Company

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0034762
Fairfield Plantation WWTP
Union County
Case No. LV-2009-0306

This letter and its enclosures are hereby sent to comply with the terms of the letter dated August 27, 2009, from Mr. Robert B. Krebs, Regional Supervisor, Division of Water Quality.

Our response is a written request for remission, including a detailed justification for this request. Therefore, with this letter we are submitting the two forms referred to in Paragraph 2 of Mr. Krebs letter:

a. Waiver of Right to an Administrative Hearing and Stipulation of Facts (attached herewith as Exhibit A)

b. Justification for Remission Request (herewith as Exhibit B)

The problems that this Company faces are very serious and the lack of funds is real and continuing. Therefore, we urgently request that DENR agree to the remission of this penalty and assist us in getting this sewer collection system connected to the Union County system, without delay.

RECEIVED
SEP 24 2009
DENR - WATER QUALITY
POINT SOURCE BRANCH

Sincerely,
Goose Creek Utility Company

Paul H. Trotter, President

Copy to: Mr. Robert B. Krebs
Regional Supervisor, DWQ
610 East Center Ave. Ste 301
Mooresville, NC 28115

Enclosures:
Exhibit A: Waiver form
Exhibit B: Justification for Remission Request

STATE OF NORTH CAROLINA

COUNTY OF UNION

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

IN THE MATTER OF ASSESSMENT OF CIVIL PENALTY AGAINST GOOSE CREEK UTILITY COMPANY	)))))	WAIVER OF RIGHT TO AN ADMINISTRATIVE HEARING AND STIPULATION OF FACTS
PERMIT NO. NC0034762	)	

FILE NO. LV-2009-0306

Having been assessed civil penalties totaling $ 585.30 for violation(s) as set forth in the assessment document of the Division of Water Quality dated August 27, 2009, the undersigned, desiring to seek remission of the civil penalties, does hereby waive the right to an administrative hearing in the above-stated matter and does stipulate that the facts are as alleged in the assessment document. The undersigned further understands that all evidence presented in support of remission of this civil penalty must be submitted to the Director of the Division of Water Quality within 30 days of receipt of the notice of assessment. No new evidence in support of a remission request will be allowed after 30 days from the receipt of the notice of assessment.

This the 21st day of September, 2009

Goose Creek Utility Company

BY: Paul H. Trotter

ADDRESS

1515 Mockingbird Lane, Suite 900

Charlotte, NC 28209

TELEPHONE

(704) 525-1783

Exhibit A

JUSTIFICATION FOR REMISSION REQUEST

DWQ Case Number: LV-2009-0306
Assessed Party: Goose Creek Utility Company
County: Union
Permit Number: NC0034762
Amount Assessed: $585.30

Please use this form when requesting remission of this civil penalty. You must also complete the *"Request For Remission, Waiver of Right to an Administrative Hearing, and Stipulation of Facts"* form to request remission of this civil penalty. You should attach any documents that you believe support your request and are necessary for the Director to consider in evaluating your request for remission. Please be aware that a request for remission is limited to consideration of the five factors listed below as they may relate to the reasonableness of the amount of the civil penalty assessed. Requesting remission is not the proper procedure for contesting whether the violation(s) occurred or the accuracy of any of the factual statements contained in the civil penalty assessment document. Pursuant to N.C.G.S. § 143B-282.1(c), remission of a civil penalty may be granted only when one or more of the following five factors applies. Please check each factor that you believe applies to your case and provide a detailed explanation, including copies of supporting documents, as to why the factor applies (attach additional pages as needed).

___ (a) one or more of the civil penalty assessment factors in N.C.G.S. 143B-282.1(b) were wrongfully applied to the detriment of the petitioner *(the assessment factors are listed in the civil penalty assessment document)*;

___ (b) the violator promptly abated continuing environmental damage resulting from the violation *(i.e., explain the steps that you took to correct the violation and prevent future occurrences)*;

_x_ (c) the violation was inadvertent or a result of an accident (*i.e., explain why the violation was unavoidable or something you could not prevent or prepare for)*;

___ (d) the violator had not been assessed civil penalties for any previous violations;

_X_ (e) payment of the civil penalty will prevent payment for the remaining necessary remedial actions *(i.e., explain how payment of the civil penalty will prevent you from performing the activities necessary to achieve compliance)*.

EXPLANATION: (*use additional pages as necessary)*
(See Attachment #1 to Exhibit B)

Exhibit B

JUSTIFICATION FOR REMISSION REQUEST
(September 21, 2009)

(Attachment #1 of Exhibit "B")

EXPLANATION

1. The violation was inadvertent; and was something that we could not prevent or prepare for.

   a.) Extreme Rainfall at this WWTP was measured to be 2.5 inches over a single weekend in this month (May 2009). Furthermore, increased flow began and was noticed immediately after a Union County crew had done a root removal job on the system and other intrusion into this collection system, without out prior knowledge or consent. This work was done in the month of February, 2009.

   b.) Union County did not have our permission for this work; nor did they give us any advance notification of it. At first, we concluded that the excessive flow was due to the water Union County was using to flush out the lines. But when the cleanout phase by Union County was completed, the flow continued. We then investigated the source of this abnormal flow and found its apparent source. We analyzed the water from this location and found that the flow was constant, clear, and chlorinated.

   c.) Based on that analysis of the water, we assumed that a water main leak was the source of the flow into our sewer line. The Union County Utility Department (hereafter "the County") owns and operates the water system in this subdivision. We promptly notified the County of this apparent leak but the County denied that there was any water main leak at this location.

   d.) After this period of negotiation with the homeowner, we scheduled a video test, attempting to pinpoint the suspected leak. When the video test procedure was completed (about June 29th) it was inconclusive, because the excessive flow previously observed at a manhole had stopped. So at this time we have scheduled a smoke test of the sewer main in a further attempt to locate this point of leakage into this sewer line.

e.) However, after further analysis of the flow, we no longer believe that the one point source, which we believed to be a potable water leak, is the only source of the excessive flow. Although that one point was surely a significant source of flow, we now conclude that the Union County work done on February without our permission, has caused significant infiltration of ground water into the system. We believe that these new leaks were primarily in the "Phase I" parts of the system. Union County had agreed (in a binding contract) that these collection lines would be accepted after a list of very specific repairs were made. This 2006 contract also specified that the "Phase I" repairs had already been done and were deemed acceptable.

f.) As indicated above, there is a strong presumption that the February, 2009, work done by the County on this collection system caused new leaks to the system. The condition of these lines had already been accepted by the County. The Phase I work was accepted explicitly by contract in 2006, and the balance (Phase II) was accepted by the County's designated inspectors in 2008. This company has no funds or source of funds to make additional repairs or rehabilitation to this system. Therefore, we consider that the system should be connected to the Union County system, without delay.

2. Payment of the civil penalty will prevent payment for the remaining necessary remedial actions. This company has been operating at a loss for several years and has exhausted its available funds. Under the current condition of the economy, this company has no source of borrowing or financing to make needed repairs to our WWTP. We do not expect to be able to repair the conditions causing the infiltration resulting in this violation. We see no alternative but for the County to accept this collection system and its flow into their system very soon.

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality
Coleen H. Sullins
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

August 21, 2009

CERTIFIED MAIL 7007 1490 0004 4510 3081
RETURN RECEIPT REQUESTED

Mr. Paul H. Trotter, President
Goose Creek Utility Company
1515 Mockingbird Lane, Suite 900
Charlotte, North Carolina 28209

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0034762
Fairfield Plantation WWTP
Union County
Case No. LV-2009-0296

Dear Mr. Trotter:

This letter transmits a Notice of Violation and assessment of civil penalty in the amount of $585.30 ($500.00 civil penalty + $85.30 enforcement costs) against Goose Creek Utility Company.

This assessment is based upon the following facts: A review has been conducted of the self-monitoring data reported for April 2009. This review has shown the subject facility to be in violation of the discharge limitations found in NPDES Permit No. NC0034762. The violations are summarized in Attachment A to this letter.

Based upon the above facts, I conclude as a matter of law that Goose Creek Utility Company violated the terms, conditions, or requirements of NPDES Permit No. NC0034762 and North Carolina General Statute (G.S.) 143-215.1(a)(6) in the manner and extent shown in Attachment A. A civil penalty may be assessed in accordance with the maximums established by G.S. 143-215.6A(a)(2).

Based upon the above findings of fact and conclusions of law, and in accordance with authority provided by the Secretary of the Department of Environment and Natural Resources and the Director of the Division of Water Quality, I, Robert B. Krebs, Surface Water Protection Regional Supervisor for the Mooresville Region, hereby make the following civil penalty assessment against Goose Creek Utility Company:

Mooresville Regional Office
Location: 610 East Center Ave., Suite 301 Mooresville, NC 28115
Phone: (704) 663-1699 \ Fax: (704) 663-6040 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org

$ 500.00	For 1 of the one (1) violation of G.S. 143-215.1(a)(6) and NPDES Permit No. NC0034762, by discharging waste into the waters of the State in violation of the permit monthly average effluent limit for flow.
$ 500.00	**TOTAL CIVIL PENALTY**
$ 85.30	Enforcement costs.
$ 585.30	**TOTAL AMOUNT DUE**

Pursuant to G.S. 143-215.6A(c), in determining the amount of the penalty I have taken into account the Findings of Fact and Conclusions of Law and the factors set forth at G.S. 143B-282.1(b), which are:

(1) The degree and extent of harm to the natural resources of the State, to the public health, or to private property resulting from the violations;
(2) The duration and gravity of the violations;
(3) The effect on ground or surface water quantity or quality or on air quality;
(4) The cost of rectifying the damage;
(5) The amount of money saved by noncompliance;
(6) Whether the violations were committed willfully or intentionally;
(7) The prior record of the violator in complying or failing to comply with programs over which the Environmental Management Commission has regulatory authority; and
(8) The cost to the State of the enforcement procedures.

Within **thirty days** of receipt of this notice, you must do **one** of the following:

1. Submit payment of the penalty:

Payment should be made directly to the order of the Department of Environment and Natural Resources (*do not include waiver form).* Payment of the penalty will not foreclose further enforcement action for any continuing or new violation(s). Please submit payment to the attention of:

Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

OR

ATTACHMENT A
CASE NO. LV-2009-0296

Outfall	Date	Parameter	Reported Value	Permit Limit
001	3/2009	Flow	* 0.084 MGD	0.070 MGD

* Denotes civil penalty assessment

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

August 7, 2009

Mr. Paul H. Trotter, President
Goose Creek Utility Company
1515 Mockingbird Lane; Suite 900
Charlotte, NC 28209

Subject: Remission Request of Civil Penalty Assessment
Fairfield Plantation WWTP
NPDES Permit NC0034762
Case Number LV-2009-0209
Union County

Dear Mr. Trotter:

This letter is to acknowledge your request for remission of the civil penalty levied against the subject facility. Your request will be scheduled for review by the Director and you will be notified of the result.

If you have any questions about this matter, please contact me at (919) 807-6398 or via e-mail at bob.sledge@ncdenr.gov.

Sincerely,

Bob Sledge, Environmental Specialist
Point Source Branch

cc: Enforcement File w/originals
Central Files w/attachments
ec: Mooresville Regional Office w/attachments

1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6492 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org
An Equal Opportunity \ Affirmative Action Employer

Goose Creek Utility Company
1515 Mockingbird Lane
Suite 900
Charlotte, NC 28209

Goose Creek Utility Company

Telephone (704) 525-1783

To: Point Source Compliance/Enforcement Unit
Division of Water Quality
1617 Mail Service Center
Raleigh, NC 27699-1617

August 4, 2009

From: Goose Creek Utility Company

SUBJECT: Notice of Violation and Assessment of Civil Penalty for Violations of N.C. General Statute 143-215.1(a)(6) and NPDES Permit No. NC0034762
Fairfield Plantation WWTP
Union County
Case No. LV-2009-0209

This letter and its enclosures are hereby sent to comply with the terms of the letter dated July 6, 2009, from Mr. Robert B. Krebs, Regional Supervisor, Division of Water Quality.

Our response is a written request for remission, including a detailed justification for this request. Therefore, with this letter we are submitting the two forms referred to in Paragraph 2 of Mr. Krebs letter:

a. Waiver of Right to an Administrative Hearing and Stipulation of Facts (attached herewith as Exhibit A)

b. Justification for Remission Request (herewith as Exhibit B)

The problems that this Company faces are very serious and the lack of funds is real and continuing. Therefore, we urgently request that DENR agree to the remission of this penalty and assist us in getting this sewer collection system connected to the Union County system, without delay.

Sincerely,
Goose Creek Utility Company

Paul H. Trout, President

Enclosures:
Exhibit A: Waiver form
Exhibit B: Justification for Remission Request

Copy to: Mr. Robert B. Krebs
Regional Supervisor, DWQ
610 East Center Ave. Ste 301
Mooresville, NC 28115

STATE OF NORTH CAROLINA

COUNTY OF UNION

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

IN THE MATTER OF ASSESSMENT OF CIVIL PENALTY AGAINST GOOSE CREEK UTILITY COMPANY

PERMIT NO. NC0034762

WAIVER OF RIGHT TO AN ADMINISTRATIVE HEARING AND STIPULATION OF FACTS

FILE NO. LV-2009-0209

Having been assessed civil penalties totaling $ **835.30** for violation(s) as set forth in the assessment document of the Division of Water Quality dated **July 6, 2009**, the undersigned, desiring to seek remission of the civil penalties, does hereby waive the right to an administrative hearing in the above-stated matter and does stipulate that the facts are as alleged in the assessment document. The undersigned further understands that all evidence presented in support of remission of this civil penalty must be submitted to the Director of the Division of Water Quality within 30 days of receipt of the notice of assessment. No new evidence in support of a remission request will be allowed after 30 days from the receipt of the notice of assessment.

This the Third day of August, 2009

Goose Creek Utility Company

BY Paul H. Trotter, Pres.

ADDRESS

1515 Mockingbird Lane, Suite 900

Charlotte, NC 28209

TELEPHONE

(704) 525-1783

Exhibit A

JUSTIFICATION FOR REMISSION REQUEST

DWQ Case Number: LV-2009-0209
Assessed Party: Goose Creek Utility Company
County: Union
Permit Number: NC0034762
Amount Assessed: $835.30

Please use this form when requesting remission of this civil penalty. You must also complete the *"Request For Remission, Waiver of Right to an Administrative Hearing, and Stipulation of Facts"* form to request remission of this civil penalty. You should attach any documents that you believe support your request and are necessary for the Director to consider in evaluating your request for remission. Please be aware that a request for remission is limited to consideration of the five factors listed below as they may relate to the reasonableness of the amount of the civil penalty assessed. Requesting remission is not the proper procedure for contesting whether the violation(s) occurred or the accuracy of any of the factual statements contained in the civil penalty assessment document. Pursuant to N.C.G.S. § 143B-282.1(c), remission of a civil penalty may be granted only when one or more of the following five factors applies. Please check each factor that you believe applies to your case and provide a detailed explanation, including copies of supporting documents, as to why the factor applies (attach additional pages as needed).

___ (a) one or more of the civil penalty assessment factors in N.C.G.S. 143B-282.1(b) were wrongfully applied to the detriment of the petitioner *(the assessment factors are listed in the civil penalty assessment document)*;

___ (b) the violator promptly abated continuing environmental damage resulting from the violation *(i.e., explain the steps that you took to correct the violation and prevent future occurrences)*;

X (c) the violation was inadvertent or a result of an accident (*i.e., explain why the violation was unavoidable or something you could not prevent or prepare for)*;

X (d) the violator had not been assessed civil penalties for any previous violations; Since 2003.

X (e) payment of the civil penalty will prevent payment for the remaining necessary remedial actions *(i.e., explain how payment of the civil penalty will prevent you from performing the activities necessary to achieve compliance)*.

EXPLANATION: (*use additional pages as necessary)*

(See Attachment #1 to Exhibit B)

Exhibit B

JUSTIFICATION FOR REMISSION REQUEST

(Attachment #1 of Exhibit "B")

EXPLANATION

1. The violation was inadvertent; and was something that we could not prevent or prepare for.

a.) This increased flow began and was noticed immediately after a Union County crew had done a root removal job on the system and other intrusion into this collection system, without out prior knowledge or consent. This work was done in the month of February, 2009.

b.) Union County did not have our permission for this work; nor did they give us any advance notification of it. At first, we concluded that the excessive flow was due to the water Union County was using to flush out the lines. But when the cleanout phase by Union County was completed, the flow continued. We then investigated the source of this abnormal flow and found its apparent source. We analyzed the water from this location and found that the flow was constant, clear, and chlorinated.

c.) Based on that analysis of the water, we assumed that a water main leak was the source of the flow into our sewer line. The Union County Utility Department (hereafter "the County") owns and operates the water system in this subdivision. We promptly notified the County of this apparent leak but the County denied that there was any water main leak at this location.

d.) After this period of negotiation with the homeowner, we scheduled a video test, attempting to pinpoint the suspected leak. When the video test procedure was completed (about June 29th) it was inconclusive, because the excessive flow previously observed at a manhole had stopped. So at this time we have scheduled a smoke test of the sewer main in a further attempt to locate this point of leakage into this sewer line.

e.) However, after further analysis of the flow, we no longer believe that the one point source, which we believed to be a potable water leak, is the only source of the excessive flow. Although that one point was surely a significant source of flow, we now conclude that the Union County work done on February without our permission, has caused significant infiltration of ground water into the system. We believe that these new leaks were primarily in the "Phase I" parts of the system. Union County had agreed (in a binding contract) that these collection lines would be accepted after a list of very specific repairs were made. This 2006 contract also specified that the "Phase I" repairs had already been done and were deemed acceptable.

f.) As indicated above, there is a strong presumption that the February, 2009, work done by the County on this collection system caused new leaks to the system. The condition of these lines had already been accepted by the County. The Phase I work was accepted explicitly by contract in 2006, and the balance (Phase II) was accepted by the County's designated inspectors in 2008. This company has no funds or source of funds to make additional repairs or rehabilitation to this system. Therefore, we consider that the system should be connected to the Union County system, without delay.

2. We have not been assessed civil penalties for any previous violations, since the year 2003. Because of a complete renovation of this sewer collection system (which we performed under the terms of a contract with Union County), this sewer system had achieved a remarkably improved record as to the flow. Consequently, violations were avoided and there were no civil penalties for a 5-year period.

3. Payment of the civil penalty will prevent payment for the remaining necessary remedial actions. This company has been operating at a loss for several years and has exhausted its available funds. Under the current condition of the economy, this company has no source of borrowing or financing to make needed repairs to our WWTP. We do not expect to be able to repair the conditions causing the infiltration resulting in this violation. We see no alternative but for the County to accept this collection system and its flow into their system very soon.

Central file

Mooresville Regional Office
Division of Water Quality

MEMORANDUM:

FROM: Rob Krebs

TO: Bob Sledge

THROUGH: Marcia Allocco

SUBJECT: Request for Remission
Goose Creek Utility Company, Fairfield Plantation WWTP
NPDES Permit No. NC0034762
Case No.LV-2009-0209
Union County

MRO staff has reviewed the subject request for remission. The Goose Creek Utility Company does not dispute the violation nor do they present any evidence that the flow meter was out of calibration or inaccurate. The company states that connection to Union County has been agreed upon and that a contract to tie Fairfield Plantation onto the County system has been accepted by Union County. Water quality impacts relative to this facility would be best addressed by Union County accepting the wastewater without further delay; however, the Permittee, Goose Creek Utility Company, is liable for the violation. This office recommends the penalty be assessed.

Central File

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
7007 1490 0004 4509 6147

June 11, 2009

Mr. Paul Trotter, President
Goose Creek Utility Company
1515 Mockingbird Lane, Suite 802
Charlotte, NC 28209

Subject: **NOV-2009-PC-0509**
Compliance Evaluation Inspection
Fairfield Plantation WWTP
NPDES Permit NC0034762
Union County, North Carolina

Dear Mr. Trotter:

Enclosed please find a copy of the Compliance Sampling Inspection Report for the inspection conducted at the subject facility on March 31, 2009, by Ms. Donna Hood and Ms. Marcia Allocco of the Office. Please inform the facility's Operator-in-Responsible Charge of our findings by forwarding a copy of the enclosed report.

During the inspection, the inspector was updated on the progress made by Goose Creek Utilities towards the connection of the facility to Union County Collection System (UCCS). Because of the uncertainty of the ultimate connection to UCCS, the undetermined timeline for connection, and the condition of the Fairfield WWTP, the permittee must repair the treatment units that are inoperable or broken. The amount of solids discharged on the day of the inspection nearly exceeded permit compliance. In addition, the lagoon formerly used by the facility to equalize flow amounts should not be used because of the uncertainty of the future for this unit. This unit is not listed as an available treatment unit in the current permit.

This report is being issued as a Notice of Violation (NOV) because of the violations of the subject NPDES permit and North Carolina General Statute (G.S.) 143-215.1 as detailed in the **Secondary Clarifier and Filtration Sections** of the attached report. Pursuant to G.S. 143-215.6A, a civil penalty of not more than twenty five-thousand

Mooresville Regional Office
Location: 610 East Center Ave., Suite 301 Mooresville, NC 28115
Phone: (704) 663-1699 \ Fax: (704) 663-6040 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org

dollars (25,000.00) per violation per day may be assessed against any person who violates or fails to act in accordance with the terms, conditions, or requirements of any permit issued pursuant to G.S. 143-215.1.

It is requested that a written response be submitted to this Office by July 6, 2009, addressing the deficiencies noted in the Secondary Clarifier and Filtration Sections of the report. In responding, please address your comments to the attention of Ms. Marcia Allocco.

This report should be self-explanatory; however, should you have any questions concerning the report, please do not hesitate to contact Ms. Hood or me at (704) 663-1699.

Sincerely,

for Robert B. Krebs
Surface Water Protection Regional Supervisor

Enclosure
cc: Union County Health Department
DH

Goose Crk Util Co.
Annual Rpt to Customers of Goose Creek Util Co. Year 2007

II. Performance

1. Our overall performance for the 2007 calendar year was in our opinion very good.

   a. The laboratory testing of the Treatment Plant effluent in 2006 found that our discharged effluent generally met the applicable water quality standards for every month of the year. This good record was due largely to the repairs and rehabilitation of the system and careful management by our operator, Mr. Jerry Sullivan.

   b. During 2006 we had monthly preventive maintenance, and repairs and parts replacement were performed on the Treatment Plant.

   c. The "Operator in Responsible Charge" of the Treatment Plant is Mr. Jerry Sullivan. Under his care the Treatment Plant functioned well in 2007, both mechanically and chemically. Mr. Sullivan lives near Fairfield Plantation, and can be reached by telephone at (704) 882-2319. His company name is Aqua-Trol, Inc.

2. Sewer spill or overflows: Sewer systems are likely to overflow during conditions of flooding and extreme rainfall. We have noticed in the newspapers that heavy rainfall conditions frequently cause overflows of municipal or government operated sewer systems in this region. The Fairfield Plantation sewer line rehabilitation accomplished in 2006 and 2007 has greatly reduced the likelihood of overflows and spills in this neighborhood sewer system. However, in early 2007 this system had three spills that are described below:

   a. January 1st and 2nd, 2007. A resident had his plumber open the back yard clean-out to preclude a potential overflow into his house. Waste water flowed through to the back yard. On the following day the Resident reported the spill to this Company. It was stopped by our contractor, who cleaned out the sewer line in the street. An estimated 600 gallons flowed through this backyard to the storm drainage system.

   b. January 8th, 2007. On this date an overflow occurred within the fence at the Treatment Plant. This overflow was caused by a mechanical malfunction at the wet well, which was corrected after about four hours. The problem was aggravated by very heavy waste water flow and a mass of rags and other debris that came through the lines. The total volume of this overflow was estimated to be 2000 gallons.

   c. March 2, 2007. Prior to this overflow, we had extremely heavy rainfall in this area of Union County (in excess of 3 inches of rain fell in a 12-hour period). Widespread flooding occurred. As a result, the capacity of this treatment plant was exceeded by the incoming waste water. Partially treated waste water spilled from the treatment plant over a 16-hour period. The estimated volume was 11,000 gallons.

d. In past years, most overflows of this system have been due to rainwater and groundwater entering the pipe system. These excess flows were due mainly to defects in the piping which is now 30 to 35 years old. The repair and rehabilitation work done in 2006 and 2007 can be expected to greatly reduce such inflow and infiltration and therefore reduce the probability and quantity of overflows or spills.

3. As explained above, minor and technical variations from NC DENR regulations and standards may be referred to as "violations", regardless of causes such as weather calamities and sudden mechanical failures.

The wastewater treatment plant (WWTP) at Fairfield Plantation operates under very strict measurement and reporting standards. These standards are expressed in the Permit for this WWTP issued by the North Carolina Division of Water Quality. Any deviation from these standards, however small, is called a "violation". The Fairfield Plantation WWTP is operated carefully by a very experienced and skilled Operator (Jerry Sullivan). Because of his ability to quickly make on-site repairs, we had no violations that were either of sizeable magnitude or long duration. For the great majority of the time in 2007, the WWTP operated well within its permit allowances.

Nevertheless, four items occurred during the year which are called violations, and are described in detail below. Each of the four violation items were duly reported to the Division of Water Quality. No fine or reprimand was imposed, presumably because of the minor magnitude of each of the violations, and because the WWTP met its permit requirements nearly all of the year.

(1) Month of February, 2007. Due to very heavy rainfall and winter ground saturation, the average daily flow rate for February, 2007 was 71,800 gallons per day, whereas the Permit amount is 70,000 gallons per day. Since February, 2007, the system has not again exceeded its permitted monthly flow rate. We completed rehabilitation of the collection system piping later in 2007. That work is expected to greatly reduce the probability of excessive flow.

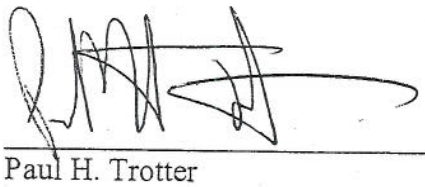
(2) February 19, 2007. On this date the lab report indicated that the fecal coliform bacteria count was higher than the daily Permit allowance (600 vs 400). The Operator took prompt action to correct this violation, which was the only occasion during the year that the fecal coliform count was found to exceed the Permit level.

(3) August, 2007. The maximum ammonia level average for the month under our Permit is 5.0 MG/L. During this month we had the failure of one of the blowers at the WWTP. Prompt action by the Operator kept this violation from reaching a very serious level. (The monthly average was 5.25 MG/L, whereas the Permit level is 5.00 MG/L)

(4) December 11, 2007. After the long period of extremely dry weather the WWTP effluent was found to have a Suspended Residue slightly higher than the Permit allowance. The Permit maximum is 45 MG/L, whereas the actual for this one day was measured to be 48 MG/L. The Operator made adjustments to the WWTP which promptly brought it back into compliance with the Permit.

III. A copy of this Annual Report is being mailed to each customer of Goose Creek Utility Company.

IV. The above report is hereby certified to be accurate and complete as to the data it contains.



Paul H. Trotter
President
Goose Creek Utility Company

More detailed information may be obtained by interested persons by calling Phil Felten at (704) 525-1783.

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
Alan W. Klimek, P.E., Director

March 28, 2005

Mr. Paul H. Trotter
Goose Creek Utility Company
1515 Mockingbird Lane; Suite 900
Charlotte, NC 28209

Subject: Special Order by Consent
EMC SOC WQ S03-011
Goose Creek Utility Company – Fairfield Plantation WWTP
NPDES Permit Number NC0034762
Union County

Dear Mr. Trotter:

Attached for your records is your copy of the signed Special Order by Consent (SOC) approved by the Environmental Management Commission.

The terms and conditions of the Order are in full effect, and you are reminded that all final permit limits contained in the NPDES permit must be met except those modified by the conditions of the Order. Additionally, as specified in paragraph 2(e) of the Order, submittal of written notice of compliance or non compliance with any schedule date is required to be submitted to this office.

The North Carolina Wildlife Resources Commission (WRC) provided comment on the draft SOC after it was placed at public notice. The WRC expressed support of efforts to reduce extraneous flow to the wastewater treatment plant, but recommended that any activities performed to rehabilitate or replace sewer lines be done in a manner that will ensure protection of the Goose Creek watershed and the species of wildlife that reside therein. A copy of the WRC's comments is attached for your review. While the specific circumstances of necessary construction may preclude the implementation of all of the WRC's recommendations, you are encouraged to make every reasonable and prudent effort to ensure the protection of the waters of the state as you make infrastructure improvements.

Pursuant to amended North Carolina General Statute 143-215.3D, effective January 1, 1999, water quality fees have been revised to include an annual fee for any permit covered under a Special Order by consent, in addition to the standard annual fee for the permit. The company will be subject to an annual SOC administration fee of $250.00, in addition to its annual permit administration fee. You will be billed for this at a later date.

1617 Mail Service Center, Raleigh, North Carolina 27699-1617
512 N. Salisbury St., Raleigh, North Carolina 27604
Phone: 919-733-7015 / FAX 919-733-2496 / Internet:: h2o.enr.state.nc.us

On November 22, 2004, the Division received your check number 646809713 in the amount of $7,658.00. This payment satisfies the upfront penalty established as a term of the subject SOC and serves as settlement of all known outstanding violations of the NPDES permit, including those cited in the following enforcement cases:

LV-2003-0146; LV-2003-0435; LV-2003-0509; LV-2003-0556, LV-2003-0590, LV-2003-0616 & LV-2003-0632

These cases have been closed. Please be advised that payment of penalties does not preclude the Division from taking enforcement action for additional violations of the NPDES permit.

If you have any questions about this matter, please contact Bob Sledge at (919) 733-5083, extension 547.

Sincerely,

Alan W. Klimek, P.E.

Attachment

cc: MRO w/attachment
SOC Files w/original
Central Files w/attachment
Lisa Uhl, EPA, w/attachment
Jeanne Phillips w/attachment

NORTH CAROLINA
ENVIRONMENTAL MANAGEMENT COMMISSION

COUNTY OF UNION

IN THE MATTER OF	)	
NORTH CAROLINA	)	SPECIAL ORDER BY CONSENT
NPDES PERMIT	)	EMC WQ NO. SO3-011
NO. NC0034762	)	
HELD BY THE GOOSE CREEK	)	
UTILITY COMPANY	)	

Pursuant to provisions of North Carolina General Statutes (G.S.) 143-215.2, this Special Order by Consent is entered into by the GOOSE CREEK UTILITY COMPANY, hereinafter referred to as the Utility, and the North Carolina Environmental Management Commission, an agency of the State of North Carolina created by G.S. 143B-282, and hereinafter referred to as the Commission:

1. The Utility and the Commission hereby stipulate the following:

   (a) That the Utility is within the jurisdiction of the Commission as set forth in G.S. Chapter 143, Article 21, and holds North Carolina NPDES Permit No. NC0034762 for operation of an existing wastewater treatment works and for making an outlet therefrom for treated wastewater to Goose Creek, Class C waters of this State in the Yadkin-Pee Dee River Basin, but is unable to comply with the final effluent limitations for Flow as set forth in the Permit. Compliance will require the Utility to prepare plans and specifications for repairs and rehabilitation of the collection system and /or the construction of new sewer collection facilities.

   (b) That noncompliance with final effluent limitations constitutes causing and contributing to pollution of the waters of this State named above.

   (c) Since this Special Order is by Consent, neither party will file a petition for a contested case or for judicial review concerning its terms.

2. The Utility, desiring to comply with the permit identified in paragraph 1(a) above, hereby agrees to do the following:

   (a) Comply with all terms and conditions of the permit except those effluent limitations identified in paragraph 1(a) above. See Attachment A for all monitoring requirements and effluent limitations. The permittee may also be required to monitor for other parameters as deemed necessary by the Director in future permits or administrative letters.

(b) As settlement of all alleged violations of NPDES Permit No. NC0034762 prior to entering into this Special Order by Consent, the Utility agrees to pay the sum of $7658.00 in full settlement for the effluent violations that occurred during the months of (February 2003 through May 2004). A certified check *must* be made payable to the *Department of Environment and Natural Resources* and forwarded to the Director of the Division of Water Quality at 1617 Mail Service Center, Raleigh, North Carolina 27699-1617, within thirty (30) days of the signing of this document by the Utility. The Utility agrees to waive its right to an Administrative Hearing or remission of civil penalties for the above settlement amount.

(c) Undertake the following activities in accordance with the indicated time schedule:

1) Begin flow monitoring on or before January 10, 2005. Complete flow monitoring phase by February 28, 2005 and complete engineering work for the collection system sections that will be replaced by April 1, 2005. Prepare and submit plans and specifications and applications if necessary for issuance of the necessary sewer construction permits. (A permit is necessary if pipe diameter changes and or the vertical or horizontal alignment changes by more than ten percent.)

2) In the event permits are required for replacement of sewer lines DENR will issue a permit within 30 days of receipt of complete and accurate permit applications. Permits if necessary should be issued by May 1,2005.

3) Begin construction of sewer collection facilities on or before May 1, 2005. Complete the construction of the sewer collection facility by November 30, 2005. Attain compliance with the final Permit effluent limitations on or before February 1, 2006.

4) Submit to the DENR-DWQ-SWP, Mooresville Regional Office, located at 610 East Center Avenue, Suite 301, Mooresville, North Carolina 28115, monthly progress reports relative to the activities identified in paragraph 1-3 above. The first report is due on March 1, 2005 with similar reports due each subsequent month.

(d) During the time in which this Special Order by Consent is effective, comply with the interim effluent limitations contained in Attachment A. The following reflects only the limitations that have been modified from NPDES requirements by this Order:

Parameters	Unit	Permit Limit	SOC Limit
Flow	MGD	0.070	0.180

(e) No later than 14 calendar days after any date identified for accomplishment of any activity listed in 2(c) above, submit to the Director of DWQ written notice of compliance or noncompliance therewith. In the case of noncompliance, the notice shall include a statement of the reason(s) for noncompliance, remedial action(s) taken, and a statement identifying the extent to which subsequent dates or times for accomplishment of listed activities may be affected.

3. The Utility agrees that unless excused under paragraph 4, the Utility will pay the Director of the DWQ, by check payable to the North Carolina Department of Environment and Natural Resources, stipulated penalties according to the following schedule for failure to meet the deadlines set out in paragraphs 2(c) and 2(e), or failure to attain compliance with the effluent limitations/monitoring requirements contained in Attachment A.

Failure to meet a schedule date	$100/day for the first 7day; $500/day thereafter
Failure to maintain compliance with any modified limit contained in the SOC.	$1000/violation
Failure to achieve compliance with effluent limits at final compliance deadline.	Single monetary penalty of $1110.00.
Monitoring frequency violations	$100 per omitted value per parameter
Failure to submit progress reports	$50/day for the first 7 days; $250/day thereafter

4. The Utility and the Commission agree that the stipulated penalties are not due if the Utility satisfies the DWQ that noncompliance was caused solely by:

   a. An act of God;

   b. An act of war;

   c. An intentional act or omission of a third party but this defense shall not be available if the act or omission is that of an employee or agent of the defendant or if the act or omission occurs in connection with a contractual relationship with the permittee;

   d. An extraordinary event beyond the permittee's control. Contractor delays or failure to obtain funding will not be considered as events beyond the permittee's control; or

   e. Any combination of the above causes.

Failure to respond within 30 days of receipt of written stipulated penalty demand from DWQ and to pay the penalties, or challenge them by a contested case petition pursuant to G.S. 150B-23, will be grounds for a collection action, which the Attorney General is hereby authorized to initiate. The only issue in such an action will be whether the 30 days has elapsed.

5. This Special Order by Consent and any terms, conditions and interim effluent limitations contained herein, hereby supersede any and all previous Special Orders and Enforcement Compliance Schedule Letters, and terms, conditions, and limitations contained therein issued in connection with NPDES Permit No. NC0034762.

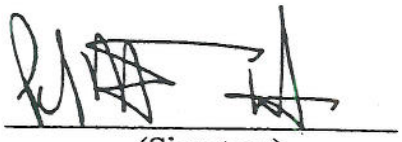
6. Noncompliance with the terms of this Special Order by Consent is subject to enforcement action in addition to the above stipulated penalties, including injunctive relief pursuant to G.S. 143-215.6.

7. The permittee, upon signature of the Special Order by Consent, will be expected to comply with all schedule dates, terms, and conditions of this document.

8. This Special Order by Consent shall expire May 01, 2006.

For Goose Creek Utilities:

Paul H. Trotter
(Print Name)


(Signature)

President
(Title)

11-09-04
(Date)

For the North Carolina Environmental Management Commission:

fa Alan Klimek
Chair of the Commission

3/23/05
(Date)

APPENDIX IV

Endangered Plant Surveyors' Credentials:

Environmental Services, Inc.

Endangered Plant Surveys for the Monroe Connector / Bypass
Environmental Services, Inc. (ESI) – Preparers' Credentials

Mr. Jeffrey Benton Mr. Benton is an ecologist with ESI and has conducted wetland and stream delineations, preliminary wetland assessments, endangered and threatened species habitat evaluations, relocations, and surveys, wetland and stream permitting, Global Positioning System (GPS) data collection, Phase I Environmental Site Assessments, wetland mitigation well installation, monitoring, and maintenance, macro-benthic sampling, freshwater mussel surveys and relocations, and related work.

Mr. Jan Gay Mr. Gay is the Ecology Division Manager and Assistant Vice President in charge of the operations for the Asheville office. He is responsible for all aspects of project work, including project management, soil suitability investigations, natural resource investigations, Threatened and Endangered species habitat evaluations, surveys, and Formal Consultations and rescues, jurisdictional wetland and stream delineation, permitting, and mitigation, and stream channel restoration.

Mr. Charles Johnston Mr. Johnson has participated in numerous field projects including wetland and stream delineations, soil suitability surveys, threatened-and-endangered species surveys, stream restorations, and permitting of impacts under Sections 401/404 of the Clean Water Act.

Mr. Kevin Markham Mr. Markham is an ecologist with an academic background in marine biology, coastal ecology, and mammalogy, with additional expertise in wetland assessments, ornithology and freshwater malacology. He has more than twenty years of progressive experience in environmental consulting. Mr. Markham's technical experience in environmental consulting includes conducting environmental assessments, wildlife and fisheries surveys, protected species assessments, wetlands delineations, wetlands mitigation planning and monitoring, and technical writing/editing. Administratively, Mr. Markham has extensive experience with project management, supervision of technical and support staff, and office management, and now serves as director for ecological services in multiple offices in the Carolinas and Georgia. In 2004, Mr. Markham was appointed to the Board of Trustees for the North Carolina Clean Water Management Trust Fund; as a Trustee, Mr. Markham serves on several committees, reviews grant applications, and contributes to decisions on awards of $100 million in clean water grants annually.

Mr. S. Paul Petitgout Mr. Petitgout has over 16 years experience as a vegetation and landscape ecologist specializing in the areas of landscape modeling, ecological land classification, vegetation ecology, soils, natural stream morphology restoration and forest wetland ecology. Mr. Petitgout's experience as an environmental consultant includes a wide diversity of project experience such as upland and riparian landscape modeling, urban and rural stream restoration, design and construction, soil classification and mapping, wetland mitigation/restoration design, threatened and endangered species surveys and habitat evaluations, and mitigation bank permitting. Mr. Petitgout has successfully completed all levels of training in the Rosgen stream classification and natural channel design. He serves as Operations Manager of the Charlotte, North Carolina office of Environmental Services, Inc.

Mr. Matthew Smith Mr. Smith has a diverse academic background that emphasizes aquatic ecosystem assessment and terrestrial and marine botany. He has more than thirteen years of experience as a professional biologist conducting fieldwork in North Carolina, South Carolina, Virginia, Florida, Arizona, Colorado, and Maine. After completing his academic training Mr. Smith spent time working with state and federal agencies, The Nature Conservancy, developers, and local industry to develop a reputation for providing quality environmental assessments and reasonable alternatives. As a professional biologist, Mr. Smith has had experience with a wide variety of projects including, private developments and infrastructure improvement projects that involved coastal resource assessment, rare and endangered

species surveys, wetlands delineations, wetlands mitigation planning, stream restoration, natural resource assessments, botanical inventories, and aquatic ecosystem assessments. Specialties include freshwater mollusks, plants, and Section 404 and CAMA permitting. In 2008, Mr. Smith was appointed to the City of Boiling Spring Lakes Planning Board.

Ms. B. Gail Tyner Ms. Tyner is a biologist with more than eleven years of experience as an environmental specialist in various areas of threatened and endangered species surveys and natural resource assessments. Ms. Tyner has research experience in evaluating foraging habitat and monitoring populations of red-cockaded woodpeckers in the sandhills region of North Carolina. As a consultant Ms. Tyner has had experience in coordinating, managing, and conducting field studies with a wide variety of projects including, wetlands and stream delineations, natural resource evaluations, threatened and endangered species surveys, wetlands mitigation planning, groundwater monitoring, well placement, installation, maintenance, data collection and interpretation and document preparation. Ms. Tyner is also well versed in NEPA technical documentation.

Mr. Robert Turnbull Mr. Turnbull is a wetland scientist with more than seven years of professional experience in various areas of natural resource assessment and management. As a consultant, Mr. Turnbull has had extensive experience with a wide variety of projects including wetland delineations, state and federal permit applications, soil assessments for on-site wastewater disposal, groundwater monitoring well installation, and threatened and endangered species surveys.

Mr. M. Todd Milam Mr. Milam is a biologist with more than four years of experience as an environmental specialist in various areas of natural resource assessments and threatened and endangered species surveys. As a consultant, Mr. Milam's responsibilities with ESI include wetland and stream delineation, groundwater monitoring, management of field crews, endangered and threatened species habitat evaluation and survey, natural resource investigation, GPS data collection, sediment and erosion control compliance monitoring, stormwater BMP compliance maintenance and monitoring, document preparation, wetland mitigation bank monitoring and EEP vegetation monitoring.

Mr. Jeffery Harbour Mr. Harbour serves as an Asst. Vice President and Ecology Division Manager and is a wetland ecologist with over fifteen years experience in conducting environmental assessments and natural resource investigations. His expertise includes conducting and managing terrestrial and aquatic natural resource investigations, wetland delineations, wetland mitigation studies, and endangered/threatened species surveys on corridor projects for transportation and utility studies. Mr. Harbour also prepares state and federal permit applications, habitat management plans, natural resource technical reports, NEPA documents, and wetland mitigation plans. His project management experience includes both private and public sector projects in Florida, Georgia, South Carolina, North Carolina, and Virginia. As an Ecology Division Manager, Mr. Harbour is also responsible for quality control of field efforts and technical reports.

APPENDIX V

Baker Engineering
ICE Analyses Memo

Draft Memorandum

To:	File	Date:	December 21, 2009
From:	Michael Baker Jr., Inc. Ken Gilland, Lorna Parkins, Chris Roessler	Subject:	Differences between 2009 and 2003 quantitative ICE analyses of Monroe Connector/Bypass

Background

In 2009, Michael Baker Engineering (Baker) was asked to develop a quantitative indirect and cumulative effects (ICE) analysis for the Monroe Connector/Bypass Project. The draft report is currently being revised. Conclusions reached in this draft document differ from a previous Monroe Connector/Bypass ICE report developed for NCDOT in 2003 for a Draft Environmental Impact Statement (DEIS) that was subsequently withdrawn. Baker was not given the earlier draft, to avoid the potential of the conclusions drawn in the past study to influence those developed for NCTA in 2009. The Baker draft stated that only minimal ICEs were expected to be caused by the project. This differed from the conclusions reached in the 2003 report, which anticipated substantial ICEs were likely. As part of the revision of the 2009 draft based on NCTA comments, Baker was asked to review the earlier document and determine reasons for the differing conclusions reached by the two documents.

Population Projection Differences

One reason for the different conclusions reached by the two studies relates to differences in population projections. Both studies used the best available source for population projection data from the North Carolina State Demographics Unit (NCSDU). However, the estimate used in the 2003 study greatly underestimated the growth in the project area. Data from the 2003 study is shown in Table 1 and includes estimates for Union County and the Charlotte Metropolitan Statistical Area (MSA), which includes Charlotte, Gastonia, and Rock Hill.

Table 1. 2003 Forecast Population Growth			
	2000 Population (2000 Census Data)	**2010 Population (Projected by NCSDU)**	**Percent Growth**
Union County	123,677	166, 838	34.9%
Charlotte MSA	1,499,293	1,858,977	24.0%
	2010 Population	2020 Population	Percent Growth
Union County	166, 838	212,811	27.6%
Charlotte MSA	1,858,977	2,252,015	21.1%

It appears that the housing boom and economic growth in the Charlotte-Mecklenburg Area caused increased growth in Union County. The most current estimate (2008) for the population of Union County is 191,108 (an increase of over 54 percent). Mecklenburg County has grown from a 2000 population of 700,714 to 877,007 in 2008 (an increase of 25 percent, which appears to be closer to the 2003 estimate). Growth is currently projected to continue at a greater rate in Union County through 2020 than was previously estimated, as shown in Table 2.

Table 2. 2009 Forecast Population Growth 2010 to 2029			
	2010 Population (Projected by NCSDU)	**2020 Population (Projected by NCSDU)**	**Percent Growth**
Union County	209,966	304,247	45%
Mecklenburg County	910,755	1,079,423	19%
	2020 Population	2029 Population	Percent Growth
Union County	304,247	389,098	28%
Mecklenburg County	1,079,423	1,231,225	14%

There is reason to anticipate that the current population growth forecasts are more accurate than previously developed estimates for Union County. As is shown in Table 3, several jurisdictions within Union County have adopted zoning regulations or other development restrictions since 2003, which should have a controlling effect on growth. In addition, because of the growth in Union County in this decade, Union County has reached the practical limits of its sewer and water systems. Currently a sewer connection moratorium is in place in Union County, and future connections will be determined through a formalized process currently under development. Regardless of the exact form this process takes, it is anticipated that the increased difficulty in obtaining sewer connections will somewhat control future development. This is much different than the conditions reported in the 2003 report, where ease in sewer connections was a listed assumption in forecasting the potential for land use change. Other factors listed as favoring land use change (change in property values, market for development, and public policy) have also changed somewhat during the intervening years. Finally, the Goose Creek Site Specific Water Quality Plan (NCDWQ, 2009) should provide a limiting factor for this portion of the FLUSA.

Table 3. Zoning or other Jurisdictional Changes Developed During or After 2003		
Jurisdiction	**Document**	**Year**
Goose Creek Watershed	Specific Water Quality Management Plan for the Goose Creek Site	2009
City of Monroe	Land Development Plan	Last Modified 2008
	Stormwater Management Ordinance	Modified 2007
	Zoning Code (Floodplain Permits)	Modified 2008
Town of Indian Trail	Unified Development Ordinance	Established in 2008
Town of Unionville	Zoning Ordinance	Adopted October 2003
	Land Use Plan	Adopted 2006
Town of Fairview	Land Development Plan	Adopted 2005
	Flood Plain Ordinance	Modified 2009
	Land Use Ordinance	Adopted 2005
Town of Stallings	Land Use Ordinance	Updated 2009
	Post Construction Ordinance	Adopted 2008
Town of Mint Hill	Zoning Ordinance	Minor Floodplain update 2006
	Post Construction Ordinance	Adopted 2007
Town of Marshville	Land Use Ordinance	Updated 2007
Town of Wingate	Land Use Ordinance	Updated 2008
Town of Weddington	Land Use Plan	Adopted 2006
	Temporary Development Ordinance	Adopted 2008
Village of Wesley Chapel	Land Use Plan	Adopted 2003
	Floodplain and Stormwater Ordinance	Adopted 2005
City of Matthews	Zoning Code	Modified 2008
	Post Construction Ordinance	Adopted 2007
Charlotte-Mecklenburg	Zoning Ordinance	Updated 2008
	East District Future Land Use Map	Adopted 2007
Union County	Land Use Plan Map	Updated 2006
	Zoning Map	Updated 2007

Methodology Differences

The HNTB methodology posits that a proportion of forecasted traffic on a new facility represents induced development, based on research from California. Two aspects of this premise are different in 2009 than when the assumptions were developed in 2003. First, the share of traffic representing induced growth was assumed to be 25 percent, whereas the source research indicated that 12.5 percent was a rule of

thumb where growth management controls were in place. The higher percentage was used to reflect the lack of planning controls in place in 2003; however, in 2009 this is no longer the case, as illustrated in the preceding table. If this type of analysis were to be attempted today, the second major difference is that the Monroe Connector is to be tolled; the assumption regarding a fixed share of forecasted traffic being attributable to induced land use does not take tolling into account. Since the land use results of the 2003 analysis are a direct result of these assumptions, a similar analysis completed in 2009, with the change in planning context and for a tolled facility, would use different assumptions and would not produce similar results.

Both studies also estimated impervious surface cover in the baseline and future conditions. In terms of the areas for which estimates were provided, there is some overlap between the two studies. HNTB looked at Goose and Duck Creek watersheds separately, while Baker examined the entire Goose Creek watershed that includes Duck Creek. The most direct comparison in modeled area is between HNTB's forecast for land use in the Lake Twitty watershed and Baker's forecast for Stewarts Creek. Those are essentially the same watersheds. Also, the Crooked Creek watershed was analyzed by both firms. Table 4 shows HNTB and Baker forecasts for percent impervious cover for the aforementioned areas.

Table 4. Percent Impervious Calculations for Quantitative ICE Studies

Watershed	**HTNB**	**Baker**
Goose Creek	23 sq mi	42 sq mi
Existing	6.9%	13%
No Build	26.1%	17%
Build w/ controls	23.2%	17%
Duck Creek	11 sq mi	included w/Goose Cr
Existing	3.7%	
No Build	30.2%	
Build w/ controls	21.7%	
Stewarts Cr/Lake Twitty	32 sq mi	35.3 sq mi
Existing	9.4%	15%
No Build	26.5%	20%
Build w/ controls	37.9%	21% (22% w/o 601)
Crooked Creek	42 sq mi	38.3 sq mi
Existing	11.0%	21%
No Build	37.0%	26%
Build w/ controls	47.3% (44.2% w/o controls)	27%

The HNTB forecasts show large increases in impervious cover (16-36 percent) from the existing condition to the Year 2020 in all cases. Baker's forecasts show much lower increases in impervious cover (4-6 percent) to the Year 2030. Given the different years for analysis and assumptions used, it is not surprising that the results are different.

Summary

The following observations account for some of the differences between the two studies:

- The rapid growth that occurred in the mid 2000s seems to have exhausted some of the growth potential in the project area, at least in the near term. For example, water and sewer service availability in Union County is currently very limited.
- There has also been a shift in public policy of the state and local governments between the two studies. Tighter growth controls are in place for the Goose Creek watershed, and NPDES Phase II stormwater regulations are in place for much of the study area. HNTB assumed that water and sewer service would be provided in Duck and Goose Creek watersheds by 2005. The scenario that was used in the forecast land use change for the 2003 study anticipated substantial changes in property values, sewer availability, market for development, and public policy for land development and weak land supply versus land demand. Generally speaking, HNTB seemed to focus more on growth potential (Tables 28, 29, and 31 of the 2003 report) while Baker focused on forecasted growth with and without the proposed project, in light of growth controls.
- The main assumptions for estimating induced growth in the 2003 analysis would not apply to a tolled Monroe Connector in the more regulated study area planning environment of 2009.
- Baker's existing condition estimates of percent impervious cover is higher in every case. This is reflective of the development boom in Union County that took place in the mid 2000s. Thus, Baker is starting from a higher base condition.
- Baker's land use categories and associated percent impervious cover followed those provided in the SCS TR-55 Manual. The percent impervious numbers for each land use type are explicit. HNTB's land use categories are more general and associated percent impervious covers are variable (e.g., residential land in the Lake Twitty existing condition appears to have a range of impervious cover from 33 to 100 percent). HNTB did not provide written explanation of their methodology to determine percent impervious cover.
- Baker's growth in population and development appears to be spread over a much larger area than HNTB's. For example, Baker forecasts a study area-wide increase of 28,000 residential acres from the existing condition to the No Build scenario, while HNTB forecasted a corresponding increase of 23,614 acres; yet the percent impervious cover forecast by HNTB is considerably higher than that by Baker. This is not explained by growth in industrial/commercial land because HNTB forecasted an increase of 1,103 acres, and Baker estimates an increase of 3,500 acres.

In summary, the results of HNTB and Baker ICE analyses are quite different. These differences, however, can be largely explained by different baseline conditions, changes in growth potential/control, and assumptions used in the analyses.

APPENDIX VI

Union Power Cooperative
Schweinitz's Sunflower Restricted Sites Guidelines

Understanding Reached With U.S. Fish and Wildlife Service Regarding Access Into Schweinitz Sunflower Restricted Sites Because of Union Power Cooperative Operations

Carrie Lorenz and Wil Ortiz will serve as the point of contact with the USFW to minimize misunderstandings and streamline the follow-up required.

- For Pre-Planned Activities- During the restricted access season of April 1st through November 15th, Union Power must make contact with Carolyn Wells at (828) 258-3939 ext 231 (Monday through Friday) between 8am and 5pm prior to work commencement. Zero can be pressed at any time to get to an operator or other co-worker. This applies if you need to cut a path to get to the equipment or require to introduce equipment into the sites. If you simply need to walk into the sites and no visual impact will be left then no contact is required. They want the opportunity to be able to move plants, if at all possible and necessary, to avoid being destroyed by Union Power activities.

- For Emergency Situations- Simply provide us with a map of the location highlighted. If warranted, we will submit report to the USFW regarding the access.

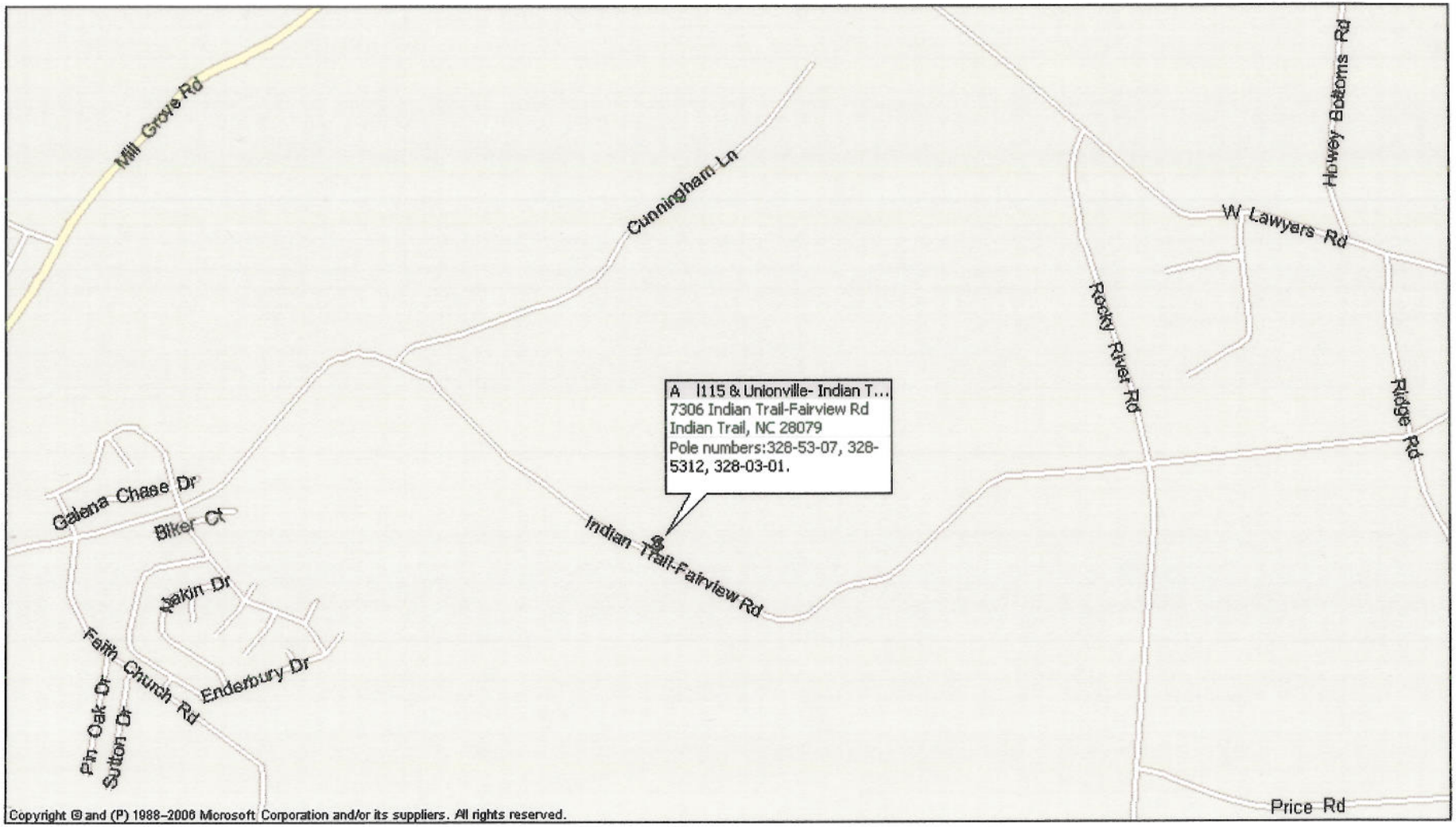
- Access During the Off-Season (November 16th through March 31st- no mowing or driving of vehicles that will compact the ground, create ruts, make holes, or in any way disturb the topsoil. Foot traffic is perfectly fine. Cutting of brush to access equipment is also permitted provided it's removed from the area.

NCDOT Management
Schweinitz's Sunflower Areas
Exact Locations of Sites NOT to MOW or Disturb within Utility ROWs

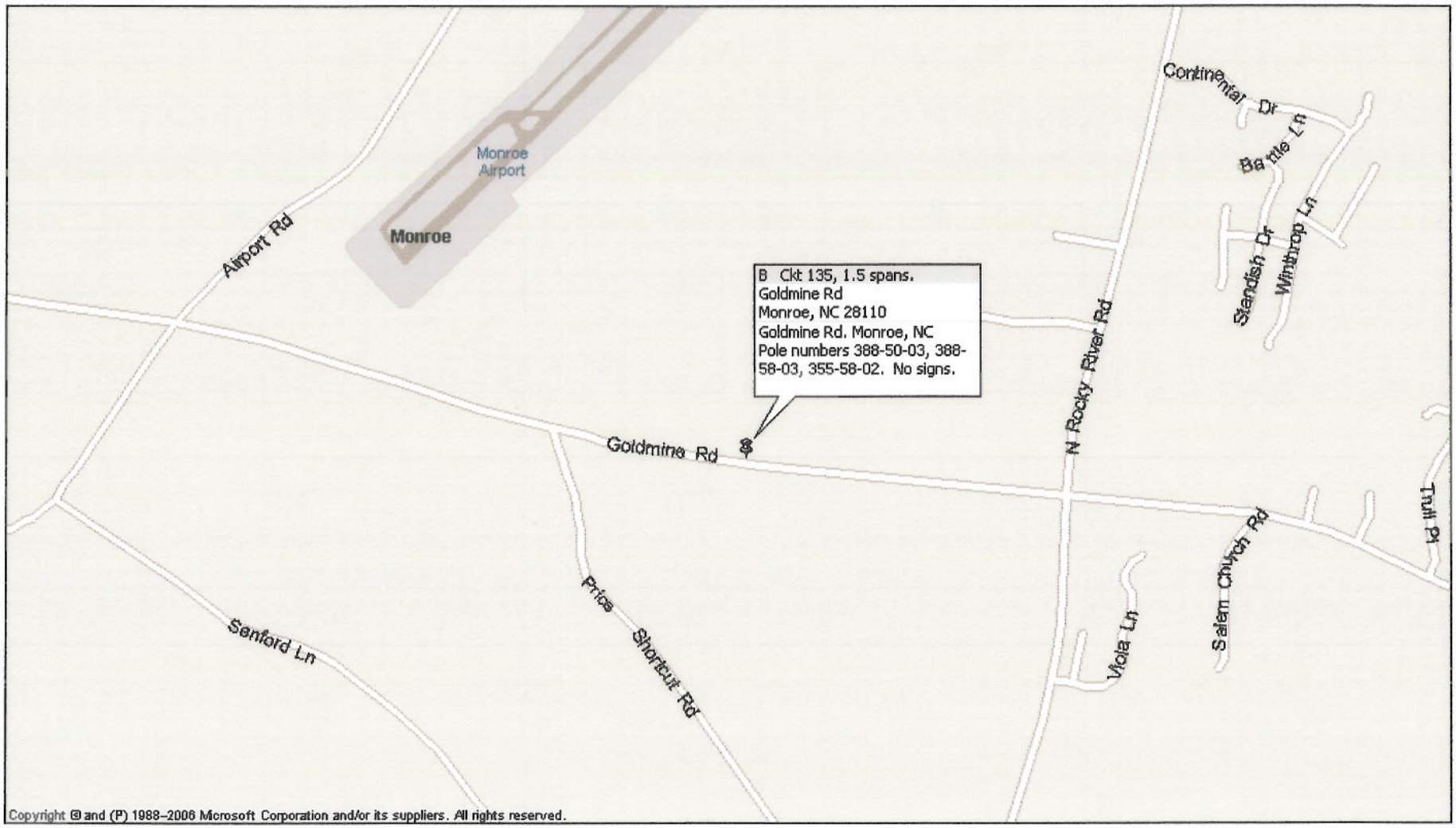
Location on Map	Address/Street	Circuit	Number of Spans	Pole Numbers	Notes
A	7306 Indian Trail-Fairview Rd	115 & Unionville-Indian Trail Transmission	4.5	328-53-07, 328-53-12, 328-03-01	
B	Goldmine Rd.	135	1.5	388-50-03, 388-58-03, 355-58-02	no signs
C	6616 Waxhaw Highway	152	1	446-29-03, 446-29-05	
D	6719 Waxhaw Highway	152	2	446-28-07, 446-28-06, 446-2804	
E	Waxhaw Highway & Western Union School Rd	152	3.5	446-27-02, 446-27-01, 446-28-08, 446-28-05,	
F	7623 Waxhaw Highway	152	6	445-40-08, 445-40-09, 445-40-01, 445-40-07, 446-33-05, 446-33-12, 446-33-03	There are 6 spans for sure, but there could be as many as 20 spans if some of the signs are missing.
G	3504 Waxhaw Marvin Rd	187	3	424-28-12, 424-27-11, 424-27-01, 424-19-02	Unsure if ROW is shared with DOT or not. Our lines don't follow the road exactly and there is a thin line of trees between road and lines.
H	9509 Marvin School Rd	188	0.25	403-07-02	no signs
I	9206 Joe Kerr Rd	188	1	383-63-03, 383-63-04	no signs
J	Miami Church Rd	71	2	171-64-04, 171-64-03, 171-64-02	
K	5485 Miami Church Rd	71	1.5	171-43-02, 171-43-08, 171-43-06	Lines shift away from DOT ROW and then merge back into same ROW again.
L	16301 Hwy 52 N	21	1.5	095-13-07, 095-13-08, 095-05-01	no signs
M	intersection of Wagoner Rd. & Hwy 52 N	21	2.5	095-05-01, 095-04-09, 095-04-03, 095-04-04	no signs, unsure if this is one of the spray areas or not
N	16093 Hwy 52 N	21	1	095-04-04, 095-04-05	no signs
O	15901 Hwy 52 N	21	1	075-59-02, 075-59-03	no signs
P	15585 Hwy 52 N	21	2	075-51-03, 075-51-02, 075-51-01	
Q	Old Beatty Ford Rd	21	1.5	075-42-03, 075-42-02, 075-42-01	

* note other sunflower areas are under Duke lines, if DOT would like to contact them as well, they are marked on the map.

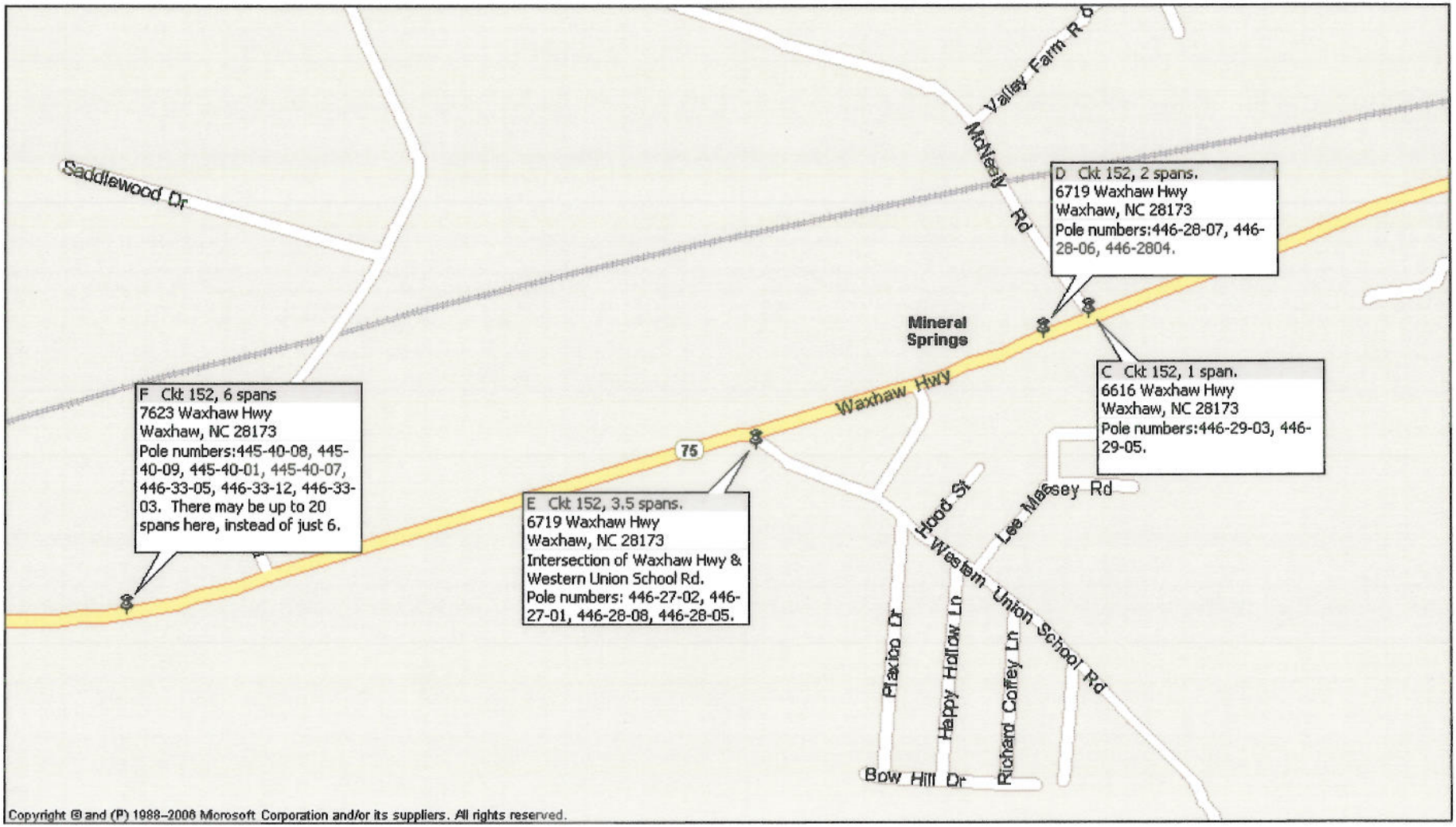
Schweinitz Sunflower
Site A



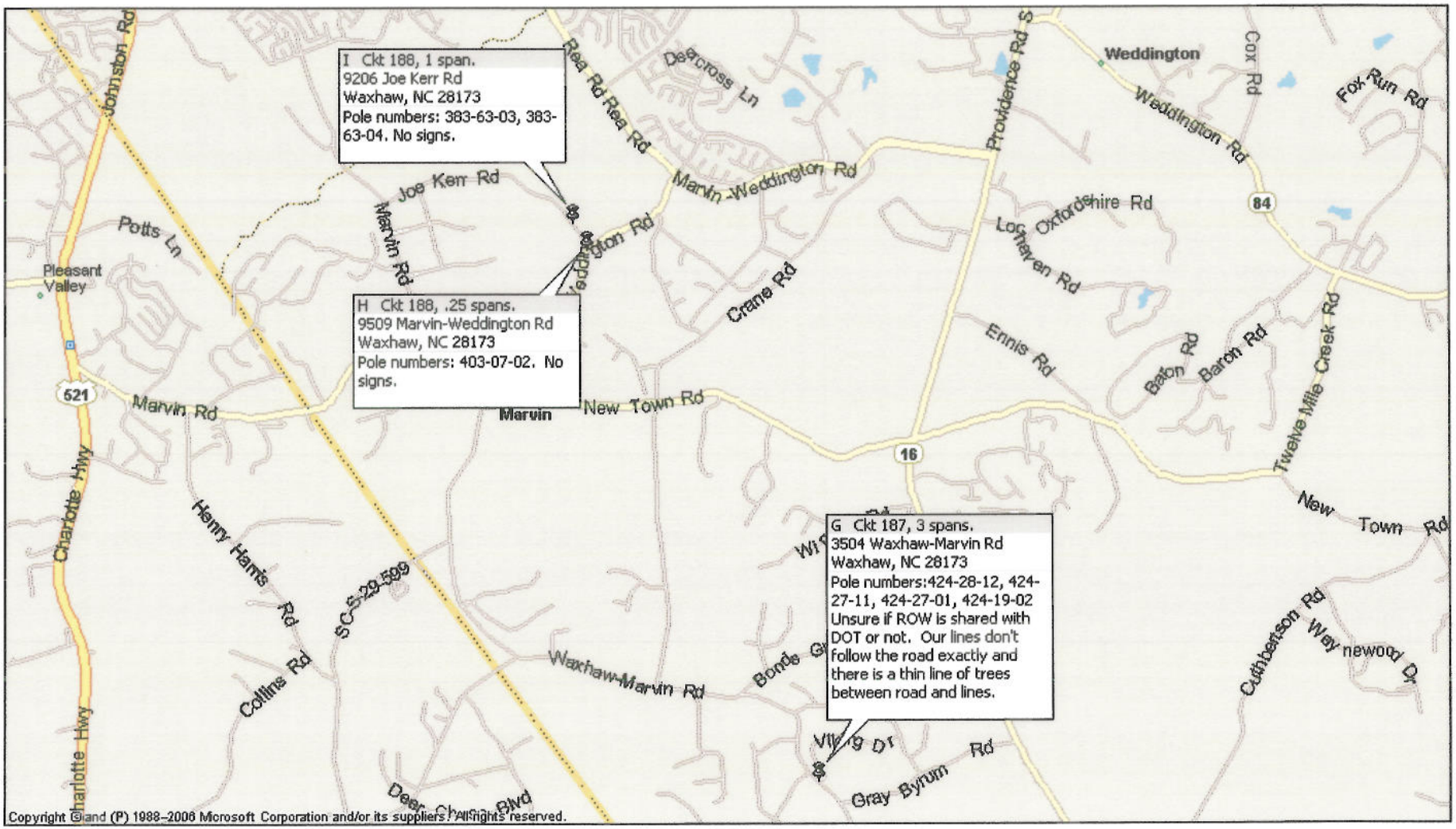
Schweinitz Sunflower
Site B



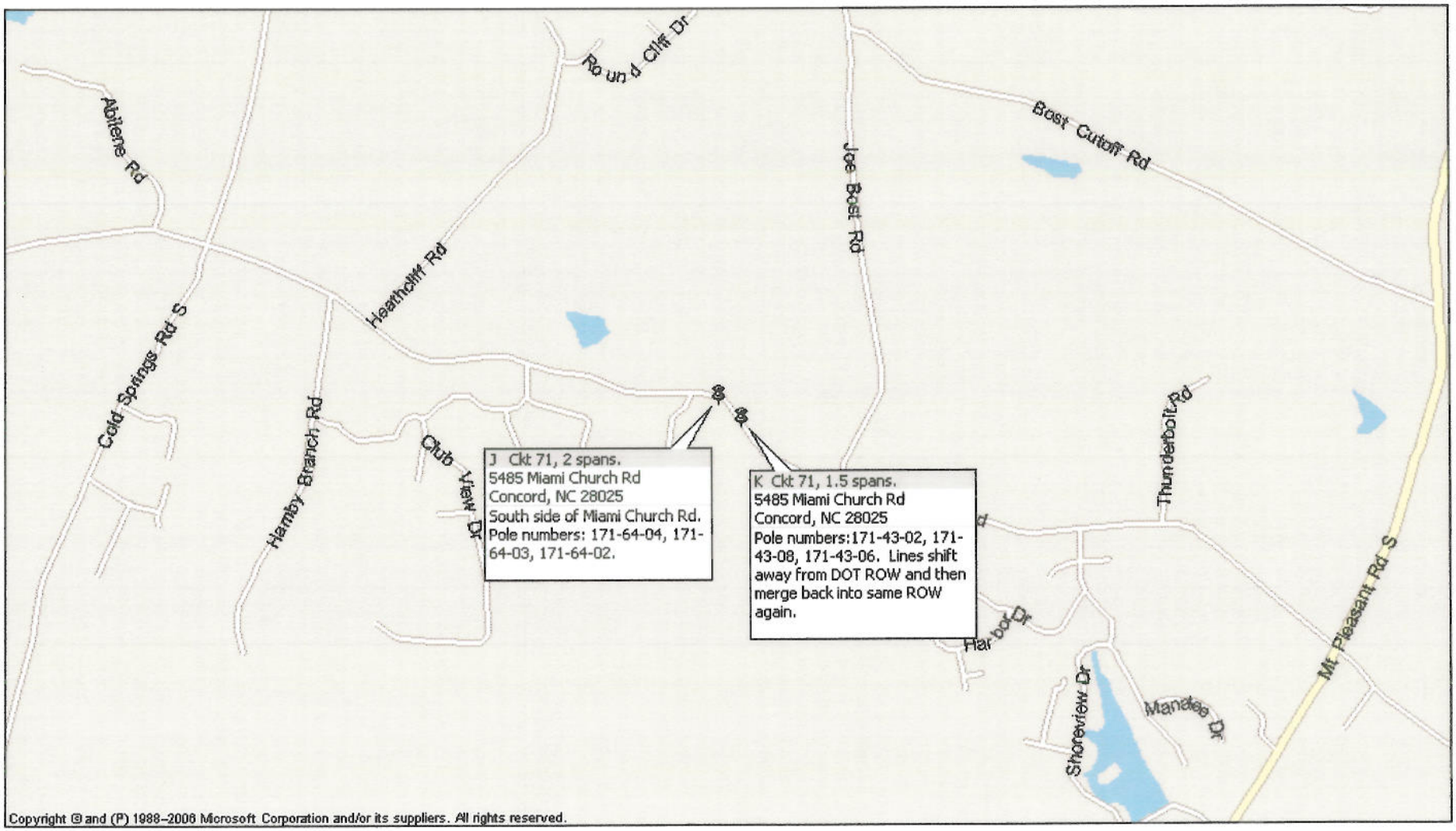
Schweinitz Sunflower
Site C-F



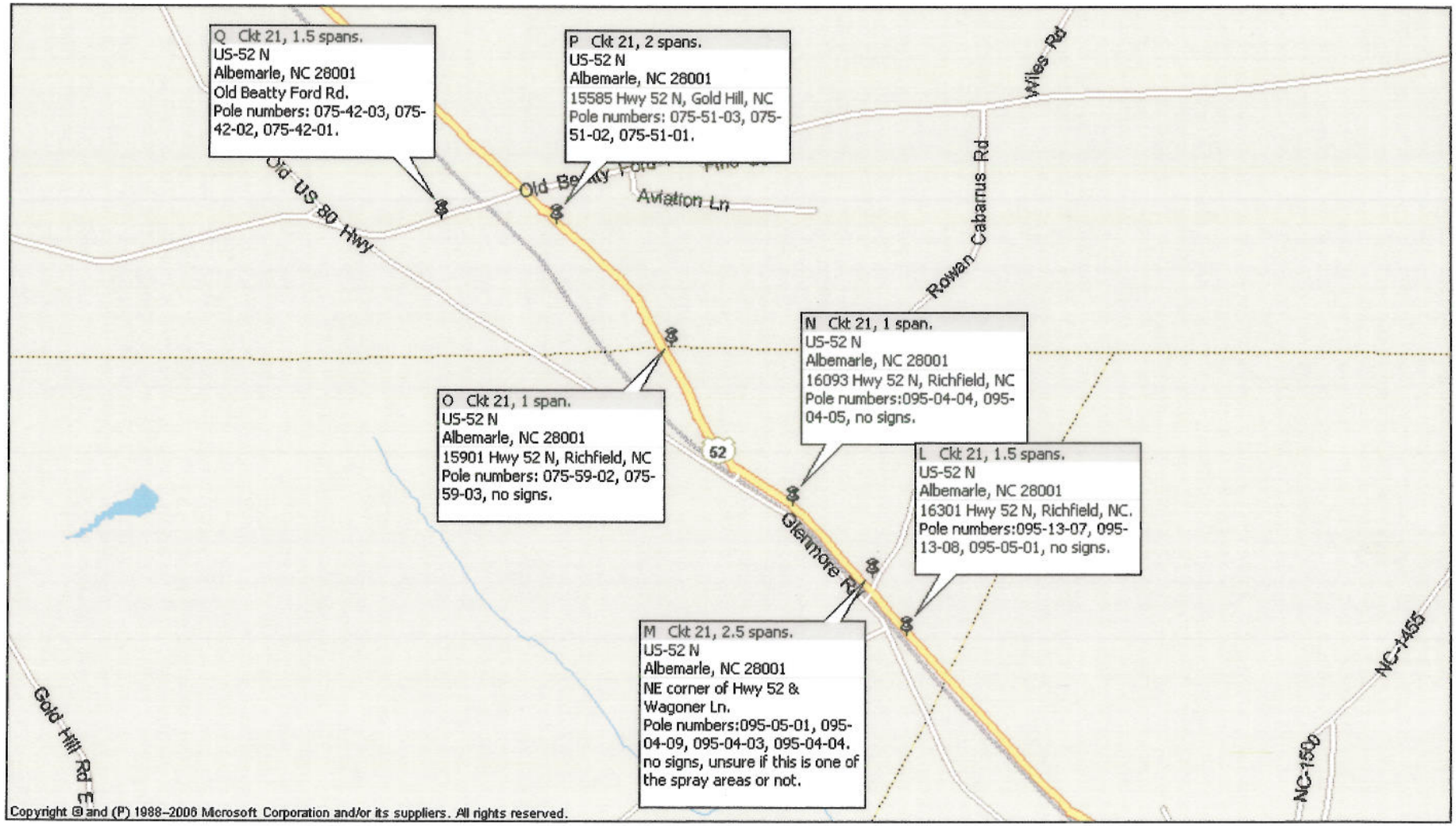
Schweinitz Sunflower
Site G-I



Schweinitz Sunflower
Site J & K



Schweinitz Sunflower
Site L-Q



APPENDIX VII

NCDOT
Roadside Vegetation Management Guidelines in Marked Areas

Center for Environmental Excellence by AASHTO
One Stop Source of Environmental Information for Transportation Professionals

Chapter 11
Appendix

11.33. NCDOT Roadside Vegetation Management Guidelines in Marked Areas

Example 35 : NCDOT Roadside Vegetation Management Guidelines in Marked Areas

- No mowing April 1-November 15.
- No herbicides, no fertilizers. (Exceptions can be made for herbicides under special circumstances, discussed below.)
- Mowing from November 16-March 31 is allowed and, in most cases (*see exception below) , should be done at least *every other year*. Winter mowing every year is acceptable. If regular contract mowers are unable to mow the sites under this time frame, NCDOT mowers may be used during the winter.
- Mowing should not be conducted when the soil is wet, as compaction and rutting will occur.
- In some instances, rare plants may be growing right along the edge of the road. Ideally, the plants should be protected if at all possible in this situation, but if NCDOT division staff determine that the road shoulder should be mowed during the growing season for safety or visibility, then the shoulder may be mowed accordingly. If possible, an NCDOT biologist can visit the site and mark where individual plants are, so they can be avoided.
- NCDOT mowing contracts are under modification to ensure that contractors are responsible for finding out if any endangered plants are within the areas they will be working, and for avoiding injury to the plants. The County Mowing Inspector or the Division Roadside Environmental Engineer should review the No Mow policy with each county maintenance office and mowing contractor prior to any mowing activities on roads with rare plant populations.
- The standard mowing height is usually four inches; ideally, the mower should be set at a level to avoid scalping the ground and damaging rare plants.
- Clippings from winter mowing should be left on site so any rare plant seeds produced will have the opportunity to germinate within the population. An exception can be made if only weeds are reproducing.
- Prior to entering the site, mowers and equipment should be cleaned off, removing any accumulated vegetative debris that contains weed seeds.
- Rare plants along roadsides often extend into utility line ROWs. Utilities managing plant growth in DOT ROWs must be told that herbicide use on DOT ROW is unlawful without a permit. Utilities conducting plant management *adjacent* to DOT ROWs should be notified when rare plants are present.

* Mowing Exception

There is an exception to winter mowing for Virginia spiraea. This shrub is found along streams, rivers and roadsides in the mountains. Because it is a woody shrub it should **never** be mowed, regardless of the time of year. Trimming or selective thinning of other woody vegetation that compete with this species may be recommended for management.

Signs/Stakes

When rare plants are discovered on NCDOT's ROW, the population should be marked with 'Do Not Mow' signs. These signs should be large enough to be easily noticed by roadside mowers. A variety of signs have already been placed along roadside populations; most simply state, 'Do Not Mow' while others include dates for the no mow period (April 1 - November 15) , or add 'Do Not Spray.' To ensure that signs are readily understood by a variety of workers, signs with universal symbols for 'Do Not Mow' and 'Do Not Spray' are under review for future use.

Do Not Mow signs should be positioned at both ends of a population, facing so mowers will see the signs as they approach the No Mow area. Where rare plants occur along a significant stretch of roadway it is suggested that double sided Do Not Mow signs be placed periodically along the population - two Do Not Mow signs placed back to back on a single post. The reasoning for this is that if a sign at one end of the population disappears, the mower will encounter another Do Not Mow sign before the entire population is mowed. Maintaining the signs and seeing that they are visible and in good condition is critical in order to protect these populations. Damaged or missing signs should be replaced as soon as possible, especially during the growing season. If possible, signs should be placed at a low enough level for the mower operator to see.

White-topped wooden stakes can also be useful in alerting mower operators that the site is designated as a No Mow area. These should be used in addition to (not instead of) Do Not Mow signs. The wooden stakes are approximately 40 inches long with the top six inches painted white, the same stakes used to delineate mowing patterns and areas that are off limits to mowers. Stakes should be placed at regular intervals along the entire edge of the roadway side of the population.

Encroachments/Maintenance

Division environmental officers, district offices and maintenance units should make sure rare plant sites are taken into consideration for proposed ROW encroachments and maintenance work. ROW encroachments such as driveways, utility work, minor widenings, installation of utility lines and pipes for driveways have the potential to damage rare plant populations. All ROW access requests and driveway access applications in areas where rare species are known to occur should be reviewed to ensure there will be no impacts. If impacts to rare plants are likely to occur, efforts should be made to avoid or minimize damage. District offices should maintain secondary road files with a notation to remind them that the road has a protected species.

Roadside maintenance activities, such as grading and ditch maintenance can also harm rare plants. As above, if impacts to rare plants are likely to occur, efforts should be made to avoid or minimize damage. Heavy equipment should be kept out of rare plant areas during the No Mow period. Employees working in the area should be shown the rare plant so they can avoid damaging them.

Herbicide Use

To reduce competition from invasive weeds, herbicides should only be used when mechanical removal is not an option. Herbicides can be used near rare plant populations when specifically prescribed by someone familiar with the biology of the rare plant. Two main herbicides have been recommended for use on roadside rare plant populations. These herbicides have been tried in a variety of situations by NCDOT and are believed to be most suitable for managing these sites, glyphosate triclopyr for woody vegetation. All herbicide applications for roadside rare plant sites should be conducted by a Licensed Pesticide Applicator.

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Return to Section 1.1 »

APPENDIX VIII

NCTA Schweinitz's Sunflower Preservation Letters

NCDOT Division 10
Union Power

STATE OF NORTH CAROLINA
TURNPIKE AUTHORITY

BEVERLY E. PERDUE
GOVERNOR

1578 MAIL SERVICE CENTER, RALEIGH, N.C. 27699-1578

DAVID W. JOYNER
EXECUTIVE DIRECTOR

March 23, 2010

Mr. Larry Thompson, Division Environmental Officer
North Carolina Department of Transportation
Division 10
716 West Main Street
Albemarle, NC 28001

RE: STIP R-3329/R-2559 (Monroe Connector/Bypass)
Preservation-in-Place of federally endangered Schweinitz's sunflower populations within NCDOT and Union Power rights of way on Secrest Shortcut Road

Dear Mr. Thompson:

The North Carolina Turnpike Authority (NCTA) has conducted threatened and endangered species surveys for the proposed Monroe Connector/Bypass (STIP R-3329/R-2559) in Union County and Mecklenburg counties. During these surveys, two populations of the federally endangered Schweinitz's sunflower (*Helianthus schweinitzii*) were identified within NCDOT right of way and Union Power right of way. These populations have the potential to be indirectly affected by the proposed project. The populations are described below and shown in the enclosed figure.

Population #1
This population is located on Secrest Shortcut Road (SR 1501), approximately 600 feet west of the intersection with Unionville-Indian Trail Road along the southern side of the road near GPS location 35.0759° N, -80.6136° W. It is a very small population (12 stems) that occurs primarily between the roadside swale and the power line adjacent to Secrest Shortcut Road.

Population #2
This population is located on Secrest Shortcut Road (SR 1501) between Unionville-Indian Trail Road (SR 1367) and the crossing of the South Fork Crooked Creek near GPS location 35.0721°N, -80.6097°W. It includes 103 stems on the northern side and 31 stems on the southwestern side of Secrest Shortcut Road. This population is currently mapped by the NC Natural Heritage Program (NHP) as element occurrence (EO) # 77.

NCTA is proposing specific management actions to preserve these two populations in place as a conservation measure to offset potential indirect effects of the proposed Monroe Connector/Bypass. We are requesting that the Division install "Do Not Mow" signs at these locations by June 1, 2010. We also request that the Division manage these populations per the "NCDOT Roadside Vegetation Management Guidelines in Marked Areas" guidance.

We have notified Union Power of the presence of these populations and have requested they add these two populations to their vegetation management plan. A copy of this letter is attached.

Additionally, it is our understanding that the Schweinitz's sunflower population on Goldmine Road (EO# 78) may not be marked with "Do Not Mow" signs. Please ensure that signs are installed at this location.

Please consider our request to preserve these two populations in place and verify in writing to the address above your commitment to manage the aforementioned sites in accordance with your vegetation management guidelines. We would appreciate your response by May 7, 2010.

If you have any questions or concerns regarding our request, please feel free to contact me or Christy Shumate at (919) 571-3000.

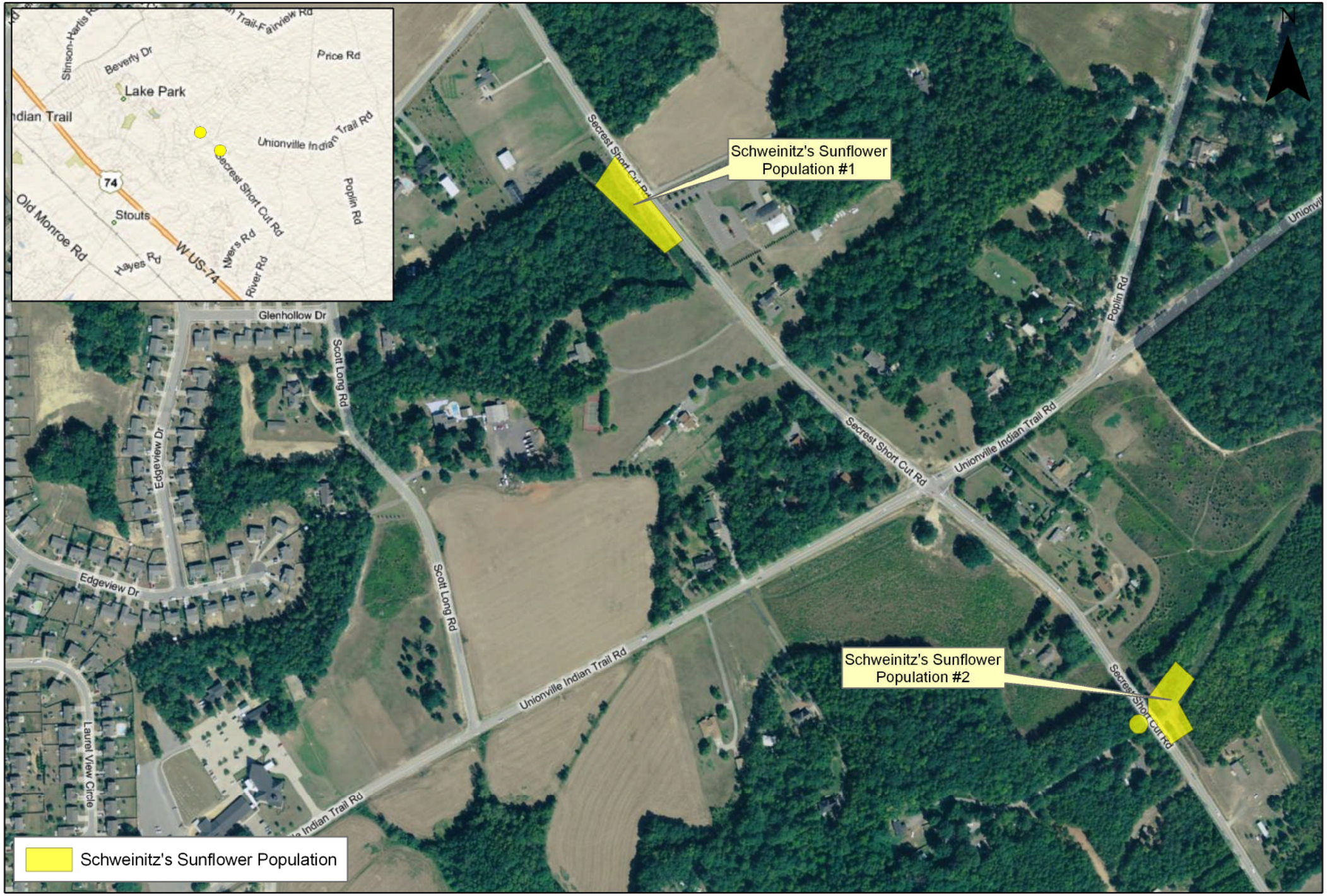
Sincerely,

Jennifer Harris

Jennifer Harris, P.E.
Director of Planning and Environmental Studies

Enclosures:
Figure 1 – Schweinitz's Sunflower Populations: Preservation Sites
Copy of letter to Mr. Wil Ortiz, Union Power

cc: George Hoops, FHWA
Bruce Ellis, NCDOT
Barry Moose, NCDOT Division 10
Jennifer Callahan, The Catena Group



The Catena Group

Date: February 2010

Scale: 0 190 380 Feet

Job No.: 1125

Title:

Monroe Connector/Bypass (R-3329/R-2559)

Schweinitz's Sunflower Populations: Preservation Sites

Union County, North Carolina

Aerial Photography www.bingmaps.com

Client:

North Carolina Turnpike Authority

Figure

1

STATE OF NORTH CAROLINA
TURNPIKE AUTHORITY

BEVERLY E. PERDUE
GOVERNOR

1578 MAIL SERVICE CENTER, RALEIGH, N.C. 27699-1578

DAVID W. JOYNER
EXECUTIVE DIRECTOR

March 23, 2010

Mr. Wil Ortiz
Regional Managing Arborist
Union Power Cooperative
Union Services Building
1543 Rocky River Road
Monroe, NC 28110

RE: STIP R-3329/R-2559 (Monroe Connector/Bypass)
Request for Preservation of federally endangered Schweinitz's sunflower populations within NCDOT and Union Power rights of way

Dear Mr. Ortiz:

The North Carolina Turnpike Authority (NCTA) has conducted threatened and endangered species surveys for the proposed Monroe Connector/Bypass (STIP R-3329/R-2559) in Mecklenburg and Union counties, NC. During these surveys, two previously unidentified populations of the federally endangered Schweinitz's sunflower (*Helianthus schweinitzii*) were identified within Union Power right of way and NCDOT right of way. The populations are described below and shown in the enclosed figure.

Population #1
This population is located on Secrest Shortcut Road (SR 1501), approximately 600 feet west of the intersection with Unionville-Indian Trail Road along the southern side of the road near GPS location 35.0759° N, -80.6136° W. It is a very small population (12 stems) that occurs primarily between the roadside swale and the power line adjacent to Secrest Shortcut Road.

Population #2
This population is located on Secrest Shortcut Road (SR 1501) between Unionville-Indian Trail Road (SR 1367) and the crossing of the South Fork Crooked Creek near GPS location 35.0721°N, -80.6097°W. It includes 103 stems on the northern side and 31 stems on the southwestern side of Secrest Shortcut Road. This population is currently mapped by the NC Natural Heritage Program (NHP) as element occurrence (EO) # 77.

NCTA is proposing specific management actions to preserve these two populations in place as a conservation measure to offset potential indirect effects of the proposed Monroe Connector/Bypass. "Do Not Mow" signs will be installed at these locations by June 1, 2010. We are requesting that Union Power add these two populations to the "Understanding Reached with US Fish and Wildlife Service Regarding Access Into Schweinitz's Sunflower Restricted Sites Because of Union Power Cooperative Operations" vegetation management plan.

Additionally, it is our understanding that population B (on Goldmine Road) in your vegetation management plan is shown as lacking "Do Not Mow" signs. We have contacted NCDOT Division 10 to install signs at this location.

Please consider our request to preserve these two populations and verify in writing to the address above your commitment to include the aforementioned sites in your vegetation management plan. We appreciate your response by May 7, 2010. We look forward to continuing to manage protected species sites within our shared rights of way with Union Power.

If you have any questions or concerns regarding our request, please feel free to contact me or Christy Shumate at (919) 571-3000.

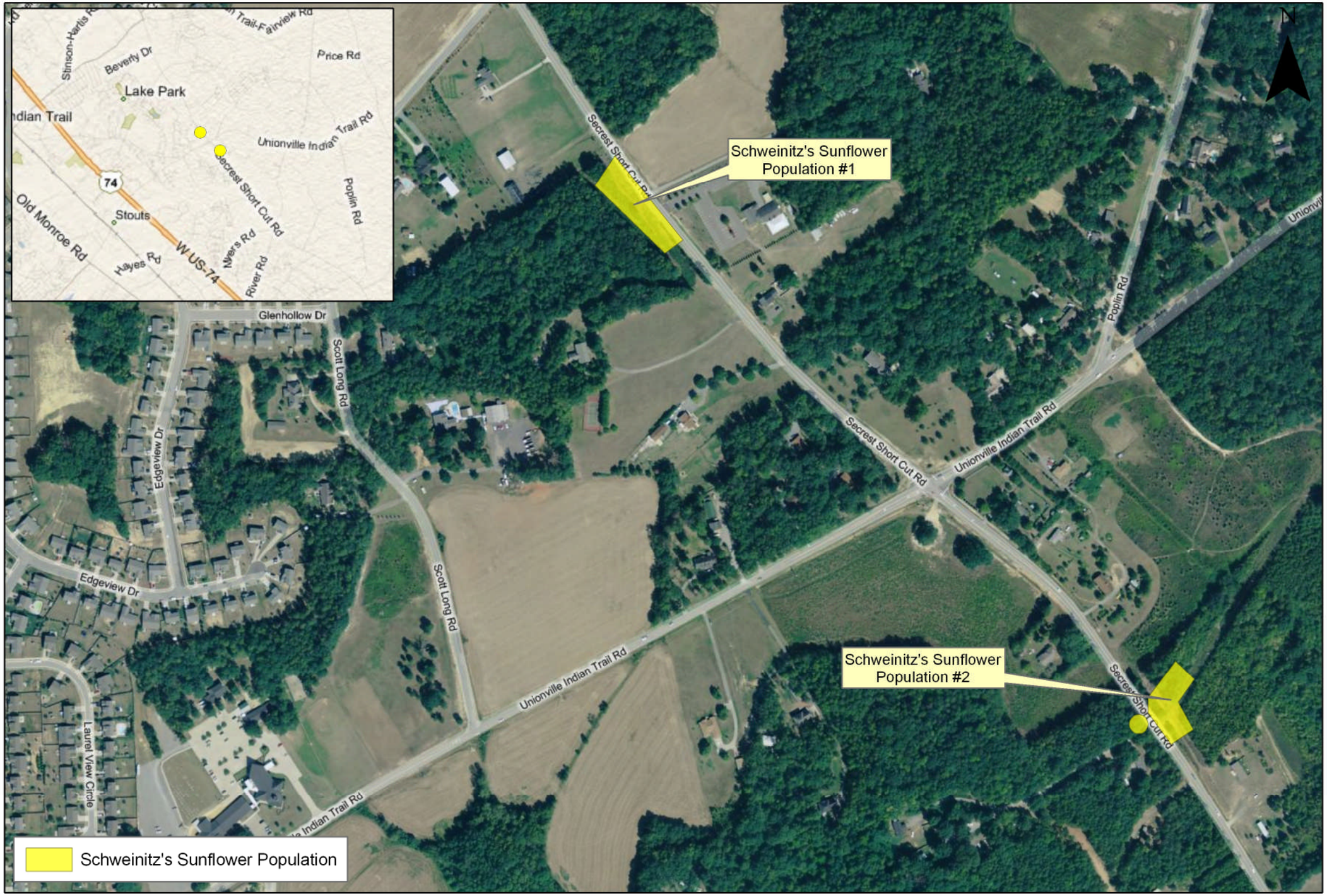
Sincerely,

Jennifer Harris

Jennifer Harris, P.E.
Director of Planning and Environmental Studies

Enclosures:
Figure 1 – Schweinitz's Sunflower Populations: Preservation Sites

cc: George Hoops, FHWA
Bruce Ellis, NCDOT
Barry Moose, NCDOT Division 10
Larry Thompson, NCDOT Division 10
Jennifer Callahan, The Catena Group



The Catena Group

Date: February 2010

Scale: 0 190 380 Feet

Job No.: 1125

Title:

Monroe Connector/Bypass (R-3329/R-2559)

Schweinitz's Sunflower Populations: Preservation Sites

Union County, North Carolina

Aerial Photography www.bingmaps.com

Client:

North Carolina Turnpike Authority

Figure

1

APPENDIX IX

Agency Comments on Draft Indirect and Cumulative Effects Quantitative Analysis

Baker, February 2010

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

April 26, 2010

MEMORANDUM

To: Jennifer Harris, P.E., North Carolina Turnpike Authority

From: Polly Lespinasse, Division of Water Quality, Mooresville Regional Office

Subject: Comments on the Draft Indirect and Cumulative Effects Quantitative Analysis Related to the Proposed Monroe Connector/Bypass Extending from US 74 near I-485 in Mecklenburg County to US 74 Between the Towns of Wingate and Marshville in Union County, Mecklenburg and Union Counties, Federal Aid Project No. STP-NHF-74(90), WBS Element 34533.1TA1, TIP No.s R-3329/R-2559

This office has reviewed the referenced document dated February 2010. The NC Division of Water Quality (NCDWQ) is responsible for the issuance of the Section 401 Water Quality Certification for activities that impact Waters of the U.S., including wetlands. It is our understanding that the project as presented will result in impacts to jurisdictional wetlands, streams, and other surface waters. NCDWQ offers the following comments based on review of the aforementioned document:

Project Specific Comments:

1. The Indirect and Cumulative Effects (ICE) analysis makes several assumptions in predicting future land use in the study area. One of the assumptions is that growth in Union County may be controlled by a moratorium on new sewer connections. There may be a moratorium implemented at the local level, however, the moratorium implemented by NCDWQ has been lifted. It is also NCDWQ's understanding that Union County's existing wastewater facilities currently have the capacity to accept additional wasteloads. Based on this information, NCDWQ has concerns regarding future land use and what role the "moratorium" played in growth projections through the design year (2030). Therefore, DWQ would like to recommend that growth projections be re-evaluated eliminating the "moratorium" assumption. Both methods should be included in the final ICE.

2. The draft ICE analysis states that "stream buffers were excluded from the subset of developable parcels because development within these areas is prohibited by local and/or state regulations". Further it was "...assumed that mitigation requirements would offset impacts." This statement is supported by documentation in Appendix A. A review of Appendix A does not appear to provide information to justify the statement that mitigation would be provided for buffer impacts. The question posed to municipality representatives was "Has the local regulation of natural resources (including stream buffers) changed in this time period". Typical responses indicated that most respondents were aware of the adoption of the Goose Creek Site Specific Water Quality Management Plan. Union County stated that they have a "draft ordinance for buffer regulations…but it has not been presented to, let alone adopted by, the County Board." The Goose Creek Site Specific Water Quality Management Plan is implemented by NCDWQ in Union County and Mecklenburg County has recently been delegated implementation authority for portions of Goose Creek which lie in their jurisdiction. The Goose Creek buffer rules do not require mitigation for all impacts. Certain activities are exempt or allowable without mitigation. In addition, as the ICE analysis states, buffer widths could vary from 30 feet to 200 feet.

Mooresville Regional Office
Location: 610 East Center Ave., Suite 301 Mooresville, NC 28115
Phone: (704) 663-1699 \ Fax: (704) 663-6040 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org

Please provide additional information to substantiate the exclusion of these areas in the growth projections (2030 No Build Land Use and 2030 RPA Land Use) and whether these areas were included in the 2007 Baseline Land Use.

3. The draft ICE analysis states that there will be a "change in intensity" of land use with minimal net change in acres of development. NCDWQ is unclear how a "change in intensity" compares to impervious surface coverage and developed acreage. The document states that percent impervious cover would not demonstrate any "measurable difference" between the 2030 No-Build and the 2030 RPA. If a change in intensity in land use occurs (the draft ICE analysis identified an increase in medium density residential [700 acres with a net increase of 1,300 households in the FLUSA], and an increase of 100 acres of commercial development with the 2030 RPA with only a slight decrease in high density residential acreage) one could hypothesize that impervious cover would increase by more than the incremental amount identified in the draft ICE analysis. Please provide an explanation of this comparison.

4. Per the draft ICE analysis, impervious cover changes average no more than 2% in three (3) of the impacted watersheds (Richardson Creek, Stewarts Creek and Crooked Creek), but there is a 7% increase in both Stewarts Creek and Bearskin Creek. The North Fork Crooked Creek, South Fork Crooked Creek, Richardson Creek and Stewarts Creek are 303(d) Waters of the State. Most of the streams are impaired use for aquatic life due to impaired biological integrity. An increase of 7% increase in impervious surface in the Stewarts Creek watershed could have increased indirect and cumulative impacts on water quality that do not appear to be addressed in this document.

General Comments:

5. In accordance with the Environmental Management Commission's Rules {15A NCAC 2H.0506(h)}, mitigation will be required for impacts of greater than 150 linear feet to any single perennial stream. In the event that mitigation is required, the mitigation plan shall be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as stream mitigation.

6. Future documentation, including the 401 Water Quality Certification Application, shall continue to include an itemized listing of the proposed wetland and stream impacts with corresponding mapping.

7. NCDWQ is very concerned with sediment and erosion impacts that could result from this project. The NCTA shall address these concerns by describing the potential impacts that may occur to the aquatic environments and any mitigating factors that would reduce the impacts.

8. A final analysis of cumulative and secondary impacts anticipated as a result of this project is required. The type and detail of analysis shall conform to the NC Division of Water Quality Policy on the assessment of secondary and cumulative impacts dated April 10, 2004.

9. The NCTA is respectfully reminded that all impacts, including but not limited to, bridging, fill, excavation and clearing, and rip rap to jurisdictional wetlands, streams, and riparian buffers need to be included in the final impact calculations. These impacts, in addition to any construction impacts, temporary or otherwise, also need to be included as part of the 401 Water Quality Certification Application.

10. Where streams must be crossed, NCDWQ prefers bridges be used in lieu of culverts. However, we realize that economic considerations often require the use of culverts. Please be advised that culverts should be countersunk to allow unimpeded passage by fish and other aquatic organisms. Moreover, in areas where high quality wetlands or streams are impacted, a bridge may prove preferable. When applicable, the NCTA should not install the bridge bents in the creek, to the maximum extent practicable.

11. Whenever possible, NCDWQ prefers spanning structures. Spanning structures usually do not require work within the stream or grubbing of the streambanks and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges shall allow for human and wildlife passage beneath the structure. Fish passage and navigation by canoeists and boaters shall not be blocked. Bridge supports (bents) should not be placed in the stream when possible.

12. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of NCDWQ's *Stormwater Best Management Practices.*

13. Sediment and erosion control measures should not be placed in wetlands or streams.

14. Borrow/waste areas should avoid wetlands to the maximum extent practical. Impacts to wetlands in borrow/waste areas will need to be presented in the 401 Water Quality Certification and could precipitate compensatory mitigation.

15. The 401 Water Quality Certification application will need to specifically address the proposed methods for stormwater management. More specifically, stormwater shall not be permitted to discharge directly into streams or surface waters.

16. Based on the information presented in the document, the magnitude of impacts to wetlands and streams may require an **Individual Permit (IP)** application to the Corps of Engineers and corresponding 401 Water Quality Certification. Please be advised that a 401 Water Quality Certification requires satisfactory protection of water quality to ensure that water quality standards are met and no wetland or stream uses are lost. Final permit authorization will require the submittal of a formal application by the NCTA and written concurrence from NCDWQ. Please be aware that any approval will be contingent on appropriate avoidance and minimization of wetland and stream impacts to the maximum extent practical, the development of an acceptable stormwater management plan, and the inclusion of appropriate mitigation plans where appropriate.

17. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.

18. If temporary access roads or detours are constructed, the site shall be graded to its preconstruction contours and elevations. Disturbed areas shall be seeded or mulched to stabilize the soil and appropriate native woody species shall be planted. When using temporary structures the area shall be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact allows the area to re-vegetate naturally and minimizes soil disturbance.

19. Placement of culverts and other structures in waters, streams, and wetlands shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.

20. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation, floodplain benches, and/or sills may be required where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

21. If foundation test borings are necessary; it shall be noted in the document. Geotechnical work is approved under General 401 Certification Number 3687/Nationwide Permit No. 6 for Survey Activities.

22. Sediment and erosion control measures sufficient to protect water resources must be implemented and maintained in accordance with the most recent version of North Carolina Sediment and Erosion Control Planning and Design Manual and the most recent version of NCS000523.

23. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.

24. While the use of National Wetland Inventory (NWI) maps, NC Coastal Region Evaluation of Wetland Significance (NC-CREWS) maps and soil survey maps are useful tools, their inherent inaccuracies require that qualified personnel perform onsite wetland delineations prior to permit approval.

25. Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams. This equipment shall be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.

26. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.

27. Riparian vegetation (native trees and shrubs) shall be preserved to the maximum extent possible. Riparian vegetation must be reestablished within the construction limits of the project by the end of the growing season following completion of construction.

NCDWQ appreciates the opportunity to provide comments on your project. Should you have any questions or require any additional information, please contact Polly Lespinasse at (704) 663-1699.

cc: Liz Hair, US Army Corps of Engineers, Asheville Field Office (electronic copy)
Chris Militscher, Environmental Protection Agency (electronic copy)
Marla Chambers, NC Wildlife Resources Commission (electronic copy)
Marella Buncick, US Fish and Wildlife Service (electronic copy)
Sonia Gregory, NCDWQ Central Office (electronic copy)
File Copy

Memorandum

To:	North Carolina DENR, Division of Water Quality	Date:	April 27, 2010
From:	Michael Baker Engineering, Inc. Ken Gilland	Subject:	Response to Comments on Draft Quantitative ICE

On April 26, 2010, NC Turnpike Authority received comments on the Draft Indirect and Cumulative Effects (ICE) Quantitative Analysis for the Monroe Connector/Bypass project from the North Carolina Department of Environment and Natural Resources, Division of Water Quality (NCDWQ). This memorandum presents the comments as numbered by with corresponding responses prepared by the author of the report, Michael Baker Engineering, Inc. (Baker).

Comment 1: *The Indirect and Cumulative Effects (ICE) analysis makes several assumptions in predicting future land use in the study area. One of the assumptions is that growth in Union County may be controlled by a moratorium on new sewer connections. There may be a moratorium implemented at the local level, however, the moratorium implemented by NCDWQ has been lifted. It is also NCDWQ's understanding that Union County's existing wastewater facilities currently have the capacity to accept additional wasteloads. Based on this information, NCDWQ has concerns regarding future land use and what role the "moratorium" played in growth projections through the design year (2030). Therefore, DWQ would like to recommend that growth projections be re-evaluated eliminating the "moratorium" assumption. Both methods should be included in the final ICE.*

Response: Although the moratorium on sewer and water connections in certain parts of Union County is one factor limiting development in the short term, most interviews conducted with planners and utility officials in the county indicated that this would not be a limiting factor on long term growth (see page 10). Therefore, in the process of projecting land use change in the No Build condition for 2030, Baker made no reductions in projected growth of households or employment based on any lack of sewer or water capacity. Baker did consider the likely availability of sewer and water service in different parts of the county in helping to determine the potential density of development. Sewer capacity is noted in a few places in the document, notably in the Executive Summary, on page ii where under the Assumptions/Observations sections, Baker notes that "[p]ast growth has caused a moratorium in new sewer connections in Union County. The new process for allocating sewer service, once adopted, may serve as a control on growth." This statement should be considered an observation as it is impossible to

predict the actual impact that any undrafted, long-term allocation policy might have on future growth. Therefore, Baker did not reduce any projected growth based on sewer or water capacity.

Comment 2: *The draft ICE analysis states that "stream buffers were excluded from the subset of developable parcels because development within these areas is prohibited by local and/or state regulations". Further it was "...assumed that mitigation requirements would offset impacts." This statement is supported by documentation in Appendix A. A review of Appendix A does not appear to provide information to justify the statement that mitigation would be provided for buffer impacts. The question posed to municipality representatives was "Has the local regulation of natural resources (including stream buffers) changed in this time period". Typical responses indicated that most respondents were aware of the adoption of the Goose Creek Site Specific Water Quality Management Plan. Union County stated that they have a "draft ordinance for buffer regulations…but it has not been presented to, let alone adopted by, the County Board." The Goose Creek Site Specific Water Quality Management Plan is implemented by NCDWQ in Union County and Mecklenburg County has recently been delegated implementation authority for portions of Goose Creek which lie in their jurisdiction. The Goose Creek buffer rules do not require mitigation for all impacts. Certain activities are exempt or allowable without mitigation. In addition, as the ICE analysis states, buffer widths could vary from 30 feet to 200 feet.*

Please provide additional information to substantiate the exclusion of these areas in the growth projections (2030 No Build Land Use and 2030 RPA Land Use) and whether these areas were included in the 2007 Baseline Land Use.

Response: Per 15A NCAC 02B .0607 (1), "[a]ny exempt or potentially allowed use shall require stormwater control as outlined in Rule .0602 if the one acre threshold is met". Thus some level of mitigation is still required when these uses disturb at least one acre of the buffer area. Since the smallest level of analysis for this study is 30x30 meter raster cells, it is unlikely that potential future encumbrances on the stream buffers would have a measurable effect on the land use results, were it possible to reasonably forecast such encumbrances.

"Exempt" uses or activities that are new to the buffer are defined under the table of uses found on pages 9-13 of the "Site Specific Water Quality Management Plan for the Goose Creek Watershed". New uses or activities with the buffer areas that are "Exempt" are:

a. Archaeological activities,
b. Dam maintenance activities,
c. Drainage of a pond in a natural drainage way provided that a new riparian buffer that meets the diffuse flow requirements of this Rule is established adjacent to the new channel,
d. Driveway crossings on single family residential lots that disturb equal to or less than 25 linear feet in width and are perpendicular,
e. Fences provided that disturbance is minimized and installation does not result in removal of forest vegetation,
f. One-time fertilizer application at agronomic rates to establish replanted vegetation,
g. Historic preservation,
h. Perpendicular non-electric utility crossings that disturb equal to or less than 40 linear feet of riparian buffer with a maintenance corridor equal to or less than 10 feet in width,

i. Overhead electric utility line stream crossings that disturb equal to or less than 150 linear feet of riparian buffer,
j. Playground equipment on single family lots provided, that installation and use does not result in removal of vegetation,
k. Removal of previous fill or debris provided that diffuse flow is maintained and any vegetation removed is restored,
l. Road crossings that impact equal to or less than 40 linear feet of riparian buffer and is perpendicular,
m. Scientific studies and stream gauging,
n. Stream restoration,
o. Temporary roads that disturb less than or equal to 2,500 square feet provided that vegetation is restored within six months of initial disturbance,
p. In-stream temporary erosion and sediment control measures for work within a stream channel,
q. Underground electric utility perpendicular crossings that disturb less than or equal to 40 linear feet of riparian buffer,
r. Vegetation management,
s. Water wells,
t. Wetland restoration.

Most of these activities or uses do not fall neatly into one of the land use categories developed as part of this study, nor are there clear or reasonable accurate ways to determine the location and likelihood of these uses within stream buffers in the future. Future land use was forecasted based on household and employment forecasts from the TAZ projections. These forecasts were then converted into acreages of development by land use and those acreages were then applied to the available land areas in each TAZ. There is no clear methodology for forecasting how much of the above uses or activities might impact stream buffers based on TAZ forecasts.

Furthermore, it is important to note that in buffer exclusion process, whole parcels were not excluded unless they fell completely within a buffer area. Instead, the buffer areas were subtracted from the developable parcel polygons, meaning that future development areas could fill out to the buffer edges under the methodology used.

As to the variance in buffer width noted in the ICE, this range was cited as there are other buffer requirements in other watersheds that are less than those required in Goose Creek. All stream buffers were calculated in GIS based on the jurisdiction and watershed rules required for each specific area and included the use of the most recently available FEMA flood plain boundaries where required. For simplicity, Baker simply cited the overall range of buffers used in the text of the report instead of outlining the exact buffer calculations for each watershed or jurisdiction.

Finally, stream buffer regulations were not a factor in developing the 2007 Baseline land use. Baseline land use development process is outlined on pages 11 and 12 of the Quantitative ICE Report. The process relied on parcel attributes, aerial photography and the NCGAP land cover dataset to determine Baseline land use. Since stream buffer regulations were not considered in this process, developed parcels, even if they fell partially or completely within a stream buffer area, would be considered developed areas (in one of the 5 developed land use categories outlined on page 12) in the Baseline land use.

Comment 3: *The draft ICE analysis states that there will be a "change in intensity" of land use with minimal net change in acres of development. NCDWQ is unclear how a "change in intensity" compares to impervious surface coverage and developed acreage. The document states that percent impervious cover would not demonstrate any "measurable difference" between the 2030 No-Build and the 2030 RPA. If a change in intensity in land use occurs (the draft ICE analysis identified an increase in medium density residential [700 acres with a net increase of 1,300 households in the FLUSA], and an increase of 100 acres of commercial development with the 2030 RPA with only a slight decrease in high density residential acreage) one could hypothesize that impervious cover would increase by more than the incremental amount identified in the draft ICE analysis. Please provide an explanation of this comparison.*

Response: Changes in the intensity of land use have effects on impervious surface cover, in that higher intensity land uses have higher levels of impervious surface. As noted in Section 4.1 of the Draft ICE, SCS TR-55 model categories were used to develop assumptions for the percent imperviousness for each land use category. The table is shown here for reference:

Percent Impervious Surface for Each Land Use Category

Land Use Category	% Impervious using SCS TR-55 Manual
Commercial	85%
Industrial/Office/Institutional	70%
High Density Residential	38%
Medium Density Residential	25%
Low Density Residential	20%
Transportation	100%
Agricultural and Natural	0%

Source: SCS, 1986

Conversion of 700 acres of low density residential to medium density residential would increase total impervious area from 140 acres to 175 acres. Conversion of 100 acres of low density residential to Commercial would increase total impervious area from 20 acres to 85 acres. Total net increase in impervious surface from these two conversions would yield a 100 acre increase in impervious surfaces. Actual total incremental increases in impervious surface between the No Build and RPA are higher, due in large part to the additional impervious surface added by the direct impact of the roadway. The small amount of incremental increase in density simply does not add substantially to the overall impervious cover when compared to the overall level of impervious increase expected under No Build conditions.

One could hypothesize that impervious cover could increase more only if land uses within the Commercial and Medium Density residential categories proves to have higher impervious surface characteristics and the Low Density Residential category has much lower impervious surface characteristics than those assumed in this study. However, Baker has developed this forecast based on standard methodologies as recommended by NCDOT guidance. Furthermore, Baker attempted to validate these assumptions using actual impervious surface data from Mecklenburg County. Results of that analysis, found on pages 27 and 28, indicate that the percent impervious levels assumed from TR-55

are highly conservative across all categories, meaning that the overall percent impervious projections may be overly conservative. Nevertheless, the analysis showed that the relative differences among Baseline, No Build, and Build scenarios were still similar to the TR-55 based methodology. Also, that analysis showed that the relative difference in percent imperviousness between categories of land use was similar to the TR-55 assumptions. Thus, the change in impervious surface predicted by Baker using the TR-55 assumptions when land uses change in intensity is still reasonable.

Comment 4: *Per the draft ICE analysis, impervious cover changes average no more than 2% in three (3) of the impacted watersheds (Richardson Creek, Stewarts Creek and Crooked Creek), but there is a 7% increase in both Stewarts Creek and Bearskin Creek. The North Fork Crooked Creek, South Fork Crooked Creek, Richardson Creek and Stewarts Creek are 303(d) Waters of the State. Most of the streams are impaired use for aquatic life due to impaired biological integrity. An increase of 7% increase in impervious surface in the Stewarts Creek watershed could have increased indirect and cumulative impacts on water quality that do not appear to be addressed in this document.*

Response: The average of no more than 2% increase in impervious surface in three watersheds refers to the indirect impact of the RPA. The 7% increase is a comparison to the Baseline condition. As noted at the end of Section 6.1 of the Draft ICE, "[i]t is possible that in the watersheds where there are differences from the No-Build, the Build Alternatives' incremental effect could also have a cumulative effect when considered in combination with the incremental effects of other reasonably foreseeable future projects."

For a more in depth review of potential water quality effects to 303(d) listed streams, please refer to the Water Quality Modeling Report. Specifically, that report notes on page 41:

> "As to the second question, four of the catchments composing the Study Area contain streams on the North Carolina 303(d) list (NCDWQ 2006) (Figure 2A, Appendix A). The Project alignment intersects three of these catchments: Crooked, Richardson (Middle), and Richardson (Lower) Creeks. Further, interchanges are proposed in Crooked Creek (4 interchanges) and Richardson Creek (Lower) (1 interchange). The watershed model results for these three catchments indicate increased streamflow, runoff, and pollutant loads in the 2030 RPA scenario compared to the 2030 No Build scenario. Richardson Creek (Lower) experiences the greatest increases for all modeled parameters; an observation explained by the fact that Richardson Creek (Lower) incurs the largest increase in high-density development per catchment area. Goose Creek, which is not intersected by the Project alignment, is not expected to experience any direct or indirect effects from the Project (Baker 2009). The estimated streamflow and pollutant loadings for Goose Creek remained unchanged between the 2030 No Build and 2030 RPA scenarios; therefore, the Project is not anticipated to affect the water quality of Goose Creek."

Responses to remaining comments are included in Appendix B1 (Table B1-4) of the Final Environmental Impact Statement (May 2009).