

**Conservation Management Plan  
for Dwarf-Flowered Heartleaf (*Hexastylis naniflora*)  
at the Tate Conservation Easement  
Rutherford County, NC**



**North Carolina Department of Transportation  
Raleigh, North Carolina**

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## **1.0 Introduction**

The North Carolina Department of Transportation (NCDOT) is poised to begin a Transportation Improvement Program project (TIP R-2233) on US Hwy 221 from the North Carolina/South Carolina state boundary to Roper Loop Road (State Road 1366), north of the town of Rutherfordton in Rutherford County, NC. It is beyond the scope of this document to discuss the details of this TIP; however, further information is available from other NCDOT environmental documentation, including the Biological Assessment for the Proposed US 221 Widening and Bypass Around Rutherfordton, Rutherford County, NC (2008), Final Natural Resources Technical Report – R-2233A (2003), Final Natural Resources Technical Report – R-2233B (2004), State Environmental Assessment – R-2233A (2005), State Finding of No Significant Impact – R-2233A (2006).

The federally-protected dwarf-flowered heartleaf (DFHL; *Hexastylis naniflora*) is a plant found within and along proposed Rights-of-Way (ROW) associated with this project. Approximately 1,073 DFHL plants are expected to incur adverse effects associated with R-2233. Of this amount, up to ~ 330 DFHL are expected to incur direct effects as a result of construction activities associated with this project.

As part of the conservation measures established in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (16 U.S.C. 1536 (c)) and as recorded in the Biological Assessment (BA) for this project, NCDOT proposes to create an on-site conservation easement for this species. This proposed conservation easement will consist of an approximately 8 acre site adjacent to project ROW limits. As the property owners are Mr. Robert and Mrs. Carolyn Tate, this parcel will be referred to as the “Tate Conservation Easement” (TCE). For further details see “On-site Measures to Offset DFHL Impacts” in the BA R-2233. The property owner has expressed interest in the development of this conservation easement and is working with NCDOT to this end. NCDOT is committed to the establishment of this conservation easement as well. If able to acquire the Tate easement, NCDOT will not only eliminate potential development at this site, but preserve the DFHL and habitat located here in perpetuity.

This Conservation Management Plan is intended to provide the NCDOT, any entity representing NCDOT, relevant state and federal agencies, the current property owner (Mr. and Mrs. Robert Tate), and future property owners with information regarding the Tate Conservation Easement, as well as specifics regarding the relocation and monitoring plans for DFHL at this site. Proposed management activities may be modified in accordance with changing scientific data and/or project details.

## **2.0 Location Specifics**

The entire TIP R-2233 (sections A and B) extends for approximately 20 miles from the North Carolina/South Carolina state boundary to north of the town of Rutherfordton, NC (Figure 1). The Tate Conservation Easement lies within the southern section of the

project (R-2233A; Figure 2) and is considered the highest quality DFHL site in the project study corridor. This site is catalogued as a high quality DFHL site by the NC Department of Environment and Natural Resources (NCDENR; Element Occurrence #106); it has few invasive species, minimal disturbance from the public, and a very high density of individual DFHL (~536 plants/acre). Pedestrian field surveys performed by NCDOT biologists during the spring of 2008 revealed an estimated 2,350 plants occurring at the site of the proposed TCE. The majority of these plants (~98% of EO #106) will not be directly effected by the construction of this project. As clarified in the BA, approximately 50 plants at the TCE (~2% of EO #106) are within the NCDOT ROW and will be transplanted to a location farther away from the road facility. The remaining majority of the DFHL at the TCE occur near or along the creek that forms the north-east boundary of the easement.

### **3.0 Transplantation Efforts**

As per the BA for R-2233, up to ~330 DFHL lie within project ROW limits and are expected to incur direct effects as a result of construction activities associated with this project. These DFHL will be transplanted to the TCE in a manner similar to that performed for B-2937 (Little Gunpowder Creek; LGC). Briefly, in November 2000, 175 individuals of DFHL were relocated from the ROW of a NCDOT bridge construction site at LGC to an adjacent conservation easement. Results from the LGC transplant are encouraging with 68% of the transplanted individuals surviving as of April 2002, despite drought conditions (Murrell et al. 2007). Transplanting the plants that will be destroyed in the construction footprint to the Tate Conservation Easement would potentially save those ~330 individual DFHL plants, provide additional data to support feasibility and efficacy of DFHL transplantation efforts, and enhance our understanding of this species' biological and habitat requirements. Transplant for these DFHL will occur in the winter prior to the start of construction activities for each section R-2233 (section A and section B). Appropriate permits will be obtained from the North Carolina Plant Conservation Program (NCPCP).

Transplantation methodology will be based on that developed by Newberry (1996) and Murrell et al. (2007), including post-transplant monitoring and efforts to minimize contamination. Monitoring methodology and reporting requirements will be incorporated into the conservation plan (see Section 5.0). Care will be taken to identify and keep separated resident DFHL from transplanted individuals in order to better track performance of each group. Optimum habitat will be chosen with consideration of potential disturbance to other DFHL.

### **4.0 Baseline DFHL Population Data**

The qualitative health and quantitative density of resident DFHL at the TCE at the time of acquisition will be used to determine baseline conditions with which to compare future changes at the site. The general condition of the overall habitat at the TCE will be noted upon acquisition, as well. Future site and plant quality at the TCE will be compared with baseline conditions (see Section 5.3); however, natural variation in plant

health and abundance will be considered, in the context of current environmental conditions. The baseline environmental data also will consider previous data collected at the TCE during the 2004 and 2008 surveys of DFHL for R-2233. Performance of transplanted individuals over time will be compared to that of resident individuals primarily based on metrics such as survivorship, overall health, and population boundaries and density.

Once the TCE is established, the baseline environmental information will be collected and included in an initial report. Where relevant and applicable, data collected from previous surveys at the TCE will be incorporated into the baseline assessment. Survey methodology and results will be reported; including area surveyed, and details regarding DFHL population density, boundary limits, etc. Subsequent reports will also include natural or human-induced alterations from baseline conditions and status updates of DFHL population based on detailed survey notes and observations (see Section 5.3).

## **5.0 Management, Monitoring, and Reporting**

### *5.1 Advisory Committee*

An advisory committee composed of individuals from relevant agencies and/or organizations will be established to ensure consistent and continued monitoring of the easement. Representatives from the following agencies will be invited to participate: US Fish and Wildlife Service (USFWS), NCDOT, and NCDENR including individuals from NCPCH and NC Natural Heritage Program (NCHNP).

### *5.2 Management, Access, and Prior Notification*

Management of the Tate conservation easement will be performed by NCDOT and/or NCDOT representatives. NCDOT will coordinate with the current property owner in conjunction with conducting management and monitoring activities.

Management will consist primarily of protection and monitoring, with little direct manipulation of habitat or individuals foreseen. Maintenance of the natural community types should not require much intervention. Eradication of invasive species will only be considered if the invasives pose a threat to DFHL, if eradication will not harm DFHL or other non-invasives present at the TCE, and will only be pursued with landowner approval. Additionally, the principles of Integrated Pest Management (IPM) shall be employed. Manual removal of invasive plants and other species will be the preferred method of removal; however, when manual removal is not feasible, a North Carolina licensed pesticide applicator shall be employed to apply the minimal but effective dose of an appropriate chemical pesticide. Furthermore, pesticide application will be overseen by NCDOT personnel to ensure there will be no adverse effects to DFHL. The usage of pesticides will be reported in the monitoring reports and will be subject to termination if the advisory committee deems necessary. To be included in the report, at a minimum, is the type and brand of pesticide used, the amount (rate of application and total applied), location of application, and observed effectiveness on invasive species, as well as the overall health of the application area.

Access into the preserve will be granted for USFWS representatives, representatives from state resource agencies, and the advisory committee with prior notification to the property owner. Prior notification shall include verbal or written communication (phone, letter, or personal contact) with the property owner. Notification will occur no later than one week prior to visitation and on the day of visitation; however, if circumstances do not allow for one week notice, than an attempt at contact must be made as soon as feasible and/or on the day of visitation. If unable to leave notice with the property owner a letter will be left at the residence or with a representative of the property owner briefly describing the work being performed and the expected duration of time to be spent on the property. Any proposal to modify the habitat, in full or part, shall be submitted in writing to the advisory committee and the property owner for consideration of consistency with the intent of the conservation easement and the goals and objectives of this conservation plan.

### *5.3 Property Owner Contact Information*

Robert & Carolyn Tate  
4411 US 221 south  
Forest City, NC 28043

Phone – 828-245-2910

### *5.4 Monitoring and Reporting*

Monitoring efforts will be employed to track and report performance of the TCE and DFHL individuals present at the TCE. NCNHP's Endangered and Rare Plant Field Survey Form will be prepared for the TCE for each survey, including the baseline survey. Additionally, the following baseline environmental conditions listed below will be established and compiled in a report once the TCE is obtained. (NOTE: The NCNHP form qualitatively and quantitatively addresses the five items listed below; the items below are specifically identified for their inclusion in NCDOT's monitoring reports). This information will be updated each year monitoring occurs. Monitoring is to be conducted during the optimal survey window for this species; March - May. Monitoring will occur at the following schedule: ~ 1 year post-relocation, ~ 3 years post-relocation, and ~ 5 years post-relocation. This monitoring regime will help track short-term and mid-term transplant success and overall population stability at the TCE. Survival and success of DFHL at the TCE beyond this time frame becomes more a function of stochastic environmental factors outside of the control of NCDOT. Baseline and subsequent monitoring reports will be provided by NCDOT to the committee, the landowner, and placed into the NCDOT project file upon completion.

The baseline and monitoring information to be collected includes (in conjunction with NCNHP's Endangered and Rare Plant Field Survey Form):

- 1) Identification and delineation of physical and biotic resources, including:  
Terrestrial and aquatic community delineation; soils present in the vicinity of the DFHL; streams; wetland; other relevant features on-site.

- 2) Identification of dominant flora and fauna.
- 3) Delineation of DFHL population boundaries (resident and transplanted) using GPS/GIS methodology.
- 4) Survey of DFHL populations at the TCE:  
Distinguishing between resident and transplanted populations—Counts of total number of *Hexastylis naniflora* plants, density and population boundary limits (i.e. estimate of overall population growth), vigor.
- 5) Identification of natural- and human-disturbance:  
Alterations of stream bank due to sloughing and erosion; identification of invasive species and monitor the extent of intrusion to the TCE and proximity to DFHL populations; assessment of trespass or encroachment by outside parties.

Collectively, this information will provide a working knowledge database of the success of the transplant effort and help to track the condition of the natural resources and DFHL present at the TCE.

#### *5.5 Adaptive Management*

This conservation plan shall be subject to modification for the purpose of implementing the original conservation plan goal: perpetuation of a viable population of *Hexastylis naniflora* in perpetuity. Modifications to this plan shall occur as needed, and as determined by consensus of the advisory committee.

#### *5.6 Term of the Plan*

This plan will be implemented, modified as necessary, and carried out in perpetuity, effective the date that the Tate Conservation Easement is obtained. The site shall remain a conservation easement for *Hexastylis naniflora* regardless of the species' status under the Endangered Species Act.

### **6.0 Final Dispensation of the Property**

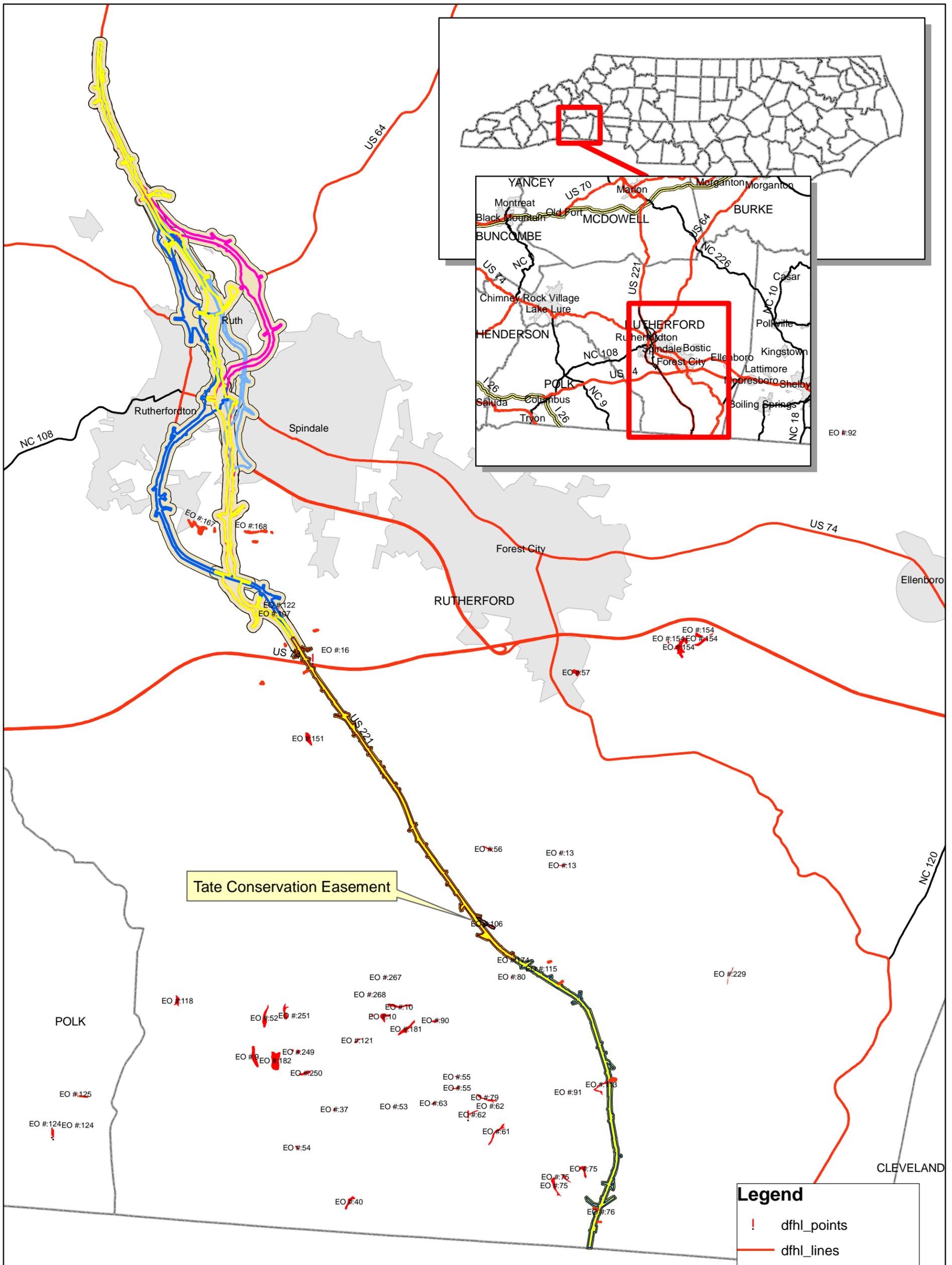
Mr. Robert and Mrs. Carolyn Tate are expected to retain ownership of the parcel. The deed for the acquired site will identify that this area was purchased for conservation purposes in perpetuity. No future transportation projects, development projects, or other activities with negative impacts to the *Hexastylis naniflora* population will be allowed in the conservation easement. The conservation easement is expected to be transferred perpetually with property upon sale of the property. Covenants and/or restrictions on the deed will be included that will ensure adequate management and protection of the TCE in perpetuity. Further details are provided in legal documentation associated with the conservation easement.

## 7.0 References

- Gaddy, L.L. 1980. Status report on *Hexastylis naniflora*. Prepared for the U.S. Fish and Wildlife Service. Unpublished report. 25 pp.
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- U.S. Fish and Wildlife Service (USFWS). 7 March 1997. Notification of Status Review for *Hexastylis naniflora* (dwarf-flowered heartleaf). 3 pp.
- U.S. Fish and Wildlife Service (USFWS). 2007. Dwarf-flowered heartleaf (*Hexastylis naniflora*) 5-Year Review: Summary and Evaluation, DRAFT. Asheville, NC. 51 pp.



Tate Conservation Easement

**Legend**

- ! dfhl\_points
- dfhl\_lines
- dfhl\_polys
- R2233A\_ROW\_aa
- R2233A\_ROW\_ab
- R2233B\_ROW\_Alt3
- R2233B\_ROW\_Alt4
- R2233B\_ROW\_Alt6
- R2233B\_ROW\_Alt74a
- R2233A\_ActionArea
- R2233B\_ActionArea



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Department  
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Transportation

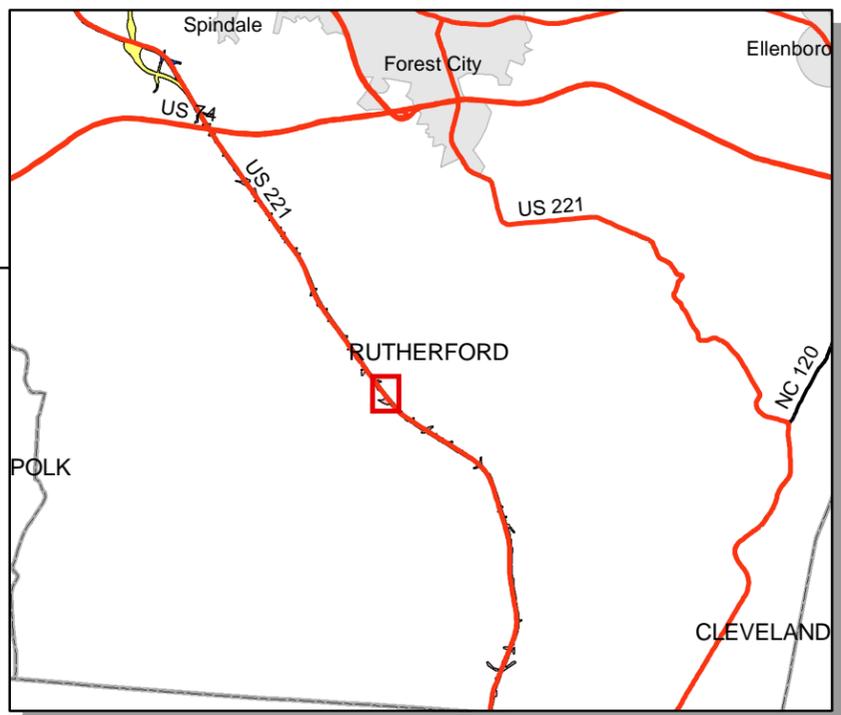
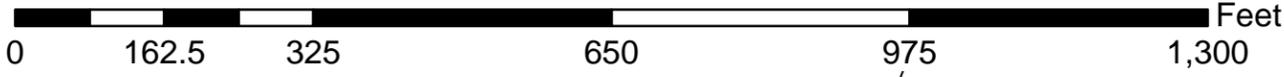
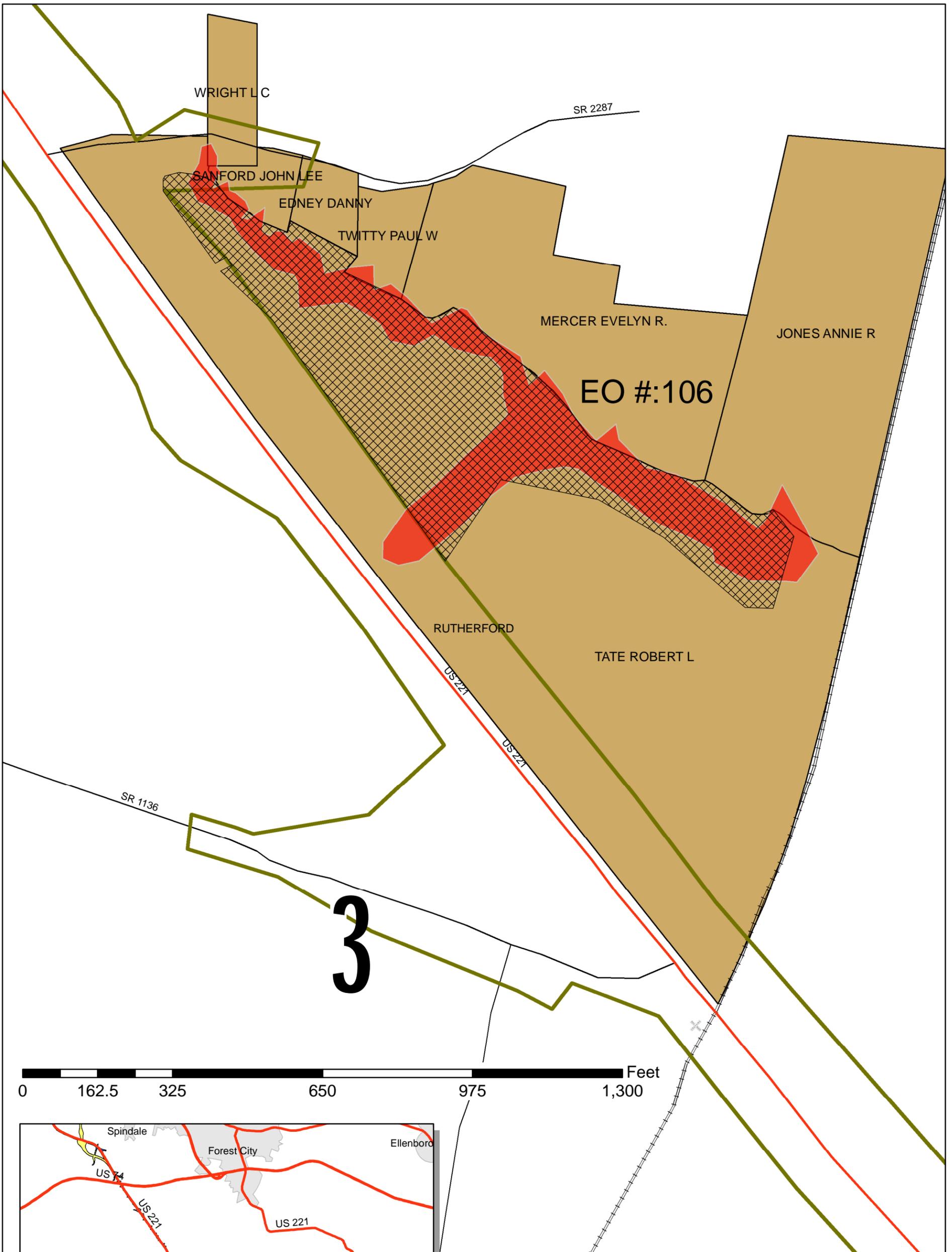
T.I.P. No. R-2233 A & B  
US 221 Widening &  
Rutherfordton Bypass

**Project Vicinity Map**

3



Figure 1

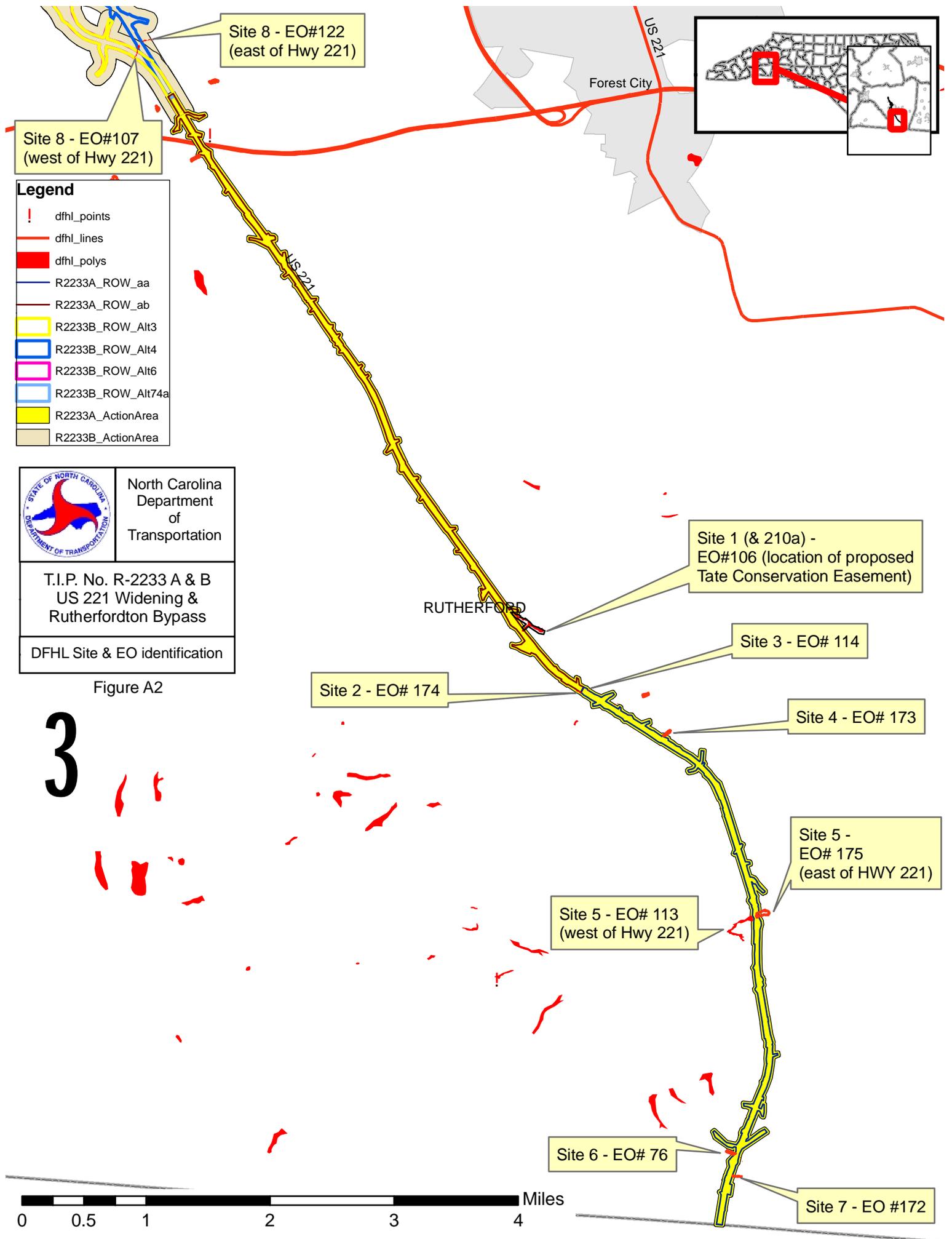


	<p>North Carolina Department of Transportation</p>
	<p>T.I.P. No. R-2233 A &amp; B US 221 Widening &amp; Rutherfordton Bypass</p>
	<p><b>Approximate Proposed Conservation Area</b></p>

**Legend**

-  ROW\_ab
-  LandParcels
-  Proposed\_ConEase
-  DFHL
-  Railroad Grade Crossing
-  Railroads

Figure 2



0 0.5 1 2 3 4 Miles