

## V. ALTERNATIVES AND IMPACTS

Throughout the development of the Master Plan, transportation project development, a wide range of transportation options were developed, evaluated and reviewed. These options were developed to meet project needs and minimizing impacts to the project area including Section 4(f) resources. Extensive public involvement efforts were also conducted during this process, as well as numerous agency and project committee meetings focusing on different aspects of the project.

The Master Plan Alternative was evaluated in detail and subjected to a comprehensive impact analysis Section 4(f) resource avoidance and minimization efforts. The goal of the resource avoidance and minimization effort was to further sensitize and therefore improve the Master Plan Alternative. This resource avoidance and minimization effort was also completed to satisfy the requirements of the National Environmental Policy Act (NEPA), Section 106 of the National Historic Preservation Act, Section 4(f) of the U.S. Department of Transportation Act and Section 404 of the Clean Water Act. A discussion of the Section 4(f) resource avoidance and minimization analysis is provided in Section B of this chapter. Minimization measures are discussed in Chapter VI.

### A. Master Plan Alternative

#### 1. Description

The Master Plan Alternative (*Figure 5*) or proposed action would include the construction of the following transportation improvements in the Blue Ball area;

##### *Regional Roadway Improvements:*

- The Delaware Route 141 Spur would be built on a new four-lane boulevard from the Childrens Drive/Route 141 intersection south to a new intersection with U.S. Route 202 and Foulk Road.
- U.S. Route 202 would be widened and improved from I-95 north to the existing Murphy Road intersection. Lanes would be added through most of this section for bus use only.

##### *Local Roadway Improvements:*

- A local roadway connection would be constructed on the west side of U.S. Route 202 (Westpark Drive), which will connect the Augustine Cut-Off to the proposed Route 141 Spur. A local roadway connection would be constructed to link the Westpark Drive under U.S. Route 202 to the Eastpark Drive on the east side of U.S. Route 202.
- Weldin Road would be relocated to allow an improved intersection with Foulk Road. A connector roadway would be constructed from this intersection west to U.S. Route 202.

- This proposed network of local roads connected under U.S. Route 202 would allow for the desired separation of local and regional traffic in the project area, thereby assisting in achievement of the “no-degradation” traffic criterion.
- Augustine Cut-Off/U.S. Route 202 Intersection: Would be a partial intersection, allowing right turns from Augustine Cut-Off and left turns from U.S. Route 202 northbound only.
- Murphy Road/U.S. Route 202 Intersection: A designated left-turn lane would be constructed.
- Childrens Drive/Delaware Route 141 Intersection: Childrens Drive would be redesigned as a standard four-way intersection. A four-way intersection is required in place of the current three-way intersection at Childrens Drive and Delaware Route 141 due to an increase in population in the Brandywine Hundred community, and to tie in with the Route 141 Spur.
- Rockland Road: Would be connected to the local road system through an intersection with the Westpark Drive.

***Intersection Improvements:***

- The signalized intersection of U.S. Route 202 and Augustine Cut-Off would be required to limit traffic movements to the minimum necessary.

***Pedestrian/Bicycle Greenway***

- A greenway trail network would be constructed from the Alapocas trail head at the western boundary of the Alapocas Tract, under U.S. Route 202, to the existing trail terminus at the eastern boundary of the Weldin tract. This greenway connector will provide the missing link in a greenway trail intended to connect the Delaware and Brandywine River corridors. This greenway trail will also facilitate pedestrian/bicycle access to the recreational facilities proposed for the area.

***Intelligent Transportation Management Systems Strategies***

- ITMS Strategies for the Master Plan Alternative are being developed for the entire project corridor. These ITMS strategies could include:
  - Coordinated traffic signals, integrated and regional signal system and DelDOT Transportation Management Center (TMC).
  - Surveillance cameras linked to TMC and the DelDOT web page.
  - Dynamic message signs.

- Traffic/transit information kiosks.
- Vehicle detection systems used to optimize traffic signals and detect incidents.

## 2. Section 4(f) Uses

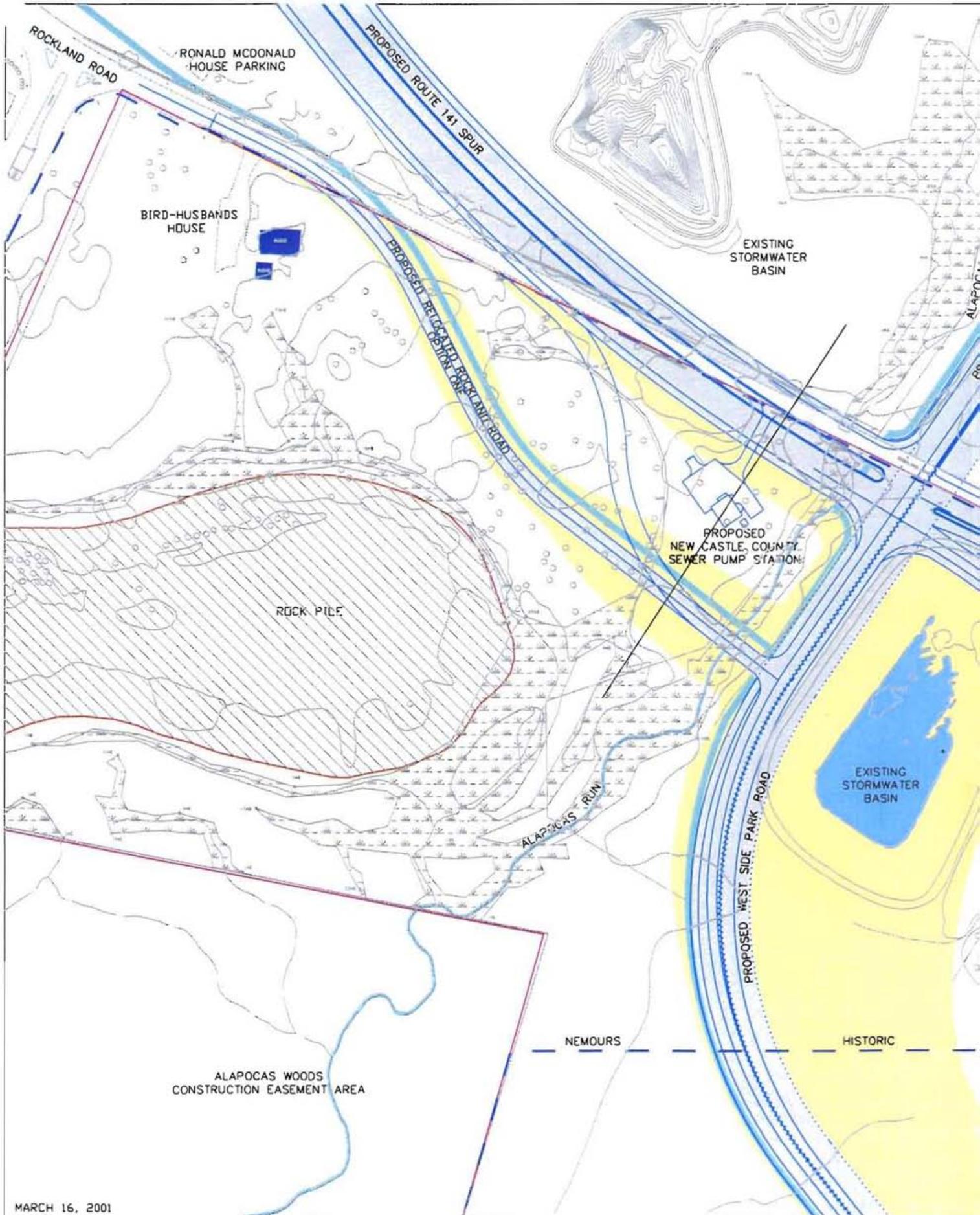
The location of the Master Plan Alternative in relationship to Section 4(f) resources is presented in *(Figure 5)*. The Master Plan Alternative would result in use of the following Section 4(f) resources:

**a.) Nemours Historic District (Blue Ball Barn and Bird-Husbands House)** - The Route 141 spur and connecting ramps at U.S. Route 202 would encroach on the northeastern portion of the District. The proposed Westpark Drive would travel north-south through the eastern portion of the District. This two-lane local roadway would be located approximately 500 feet west of the Blue Ball Barn and approximately 800 feet east of the Bird-Husbands House. *(Figure 6)*. A portion of the land required for the Westpark Drive has been previously altered for construction of a stormwater basin and is currently DelDOT right-of-way. The partial relocation of Rockland Road to the south would encroach approximately 300 feet into the northern portion of the District.

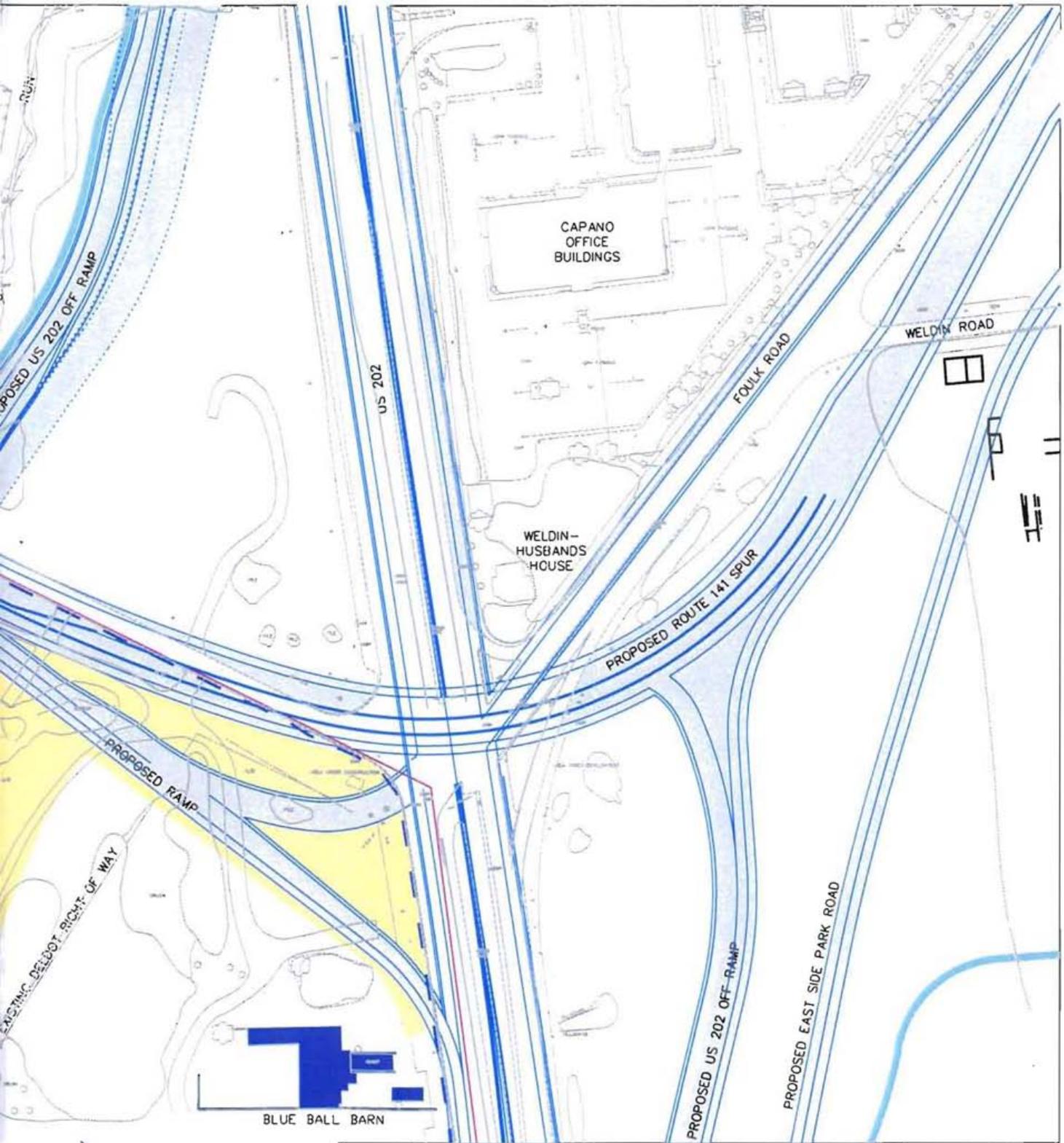
A total of approximately 9.3 acres of the 345 acre Nemours Historic District would be converted to transportation use as a result of the Master Plan Alternative. An additional 3.5 acres will be used for stormwater management features. Of the 12.8 acre area, approximately six acres are currently held by DelDOT as an existing right-of-way. These transportation and stormwater improvements will take place primarily in an area of the historic district that has been altered by previous clearing and grading or acquired for right-of-way for previously constructed stormwater facilities.

No direct physical impacts to the Blue Ball Barn or Bird-Husbands House would result from the Master Plan Alternative. These facilities would be improved as part of the overall master plan development. (Please refer to Section VII, Mitigation Measures.) Area improvements will facilitate long-term stabilization of these buildings through access and recreational site development.

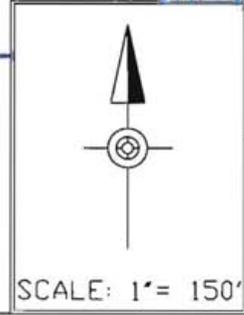
**b.) Nemours Historic District (William Murphy House)** – The William Murphy House occupies an isolated portion of the Historic District north of Rockland Road. The realignment of Childrens Drive *(Figure 7)* will impact approximately .06 acres of the land adjacent to the William Murphy House. The Master Plan Alternative will have no physical impact on the house structure.



MARCH 16, 2001



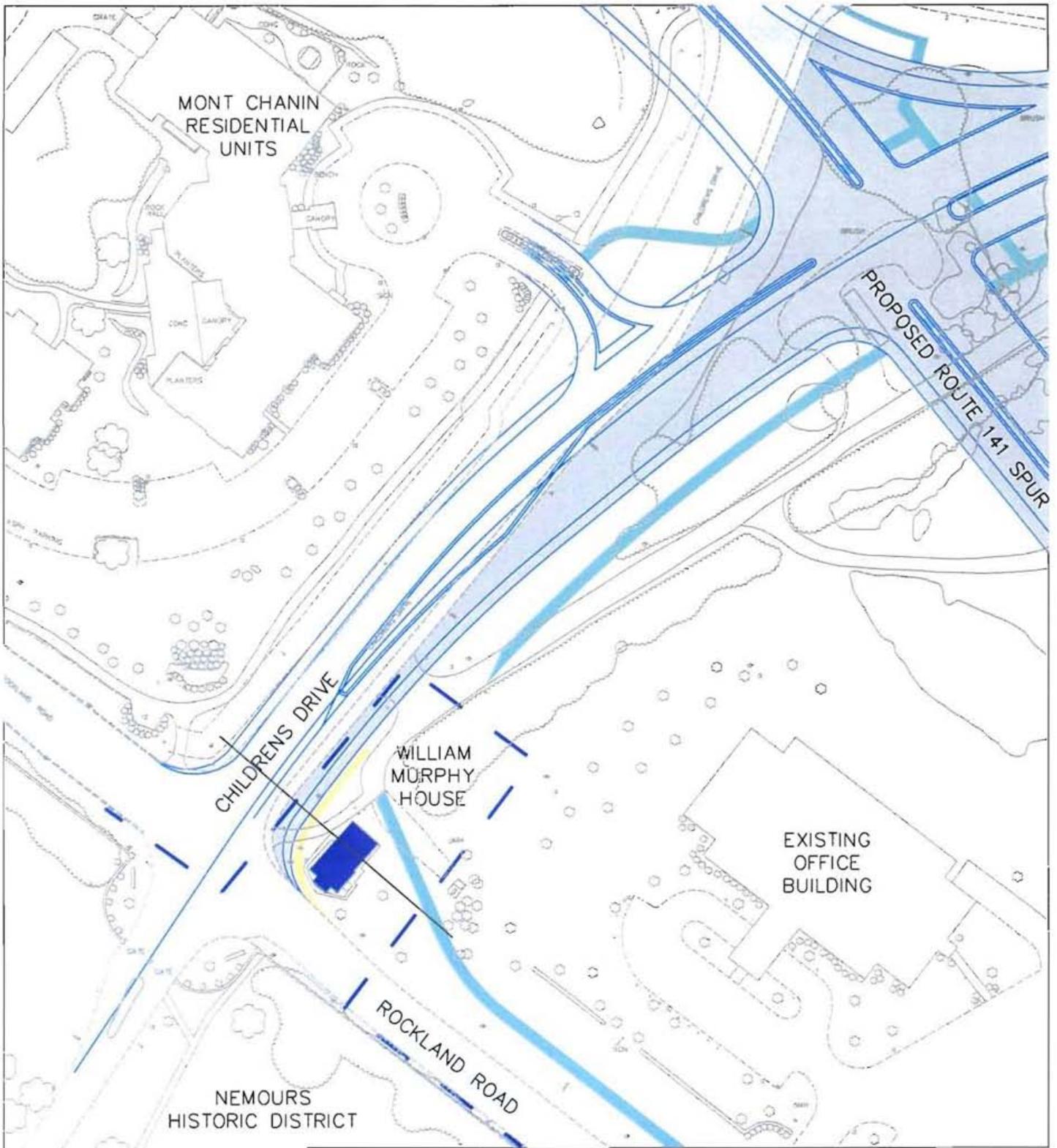
DISTRICT



MASTER PLAN ALTERNATIVE IN RELATION TO NEMOURS HISTORIC DISTRICT BIRD-HUSBANDS HOUSE (N-494) AND BLUE BALL BARN (N-4048)

- TAX PARCEL BOUNDARY
- NATIONAL REGISTER BOUNDARY
- █ NATIONAL REGISTER ELIGIBLE RESOURCE
- PROPOSED ALIGNMENT
- PROPOSED ROADWAY AREA
- PROPOSED BIKE PATH
- █ AREA OF DISTURBANCE
- EXISTING TOPOGRAPHY
- EXISTING ROADWAY AREA
- WATER

FIGURE 6



A.I. DUPONT INSTITUTE

SCALE: 1" = 100'

MASTER PLAN ALTERNATIVE IN RELATION TO NEMOURS HISTORIC DISTRICT (WILLIAM MURPHY HOUSE N-544)

- NATIONAL REGISTER BOUNDARY
- NATIONAL REGISTER ELIGIBLE RESOURCE
- PROPOSED ALIGNMENT
- PROPOSED ROADWAY AREA
- PROPOSED BIKE PATH
- AREA OF DISTURBANCE
- EXISTING TOPOGRAPHY
- EXISTING ROADWAY AREA

FIGURE 7

c.) **Porter Reservoir**- The U.S. Route 202 off-ramp improvement adjacent to the Porter Reservoir would require 0.7 acres of the 42 acre resource along the extreme western border of the resource. The existing entrance to the reservoir off U.S. Route 202 would be relocated to a driveway access off relocated Weldin Road. With the exception of the entrance pillars, none of the features of the reservoir resource would be displaced by the Master Plan Alternative (*Figure 8*).

d.) **One Rock Manor** - The widening of U.S. Route 202 and adjustment of the U.S. Route 202 to I-95 on ramp would necessitate the acquisition of 0.18 acres from the 1.9 acre resource (*Figure 9*).

No features of the existing building at One Rock Manor would be displaced. Noise levels in the design year (2010) would exceed FHWA abatement criteria. Noise abatement features in this area are being developed in coordination with the property owner and the SHPO.

e.) **Lombardy Hall** - No land acquisition, impact or use of this resource would occur.

f.) **Wartime Deerhurst** – No land acquisition, impact or use of this resource would occur.

g.) **Jewish Community Cemetery** – No land acquisition, impact or use of this resource would occur.

h.) **Concord Pike Milestone** - No land acquisition, impact or use of this resource would occur.

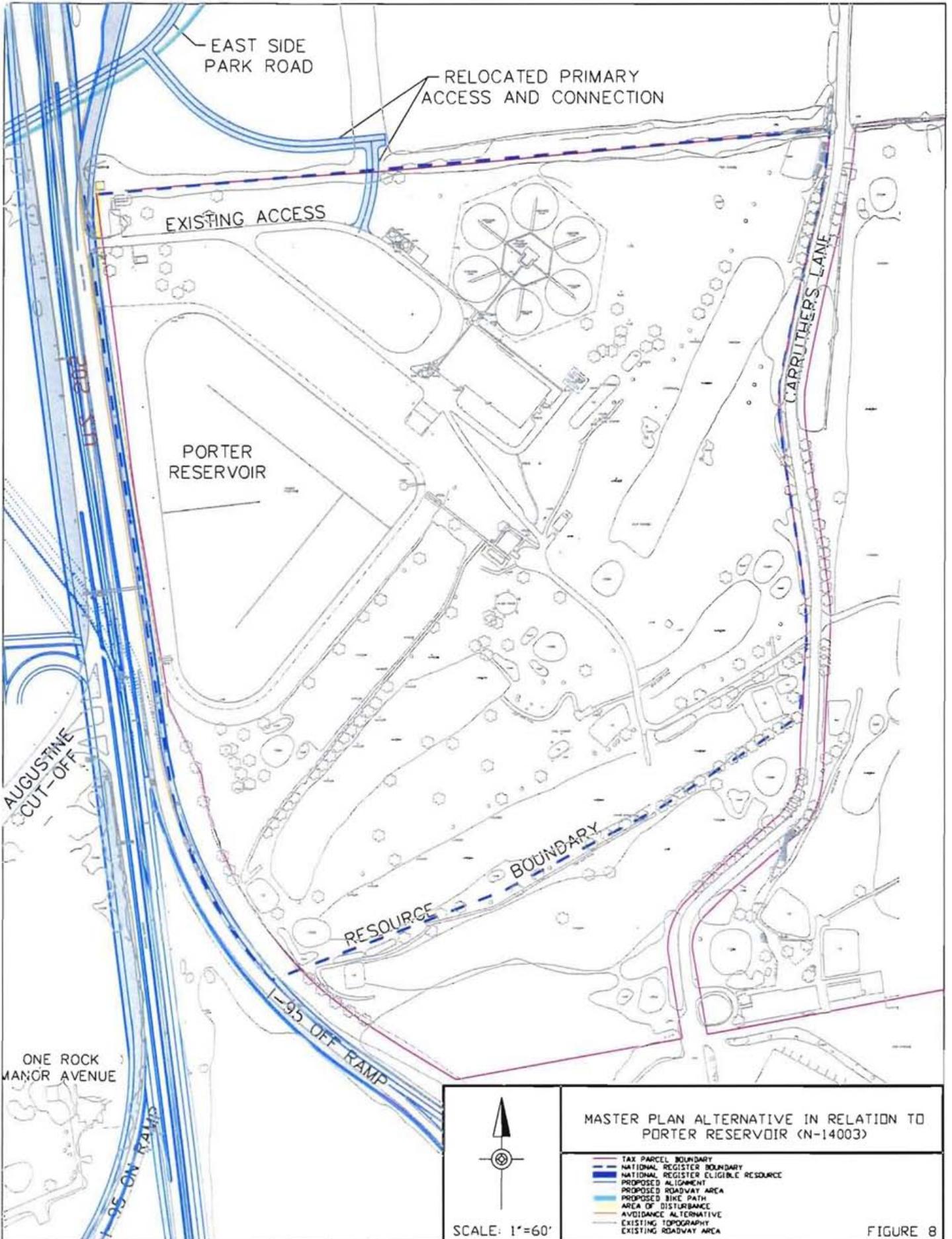
i.) **J.R. Weldin Archaeological Site** - The proposed Route 141 spur and the Eastpark Drive which parallel the U.S. Route 202 off ramp would pass through a portion of the site, displacing a portion of the ruins. Specifically, the Eastpark Drive would destroy the 18th century farmhouse ruins that occupy the western portion of the site. Some adjacent rock features like the milk house would also be destroyed. Many other features of the site would remain including the 19th century barn and perimeter wall. (*Figure 10*)

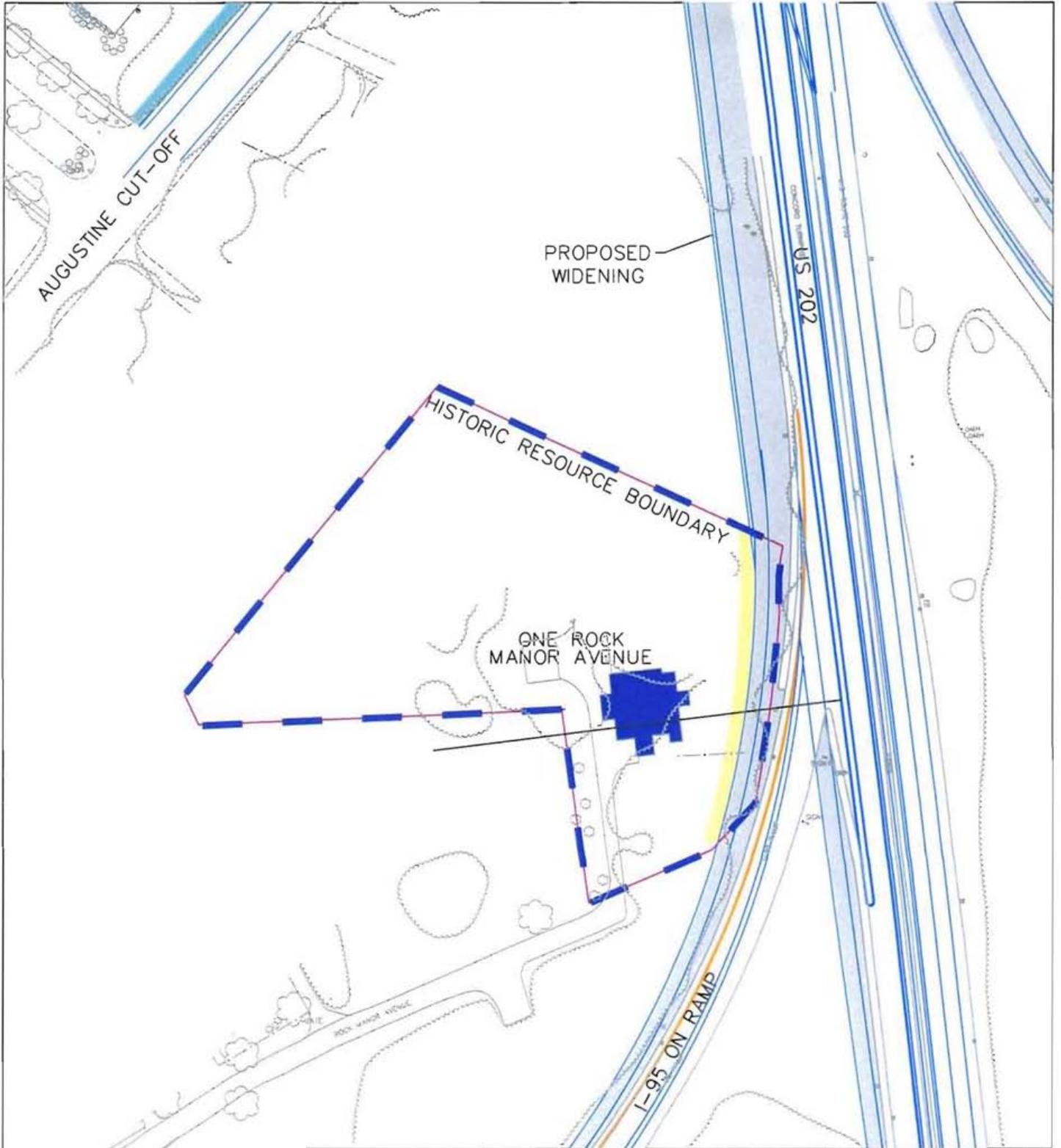
## **B. Section 4 (f) Avoidance Alternatives**

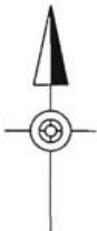
### **1. No-Build Alternative**

The No-Build Alternative (*Figure 11*) is based on a no-construction scenario where no roadway improvements would take place. It would only entail routine maintenance of existing roadway surfaces, road painting, road signs, traffic signals and traffic signal timing. This alternative would include the implementation of feasible ITMS strategies similar to those proposed for the Master Plan Modified Alternative. These ITMS strategies would include:

- Coordinated traffic signals, integrated and regional signal system and DelDOT transportation management center (TMC).





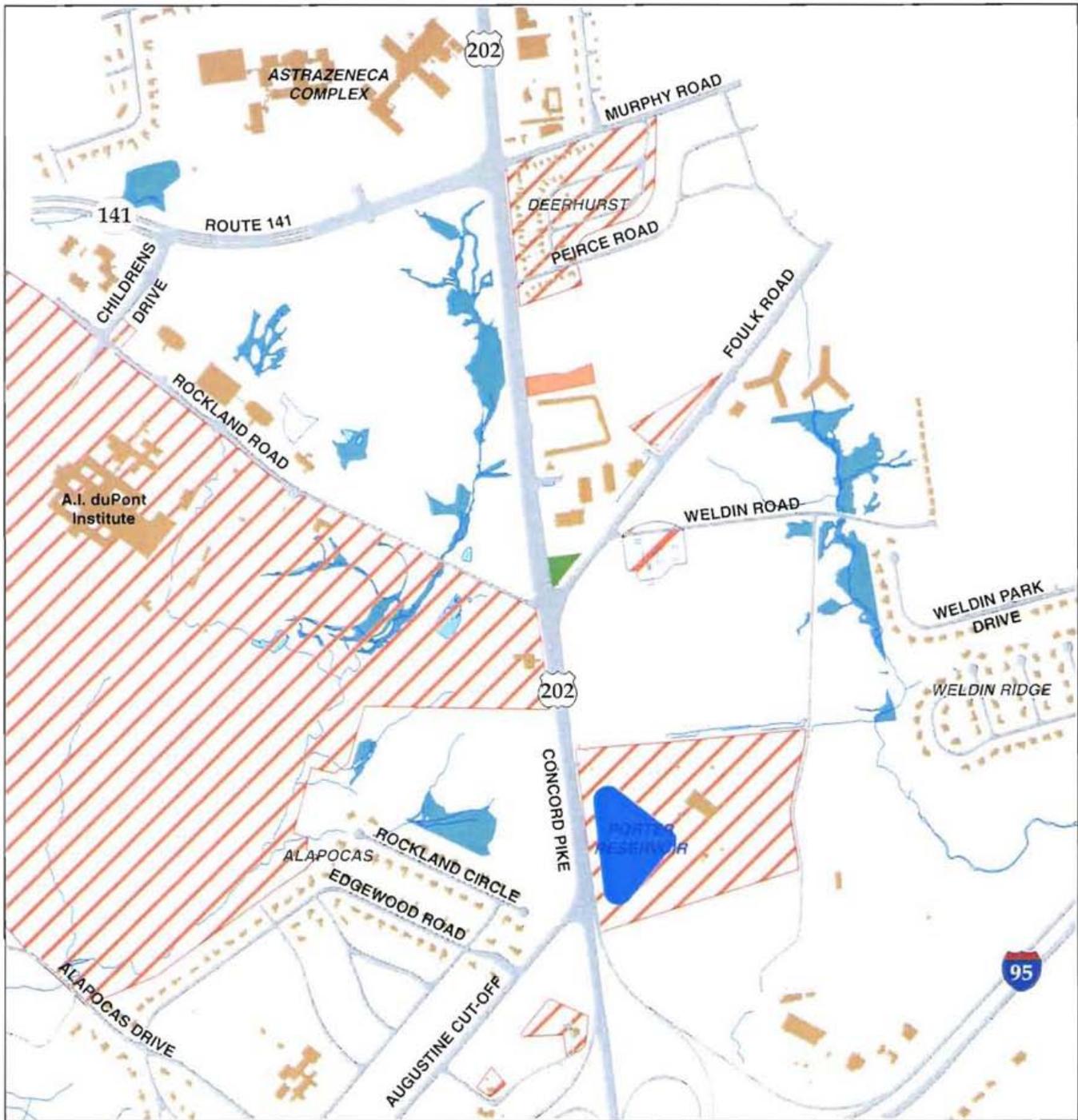


SCALE: 1" = 100'

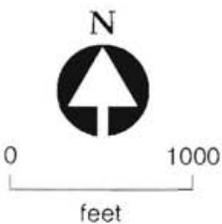
MASTER PLAN ALTERNATIVE IN RELATION TO  
ONE ROCK MANOR (N-12673)

- TAX PARCEL BOUNDARY
- NATIONAL REGISTER BOUNDARY
- NATIONAL REGISTER ELIGIBLE RESOURCE
- PROPOSED ALIGNMENT
- PROPOSED ROADWAY AREA
- PROPOSED BIKE PATH
- AREA OF DISTURBANCE
- AVOIDANCE ALTERNATIVE
- EXISTING TOPOGRAPHY
- EXISTING ROADWAY AREA

FIGURE 9



**FIGURE 11: "NO BUILD" ALTERNATIVE IN RELATION TO SECTION 4(f) RESOURCES**



- Wetland
- National Historic Landmark (N.H.L.)
- National Register Eligible Property

- Surveillance cameras linked to TMC and the DelDOT web page.
- Dynamic message signs.
- Traffic/transit information kiosks.
- Vehicle detection system used optimize traffic signals and detect incidents.

Although limited pedestrian/bicycle facilities could be constructed with the proposed recreational features on the Weldin and Alapocas Tracts, the grade-separated connection of the Brandywine Greenway under U.S. Route 202 would not occur. This would not be consistent with the Delaware Greenways plan for the area, and it would represent an incomplete inter-modal transportation facility.

This alternative would not meet project needs and objectives, as it would not address existing or future traffic congestion, high accident locations, or the access needs of the economic development planned for the area.

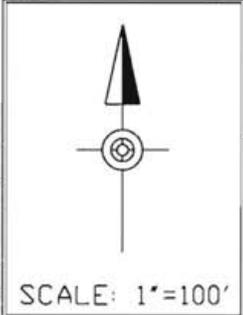
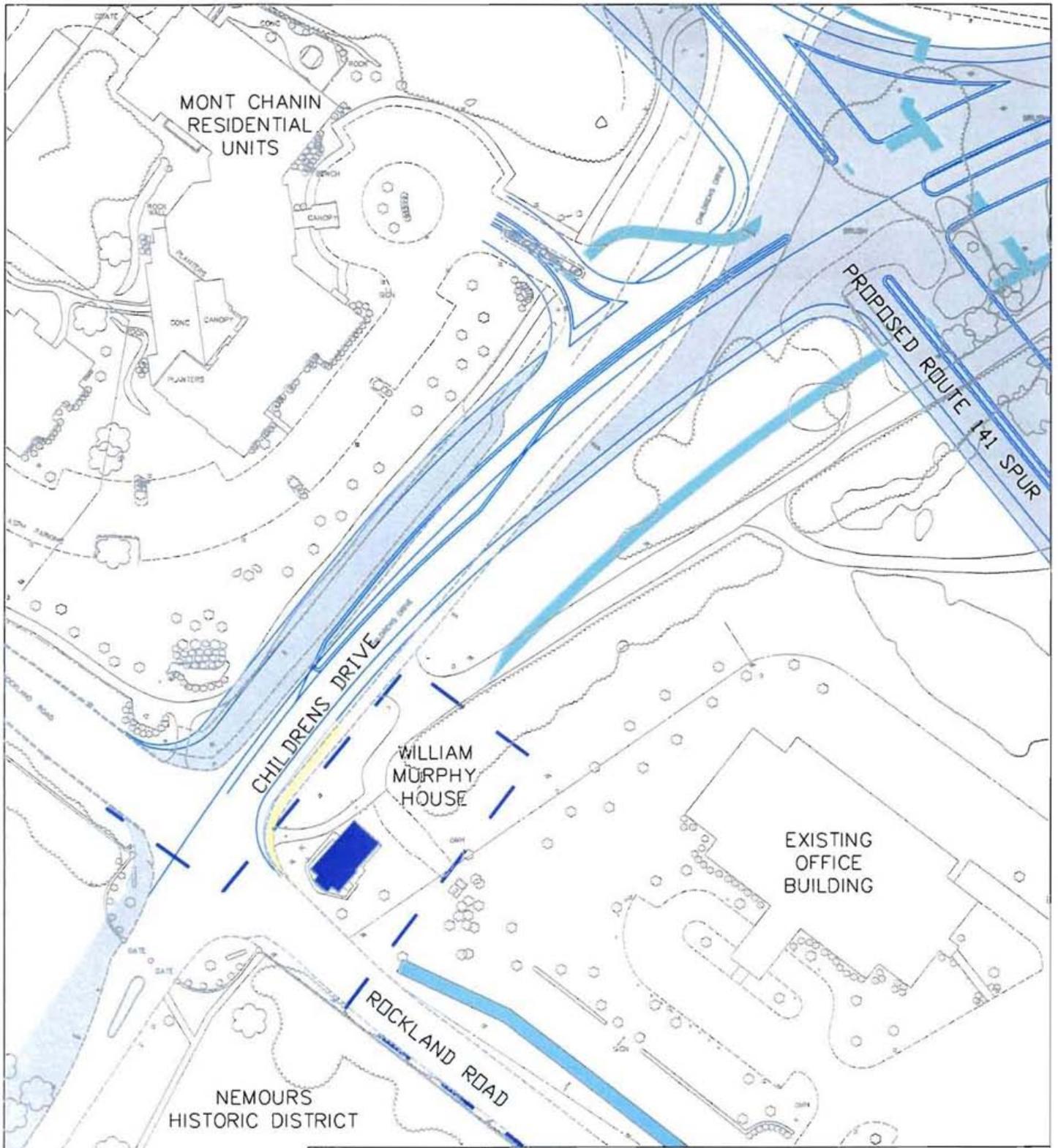
The No-Build Alternative would result in no use of Section 4(f) Resources.

**2. *Nemours Historic District Avoidance Alternative (Blue Ball Barn and Bird – Husbands House)***

This alternative (*Figure 12*) would avoid the Nemours Historic District by shifting the Route 141 Spur to the north and into the AstraZeneca triangle parcel, which is approved for development and expansion of the AstraZeneca Corporate Headquarters. This alternative would also eliminate the Westpark Drive (local connector) by adding capacity to the Eastpark Drive system. This alternative would leave Rockland Road in its current alignment with a cul-de-sac termination.

In addition, this alternative would result in the following impacts:

- Loss of the proposed western Greenway Connection through the Alapocas parcel as outlined in the Master Plan
- Additional wetlands loss on the AstraZeneca triangle property
- Reduction of the AstraZeneca triangle property size below that approved the New Castle County and a reduction of the required storm water management facilities
- Displacement of the Capano property, a large, 9-acre commercial property consisting of four office buildings and associated parking of 538 spaces. The businesses currently occupying the buildings employ several hundred professional employees
- Elimination of the proposed recreational features on the Weldin Tract including two multi-purpose fields, a picnic area, associated parking area, and existing negative buffers



NEMOURS HISTORIC DISTRICT  
(WILLIAM MURPHY HOUSE N-544)  
AVOIDANCE ALTERNATIVE

- NATIONAL REGISTER BOUNDARY
- NATIONAL REGISTER ELIGIBLE RESOURCE
- PROPOSED ALIGNMENT
- PROPOSED ROADWAY AREA
- PROPOSED BIKE/PEDESTRIAN PATH
- AREA OF DISTURBANCE
- EXISTING TOPOGRAPHY
- EXISTING ROADWAY AREA

FIGURE 12

### 3. *Nemours Historic District Avoidance Alternative (Murphy House Area)*

This alternative (*Figure 13*) would avoid the isolated portion of the Nemours Historic District surrounding the William Murphy House by shifting the widening of Childrens Drive to the west. This would maintain the existing edge of roadway and drainage swale on the western property boundary.

This alternative would result in the following impacts:

- Displacement of and adverse impacts to the Nemours Historic District features associated with the A.I. duPont Institute on the south side of Rockland Road. This includes portions of the original stone wall and entrance gateway.
- Loss of landscaping and access roadway features associated with the Montchanin Residential Complex (Senior citizen accommodations).

### 4. *Porter Reservoir Avoidance Alternative*

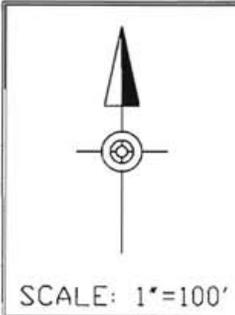
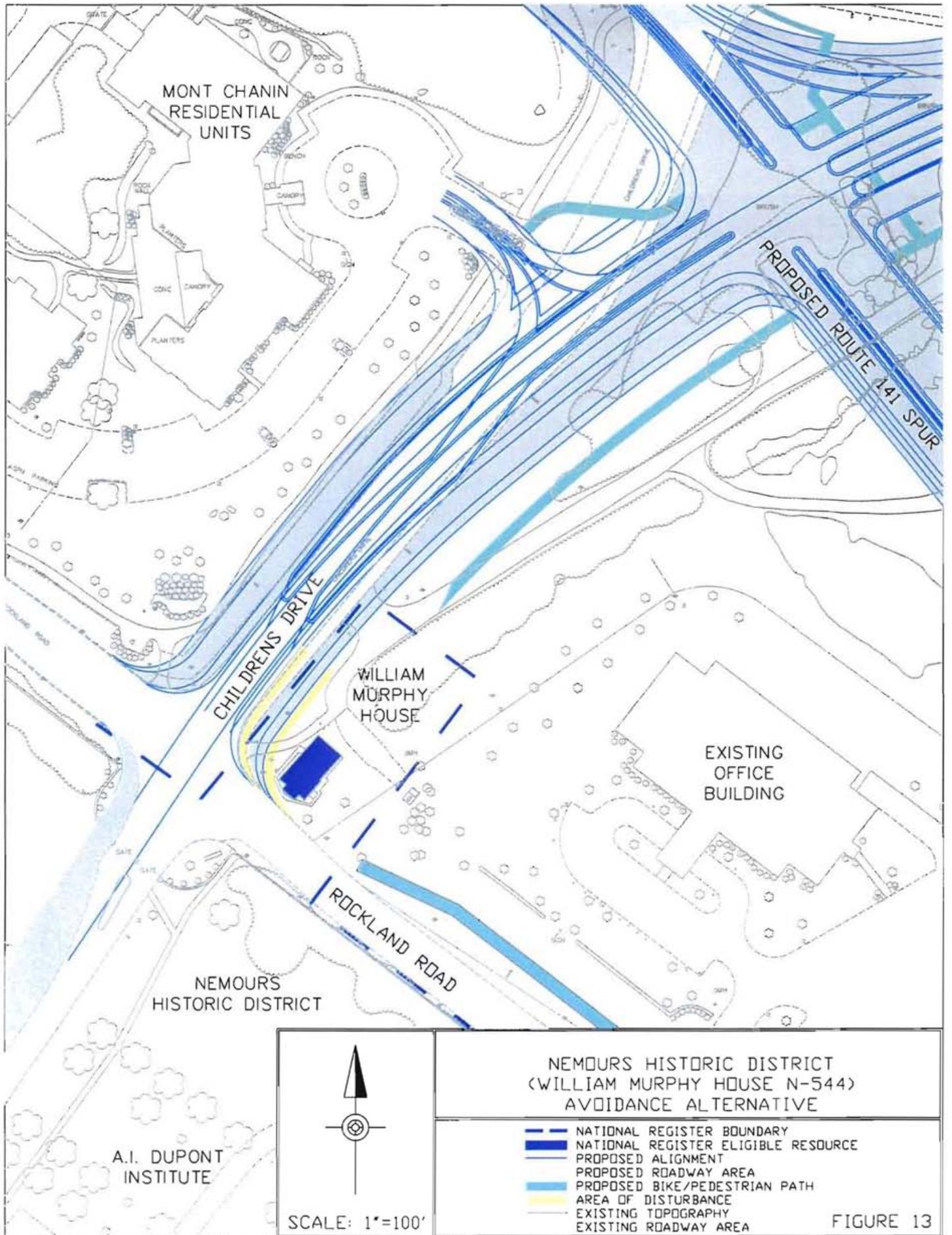
This alternative (*Figure 14/14A/14B*) would shorten the proposed U.S. Route 202 northbound to Route 141 off-ramp. It would also result in a shift in the alignment of U.S. Route 202 to the west, encroaching on One Rock Manor Avenue as well as the Nemours Historic District. This would result in the displacement of the milk house associated with the Blue Ball Barn (50 feet). The reservoir access drive (at its current location off U.S. Route 202 in the traffic weave area between the I-95 off ramp and the U.S. Route 202 off ramp) would be discontinued. As secondary access via Carruthers Lane would be used.

This alternative would not meet the following project needs:

- Safety objectives of access management on U.S. Route 202.
- Ramp design geometry at U.S. Route 202 to Route 141 off ramp.

In addition, this alternative would result in the following impacts:

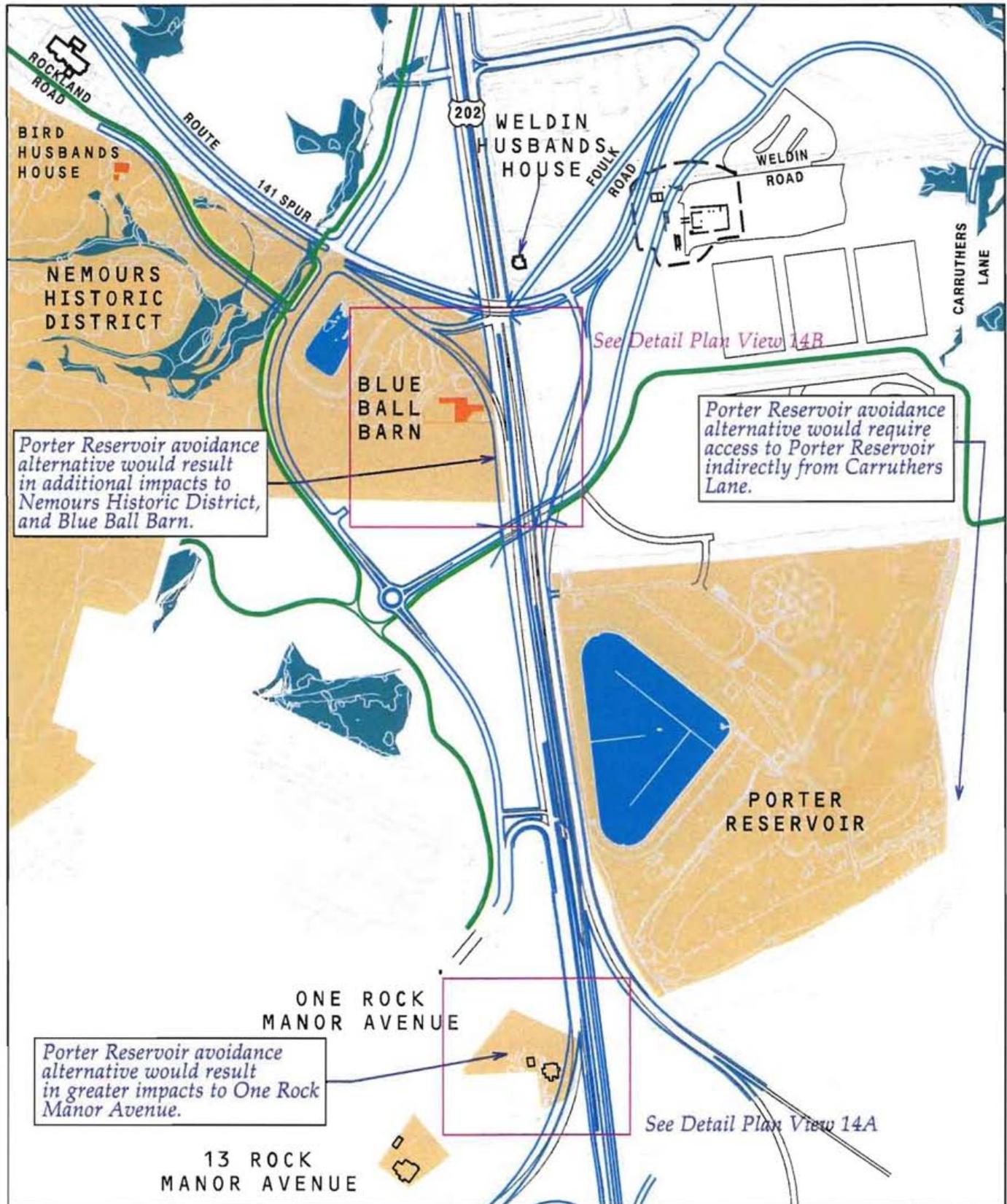
- Greater harm and encroachment of approximately 30 feet into the One Rock Manor Avenue Historic site boundary.
- Further encroachment of U.S. Route 202 into the Nemours Historic District.
- Displacement of the Blue Ball Barn Milk House (a contributing element).
- Adverse effects to the setting of Blue Ball Barn.



**NEMOURS HISTORIC DISTRICT  
(WILLIAM MURPHY HOUSE N-544)  
AVOIDANCE ALTERNATIVE**

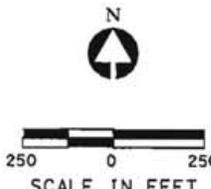
	NATIONAL REGISTER BOUNDARY
	NATIONAL REGISTER ELIGIBLE RESOURCE
	PROPOSED ALIGNMENT
	PROPOSED ROADWAY AREA
	PROPOSED BIKE/PEDESTRIAN PATH
	AREA OF DISTURBANCE
	EXISTING TOPOGRAPHY
	EXISTING ROADWAY AREA

FIGURE 13





JUNE, 2001

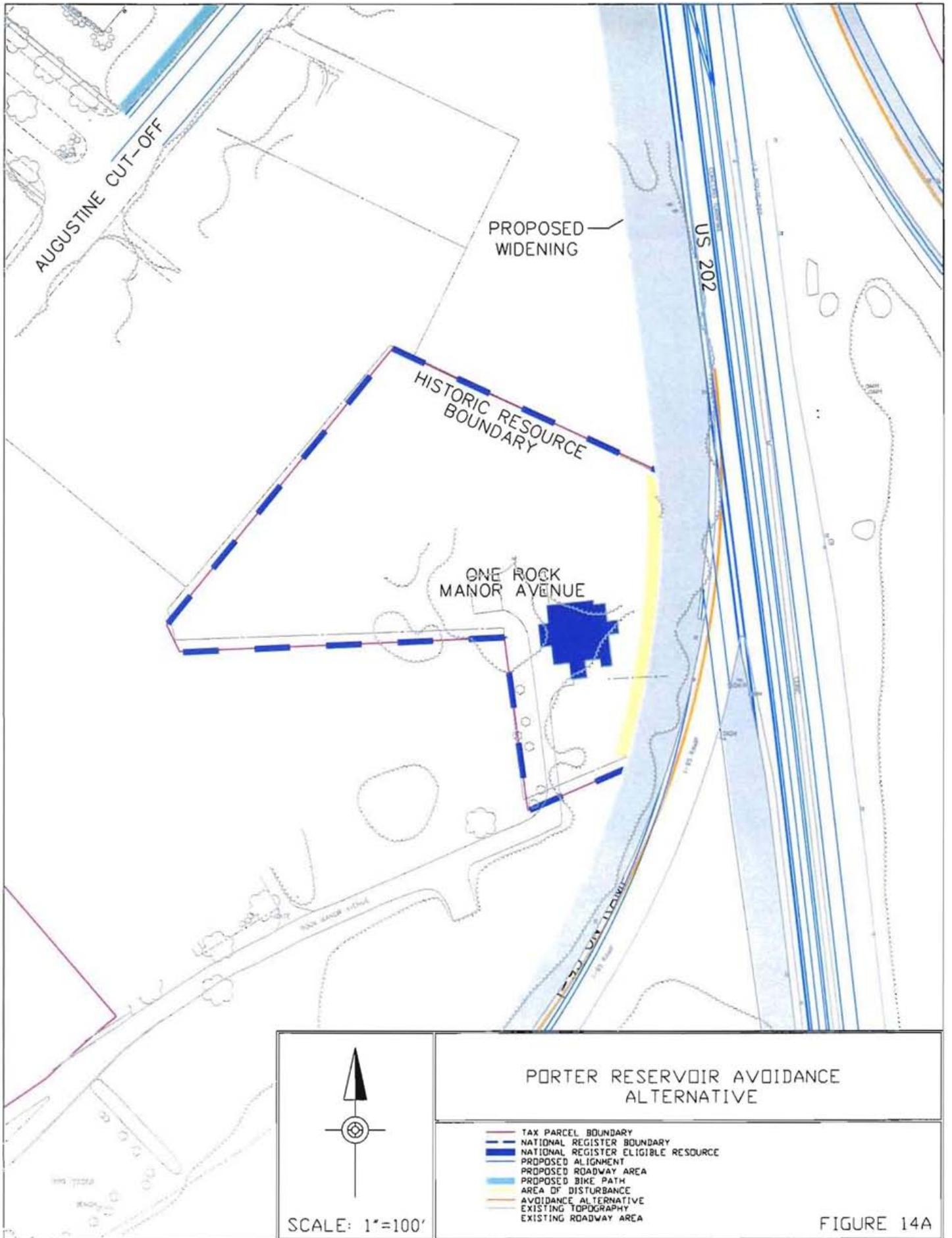


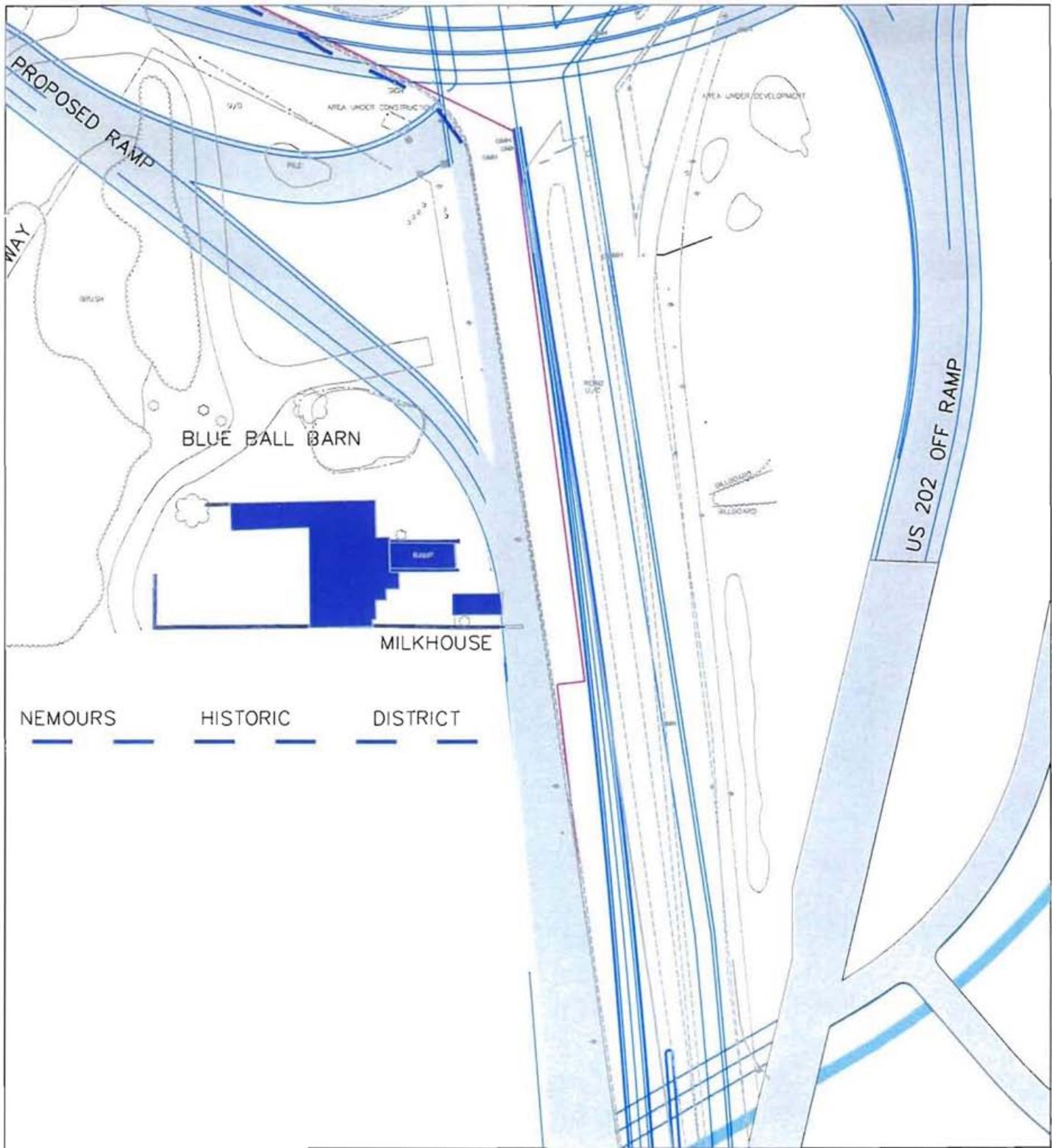
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**LEGEND**

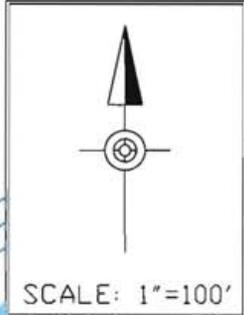
- WETLANDS
- SECTION 4(F) RESOURCE
- HISTORIC DISTRICT CONTRIBUTING ELEMENT
- AVOIDANCE ALIGNMENT
- MASTER PLAN MODIFIED (OPTION A)
- GREENWAY TRAIL

**Fig. 14, Avoidance Alternative - Porter Reservoir**





NEMOURS      HISTORIC      DISTRICT



### PORTER RESERVOIR AVOIDANCE ALTERNATIVE

- TAX PARCEL BOUNDARY
- NATIONAL REGISTER BOUNDARY
- NATIONAL REGISTER ELIGIBLE RESOURCE
- PROPOSED ALIGNMENT
- PROPOSED ROADWAY AREA
- PROPOSED BIKE PATH
- AREA OF DISTURBANCE
- AVOIDANCE ALTERNATIVE
- EXISTING TOPOGRAPHY
- EXISTING ROADWAY AREA

FIGURE 14B

## 5. *One Rock Manor Avenue Avoidance Alternative*

This alternative (*Figure 15/15A*) would shift the proposed U.S. Route 202 widening approximately 50 feet to the east allowing the U.S. Route 202 to I-95 on ramp to avoid encroachment onto One Rock Manor Avenue. The resulting alignment would force U.S. Route 202 into the Porter Reservoir historic resource boundary and actually displace a portion of the reservoir embankment, requiring its reconfiguration or permanent loss. This would adversely affect the Wilmington water supply.

This alternative would meet most project needs; however it would result in greater harm to the Porter Reservoir property and require alteration of the reservoir structure itself. This adverse impact on the reservoir and have an adverse impact on the water supply for the City of Wilmington.

## 6. *J.R. Weldin Archaeological Site Avoidance Alternative*

Extensive engineering analysis was conducted to develop alternatives which avoid this resource while addressing project needs. Through this analysis, a total avoidance was not feasible, however several minimization alternatives were developed. These are presented below and in Section VI.

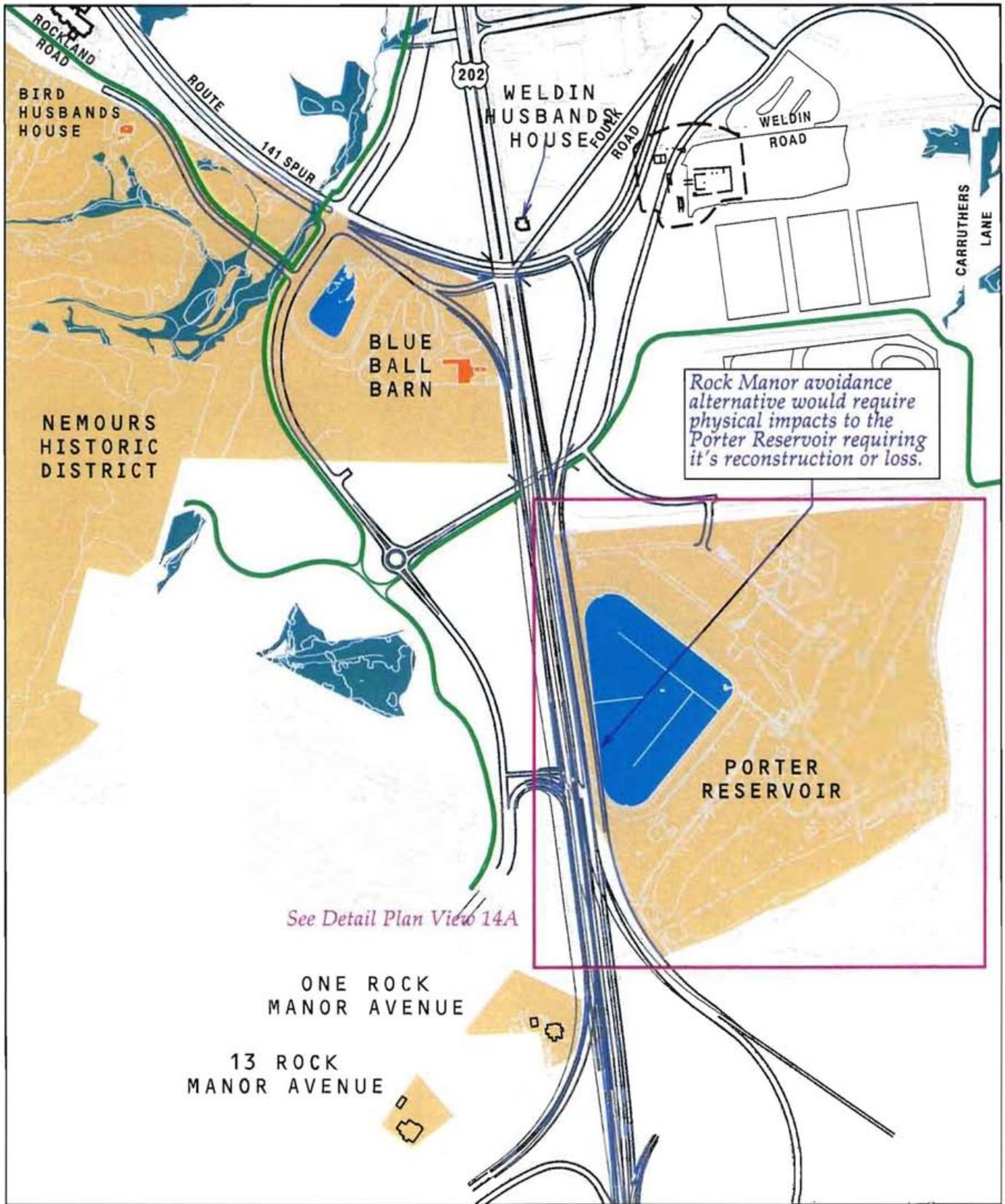
### C. **Master Plan “Modified” Alternative**

This alternative (*Figure 16 and 17*) is consistent with the general location and operation of the Master Plan Alternative, however it has been refined to incorporate minimization concepts and features. These minimization features include:

Realignment and shift of the Route 141 Spur 100 feet to the north at its U.S. Route 202 crossing. This minimization reduces the land area required from the Nemours Historic District by approximately one acre. This shift also allows the Route 141 to U.S. Route 202 off ramps to be realigned at a location farther from the Blue Ball Barn. A resulting impact of this shift is the loss of the Weldin-Husbands House, an abandoned, unoccupied structure in very poor condition at the corner of Foulk Road and U.S. Route 202. This structure was determined to be not eligible for the National Register of Historic Places by the SHPO.

Other minimization strategies incorporated into this alternative include:

- Grass shoulder and 11-foot travel lanes for the Westpark Drive through the Nemours Historic District.
- Reduced lane and shoulder widths for the widened portion of Childrens Drive adjacent to the William Murphy House.
- Placement of a retaining wall and fence between the One Rock Manor Avenue property and the U.S. Route 202 to I-95 on ramps.

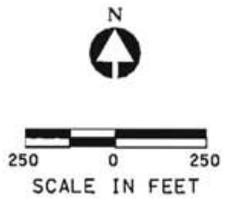


See Detail Plan View 14A

Rock Manor avoidance alternative would require physical impacts to the Porter Reservoir requiring it's reconstruction or loss.



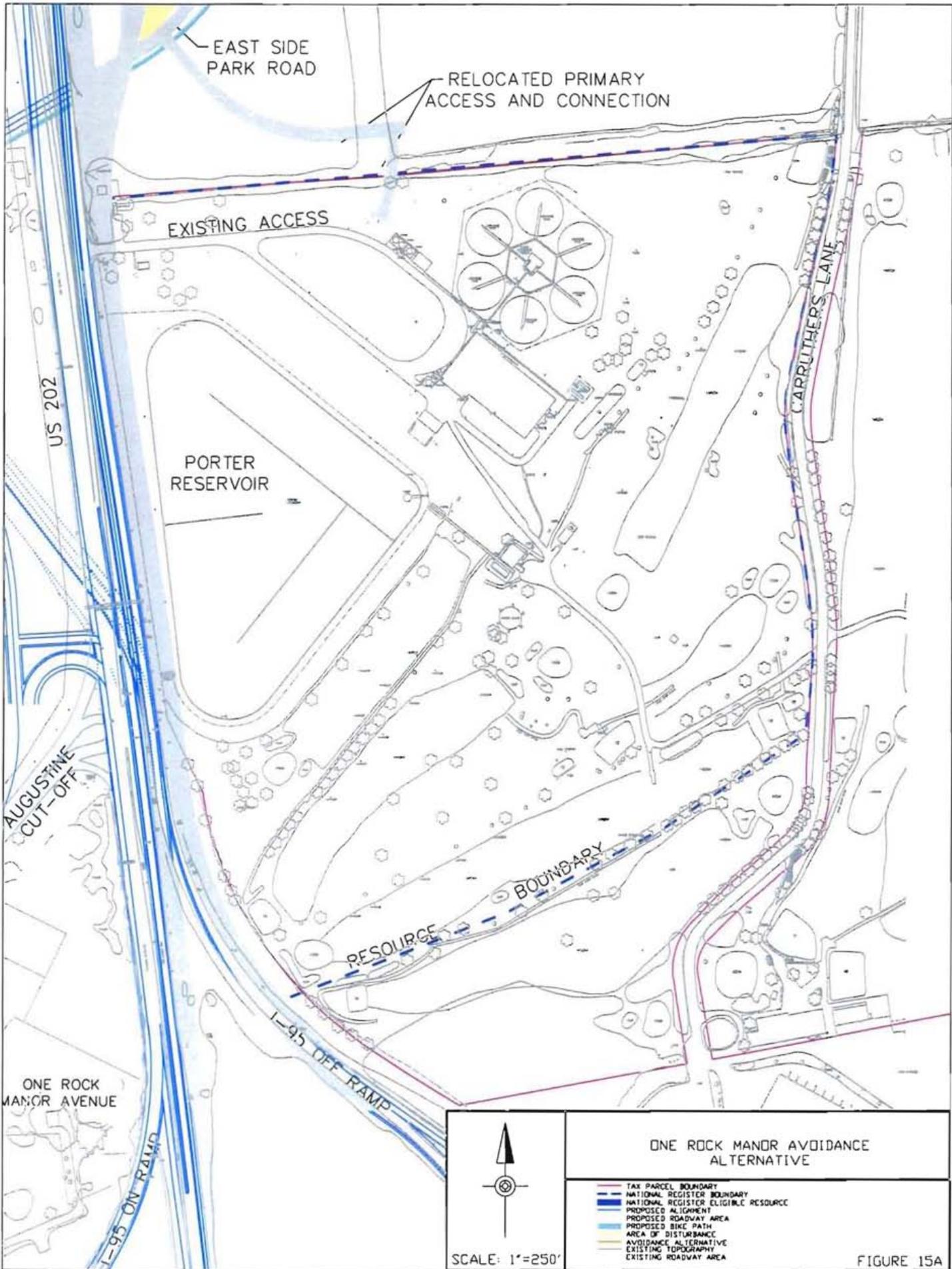
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**LEGEND**

	WETLANDS
	SECTION 4(F) RESOURCE
	HISTORIC DISTRICT CONTRIBUTING ELEMENT
	AVOIDANCE ALIGNMENT
	MASTER PLAN MODIFIED (OPTION A)
	GREENWAY TRAIL

**Fig.15, Avoidance Alternative - One Rock Manor Avenue**

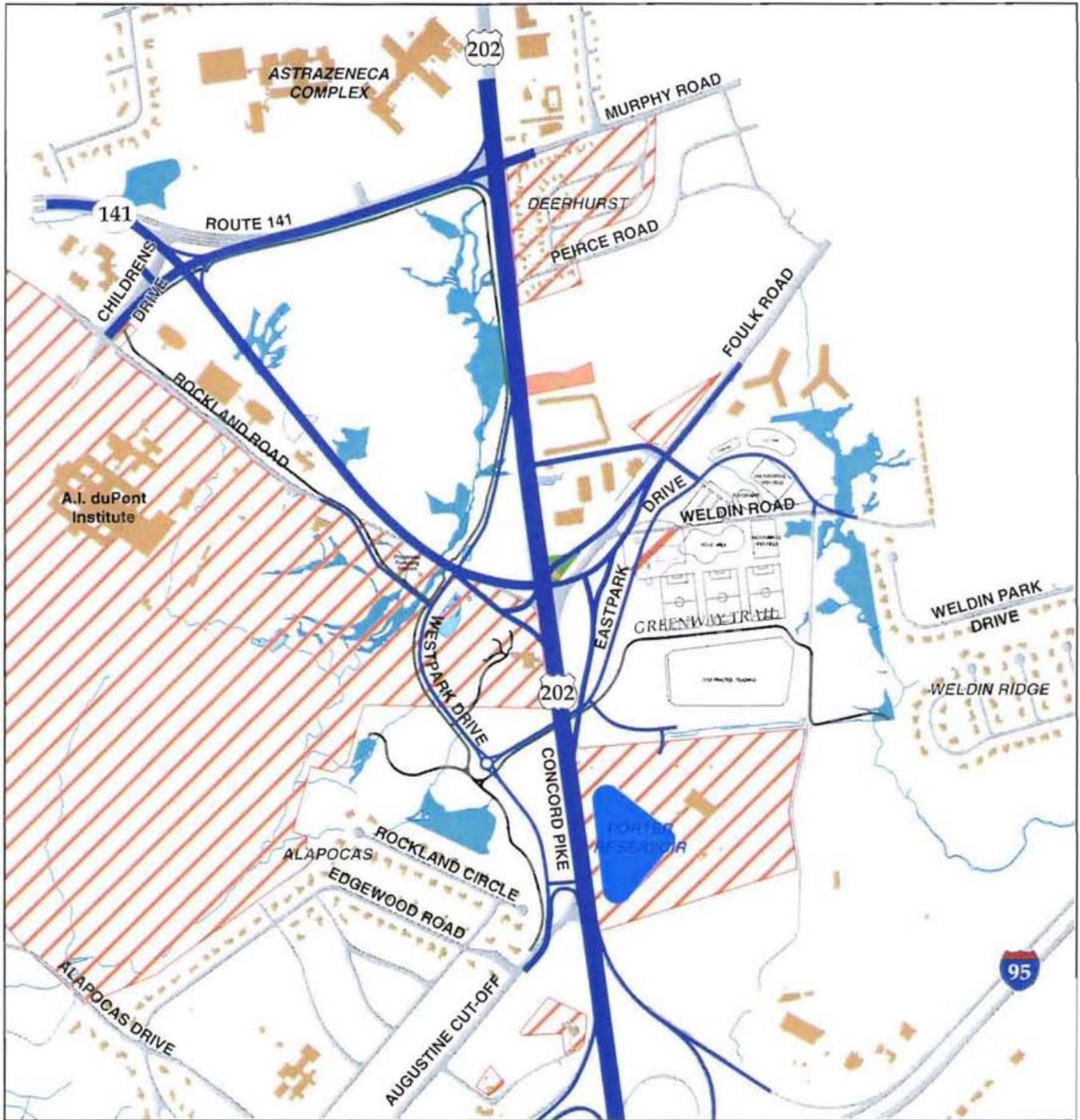


SCALE: 1"=250'

**ONE ROCK MANOR AVOIDANCE ALTERNATIVE**

- TAX PARCEL BOUNDARY
- NATIONAL REGISTER BOUNDARY
- NATIONAL REGISTER ELIGIBLE RESOURCE
- PROPOSED ALIGNMENT
- PROPOSED ROADWAY AREA
- PROPOSED BIKE PATH
- AREA OF DISTURBANCE
- AVOIDANCE ALTERNATIVE
- EXISTING TOPOGRAPHY
- EXISTING ROADWAY AREA

FIGURE 15A

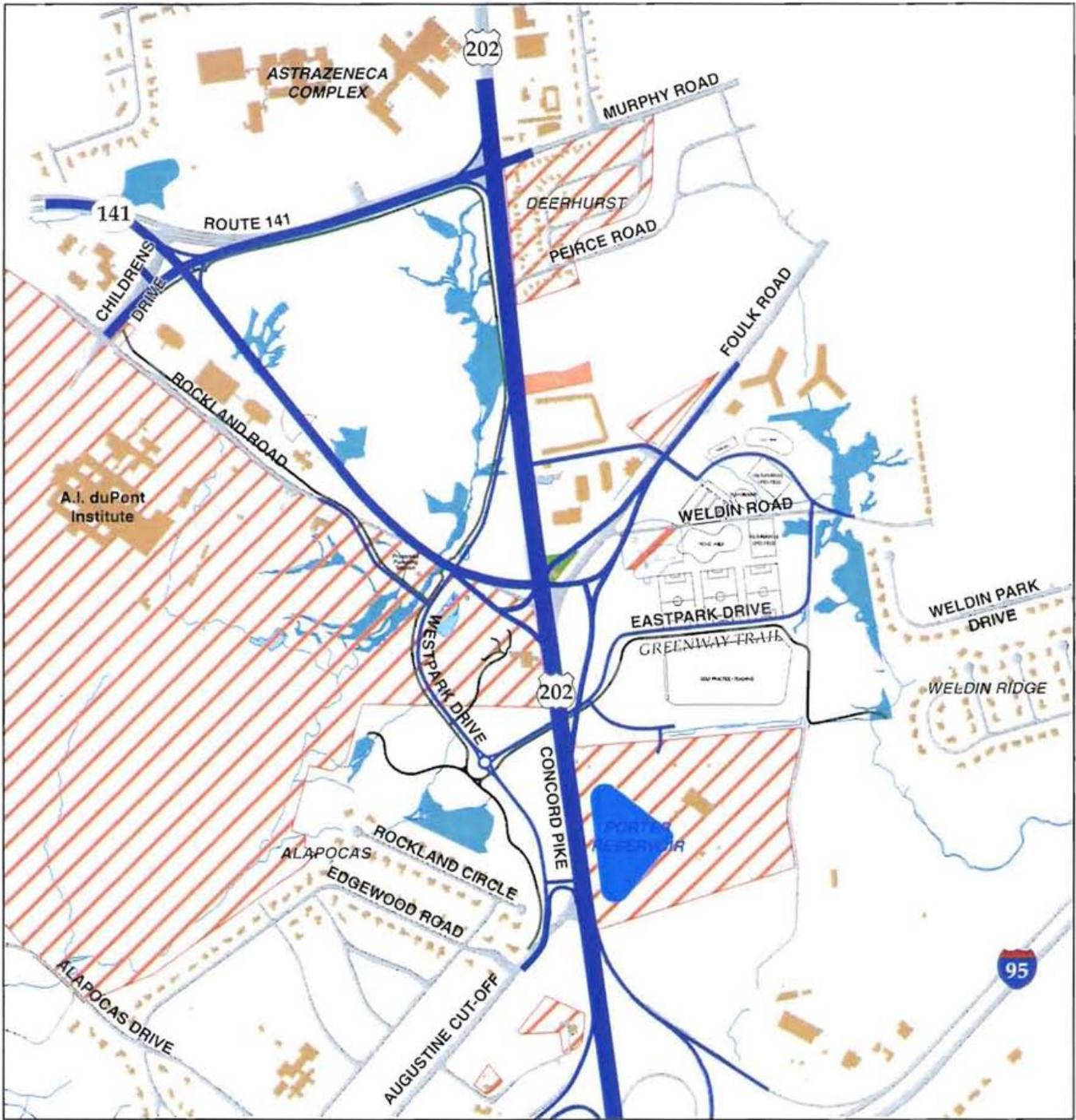


**FIGURE 16: MASTER PLAN "MODIFIED" ALTERNATIVE WITH EASTPARK DRIVE OPTION A**

0 1000  
feet

- Wetland
- National Historic Landmark (N.H.L.)
- National Register Eligible Property
- Greenway Trail



**FIGURE 17: MASTER PLAN "MODIFIED" ALTERNATIVE WITH EASTPARK DRIVE OPTION B**



#### **D. Master Plan "Modified" Alternative with Eastpark Drive Option A**

1. This option (*Figure 16*) places the Eastpark Drive in an alignment parallel with the U.S. Route 202 off ramp. It passes through a portion of the J.R. Weldin archaeological site, displacing a portion of the ruins. The Eastpark Drive then connects to relocated Weldin Road with an intersection east of Foulk Road.

While Option A is consistent with the Blue Ball Properties Master Plan, this option would displace a portion of the ruins at the J.R. Weldin archaeological site. Specifically, the Eastpark Drive would destroy the 18<sup>th</sup> century farmhouse ruins which occupies the western portion of the site. Some associated rock walls and features like the milk house would also be destroyed. Other features of the site would remain, including the barn ruins and a perimeter rock wall. (Phase III archaeological data recovery would mitigate portions of the site to be destroyed.)

#### **E. Master Plan "Modified" Alternative with Eastpark Drive Option B**

This option (*Figure 17*) places the Eastpark Drive south of the site in an east-west alignment between the proposed golf practice area and the proposed multi-purpose soccer fields. It then connects to Carruthers Lane and travels north to a relocated segment of Weldin Road. This portion of Weldin Road connects to Foulk Road at an intersection north of the existing Foulk Road/Weldin Road intersection.

Although Option B would avoid the impacts of the proposed Eastpark Drive on the archaeological ruin features, the proposed Route 141 spur would still impact the site and displace the 18th century farmhouse ruins. In addition the realignment of the Eastpark Drive would alter the layout of the proposed recreational facilities planned for the area. The alignment of Option B would place the roadway south of and immediately adjacent to three multi-purpose sports fields. Due to the 30-foot safety buffer requirement, this alignment would necessitate a different layout of the fields and redesign of other proposed park features.

In addition, this option would require the continued use of Carruthers Lane, thereby reducing land available for stormwater management facilities in this area.