ATTACHMENT 2

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Kimley»Horn

April 10, 2018

Mr. Carlos Alzate
CDOT Land Development
600 East 4th Street
Charlotte, NC 28202

Re: Project Quattro Traffic Impact Analysis Final Addendum

Dear Carlos:

The purpose of this letter Addendum is to outline the improvements agreed upon by Charlotte Department of Transportation (CDOT) and North Carolina Department of Transportation (NCDOT) for Project Quattro following review of the Traffic Impact Analysis (TIA) and TIA Addendum prepared by Kimley-Horn and Associates, Inc. (dated February 26, 2018 and March 9, 2018, respectively). This Addendum package includes the following:

1. Summary of study area improvements
2. Wilkinson Roadway Improvement Concept

Based on discussions with CDOT and NCDOT, the following improvements will be constructed due to the impacts relative to Project Quattro:

I-485 Outer Loop Ramp at US 74

- Construction of a channelized eastbound right-turn lane with 280 feet of storage.
- Extension of the westbound left-turn lane to the adjacent signal to create a drop lane.
- Installation of left-turn flashing yellow arrow signals (FYAs) for both US 74 approaches.

I-485 Inner Loop Ramp at US 74

- Construction of an additional northbound right-turn lane to create dual northbound right-turn lanes with a minimum of 425 feet of storage each.
    - These turn lanes should be channelized with a flared channelization island that is large enough to serve as a pedestrian refuge and to have pedestrian signals and pushbuttons within it.
- Construction of a southbound right-turn lane with a minimum of 150 feet of storage.
- Restriping the southbound left-turn lane to provide a minimum of 150 feet of storage.
- Restriping the eastbound right-turn lane to a shared through-right lane.
    - The additional receiving lane will extend to the intersection of US 74 at Sears Road
- Restriping the westbound right-turn lane to a shared through-right lane.
    - This improvement will require the construction of an additional receiving lane.

  - The two existing westbound through lanes will be transitioned east along US 74 to tie to the existing on the west side of the Ticer Branch culvert with appropriate lane transition and taper.
- Extension of the median towards the intersection on the northbound approach, assuming verification of adequate truck turn radii.

US 74 at Barry Drive

- Add pedestrian signals for crossing the south leg of Barry Drive.
- Modify the existing channelization island for the northbound approach to accommodate pedestrians as well as pedestrian signals and pushbuttons.

US 74 at Realigned Tuckaseegee Road

- Installation of a traffic signal.
  - CDOT Signals Section will review the full signal warrants analysis once it is received before approving signalization.
  - NCDOT has approved the traffic signal warrants.
- Construction of dual southbound left-turn lanes with a minimum of 150 feet of storage.
- Construction of dual southbound right-turn lanes with a minimum of 175 feet of storage.
  - These turn lanes should be channelized with a flared channelization island that is large enough to serve as a pedestrian refuge and to have pedestrian signals and pushbuttons within it.
- Construction of an eastbound left-turn lane with 275 feet of storage
- Construction of a westbound right-turn lane with a minimum of 150 feet of storage.

Realigned Tuckaseegee Road

- Construction of a new alignment of Tuckaseegee Road meeting the following design standards:
  - 11 foot lanes
  - Three lane section
  - 6 foot sidewalk
  - 8 foot planting strip
  - Curb & gutter
  - Buffered bike lanes (3 foot buffer and 5 foot bike lane)
  - Four lane bridge over Ticer Branch (with 8 foot sidewalk)

Industrial Drive

- Construction of the new Industrial Drive meeting the following design standards:
  - 11 foot lanes
  - Three lane section
  - 6 foot sidewalk

- 8 foot planting strip
- Curb & gutter
- Buffered bike lanes (3 foot buffer and 5 foot bike lane)

In addition, the following general comments will also be incorporated as applicable:

- Installation of an 8 foot shoulder (4 foot paved & 4 foot grass) on Wilkinson Boulevard (except at the Ticer Branch culvert).
- Implementation of a 1 foot offset from the median to the paint strip in all locations with a concrete median (except at the Ticer Branch culvert).
- Use of soil stabilization at the existing culvert.
- Design of intersections along US 74 to accommodate future sidewalk and crosswalk connections, via accessible ramps and stop bar placement.

We appreciate the opportunity to be of service. Please contact me if you have any questions.

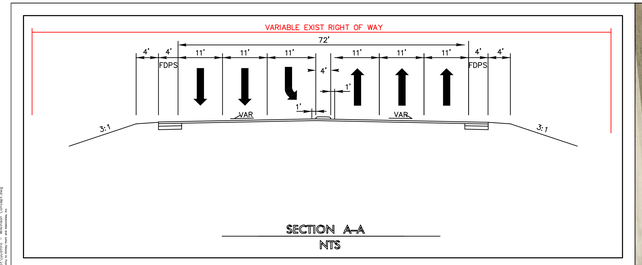
Very truly yours,

KIMLEY-HORN AND ASSOCIATES, INC.

Laura N Reid

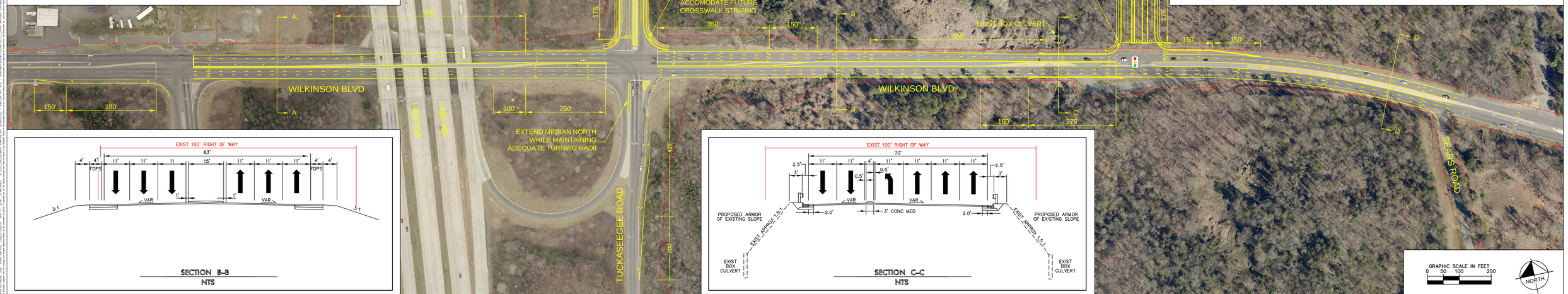
Laura Reid, P.E.

Cc: Wendy Taylor, PE/NCDOT
Travis Preslar, PE/NCDOT
Tony Tagliaferri, PE/NCDOT



SECTION A–A
NTS

SECTION B–B
NTS



SECTION C–C
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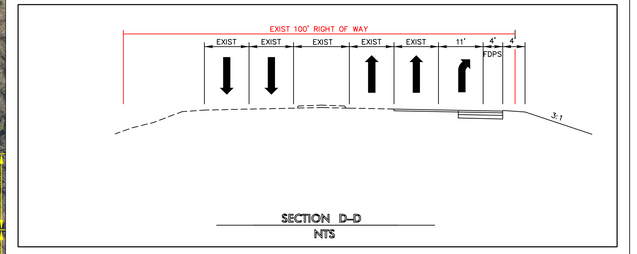

SECTION D–D
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NORTH

Traffic Impact Analysis for
Project Quattro
Charlotte, North Carolina

Prepared for:

Charlotte Douglas International Airport
Charlotte, North Carolina

Prepared by:

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February 2018
019854001

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1.0 Executive Summary

The purpose of this Traffic Impact Analysis (TIA) is to review vehicular traffic impacts as a result of the proposed Project Quattro development. The objectives of the study are:

- To estimate trip generation and distribution for the proposed development.
- To perform intersection capacity analyses for the identified study area.
- To determine the potential traffic impacts of the proposed development.
- To develop recommendations for needed roadway and operational improvements to accommodate the proposed development's traffic impacts.

The proposed Project Quattro development is located in Charlotte, North Carolina in the northwest quadrant of US 74 at Tuckaseegee Road. As currently envisioned, the development is proposed to consist of up to 2,560,000 square feet of warehouse space.

As part of the proposed development, the existing Tuckaseegee Road will be realigned to intersect US 74 approximately 1,500 feet east of the existing US 74 at Tuckaseegee intersection. The existing northern leg of the US 74 at Tuckaseegee Road intersection, referred to as Industrial Drive for the purposes of this study, will be realigned to tee into the Realigned Tuckaseegee Road approximately 1,100 feet north of US 74. This proposed roadway network can be seen in **Figure 3.2**.

For the purposes of this TIA, the development is assumed to be completed (built-out) in 2019. The proposed development is envisioned to be accessed via five proposed full-movement driveways; two on the proposed Industrial Drive and three on Tuckaseegee Road, as shown in **Figure 3.2**. The five locations and assumed access configurations are as follows:

- **Access A** – A proposed full-movement, unsignalized driveway connection on Industrial Drive approximately 900 feet north of US 74
- **Access B** – A proposed full-movement, unsignalized driveway connection on Industrial Drive approximately 560 feet east of Access A
- **Access C** – A proposed full-movement, unsignalized driveway connection on Realigned Tuckaseegee Road approximately 400 feet north of Industrial Drive
- **Access D** – A proposed full-movement, unsignalized driveway connection on Realigned Tuckaseegee Road approximately 330 feet north of Access C
- **Access E** – A proposed full-movement, unsignalized truck driveway connection on Realigned Tuckaseegee Road approximately 470 feet north of Access D

Through coordination with Charlotte Douglas International Airport (CDIA), North Carolina Department of Transportation (NCDOT), and Charlotte Department of Transportation (CDOT), this TIA evaluated the impacts of the proposed site during the AM and PM peak hours at the following intersections:

1. I-485 Outer Loop Ramp/Fieldridge Road at US 74
2. I-485 Inner Loop Ramp/Tuckaseegee Road at US 74
3. US 74 at Barry Drive/Duke Power Driveway
4. US 74 at Josh Birmingham Parkway
5. Josh Birmingham Parkway/Little Rock Road at Scott Futrell Drive
6. I-85 at Little Rock Road
7. Little Rock Road at Tuckaseegee Road
8. US 74 at Realigned Tuckaseegee Road
9. Realigned Tuckaseegee Road at Industrial Drive
10. Industrial Drive at Access A
11. Industrial Drive at Access B
12. Realigned Tuckaseegee Road at Access C
13. Realigned Tuckaseegee Road at Access D
14. Realigned Tuckaseegee Road at Access E

The potential traffic impacts to these intersections by this development have been evaluated in accordance with the traffic study guidelines set forth by CDOT and NCDOT, including the identification of transportation improvements that may be required to accommodate future traffic conditions. This report presents trip generation, distribution, capacity analyses, and recommendations for transportation improvements required to meet anticipated traffic demands.

Recommendations for improvements to intersection lane geometry and signal operations for existing intersections in the study area are summarized in the following listing. The recommendations outlined are subject to approval by NCDOT and CDOT. All additions and attachments to the State and City roadway system shall be properly permitted, designed and constructed in conformance to standards maintained by the agencies.

Based on the capacity analyses contained herein, the following improvements are recommended to mitigate impact of the proposed development under the build-out conditions:

I-485 Outer Loop Ramp at US 74

- Construction of a channelized right-turn lane with a minimum of 450 feet of storage.
- Extension of the westbound left-turn lane to the adjacent signal to create a drop lane.

I-485 Inner Loop Ramp at US 74

- Construction of an additional northbound right-turn lane to create dual northbound right-turn lanes with a minimum of 425 feet of storage each.
- Construction of a southbound right-turn lane with a minimum of 150 feet of storage.
- Restriping the southbound left-turn lane to provide a minimum of 150 feet of storage.
- Restriping the eastbound right-turn lane to a shared through-right lane.
    - This improvement will require the construction of a receiving lane that will drop as an eastbound left-turn lane at Realigned Tuckaseegee Road.
- Restriping the westbound right-turn lane to a shared through-right lane.
    - This improvement will require the construction of an additional receiving lane.
    - The existing lane will be extended back to the proposed US 74 at Realigned Tuckaseegee Road intersection.

US 74 at Realigned Tuckaseegee Road

- Installation of a traffic signal.
- Construction of dual southbound left-turn lanes with a minimum of 150 feet of storage.
- Construction of dual southbound right-turn lanes with a minimum of 175 feet of storage.
- Construction of an eastbound left-turn lane that extends to the existing US 74 at Tuckaseegee Road intersection.
- Construction of a westbound right-turn lane with a minimum of 150 feet of storage.

Realigned Tuckaseegee Roadn at Industrial Drive

- Construction of a single lane roundabout.

Industrial Drive at Access A

- Construction of an eastbound left-turn lane with a minimum of 150 feet of storage.

Industrial Drive at Access B

- Construction of an eastbound left-turn lane with a minimum of 150 feet of storage.
- Construction of a westbound right-turn lane with a minimum of 150 feet of storage.

Realigned Tuckaseegee Road at Access C

- Construction of an eastbound left-turn lane with a minimum of 150 feet of storage.

Realigned Tuckaseegee Road at Access D

- Construction of an eastbound left-turn lane with a minimum of 150 feet of storage.
- Construction of a westbound right-turn lane with a minimum of 150 feet of storage.

Realigned Tuckaseegee Road at Access E

- Construction of an eastbound left-turn lane with a minimum of 150 feet of storage.

2.0 Introduction

The proposed Project Quattro development is located in Charlotte, North Carolina in the northwest quadrant of US 74 at Tuckaseegee Road. As currently envisioned, the development is proposed to consist of up to 2,560,000 square feet of warehouse space.

As part of the proposed development, the existing Tuckaseegee Road will be realigned to intersect US 74 approximately 1,500 feet east of the existing US 74 at Tuckaseegee intersection. The existing northern leg of the US 74 at Tuckaseegee Road intersection, referred to as Industrial Drive for the purposes of this study, will be realigned to tee into the Realigned Tuckaseegee Road approximately 1,100 feet north of US 74. This proposed roadway network can be seen in **Figure 3.2**.

For the purposes of this TIA, the development is assumed to be completed (built-out) in 2019. The proposed development is envisioned to be accessed via five proposed full-movement driveways; two on the proposed Industrial Drive and three on Tuckaseegee Road, as shown in **Figure 3.2**. The five locations and assumed access configurations are as follows:

- **Access A** – A proposed full-movement, unsignalized driveway connection on Industrial Drive approximately 900 feet north of US 74
- **Access B** – A proposed full-movement, unsignalized driveway connection on Industrial Drive approximately 560 feet east of Access A
- **Access C** – A proposed full-movement, unsignalized driveway connection on Realigned Tuckaseegee Road approximately 400 feet north of Industrial Drive
- **Access D** – A proposed full-movement, unsignalized driveway connection on Realigned Tuckaseegee Road approximately 330 feet north of Access C
- **Access E** – A proposed full-movement, unsignalized truck driveway connection on Realigned Tuckaseegee Road approximately 470 feet north of Access D

Kimley-Horn was retained to determine the potential traffic impacts of this development in accordance with the traffic study guidelines set forth by NCDOT and CDOT and to identify transportation improvements that may be required to accommodate future traffic conditions. This report presents trip generation, distribution, capacity analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in build-out year 2019.

Coordination occurred with CDIA, NCDOT, and CDOT to develop the scope and parameters to be covered in this TIA. The draft scoping package is included in the **Appendix**. Note that there have been changes to the site plan since the initial scoping coordination. This report reflects the current site plan and proposed access spacing as shown in **Figure 3.2.** It should also be noted that CDOT and NCDOT issued comments on the scoping package on February 23, 2017 which added and removed some study intersections. This supplemental analysis will be submitted under separate cover.

3.0 Existing Traffic Conditions

Existing traffic conditions were coordinated with NCDOT and CDOT staff and collected through field observations and turning-movement counts to establish the existing conditions baseline analysis.

3.1 STUDY AREA

Based on discussions with CDOT and NCDOT staff, the study area for this TIA includes the following intersections:

1. I-485 Outer Loop Ramp at US 74
2. I-485 Inner Loop Ramp/Tuckaseegee Road at US 74
3. US 74 at Barry Drive/Duke Power Driveway
4. US 74 at Josh Birmingham Parkway
5. Josh Birmingham Parkway/Little Rock Road at Scott Futrell Drive
6. I-85 at Little Rock Road
7. Little Rock Road at Tuckaseegee Road

Figure 3.1 shows the study area intersections and the site location, **Figure 3.2** shows the proposed site plan for the development and **Figure 3.3** shows the roadway geometry at the existing study intersections.

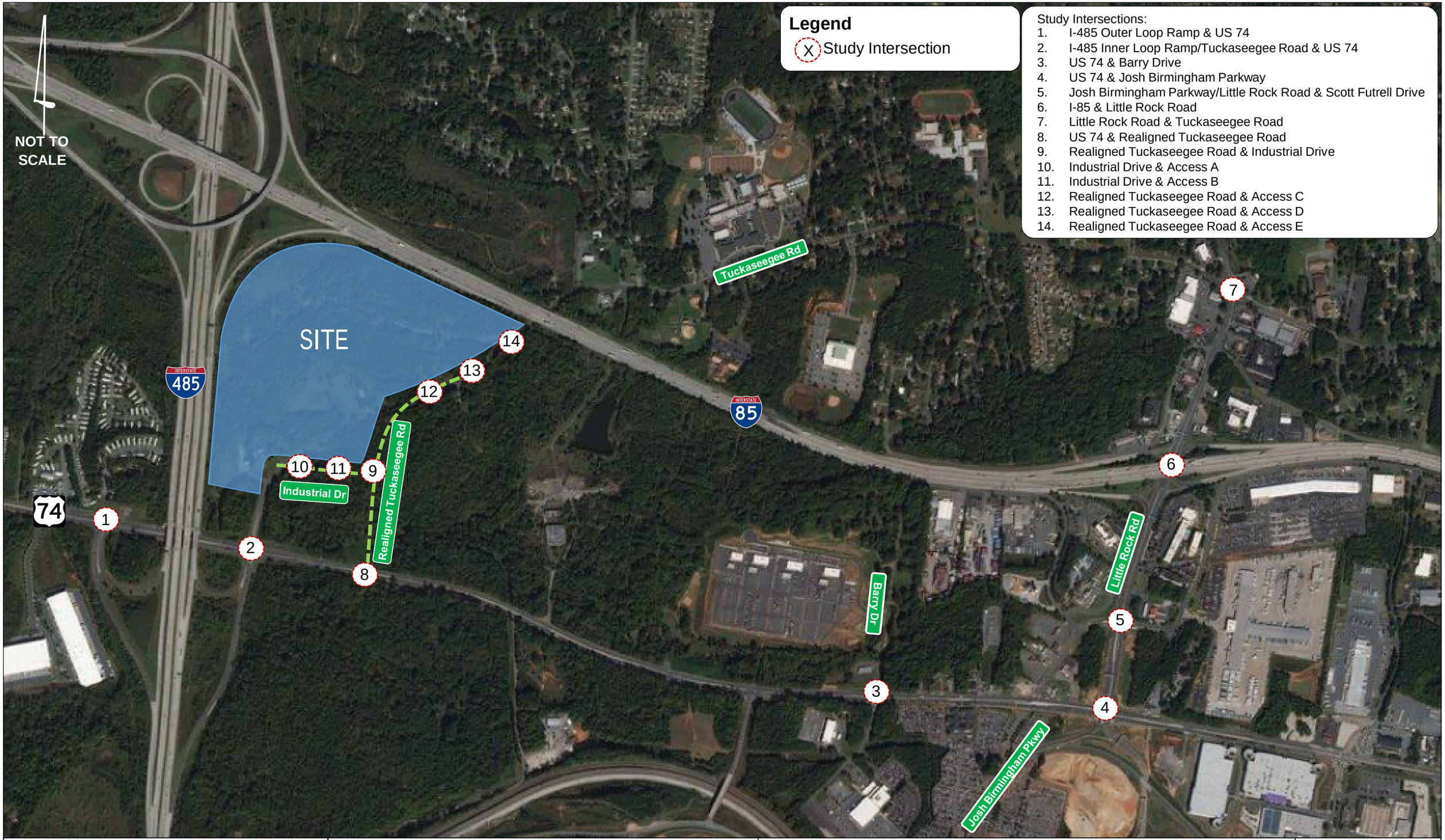
The roadways in the vicinity of the site are I-85, I-485, US 74, Tuckaseegee Road, and Little Rock Road.

I-85 is an eight-lane, divided interstate with a posted speed limit of 55 miles per hour (mph) throughout the study area. I-85 has an annual average daily traffic (AADT) volume of 114,000 vehicles per day (vpd) in the vicinity of the site based on 2016 NCDOT AADT maps.

US 74 is a four-lane divided principal arterial west of Sears Road and a six-lane divided principal arterial east of Sears Road with a posted speed limit of 45 mph throughout the study area. US 74 has an AADT of 21,000 vpd west of I-485, 24,000 vpd east of I-485, 25,000 vpd west of Josh Birmingham Road and 28,000 vpd east of Josh Birmingham Road, based on 2016 NCDOT AADT maps.

Tuckaseegee Road is a two-lane, undivided major collector with a posted speed limit of 45 mph west of I-85 and 35 mph east of I-85. Tuckaseegee Road has an AADT of 3,100 vpd west of I-85, 3.200 vpd east of I-85, 6,000 vpd west of Little Rock Road, and 6,700 vpd east of Little Rock Road, based on 2016 NCDOT AADT maps.

Little Rock Road is a six-lane, divided minor arterial with a posted speed limit of 35 miles per hour (mph) throughout the study area. Little Rock Road has an AADT of 16,000 vpd north of I-85, based on 2016 NCDOT AADT maps.

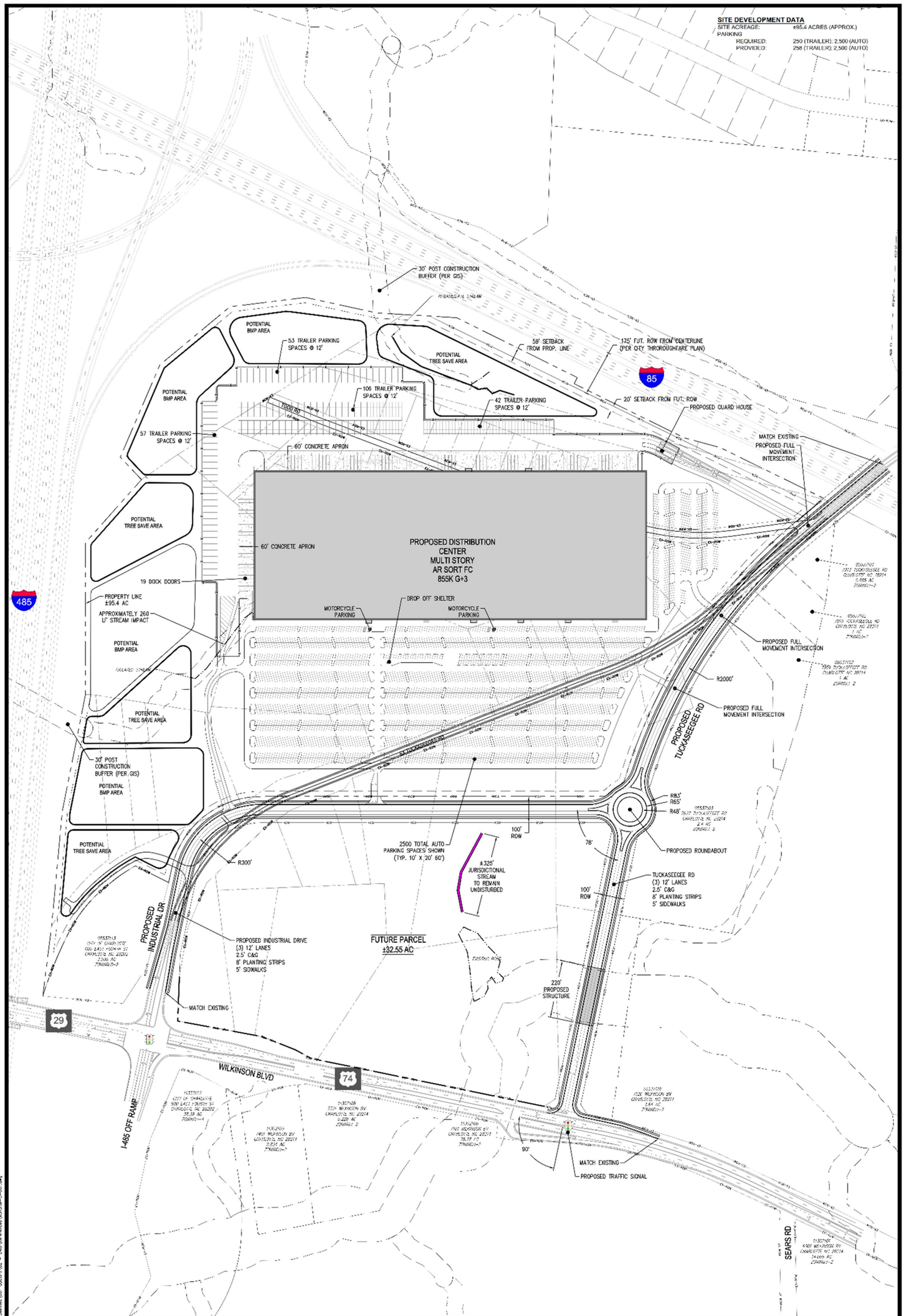


Kimley»Horn	**Project Quattro** **Traffic Impact Analysis**	**Study Area /Site Location**	**Figure** **3.1**

Kimley»Horn

Project Quattro
Traffic Impact Analysis

Proposed Site Plan



Kimley»Horn NC LICENSE #F-0102 200 SOUTH TRYON STREET, SUITE 200 CHARLOTTE, NORTH CAROLINA 28202 PHONE: 704-333-5131

QUATTRO 855K

PRELIMINARY SITE PLAN EXHIBIT

EXHIBIT C

DATE: 02-21-2018

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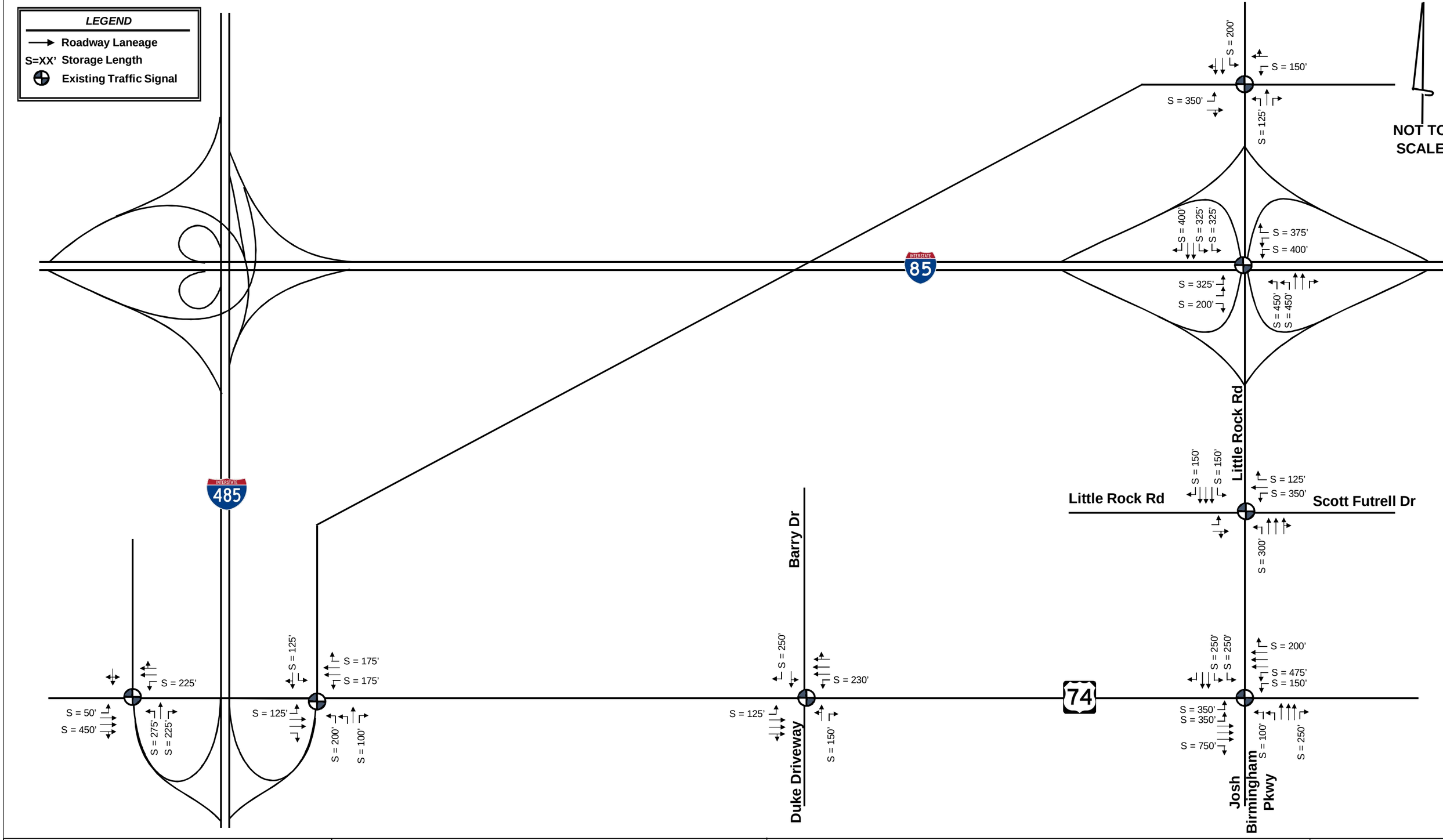
Figure 3.2



Kimley»Horn	**Project Quattro** **Traffic Impact Analysis**	**Existing Roadway Laneage**	**Figure** **3.3**

3.2 EXISTING TRAFFIC VOLUME DEVELOPMENT

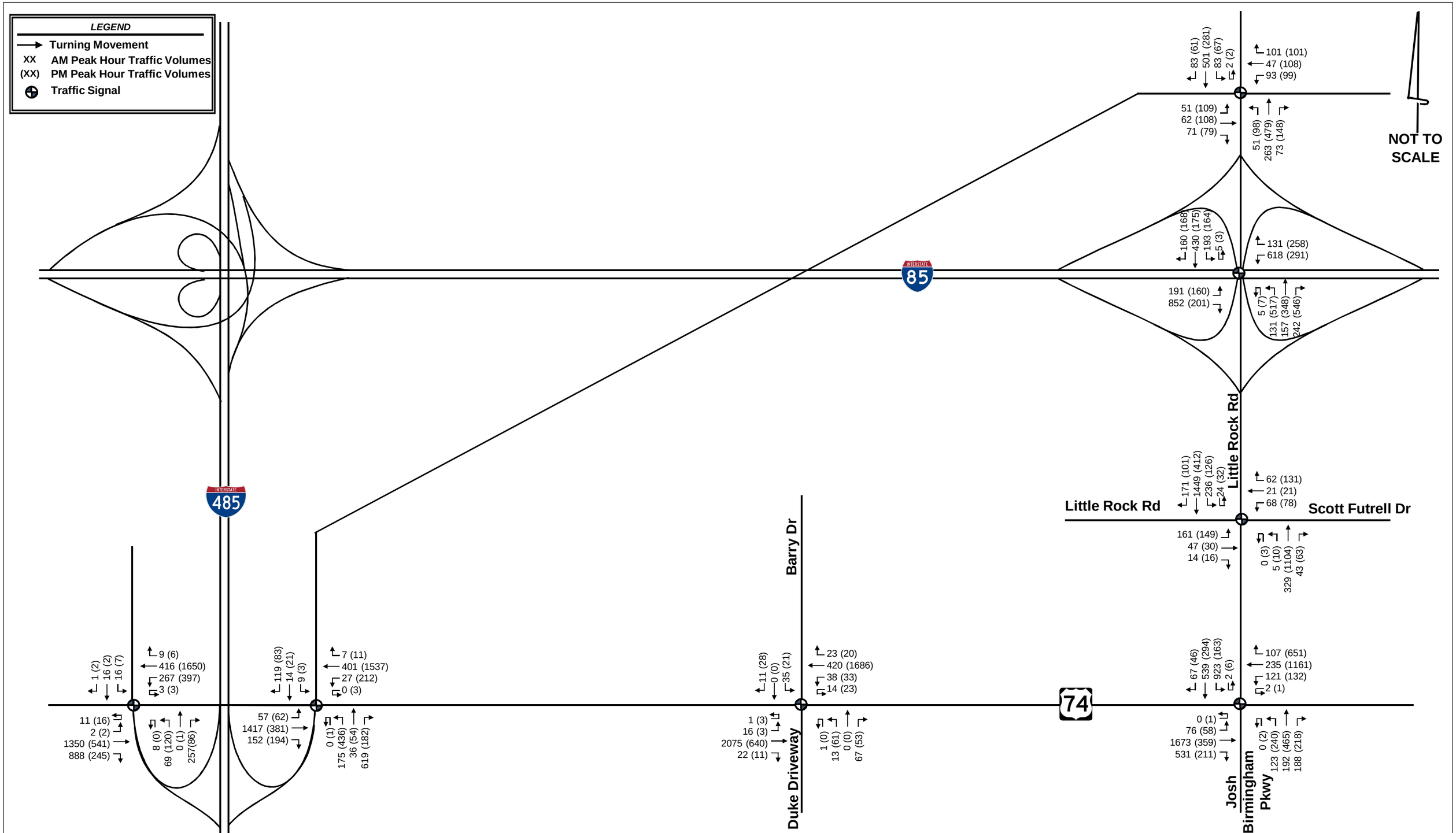
Peak-hour intersection turning-movement, heavy-vehicle and pedestrian counts were performed by National Data and Surveying Services from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM on Tuesday, January 23, 2018, at the following study intersections:

- I-485 Outer Loop Ramp at US 74
- I-485 Inner Loop Ramp/Tuckaseegee Road at US 74
- US 74 at Barry Drive/Duke Power Driveway
- US 74 at Josh Birmingham Parkway
- Josh Birmingham Parkway/Little Rock Road at Scott Futrell Drive
- I-85 at Little Rock Road
- Little Rock Road at Tuckaseegee Road

Turning-movement count data and the corresponding peak-hour factors and heavy-vehicle percentages are provided in the **Appendix**. U-turn volumes were also considered at the study intersections.

Existing traffic volumes were balanced along US 74 between the I-485 Inner and Outer Ramps and along Josh Birmingham Road between US 74 and Scott Futrell Drive. Volumes were not balanced between other intersections due to the presence of driveways.

Figure 3.4 shows the 2018 existing AM and PM peak-hour traffic volumes.



Kimley»Horn	**Project Quattro** **Traffic Impact Analysis**	**2018 Existing AM and PM Peak Hour Traffic Volumes**	**Figure 3.4**

4.0 Background Traffic Volume Development

Projected background (non-project) traffic is defined as the expected growth or change in traffic volumes on the surrounding roadway network between the year the existing counts were collected (2018) and the expected build-out year (2019), absent the opening of the proposed project.

The historical background growth is the increase in existing traffic volumes due to usage increases and non-specific growth throughout the area. Historical background growth traffic is calculated using an annual growth rate, which is applied to the existing traffic volumes to grow them to the future horizon year. At the direction of NCDOT and CDOT, an annual growth rate of two percent (2%) was applied to the 2018 existing peak-hour traffic volumes for one year to calculate base 2019 background traffic volumes.

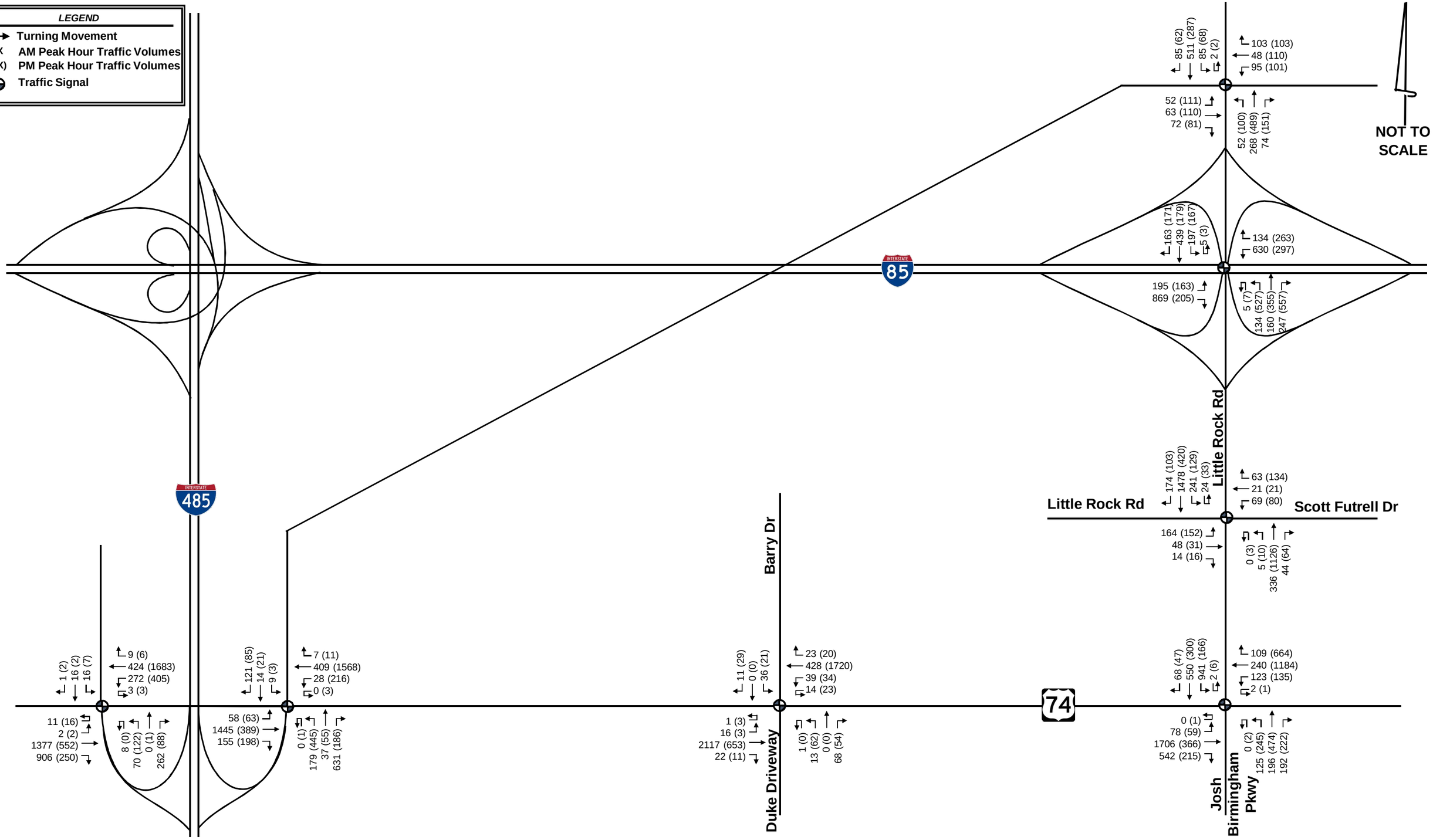
There were no approved developments considered in this analysis.

Figure 4.1 shows the projected 2019 background AM and PM peak-hour traffic volumes, which include the historical growth traffic.

LEGEND

- Turning Movement
- XX AM Peak Hour Traffic Volumes
- (XX) PM Peak Hour Traffic Volumes
- Traffic Signal

NOT TO SCALE



Kimley»Horn	Project Quattro Traffic Impact Analysis	2019 Background AM and PM Peak Hour Traffic Volumes	Figure 4.1

5.0 Site Traffic Volume Development

Site traffic developed for this TIA is defined as the vehicle trips expected to be generated and added to the study area by the construction of the proposed development. The site traffic was distributed and assigned throughout the study area network.

5.1 SITE ACCESS & ROADWAY NETWORK

Based on the current site plan, the proposed development is expected to be accessed via the following proposed driveways:

- **Access A** – A proposed full-movement, unsignalized driveway connection on Industrial Drive approximately 900 feet north of US 74
- **Access B** – A proposed full-movement, unsignalized driveway connection on Industrial Drive approximately 560 feet east of Access A
- **Access C** – A proposed full-movement, unsignalized driveway connection on Realigned Tuckaseegee Road approximately 400 feet north of Industrial Drive
- **Access D** – A proposed full-movement, unsignalized driveway connection on Realigned Tuckaseegee Road approximately 330 feet north of Access C
- **Access E** – A proposed full-movement, unsignalized truck driveway connection on Realigned Tuckaseegee Road approximately 470 feet north of Access D

As part of the proposed development, the existing Tuckaseegee Road will be realigned to intersect US 74 approximately 1,500 feet east of the existing US 74 at Tuckaseegee Road intersection. The existing northern leg of the US 74 at Tuckaseegee Road intersection, referred to as Industrial Drive for the purposes of this study, will be realigned to tee into the Realigned Tuckaseegee Road approximately 1,100 feet north of US 74. This proposed roadway network can be seen in **Figure 3.2**.

At the request of CDOT, the intersection of Realigned Tuckaseegee Road at Industrial Drive was analyzed as a single lane roundabout in all future year analyses.

In future year analyses, all traffic volumes from the existing Tuckaseegee Road were rerouted to the proposed Realigned Tuckaseegee Road.

5.2 TRAFFIC GENERATION

The traffic generation potential of the proposed development was determined using the trip generation rates published in *Trip Generation* (Institute of Transportation Engineers, Ninth Edition, 2012) for all land uses.

Based on the site plan provided by the applicant, the proposed development is envisioned to consist of 2,560,000 SF of warehouse space. Due to the characteristics of the site's land use, there are assumed to be no pass-by or internally captured trips. Additionally, 20% of trips generated by the site are assumed to be truck trips per ITE. The full breakout of passenger car trips and truck trips at each intersection can be viewed in the volume development in the **Appendix**.

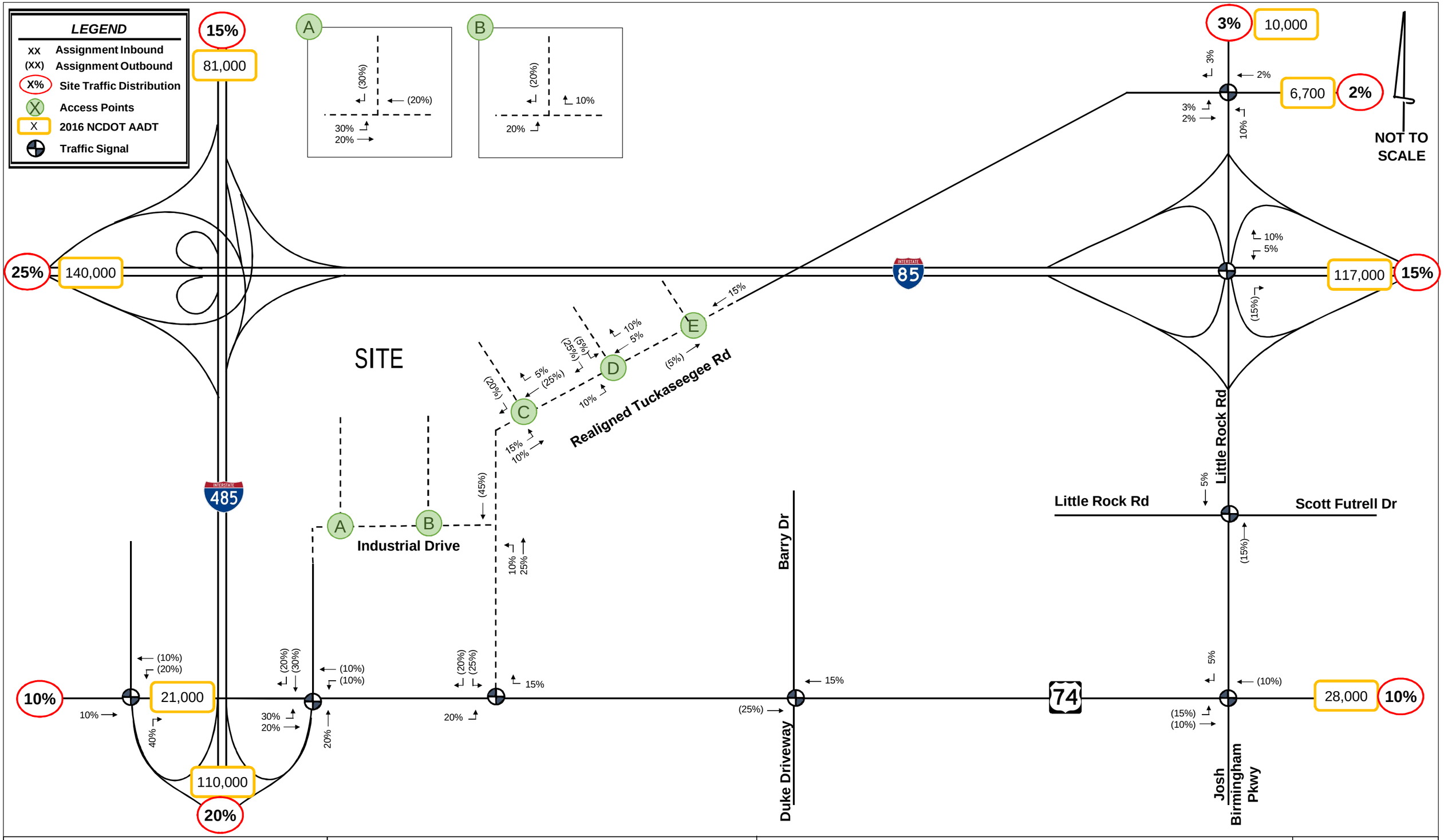
Table 5.1 summarizes the projected trip generation for the proposed warehouse.

Table 5.1 - Trip Generation								
Land Use	**Intensity**	**Daily**	**AM Peak Hour**			**PM Peak Hour**		
			Total	**In**	**Out**	**Total**	**In**	**Out**
Warehouse	2,560,000 SF	9,114	768	607	161	819	205	614
Subtotal		**9,114**	**768**	**607**	**161**	**819**	**205**	**614**
Truck Trips 20% per ITE 150		**1,823**	**154**	**121**	**32**	**164**	**41**	**123**
Net New Passenger Car Trips		**7,291**	**614**	**486**	**129**	**655**	**164**	**491**
Net New External Project Trips		**9,114**	**768**	**607**	**161**	**819**	**205**	**614**

5.3 SITE TRAFFIC DISTRIBUTION

The proposed development's passenger car trips and truck trips were assigned to the surrounding network based on existing peak-hour turning movements, future connections, surrounding land uses, locations of similar land use and population densities in the area, and coordination with NCDOT and CDOT staff.

The overall distribution and assignment for passenger cars and trucks are shown in **Figure 5.1** and **Figure 5.2**, respectively. **Figure 5.3** and **Figure 5.4** show the projected 2019 build-out AM and PM peak-hour traffic volumes, respectively. Intersection volume development worksheets and calculations are included in the **Appendix**.



Kimley»Horn	**Project Quattro** **Traffic Impact Analysis**	**Distribution and Assignment** **Passenger Cars**	**Figure** **5.1**

LEGEND

- XX — Assignment Inbound
- (XX) — Assignment Outbound
- X% — Site Traffic Distribution
- X — Access Points
- X — 2016 NCDOT AADT
- Traffic Signal

NOT TO SCALE

15%
81,000
25%
140,000
117,000
20%
10%
21,000
110,000
20%
10%
28,000
10%

SITE

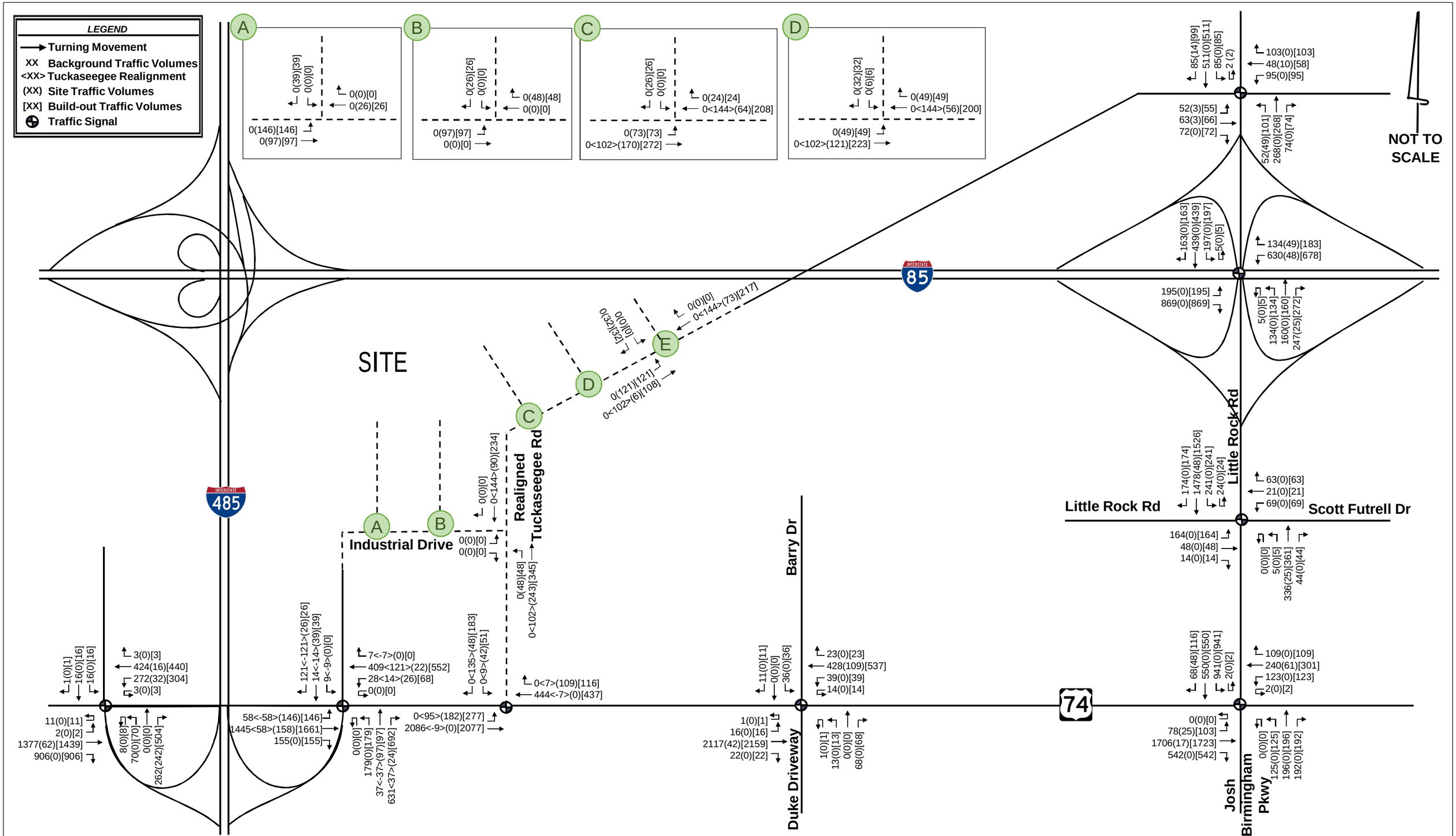
A
B
C
D
E

Realigned Tuckaseegee Rd
Industrial Drive
Barry Dr
Duke Driveway
Little Rock Rd
Scott Futrell Dr
Josh Birmingham Pkwy

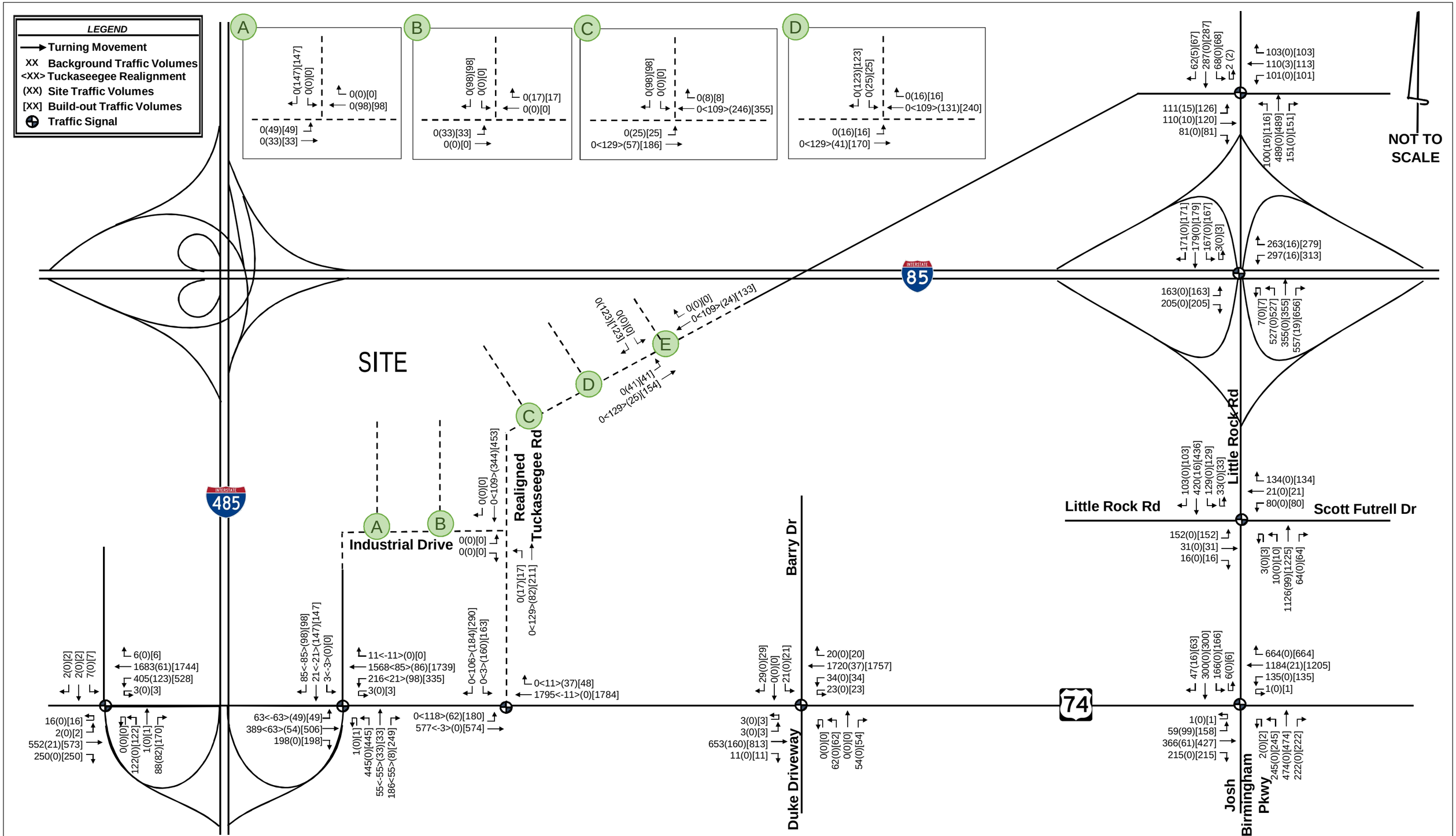
INTERSTATE 85
INTERSTATE 485
74

(100%)
100%
(10%)
(20%)
40%
10%
(30%)
(40%)
50%
20%
(70%)
(30%)
70%
30%
(30%)
20%
(20%)
(10%)

Kimley»Horn	**Project Quattro** **Traffic Impact Analysis**	**Distribution and Assignment** **Trucks**	**Figure** **5.2**



Kimley»Horn	**Project Quattro** **Traffic Impact Analysis**	**2019 Build-out AM Peak Hour Traffic Volumes**	**Figure 5.3**



Kimley»Horn	**Project Quattro** **Traffic Impact Analysis**	**2019 Build-out PM Peak Hour Traffic Volumes**	**Figure 5.4**

6.0 Capacity Analysis

Capacity analyses were performed for the AM and PM peak hours using the Synchro Version 9 software to determine the operating characteristics at the signalized and stop-controlled intersections of the adjacent street network and to evaluate the impacts of the proposed development. Capacity is defined as the maximum number of vehicles that can pass over a particular road segment, or through a particular intersection, within a specified period of time under analyze roundabout operations using a macroscopic model that uses gap acceptance and lane utilization to determine capacity, where capacity is based on the size of time gaps between vehicles that motorists choose prevailing operational, geometric and controlling conditions within a set time duration. SIDRA Version 7 software was used to determine operating characteristics, Level-of-Service (LOS) and delay for the proposed roundabout at the Realigned Tuckaseegee Road at Industrial Drive intersection under build-out conditions. These software programs use methodologies contained in the Highway Capacity Manual (HCM) to determine the operating characteristics of an intersection.

The Highway Capacity Manual (HCM) defines LOS as a "quantitative stratification of a performance measure or measures representing quality of service", and is used to "translate complex numerical performance results into a simple A-F system representative of travelers' perceptions of the quality of service provided by a facility or service". The HCM defines six levels of service, LOS A through LOS F, with A having the best operating conditions from the traveler's perspective and F having the worst. However, it must be understood that "the LOS letter result hides much of the complexity of facility performance", and that "the appropriate LOS for a given system element in the community is a decision for local policy makers". According to the HCM, "for cost, environmental impact, and other reasons, roadways are typically designed not to provide LOS A conditions during peak periods but instead to provide some lower LOS that balances individual travers' desires against society's desires and financial resources. Nevertheless, during low-volume periods of the day, a system element may operate at LOS A."

LOS for a two-way stop-controlled (TWSC) intersection is determined by the control delay at the side-street approaches, typically during the highest volume periods of the day, the AM and PM peak periods. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. With respect to field measurements, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line. It is typical for stop sign-controlled side streets and driveways intersecting major streets to experience long delays during peak hours, particularly for left-turn movements. The majority of the traffic moving through the intersection on the major street experiences little or no delay.

LOS for signalized intersections is reported for the intersection as a whole, also typically during the highest volume periods of the day, the AM and PM peak periods. One or more movements at an intersection may experience a low level-of-service, while the intersection as a whole may operate acceptably.

LOS for roundabout intersections is also reported for the intersection as a whole, but uses the same control delay thresholds as the stop-controlled intersections. However, if the volume-to-

capacity ratio on an approach of the intersection is greater than 1.0, that approach or intersection is reported as LOS F regardless of the reported control delay.

Table 6.0A and **6.0B** list the LOS control delay thresholds published in the HCM for unsignalized and signalized intersections, respectively, as well as the unsignalized operational descriptions assumed herein.

Table 6.0A
Level of Service Control Delay Thresholds for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle [sec/veh]	
A	≤ 10	Short Delays
B	> 10 – 15	
C	> 15 – 25	
D	> 25 – 35	Moderate Delays
E	> 35 – 50	
F	> 50	Long Delays

Table 6.0B
Level-of-Service Control Delay Thresholds for Signalized Intersections

Level-of-Service	Control Delay per Vehicle [sec/veh]
A	≤ 10
B	> 10 – 20
C	> 20 – 35
D	> 35 – 55
E	> 55 – 80
F	> 80

Capacity analyses were performed for the 2018 existing traffic conditions, 2019 background traffic conditions, and 2019 build-out traffic conditions. In conditions where mitigation is required, build-out improved conditions are shown as well. The capacity analyses for each are summarized in the following subsections. Capacity analysis reports generated by Synchro Version 9 software, Queueing and Blocking reports generated by SimTraffic, and Movement Summary reports generated by SIDRA Version 7 are included in the **Appendix**.

NCDOT Mitigation Requirements

Mitigation for traffic impacts caused by the proposed development were noted and recommended based on NCDOT mitigation requirements. When determining the proposed development's traffic impact to the study area intersections, the 2019 background and 2019 build-out conditions were compared. Based on the NCDOT's *Policy on Street and Driveway Access to North Carolina Highways*, "the applicant shall be required to identify mitigation improvements to the roadway network if at least one of the following conditions exists when comparing base network conditions to project conditions:

- the total average delay at an intersection or individual approach increases by 25% or greater, while maintaining the same level of service
- the Level of Service degrades by at least one level,
- or Level of Service is 'F'."

Per NCDOT *Congestion Management Capacity Analysis Guidelines,* zero volume movements at the study intersections were modeled as four vehicles per hour were modeled as four vehicles per hour with the exception of the site access intersection and all allowable Right-Turn-On-Red (RTOR) operations were not included in any conditions (existing through build-out). Similarly, according to the NCDOT *Congestion Management Capacity Analysis Guidelines*, protected-only left-turn phasing is to be used in all analysis of future operations which currently operate as permitted-protected. Therefore, the splits and offsets were optimized in background conditions to account for this change. With pedestrian timings included in future year models, the minimum split times at some signals were longer than the actual coordinated timings provided by CDOT. Therefore, these pedestrian walk/don't walk times were removed in future year scenarios when optimizing splits and offsets.

Under existing conditions, field-observed peak hour factors (PHFs) were used. Given that West Mecklenburg High School is located along Tuckaseegee Road just east of the site, a weighted PHF was calculated for future year analyses during the AM peak hour assuming field-observed PHFs for existing and historical growth traffic and a PHF of 0.9 for site traffic. A PHF of 0.9 was assumed for future year analyses during the PM peak hour.

CDOT Mitigation Requirements

Based on direction from CDOT, the impacts of the proposed rezoning are also based on the volume-to-capacity (V/C) ratios calculated for each intersection using procedures from the *Highway Capacity Manual*. The V/C ratio represents a comparison of the traffic volume passing through an intersection to the capacity of the intersection. CDOT evaluates the impacts of the proposed development at intersections based on the increase in V/C ratio as a result of the projected site traffic. This increase is determined by comparing the maximum V/C ratio under background conditions and build-out conditions. CDOT requires consideration of roadway and/or operational improvements when the proposed development increases the maximum V/C ratio beyond the thresholds indicated in **Table 6.0C**.

Table 6.0C – V/C Thresholds

Background V/C	Allowable Increase in V/C By Development
0.00 – 0.60	0.10
0.61 – 0.70	0.07
0.71 – 0.80	0.05
0.81 – 0.90	0.03
0.91 – 1.00+	0.02

6.1 I-485 OUTER LOOP RAMP AT US 74

Table 6.1 summarizes the LOS, control delay, and 95th percentile queue lengths at the signalized intersection of I-485 Outer Loop Ramp at US 74.

Table 6.1 - US 74 at I-485 Outer Loop Ramp/Fieldridge Road													
Condition	Measure	EB			WB		NB			SB	Intersection	V/C
		EBL	EBTR	EBR	WBL	WBTR	NBL	NBT	NBR	SBLTR		
AM Peak Hour												
2018 Existing	LOS (Delay)	C (25.6)			C (29.7)		C (20.9)			D (50.6)	C (26.3)	0.94
	Synchro 95th Q	5'	624'	-	#338'	36'	113'	14'	0'	53'		
	SimTraffic Max Q	72'	1928'	-	284'	152'	233'	34'	189'	95'		
2019 Background	LOS (Delay)	C (31.7)			C (30.5)		C (27.9)			E (55.8)	C (31.3)	0.93
	Synchro 95th Q	6'	695'	-	#360'	5'	#132'	14'	0'	55'		
	SimTraffic Max Q	108'	2045'	-	349'	94'	225'	34'	154'	82'		
2019 Build-out	LOS (Delay)	D (42.2)			C (31.0)		B (18.5)			E (55.8)	D (35.8)	0.99
	Synchro 95th Q	6'	#824'	-	#392'	m2'	#132'	14'	0'	55'		
	SimTraffic Max Q	136'	2046'	-	442'	250'	208'	30'	325'	80'		
2019 Build-out Improved	LOS (Delay)	B (19.8)			B (18.6)		B (12.8)			D (48.5)	B (18.7)	0.72
	Synchro 95th Q	8'	438'	0'	364'	4'	110'	13'	0'	51'		
	SimTraffic Max Q	115'	2022'	538'	364'	70'	174'	31'	303'	88'		
PM Peak Hour												
2018 Existing	LOS (Delay)	B (18.5)			A (9.0)		D (40.3)			D (44.3)	B (14.1)	0.74
	Synchro 95th Q	11'	219'	-	m181'	m167'	161'	4'	0'	22'		
	SimTraffic Max Q	66'	307'	-	341'	260'	198'	27'	0'	59'		
2019 Background	LOS (Delay)	C (28.9)			A (5.6)		D (42.1)			D (43.1)	B (14.3)	0.74
	Synchro 95th Q	41'	242'	-	m305'	m33'	167'	6'	0'	26'		
	SimTraffic Max Q	88'	306'	-	335'	213'	214'	15'	18'	52'		
2019 Build-out	LOS (Delay)	D (37.6)			A (3.6)		C (32.0)			D (44.2)	B (14.5)	0.80
	Synchro 95th Q	41'	278'	-	m236'	m13'	#171'	6'	0'	26'		
	SimTraffic Max Q	133'	321'	-	353'	256'	176'	15'	0'	49'		
2019 Build-out Improved	LOS (Delay)	C (24.6)			A (6.3)		C (32.0)			D (44.2)	B (13.1)	0.78
	Synchro 95th Q	41'	188'	0'	m403'	37'	#171'	6'	0'	26'		
	SimTraffic Max Q	93'	192'	206'	377'	182'	199'	20'	17'	49'		
Existing Storage		50'			225'		275'		225'			

Exceeds existing storage

Exceeds mitigation threshold

m Volume for 95th percentile queue is metered by upstream signal

95th percentile volume exceeds capacity; queue may be longer

As shown in **Table 6.1**, the overall intersection currently operates at LOS C during the AM peak hour and LOS B during the PM peak hour and is expected to continue to operate at LOS C during the AM peak hour and LOS B during the PM peak hour under background conditions.

Upon build-out of the site, the overall intersection is expected to drop to LOS D during the AM peak hour while continuing to operate at LOS B during the PM peak hour. It should also be noted that the V/C ratio is expected to increase by 0.06 during both the AM and PM peak hours. The

construction of a channelized right-turn lane with 450 feet of storage is recommended to mitigate the degradation in LOS and the increase in V/C expected with the addition of site traffic. With the addition of a channelized right-turn lane, the overall intersection is expected to operate at LOS B during both the AM and PM peak hours and the V/C ratio is expected to decrease by 0.11 during the AM peak hour and increase by 0.04 during the PM peak hour when compared to background conditions. This is within the NCDOT and CDOT allowable threshold.

Further evaluation of the SimTraffic model shows that the maximum eastbound right-turn queue is expected to be 538 feet. However, given that Perimeter W Drive is located approximately 450 feet west of the I-485 Outer Loop Ramp and that the existing culvert over Paw Creek, just east of Perimeter W Drive may constrain further extension of the turn lane, 450 feet of storage is recommended for the eastbound right-turn lane.

It should be noted that based on the Synchro 95th percentile queue length, the westbound left-turn queue is expected to exceed the existing westbound left-turn storage during the AM and PM peak hours under existing, background, and build-out conditions. Under build-out improved conditions, this analysis assumes the additional westbound through lane recommended to be constructed along US 74 between Realigned Tuckaseegee Road and I-485 Outer Loop Ramp will drop as a westbound left-turn lane at the I-485 Outer Loop Ramp. This improvement is discussed in more detail in **Section 6.2**.

6.2 I-485 INNER LOOP RAMP/TUCKASEEGEE ROAD AT US 74

Table 6.2 summarizes the LOS, control delay, and 95th percentile queue lengths at the signalized intersection of I-485 Inner Loop Ramp/Tuckaseegee Road at US 74.

Table 6.2 - US 74 at I-485 Inner Loop Ramp/Tuckaseegee Road

Condition	Measure	EB			WB			NB			SB			Intersection	V/C
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
AM Peak Hour															
2018 Existing	LOS (Delay)	B (16.1)			B (12.9)			B (15.7)			E (70.4)			B (18.6)	0.77
	Synchro 95th Q	m28'	463'	m14'	25'	81'	4'	108'	50'	0'	24'	129'	-		
	SimTraffic Max Q	181'	347'	92'	60'	145'	37'	375'	1040'	400'	149'	212'	-		
2019 Background	LOS (Delay)	A (8.4)			B (13.7)			B (18.4)			E (67.2)			B (15.2)	0.77
	Synchro 95th Q	m76'	m258'	m10'	55'	61'	4'	115'	58'	0'	22'	128'	-		
	SimTraffic Max Q	114'	236'	91'	89'	188'	38'	399'	1245'	400'	175'	215'	-		
2019 Build-out	LOS (Delay)	B (10.8)			C (27.1)			C (21.4)			E (58.1)			B (17.4)	0.88
	Synchro 95th Q	m151'	m108'	m13'	#125'	238'	m7'	#134'	140'	0'	15'	102'	-		
	SimTraffic Max Q	255'	1312'	319'	166'	211'	22'	739'	2886'	400'	66'	117'	-		
2019 Build-out Improved	LOS (Delay)	B (10.4)			C (33.8)			D (43.9)			D (44.5)			C (24.4)	0.82
	Synchro 95th Q	m189'	108'	-	108'	166'	-	105'	124'	#401'	15'	68'	39'		
	SimTraffic Max Q	238'	614'	-	184'	192'	-	178'	193'	448'	31'	99'	80'		
PM Peak Hour															
2018 Existing	LOS (Delay)	C (25.8)			D (36.6)			D (38.7)			E (69.3)			D (35.6)	0.99
	Synchro 95th Q	87'	224'	67'	72'	#822'	5'	240'	71'	0'	10'	127'	-		
	SimTraffic Max Q	111'	189'	320'	300'	737'	336'	278'	104'	0'	112'	146'	-		
2019 Background	LOS (Delay)	B (15.7)			C (28.7)			D (52.9)			E (74.3)			C (32.7)	0.94
	Synchro 95th Q	#120'	51'	46'	282'	#852'	m5'	#312'	80'	0'	13'	#175'	-		
	SimTraffic Max Q	128'	95'	157'	300'	805'	400'	407'	100'	24'	133'	154'	-		
2019 Build-out	LOS (Delay)	C (22.5)			E (70.2)			F (94.8)			F (93.2)			E (67.0)	1.19
	Synchro 95th Q	m75'	120'	94'	m353'	#1039'	m1'	#346'	54'	0'	15'	#405'	-		
	SimTraffic Max Q	107'	187'	232'	300'	1030'	276'	695'	126'	61'	729'	475'	-		
2019 Build-out Improved	LOS (Delay)	C (24.6)			C (21.9)			D (41.2)			E (57.6)			C (28.4)	0.84
	Synchro 95th Q	88'	81'	-	m343'	461'	-	#266'	51'	54'	15'	#210'	123'		
	SimTraffic Max Q	100'	279'	-	441'	412'	-	314'	98'	223'	30'	234'	186'		
Existing Storage		125'			175'		175'	200'		100'					

Exceeds existing storage
Exceeds mitigation threshold
m Volume for 95th percentile queue is metered by upstream signal
95th percentile volume exceeds capacity; queue may be longer

As shown in **Table 6.2**, the overall intersection currently operates at LOS B during the AM peak hour and LOS D during the PM peak hour. Under 2019 background conditions the overall intersection is expected to operate at LOS B during the AM peak hour and LOS C during the PM peak hour. Note that the overall intersection delay is expected to decrease between existing and background conditions during both peak hours due to the optimization of splits and offsets between existing and background conditions, as well as the use of a 0.9 PHF in the future years.

As previously noted, the Project Quattro development proposes to realign Tuckaseegee Road to intersect US 74 approximately 1,500 feet east of the existing US 74 at Tuckaseegee Road intersection. The existing northern leg of the US 74 at Tuckaseegee Road intersection, referred to as Industrial Drive for the purposes of this study, will be realigned to tee into the Realigned Tuckaseegee Road approximately 1,100 feet north of US 74. This proposed roadway network can be seen in **Figure 3.2**.

This analysis assumes the existing traffic turning onto/off of Tuckaseegee Road at US 74 will redistribute to the Realigned Tuckaseegee Road at US 74 intersection. With this redistribution and the addition of site traffic, the overall intersection is expected to continue to operate at LOS B during the AM peak hour and drop to LOS E during the PM peak hour. It should also be noted that the V/C ratio is expected to increase by 0.11 during the AM peak hour and by 0.25 during the PM peak hour. The following improvements are recommended to mitigate the degradation in LOS and the increase in V/C expected with the addition of site traffic:

- Construction of an additional northbound right-turn lane to create dual northbound rightt-turn lanes with a minimum of 425 feet of storage each.
- Construction of a southbound right-turn lane with a minimum of 150 feet of storage.
- Restriping the southbound left-turn lane to provide a minimum of 150 feet of storage.
- Restriping the eastbound right-turn lane to a shared through-right lane.
    - This improvement will require the construction of a receiving lane that will drop as an eastbound left-turn lane at Realigned Tuckaseegee Road.
- Restriping the westbound right-turn lane to a shared through-right lane.
    - This improvement will require the construction of an additional receiving lane.
    - The existing lane will be extended back to the proposed US 74 at Realigned Tuckaseegee Road intersection.

With these improvements in place, the overall intersection is expected to operate at LOS C during the both peak hours and the V/C ratio is expected to increase by 0.05 during the AM peak hour and decrease by 0.10 during the PM peak hour when compared to background conditions; within the NCDOT and CDOT allowable thresholds. The eastbound, westbound, and northbound approaches are still expected to experience an increase in delay greater than 25% and/or a drop in LOS between background and build-out improved conditions; however, each of these approaches is expected to operate at an acceptable LOS during the AM and PM peak hours. The southbound approach is expected to continue to operate at LOS E with the addition of site traffic and the proposed improvements.

Note that this analysis assumes that upon construction of the additional northbound right-turn lane, the traffic signal will be modified to include protected-overlap phasing for the northbound right-turn movement. The northbound right-turn currently operates under yield control and is not included in the traffic signal phasing. Observation of the Build-out SimTraffic simulation under these phasing conditions with a single northbound right-turn lane indicated that the northbound right-turn queue is expected to exceed the existing storage and extend to I-485. With the proposed improvements, observation of the SimTraffic simulation indicates that the northbound right-turn queue is expected to significantly decrease. However, with these improvements, the northbound approach and overall intersection delay is expected to increase during the AM peak hour, as the northbound right-turning vehicles are incorporated into the intersection. Given that incorporation of the northbound right-turn movement into the traffic signal is expected to significantly reduce the expected queue shown in the SimTraffic model and that the overall intersection and each approach are expected to operate at an acceptable LOS, the construction of dual northbound right-turn lanes with protected-overlap phasing is recommended.

Based on Synchro 95th percentile queues, the following turn lane storage extensions are recommended to accommodate the expected queues under build-out improved conditions:

- Extension of the eastbound left-turn lane to provide a minimum of 200 feet of storage.
- Extension of the westbound left-turn lane to provide a minimum of 350 feet of storage.

- Extension of the northbound left-turn lane to provide a minimum of 275 feet of storage.

6.3 US 74 AT BARRY DRIVE

Table 6.3 summarizes the LOS, control delay, and 95th percentile queue lengths at the signalized intersection of US 74 at Barry Drive.

Table 6.3 - US 74 at Barry Drive/Duke Power Driveway												
Condition	Measure	EB		WB		NB		SB		Intersection	V/C
		EBL	EBTR	WBL	WBTR	NBLT	NBR	SBLT	SBR		
AM Peak Hour											
2018 Existing	LOS (Delay)	A (2.1)		A (4.2)		B (19.2)		E (55.3)		A (4.9)	0.62
	Synchro 95th Q	m1'	66'	27'	21'	67'	0'	#111'	0'		
	SimTraffic Max Q	54'	188'	83'	78'	114'	110'	92'	0'		
2019 Background	LOS (Delay)	A (3.0)		B (12.6)		B (17.0)		D (46.9)		A (6.7)	0.61
	Synchro 95th Q	m28'	83'	81'	126'	64'	0'	95'	0'		
	SimTraffic Max Q	71'	257'	107'	145'	265'	67'	105'	0'		
2019 Build-out	LOS (Delay)	A (4.0)		B (11.5)		B (17.0)		D (46.9)		A (7.3)	0.62
	Synchro 95th Q	m23'	175'	54'	67'	64'	0'	95'	0'		
	SimTraffic Max Q	68'	199'	94'	150'	109'	74'	87'	0'		
2019 Build-out Improved	LOS (Delay)	A (7.3)		B (10.6)		B (17.0)		D (46.9)		A (9.5)	0.62
	Synchro 95th Q	m24'	244'	81'	92'	64'	0'	95'	0'		
	SimTraffic Max Q	74'	268'	118'	136'	138'	113'	99'	0'		
PM Peak Hour											
2018 Existing	LOS (Delay)	B (14.7)		A (5.2)		C (34.6)		C (23.7)		B (10.2)	0.62
	Synchro 95th Q	7'	191'	m21'	146'	123'	0'	73'	0'		
	SimTraffic Max Q	31'	192'	64'	131'	129'	18'	80'	0'		
2019 Background	LOS (Delay)	B (10.3)		A (3.7)		C (34.1)		C (23.0)		A (7.1)	0.51
	Synchro 95th Q	m14'	191'	m88'	162'	100'	0'	47'	0'		
	SimTraffic Max Q	31'	140'	119'	182'	163'	9'	63'	0'		
2019 Build-out	LOS (Delay)	A (8.9)		A (2.9)		C (34.1)		C (23.0)		A (6.3)	0.51
	Synchro 95th Q	m15'	189'	m83'	140'	100'	0'	47'	0'		
	SimTraffic Max Q	37'	103'	127'	141'	124'	18'	64'	0'		
2019 Build-out Improved	LOS (Delay)	A (8.0)		A (2.9)		C (34.1)		C (23.0)		A (6.1)	0.51
	Synchro 95th Q	m15'	180'	m83'	140'	100'	0'	47'	0'		
	SimTraffic Max Q	28'	125'	104'	444'	143'	0'	70'	0'		
Existing Storage		125'		230'			150'		250'		

m Volume for 95th percentile queue is metered by upstream signal
95th percentile volume exceeds capacity; queue may be longer

As shown in **Table 6.3**, the overall intersection currently operates at LOS A during the AM peak hour and LOS B during the PM peak hour. Under background conditions, the overall intersection is expected to operate at LOS A during both the AM and PM peak hours. It should be noted that the overall intersection delay is expected to decrease between each analysis scenario during the PM peak hour due to the optimization of splits and offsets, as well as the use of a 0.9 PHF in the future years.

Upon build-out of the site the overall intersection is expected to continue to operate at LOS A during both peak hours. Since the proposed development is expected to have minimal impact on operations at this intersection, no improvements are recommended for capacity purposes.

It should be noted that improvements shown in the build-out improved row of **Table 6.3**, are due to improvements at adjacent intersections and optimization of intersection splits and offsets throughout the network.

6.4 US 74 AT JOSH BIRMINGHAM PARKWAY

Table 6.4 summarizes the LOS, control delay, and 95th percentile queue lengths at the signalized intersection of US 74 at Josh Birmingham Parkway.

Table 6.4 - US 74 at Josh Birmingham Parkway

Condition	Measure	EB			WB			NB			SB			Intersection	V/C
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
AM Peak Hour															
2018 Existing	LOS (Delay)	D (39.3)			C (29.6)			C (34.0)			F (101.8)			E (58.6)	1.25
	Synchro 95th Q	57'	#661'	0'	82'	69'	0'	76'	81'	0'	#580'	157'	0'		
	SimTraffic Max Q	112'	378'	201'	110'	120'	0'	126'	126'	0'	450'	741'	0'		
2019 Background	LOS (Delay)	D (46.5)			C (32.8)			C (32.9)			E (60.1)			D (48.1)	1.1
	Synchro 95th Q	53'	#672'	0'	86'	70'	0'	80'	85'	0'	#552'	161'	0'		
	SimTraffic Max Q	150'	435'	200'	102'	116'	0'	107'	113'	0'	449'	671'	0'		
2019 Build-out	LOS (Delay)	D (50.4)			C (32.7)			C (32.9)			E (58.6)			D (49.3)	1.1
	Synchro 95th Q	67'	#689'	0'	86'	88'	0'	80'	85'	0'	#550'	164'	0'		
	SimTraffic Max Q	158'	416'	177'	112'	145'	0'	130'	118'	0'	439'	525'	0'		
2019 Build-out Improved	LOS (Delay)	D (52.3)			C (32.7)			C (32.9)			E (58.7)			D (50.1)	1.1
	Synchro 95th Q	66'	#687'	0'	86'	88'	0'	80'	85'	0'	#550'	166'	0'		
	SimTraffic Max Q	303'	618'	349'	98'	129'	0'	126'	131	0'	447'	539'	0'		
PM Peak Hour															
2018 Existing	LOS (Delay)	B (12.0)			B (18.5)			D (42.5)			E (57.9)			C (28.4)	0.8
	Synchro 95th Q	50'	55'	0'	85'	313'	0'	145'	173'	0'	117'	176'	0'		
	SimTraffic Max Q	93'	92'	67'	120'	256'	264'	190'	209'	0'	169'	189'	0'		
2019 Background	LOS (Delay)	A (9.0)			B (18.5)			D (38.8)			C (24.8)			C (22.5)	0.63
	Synchro 95th Q	52'	27'	1'	92'	345'	0'	145'	170'	0'	95'	152'	0'		
	SimTraffic Max Q	101'	77'	23'	103'	282'	264'	174'	205'	0'	150'	152'	0'		
2019 Build-out	LOS (Delay)	B (11.2)			C (21.6)			D (39.3)			C (25.3)			C (24.0)	0.64
	Synchro 95th Q	111'	27'	0'	93'	363'	0'	147'	174'	0'	96'	154'	0'		
	SimTraffic Max Q	141'	90'	0'	122'	322'	275'	182'	195'	0'	135'	163'	0'		
2019 Build-out Improved	LOS (Delay)	B (11.0)			C (21.6)			D (39.3)			C (25.3)			C (24.0)	0.64
	Synchro 95th Q	111'	27'	0'	93'	363'	0'	147'	174'	0'	96'	154'	0'		
	SimTraffic Max Q	180'	76'	0'	103'	291'	273'	187'	194'	0'	127'	180'	0'		
Existing Storage		350'		750'	150'		200'	100'		250'	250'				

Exceeds existing storage
Exceeds mitigation threshold
95th percentile volume exceeds capacity; queue may be longer

As shown in **Table 6.4**, the overall intersection currently operates at LOS E during the AM peak hour and LOS C during the PM peak hour. Under background conditions, the overall intersection is expected to operate at LOS D during the AM peak hour and continue to operate at LOS C during the PM peak hour. It should be noted that the overall intersection delay is expected to decrease between existing and background conditions during both peak hours due to the optimization of splits and offsets, as well as the use of a 0.9 PHF in the future years.

Upon build-out of the site the overall intersection is expected to continue to operate at LOS D during the AM peak hour and LOS C during the PM peak hour. Note that the eastbound and westbound approaches are expected to drop a level of service during the PM peak hour between background and build-out conditions; however, given that the delay is not expected to increase by more than 25% and the overall intersection and each approach is expected to operate at an acceptable LOS during the PM peak hour, no improvements are recommended for capacity purposes.

It should be noted that based on the Synchro 95th percentile queue length, the northbound and southbound left-turn queues are expected to exceed the existing storage under existing, background, and build-out conditions. Given that the queue lengths are expected to exceed the storage under background conditions, and that the site is not expected to add traffic to these movements, the northbound and southbound left-turn lanes are not recommended to be extended as a part of the Project Quattro development.

It should also be noted that improvements shown in the build-out improved row of **Table 6.4**, are due to the optimization of intersection splits and offsets throughout the network.

6.5 JOSH BIRMINGHAM PARKWAY/LITTLE ROCK ROAD AT SCOTT FUTRELL DRIVE

Table 6.5 summarizes the LOS, control delay, and 95th percentile queue lengths at the signalized intersection of Josh Birmingham Parkway/Little Rock Road at Scott Futrell Drive.

Table 6.5 - Josh Birmingham Parkway/Little Road Road at Scott Futrell Drive

Condition	Measure	EB		WB			NB		SB			Intersection	V/C
		EBL	EBTR	WBL	WBT	WBR	NBL	NBTR	SBL	SBT	SBR		
AM Peak Hour													
2018 Existing	LOS (Delay)	D (45.1)		C (23.3)			B (18.1)		B (11.0)			B (16.1)	0.58
	Synchro 95th Q	169'	98'	80'	38'	0'	6'	65'	124'	432'	0'		
	SimTraffic Max Q	236'	143'	130'	91'	0'	50'	159'	250'	1427'	0'		
2019 Background	LOS (Delay)	D (51.0)		C (27.0)			C (22.9)		B (13.3)			B (19.2)	0.63
	Synchro 95th Q	194'	99'	92'	38'	0'	m12'	161'	251'	390'	0'		
	SimTraffic Max Q	249'	133'	138'	88'	20'	51'	157'	250'	1259'	0'		
2019 Build-out	LOS (Delay)	D (51.7)		C (27.4)			C (21.6)		B (13.9)			B (19.4)	0.67
	Synchro 95th Q	199'	99'	94'	38'	0'	m11'	169'	255'	402'	0'		
	SimTraffic Max Q	227'	138'	150'	72'	0'	33'	168'	250'	1260'	0'		
2019 Build-out Improved	LOS (Delay)	D (51.7)		C (27.4)			C (21.6)		B (13.8)			B (19.3)	0.67
	Synchro 95th Q	199'	99'	94'	38'	0'	m11'	169'	253'	399'	0'		
	SimTraffic Max Q	277'	137'	130'	89'	30'	32'	167	250'	1322'	0'		
PM Peak Hour													
2018 Existing	LOS (Delay)	D (48.1)		B (14.5)			B (13.4)		B (11.5)			B (16.4)	0.62
	Synchro 95th Q	152'	77'	89'	37'	0'	8'	193'	131'	56'	0'		
	SimTraffic Max Q	214'	134'	140'	95'	30'	38'	266'	210'	178'	0'		
2019 Background	LOS (Delay)	D (48.7)		C (23.0)			B (15.9)		B (19.5)			C (20.5)	0.76
	Synchro 95th Q	199'	76'	115'	41'	0'	m24'	209'	221'	75'	0'		
	SimTraffic Max Q	210'	131'	136'	108'	63'	55'	256'	247'	461'	0'		
2019 Build-out	LOS (Delay)	D (48.7)		C (23.0)			B (15.7)		B (19.9)			C (20.3)	0.77
	Synchro 95th Q	199'	76'	115'	41'	0'	m23'	50'	#222'	83'	0'		
	SimTraffic Max Q	222'	129'	133'	82'	22'	57'	282'	242'	290'	0'		
2019 Build-out Improved	LOS (Delay)	D (48.7)		C (23.0)			B (15.7)		B (19.9)			C (20.3)	0.77
	Synchro 95th Q	199'	76'	115'	41'	0'	m23'	250'	#222'	83'	0'		
	SimTraffic Max Q	232'	126'	156'	92'	42'	62'	395'	247'	327'	0'		
Existing Storage				350'		125'	300'		150'		150'		

Exceeds existing storage
m Volume for 95th percentile queue is metered by upstream signal
95th percentile volume exceeds capacity; queue may be longer

As shown in **Table 6.5**, the overall intersection currently operates at LOS B during both peak hours. Under background conditions, the overall intersection is expected to continue to operate at LOS B during the AM peak hour and drop to LOS C during the PM peak hour.

Upon build-out of the site the overall intersection is expected to continue to operate at LOS B during the AM peak hour and LOS C during the PM peak hour. Since the proposed development is expected to have minimal impact on operations at this intersection, no improvements are recommended for capacity purposes.

It should be noted that based on the Synchro 95th percentile queue length, the southbound left-turn queues are expected to exceed the existing storage under both background, and build-out conditions. Given that the queue lengths are expected to exceed the storage under background conditions, and that the site is not expected to add traffic to the southbound left-turn movement, this turn lane is not recommended to be extended as a part of the Project Quattro development.

It should also be noted that improvements shown in the build-out improved row of **Table 6.5**, are due to the optimization of intersection splits and offsets throughout the network.

6.6 I-85 AT LITTLE ROCK ROAD

Table 6.6 summarizes the LOS, control delay, and 95th percentile queue lengths at the signalized intersection of I-85 at Little Rock Road.

Table 6.6 - Little Rock Road at I-85 Ramps														
Condition	Measure	EB		WB		NB			SB			Intersection	V/C
		EBL	EBR	WBL	WBR	NBLT	NBT	NBR	SBL	SBT	SBR		
AM Peak Hour													
2018 Existing	LOS (Delay)	A (8.2)		D (37.7)		C (21.6)			C (27.0)			C (21.7)	0.73
	Synchro 95th Q	91'	0'	279'	0'	98'	73'	0'	122'	184'	0'		
	SimTraffic Max Q	1792'	300'	328'	0'	120'	67'	53'	132'	212'	31'		
2019 Background	LOS (Delay)	A (8.2)		D (37.5)		B (16.2)			C (20.4)			B (19.0)	0.73
	Synchro 95th Q	92'	0'	283'	0'	99'	73'	2'	88'	142'	0'		
	SimTraffic Max Q	1764'	300'	294'	0'	107'	83'	215'	139'	182'	0'		
2019 Build-out	LOS (Delay)	A (7.8)		C (34.6)		B (15.0)			B (19.8)			B (18.3)	0.75
	Synchro 95th Q	88'	0'	298'	0'	99'	77'	12'	84'	140'	0'		
	SimTraffic Max Q	1775'	300'	357'	0'	106'	96'	193'	146'	214'	0'		
2019 Build-out Improved	LOS (Delay)	A (7.8)		C (34.6)		B (15.0)			C (20.7)			B (18.5)	0.75
	Synchro 95th Q	88'	0'	298'	0'	99'	77'	12'	98'	177'	0'		
	SimTraffic Max Q	1886'	300'	335'	0'	114'	93'	200'	151'	218'	6'		
PM Peak Hour													
2018 Existing	LOS (Delay)	B (19.2)		C (28.1)		C (20.7)			C (21.7)			C (22.1)	0.75
	Synchro 95th Q	91'	0'	158'	0'	208'	37'	21'	92'	73'	0'		
	SimTraffic Max Q	119'	0'	200'	241'	296'	76'	182'	128'	91'	111'		
2019 Background	LOS (Delay)	C (20.1)		C (27.2)		A (5.2)			C (23.8)			B (14.7)	0.60
	Synchro 95th Q	94'	0'	164'	0'	57'	14'	327'	112'	108'	0'		
	SimTraffic Max Q	113'	0'	191'	116'	175'	48'	76'	112'	99'	40'		
2019 Build-out	LOS (Delay)	B (19.6)		C (27.0)		A (5.6)			C (23.5)			B (14.6)	0.62
	Synchro 95th Q	93'	0'	171'	0'	53'	13'	427'	112'	108'	0'		
	SimTraffic Max Q	110'	0'	233'	96'	206'	268'	180'	113'	101'	50'		
2019 Build-out Improved	LOS (Delay)	B (19.6)		C (27.0)		A (5.6)			C (23.5)			B (14.6)	0.62
	Synchro 95th Q	93'	0'	171'	0'	53'	13'	342'	112'	108'	0'		
	SimTraffic Max Q	123'	0'	216'	115'	156'	34'	98'	110'	93'	37'		
Existing Storage			225'		357'	450'			325'				

As shown in **Table 6.6**, the overall intersection currently operates at LOS C during both peak hours. Under background conditions, the overall intersection is expected to operate at LOS B during peak hours. It should be noted that the overall intersection delay is expected to decrease between in future year analyses during both peak hours due to the optimization of splits and offsets, as well as the use of a 0.9 PHF in the future years.

Upon build-out of the site the overall intersection is expected to continue to operate at LOS B during both peak hours. Since the proposed development is expected to have minimal impact on operations at this intersection, no improvements are recommended for capacity purposes.

It should be noted that based on observation of the SimTraffic simulation, the eastbound right-turn queue is expected to exceed the existing storage and queue back onto the ramp during the AM peak hour under existing, background, and build-out conditions. Due to the method in which

the interchange is modeled in Synchro, these queues can be seen under the eastbound left-turn in Table 6.6. Given that the queue lengths are expected to exceed the storage under existing and background conditions, and that the site is not expected to add traffic to these movements, the eastbound right-turn lane is not recommended to be extended as a part of the Project Quattro development.

It should also be noted that improvements shown in the build-out improved row of **Table 6.6**, are due to the optimization of intersection splits and offsets throughout the network.

6.7 LITTLE ROCK ROAD AT TUCKASEEGEE ROAD

Table 6.7 summarizes the LOS, control delay, and 95th percentile queue lengths at the signalized intersection of Little Rock Road at Tuckaseegee Road.

Table 6.7 - Little Rock Road at Tuckaseegee Road

Condition	Measure	EB		WB		NB			SB		Intersection	V/C
		EBL	EBTR	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR		
AM Peak Hour												
2018 Existing	LOS (Delay)	D (53.1)		E (63.4)		C (24.7)			C (22.2)		C (34.4)	0.75
	Synchro 95th Q	71'	160'	117'	187'	87'	233'	72'	99'	199'		
	SimTraffic Max Q	92'	171'	172'	202'	113'	218'	118'	208'	240'		
2019 Background	LOS (Delay)	D (53.8)		E (64.2)		C (24.2)			B (19.8)		C (33.4)	0.77
	Synchro 95th Q	73'	161'	120'	191'	88'	183'	62'	95'	202'		
	SimTraffic Max Q	98'	137'	200'	228'	159'	274'	127'	179'	206'		
2019 Build-out	LOS (Delay)	D (53.8)		E (62.7)		C (28.2)			C (23.2)		D (35.6)	0.75
	Synchro 95th Q	76'	164'	119'	204'	146'	184'	63'	97'	232'		
	SimTraffic Max Q	108'	154'	168'	217'	178'	251'	113'	158'	243'		
2019 Build-out Improved	LOS (Delay)	D (53.1)		E (61.6)		C (27.8)			C (22.7)		C (34.9)	0.74
	Synchro 95th Q	75'	163'	118'	203'	145'	193'	66'	96'	232'		
	SimTraffic Max Q	95'	143'	147'	214'	215'	308'	121'	171'	236'		
PM Peak Hour												
2018 Existing	LOS (Delay)	E (55.5)		E (67.8)		C (24.4)			C (26.8)		D (39.2)	0.95
	Synchro 95th Q	141'	187'	113'	223'	126'	404'	136'	99'	145'		
	SimTraffic Max Q	175'	198'	201'	292'	224'	471'	153'	111'	190'		
2019 Background	LOS (Delay)	E (72.1)		E (60.4)		B (14.8)			C (23.0)		C (34.5)	0.93
	Synchro 95th Q	#171'	209'	136'	233'	148'	272'	62'	108'	131'		
	SimTraffic Max Q	229'	200'	196'	246'	224'	384'	162'	122'	163'		
2019 Build-out	LOS (Delay)	E (71.4)		E (55.3)		B (16.6)			C (23.8)		C (34.9)	0.95
	Synchro 95th Q	#188'	214'	133'	231'	167'	278'	68'	108'	137'		
	SimTraffic Max Q	280'	193'	142'	263'	225'	387'	146'	114'	167'		
2019 Build-out Improved	LOS (Delay)	E (71.4)		E (55.3)		B (16.6)			C (23.8)		C (34.9)	0.95
	Synchro 95th Q	#188'	214'	133'	231'	167'	278'	68'	108'	137'		
	SimTraffic Max Q	254'	216'	190'	260'	224'	401'	162'	102'	158'		
Existing Storage		350'		150'		125'			200'			

Exceeds existing storage
Exceeds mitigation threshold
\# 95th percentile volume exceeds capacity; queue may be longer

As shown in **Table 6.7**, the overall intersection currently operates at LOS C during the AM peak hour and LOS D during the PM peak hour. Under background conditions, the overall intersection is expected to operate at LOS C during both peak hours. It should be noted that the overall intersection delay is expected to decrease between existing and background conditions during the PM peak hour due to the optimization of intersection splits and offsets, as well as the use of a 0.9 PHF in the future years..

Upon build-out of the site the overall intersection is expected to drop to LOS D during the AM peak hour and continue to operate at LOS C during the PM peak hour. With the optimization of intersection splits and offsets throughout the network under build-out improved conditions, the overall intersection is expected to return to LOS C during the AM peak hour. Note that the southbound approach is expected to drop a level of service during the AM peak hour between background and build-out conditions; however, given that the delay is not expected to increase by more than 25% and the overall intersection and the southbound approach is expected to operate at an acceptable LOS, no improvements are recommended for capacity purposes.

It should be noted that based on the Synchro 95th percentile queue length, the northbound left-turn queue is expected to exceed the existing storage under existing, background, and build-out conditions during the PM peak hour. Given that the queue lengths are expected to exceed the storage under existing and background conditions, the northbound left-turn lane is not recommended to be extended as a part of the Project Quattro development.

6.8 US 74 AT REALIGNED TUCKASEEGEE ROAD

Table 6.8 summarizes the LOS, control delay, and 95th percentile queue lengths at the proposed signalized intersection of US 74 at Realigned Tuckaseegee Road.

Table 6.8 - US 74 at Realigned Tuckaseegee Road

Condition	Measure	EB		WB		SB		Intersection	V/C
		EBL	EBT	WBT	WBR	SBL	SBR		
AM Peak Hour									
2019 Build-out	LOS (Delay)	B (11.1)		B (14.4)		C (28.7)		B (13.1)	0.82
	Synchro 95th Q	m257'	67'	200'	125'	43'	70'		
	SimTraffic Max Q	374'	476'	140'	126'	113'	168'		
2019 Build-out Improved	LOS (Delay)	A (8.8)		C (20.8)		C (28.5)		B (12.4)	0.81
	Synchro 95th Q	215'	64'	168'	112'	43'	69'		
	SimTraffic Max Q	548'	190'	217'	184'	125'	173'		
PM Peak Hour									
2019 Build-out	LOS (Delay)	B (17.9)		B (16.0)		D (52.2)		C (21.8)	0.88
	Synchro 95th Q	#271'	34'	266'	8'	#127'	169'		
	SimTraffic Max Q	333'	175'	1563'	250'	377'	262'		
2019 Build-out Improved	LOS (Delay)	B (17.6)		B (16.0)		D (52.2)		C (21.8)	0.88
	Synchro 95th Q	m#253'	46'	266'	8'	#127'	169'		
	SimTraffic Max Q	367'	70'	594'	250'	419'	274'		

m Volume for 95th percentile queue is metered by upstream signal
\# 95th percentile volume exceeds capacity, queue may be longer

As previously noted, the Project Quattro development proposes to realign Tuckaseegee Road to intersect US 74 approximately 1,500 feet east of the existing US 74 at Tuckaseegee Road intersection. Based on coordination with NCDOT and CDOT, the proposed intersection was analyzed as signalized. It should be noted that this intersection meets preliminary AM and PM peak hour signal warrants. These preliminary warrants can be found in the **Appendix**. Supplemental full traffic signal warrants will be performed and submitted under separate cover.

As shown in **Table 6.8**, the proposed signalized intersection is expected to operate at LOS B during the AM peak hour and LOS C during the PM peak hour, assuming the following laneage:

- Dual southbound left-turn lanes with a minimum of 150 feet of storage.
- Dual southbound right-turn lanes with a minimum of 175 feet of storage.
- Eastbound left-turn lane that extends to the existing US 74 at Tuckaseegee Road intersection.
- Westbound right-turn lane with a minimum of 150 feet of storage.

It should also be noted that improvements shown in the build-out improved row of **Table 6.8**, are due to the optimization of intersection splits and offsets throughout the network.

6.9 REALIGNED TUCKASEEGEE ROAD AT INDUSTRIAL DRIVE

Table 6.9 summarizes the LOS, control delay, and 95th percentile queue lengths at the proposed roundabout intersection of Realigned Tuckaseegee Road at Industrial Drive.

Table 6.9 - Realigned Tuckaseegee Road at Industrial Drive

Condition	Measure	EB	NB	SB	Intersection	V/C
		EBLR	NBLT	SBTR		
AM Peak Hour						
2019 Build-out	LOS (Delay)	A (3.8)	A (8.5)	A (5.6)	A (7.3)	0.45
	Synchro 95th Q	1'	69'	34'		
	SimTraffic Max Q	24’	172’	62’		
2019 Build-out Improved	LOS (Delay)	A (3.8)	A (8.5)	A (5.6)	A (7.3)	0.45
	Synchro 95th Q	1'	69'	34'		
	SimTraffic Max Q	15’	201’	53’		
PM Peak Hour						
2019 Build-out	LOS (Delay)	A (5.3)	A (5.1)	A (8.9)	A (7.6)	0.48
	Synchro 95th Q	2'	28'	76'		
	SimTraffic Max Q	24’	62’	109’		
2019 Build-out Improved	LOS (Delay)	A (5.3)	A (5.1)	A (8.9)	A (7.6)	0.48
	Synchro 95th Q	2'	28'	76'		
	SimTraffic Max Q	25’	48’	86’		

Based on coordination with NCDOT and CDOT, the proposed intersection of Realigned Tuckaseegee Road at Industrial Drive will be a single lane roundabout. As shown in **Table 6.9**, the single lane roundabout intersection of Realigned Tuckaseegee Road at Industrial Drive is expected to operate with short delays and minimal queuing during the AM and PM peak hour. Therefore, no improvements are recommended for capacity purposes at this intersection.

6.10 INDUSTRIAL DRIVE AT ACCESS A

Table 6.10 summarizes the LOS, control delay, and 95th percentile queue lengths at the proposed unsignalized intersection of Industrial Drive at Access A.

Table 6.10 - Industrial Drive at Access A					
Condition	Measure	EB	WB	SB	V/C
		EBLT	WBTR	SBLR	
AM Peak Hour					
2019 Build-out	LOS (Delay)	A (4.8)	A (0.0)	A (8.6)	0.1
	Synchro 95th Q	9'	0'	3'	
	SimTraffic Max Q	37’	0'	64’	
2019 Build-out Improved	LOS (Delay)	A (4.5)	A (0.0)	A (8.6)	0.1
	Synchro 95th Q	9'	0'	3'	
	SimTraffic Max Q	35’	0'	65’	
PM Peak Hour					
2019 Build-out	LOS (Delay)	A (4.6)	A (0.0)	A (9.6)	0.17
	Synchro 95th Q	3'	0'	16'	
	SimTraffic Max Q	50’	12’	82’	
2019 Build-out Improved	LOS (Delay)	A (4.5)	A (0.0)	A (9.6)	0.17
	Synchro 95th Q	3'	0'	16'	
	SimTraffic Max Q	33’	0'	78’	

As shown in **Table 6.10**, the stop controlled southbound approach of Access A is expected to operate with short delays and minimal queuing during the AM and PM peak hours. Therefore, no improvements are recommended for capacity purposes at this intersection.

6.11 INDUSTRIAL DRIVE AT ACCESS B

Table 6.11 summarizes the LOS, control delay, and 95th percentile queue lengths at the proposed unsignalized intersection of Industrial Drive at Access B.

Table 6.11 - Industrial Drive at Access B					
Condition	Measure	EB	WB	SB	V/C
		EBLT	WBTR	SBLR	
AM Peak Hour					
2019 Build-out	LOS (Delay)	A (7.3)	A (0.0)	A (8.5)	0.07
	Synchro 95th Q	6'	0'	2'	
	SimTraffic Max Q	40’	3’	43’	
2019 Build-out Improved	LOS (Delay)	A (7.2)	A (0.0)	A (8.4)	0.07
	Synchro 95th Q	6'	0'	2'	
	SimTraffic Max Q	42’	3’	33’	
PM Peak Hour					
2019 Build-out	LOS (Delay)	A (6.6)	A (0.0)	A (8.8)	0.1
	Synchro 95th Q	2'	0'	9'	
	SimTraffic Max Q	14'	0'	65’	
2019 Build-out Improved	LOS (Delay)	A (6.6)	A (0.0)	A (8.7)	0.1
	Synchro 95th Q	2'	0'	8'	
	SimTraffic Max Q	22’	0'	48’	

As shown in **Table 6.11**, the stop controlled southbound approach of Access B is expected to operate with short delays and minimal queuing during the AM and PM peak hours. Therefore, no improvements are recommended for capacity purposes at this intersection.

6.12 REALIGNED TUCKASEEGEE ROAD AT ACCESS C

Table 6.12 summarizes the LOS, control delay, and 95th percentile queue lengths at the proposed unsignalized intersection of Realigned Tuckaseegee Road at Access C.

Table 6.12 - Realigned Tuckaseegee Road at Access C					
Condition	Measure	EB	WB	SB	V/C
		EBLT	WBTR	SBLR	
AM Peak Hour					
2019 Build-out	LOS (Delay)	A (2.1)	A (0.0)	A (9.9)	0.17
	Synchro 95th Q	5'	0'	3'	
	SimTraffic Max Q	79'	0'	62'	
2019 Build-out Improved	LOS (Delay)	A (1.6)	A (0.0)	A (9.9)	0.2
	Synchro 95th Q	5'	0'	3'	
	SimTraffic Max Q	49'	0'	49'	
PM Peak Hour					
2019 Build-out	LOS (Delay)	A (1.2)	A (0.0)	B (11.6)	0.24
	Synchro 95th Q	2'	0'	15'	
	SimTraffic Max Q	93'	0'	85'	
2019 Build-out Improved	LOS (Delay)	A (1.0)	A (0.0)	B (11.6)	0.24
	Synchro 95th Q	2'	0'	15'	
	SimTraffic Max Q	37'	0'	76'	

As shown in **Table 6.12**, the stop controlled southbound approach of Access C is expected to operate with short delays and minimal queuing during the AM and PM peak hours. Therefore, no improvements are recommended for capacity purposes at this intersection.

6.13 REALIGNED TUCKASEEGEE ROAD AT ACCESS D

Table 6.13 summarizes the LOS, control delay, and 95th percentile queue lengths at the proposed unsignalized intersection of Realigned Tuckaseegee Road at Access D.

Table 6.13 - Realigned Tuckaseegee Road at Access D					
Condition	Measure	EB	WB	SB	V/C
		EBLT	WBTR	SBLR	
AM Peak Hour					
2019 Build-out	LOS (Delay)	A (1.6)	A (0.0)	B (10.8)	0.18
	Synchro 95th Q	3'	0'	5'	
	SimTraffic Max Q	81'	0'	57'	
2019 Build-out Improved	LOS (Delay)	A (1.3)	A (0.0)	B (10.6)	0.17
	Synchro 95th Q	3'	0'	5'	
	SimTraffic Max Q	36'	0'	55'	
PM Peak Hour					
2019 Build-out	LOS (Delay)	A (0.8)	A (0.0)	B (11.6)	0.23
	Synchro 95th Q	1'	0'	23'	
	SimTraffic Max Q	37'	0'	88'	
2019 Build-out Improved	LOS (Delay)	A (0.7)	A (0.0)	B (11.5)	0.23
	Synchro 95th Q	1'	0'	22'	
	SimTraffic Max Q	28'	0'	110'	

As shown in **Table 6.13**, the stop controlled southbound approach of Access D is expected to operate with short delays and minimal queuing during the AM and PM peak hours. Therefore, no improvements are recommended for capacity purposes at this intersection.

6.14 REALIGNED TUCKASEEGEE ROAD AT ACCESS E

Table 6.14 summarizes the LOS, control delay, and 95th percentile queue lengths at the proposed unsignalized intersection of Realigned Tuckaseegee Road at Access E. This access will serve as the truck access for the proposed development.

Table 6.14 - Realigned Tuckaseegee Road at Access E

Condition	Measure	EB	WB	SB	V/C
		EBLT	WBTR	SBLR	
AM Peak Hour					
2019 Build-out	LOS (Delay)	A (5.3)	A (0.0)	B (11.6)	0.16
	Synchro 95th Q	13'	0'	5'	
	SimTraffic Max Q	136'	0'	105'	
2019 Build-out Improved	LOS (Delay)	A (4.4)	A (0.0)	B (11.6)	0.16
	Synchro 95th Q	13'	0'	5'	
	SimTraffic Max Q	145'	0'	97'	
PM Peak Hour					
2019 Build-out	LOS (Delay)	A (2.2)	A (0.0)	B (11.5)	0.2
	Synchro 95th Q	4'	0'	18'	
	SimTraffic Max Q	97'	0'	175'	
2019 Build-out Improved	LOS (Delay)	A (1.9)	A (0.0)	B (11.5)	0.2
	Synchro 95th Q	4'	0'	18'	
	SimTraffic Max Q	89'	0'	197'	

As shown in **Table 6.14**, the stop controlled southbound approach of Access E is expected to operate with short delays and minimal queuing during the AM and PM peak hours. Therefore, no improvements are recommended for capacity purposes at this intersection.

7.0 Auxiliary Turn Lane Warrant Analysis

Warrants for additional turn-lane improvements for unsignalized intersections beyond those necessary for capacity were determined based on a review of the figure titled 'Warrant for Left and Right-Turn Lanes' found on page 80 in the *NCDOT Policy On Street And Driveway Access to North Carolina Highways*. The results of the warrants for left and right-turn lanes under 2019 background and build-out conditions are summarized by intersection below and included in the **Appendix**.

Industrial Drive at Access B

- Westbound right-turn lane along Industrial with a minimum storage length of 50'

Realigned Tuckaseegee Road at Access C

- Eastbound left-turn lane along Tuckaseegee Road with a minimum storage length of 75'

Realigned Tuckaseegee Road at Access D

- Eastbound left-turn lane along Tuckaseegee Road with a minimum storage length of 50'
- Westbound right-turn lane along Tuckaseegee Road with a minimum storage length of 50'

Realigned Tuckaseegee Road at Access E

- Eastbound left-turn lane along Tuckaseegee Road with a minimum storage length of 100'

For the purposes of this study, it was assumed that a minimum storage of 150' will be required for recommended auxiliary turn lanes. It should be noted that additional storage may be required by NCDOT and CDOT.

8.0 Recommendations

Recommendations for improvements to intersection lane geometry and signal operations for intersections in the study area for this TIA are summarized in the following listing.

Based on the capacity analyses contained herein, the following improvements are recommended to mitigate impact of the proposed development under the build-out conditions:

I-485 Outer Loop Ramp at US 74

- Construction of a channelized right-turn lane with a minimum of 450 feet of storage.
- Extension of the westbound left-turn lane to the adjacent signal to create a drop lane.

I-485 Inner Loop Ramp at US 74

- Construction of an additional northbound right-turn lane to create dual northbound right-turn lanes with a minimum of 425 feet of storage each.
- Construction of a southbound right-turn lane with a minimum of 150 feet of storage.
- Restriping the southbound left-turn lane to provide a minimum of 150 feet of storage.
- Restriping the eastbound right-turn lane to a shared through-right lane.
    - This improvement will require the construction of a receiving lane that will drop as an eastbound left-turn lane at Realigned Tuckaseegee Road.
- Restriping the westbound right-turn lane to a shared through-right lane.
    - This improvement will require the construction of an additional receiving lane.
    - The existing lane will be extended back to the proposed US 74 at Realigned Tuckaseegee Road intersection.

US 74 at Realigned Tuckaseegee Road

- Installation of a traffic signal.
- Construction of dual southbound left-turn lanes with a minimum of 150 feet of storage.
- Construction of dual southbound right-turn lanes with a minimum of 175 feet of storage.
- Construction of an eastbound left-turn lane that extends to the existing US 74 at Tuckaseegee Road intersection.
- Construction of a westbound right-turn lane with a minimum of 150 feet of storage.

Realigned Tuckaseegee Roadn at Industrial Drive

- Construction of a single lane roundabout.

Industrial Drive at Access A

- Construction of an eastbound left-turn lane with a minimum of 150 feet of storage.

Industrial Drive at Access B

- Construction of an eastbound left-turn lane with a minimum of 150 feet of storage.
- Construction of a westbound right-turn lane with a minimum of 150 feet of storage.

Realigned Tuckaseegee Road at Access C

- Construction of an eastbound left-turn lane with a minimum of 150 feet of storage.

Realigned Tuckaseegee Road at Access D

- Construction of an eastbound left-turn lane with a minimum of 150 feet of storage.
- Construction of a westbound right-turn lane with a minimum of 150 feet of storage.

Realigned Tuckaseegee Road at Access E

- Construction of an eastbound left-turn lane with a minimum of 150 feet of storage.

The recommended improvements at study intersections are shown on **Figure 8.1.** The recommendations shown on this figure are subject to approval by the NCDOT and CDOT. All additions and attachments to the City roadway system shall be properly permitted, designed and constructed in conformance to standards maintained by the City.

LEGEND

- Roadway Laneage
- S=XX' Storage Length
- Traffic Signal
- Roundabout
- Build-out Recommendations

NOT TO SCALE

SITE

Realigned Tuckaseegee Rd

Industrial Drive

Barry Dr

Duke Driveway

Little Rock Rd

Scott Futrell Dr

Josh Birmingham Pkwy

INTERSTATE 85

INTERSTATE 485

74

A: S = 150' | S = 150'

B: S = 150'

C: S = 150'

D: S = 150' | S = 150'

E: S = 150' | S = 150'

S = 50'
S = 450'
S = 450'; Channelized
DROP
S = 275' | S = 225'
S = 150' | S = 150'
S = 200'
S = 350'
S = 275'
S = 425' | S = 425'
S = 175' | S = 175' | S = 150'
DROP
S = 150'
S = 250'
S = 125'
S = 230'
S = 150'
S = 200'
S = 150'
S = 350'
S = 125'
S = 325' | S = 325'
S = 375'
S = 400'
S = 325'
S = 200'
S = 450' | S = 450'
S = 150' | S = 150'
S = 125'
S = 350'
S = 300'
S = 250' | S = 250'
S = 200'
S = 475'
S = 150'
S = 350' | S = 350'
S = 750'
S = 100'
S = 250'

Kimley»Horn	**Project Quattro** **Traffic Impact Analysis**	**Recommended Laneage**	**Figure 8.1**

APPENDIX

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ATTACHMENT 3

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AIR QUALITY AND CLIMATE TECHNICAL REPORT

For the Proposed Quattro Development Environmental Assessment at the Charlotte Douglas International Airport Mecklenburg County, North Carolina

Prepared for:

CLT
CHARLOTTE DOUGLAS SM
INTERNATIONAL AIRPORT

Prepared by:

Landrum & Brown, Incorporated
11279 Cornell Park Road
Cincinnati, Ohio 45242

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I. INTRODUCTION

The Proposed Quattro Development at the Charlotte Douglas International Airport (CLT or Airport) includes the release and disposal of approximately 100 acres of residentially zoned land from the Airport to a private developer. The private developer is proposing to construct an 855,000 square foot warehouse and distribution facility on the site. Additionally, the private developer is proposing to realign Tuckaseegee Road to improve the level of service with improved traffic patterns and intersections. Associated actions with this development include the demolition of five structures located on the project site. Construction is scheduled to begin July 2018 and would be completed in approximately 13 months.

This Proposed Project, as described in the Environmental Assessment (EA), includes the following elements:

- Clearing, grading, and tree removal of approximately 82 acres;
- Construction of a warehouse and distribution facility approximately 855,000 square feet;
- Construction of parking lots with approximately 2,500 passenger vehicle spaces, 260 delivery truck spaces, and 105 loading docks;
- Realignment of Tuckaseegee Road with new intersections, a roundabout and entrances to the facility;
- Construction of stormwater detention basins;
- Demolition of five structures; and
- Construction of a guard house.

II. REGULATORY SETTING

NATIONAL AMBIENT AIR QUALITY STANDARDS

The Clean Air Act, including the 1990 Amendments, (CAA) provides for the establishment of standards and programs to evaluate, achieve, and maintain acceptable air quality in the U.S. Under the CAA, the U.S. Environmental Protection Agency (USEPA) established a set of standards, or criteria, for six pollutants determined to be potentially harmful to human health and welfare.[1] A discussion on the criteria pollutants is provided in **Attachment 1**. The USEPA considers the presence of the following six criteria pollutants to be indicators of air quality:

- Ozone (O_3);
- Carbon monoxide (CO);
- Nitrogen dioxide (NO_2);
- Particulate matter (PM_{10} and $PM_{2.5}$);
- Sulfur dioxide (SO_2); and,
- Lead (Pb).

The National Ambient Air Quality Standards for the criteria pollutants, known as the NAAQS, are summarized in **Table 1**. For each of the criteria pollutants, the USEPA established primary standards intended to protect public health, and secondary standards for the protection of other aspects of public welfare, such as preventing materials damage, preventing crop and vegetation damage, and assuring good visibility. Areas of the country where air pollution levels consistently exceed these standards may be designated nonattainment by the USEPA.

A nonattainment area is a homogeneous geographical area[2] (usually referred to as an air quality control region) that is in violation of one or more NAAQS and has been designated as nonattainment by the USEPA as provided for under the CAA. Some regulatory provisions, for instance the CAA conformity regulations, apply only to areas designated as nonattainment or maintenance.

A maintenance area describes the air quality designation of an area previously designated nonattainment by the USEPA and subsequently redesignated attainment after emissions are reduced. Such an area remains designated as maintenance for a period up to 20 years at which time the state can apply for redesignation to attainment, provided that the NAAQS were sufficiently maintained throughout the maintenance period.

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1 USEPA, Code of Federal Regulations, Title 40, Part 50 (40 CFR Part 50) *National Primary and Secondary Ambient Air Quality Standards (*NAAQS), July 2011.

2 A homogeneous geographical area, with regard to air quality, is an area, not necessarily bounded by state lines, where the air quality characteristics have been shown to be similar over the whole area. This may include several counties, encompassing more than one state, or may be a very small area within a single county.

Table 1
NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead		primary and secondary	Rolling 3 month average	0.15 µg/m3 (1)	Not to be exceeded
Nitrogen Dioxide		primary	1-hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	Annual	53 ppb(2)	Annual Mean
Ozone		primary and secondary	8-hour	0.075 ppm (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particulate Matter	PM2.5	primary	Annual	12 µg/m^3	annual mean, averaged over 3 years
		secondary	Annual	15 µg/m^3	annual mean, averaged over 3 years
		primary and secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM10	primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide		primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Notes: ppm is parts per million; ppb is parts per billion, and µg/m^3 is micrograms per cubic meter.
Sources: https://www.epa.gov/criteria-air-pollutants/naaqs-table.

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m^3 as a calendar quarter average) also remain in effect.

(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2)any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a State Implementation Plan (SIP) call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is a USEPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

MECKLENBERG COUNTY AIR QUALITY STATUS

The Airport is located within Mecklenburg County, North Carolina, which is included in the Metropolitan Charlotte Interstate Air Quality Region.[3] In the past, Mecklenburg County was designated as nonattainment for CO and nonattainment for 8-hour ozone; however, on September 18, 1995, the USEPA determined the area had attained the CO standard and on August 27, 2015, the USEPA determined the area had attained the ozone standard and the region was redesignated to attainment for these pollutants. The area now operates under a maintenance plan for 8-hour ozone and for CO.

The construction and operation of the Proposed Project would cause emissions of nitrogen oxides (NO_x) and volatile organic compounds (VOC), the precursors to ozone development; and wuld also emit CO. As such, the Proposed Project at CLT would be subject to the General Conformity provisions under the Clean Air Act (CAA, including the 1990 Amendments), which are required to ensure compliance with the North Carolina State Implementation Plan (SIP).[4] In addition to the CAA, the impacts of the Proposed Project would require assessment under the provisions of the National Environmental Policy Act (NEPA) to determine compliance to the NAAQS.

GENERAL CONFORMITY RULE APPLICABILITY

The General Conformity Rule under the CAA establishes minimum values, referred to as the *de minimis* thresholds, for the criteria and precursor pollutants[5] for the purpose of:

- Identifying Federal actions with project-related emissions that are clearly negligible (*de minimis*);
- Avoiding unreasonable administrative burdens on the sponsoring agency, and;
- Focusing efforts on key actions that would have potential for significant air quality impacts.

The *de minimis* rates vary depending on the severity of the nonattainment area and further depend on whether the general Federal action is located inside an ozone transport region.[6] An evaluation relative to the General Conformity Rule (the Rule),

[3] USEPA, Title 40 Code of Federal Regulations Part 81.75.

[4] The SIP is the State air agency document that sets forth the strategy intended to reduce air emissions in an area of poor air quality and maintain the quality of the air relevant to the Federal air quality standards.

[5] Precursor pollutants are pollutants that are involved in the chemical reactions that form the resultant pollutant. Ozone precursor pollutants are NO_x and VOC.

[6] The ozone transport region is a single transport region for ozone (within the meaning of Section 176A(a) of the CAA), comprised of the States of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and the Consolidated Metropolitan Statistical Area that includes the District of Columbia, as given at Section 184 of the CAA.

published under 40 CFR Part 93,[7] is required only for general Federal actions that would cause emissions of the criteria or precursor pollutants, and are:

- Federally-funded or Federally-approved;
- Not a highway or transit project[8];
- Not identified as an exempt project[9] under the CAA;
- Not a project identified on the approving Federal agency's Presumed to Conform list;[10] and,
- Located within a nonattainment or maintenance area.

The Proposed Project at CLT is included in a nonattainment area for ozone and maintenance area for CO. Moreover, the Proposed Project meets the remaining criteria for requiring an evaluation under the General Conformity Rule. When the action requires evaluation under the General Conformity regulations, the net total direct and indirect emissions due to the Federal action may not equal or exceed the relevant *de minimis* thresholds unless:

- An analytical demonstration is provided that shows the emissions would not exceed the NAAQS; or
- Net emissions are accounted for in the SIP planning emissions budget; or
- Net emissions are otherwise accounted for by applying a solution prescribed under 40 CFR Part 93.158.

The Federal *de minimis* thresholds established under the CAA are given in **Table 2**. Conformity to the *de minimis* thresholds is relevant only with regard to those pollutants and the precursor pollutants for which the area is nonattainment or maintenance. Notably, there are no *de minimis* thresholds to which a Federal agency would compare ozone emissions. This is because ozone is not directly emitted from a source. Rather, ozone is formed through photochemical reactions involving emissions of the precursor pollutants NO_x and VOC in the presence of abundant sunlight and heat. Therefore, emissions of ozone on a project level are evaluated based on the rate of emissions of NO_x and VOC.

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7 USEPA, 40 CFR Part 93, Subpart B, *Determining Conformity of General Federal Actions to State or Federal Implementation Plans*, July 1, 2006.

8 Highway and transit projects are defined under Title 23 U.S. Code and the Federal Transit Act.

9 The Proposed Project is not listed as an action exempt from a conformity determination pursuant to 40 CFR Part 93.153(c). An exempt project is one that the USEPA has determined would clearly have no impact on air quality at the facility, and any net increase in emissions would be so small as to be considered negligible.

10 The provisions of the CAA allow a Federal agency to submit a list of actions demonstrated to have low emissions that would have no potential to cause an exceedence of the NAAQS and are presumed to conform to the CAA conformity regulations. This list would be referred to as the "Presumed to Conform" list. The Federal Aviation Administration Presumed to Conform list was published in the Federal Register on February 12, 2007 (72 FR 6641-6656) and includes airport projects that would not require evaluation under the General Conformity regulations.

Table 2
***DE MINIMIS* THRESHOLDS**

CRITERIA AND PRECURSOR POLLUTANTS	TYPE AND SEVERITY OF NONATTAINMENT AREA	TONS PER YEAR THRESHOLD
Ozone (VOC or NO_x)[1]	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region	100
Ozone (NO_x)[1]	Marginal and moderate nonattainment inside an ozone transport regions[2]	100
	Maintenance	100
Ozone (VOC)[1]	Marginal and moderate nonattainment inside an ozone transport region[2]	50
	Maintenance within an ozone transport region[2]	50
	Maintenance outside an ozone transport region[2]	100
Carbon monoxide (CO)	All nonattainment & maintenance	100
Sulfur dioxide (SO_2)	All nonattainment & maintenance	100
Nitrogen dioxide (NO_2)	All nonattainment & maintenance	100
Coarse particulate matter (PM_{10})	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
Fine particulate matter ($PM_{2.5}$) (VOC, NO_x, NH_3, and SO_x)[3]	All nonattainment and maintenance	100
Lead (Pb)	All nonattainment and maintenance	25

Notes: Federal thresholds that are shaded are applicable to this project.
Code of Federal Regulations (CFR), Title 40, *Protection of the Environment*.
USEPA defines *de minimis* as emissions that are so low as to be considered insignificant and negligible.
[2] An OTR is a single transport region for ozone, comprised of the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and the Consolidated Metropolitan Statistical Area that includes the District of Columbia.
Sources: USEPA, 40 CFR Part 93.153(b)(1) & (2).

If the General Conformity evaluation for this air quality assessment were to show that any of the applicable thresholds were equaled or exceeded due to the Proposed Project, further, more detailed analyses to demonstrate conformity would be required, which is referred to as a General Conformity Determination.[11] Conversely, if the General Conformity evaluation were to show that none of the relevant thresholds were equaled or exceeded, the Proposed Project at CLT would be presumed to conform to the applicable North Carolina SIP and no further analysis would be required under the CAA.

TRANSPORTATION CONFORMITY RULE APPLICABILITY

Although airport improvement projects are usually considered under the General Conformity regulations, there can be elements of a Federal action or its alternatives that may require an analysis to demonstrate Transportation Conformity, such as actions relating to transportation plans, programs, projects developed, funded, or

[11] 40 CFR Part 93.153.

approved under Title 23 United States Code (U.S.C.) or the Federal Transit Act (FTA),[12] or involve Federal highways. In such cases, the sponsoring Federal agency would be required to coordinate with the Federal Highway Administration (FHWA), the state Department of Transportation (DOT), and the local metropolitan planning organization (MPO) to assist in completing a Transportation Conformity evaluation.

As with General Conformity, Transportation Conformity regulations apply only to Federal actions located within a nonattainment or maintenance area. The Proposed Project under consideration at CLT would not be developed, funded, or approved by the FHWA or FTA. Therefore, the Transportation Conformity regulations would not apply.

STATE IMPLEMENTATION PLANS

The SIPs must include a strategy for air quality improvement in local areas for each criteria pollutant that exceeds the NAAQS. The SIP must also include a plan to maintain acceptable air quality in areas that did not meet the NAAQS in recent past. As previously stated, Mecklenburg County is considered maintenance for 8-hour ozone and for CO. Therefore, the state of North Carolina has prepared the applicable SIPs, including the Redesignation Demonstration and Maintenance Plan for the Charlotte-Gastonia-Salisbury, North Carolina 2008 8-hour Ozone Marginal Nonattainment Area submitted April 16, 2015 and USEPA approved August 27, 2015 and the Carbon Monoxide Limited Maintenance Plan submitted August 2, 2012 and approved by USEPA on June 20, 2013.

INDIRECT SOURCE REVIEW

Some states require an air quality review when a Federal action has the potential to cause an increase in net emissions from indirect sources. Indirect sources cause emissions that occur later in time or are farther removed from the Federal action. Depending on the state, indirect sources may be identified as motor vehicles on highways, parking at sports and entertainment facilities, or an increase in aircraft operations. The state requirement may be referred to as the indirect source review (ISR) and each state requiring an ISR sets thresholds for increased operation of the indirect sources. When a Federal action has the potential to exceed these thresholds, an air quality review is required to assess the character and impact of the additional emissions and determine whether a permit is required, which is separate from the analyses required under NEPA or the CAA.

The state of North Carolina did have indirect source review thresholds known as the Transportation Facility Permitting (TFP) regulations; however, these regulations were repealed by the North Carolina Division of Air Quality effective January 1, 2015.[13]

[12] USEPA, 40 CFR Part 93.153, *Applicability*, July 1, 2006.
[13] North Carolina Air Quality Rules Subchapter 2Q Air Quality Permit Procedures Section 0600 Transportation Facility Procedures.

AIR QUALITY PERMITS

In order to be in compliance with Federal or state requirements, a proposed project may be required to obtain certain air quality permits before construction or implementation can occur. The Mecklenburg County Air Quality (MCAQ), a division of the Mecklenburg County Land Use and Environmental Services Agency (LUESA), has identified common activities and industry types that are required to have air quality permits in Mecklenburg County. The Proposed Project does not include any abrasive blasting, use of printing presses, or the operation of any combustion sources such as a generator or boiler. Therefore, no air quality permits would be required for construction and operation of the Proposed Project.

AIR QUALITY MONITORING IN REGION

MCAQ maintains four air quality monitoring sites that measure concentrations of criteria air pollutants.[14]

- Garinger (ID 37-119-0041)
- Montclaire (ID 37-119-0042)
- Remount (ID 37-119-0045)
- University Meadows (ID 37-119-0046)

The Remount site, which is the closest to the Airport, is located approximately three miles due east of the Airport and provides nitrogen dioxide concentrations in the near-road environment.

Mecklenburg County overall ambient (outdoor) air quality continues to improve. At the end of 2016, Mecklenburg County monitoring data continues to demonstrate compliance with all federal, health-based air quality standards.

[14] Mecklenburg County Air Quality, 2017-2018 Annual Monitoring Network Plan – Mecklenburg County Air Quality, 2017.

III. EMISSIONS INVENTORY

The impacts to air quality due to the Proposed Project were determined in accordance with the guidelines provided in the Federal Aviation Administration (FAA), *Aviation Emissions and Air Quality Handbook Version 3*,[15] and FAA Order 5050.4B[16], *NEPA Implementing Instructions for Airport Actions*, which together with the guidelines of FAA Order 1050.1F,[17] *Environmental Impacts: Policies and Procedures*, constitute compliance with all the relevant provisions of NEPA and the CAA.

The construction and operation of the Proposed Project would result in short-term and long-term emissions. The estimated emissions due to the implementation of the Proposed Project is provided in **Table 3**.

CONSTRUCTION EMISSIONS

Short-term temporary air quality impacts would be caused by construction of the Proposed Project expected to begin July 2018 with a duration of 13 months. A construction emissions inventory was calculated for the Proposed Project using the Airport Construction Emissions Inventory Tool (ACEIT).

OPERATIONAL EMISSIONS

Long-term air quality emissions would be caused by the addition of approximately 1,823 passenger vehicles and 7,291 delivery trucks per day by the operation of the Proposed Project. Surface vehicle emissions were estimated using MOVES 2014a. It is important to note the Proposed Project would not be fully operational until August 2019. Therefore, operational emissions for 2019 only account for the surface vehicle emissions from August through December of 2019. The full-year operational emissions due to the implementation of the Proposed Project are accounted for in 2020.

[15] FAA, *Aviation Emissions and Air Quality Handbook Version 3,* July 2014.
[16] FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*, April 28, 2006.
[17] FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, July 16, 2015.

Table 3
EMISSIONS INVENTORY
Charlotte Douglas International Airport

EMISSIONS SOURCE	ANNUAL EMISSIONS SUMMARY (TONS PER YEAR)					
	CO	VOC	NO_X	SO_X	PM_{10}	$PM_{2.5}$
***DE MINIMIS* THRESHOLD**	***100***	***100***	***100***	***N/A***	***N/A***	***N/A***
2018						
Construction	1.8	0.3	1.7	0.0	0.2	0.1
2018 Total	***1.8***	***0.3***	***1.7***	***0.0***	***0.2***	***0.1***
2019						
Construction	27.1	12.9	11.2	0.1	2.6	0.6
Operation	9.0	1.3	6.6	0.0	0.4	0.3
2019 Total	***36.1***	***14.1***	***17.8***	***0.1***	***2.9***	***0.9***
2020						
Operational	21.6	3.1	15.9	0.0	0.9	0.8
2020 Subtotal	***21.6***	***3.1***	***15.9***	***0.0***	***0.9***	***0.8***
Exceed Threshold?	***NO***	***NO***	***NO***	***NO***	***NO***	***NO***

Source: Landrum & Brown analysis, 2018.

IV. SIGNIFICANCE DETERMINATION

The air quality assessment demonstrates that the Proposed Project would not cause an increase in air emissions above the applicable *de minimis* thresholds. Therefore, the Proposed Project conforms to the SIPs and the CAA and would not create any new violation of the NAAQS, delay the attainment of any NAAQS, nor increase the frequency or severity of any existing violations of the NAAQS. As a result, no adverse impact on local or regional air quality is expected by construction of the Proposed Project. No further analysis or reporting is required under the CAA or NEPA.

Construction of the Proposed Project would result in short term air quality impacts from exhaust emissions from construction equipment and from fugitive dust emissions from vehicle movement and soil excavation. As provided in **Table 3,** emissions due to construction equipment would not exceed applicable thresholds.

While the construction of the Proposed Project would be expected to contribute to fugitive dust in and around the construction site, the City of Charlotte would ensure that all possible measures would be taken to reduce fugitive dust emissions by adhering to guidelines included in FAA Advisor Circular, *Standards for Specifying Construction of Airports*.[18]

Methods of controlling dust and other airborne particles will be implemented to the maximum possible extent and may include, but not limited to, the following:

- Exposing the minimum area of erodible earth.
- Applying temporary mulch with or without seeding.
- Using water sprinkler trucks.
- Using covered haul trucks.
- Using dust palliatives or penetration asphalt on haul roads.
- Using plastic sheet coverings.

[18] FAA Advisory Circular, *Standards for Specifying Construction of Airports*, Item P-156, *Temporary Air and Water Pollution, Soil Erosion, and Siltation Control*, AC 150/5370-10G (July 21, 2014).

V. CLIMATE

AFFECTED ENVIRONMENT

Greenhouse gases (GHG) are gases that trap heat in the earth's atmosphere. Naturally occurring and man-made GHGs primarily include water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Sources that require fuel or power at an airport are the primary sources that would generate GHGs. Aircraft are probably the most often cited air pollutant source, but they produce the same types of emissions as ground access vehicles.

Research has shown there is a direct correlation between fuel combustion and GHG emissions. In terms of U.S. contributions, the General Accounting Office (GAO) reports that "domestic aviation contributes about three percent of total carbon dioxide emissions, according to [USEPA] data," compared with other industrial sources including the remainder of the transportation sector (20 percent) and power generation (41 percent).[19] The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly three percent of all anthropogenic GHG emissions globally.[20] Climate change due to GHG emissions is a global phenomenon, so the affected environment is the global climate.[21]

The scientific community is continuing efforts to better understand the impact of aviation emissions on the global atmosphere. The FAA is leading and participating in a number of initiatives intended to clarify the role that commercial aviation plays in GHG emissions and climate. The FAA, with support from the U.S. Global Change Research Program and its participating federal agencies (e.g., National Aeronautics and Space Administration (NASA), National Oceanic and Atmospheric Administration (NOAA), USEPA, and Department Of Energy (DOE)), has developed the Aviation Climate Change Research Initiative (ACCRI) in an effort to advance scientific understanding of regional and global climate impacts of aircraft emissions. FAA also funds the Partnership for Air Transportation Noise & Emissions Reduction (PARTNER) Center of Excellence research initiative to quantify the effects of aircraft exhaust and contrails on global and U.S. climate and atmospheric composition. Similar research topics are being examined at the ICAO.[22]

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19 *Aviation and Climate Change.* GAO Report to Congressional Committees, (2009).

20 Alan Melrose, "European ATM and Climate Adaptation: A Scoping Study," in *ICAO Environmental Report.* (2010).

21 As explained by the U.S. Environmental Protection Agency, "greenhouse gases, once emitted, become well mixed in the atmosphere, meaning U.S. emissions can affect not only the U.S. population and environment but other regions of the world as well; likewise, emissions in other countries can affect the United States." Climate Change Division, Office of Atmospheric Programs, U.S. Environmental Protection Agency, *Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act* 2-3 (2009).

22 Lourdes Q. Maurice and David S. Lee. *Chapter* 5: *Aviation Impacts on Climate.* Final Report of the International Civil Aviation Organization (lCAO) Committee on Aviation and Environmental Protection (CAEP) Workshop. October 29th November 2nd 2007, Montreal.

CLIMATE ENVIRONMENTAL CONSEQUENCES

Although there are no federal standards for aviation-related GHG emissions, it is well-established that GHG emissions can affect climate.[23] The Council on Environmental Quality (CEQ) has indicated that climate should be considered in NEPA analyses.

The following provides an estimate of GHG emissions. These estimates are provided for information only as no federal NEPA standard for the significance of GHG emissions from individual projects on the environment has been established. Under the No Action Alternative, there would be no increase in project specific GHG emissions. **Table 4** provides the GHG emissions inventory for the Proposed Project.

Table 4
GHG EMISSIONS INVENTORY
Charlotte Douglas International Airport

EMISSIONS SOURCE	ANNUAL EMISSIONS SUMMARY (METRIC TONS PER YEAR)
	CO_2EQ
2018	
Construction	1,008.7
2018 Total	*1,008.7*
2019	
Construction	7,724.8
Operation	2,059.5
2019 Total	9,*784*.3

CO_2EQ: Carbon Dioxide equivalent
CO_2EQ represents the added CO_2, CH_4 and N_2O emissions.
Total emissions may not sum exactly due to rounding.
Source: Landrum & Brown analysis, 2018.

CLIMATE CUMULATIVE IMPACTS

The cumulative impact of this Proposed Project on the global climate when added to other past, present, and reasonably foreseeable future actions is not currently scientifically predictable. Aviation contributes approximately three percent of global CO_2 emissions; this contribution may grow to five percent by 2050. Actions are underway within the U.S. and by other nations to reduce aviation's contribution through such measures as new aircraft technologies to reduce emissions and improve fuel efficiency, renewable alternative fuels with lower carbon footprints, more efficient air traffic management, market-based measures and environmental regulations including an aircraft CO_2 standard. The U.S. has ambitious goals to achieve carbon-neutral growth for aviation by 2020 compared to a 2005 baseline, and to gain absolute reductions in GHG emissions by 2050. At present there are no calculations of the extent to which measures individually or cumulatively may affect aviation's CO_2 emissions. Moreover, there are large uncertainties regarding

[23] See *Massachusetts* v. *E.P.A.,* 549 U.S. 497, 508-10, 521-23 (2007).

aviation's impact on climate. The FAA, with support from the U.S. Global Change Research Program and its participating federal agencies (e. g., NASA, NOAA, USEPA, and DOE), has developed the ACCRI in an effort to advance scientific understanding of regional and global climate impacts of aircraft emissions, with quantified uncertainties for current and projected aviation scenarios under changing atmospheric conditions.[24]

[24] Nathan Brown, et. al. *The U.S. Strategy for Tackling Aviation Climate Impacts,* (2010). 27th International Congress of the Aeronautical Sciences.

ATTACHMENT 1
DESCRIPTION OF POLLUTANTS

Ozone (O_3) – Ozone is a pollutant, which is not directly emitted; rather, ozone is formed in the atmosphere through photochemical reactions between nitrogen oxides (NO_X), volatile organic compounds (VOC), sunlight, and heat. Ozone is the primary constituent of smog and, because it is formed in the atmosphere, may result in health problems many miles away from the pollutant sources.

People with lung disease, children, older adults, and people who are active can be affected when ozone levels are unhealthy. Numerous scientific studies have linked ground-level ozone exposure to a variety of problems, including:

- lung irritation that can cause inflammation much like a sunburn;
- wheezing, coughing, pain when taking a deep breath, and breathing difficulties during exercise or outdoor activities;
- permanent lung damage to those with repeated exposure to ozone pollution; and
- aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis.

Carbon Monoxide (CO) - Carbon monoxide is a colorless, odorless gas primarily associated with the incomplete combustion of fossil fuels in motor vehicles. CO combines with hemoglobin in the bloodstream and reduces the amount of oxygen that can be circulated through the body. High CO concentrations can lead to headaches, aggravation of cardiovascular disease, and impairment of central nervous system functions. CO concentrations can vary greatly over comparatively short distances. Relatively high concentrations are typically found near crowded intersections, along heavily used roadways carrying slow-moving traffic, and at or near ground level. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations within a relatively short distance of heavily traveled roadways. Overall CO emissions are decreasing as a result of the Federal Motor Vehicle Control Program, which has mandated increasingly lower emission levels for vehicles manufactured since 1973.

Volatile Organic Compound (VOC) – VOCs are gases that are emitted from solids or liquids, such as stored fuel, paint, asphalt, and cleaning fluids. VOCs include a variety of chemicals, some which can have short and long-term adverse health effects. VOCs are precursor pollutants that react with heat, sunlight and nitrogen oxides to form ozone. VOCs can also mix with other gases to form fine particulate matter ($PM_{2.5}$).

Nitrogen Dioxide (NO_2) - Nitrogen gas, normally relatively inert (unreactive), comprises about 80% of the air. At high temperatures (i.e., in the combustion process) and under certain other conditions it can combine with oxygen, forming several different gaseous compounds collectively called nitrogen oxides. Nitric

oxide (NO) and NO_2 are the two most important compounds. Nitric oxide is converted to NO_2 in the atmosphere. NO_2 is a red-brown pungent gas. Motor vehicle emissions are the main source of NO_x in urban areas.

NO_2 is toxic to various animals as well as to humans. Its toxicity relates to its ability to form nitric acid with water in the eye, lung, mucus membrane and skin. In animals, long-term exposure to nitrogen oxides increases susceptibility to respiratory infections lowering their resistance to such diseases as pneumonia and influenza. Laboratory studies show susceptible humans, such as asthmatics, exposed to high concentrations of NO_2 can suffer lung irritation and potentially, lung damage. Epidemiological studies have also shown associations between NO_2 concentrations and daily mortality from respiratory and cardiovascular causes and with hospital admissions for respiratory conditions.

While the NAAQS only addresses NO_2, NO and the total group of nitrogen oxides is of concern. NO and NO_2 are both precursors in the formation of ozone and secondary particulate matter. Therefore, NO_x emissions are typically examined when assessing potential air quality impacts.

Sulfur Dioxide (SO_2) - Sulfur oxides (SO_x) constitute a class of compounds of which SO_2 and sulfur trioxide (SO_3) are of greatest importance. SO_2 is commonly expressed as SO_X since it is a larger subset of SO_2. SO_2 is a colorless gas that is typically identified as having a strong odor and is formed when fuel-containing sulfur, like coal, oil, and/or jet fuel, is burned. SO_2 combines easily with water vapor, forming aerosols of sulfurous acid (H_2SO_3), a colorless, mildly corrosive liquid. This liquid may then combine with oxygen in the air, forming the even more irritating and corrosive sulfuric acid (H_2SO_4). Peak levels of SO_2 in the air can cause temporary breathing difficulty for people with asthma who are active outdoors. Longer-term exposures to high levels of SO_2 gas and particles cause respiratory illness and aggravate existing heart disease.

Particulate Matter (PM_{10} and $PM_{2.5}$) - Particulate matter includes both aerosols and solid particles of a wide range of size and composition. PM_{10} is considered coarse particles with a diameter of 10 micrometers or less, and $PM_{2.5}$, fine particles with a diameter of 2.5 micrometers or less. Emissions of $PM_{2.5}$ are a subset of emissions of PM_{10}. Particulate matter can be any particle of these sizes, including dust, dirt, and soot. Smaller particulates are of greater concern because they can penetrate deeper into the lungs than large particles.

$PM_{2.5}$ is directly emitted in combustion exhaust and formed from atmospheric reactions between various gaseous pollutants including NO_x, sulfur oxides, and volatile organic compounds. PM_{10} is generally emitted directly as a result of mechanical processes that crush or grind larger particles or the resuspension of dust, most typically through construction activities and vehicular movements. $PM_{2.5}$ can remain suspended in the atmosphere for days and weeks and can be transported over long distances. PM_{10} generally settles out of the atmosphere rapidly and is not readily transported over large distances.

The principal health effect of airborne particulate matter is on the respiratory system. Short-term exposures to high $PM_{2.5}$ levels are associated with premature mortality, increased hospital admissions, and emergency room visits. Long-term exposures to high $PM_{2.5}$ levels are associated with premature mortality and development of chronic respiratory disease.

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ATTACHMENT 4

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Water Resources
Environmental Quality

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
LINDA CULPEPPER
Interim Director

16 April 2018
DWR# 18-0393
Mecklenburg County

Mr. Joseph Scarborough
Seefried Industrial Properties
3333 Riverwood Parkway, Ste. 200
Atlanta, GA 30339

Subject: APPROVAL of 401 Water Quality Certification with Additional Conditions
Quattro Project and Tuckaseegee Rd. Relocation

Dear Mr. Scarborough:

You have our approval, in accordance with the General Certification and those conditions listed below, for the purpose proposed in your application received by the Division of Water Resources (the Division) on March 22, 2018 and subsequent information on April 1, 2018. After reviewing your application, we have determined that this project is covered by Water Quality General Certification Number 4139 which can be viewed on our web site at https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/401-wetlands-buffer-permits/401-401-isolated-wetlands-waters-program The General Certification allows you to use Nationwide Permit Number 39 once it is issued to you by the U.S. Army Corps of Engineers (COE). Please note that you should get any other federal, state or local permits before proceeding with your project, including those required by (but not limited to) Sediment and Erosion Control, Non-Discharge, and Water Supply Watershed regulations.

The above noted Certification will expire when the associated 404 permit expires unless otherwise specified in the General Certification. It is advised that all conditions of the Certification are reviewed prior to initiation of the project. In addition to the requirements of the Certification, you must also comply with the following conditions:

1. This approval is only valid for the purpose and design that you described in your application. If you change your project, you must notify us in writing, and you may be required to send us a new application for a new Certification. If total wetland fills for this project (now or in the future) exceed one acre, or if there are future cumulative impacts to streams (now or in the future), compensatory mitigation may be required. If the property is sold, the new owner must be given a copy of the Certification and approval letter; and is thereby responsible for complying with all conditions. 15A NCAC 02H .0506 and 15A NCAC 02H .0507

2. The Mooresville Regional Office shall be notified in writing once construction at the approved impact areas has commenced. 15A NCAC 02H .0502 (e)

3. **Prior to construction** of the "new" relocated Tuckaseegee Road, it shall be submitted to DWR for review of its stormwater outfalls and potential stormwater treatment. 15A NCAC 2H .1000

4. Approved Impacts:

Type of Impact	Amount Approved Temporary Impact	Amount Approved Permanent Impact
Stream	0 linear ft.	560 linear ft.
Open Water (pond)	0 acre	0.13 acre

5. Diversion Ditches and other storm water conveyances as related to the sediment and erosion control measures shall be matted and/or stabilized to reduce sediment loss and turbidity. This includes interior/exterior slopes of sediment basins. 15A NCAC 02H .0506 (b)(3) and (c)(3)

6. Bare/fill slopes in excess of 10 feet in height and within 30 feet of surface waters shall be matted. 15A NCAC 02H .0506 (b)(3) and (c)(3)

7. Please provide documentation showing that water quality from the development will not be impaired. A storm water management plan in lieu of such documentation is acceptable if approved by a delegated or state authority. 15A NCAC 2H .1000

8. **Stormwater discharge structures** at this site shall be constructed in a manner such that the potential receiving streams (of the discharge) will not be impacted due to sediment accumulations, scouring or erosion of the stream banks. 15A NCAC 02H .0506(b)(5)

9. Use of native vegetation and other soft stream bank stabilization techniques is recommended where practicable instead of riprap or other bank hardening methods. If riprap is necessary, it shall not be placed in the streambed, unless approved by DWR

10. Mitigation [15A NCAC 02H .0500(h)] must be provided for the proposed impacts as specified in the table below. The Division has received notification/acceptance from the Division of Mitigation Services (DMS) to meet this mitigation requirement. Until the DMS receives and clears your payment, and proof of payment has been provided to this Office, no impacts specified in this Authorization Certificate shall occur. For accounting purposes, this Certification authorizes payment to meet the following compensatory mitigation requirement:

	Compensatory Mitigation Required	River and Sub-basin Number
Stream	560 (feet)	Catawba (03050101) 0.5:1 ratio
Wetlands	0 (acres)	0

11. Mitigation Credit: Approval of the restoration plan and issuance of the 401 Water Quality Certification means that DWR has determined that the proposed activity will not remove or degrade significant existing uses of the surface water . The issuance does not represent an approval of credit yield for the project. (15A NCAC 2H .0506(a))

12. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers. 15A NCAC 02H .0506(b)(3)

13. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval. 15A NCAC 02H .0507 (c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)

14. The permittee shall report any violations of this Certification to the Division of Water Resources within 24 hours of discovery. 15A NCAC 02H .0507(c)

15. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials. 15A NCAC 02H.0506(b)(3)

16. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this Certification. 15A NCAC 02H.0506(b)(2)

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. 15A NCAC 02H .0506(b)(3)

18. "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 *Stormwater Best Management Practices*. [15A NCAC 02H .0507(d)(2) and 15A NCAC 02H .0506(b)(5)

19. Upon completion of the project, the applicant shall complete and return the enclosed "Certificate of Completion" form to the 401/Wetlands Unit of the Division. 15A NCAC 02H .0507(c)

This Certification can be contested as provided in Articles 3 and 4 of the General Statute 150B by filing a written petition for an administrative hearing to the Office of the Administrative Hearings (hereby known as OAH). A petition form may be obtained from the OAH at http://www.ncoah.com/or by calling the OAH Clerk's Office at (919) 431-3000.

Within sixty (60) calendar days of receipt of this notice, a petition must be filed with the OAH. A petition is considered filed when the original and one (1) copy along with any applicable OAH filing fee is received in the OAH during normal office hours (Monday through Friday, 8:00 am to 5:00 pm, excluding state holidays).

The petitions may be faxed to the OAH at (919) 431-3100, provided the original and one (1) copy of the petition along with any applicable OAH filing fee is received by the OAH within five (5) business days following the faxed transmission. Mailing address for the OAH:

If sending via US Postal Service:
Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714

If sending via delivery service (UPS, FedEx, etc.)
Office of Administrative Hearings
1711 New Hope Church Rd.
Raleigh, NC 27609-6285

One (1) copy of the petition must also be served on DEQ as follows:

Mr. William F. Lane, General Counsel
Department of Environmental Quality
1601 Mail Service Center
Raleigh, NC 27699-1601

This letter completes the review by the Division under Section 401 of the Clean Water Act. If you have any questions, please telephone Mr. Alan Johnson in the Mooresville Regional Office at 704-663-1699.

Sincerely,

W. Corey Basinger, Regional Supervisor
Water Quality Regional Operations Section
Mooresville Regional Office, DEQ

Attachments

cc: David Schaeffer, Army Corps of Engineers, Charlotte, email
Daniel Roberts, CWS, email
DWR 401 & Buffer Permitting Branch file
MRO, Land Quality

NORTH CAROLINA-DIVISON OF WATER RESOURCES
401 WATER QUALITY CERTIFICATION
SUMMARY OF PERMITTED IMPACTS AND MITIGATION REQUIREMENTS

In accordance with 15A NCAC 2 H .0500, Seefried Industrial Properties, Inc. has permission as outlined below to impact 560 linear feet of stream and 0.13 acre of open water in order to proceed with the distribution facility in Mecklenburg County, North Carolina. All activities associated with these authorized impacts must be conducted with the conditions listed in the attached certification. THIS CERTIFICATION IS NOT VALID WITHOUT THE ATTACHMENTS.

COMPENSATORY MITIGATION REQUIREMENT: Division of Mitigation Services (DMS)

LOCATION:	Tuckaseegee Road
COUNTY:	Mecklenburg
BASIN/SUBBASIN	Catawba (03050101)

Impacts:
560 linear feet of stream
0.13 acre open water

As required by 15A NCAC 2H .0506, and the conditions of this certification, you are required to compensate for the above impacts through the restoration, creation, enhancement or preservation of wetlands as outlined below prior to conducting any activities that impact or degrade the waters of the state.

Note: Linear foot requirements proposed to be mitigated through the DMS must be rounded to the nearest foot and acreage requirements must be rounded to one-quarter acre increments according to 15 2r .0503(b).

Mitigation:
560 linear feet total of stream required (0.5:1)

Mitigation:
560 linear feet of stream by the DMS required for the 401 Water Quality Certification. In correspondence dated March 14, 2018 the DMS indicated that up to 560 linear feet of stream mitigation would be conducted by DMS if available within the cataloging unit. More may be required if mitigation is required outside the unit.

One of the options you have available to satisfy the compensatory mitigation requirements is through the payment of a fee to the DMS per NCAC 2R .0503. If you choose this option, please sign this form and mail it to the Ecosystem Enhancement Fund at the address listed below. An invoice for the appropriate amount of payment will be sent to you upon receipt of this form. PLEASE NOTE, THE ABOVE IMPACTS ARE NOT AUTHORIZED UNTIL YOU RECEIVE NOTIFICATION THAT YOUR PAYMENT HAS BEEN PROCESSED BY THE EEP.

Signature _____ Date_____

ENVIRONMENTAL QUALITY
DIVISION OF MITIGATION SERVICES
1652 Mail Service Center
RALEIGH, N.C. 27669-1652

CERTIFICATE OF COMPLETION

NCDWR Project No.: _____ **County:** _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion
Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401 Wetland & Buffer Permitting Unit, North Carolina Division of Water Resources, 1617 Mail Service Center, Raleigh, NC, 27699-1617. This form may be returned to NCDWR by the applicant, the applicant's authorized agent, **or** the project engineer. It is not necessary to send certificates from all of these.

Applicant's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Agent's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date:_____

Engineer's Certification

_____ Partial _____ Final

I, _____, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature _____ Registration No. _____Date_____

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action Id. **SAW-2013-02255** County: **Mecklenburg** U.S.G.S. Quad: **NC-Charlotte West**

GENERAL PERMIT (REGIONAL AND NATIONWIDE) VERIFICATION

Permittee: **Seefried Industrial Properties, Incorporated**
Joseph Scarborough
Address: **3333 Riverwood Parkway, Suite 200**
Atlanta, GA 30339
Telephone Number: **864-612-8104**
E-mail: **joes@seefriedproperties.com**

Size (acres) **158**
Nearest Waterway **Paw Creek**
USGS HUC **03050101**
Nearest Town **Charlotte**
River Basin **Santee**
Coordinates Latitude: **35.2439**
Longitude: **-80.9643**

Location description: **The project area is located on the northeast corner of the intersection of I-485 and Wilkinson Boulevard. See project location map Figure 2 of 7 dated 3/8/2018.**

Description of projects area and activity: **This verification authorizes the placement of fill material in and the loss of 560 linear feet of intermittent stream and 0.13 acre of open water to facilitate the construction of an e-commerce distribution warehouse.**

Applicable Law(s): ☒ Section 404 (Clean Water Act, 33 USC 1344)
☐ Section 10 (Rivers and Harbors Act, 33 USC 403)

Authorization: **NWP 39. Commercial and Institutional Developments**

SEE ATTACHED NWP GENERAL, REGIONAL, AND/OR SPECIAL CONDITIONS

Your work is authorized by the above referenced permit provided it is accomplished in strict accordance with the enclosed Conditions, your application signed and dated 3/16/2018, and the enclosed plans Sheets EX-01-EX-04 dated 3/12/2018 (EX-04) and 3/14/2018. Any violation of the attached conditions or deviation from your submitted plans may subject the permittee to a stop work order, a restoration order, a Class I administrative penalty, and/or appropriate legal action.

This verification will remain valid until the expiration date identified below unless the nationwide authorization is modified, suspended or revoked. If, prior to the expiration date identified below, the nationwide permit authorization is reissued and/or modified, this verification will remain valid until the expiration date identified below, provided it complies with all requirements of the modified nationwide permit. If the nationwide permit authorization expires or is suspended, revoked, or is modified, such that the activity would no longer comply with the terms and conditions of the nationwide permit, activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon the nationwide permit, will remain authorized provided the activity is completed within twelve months of the date of the nationwide permit's expiration, modification or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend or revoke the authorization.

Activities subject to Section 404 (as indicated above) may also require an individual Section 401 Water Quality Certification. You should contact the NC Division of Water Resources (telephone 919-807-6300) to determine Section 401 requirements.

For activities occurring within the twenty coastal counties subject to regulation under the Coastal Area Management Act (CAMA), prior to beginning work you must contact the N.C. Division of Coastal Management **Morehead City, NC, at (252) 808-2808.**

This Department of the Army verification does not relieve the permittee of the responsibility to obtain any other required Federal, State or local approvals/permits.

If there are any questions regarding this verification, any of the conditions of the Permit, or the Corps of Engineers regulatory program, please contact **David L. Shaeffer at 704-510-1437 or david.l.shaeffer@usace.army.mil**.

Corps Regulatory Official: _____ Digitally signed by SHAEFFER.DAVID.LEIGH.1260750573 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=SHAEFFER.DAVID.LEIGH.1260750573 Date: 2018.05.08 14:30:49 -04'00' Date: **05/08/2018**
Expiration Date of Verification: **03/18/2022**

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0

Copy furnished:

Agent:	**Carolina Wetland Services, Incorporated**
	Daniel Roberts
Address:	**550 East Westinghouse Boulevard**
	Charlotte, NC 28273
Telephone Number:	**704-527-1177**
E-mail:	**daniel@cws-inc.net**

SPECIAL CONDITIONS

a. In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization.

Action ID Number: SAW-2013-02255 **County: Mecklenburg**

Permittee: Seefried Industrial Properties, Incorporated, Joseph Scarborough

Project Name: Project Quattro/CLT Land

Date Verification Issued: 05/08/2018

Project Manager: David L. Shaeffer

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

US ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT
Attn: David L. Shaeffer
Charlotte Regulatory Office
U.S Army Corps of Engineers
8430 University Executive Park Drive, Suite 615
Charlotte, North Carolina 28262
or
david.l.shaeffer@usace.army.mil

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers representative. Failure to comply with any terms or conditions of this authorization may result in the Corps suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and condition of the said permit, and required mitigation was completed in accordance with the permit conditions.

_____ _____

Signature of Permittee **Date**

Compensatory Mitigation Responsibility Transfer Form

Permittee: Seefried Industrial Properties, Incorporated, Joseph Scarborough **Action ID:** SAW-2013-02255
Project Name: Project Quattro/CLT Land **County:** Mecklenburg

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that to the U.S. Army Corps of Engineers (USACE) Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate mitigation Sponsors.

Instructions to Sponsor: The Sponsor must verify that the mitigation requirements (credits) shown below are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether or not they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated bank ledger to the Permittee, the USACE Project Manager, and the Wilmington District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements:

Permitted Impacts Requiring Mitigation* **8-digit HUC and Basin:** 03050101, Catawba River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
560						

*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: **8-digit HUC and Basin:** 03050101, Catawba River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
280						

Mitigation Site Debited: NCDMS
(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

Section to be completed by the Mitigation Sponsor

Statement of Mitigation Liability Acceptance: I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document (see the table above), associated with the USACE Permittee and Action ID number shown. I also verify that released credits (and/or advance credits for NCDMS), as approved by the USACE, are currently available at the mitigation site identified above. Further, I understand that if the Sponsor fails to provide the required compensatory mitigation, the USACE Wilmington District Engineer may pursue measures against the Sponsor to ensure compliance associated with the mitigation requirements.

Mitigation Sponsor Name: _____

Name of Sponsor's Authorized Representative: _____

_____ _____

Signature of Sponsor's Authorized Representative **Date of Signature**

Conditions for Transfer of Compensatory Mitigation Credit:

- Once this document has been signed by the Mitigation Sponsor and the USACE is in receipt of the signed form, the Permittee is no longer responsible for providing the mitigation identified in this form, though the Permittee remains responsible for any other mitigation requirements stated in the permit conditions.
- Construction within jurisdictional areas authorized by the permit identified on page one of this form can begin only after the USACE is in receipt of a copy of this document signed by the Sponsor, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein. For authorized impacts conducted by the North Carolina Department of Transportation (NCDOT), construction within jurisdictional areas may proceed upon permit issuance; however, a copy of this form signed by the Sponsor must be provided to the USACE within 30 days of permit issuance. NCDOT remains fully responsible for the mitigation until the USACE has received this form, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein.
- Signed copies of this document must be retained by the Permittee, Mitigation Sponsor, and in the USACE administrative records for both the permit and the Bank/ILF Instrument. It is the Permittee's responsibility to ensure that the USACE Project Manager (address below) is provided with a signed copy of this form.
- If changes are proposed to the type, amount, or location of mitigation after this form has been signed and returned to the USACE, the Sponsor must obtain case-by-case approval from the USACE Project Manager and/or North Carolina Interagency Review Team (NCIRT). If approved, higher mitigation ratios may be applied, as per current District guidance and a new version of this form must be completed and included in the USACE administrative records for both the permit and the Bank/ILF Instrument.

Comments/Additional Conditions: A letter from **NCDMS**, confirming their willing and able to accept the applicants compensatory mitigation responsibility, dated **3/14/2018** was included with the preconstruction notification.

This form is not valid unless signed below by the USACE Project Manager and by the Mitigation Sponsor on Page 1. ***Once signed, the Sponsor should provide copies of this form along with an updated bank ledger to: 1) the Permittee, 2) the USACE Project Manager at the address below, and 3) the Wilmington District Mitigation Office, Attn: Todd Tugwell, 11405 Falls of Neuse Road, Wake Forest, NC 27587 (email: todd.tugwell@usace.army.mil)***. Questions regarding this form or any of the permit conditions may be directed to the USACE Project Manager below.

USACE Project Manager: David L. Shaeffer
USACE Field Office: Charlotte Regulatory Office
US Army Corps of Engineers
8430 University Executive Park Drive, Suite 615
Charlotte, North Carolina 28262
Email: david.l.shaeffer@usace.army.mil

Digitally signed by SHAEFFER.DAVID.LEIGH.1260750573
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=SHAEFFER.DAVID.LEIGH.1260750573
Date: 2018.05.08 14:36:52 -04'00'

USACE Project Manager Signature

05/08/2018
Date of Signature

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at http://ribits.usace.army.mil

30' POST CONSTRUCTION BUFFER (PER GIS)

INTERMEDIATE STREAM

PROPOSED RETAINING WALL SEE GRADING EXHIBIT

BMP AREA

TREE SAVE AREA

175 FUT. ROW FROM CENTERLINE (PER CITY THROROUGHFARE PLAN)

85

20' SETBACK FROM FUT. ROW

41 TRAILER PARKING SPACES

66 TRAILER PARKING SPACES @ 12'

57 TRAILER PARKING SPACES

106 TRAILER PARKING SPACES

TOTAL BUILDING AREA - 857,470 SF
PROPOSED DISTRIBUTION CENTER

20' SETBACK FROM FUT. ROW

BMP AREA

485

PROPERTY LINE
±92.10 AC

560 LF OF STREAM IMPACTS

INTERMITTENT STREAM

TREE SAVE AREA

BMP AREA

05537101
7913 TUCKASEEGEE RD
CHARLOTTE NC 28214
0.885 AC
ZONING:I-2

05537102
7919 TUCKASEEGEE RD
CHARLOTTE NC 28214
1 AC
ZONING:I-2

05537102
7919 TUCKASEEGEE RD
CHARLOTTE NC 28214
1 AC
ZONING:I-2

PROPOSED TUCKASEEGEE RD

05537103
7927 TUCKASEEGEE RD
CHARLOTTE NC 28214
2.4 AC
ZONING:I-2

PROPOSED INDUSTRIAL DR

100' ROW

2439 TOTAL AUTO PARKING SPACES SHOWN (TYP. 10' X 20' 75°)

PROPOSED RETAINING WALL SEE GRADING EXHIBIT

TUCKASEEGEE RD
(3) 12' LANES
2.5' C&G
8' BUFFERED BIKE LANES
8' PLANTING STRIPS
6' SIDEWALKS

PROPOSED INDUSTRIAL DRIVE
(3) 12' LANES
2.5' C&G
8' BUFFERED BIKE LANES
8' PLANTING STRIPS
6' SIDEWALKS

±37.1' JURISDICTIONAL STREAM TO REMAIN UNDISTURBED

NO IMPACT TO FLOODWAY

EXISTING POND

PROPOSED WING WALLS (TYP.)
SEE GRADING EXHIBIT

100' PROPOSED BRIDGE

29

SEE OFF-SITE ROADWAY DESIGN/DRAWINGS (TYP.)

WILKINSON BLVD

74

OFF RAMP

PROPOSED TRAFFIC SIGNAL

11333122
CITY OF CHARLOTTE
600 EAST FOURTH ST
CHARLOTTE NC 28202
38.39 AC
ZONING:I-4

11302108
7321 WILKINSON BV
CHARLOTTE NC 28214
5.228 AC
ZONING:I-2

11302109
7401 WILKINSON BV

05537118
7126 WILKINSON BV
CHARLOTTE NC 28214
4.64 AC
ZONING:I-2

811 Know what's below. Call before you dig.

GRAPHIC SCALE IN FEET
0 75 150 300

NORTH

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2017 KIMLEY-HORN AND ASSOCIATES, INC.
200 SOUTH TRYON ST, SUITE 200, CHARLOTTE, NC 28202
PHONE: 704-333-5131
WWW.KIMLEY-HORN.COM
NC LICENSE #F-0102

LICENSED PROFESSIONAL

PRELIMINARY
NOT FOR CONSTRUCTION

DATE:

KH PROJECT	019854001
DATE	3/14/2018
SCALE	AS SHOWN
DESIGNED BY	MHP
DRAWN BY	LL
CHECKED BY	MAE

SITE PLAN

PROJECT QUATTRO
CHARLOTTE, NORTH CAROLINA
PREPARED FOR
SEEFRIED DEVELOPMENT MANAGEMENT, INC
3333 RIVERWOOD PARKWAY, SUITE 200
ATLANTA, GA 30339

SHEET NUMBER
EX-01

INTERMEDIATE STREAM
BMP AREA
TREE SAVE AREA
TREE SAVE AREA
85
20' SETBACK FROM FUT. ROW
TOTAL BUILDING AREA - 857,470 SF
PROPOSED DISTRIBUTION CENTER
PROPOSED SANITARY SEWER LINE
20' SETBACK FROM FUT. ROW
485
BMP AREA
PROPERTY LINE
±92.10 AC
560 LF OF STREAM IMPACTS
INTERMITTENT STREAM
PROPOSED SANITARY SEWER LINE
05537101
7913 TUCKASEEGEE RD
CHARLOTTE NC 28214
0.885 AC
ZONING:I-2
05537102
7919 TUCKASEEGEE RD
CHARLOTTE NC 28214
1 AC
ZONING:I-2
05537102
7919 TUCKASEEGEE RD
CHARLOTTE NC 28214
1 AC
ZONING:I-2
PROPOSED TUCKASEEGEE RD
PROPOSED SANITARY SEWER LINE
BMP AREA
05537103
7927 TUCKASEEGEE RD
CHARLOTTE NC 28214
2.4 AC
ZONING:I-2
PROPOSED INDUSTRIAL DR
EXISTING SANITARY SEWER LINE
±371' JURISDICTIONAL STREAM TO REMAIN UNDISTURBED
NO IMPACT TO FLOODWAY
EXISTING POND
PROPOSED SANITARY SEWER LINE
Construction techniques will use jack-and-bore or similar method to avoid all impacts.
29
EXISTING SANITARY SEWER LINE
WILKINSON BLVD
74
OFF RAMP
11333122
CITY OF CHARLOTTE
600 EAST FOURTH ST
CHARLOTTE NC 28202
38.39 AC
ZONING:I-4
11302108
7321 WILKINSON BV
CHARLOTTE NC 28214
5.228 AC
ZONING:I-2
11302109
7401 WILKINSON BV
05537118
7126 WILKINSON BV
CHARLOTTE NC 28214
4.64 AC
ZONING:I-2

811 Know what's below. Call before you dig.

GRAPHIC SCALE IN FEET
0 75 150 300
NORTH

No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			

Kimley»Horn

200 SOUTH TRYON ST, SUITE 200, CHARLOTTE, NC 28202
PHONE: 704-333-5131
WWW.KIMLEY-HORN.COM
NC LICENSE #F-0102

LICENSED PROFESSIONAL

PRELIMINARY
NOT FOR CONSTRUCTION

DATE:

KH PROJECT	019854001
DATE	3/14/2018
SCALE	AS SHOWN
DESIGNED BY	MHP
DRAWN BY	LL
CHECKED BY	MAE

UTILITY PLAN

PROJECT QUATTRO
CHARLOTTE, NORTH CAROLINA
PREPARED FOR
SEEFRIED DEVELOPMENT MANAGEMENT, INC
3333 RIVERWOOD PARKWAY, SUITE 200
ATLANTA, GA 30339

SHEET NUMBER
EX-02

Avoided impacts

0.13 ac of Open Water Impacts

560 lf of Stream Impacts

INTERMEDIATE STREAM

560 LF OF STREAM IMPACTS

INTERMITTENT STREAM

TOTAL BUILDING AREA - 857,470 SF
PROPOSED DISTRIBUTION CENTER

PROPOSED INDUSTRIAL DR

PROPOSED TUCKASEEGEE RD

EXISTING POND

WILKINSON BLVD

OFF RAMP

Avoided impacts

Avoided impacts

Avoided impacts

05537101
7913 TUCKASEEGEE RD
CHARLOTTE NC 28214
0.885 AC
ZONING:I-2

05537102
7919 TUCKASEEGEE RD
CHARLOTTE NC 28214
1 AC
ZONING:I-2

05537102
7919 TUCKASEEGEE RD
CHARLOTTE NC 28214
1 AC
ZONING:I-2

05537102
7927 TUCKASEEGEE RD
CHARLOTTE NC 28214
2.4 AC
ZONING:I-2

05537118
7126 WILKINSON BV
CHARLOTTE NC 28214
4.64 AC
ZONING:I-2

11333122
CITY OF CHARLOTTE
600 EAST FOURTH ST
CHARLOTTE NC 28202
38.39 AC
ZONING:I-4

11302108
7321 WILKINSON BV
CHARLOTTE NC 28214
5.228 AC
ZONING:I-2

11302109
7401 WILKINSON BV

Know what's **below.** **Call** before you dig.

GRAPHIC SCALE IN FEET
0 75 150 300

NORTH

No.	REVISIONS	DATE	BY

Kimley»Horn
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200 SOUTH TRYON ST, SUITE 200, CHARLOTTE, NC 28202
PHONE: 704-333-5131
WWW.KIMLEY-HORN.COM
NC LICENSE #F-0102

LICENSED PROFESSIONAL

PRELIMINARY
NOT FOR CONSTRUCTION

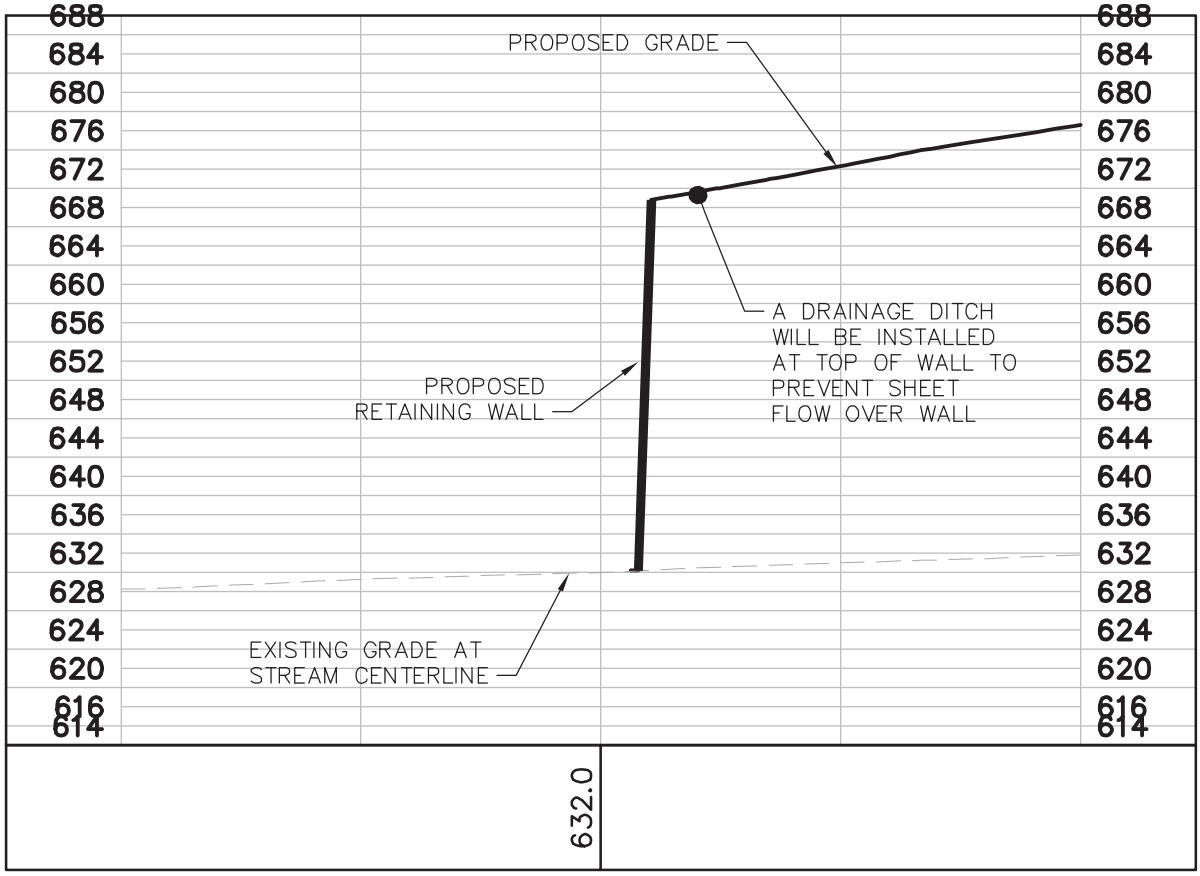
DATE:

KH PROJECT 019854001
DATE 3/14/2018
SCALE AS SHOWN
DESIGNED BY MHP
DRAWN BY LL
CHECKED BY MAE

GRADING PLAN

PROJECT QUATTRO
CHARLOTTE, NORTH CAROLINA
PREPARED FOR
SEEFRIED DEVELOPMENT MANAGEMENT, INC
3333 RIVERWOOD PARKWAY SUITE 200
ATLANTA, GA 30339

SHEET NUMBER
EX-03

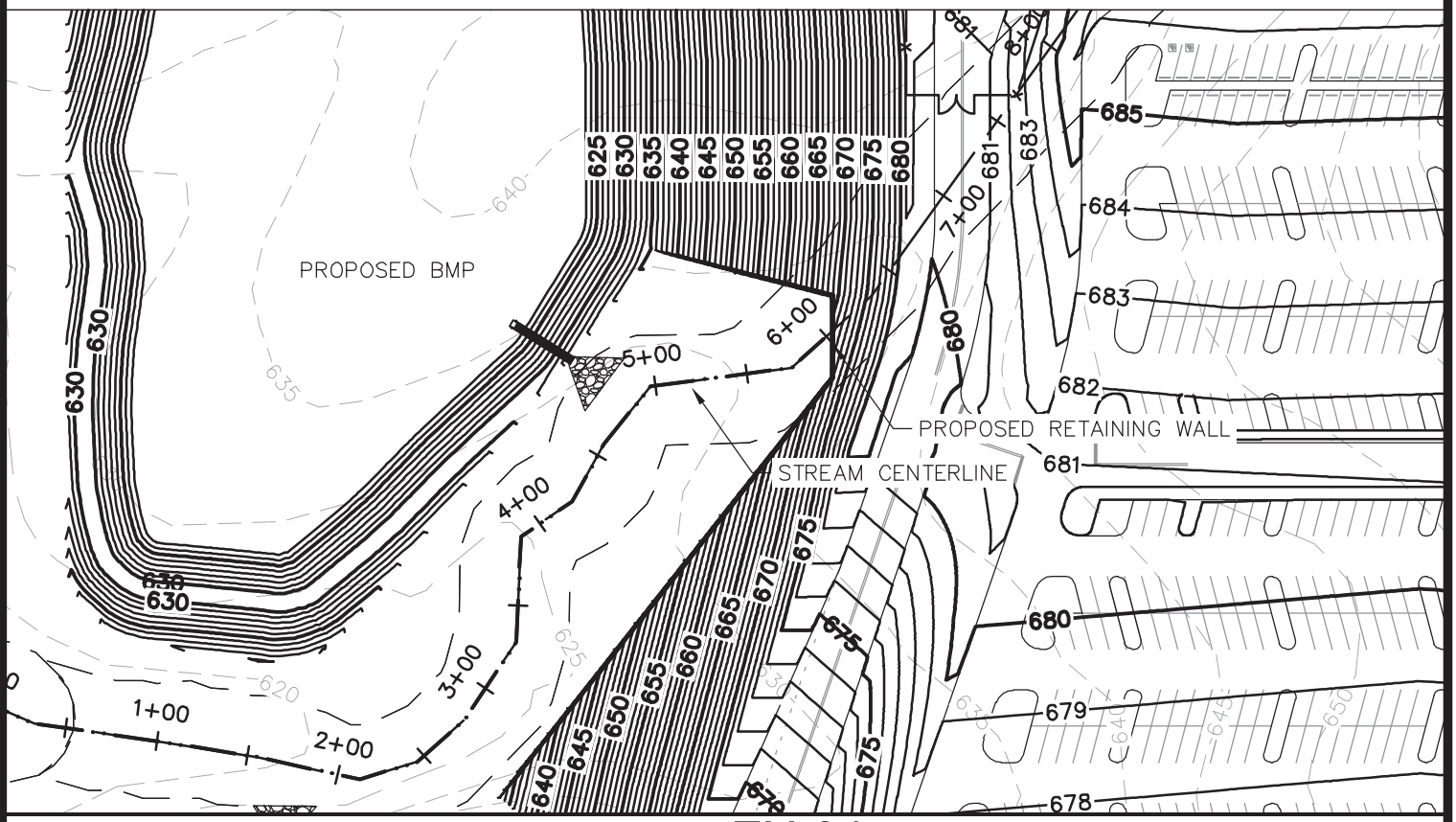


6+00

RETAINING WALL PROFILE

HORIZONTAL: 1"=20'

VERTICAL 1"=10'



Kimley»Horn

EX-04

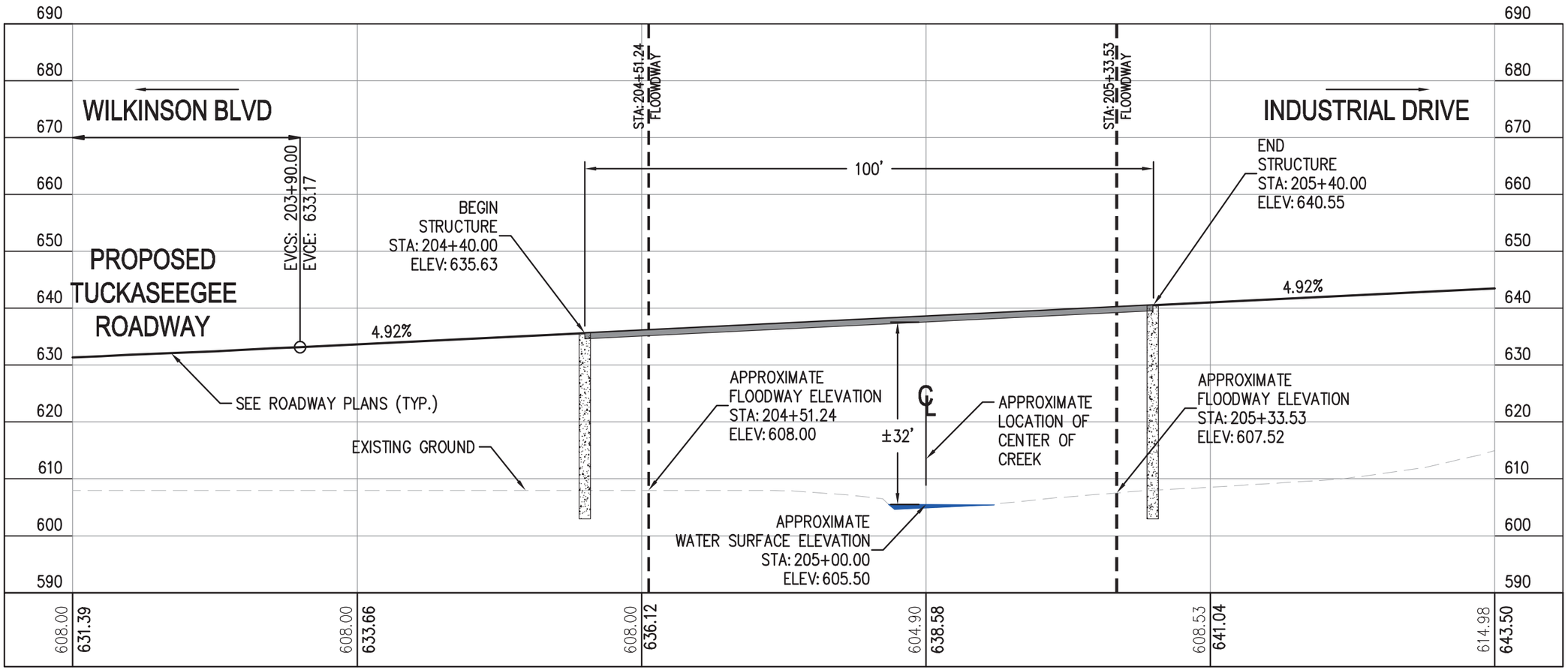
RETAINING WALL PROFILE

DATE: 03-12-2018

0 50' 100'

SCALE: 1" = 100'

K:\CHL_PRJ\019854 Seefried\001 Quattro\02 - DWG\03 ON SITE\Exhibit\2018-0312 - NWP Exhibits Updates\Exhibit 4 - Retaining Wall Profile.dwg



STRUCTURE PROFILE

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'

Kimley»Horn
NC LICENSE #F-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE 704-333-5131

QUATTRO - TUCKASEEGEE ROAD
STRUCTURE DETAIL

DATE: 03-16-2018

0 20' 40' 60'
SCALE: 1" = 20'

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ATTACHMENT 5

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Carolina Wetland Services, Inc.
550 E. Westinghouse Blvd.
Charlotte, NC 28273
704-527-1177 (office)
704-527-1133 (fax)

March 1, 2018

Joe Scarborough
Seefried Industrial Properties, Inc.
3333 Riverwood Parkway, Suite 200
Atlanta, Georgia 30339

Subject: **Protected Species Habitat Assessment Report**
Project Quattro/CLT Land
Charlotte, North Carolina
CWS Project No. 2017-0565

Dear Mr. Scarborough,

Seefried Industrial Properties, Inc. has contracted Carolina Wetland Services, Inc. (CWS) to provide a protected species habitat assessment for the Project Quattro/CLT Land site. The Project Quattro/CLT Land site (Mecklenburg County Tax Parcel Numbers are available on request) is approximately 158 acres in extent and is located north of the Charlotte Douglas International Airport along Tuckaseegee Road to the southeast of the I-485 and I-85 intersection in unincorporated Mecklenburg County (Figure 1).

Methods

In-office Desktop Review

To determine which protected species are listed as occurring or potentially occurring within the project vicinity and prior to conducting the on-site field investigation, CWS consulted the United States Fish and Wildlife Service's (USFWS) Endangered and Threatened Species and Species of Concern by County for North Carolina online database for Mecklenburg County[1]. In addition, CWS performed a data review using the North Carolina Natural Heritage Program (NCNHP) Data Explorer[2] on January 3, 2018 to determine if any record occurrences of federally-listed, candidate endangered, threatened species, or critical habitat are located within the project limits.

Typical habitat requirements for listed species was discerned from multiple USFWS[3] and NCNHP[4] online resources including, but not limited to, specific USFWS species profiles, recovery plans, NCNHP's Guide to Federally Listed Endangered and Threatened Species of North Carolina, and List of the Rare Plant Species of North Carolina. United States Department of Agriculture - Natural Resources Conservation Service (USDA-NRCS) Web Soil Survey of

[1] United States Fish and Wildlife Service, Raleigh Field Office. Accessed March 9, 2018. Endangered and Threatened Species and Species of Concern by County for North Carolina. https://www.fws.gov/raleigh/species/cntylist/mecklenburg.html
[2] North Carolina Natural Heritage Data Explorer. Accessed January 3, 2018. https://ncnhde.natureserve.org/.
[3] U.S. Fish and Wildlife Service. 2006. Optimal Survey Windows for North Carolina's Federally Threatened and Endangered Plant Species. http://www.fws.gov/nces/es/plant_survey.html. Accessed March 9 ,2018.
[4] Buchanan, M.F. and J.T. Finnegan. 2010. Natural Heritage Program List of the Rare Plant Species of North Carolina. NC Natural Heritage Program, Raleigh, NC. Accessed from https://www.fws.gov/raleigh/species/cntylist/nc_counties.html

Mecklenburg County[5] and aerial imagery were also reviewed for potential habitat communities of listed species within the project vicinity (Figures 2 and 3).

Field Survey

CWS scientists Daniel Roberts, Project Scientist, and Megan Shelton, Staff Scientist I, conducted a pedestrian habitat assessment of the project area on January 2, and March 9, 2018. Potential habitat for potentially occurring federally-protected species that was identified during the desktop review was assessed in the field for the quality of physical and/or biological features essential to the conservation of the applicable species. Additionally, during the pedestrian habitat assessment, areas were reviewed for applicable federally protected species; however, formal surveys were not conducted. Identification references for natural communities include The National Land Cover Database (2011)[6].

Results

Based on the NCNHP data explorer review, there are no current records of federally-protected species within the project limits or within a mile of the project limits (Attachment A). The USFWS lists seven federally protected species for Mecklenburg County (Table 1). An official species list has not been obtained from the USFWS Asheville Field Office.

Table 1. Unofficial List of Federally-Protected Species Potentially Occurring within the Project Quattro/CLT Land Site, Mecklenburg County, NC.

Major Group	Scientific Name	Common Name	Federal Status*	Record Status
Plant	*Helianthus schweinitzii*	Schweinitz's sunflower	E	Current
Plant	*Echinacea laevigata*	Smooth coneflower	E	Current
Plant	*Rhus michauxii*	Michaux's sumac	E	Current
Animal	*Lasmigona decorata*	Carolina heelsplitter	E	Current
Animal	*Bombus affinis*	Rusty-patched bumble bee	E	Historic
Animal	*Myotis septentrionalis*	Northern-long-eared bat	T	Current
Animal	*Haliaeetus leucocephalus*	Bald eagle	BGPA	Current

* E - Endangered, T - Threatened, BGPA - Bald and Golden Eagle Protection Act

Six terrestrial community types were identified within the project area during the field survey. These community types consist of mixed forest, deciduous forest, herbaceous land, pasture, low intensity developed areas, and actively maintained road side right-of-ways (Figure 3). Of the identified on-site community types, herbaceous land, pasture, and actively maintained road side right-of-ways are considered potential habitat for federally threatened or endangered species

[5] United States Department of Agriculture, 2017. Web Soil Survey of Mecklenburg County, North Carolina. Accessed 3/9/18. Source: https://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

[6] MLRC. National Land Cover Database, 2011. https://www.mrlc.gov/nlcd11_leg.php

that could potentially occur within the project limits. A brief description of each species habitat requirements and determination of effect findings are listed below by species.

Schweinitz's sunflower (*Helianthus schweinitzii*)

Habitat Description:

Schweinitz's sunflower is a perennial herb with yellow rays and yellow centers. They can reach heights of five feet. Populations are limited to the piedmont of North and South Carolina. It has been listed as an Endangered species under the ESA since 1991.[7] The typical habitat for this plant includes roadsides, old pastures, transmission line right-of-ways, open areas, either natural or human-maintained habitats, or edges of upland woods. Major characteristics of soils associated with suitable Schweinitz's sunflower habitat include thin soils, soils on upland interstream flats or gentle slopes, soils that are clay like in both composition and texture (and often with substantial rock fragments), soils that have a high shrinkage swell capacity, and those which vary over the course of the year from very wet to very dry.

Biological Analysis:

Potential on site habitat for this species is limited to herbaceous land and actively maintained road side right-of-ways along Todd Road and pasture and low intensity developed areas found off of Tuckaseegee Road (Figure 3, Photographs 1 and 2, attached). The desktop review and field survey assessment determined that these areas have the proper soils, slopes, and occasional disturbances to potentially support Schweinitz's sunflower. While no individuals of Schweinitz's sunflower or other *Helianthus* species were observed during the field assessment on January 2, and March 9, 2018, this survey was conducted outside the optimal survey window of late August to October. However, plant remnants identifiable to genera can often be seen after flowering (personal observation). Although no known population records of the species occurs within one mile of the project area in the NHP database, potential habitat is present, which leads **CWS to conclude that the project might affect the Schweinitz's sunflower and a targeted species survey may be required to make a conclusive biological determination.**

Smooth coneflower (*Echinacea laevigata*)

Habitat Description:

Smooth coneflower is a tall, perennial herbaceous plant found in areas with abundant sunlight where competition in the herbaceous layer is minimal. It has been federally listed as Endangered under the ESA since 1992.[8] Typical habitat for this plant includes meadows, open woodlands, the ecotonal regions between meadows and woodlands, cedar barrens, dry limestone bluffs, clear cuts, and roadside and utility rights-of-way. In North Carolina, the species normally grows in magnesium- and calcium- rich soils associated with gabbro and diabase parent material, and typically occurs in Iredell, Misenheimer, and Picture soil series. It grows best where there is abundant sunlight, little competition in the herbaceous layer, and periodic disturbances (e.g., regular fire regime,

[7] United States Fish and Wildlife Services. 1991. Endangered and Threatened Wildlife and Plants; *Helianthus schweinitzii* (Schweinitz's sunflower) Determined to be Endangered. http://ecos.fws.gov/docs/federal_register/fr1852.pdf.

[8] United States Fish and Wildlife Services. 1992. Endangered and Threatened Wildlife and Plants; *Echinacea laevigata* (Smooth Coneflower) Determined to be Endangered. http://ecos.fws.gov/docs/federal_register/fr2140.pdf.

well-timed mowing, careful clearing) that prevents encroachment of shade-producing woody shrubs and trees. On sites where woody succession is held in check, it is characterized by a number of species with prairie affinities.

Biological Analysis:

A NCNHP data record review revealed that there are no current occurrences for this species within the project limits, or within a one-mile radius of the project (Attachment A). Though disturbed open areas conducive to early succession species are present in the project area, these areas consist of saprolite and residuum weathered soils, absent of magnesium and calcium and are therefore not suitable for smooth coneflower (Photograph 3 attached).[9] Due to the lack of habitat and known occurrences, **CWS concludes that this project will not affect smooth coneflower.**

Michaux's sumac (*Rhus michauxii*)

Habitat Description:

Michaux's sumac is a rhizomatous shrub. It is densely hairy with compound leaves exhibiting evenly-serrated leaflets. Flowers are small, greenish to white, in terminal clusters. Fruits are red drupes produced from August to October. It has been listed as an Endangered species under the Endangered Species Act (ESA) since 1989.[10] It is found on the coastal plains of Virginia to Florida, with most populations occurring in North Carolina. It prefers sandy or rocky open woods with basic soils, as well as, highway right-of-ways, roadsides, or edges of artificially-maintained clearings.

Biological Analysis:

A NCNHP data record review revealed that there are no current occurrences for this species within the project limits, or within a one-mile radius of the project (Attachment A). Though disturbed open areas conducive to early succession species are present in the project area, these areas consist of acidic Enon and Wilkes soils that are not suitable for Michaux's sumac (Figure 2). Additionally the Raleigh Ecological Services Field Office states in its Michaux's sumac profile page that the species is considered historic in Mecklenburg County[11]. Due to the lack of habitat and known occurrences, **CWS concludes that this project will not affect Michaux's sumac.**

Carolina heelsplitter (*Lasmigona decorata*)

Habitat Description:

The Carolina heelsplitter was historically known from several locations within the Catawba and Pee Dee River systems in North Carolina and the Pee Dee and Savannah River systems, and possibly the Saluda River system in South Carolina. In North Carolina, the species is now known only from a handful of streams in the Pee Dee and Catawba River systems. The species exists in very low abundances, usually within 6 feet of shorelines, throughout its known range. The general habitat requirements for the Carolina heelsplitter are shaded areas in large rivers to small streams, often burrowed

[9] United States Department of Agriculture, 2017. Web Soil Survey of Mecklenburg County, North Carolina. Accessed 12/28/17. Source: https://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

[10] United States Fish and Wildlife Services. 1989. Endangered and Threatened Wildlife and Plants;Determination of Endangered Status for *Rhus michauxii* (Michaux's sumac). http://ecos.fws.gov/docs/federal_register/fr1601.pdf.

[11] Suiter, Dale. Fish and Wildlife Biologist. Raleigh Ecological Services Field, USFWS. Michaux's Sumac Species Profile page. Last updated August 24, 2017. Accessed January 3, 2018 https://www.fws.gov/raleigh/species/es_michauxs_sumac.html

into clay banks between the root systems of trees, or in runs along steep banks with moderate current. Recently, the Carolina heelsplitter has been found is in sections of streams containing bedrock with perpendicular crevices filled with sand and gravel, and with wide riparian buffers.[12]

Biological Analysis:

A pedestrian foot survey conducted on January 2, and March 9, 2018 revealed that three of the four on-site streams originate on-site and are connected to downstream waters via a pipe, which does not provide a suitable connection to downstream waters that Carolina heelsplitter could utilize during its matting phase (Photograph 4 and 5) . Ticer Branch is highly incised with kudzu as the main vegetation along the banks. The lack of bank stabilization due to poor vegetation has resulted in highly unstable banks and stream bottoms, and instability throughout the stream has caused high amounts of sediment to flow into the stream, resulting in high turbidity, which is not conducive habitat for the Carolina heelsplitter (Photograph 6). Due to the breaks in biological connectivity to downstream waters, highly turbid waters, and a lack of well shaded in stream microhabitats **CWS concludes that this project will not affect the Carolina heelsplitter.**

Rusty Patched Bumble Bee (Bombus affinis)

The Rusty patched bumble bee was listed as Endangered under the ESA in January 2017.[13] Rusty patched bumble bees once occupied grasslands and tallgrass prairies of the Upper Midwest and Northeast, but most grasslands and prairies have been lost, degraded, or fragmented by conversion to other uses. According to USFWS guidance, "the rusty patched bumble bee is likely to be present in scattered locations that cover only about 0.1% of the species' historical range. It is within these limited areas USFWS recommend that federal agencies and others consider the need to consult with the Service on the potential effects of their actions or the potential need for an incidental take permit under section 10(a)(1)(B). For the remaining 99.9% of the historical range, USFWS advise agencies and others that this bumble bee is not likely to be present and that consultations or incidental take coverage is not necessary."[14] According to USFWS' Rusty Patched Bumble Bee Interactive Map, Mecklenburg County is not within the 0.1% historical range as no high potential zones or low potential zones are present within Mecklenburg County. **Therefore, the proposed project will not affect the rusty-patched bumble bee.**

Northern long-eared bat (*Myotis septentrionalis*)

The northern long-eared bat (NLEB) is one of the species of bats most impacted by the white-nose syndrome disease. Summer habitat (roosting habitat) of the NLEB includes forests and woodlots containing live trees and/or dead snags greater than three inches diameter at breast height with cavities or crevices. Winter habitat (hibernacula) of the NLEB includes caves,

[12] NCDOT TE Animal Habitat Descriptions. 2015. https://connect.ncdot.gov/resources/Environmental/Compliance%20Guides%20and%20Procedures/TE%20Animal%20Habitat%20Descriptions%20Mar_6_2015.pdf

[13] United States Fish and Wildlife Services. https://www.fws.gov/midwest/endangered/insects/rpbb/index.html

[14] United States Fish and Wildlife Services. https://www.fws.gov/midwest/endangered/insects/rpbb/index.html

mines, rocky areas, or structures that mimic similar conditions such as culverts greater than 48-inch in diameter.[15] The NLEB was listed as Threatened (T) on April 2, 2015.

A Standard Local Operating Procedure for Endangered Species Act Compliance (SLOPES) was established for NLEB between the USFWS Asheville and Raleigh Ecological Offices and the United States Army Corps of Engineers (USACE), Wilmington District, on January 31, 2017.[16] This SLOPES defines how the USACE will make determinations of effect to the NLEB on projects in which the USACE is the lead federal agency. Alternative Local Procedure 2 (ALP 2) applies for the Project Quattro/CLT Land site as the action area is within range of the NLEB,[17] the action area is located outside of a red 12-digit HUC as defined by the Asheville Ecological Services Field Office,[18] and consultation by the USACE is required on other listed species or critical habitat.

The final 4(d) rule exempts incidental take of NLEB associated with activities that occur greater than 0.25 miles from a known hibernaculum site and greater than 150 feet from a known, occupied maternity roost from June 1-July 31. In accordance with ALP 2 and the final 4(d) rule (effective as of February 16, 2016), any incidental take that may result from associated activities is exempt under the 4(d) rule. **Therefore, this project is exempt under the 4(d) rule.**

Bald eagle (*Haliaeetus leucocephalus*)
The Bald and Golden Eagle Protection Act,[19] enacted in 1940, prohibits anyone, without a permit issued, from "taking" bald eagles, including their parts, nests, or eggs. Habitat for the bald eagle includes cliffs and forested areas typically within 1.0 mile of estuaries, large lakes, reservoirs, rivers, seacoast, and as they become more abundant, stands of undisturbed forest.

A desktop-GIS assessment of the project study area, as well as the area within a 1 mile radius of the project limits, was performed on December 28, 2017 using 2016 color aerials. No water bodies large enough or sufficiently open to be considered potential feeding sources were identified. Since there was no foraging habitat within the review area, a survey of the project study area and the area within the project limits was not conducted. Additionally, a review of the NCNHP database on January 03, 2018 revealed no known occurrences of this species within 1.0 mile of the project study area. Due to the lack of habitat, known occurrences, and minimal impact anticipated for this project, **CWS concludes that this project will not affect this species.**

Summary

Based on the literature search and the results of the on-site assessment for suitable habitat of federally-protected endangered, threatened, and candidate species, suitable habitat was not observed within the project limits for the smooth coneflower, Michaux's sumac, bald eagle, and Carolina heelsplitter. Suitable habitat was observed for Schweinitz's sunflower. Additionally, the project area is not located within the 0.1% historical range of the rusty-patched bumble bee.

[15] United States Fish and Wildlife Service. 2016. 4(d) Rule for the Northern Long-Eared Bat; Final rule. https://www.gpo.gov/fdsys/pkg/FR-2016-01-14/pdf/2016-00617.pdf
[16] USACE http://saw-reg.usace.army.mil/NLEB/1-30-17-signed_NLEB-SLOPES&apps.pdf
[17] The U.S. Fish and Wildlife Service (USFWS) 2016. https://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf
[18] The U.S. Fish and Wildlife Service (USFWS) 2016. Northern Long-Eared Bat.
[19] https://www.fws.gov/midwest/MidwestBird/eaglepermits/bagepa.html

CWS has concluded that activities within the project area will not directly or indirectly jeopardize the continued existence of smooth coneflower, Michaux's sumac, bald eagle, rusty-patched bumble bee, and Carolina heelsplitter. However, Schweinitz's sunflower **might** be affected. Additionally, based on the project area location, no tree removal activities will occur within a 150-foot radius of a known, occupied NLEB maternity roost from June 1-July 31 and no trees will be removed within 0.25 miles of a known hibernaculum at any time of year. Therefore, any incidental take on NLEB that may result from associated activities is exempt under the 4(d) rule and notifications will follow the SLOPES agreement[20]. Biological determinations requirements for federally protected species are summarized in Table 2 (below).

Table 2. Biological Determination Requirements Summary Table for Federally Protected Species

Scientific Name	Common Name	Federal Status*	Effect on Listed Species	Biological Determination Required
Helianthus schweinitzii	Schweinitz's sunflower	E	Might Affect	Yes
Echinacea laevigata	Smooth coneflower	E	Will Not Affect	No
Rhus michauxii	Michaux's sumac	E	Will Not Affect	No
Lasmigona decorata	Carolina heelsplitter	E	Will Not Affect	No
Bombus affinis	Rusty-patched bumble bee	E	Will Not Affect	No
Myotis septentrionalis	Northern-long-eared bat	T	Exempt/Excepted	Yes**
Haliaeetus leucocephalus	Bald eagle	BGPA	Will Not Affect	No

* E - Endangered, T - Threatened, BGPA - Bald and Golden Eagle Protection Act
** - Required in accoradnce with SLOPES, ALP 2 agreement.

[20] http://www.fws.gov/asheville/htmls/project_review/NLEB_in_WNC.html

A biological assessment was not conducted for this project. All biological determinations of effect represent the best professional opinion of CWS and are not official determinations of effect. It is the responsibility of the lead federal agency to render an official determination of effect. Should the lead federal agency agree with CWS's initial findings of no effect, then no USFWS consultation is required to comply with Section 7 of the Endangered Species Act. Should the lead federal agency's determination of effect differ from the findings of CWS, formal or informal consultation with USFWS may be required.

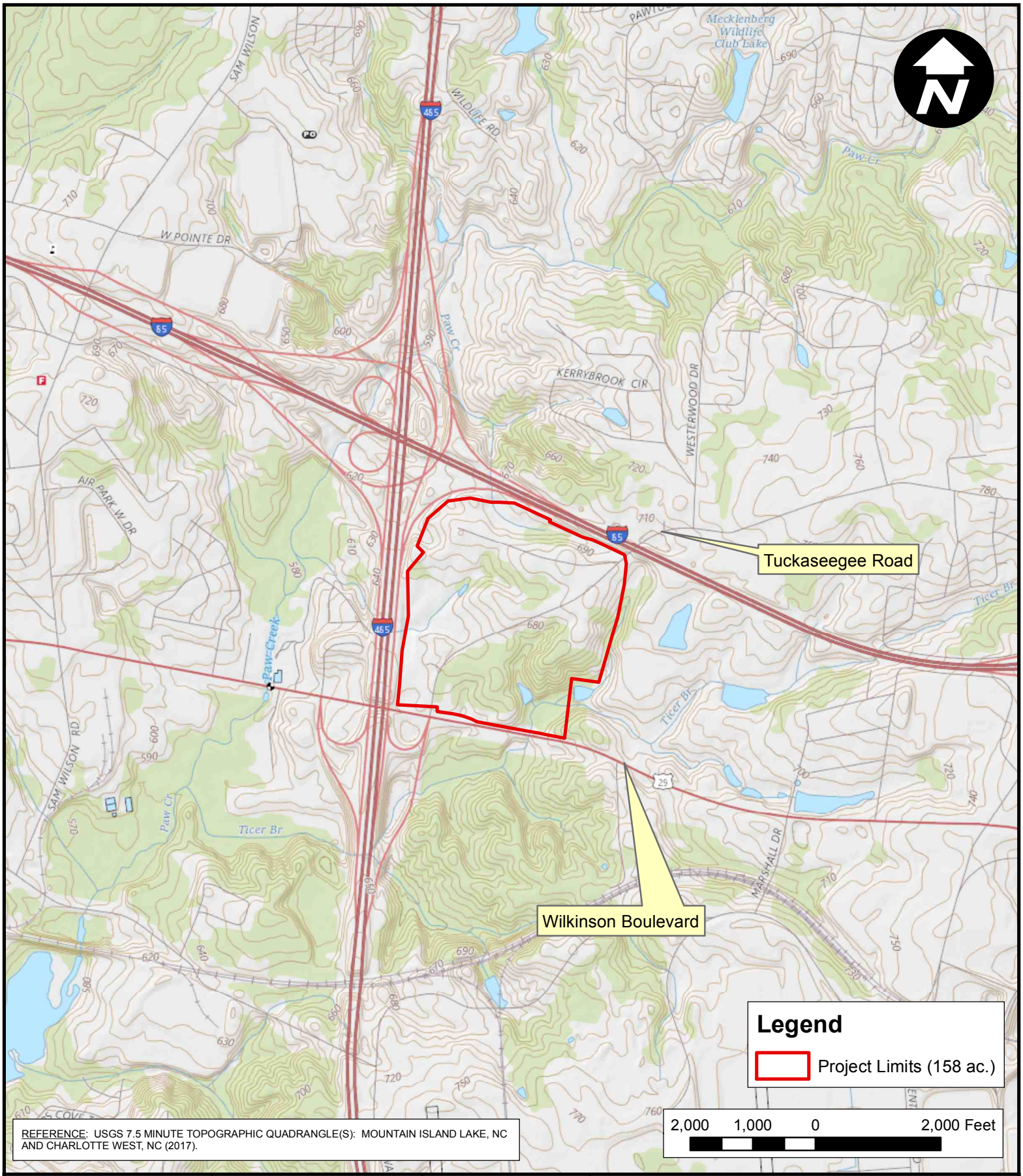
Thank you for the opportunity to provide these services on this important project. Please do not hesitate to contact Daniel Roberts at 704-527-1177 ex. 707 or daniel@cws-inc.net should you have any questions or comments regarding this report.

Sincerely,

Daniel Roberts
Project Scientist

Christine A. Geist, PWS, CE
Principal Scientist

Attachments: Figure 1: USGS Site Location
Figure 2: USDA-NRCS Soil Map of Mecklenburg County
Figure 3: Aerial Imagery
Attachment A: NCNHP Data Review Report
Attachment B: Representative Photographs (1-6)



SCALE: 1 inch = 2,000 feet	DATE: 3/8/2018	CAROLINA WETLAND SERVICES	**USGS Site Location**	FIGURE NO. 1 of 3
CWS PROJECT NO: 2017-0565	DRAWN BY: JDR		**Quatro** **Mecklenburg County** **Charlotte, NC**	
COORDINATES: 35.243977, -80.964377	CHECKED BY: CAG			

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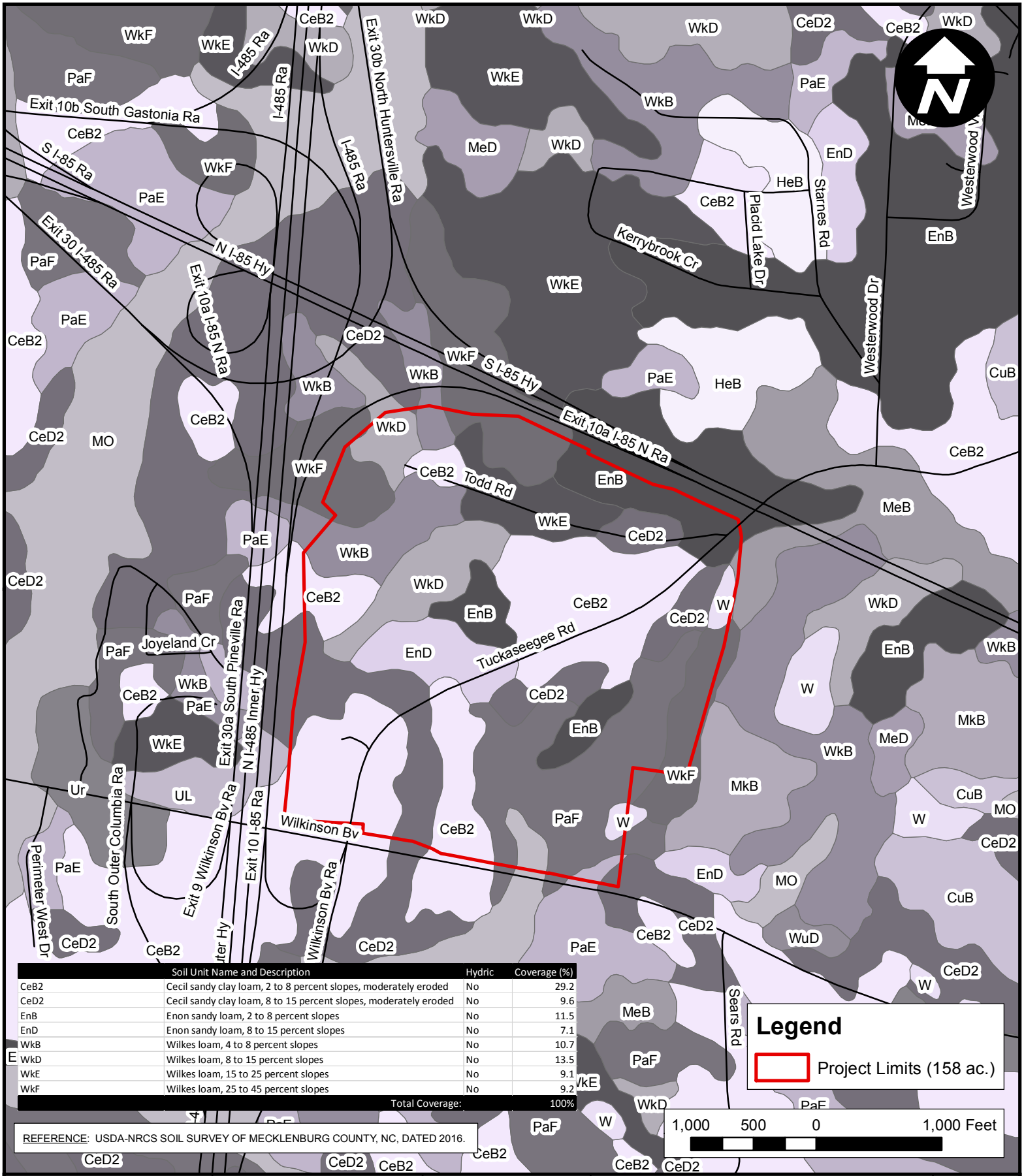
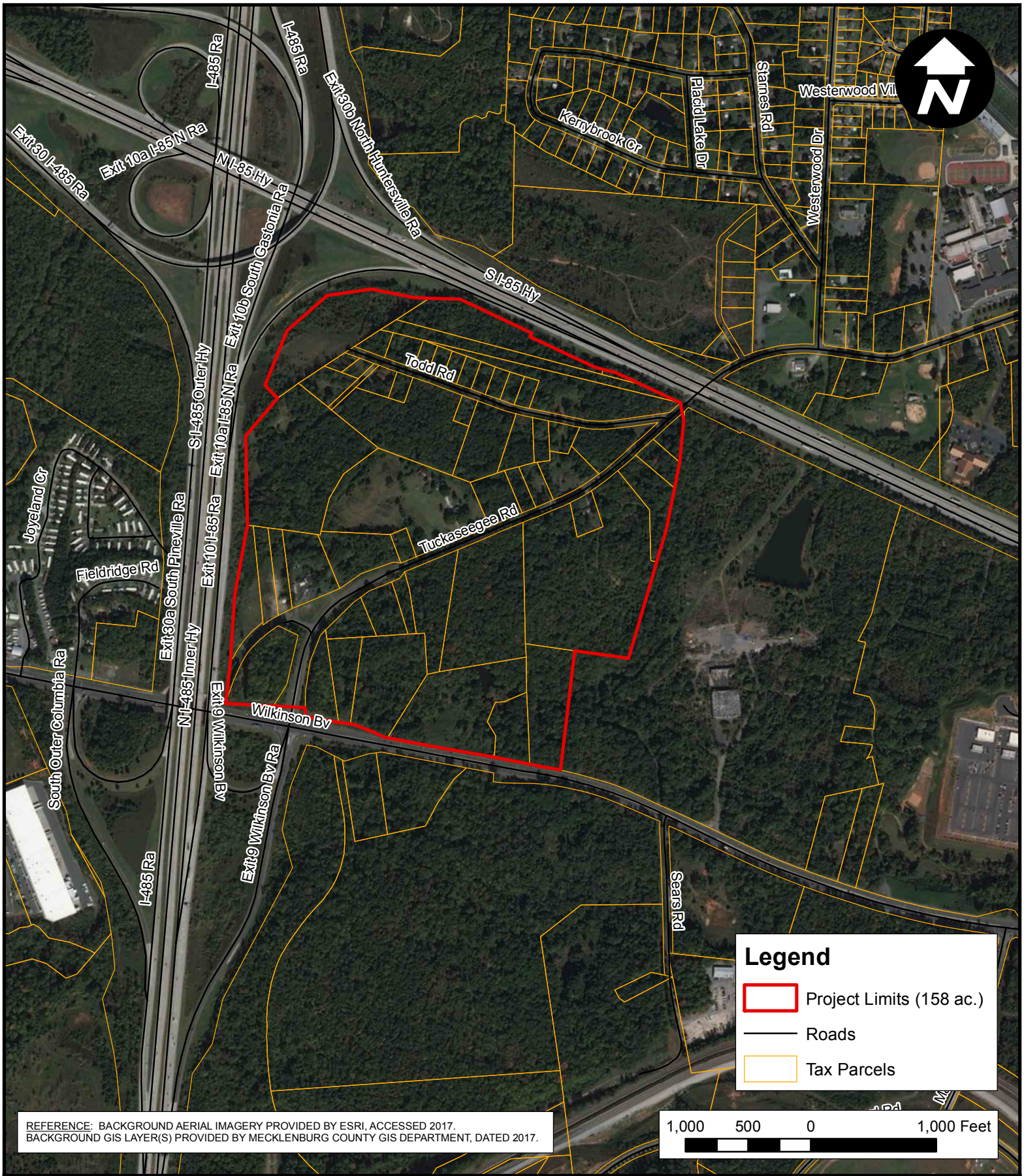


Soil Unit	Name and Description	Hydric	Coverage (%)
CeB2	Cecil sandy clay loam, 2 to 8 percent slopes, moderately eroded	No	29.2
CeD2	Cecil sandy clay loam, 8 to 15 percent slopes, moderately eroded	No	9.6
EnB	Enon sandy loam, 2 to 8 percent slopes	No	11.5
EnD	Enon sandy loam, 8 to 15 percent slopes	No	7.1
WkB	Wilkes loam, 4 to 8 percent slopes	No	10.7
WkD	Wilkes loam, 8 to 15 percent slopes	No	13.5
WkE	Wilkes loam, 15 to 25 percent slopes	No	9.1
WkF	Wilkes loam, 25 to 45 percent slopes	No	9.2
	Total Coverage:		100%

REFERENCE: USDA-NRCS SOIL SURVEY OF MECKLENBURG COUNTY, NC, DATED 2016.

SCALE: 1 inch = 1,000 feet	DATE: 3/8/2018	CAROLINA WETLAND SERVICES	**USDA-NRCS Soil Survey of Mecklenburg County**
CWS PROJECT NO: 2017-0565	DRAWN BY: JDR		**Quatro Mecklenburg County Charlotte, NC**
COORDINATES: 35.243977, -80.964377	CHECKED BY: CAG		FIGURE NO. **2 of 3**

G:\My Drive\2017 Consulting\2017 Projects\2017-0565 ProjectQuattro\PETS\ArcGIS\Figure 2_Current Soils.mxd



REFERENCE: BACKGROUND AERIAL IMAGERY PROVIDED BY ESRI, ACCESSED 2017.
BACKGROUND GIS LAYER(S) PROVIDED BY MECKLENBURG COUNTY GIS DEPARTMENT, DATED 2017.

SCALE: 1 inch = 1,000 feet	DATE: 3/9/2018	CAROLINA WETLAND SERVICES	**Aerial Map**	FIGURE NO. **3 of 3**
CWS PROJECT NO: 2017-0565	DRAWN BY: JDR		**Quatro Mecklenburg County Charlotte, NC**	
COORDINATES: 35.243977, -80.964377	CHECKED BY: CAG			

G:\My Drive\2017 Consulting\2017 Projects\2017-0565 ProjectQuattro\PETS\ArcGIS\Figure 3_AerialMap.mxd

North Carolina Department of Natural and Cultural Resources
Natural Heritage Program

Governor Roy Cooper | Secretary Susi H. Hamilton

NCNHDE-5547

March 9, 2018

Daniel Roberts
Carolina Wetland Services
550 E. Westinghouse Blvd
Charlotte, NC 28273
RE: Project Quattro/CLT Land; 2017-0565

Dear Daniel Roberts:

The North Carolina Natural Heritage Program (NCNHP) appreciates the opportunity to provide information about natural heritage resources for the project referenced above.

A query of the NCNHP database, based on the project area mapped with your request, indicates that there are no records for rare species, important natural communities, natural areas, or conservation/managed areas within the proposed project boundary. Please note that although there may be no documentation of natural heritage elements within the project boundary, it does not imply or confirm their absence; the area may not have been surveyed. The results of this query should not be substituted for field surveys where suitable habitat exists. In the event that rare species are found within the project area, please contact the NCNHP so that we may update our records.

The attached 'Potential Occurrences' table summarizes rare species and natural communities that have been documented within a one-mile radius of the property boundary. The proximity of these records suggests that these natural heritage elements may potentially be present in the project area if suitable habitat exists and is included for reference. Tables of natural areas and conservation/managed area within a one-mile radius of the project area, if any, are also included in this report.

Please note that natural heritage element data are maintained for the purposes of conservation planning, project review, and scientific research, and are not intended for use as the primary criteria for regulatory decisions. Information provided by the NCNHP database may not be published without prior written notification to the NCNHP, and the NCNHP must be credited as an information source in these publications. Maps of NCNHP data may not be redistributed without permission.

The NC Natural Heritage Program may follow this letter with additional correspondence if a Dedicated Nature Preserve (DNP), Registered Heritage Area (RHA), Clean Water Management Trust Fund (CWMTF) easement, or Federally-listed species are documented near the project area.

If you have questions regarding the information provided in this letter or need additional assistance, please contact Rodney A. Butler at rodney.butler@ncdcr.gov or 919.707.8603.

Sincerely,
NC Natural Heritage Program

MAILING ADDRESS:
1651 Mail Service Center
Raleigh, NC 27699-1651

Telephone: (919) 707-8107
www.ncnhp.org

LOCATION:
121 West Jones Street
Raleigh, NC 27603

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Within a One-mile Radius of the Project Area
Project Quattro/CLT Land
Project No. 2017-0565
March 9, 2018
NCNHDE-5547

Element Occurrences Documented Within a One-mile Radius of the Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Freshwater Bivalve	450	Lasmigona decorata	Carolina Heelsplitter	1918-Pre	X	3-Medium	Endangered	Endangered	G1	S1
Vascular Plant	13743	Delphinium exaltatum	Tall Larkspur	1800s	Hi?	5-Very Low	---	Endangered	G3	S2

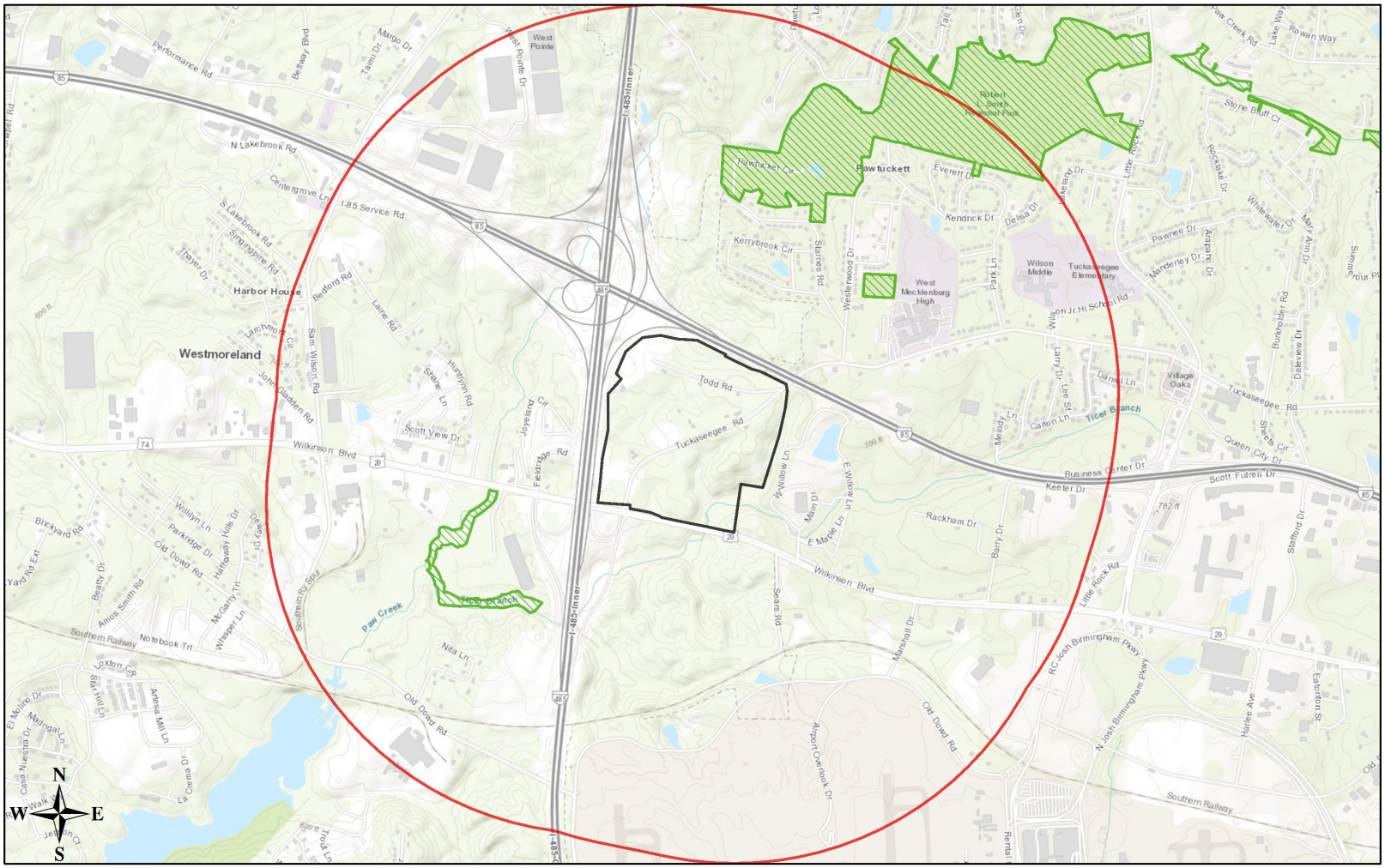
No Natural Areas are Documented Within a One-mile Radius of the Project Area

Managed Areas Documented Within a One-mile Radius of the Project Area

Managed Area Name	Owner	Owner Type
Mecklenburg County Open Space	Mecklenburg County	Local Government

Definitions and an explanation of status designations and codes can be found at https://ncnhde.natureserve.org/content/help. Data query generated on March 9, 2018; source: NCNHP, Q1 January 2018. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

NCNHDE-5547: Project Quattro/CLT Land



March 9, 2018

- Project Boundary
- Buffered Project Boundary
- Managed Area (MAREA)

1:26,312

0 0.225 0.45 0.9 mi

0 0.35 0.7 1.4 km

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Photograph 1. View of suitable Schweinitz's sunflower habitat with improper soils for smooth coneflower and Michaux’s sumac.

Photograph 2. View of suitable Schweinitz's sunflower habitat with improper soils for smooth coneflower and Michaux’s sumac.

Photograph 3. View of unsuitable habitat for smooth coneflower with improper soils for Schweinitz's sunflower and Michaux's sumac.

Photograph 4. View of unsuitable Carolina heelsplitter habitat.

Photograph 5. View of break in biological connectivity of Carolina heelsplitter habitat.

Photograph 6. View of sedimentation, turbidity, and kudzu covered incised banks in Ticer Branch, unsuitable for Carolina Heelsplitter habitat.

North Carolina Wildlife Resources Commission

Gordon Myers, Executive Director

19 April 2018

Mr. Daniel Roberts
Carolina Wetland Services, Inc.
550 E. Westinghouse Boulevard
Charlotte, North Carolina 28273

Subject: Individual Permit Application for the Seefried Industries Quattro CLT Land Project, Mecklenburg County; USACE Action ID SAW-2013-02255.

Dear Mr. Roberts,

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the Individual Permit (IP) application. Comments are provided in accordance with provisions of the Clean Water Act of 1977 (as amended) and Fish and Wildlife Coordination Act Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

On behalf of Seefried Industries Properties, Inc., Carolina Wetland Services, Inc. (CWS) has submitted an IP application to develop an approximately 158-acre property located north of Charlotte Douglas International Airport along Tuckaseegee Road to the southeast of the I-485 and I- 85 intersection in Charlotte, Mecklenburg County, North Carolina. The applicant is proposing to construct an 855,000-square foot commercial distribution center. The IP application is requesting to permanently impact 560 linear feet of an intermittent stream and 0.13 acres of a pond. NCWRC is pleased the alternative was chosen that minimizes or avoids impacts to unnamed tributaries and a bridge will be constructed to avoid impacts to Ticer Branch.

Ticer Branch and its unnamed tributaries occur in the project area. Ticer Creek in the Catawba River basin is classified as a Class C stream by N.C. Division of Water Resources (NCDWR). We have no current records of state or federally-listed rare, threatened, or endangered species. CWS conducted a protected species habitat survey in January and March 2018. CWS documented potential habitat for the federally and state endangered Schweinitz's sunflower (*Helianthus schweinitzii*) but no individuals were observed. The field survey was conducted outside the optimal survey window (late August-October) for this species. To ensure this species does not occur within the project area, NCWRC recommends a survey for Schweinitz's sunflower be conducted by a qualified botanist prior to construction and during the optimal survey window, unless stated otherwise by the U.S. Fish and Wildlife Service (USFWS).

Should the permit be issued, we offer the following recommendations to further minimize impacts to aquatic and terrestrial wildlife resources.

Mailing Address: Habitat Conservation Division • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 707-0220 • **Fax:** (919) 707-0028

1. Maintain a minimum 100-foot undisturbed, native, forested buffer along perennial streams, and a minimum 50-foot buffer along intermittent streams and wetlands. Maintaining undisturbed, forested buffers along these areas will minimize impacts to aquatic and terrestrial wildlife resources, water quality, and aquatic habitat both within and downstream of the project area. Also, wide riparian buffers are helpful in maintaining stability of stream banks and for treatment of pollutants associated with urban stormwater.

2. Avoid tree clearing activities during the maternity roosting season for bats (May 15 – August 15).

3. Consider using **native** seed mixtures and plants that are beneficial to wildlife for revegetating disturbed areas and landscaping. Avoid using Bermudagrass, redtop, tall fescue, and lespedeza, which are invasive and/or non-native and provide little benefit to wildlife. Consider an alternative mix of red clover, creeping red fescue, and a grain, such as oats, wheat, or rye. Also avoid using invasive, non-native landscaping plants (http://www.ncwildflower.org/plant_galleries/invasives_list).

4. Use non-invasive **native** species and Low Impact Development (LID) technology in landscaping. Using LID technology in landscaping will not only help maintain the predevelopment hydrologic regime, but also enhance the aesthetic and habitat value of the site. LID techniques include permeable pavement and bioretention areas that can collect stormwater from driveways and parking areas. Additional alternatives include narrower roads, swales versus curbs/gutters and permeable surfaces such as turf stone, brick, and cobblestone. Compared to conventional developments, implementing **appropriate LID techniques can be more cost-effective, provide space-saving advantages, reduce runoff, and protect water quality** (Roseen et al. 2011). Also, NCWRC's Green Growth Toolbox provides information on nature-friendly planning (http://www.ncwildlife.org/Conserving/Programs/GreenGrowthToolbox.aspx).

5. Limit impervious surface to less than 10% or use stormwater control measures to mimic the hydrograph consistent with an impervious coverage of less than 10%. Consider building a parking structure to reduce impervious surface or use LID technology. Where feasible, trees and shrubs should be planted around stormwater ponds, or use LID technology. This would provide habitat benefits that offset those functions lost by development, partially restore aquatic habitats, reduce exposure of the water surface to sunlight to minimize thermal pollution, and provide essential summer and winter habitats.

6. We recommend that retention ponds be located at least 750 feet from small wetlands or streams to minimize hydrologic disturbance and ecological function.

7. Sediment and erosion control measures should use advanced methods and installed prior to any land-disturbing activity. The use of **biodegradable and wildlife-friendly sediment and erosion control devices** is strongly recommended. Silt fencing, fiber rolls and/or other products should have loose-weave netting that is made of natural fiber materials with movable joints between the vertical and horizontal twines. Silt fencing that has been reinforced with plastic or metal mesh should be avoided as it impedes the movement of terrestrial wildlife species. Excessive silt and sediment loads can have detrimental effects on aquatic resources including destruction of spawning habitat, suffocation of eggs, and clogging of gills.

Thank you for the opportunity to provide input for this project. For further information or **free** technical guidance from the NCWRC, please call (336) 290-0056 or email olivia.munzer@ncwildlife.org.

Sincerely,

Olivia Munzer
Western Piedmont Habitat Conservation Coordinator
Habitat Conservation Program

Literature

Roseen, R. M., T. V. Janeski, J. J. Houle, M. H. Simpson, and J. Gunderson. 2011. Forging the Link: Linking the Economic Benefits of Low Impact Development and Community Decisions. University of New Hampshire Stormwater Center, Virginia Commonwealth University, and Antioch University New England.

ec: David Shaeffer, U.S. Army Corps of Engineers
Alan Johnson, NCDWR
Byron Hamstead, USFWS
Todd Bowers, U.S. Environmental Protection Agency
W. Thomas Russ, NCWRC

United States Department of the Interior

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

April 19, 2018

Mr. David Shaeffer
U.S. Army Corps of Engineers
151 Patton Avenue, Room 208
Asheville, North Carolina 28801-5006

Dear Mr. Schaeffer:

Subject: Seefried Quattro Commercial Development; Mecklenburg County, North Carolina
Log No. 4-2-18-231

The U.S. Fish and Wildlife Service (Service) has reviewed the information provided in your correspondence dated April 9, 2018 wherein you request our comments on the project referenced above. We submit the following comments in accordance with the provisions of the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e); the National Environmental Policy Act (42 U.S.C. §4321 et seq.); and section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

Project Description

According to the information provided, the Applicant is seeking a NWP 39 for impacts associated with the construction of a commercial development on approximately 159 acres of land in Charlotte, North Carolina. Specifically, the project would consist of a four-story commercial distribution facility, appurtenant parking, utility lines, roadways, and multiple stormwater control structures. The proposed project would result in 560 linear feet of permanent impacts to an unnamed tributary to Paw Creek and fill a 0.13 acre pond. The site (with component parcels primarily owned by City of Charlotte), consists of a mixture of forest, pasture, developed open space, and transitional habitats along maintained roadways and forest edges.

Impact avoidance measures include, a spanning structure over Ticer Branch and horizontal directional drilling (or similar methods) to preclude stream impacts mediated by utility line crossings. The Applicant indicated that work would be conducted under dry working conditions.

Federally Listed Endangered and Threatened Species

According to Service records, suitable summer roosting habitat may be present in the project area for the federally threatened northern long-eared bat (*Myotis septentrionalis*). However, the final 4(d) rule (effective as of February 16, 2016), exempts incidental take of northern long-eared bat associated with activities that occur greater than 0.25 miles from a known hibernation site, and greater than 150 feet from a known, occupied maternity roost during the pup season (June 1

– July 31). Based on the information provided, the project (which may require tree clearing) would occur at a location where any incidental take that may result from associated activities is exempt under the 4(d) rule.

Service records indicate that occurrences of the federally endangered Schweinitz's sunflower (*Helianthus schweintizii*) occur in the vicinity of the proposed project. The most recent Protected Species Habitat Assessment Report dated March 1, 2018 (also dated March 9, 2018 therein) indicates that potential habitat for the federally endangered Schweinitz's sunflower (*Helianthus schweintizii*) occurs onsite. Although survey efforts conducted January 2, 2018 and March 9, 2018, did not detect any individuals of this species (or genus) at that time, CWS staff indicated that "*the project might affect the Schweinitz's sunflower and a targeted species survey may be required to make a conclusive biological determination*." The Service appreciates the Applicant's consideration for this species

To best inform your effect determination, we request that the Applicant conduct targeted surveys during the optimal survey window (flowering season) for this species (late August – first frost). We acknowledge that experienced botanists may be able to diagnose this species when it is not flowering. Therefore, we would accept survey results outside of the optimal survey window provided that: 1) surveys are conducted by a qualified botanist that has experience with this species; 2) the surveyor(s) can confirm that above-ground diagnostic characters are readily identifiable as evidenced by a relevant reference population[1]; 3) all potential habitats within the proposed impact area are systematically evaluated; 4) survey efforts are summarized and reported, preferably with photographs of the reference population and onsite conditions.

The Applicant determined that the proposed project would not affect any other federally protected species based on the apparent lack of suitable habitats onsite.

Our habitat suitability models predict the presence of the Carolina darter (*Etheostoma collis*) in the project's receiving waters (Paw Creek). This is a federal species of concern and is not currently afforded legal protection under the Act. However, incorporating proactive conservation measures on its behalf may preclude the need to list this species in the future. Like many aquatic species, potential threats to this fish include chemical runoff and high sedimentation. We offer the following comments in the interest of protecting this, and other fish and wildlife resources:

<u>Impervious Surfaces and Low-Impact Development</u>

The Service is concerned about the proposed increase in impervious surface and stormwater-mediated impacts to streams and wetlands onsite. Studies[2] show that areas of 10- to 20-percent impervious surface (such as roofs, roads, and parking lots) double the amount of storm-water runoff compared to natural cover and decrease deep infiltration (groundwater recharge) by

[1] Habitat conditions (e.g. canopy cover, disturbance regime, prevalence of deer browse, competition from plant associates) may influence identifiable characteristics of individuals and plant clusters. Every effort should be made to use a reference population that occurs in conditions similar to potential habitats within the proposed project area.
[2]Federal Interagency Stream Restoration Working Group (15 federal agencies of the United States Government). Published October 1998, Revised August 2001. Stream Corridor Restoration: Principles, Processes, and Practices. GPO Item No. 0120-A; SuDocs No. A 57.6/2:EN 3/PT.653. ISBN-0-934213-59-3.

16 percent. At 35- to 50-percent impervious surface, runoff triples, and deep infiltration is decreased by 40 percent. Additionally, the adequate treatment of storm water in development areas is essential for the protection of water quality and aquatic habitat in developing landscapes.

Increased storm-water runoff also directly damages aquatic and riparian habitat, causing stream-bank and stream-channel scouring. In addition, impervious surfaces reduce groundwater recharge, resulting in even lower than expected stream flows during drought periods, which can induce potentially catastrophic effects for fish, mussels, and other aquatic life. Accordingly, we recommend that all new developments, regardless of the percentage of impervious surface area they will create, implement storm-water-retention and -treatment measures designed to replicate and maintain the hydrograph at the preconstruction condition in order to avoid any additional impacts to habitat quality within the watershed.

We recommend the use of low-impact-development techniques,[3] such as reduced road widths, grassed swales in place of curb and gutter, rain gardens, and wetland retention areas, for retaining and treating storm-water runoff rather than the more traditional measures, such as large retention ponds, etc.

Where detention ponds are used, storm-water outlets should drain through a vegetated area prior to reaching any natural stream or wetland area. Detention structures should be designed to allow for the slow discharge of storm water, attenuating the potential adverse effects of storm-water surges; thermal spikes; and sediment, nutrient, and chemical discharges. **Since the purpose of storm-water-control is to protect streams and wetlands, no storm-water-control measures or best management practices should be installed within any stream (perennial or intermittent) or wetland.** We recommend that retention ponds be located at least 750 feet from small wetlands to minimize hydrologic disturbance and ecological function.

We also recommend that consideration be given to the use of pervious materials (i.e., pervious concrete, interlocking/open paving blocks, etc.) for the construction of roads, driveways, sidewalks, etc. Pervious surfaces minimize changes to the hydrology of the watershed and can be used to facilitate groundwater recharge. Pervious materials are also less likely to absorb and store heat and allow the cooler soil below to cool the pavement. Additionally, pervious concrete requires less maintenance and is less susceptible to freeze/thaw cracking due to large voids within the concrete.

Erosion and Sediment Control

Measures to control sediment and erosion should be installed before any ground-disturbing activities occur. Disturbed areas should be revegetated with native grass and tree species as soon as the project is completed. Ground disturbance should be limited to what will be stabilized quickly, preferably by the end of the workday. Natural fiber matting (coir) should be used for erosion control as synthetic netting can trap animals and persist in the environment beyond its intended purpose.

[3]We recommend visiting the Environmental Protection Agency's Web site (http://www.epa.gov/polluted-runoff-nonpoint-source-pollution/urban-runoff-low-impact-development) for additional information and fact sheets regarding the implementation of low-impact-development techniques.

Roadways and Utility Crossings

We appreciate your efforts to avoid impacts to streams by the proposed use of a spanning structure over Ticer Branch and boring for utility line crossings. As proposed, the bridge should span the channel and the floodplain in order to minimize impacts to aquatic resources, allow for the movement of aquatic and terrestrial organisms, and eliminate the need to place fill in streams.

Bridges should be designed and constructed so that no piers or bents are placed in the stream, approaches and abutments do not constrict the stream channel, and the crossing is perpendicular to the stream. When bank stabilization is necessary, we recommend that the use of riprap be minimized and that a riprap-free buffer zone be maintained under the bridge to allow for wildlife movement. If fill in the floodplain is necessary, floodplain culverts should be added through the fill to allow the stream access to the floodplain during high flows.

Riparian Buffers

Natural, forested riparian buffers are critical to the health of aquatic ecosystems. They accomplish the following:

1. catch and filter runoff, thereby helping to prevent nonpoint-source pollutants from reaching streams;
2. enhance the in-stream processing of both point- and nonpoint-source pollutants;
3. act as "sponges" by absorbing runoff (which reduces the severity of floods) and by allowing runoff to infiltrate and recharge groundwater levels (which maintains stream flows during dry periods);
4. catch and help prevent excess woody debris from entering the stream and creating logjams;
5. stabilize stream banks and maintain natural channel morphology;
6. provide coarse woody debris for habitat structure and most of the dissolved organic carbon and other nutrients necessary for the aquatic food web; and
7. maintain air and water temperatures around the stream.

Forested riparian buffers (a minimum 50 feet wide along intermittent streams and 100 feet wide along perennial streams [or the full extent of the 100-year floodplain, whichever is greater]) should be created and/or maintained along all aquatic areas. Within the watersheds of streams supporting endangered aquatic species, we recommend undisturbed, forested buffers that are naturally vegetated with trees, shrubs, and herbaceous vegetation and extend a **minimum** of 200 feet from the banks of all perennial streams and a **minimum** of 100 feet from the banks of all intermittent streams, or the full extent of the 100-year floodplain, whichever is greater.) Impervious surfaces, ditches, pipes, roads, utility lines (sewer, water, gas, transmission, etc.), and other infrastructures that require maintained, cleared rights-of-way and/or compromise the functions and values of the forested buffers should not occur within these riparian areas.

Mitigation

The NCSAM rating sheets provided indicate that Stream C has a high functioning wooded riparian buffer which has important implications for thermoregulation and maintaining aquatic habitats (see above) onsite and downstream. Moreover, we are concerned about potential

impacts to downstream habitats (Paw Creek) that may support the Carolina darter (federal species of concern). The Applicant proposes to mitigate for the loss of stream at a 0.5:1 ratio. The Service highly values the ecological role of this stream and recommends a minimum mitigation ratio of 2:1.

The Service appreciates the opportunity to provide these comments. Please contact Mr. Byron Hamstead of our staff at 828/258-3939, Ext. 225, if you have any questions. In any future correspondence concerning this project, please reference our Log Number 4-2-18-231.

Sincerely,

- - original signed - -

Janet Mizzi
Field Supervisor

E.c. Daniel Roberts; CWS
Olivia Munzer; NCWRC
TR Russ; NCWRC
Alan Johnson; NCDWR
Todd Bowers; USEPA

Kimley»Horn

MEMORANDUM

To:	Stuart Hair, C.M. Economic and Community Affairs Manager
From:	Chris Tinklenberg, PWS Kimley-Horn and Associates, Inc.
Date:	April 30, 2018
Subject:	Project Quattro / CLT Land Site Charlotte, Mecklenburg County, North Carolina

---

Dear Mr. Hair,

On behalf of our client, Seefried Industrial Properties, Inc., Kimley-Horn is submitting this memorandum detailing the results of the pedestrian survey performed for the above referenced project in accordance with the methodologies recommended Byron Hamstead, U.S. Fish and Wildlife Services. The pedestrian survey was conducted by KH staff Addie Lasitter, WPIT and Michael Knepper, EIT on April 26, 2018.

BACKGROUND INFORMATION

The project site is located north of the Charlotte Douglas International Airport along Tuckaseegee Road, southeast of the I-485 and I-85 intersection, in in unincorporated Mecklenburg County, North Carolina. The overall limits of disturbance for the project area consists of approximately 100-acres.

METHODOLOGIES AND FINDINGS

As of April 25, 2018, the United States Fish and Wildlife Service (USFWS) lists Schweinitz's sunflower as a federally protected species for Mecklenburg County. Habitat requirements for this species are based on the current best available information from referenced literature and/or USFWS.

Schweinitz's Sunflower
USFWS Optimal Survey Window: late August-October

Habitat Description: Schweinitz's sunflower, endemic to the Piedmont of North and South Carolina. The few sites where this rhizomatous perennial herb occurs in relatively natural vegetation are found in Xeric Hardpan Forests. The species is also found along roadside rights-of-way, maintained power lines and other utility rights-of-way, edges of thickets and old pastures, clearings and edges of upland

oak-pine-hickory woods and Piedmont longleaf pine forests, and other sunny or semi-sunny habitats where disturbances (*e.g.*, mowing, clearing, grazing, blow downs, storms, frequent fire) help create open or partially open areas for sunlight. It is intolerant of full shade and excessive competition from other vegetation (see Figure 1). It is generally found growing on shallow sandy soils with high gravel content; shallow, poor, clayey hardpans; or shallow rocky soils, especially those derived from mafic rocks.

Prior to conducting on-site pedestrian surveys, Kimley-Horn visited a documented reference community to review the appearance of the sunflower outside of the optimal survey window. The reference community is located in York County, SC, within the maintained right-of-way of Church Road (SC Hwy 654), adjacent to Burgis Creek (34.932818, -80.938972; see Figure 2). The reference community was identified by Kimley-Horn scientists and confirmed by USFWS in October 2016. Additionally, a review of the NCNHP database on April 30, 2018, indicates no known occurrences within 1.0 mile of the study area.

Potentially suitable habitat for Schweinitz's sunflower is present within the project study area, within areas of disturbance, including roadside shoulders and utility right-of-ways; however, these areas are either heavily maintained by mowing or are within areas which are dominated by tall herbaceous grasses and forbs creating only marginally suitable habitat. Surveys were conducted by Kimley-Horn scientists throughout areas of potentially suitable habitat on April 26, 2018. Herbaceous species observed during the survey include broomsedge (*Andropogon virginicus*), Chinese lespedeza (*Lespedeza cuneata*), goldenrod (*Solidago sp.)*, Queen Anne's lace (*Daucus carota*), blackberry (*Rubus argutus*), common milkweed (*Asclepias syriaca*), dogfennel (*Eupatorium capillifolium*) and Johnson grass (*Sorghum spp.*). Several species of the Asteraceae family were observed, including *Helianthus spp* and *Bidens spp.* Sapling species observed in areas of less frequent maintenance and along wood lines include winged elm (*Ulmus alata*), red maple (*Acer rubrum*), and sweet gum (*Liquidambar styraciflua*). No individuals of Schweinitz's sunflower were observed during the pedestrian survey.

CONCLUSION

No individuals of Schweinitz's sunflower were observed during the *Helianthus schweinitzii* pedestrian survey on April 26, 2018. Although the survey was conducted outside of the optimal survey window, a documented Schweinitz's sunflower reference community was visited prior to conducting on-site pedestrian surveys.

Based on the results of the NCNHP database review indicating no known populations of Schweinitz's sunflower within 1.0 mile of the project study area and the absence of observed individuals during the pedestrian survey, KH concludes that the project will have no effect on the Schweinitz's sunflower.*

**This biological conclusion represents the best professional opinion of KH and is not an official determination of effect. Consultation with the USFWS may be necessary if the opinion of the lead federal agency differs from the determination provided herein.*

Statement of Qualifications:

Investigator:	Addie Lasitter, WPIT
Education:	B.S. Natural Resource Ecology and Management, conc. Wetland Sciences, 2013; M.S. Earth Sciences, 2016
Experience:	Environmental Analyst, Kimley-Horn and Associates, Inc., 2017-Present
Responsibilities:	Natural communities assessments, threatened and endangered species habitat assessments, wetland and stream delineations, GPS, GIS, tree surveys

Attachments

- Figure 1: Habitat Map
- Figure 2: Reference Site Location
- Reference Photographs

Photo Page 1

Photo 1 – Representative community – Located in York County, SC, within the maintained right-of-way of Church Road (SC Hwy 654).

Photo 2 - Representative community – Located in York County, SC, within the maintained right-of-way of Church Road (SC Hwy 654).

Photo Pages

Project	Project Quattro Charlotte, Mecklenburg County, North Carolina	**Prepared By**
Date	**Project Number**	Kimley»Horn
5/2/18	019854002	

Photo Page 2

Photo 3 – *Helianthus schweinitzii* – Located in York County, SC, within the maintained right-of-way of Church Road (SC Hwy 654).

Photo 4 – Maintained road easement and potential *H. schweinitzii* habitat.

Photo Pages

Project	Project Quattro Charlotte, Mecklenburg County, North Carolina	**Prepared By**
Date	**Project Number**	Kimley»Horn
5/2/18	019854002	

Photo Page 3

Photo 5 – Human induced altered land, potential suitable habitat for *H. schweinitzii.*

Photo 6 - Maintained road easement and potential *H. schweinitzii* habitat.

Photo Pages

Project	Project Quattro Charlotte, Mecklenburg County, North Carolina	**Prepared By**
Date	**Project Number**	Kimley»Horn
5/2/18	019854002	

Photo Page 4

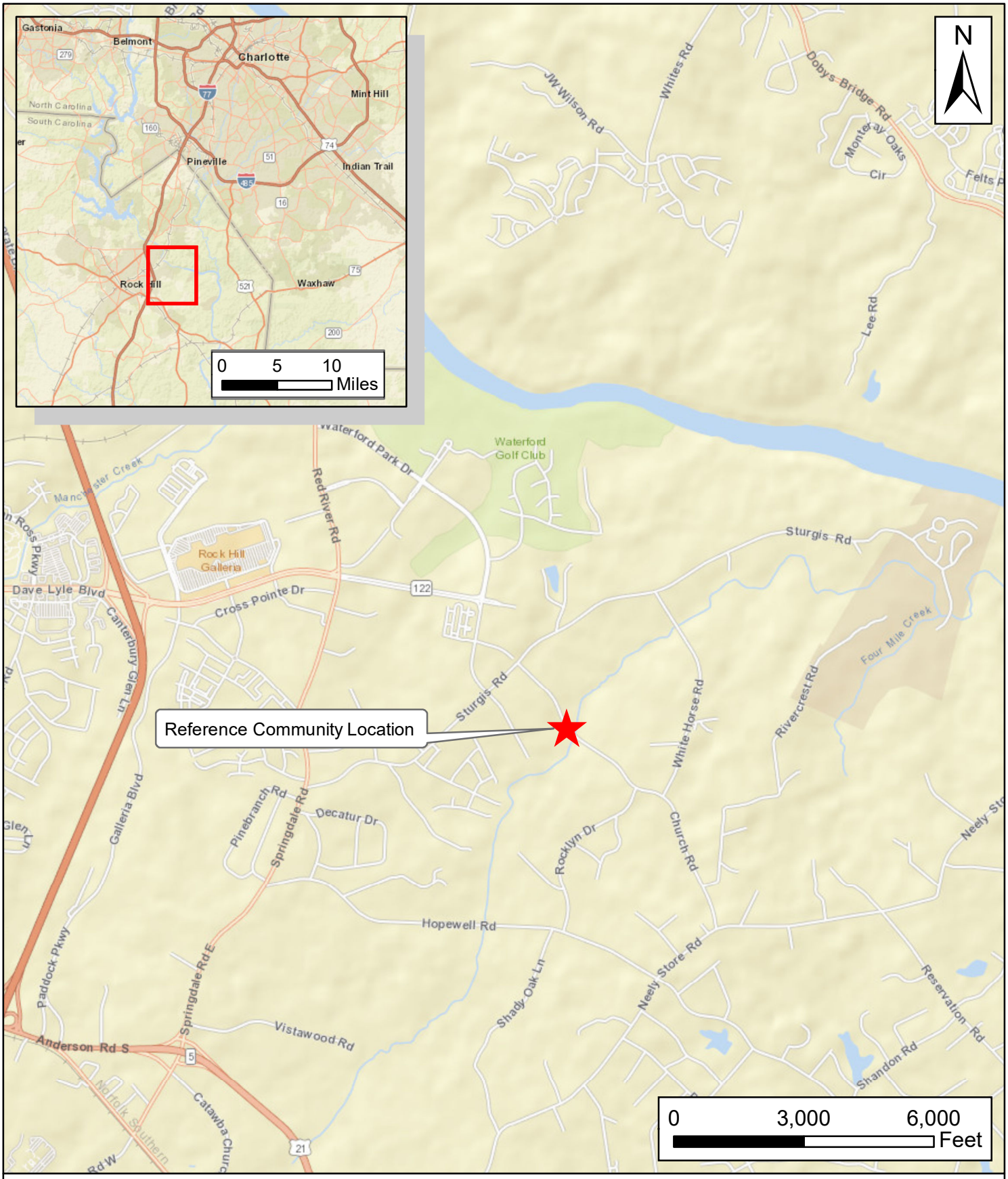
Photo 7 – Human induced altered land, potential suitable habitat for *H. schweinitzii*.

Photo Pages

Project	Project Quattro Charlotte, Mecklenburg County, North Carolina	**Prepared By**
Date	**Project Number**	Kimley»Horn
5/2/18	019854002	

Kimley»Horn

Figure 1
Habitat Map
Project Quattro
May 2018
Charlotte, Mecklenburg County, NC



Kimley»Horn

Figure 2
Reference Site Location
Project Quattro
May 2018
Charlotte, Mecklenburg County, NC

United States Department of the Interior

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

May 4, 2018

Mr. Daniel Roberts
Carolina Wetland Services Inc.
550 East Westinghouse Boulevard
Charlotte, North Carolina 28273

Dear Mr. Roberts:

Subject: Seefried Quattro Commercial Development; Mecklenburg County, North Carolina
Log No. 4-2-18-231

The U.S. Fish and Wildlife Service (Service) has reviewed the information provided in your correspondence dated April 27, 2018 wherein you update and summarize multiple site evaluations for federally protected species. We submit the following comments in accordance with the provisions of the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e); the National Environmental Policy Act (42 U.S.C. §4321 et seq.); and section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

Federally Listed Endangered and Threatened Species

The Service accepts your Protects Species Habitat Assessment Report. We acknowledge that potential suitable habitat (delineated in Figure 3 of your Report) was observed on the 158 acre site for the federally endangered Schweinitz's sunflower (*Helianthus schweinitzii*). CWS staff confirmed that diagnostic above-ground vegetative parts were readily identifiable following a site visit to a nearby reference population. On the same day, onsite areas containing potential habitats for this species were systematically surveyed, but no individuals (nor members of genus *Helianthus*) were detected at that time.

Please be aware that in accordance with the Act, it is the responsibility of the appropriate federal agency or its designated representative to review its activities or programs and to identify any such activities or programs that may affect endangered or threatened species or their habitats. If it is determined that the proposed activity may adversely affect any species federally listed as endangered or threatened, formal consultation with this office must be initiated. Our concurrence is not required for a "no effect" determination from the action agency.

We refer you to our previous comments (dated April 19, 2018) regarding other federally protected species, federal species of concern, development recommendations, and mitigation.

The Service appreciates the opportunity to provide these comments. Please contact Mr. Byron Hamstead of our staff at 828/258-3939, Ext. 225, if you have any questions. In any future correspondence concerning this project, please reference our Log Number 4-2-18-231.

Sincerely,

- - original signed - -

Janet Mizzi
Field Supervisor

ATTACHMENT 6

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North Carolina Department of Natural and Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Roy Cooper
Secretary Susi H. Hamilton

Office of Archives and History
Deputy Secretary Kevin Cherry

February 13, 2018

Joe Scarborough
Seefried Industrial Properties, Inc.
3333 Riverwood parkway, Suite 200
Atlanta, GA 30339

Re: Commercial Development, Quattro Site, Tuckaseegee Road, Charlotte, CWS 2017-0565, Mecklenburg County, ER 18-0214

Dear Mr. Scarborough:

Thank you for your letter of January 12, 2018, concerning the above project.

We have conducted a review of the project and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the project as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona M. Bartos

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ATTACHMENT 7

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PHASE I ENVIRONMENTAL SITE ASSESSMENT

PROJECT QUATTRO

TUCKASEEGEE ROAD AND TODD ROAD
CHARLOTTE, MECKLENBURG COUNTY, NORTH CAROLINA
ECS PROJECT NO. 49-6142

FOR

SEEFRIED PROPERTIES

FEBRUARY 16, 2018

February 16, 2018

Mr. Joe Scarborough
Seefried Properties
3333 Riverwood Parkway
Suite 200
Atlanta, Georgia 30339

ECS Project No. 49-6142

Reference: Phase I Environmental Site Assessment Report, Project Quattro, Tuckaseegee Road and Todd Road, Charlotte, Mecklenburg County, North Carolina

Dear Mr. Scarborough:

ECS Southeast, LLP (ECS) is pleased to provide you with the results of our Phase I Environmental Site Assessment (ESA) for the referenced site. ECS services were provided in general accordance with ECS Proposal No. 49:8285P authorized on February 2, 2018 and generally meet the requirements of ASTM E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process and EPA Standards and Practices for All Appropriate Inquiries contained in 40 CFR Part 312.

If there are questions regarding this report, or a need for further information, please contact the undersigned.

ECS Southeast, LLP

Erika Frey
Assistant Staff Project Manager
efrey@ecslimited.com
704-525-5152

Justin Roth
Environmental Principal
jroth@ecslimited.com
843-654-4448

Project Summary

Project Quattro
Tuckaseegee Road and Todd Road
Charlotte, North Carolina

Report Section		No Further Action	REC	CREC	HREC	BER	Comment
4.0	User Provided Information	✔					
5.1	Federal ASTM Databases	✔					
5.2	State ASTM Databases	✔					
5.3	Additional Environmental Record Sources	✔					
6.0	Historical Use Information	✔					
7.0	Site and Area Reconnaissance		✔			✔	ECS considers the potential for an undocumented release from the apparent heating oil UST located at 8021 Tuckaseegee Road to be a REC of the subject property. ECS considers the surface debris scattered throughout the subject property to be a BER.
8.0	Additional Services	✔					
9.0	Interviews	✔					

ENVIRONMENTAL PROFESSIONAL STATEMENT

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in § 312.10 of 40 CFR 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Justin Roth
Environmental Principal
February 16, 2018

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TABLE OF APPENDICES

1.0 EXECUTIVE SUMMARY

ECS Southeast, LLP (ECS) was contracted by Seefried Properties to perform an ASTM E1527-13, Phase I Environmental Site Assessment (ESA) of the Project Quattro located at Tuckaseegee Road and Todd Road in Charlotte, Mecklenburg County, North Carolina (i.e. subject property). This Executive Summary is an integral part of the Phase I ESA report. ECS recommends that the report be read in its entirety.

The subject property is identified by the Mecklenburg County GIS as Parcel Identification Numbers (PINs): 05553101, 05538201, 05538202, 05538203, 05538204, 05538205, 05538206, 05538207, 05538208, 05538209, 05538210, 05538211, 05538213, 05538214, 05538113, 05538114, 05538115, 05538116, 05538124, 05538135, 05538129, 05538133, 05538118, 05538134, 05538132, 05538146, 05538144, 05538130, 05538153, 05538111, 05538110, 05538109, 05538108, 05538125, 05538105, 05538104, 05538147, 05538103, 05538126, 05538101, 05537113, 05537120, 05537114, 05537115, 05537116, 05537117, 05537112, 05537111, 05537101, 05537102, 05537103, 05537104, 05537105, 05537107, 05537109, and 05537110. The property is owned by the City of Charlotte and individual owners. The approximately 154-acre subject property consists of wooded land, portions of Tuckaseegee Road, Todd Road, Clark Place Drive, and approximately four residences with associated structures. ECS observed apparent active and abandoned water supply wells and septic tank systems at the subject property. During the field reconnaissance, ECS observed a fill port and vent pipe indicative of a heating oil UST located at the residence of 8021 Tuckaseegee Road. ECS considers the potential for an undocumented release from the apparent heating oil UST located at 8021 Tuckaseegee Road to be a Recognized Environmental Condition (REC) of the subject property.

ECS observed surface trash and solid waste debris piles consisting of household debris, bottles, tires, discarded wood, bricks, and concrete blocks throughout the vicinity of the subject property. ECS considers the surface debris scattered throughout the subject property to be a Business Environmental Risk (BER).

The subject property is located in a residential area of Charlotte. The subject property is bound on the north by Interstate 85, followed by wooded land and residences; on the east by wooded land and vacant land; on the south by Wilkinson Boulevard, followed by wooded land; and on the west by Interstate-485, followed by a mobile home park. We did not identify adjoining or nearby properties that are considered a REC for the subject property.

Based on the records search, site reconnaissance and interviews, the subject property appears to have been occupied with residences, roads, wooded land, and agricultural and/or pasture land from at least 1905. From the 1940s until the 1980s, there were several residences developed at the subject property. A warehouse was developed at the subject property in approximately 1967. A portion of a mobile home park occupied the southwestern portion of the subject property from the early 1990s until approximately the mid-2000s, when Interstate 485 was constructed. Numerous residences and the warehouse building were demolished between the 1990s to present. The area has developed to a primarily residential area of the subject property. Historical records prior to 1905, which does not predate the residential use of the subject property, were not reasonably ascertainable for the subject property. No obvious indications of RECs were identified in the historical data review.

A regulatory database search report was provided by Environmental Data Resources, Inc. (EDR). The database search involves researching a series of Federal, State, Local, and other databases for facilities and properties that are located within specified minimum search distances from the subject property. The report did identify the subject property on the databases researched (EDR Historical Auto database); however, based on interviews and aerial photograph, ECS does not consider the listing to be a REC of the site. The EDR report identified several off-site properties within the minimum ASTM search distances. Based on our review of available public records, none of the listings are believed to represent a REC for the subject property.

ASTM E1527-13 defines a "data gap" as: "a lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information". Data gaps which would be expected to impact our ability to render a professional opinion concerning the subject property were not identified.

We have performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM E1527-13 of the Project Quattro located at Tuckaseegee Road and Todd Road, in Charlotte, Mecklenburg County, North Carolina. Exceptions to, or deletions from, this practice are described in Section 2.6 of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the property except for the following:

- ECS considers the potential for an undocumented release from the apparent heating oil UST located at 8021 Tuckaseegee Road to be a Recognized Environmental Condition (REC) of the subject property.

The following Business Environmental Risks (BERs) and/or additional considerations were identified:

- ECS considers the surface debris scattered throughout the subject property to be a BER.

Additional Considerations

Historical aerial photographs depict numerous apparent residential structures on the subject property that were not located on the subject property during our site reconnaissance. ECS does not have technical evidence how these structures were heated, or if the structures utilized septic tanks or water supply wells. Based on the age, it is possible that the structures were heated with oil stored in USTs. ECS did not observe evidence of USTs, septic tanks, or water supply wells during our site reconnaissance in the location of these former structures. ECS observed apparent active drinking water wells and apparent septic tank systems utilized at the current residential buildings. While not considered a REC, if encountered during site development, USTs, septic systems, and water supply wells should be closed in accordance with applicable laws.

The subject property was historically used as agricultural land. Such use of the subject property may have included the storage and use of beneficial agricultural products such as fungicides, herbicides, and/or fertilizers. The legal use (i.e., in accordance with the manufacturers' specifications and customary practices) of such substances, in the course of standard operational practices does not constitute a "release to the environment." Further, reasonably ascertainable information was not observed during the course of our assessment, including historical records review, or field reconnaissance observations regarding past site history, that a past release of such substances had

occurred. Therefore, the mere presence of this historical land use does not meet the definition of a REC.

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ATTACHMENT 8

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LIMITED LEAD-BASED PAINT TESTING REPORT
8021 TUCKASEEGEE ROAD
CHARLOTTE, NORTH CAROLINA 28214

Owner/Prepared for:
Charlotte Douglas International Airport
5601 Wilkinson Boulevard
Charlotte, North Carolina 28219
704.488.7029

Prepared by:
ROY CONSULTING GROUP CORPORATION
PROJECT #51-102114

James E. Roy, Jr.
James E. Roy, Jr.
NC Inspector/Risk Assessor-#120134

Patricia P. Roy
Patricia P. Roy
President

ROY CONSULTING GROUP CORPORATION

9823 BALMORAL CIRCLE
CHARLOTTE, NORTH CAROLINA 28210
PHONE: 704.968.4111 FAX: 704.553.9458

August 25, 2017

Kevin M. Hennessey, SR/WA
Community Program Manager
Charlotte Douglas International Airport
Community Programs
5601 Wilkinson Boulevard
Charlotte, North Carolina 28219

Subject: **LIMITED LEAD-BASED PAINT TESTING REPORT**
8021 TUCKASEEGEE ROAD
CHARLOTTE, NORTH CAROLINA 28214
OWNER: CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT – 704.488.7029
ROY CONSULTING GROUP CORPORATION PROJECT #51-102114

Dear Mr. Hennessey:

As authorized by Contract Number 2015001287 between the City of Charlotte and Roy Consulting Group Corporation (Roy Consulting Group) dated December 1, 2014 and your written Notice to Proceed Order dated August 15. 2017, we are pleased to submit this Limited Lead-Based Paint Testing Report for the subject property location. The report summarizes our on-site investigation and procedures, RMD, Inc. LPA-1 Lead Paint Spectrum Analyzer (XRF) test results and our conclusions based on the data collected. **Lead-based paint was not identified at concentrations greater than or equal to 1.0 mg/cm^2 (milligram per centimeter squared) during this limited testing.**

1.0 INTRODUCTION

The property consists of a single-story, single-family, vinyl-sided (on plywood) and brick exterior, residential house with asphalt shingle roof and unfinished basement with partial crawlspace. The house was constructed in 1953. The house was vacant at the time of the testing.

Mr. Jim Roy, Certified North Carolina Lead-Based Paint Inspector/Risk Assessor, Number 120134, performed the lead-based paint testing services on August 25, 2017.

The location of the subject property, access to the subject property and an explanation of the areas to be assessed were provided by the Charlotte Douglas International Airport. The work was completed as documented in Appendix A - Methodology.

2.0 FINDINGS FOR LEAD-BASED PAINT TESTING

Testing for the presence of lead-based paint was completed using the XRF. For paint to be considered "Lead-Based Paint," the paint must contain lead concentrations of 0.5% by weight or greater or contain lead concentrations of 1.0 mg/cm^2 or greater under the HUD guidelines and the EPA regulations. Please note that detectable lead quantities less than 1.0 mg/cm^2 may constitute a lead dust hazard even though it is not considered a lead-based paint. **Lead-based paint was not detected at concentrations greater than 1.0 mg/cm^2 during this limited testing.**

Note: Based on HUD guidelines, the sides of the house, including the windows, doors, and cabinets, are identified by letter. The A-side of the house is the side facing the road and is typically the location of the main entrance door to the house. The remaining three sides of the house are denoted with letters B through D moving clockwise from the front of the house. Exterior windows throughout the house are additionally identified by a number, beginning with number one, which identifies the window on the farthest right side of the exterior wall. The next window moving toward the left is window two, etc. Thus, the far right window on wall A or A-side is window A1, the second window moving to the left is A2, the third window is A3, etc. When windows exist on a second floor, the window label will have the floor number in front of the letter. Thus, the farthest right window on the second floor wall A or A-side is 2A1. Exterior doors are identified with the same numbering system. Interior doors and windows are numbered similarly, however the numbering is specific to the room. Thus, several rooms may have door A1 which would be the far right door on wall A or A-side (when looking at the room from the front of the house). Also, lead-based paint may exist under an exposed substrate. Thus, if a substrate is identified as containing lead-based paint, yet is unpainted, lead-based paint may exist beneath the exposed substrate (i.e., paint under vinyl siding).

For a list of surfaces tested and the XRF results, refer to the complete XRF Testing Report contained in Appendix B.

3.0 DISCLOSURE

As required by Section 0.0808 of the North Carolina Lead-Based Paint Hazard Management Program, a summary of the lead-based paint testing activities performed at the site has been forwarded to the North Carolina Department of Health and Human Services – Health Hazards Control Unit.

According to Federal Law (24 CFR part 35 and 40 CFR part 745), a copy of this summary must be provided to new tenants and purchasers of this property before they become obligated under a lease or sales contract. The entire report must also be provided to new purchasers and be made available to new tenants. Landlords (leasers) and sellers are also required to distribute an educational pamphlet, including standard warning language in their leases or sales contracts to ensure that parents have the information necessary to protect their children from lead-based paint hazards.

4.0 QUALIFICATIONS

This report summarizes Roy Consulting Group's evaluation of the conditions observed at the subject property during the course of the survey to identify lead-based paints. Our findings are based upon our observations at the property and sampling performed at the time of the testing activities. Additional lead-based paints may exist in other portions of the property but were undetected due to inaccessibility or due to an imperceptible change in paints. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation. The information contained in this report is based upon the data furnished by Charlotte Douglas International Airport and observations and test results provided by Roy Consulting Group. These observations and results are time-dependent and are subject to changing site conditions and revisions to federal, state, and local regulations.

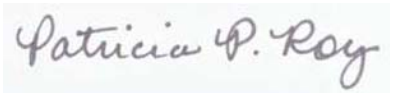
This report was prepared pursuant to the contract Roy Consulting Group has with Charlotte Douglas International Airport. That contractual relationship included an exchange of information about the property that was unique and between Roy Consulting Group and Charlotte Douglas International Airport and serves as the basis upon which this report was prepared. Because of the importance of the communication between Roy Consulting Group and Charlotte Douglas International Airport, reliance or any use of this report by anyone other than Charlotte Douglas International Airport for whom it was prepared is prohibited and therefore, not foreseeable by Roy Consulting Group.

Reliance or use by any such third party without explicit authorization in the report does not make said third party a third party beneficiary to Roy Consulting Group's contract with Charlotte Douglas International Airport. Any such unauthorized reliance on or use of this report, including any of its information or conclusions, will be at the third party's risk. For the same reasons, no warranties or representations, expressed or implied in this report, are made to any such third party.

We appreciate this opportunity to provide professional services for this project. If we can be of further assistance, or if you have any questions concerning this report, please do not hesitate to call us at 704.968.4111.

Sincerely,

ROY CONSULTING GROUP CORPORATION



James E. Roy, Jr.
NC Inspector/Risk Assessor-#120134
Principal

Patricia P. Roy
President

Appendices

Appendix A	Methodology
Appendix B	XRF Testing Report
Appendix C	Photos

APPENDIX A

METHODOLOGY

PROJECT METHODOLOGY

The lead-based paint limited testing was conducted in general accordance with EPA work practice standards for conducting lead-based paint activities (40 CFR 745.227), Lead-Based Paint Poisoning Prevention In Certain Residential Structures (24 CFR Part 35), and the U.S. Department of Housing and Urban Development (HUD) *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* (Guidelines). Roy Consulting Group is a North Carolina Certified Lead Firm – No. FPB-0186.

Methodology for Lead-Based Paint Limited Testing

A lead-based paint testing, as defined by 40 CFR 745.223 and 29 CFR Part 35, is a surface-by-surface investigation to determine the presence of lead-based paint and the provisions of a report explaining the results of the investigation. As requested, this testing was limited to approximately 100 XRF test shots. The lead-based paint limited testing began with our inspector/risk assessor walking the subject property and documenting room equivalents, testing combinations and selecting test locations. After the testing strategy was determined, Roy Consulting Group used RMD LPA-1 XRF, serial number 2635, to determine the lead content in mg/cm^2 of selected painted surfaces on the subject property building(s). **As requested, the testing was limited to select locations of the building. Since the testing was limited to select surfaces, this testing does not constitute a complete EPA lead-based paint building testing.**

APPENDIX B

XRF TESTING REPORT

The lead-based paint XRF testing reports are separated into the following sections:

Section 1 – Cover Page

Section 2 – Sequential Report of Lead-Based Paint Testing
Detailed report of LBP samples in the order collected.

Section 3 – Summary Report of Lead-Based Paint Testing
Detailed report of LBP samples with concentrations $\geq$ 1 mg/cm^2.

Paint conditions in this report have been documented as either INTACT (I) or Poor (P) where I is paint with no deterioration and P is deteriorated paint. Deteriorated paint means any interior or exterior paint or other surface coating that is peeling, chipping, chalking or cracking, or any paint or surface coating located on an interior or exterior surface or fixture that is otherwise damaged or separated from the substrate.

LEAD PAINT INSPECTION REPORT

REPORT NUMBER: S#02635 - 08/25/17 10:52

INSPECTION FOR: CDIA

PERFORMED AT: 8021 Tuckaseegee

INSPECTION DATE: 08/25/17

INSTRUMENT TYPE: R M D
MODEL LPA-1
XRF TYPE ANALYZER
Serial Number: 02635

ACTION LEVEL: 1.0 mg/cm**2

ROY CONSULTING GROUP CORPORATION

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION FOR:CDIA

Inspection Date: 08/25/17 8021 Tuckaseegee
Report Date: 8/25/2017
Abatement Level: 1.0
Report No. S#02635 - 08/25/17 10:52
Total Readings: 103
Job Started: 08/25/17 10:52
Job Finished: 08/25/17 12:24

Read No.	Rm	Room Name	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm²)	Mode
1		CALIBRATION								0.9	TC
2		CALIBRATION								1.0	TC
3		CALIBRATION								0.9	TC
4	001	House	A	Wall	L Lft		I	Vinyl	Lt Brown	0.0	QM
5	001	House	A	Column	Lft	U column	I	Aluminum	Lt Brown	0.0	QM
6	001	House	A	Fascia			P	Wood	Green	-0.1	QM
7	001	House	A	Soffit			I	Vinyl	Lt Brown	0.0	QM
8	001	House	A	Door	Ctr	Lft jamb	I	Wood	Lt Brown	-0.1	QM
9	001	House	A	Door	Ctr	L Lft	I	Wood	Stained	-0.1	QM
10	001	House	A	Window	Lft	Lft casing	I	Aluminum	Lt Brown	-0.1	QM
11	001	House	A	Window	Lft	Sill	I	Aluminum	Lt Brown	0.0	QM
12	001	House	A	Window	Lft	Sash	I	Vinyl	Lt Brown	-0.1	QM
		sashes vinyl except basement									
13	001	House	B	Wall	L Rgt		I	Vinyl	Lt Brown	-0.1	QM
14	001	House	B	Fascia			P	Wood	Green	-0.1	QM
15	001	House	C	Wall	L Rgt		P	Wood	Green	-0.1	QM
		under vinyl									
16	001	House	C	Fascia			P	Wood	Green	0.2	QM
17	001	House	C	Trim Board	Rgt		P	Wood	Green	-0.1	QM
18	001	House	C	Soffit			I	Vinyl	Lt Brown	-0.1	QM
19	001	House	C	Window	Rgt	Sill	I	Aluminum	Lt Brown	-0.1	QM
20	001	House	C	Window	Rgt	Sash	I	Vinyl	Lt Brown	0.0	QM
21	001	House	C	Door	Ctr	Lft jamb	P	Wood	Brown	-0.1	QM
22	001	House	C	Door	Ctr	U Lft	P	Wood	Brown	0.0	QM
23	001	House	C	Threshold	Ctr		P	Wood	Brown	0.1	QM
24	001	House	C	Window	Lft	Lft casing	P	Metal	Silver	0.0	QM
25	001	House	C	Window	Lft	Sash	P	Metal	Silver	0.0	QM
		poison ivy all along Side D									
26	001	House	B	Door	Ctr	Rgt jamb	P	Wood	Green	0.0	QM
27	001	House	B	Door	Ctr	L Rgt	P	Wood	Black	-0.1	QM
28	001	House	B	Wall	L Ctr		P	Wood	Black	0.0	QM
		under vinyl									
29	001	Living Rm	A	Wall	L Ctr		P	Plaster	White	0.2	QM
30	001	Living Rm	A	Ceiling			P	Plaster	White	-0.1	QM
31	001	Living Rm	B	Floor			P	Wood	Natural	-0.1	QM
		under carpet									
32	001	Living Rm	A	Baseboard	Ctr		I	Wood	Natural	-0.1	QM
33	001	Living Rm	A	Window	Ctr	Sill	I	Wood	Natural	0.0	QM
34	001	Living Rm	A	Window	Ctr	Sash	I	Vinyl	Lt Brown	0.0	QM
35	001	Living Rm	A	Door	Lft	Rgt casing	I	Wood	Stained	-0.1	QM
36	001	Living Rm	A	Door	Lft	Rgt jamb	I	Wood	Stained	-0.1	QM
37	001	Living Rm	A	Door	Lft	L Lft	I	Wood	Stained	-0.1	QM

38	002	Dining Rm	B	Wall	L	Ctr		I	Plaster	White	-0.1	QM
39	002	Dining Rm	B	Ceiling				I	Plaster	White	-0.1	QM
40	002	Dining Rm	B	Floor				I	Wood	Natural	0.0	QM
	under carpet											
41	002	Dining Rm	A	Baseboard		Ctr		I	Wood	Stained	-0.1	QM
42	002	Dining Rm	A	Window		Ctr	Sill	I	Wood	Stained	-0.1	QM
43	002	Dining Rm	A	Window		Ctr	Sash	I	Vinyl	Lt Brown	-0.1	QM
44	002	Dining Rm	C	Bookcase		Lft		P	Wood	White	-0.1	QM
45	002	Dining Rm	C	Shelf		Lft		P	Wood	White	-0.1	QM
46	003	Den	B	Wall	L	Lft		I	Wood	Natural	-0.1	QM
47	003	Den	C	Ceiling				I	Wall Board	White	0.2	QM
48	003	Den	B	Baseboard		Lft		I	Wood	Stained	-0.1	QM
	floor unpainted wood											
49	003	Den	D	Door		Lft	Lft jamb	P	Wood	Brown	-0.1	QM
50	003	Den	D	Door		Lft	L Ctr	P	Wood	Stained	0.2	QM
51	004	Kitchen	D	Wall	L	Ctr		P	Plaster	Yellow	-0.1	QM
	cabinets removed											
52	004	Kitchen	A	Ceiling				P	Plaster	White	-0.1	QM
53	004	Kitchen	C	Floor				I	Wood	N/A	-0.1	QM
54	004	Kitchen	C	Window		Ctr	Sill	I	Wood	Stained	0.0	QM
	sashes are unpainted throughout											
55	004	Kitchen	D	Door		Rgt	Lft jamb	I	Wood	Stained	-0.1	QM
	no door											
56	005	Family Rm	D	Wall	L	Ctr		I	Wood	Stained	-0.1	QM
57	005	Family Rm	C	Ceiling				P	Plaster	White	-0.1	QM
58	005	Family Rm	C	Baseboard		Ctr		I	Wood	Stained	-0.1	QM
59	005	Family Rm	C	Window		Ctr	Sill	I	Wood	Stained	-0.1	QM
60	006	Bath 1	B	Wall	U	Rgt		P	Plaster	Green	-0.2	QM
61	006	Bath 1	C	Ceiling				P	Plaster	White	0.1	QM
62	006	Bath 1	C	Floor				I	Ceramic	Green	-0.1	QM
63	006	Bath 1	C	Wall	L	Lft		I	Ceramic	White	0.0	QM
64	006	Bath 1	C	Window		Lft	Sill	P	Wood	Beige	0.0	QM
65	006	Bath 1	C	Window		Lft	Apron	P	Wood	Beige	0.3	QM
66	006	Bath 1	C	Window		Lft	Sash	I	Vinyl	Lt Brown	-0.1	QM
67	007	BR1	C	Wall	L	Lft		P	Plaster	Beige	-0.1	QM
68	007	BR1	C	Ceiling				P	Plaster	White	-0.1	QM
69	007	BR1	C	Floor				I	Wood	Natural	-0.1	QM
70	007	BR1	D	Baseboard		Ctr		I	Wood	Stained	-0.1	QM
71	007	BR1	D	Window		Ctr	Sill	I	Wood	Stained	-0.1	QM
72	007	BR1	D	Window		Ctr	Sash	I	Vinyl	Lt Brown	-0.2	QM
73	007	BR1	A	Door		Lft	Lft jamb	I	Wood	Stained	-0.1	QM
74	007	BR1	A	Door		Lft	L Ctr	I	Wood	Stained	-0.1	QM
75	008	Bath 2	A	Wall	U	Ctr		P	Plaster	White	-0.1	QM
76	008	Bath 2	A	Ceiling				P	Plaster	White	-0.1	QM
77	008	Bath 2	A	Floor				I	Ceramic	White	-0.1	QM
78	008	Bath 2	D	Wall	L	Ctr		I	Ceramic	White	-0.1	QM
79	009	BR2	B	Wall	L	Ctr		P	Plaster	Green	-0.1	QM
80	009	BR2	B	Ceiling				P	Plaster	White	-0.1	QM
81	009	BR2	A	Floor				I	Wood	Natural	0.0	QM
82	009	BR2	D	Baseboard		Ctr		I	Wood	Stained	-0.1	QM
83	009	BR2	B	Closet		Lft	Door Jamb	I	Wood	Stained	-0.1	QM
84	009	BR2	B	Closet		Lft	Door Casing	I	Wood	Stained	-0.1	QM
85	009	BR2	B	Closet		Lft	Wall	P	Plaster	Blue	0.0	QM
86	010	BR3	A	Wall	L	Lft		P	Plaster	Beige	-0.1	QM
87	010	BR3	C	Ceiling				P	Plaster	White	0.0	QM
88	010	BR3	C	Floor				P	Wood	Natural	0.0	QM

89	010	BR3	A	Window		Ctr	Sill	P	Wood	Stained	-0.1	QM
90	010	BR3	A	Window		Ctr	Sash	I	Vinyl	Lt Brown	-0.1	QM
91	010	BR3	C	Door		Rgt	Lft jamb	I	Wood	Stained	0.0	QM
92	010	BR3	C	Door		Rgt	L Ctr	I	Wood	Stained	-0.1	QM
93	011	Hallway	A	Wall	L	Rgt		P	Plaster	Beige	0.1	QM
94	011	Hallway	C	Ceiling				P	Plaster	White	-0.1	QM
95	011	Hallway	A	Floor				I	Wood	Natural	-0.1	QM
96	011	Hallway	D	Baseboard		Ctr		I	Wood	Stained	-0.1	QM
97	011	Hallway	D	Attic Dr Frm		Ctr		P	Wood	White	-0.1	QM
98	011	Hallway	D	Attic Door		Ctr		P	Wood	White	-0.2	QM
99	011	Hallway	B	Door		Ctr	Rgt jamb	I	Wood	Stained	-0.1	QM
100	011	Hallway	B	Door		Ctr	U Rgt	I	Wood	Stained	0.0	QM
101		CALIBRATION									1.0	TC
102		CALIBRATION									1.0	TC
103		CALIBRATION									1.0	TC

---- End of Readings ----

SUMMARY REPORT OF LEAD PAINT INSPECTION FOR: CDIA

Inspection Date: 08/25/17 8021 Tuckaseegee
Report Date: 8/25/2017
Abatement Level: 1.0
Report No. S#02635 - 08/25/17 10:52
Total Readings: 103 Actionable: 0
Job Started: 08/25/17 10:52
Job Finished: 08/25/17 12:24

Read No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm²)	Mode
Calibration Readings									
---- End of Readings ----									

APPENDIX C

PHOTOS

Photo 1 – House – Side A

Photo 2 – House – Side B

Photo 3 – House – Side C

ROY CONSULTING GROUP CORPORATION

9823 Balmoral Circle
Charlotte, North Carolina 28210
Phone: 704.968.4111 Fax: 704.553.9458

August 2, 2017

Mr. Mike Jenkins
City of Charlotte
Procurement Services
600 East Fourth Street
Charlotte, North Carolina 28012

Subject: **REPORT OF LIMITED ASBESTOS SURVEY**
8021 TUCKASEEGEE ROAD
CHARLOTTE, MECKLENBURG COUNTY, NORTH CAROLINA
ROY CONSULTING GROUP CORPORATION PROJECT #41-090914

Dear Mr. Jenkins:

As authorized by the City of Charlotte, Notice to Proceed Order dated July 31, 2017 and Contract Number 2015000098, Roy Consulting Group Corporation (Roy Consulting Group) is pleased to submit this Report of Limited Asbestos Survey for the subject property (the property). Our report summarizes the project background, survey and sampling methodology, the laboratory results and qualifications. **Asbestos-containing materials (ACM) were identified during this survey.**

PROJECT BACKGROUND

The property consists of a single-story, single-family, vinyl-sided (on plywood) and brick exterior, residential house with asphalt shingle roof and unfinished basement with partial crawlspace. The house was constructed in 1953. The house was vacant at the time of the survey.

Roy Consulting Group completed suspect ACM sampling on July 31, 2017. The sampling was completed according to Environmental Protection Agency (EPA) regulations for suspect ACM identification. The sampling was completed to communicate the presence, location, and quantity of ACM in general conformance with the hazardous communications requirements of the Occupational Safety and Health Administrations (OSHA) Regulations 29 Code of Federal Regulations (CFR) 1910.1001 and 29 CFR 1926.1101.
The observations and results discussed in this report are time dependent and are subject to changing site conditions and revisions to federal, state and local regulations.

SURVEY AND SAMPLING METHODOLOGY

Initially, Roy Consulting Group identified materials at the property that were suspected of containing asbestos. Roy Consulting Group utilized this information to identify homogeneous sampling areas. A homogeneous sampling area, as defined by the Asbestos Hazard Emergency Response Act (AHERA), is an area of surfacing material, thermal system insulation material or miscellaneous material that is uniform in texture and appearance, was installed at one time and is unlikely to consist of more than one type or formulation of material. Roy Consulting Group next collected suspect ACM samples where required according to EPA regulations, which dictate the number and location of samples to be collected. Suspect materials found to be significantly damaged as defined by EPA were noted.

Thirty-two (32) bulk samples were collected from suspect building materials at the property. The samples were analyzed for asbestos by AmeriSci Richmond located in Midlothian, Virginia using Polarized Light Microscopy (PLM) in conjunction with dispersion staining techniques using EPA Method 600/M4-82/020. AmeriSci Richmond is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code #101904-0, to perform asbestos analysis using PLM methods. Materials containing less than one percent asbestos, as identified during laboratory analysis, are considered non-ACM. (Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound (NOB) materials. Materials analyzed by PLM with NAD or trace results are inconclusive and may contain asbestos. The EPA recommends analyzing flooring and other NOB materials utilizing TEM (transmission electron microscopy) analysis. ASTM (American Society for Testing and Materials) publication E2356-04, Section 6.1.5.2 recommends “at least one sample of each distinct homogeneous area of NOB materials shall be re-analyzed by TEM” if PLM analytical results are NAD or trace for ACM).

LABORATORY RESULTS

A detailed record of the bulk samples collected, including the summarized analytical results, is attached as Appendix A, Suspect Asbestos-Containing Materials Bulk Sampling Record. The laboratory analytical results and chain-of-custody sheet are contained in Appendix B. A material is considered by the EPA, OSHA, and the State of North Carolina to be asbestos-containing if at least one sample collected from a homogeneous area (H Area) contains asbestos in an amount greater than one percent. **As summarized in Appendix A, asbestos-containing materials were identified on the house during the survey as listed below.**

Interior

Light Brown Vinyl Flooring (Layer 1)

- Approximately 170 square feet of Light Brown Vinyl Flooring (Layer 1) on the Kitchen floor.

White HVAC Duct Joint Wrap

- Approximately 150 linear feet of White HVAC Duct joint wrap on the HVAC ducts in the basement and partial crawlspace and on the floor and ground underneath the duct work where air ducts have been removed (appears to be vandalism).

The identified ACM was classified as being in damaged condition at the time of the sampling event.

RECOMMENDATIONS

Based upon our site survey, the laboratory analytical results, and our experience with similar sites, we recommend:

- Based on the current condition, the asbestos-containing flooring materials and HVAC duct joint wrap are considered **Regulated Asbestos Containing Material (RACM).** RACM, as per EPA's NESHAP, 40 CFR, Part 61, Subpart M pose a significant exposure problem. Removal of RACM should be completed before any renovation or demolition work is completed on the property.

- Completion of an Asbestos Abatement Project Design by a licensed North Carolina Accredited Asbestos Project Designer prior to abatement activities. Removal of the RACM should be completed by a licensed North Carolina Asbestos Abatement Contractor.

QUALIFICATIONS

The field and laboratory results reported herein are considered sufficient in detail and scope to determine the presence of accessible and/or exposed suspect ACM at the property. The findings contained herein have been prepared in general accordance with accepted professional practices at the time of this preparation and as applied by similar professionals in the community. There is a possibility that conditions may exist that could not be identified within the scope of the study or which were not apparent during the site visit. This inspection covered only those areas that were exposed and/or physically accessible to the inspector. This study is also limited to the information provided by the client at the time the survey was conducted.

We appreciate this opportunity to provide our professional services for this project. If we can be of further assistance, or if you have any questions concerning this report, please do not hesitate to call us at 704.968.4111.

Sincerely,

ROY CONSULTING GROUP CORPORATION

James E. Roy, Jr. *Patricia P. Roy*

James E. Roy, Jr.
NC Asbestos Inspector #12053
Principal Geologist

Patricia P. Roy
President

Appendices

Appendix A - Suspect Asbestos-Containing Materials Bulk Sampling Record
Appendix B - Laboratory Analytical Results and Chain-of-Custody Sheet
Appendix C - Photos

APPENDIX A

SUSPECT ASBESTOS-CONTAINING MATERIALS BULK SAMPLING RECORD

SUSPECT ASBESTOS-CONTAINING MATERIALS BULK SAMPLING RECORD

Client: City of Charlotte
Location: Charlotte, North Carolina
Inspector: Jim Roy
Inspection Date: July 31, 2017
Project: 8021 Tuckaseegee
RCG Project No.: 41-090914

LEGEND:
NAD: No Asbestos Detected
N/A: Not Applicable
F: Friable
NF: Non-Friable

FT: Floor Tile
SF: Square Feet
LF: Linear Feet
CT: Ceiling Tile
WB: Wallboard
JC: Joint Compound
CH: Chrysotile

SUSPECT ACM[1] LOCATION				SUSPECT ACM CHARACTERISTICS				SUSPECT ACM ASSESSMENT RESULTS				
Sample #	H-Area[2]	F-Space[3]	Sample Location	Type	Friability	Total H-Quantity	Units	Condition[4]	Disturbance Potential[5]	AHERA Category[6]	Reason for Damage	Analytical Results
8021-WB01	1	1	Kitchen	White Skim Coat Plaster	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB02	1	2	Living Room	White Skim Coat Plaster	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB03	1	3	Dining Room	White Skim Coat Plaster	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB04	1	4	Bedroom 1	White Skim Coat Plaster	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB05	1	4	Bedroom 2	White Skim Coat Plaster	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB01	2	1	Kitchen	Gray Base Coat Plaster	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB02	2	2	Living Room	Gray Base Coat Plaster	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB03	2	3	Dining Room	Gray Base Coat Plaster	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB04	2	4	Bedroom 1	Gray Base Coat Plaster	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB05	2	4	Bedroom 2	Gray Base Coat Plaster	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB01	3	1	Kitchen	Gray WB	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB02	3	2	Living Room	Gray WB	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB03	3	3	Dining Room	Gray WB	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB04	3	4	Bedroom 1	Gray WB	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WB05	3	4	Bedroom 2	Gray WB	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-FT01	**4**	**1**	**Kitchen**	**Light Brown Vinyl Flooring (layer 1)**	**NF**	**170**	**SF**	**D**	**1**	**N/A**	**Age/Moisture**	**20% CH**
8021-FT02	**4**	**1**	**Kitchen**	**Light Brown Vinyl Flooring (layer 1)**	**NF**	**170**	**SF**	**D**	**1**	**N/A**	**Age/Moisture**	**Not Analyzed**
8021-FT01A	5	1	Kitchen	Green FT (layer 2)	NF	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-FT02A	5	1	Kitchen	Green FT (layer 2)	NF	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-FT01B	6	1	Kitchen	Black Mastic and Tar Paper	NF	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-FT02B	6	1	Kitchen	Black Mastic and Tar Paper	NF	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-TP01	7	5	Study	Black Tar Paper	NF	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-TP02	7	2	Living Room	Black Tar Paper	NF	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-SPR1	8	5	Study	White Spray-on Texture	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-SPR2	8	6	Den	White Spray-on Texture	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-SPR3	8	6	Den	White Spray-on Texture	F	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-WRP1	**9**	**7**	**Basement**	**White HVAC Duct Joint Wrap**	**F**	**150**	**LF**	**D**	**1**	**1**	**Age/Moisture**	**60% CH**
8021-WRP2	**9**	**7**	**Basement**	**White HVAC Duct Joint Wrap**	**F**	**150**	**LF**	**D**	**1**	**1**	**Age/Moisture**	**Not Analyzed**
8021-SHG1	10	8	Exterior Roof	Black Asphalt Roof Shingle	NF	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-SHG2	10	8	Exterior Roof	Black Asphalt Roof Shingle	NF	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-SHG1A	11	8	Exterior Roof	Black Tar Paper	NF	N/A	SF	D	1	N/A	Age/Moisture	NAD
8021-SHG2A	11	8	Exterior Roof	Black Tar Paper	NF	N/A	SF	D	1	N/A	Age/Moisture	NAD

The samples identified in BOLD print contain asbestos at concentrations greater than 1 percent.

LEGEND:
[1] – Asbestos-Containing Materials
[2] – Homogeneous Area
[3] – Functional Space
[4] – (G) Good (No damage), (D) Damaged (<10% distributed or <25% localized), (SD) Significantly Damaged (>10% distributed or >25% localized)
[5] – 1/potential for significant damage, 2/potential for damage, 3/low potential for damage
[6] – 1/damaged or sig. damaged TSI, 2/damaged friable surfacing ACM, 3/significantly damaged friable surfacing ACM, 4/ damaged or sig. damaged friable misc. ACM, 5/ACM with potential for damage, 6/ACM with potential for sig. damage, 7/any other friable ACM or friable suspect ACM.

Total H-Quantity is reported as the TOTAL amount of homogeneous material located throughout the building(s).

APPENDIX B

LABORATORY ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY SHEET

AmeriSci Richmond
13635 GENITO ROAD
MIDLOTHIAN, VIRGINIA 23112
TEL: (804) 763-1200 • FAX: (804) 763-1800

PLM Bulk Asbestos Report

Roy Consulting Group Corporation
Attn: Jim Roy
9823 Balmoral Circle

Charlotte, NC 28210

Date Received 08/01/17
Date Examined 08/02/17

AmeriSci Job # 117081039
P.O. #

RE: 41-090914; 8021 Tuckaseegee

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
8021-WB01 1	117081039-01.1 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: White, Heterogeneous, Non-Fibrous, Skim Coat (Plaster) **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
8021-WB01 1	117081039-01.2 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Cementitious, Base Coat (Plaster) **Asbestos Types:** **Other Material:** Cellulose Trace, Non-fibrous 100 %			
8021-WB01 1	117081039-01.3 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Gray/Brown, Heterogeneous, Non-Fibrous, Wall Board **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
8021-WB02 1	117081039-02.1 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: White, Heterogeneous, Non-Fibrous, Skim Coat (Plaster) **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
8021-WB02 1	117081039-02.2 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Cementitious, Base Coat (Plaster) **Asbestos Types:** **Other Material:** Cellulose Trace, Non-fibrous 100 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

41-090914; 8021 Tuckaseegee

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
8021-WB02 1	117081039-02.3 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Gray/Brown, Heterogeneous, Non-Fibrous, Wall Board **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
8021-WB03 1	117081039-03.1 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: White, Heterogeneous, Non-Fibrous, Skim Coat (Plaster) **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
8021-WB03 1	117081039-03.2 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Cementitious, Base Coat (Plaster) **Asbestos Types:** **Other Material:** Cellulose Trace, Non-fibrous 100 %			
8021-WB03 1	117081039-03.3 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Gray/Brown, Heterogeneous, Non-Fibrous, Wall Board **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
8021-WB04 1	117081039-04.1 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: White, Heterogeneous, Non-Fibrous, Skim Coat (Plaster) **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
8021-WB04 1	117081039-04.2 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Cementitious, Base Coat (Plaster) **Asbestos Types:** **Other Material:** Cellulose Trace, Non-fibrous 100 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

41-090914; 8021 Tuckaseegee

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
8021-WB04 1	117081039-04.3 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Gray/Brown, Heterogeneous, Non-Fibrous, Wall Board **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
8021-WB05 1	117081039-05.1 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: White, Heterogeneous, Non-Fibrous, Skim Coat (Plaster) **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
8021-WB05 1	117081039-05.2 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Cementitious, Base Coat (Plaster) **Asbestos Types:** **Other Material:** Cellulose Trace, Non-fibrous 100 %			
8021-WB05 1	117081039-05.3 **Location:** H1-White Skim, Gray Base And Gray WB	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Gray/Brown, Heterogeneous, Non-Fibrous, Wall Board **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
8021-FT01 2	117081039-06 **Location:** H2-Lt Brown Vinyl	***Yes***	20 % (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Lt. Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 20.0 % **Other Material:** Non-fibrous 80 %			
8021-FT02 2	117081039-07 **Location:** H2-Lt Brown Vinyl		NA/PS
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:**			

See Reporting notes on last page

PLM Bulk Asbestos Report

41-090914; 8021 Tuckaseegee

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
8021-FT01A	117081039-08	***No***	NAD
3	**Location:** H3-Green FT		(by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Green, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 30 %, Non-fibrous 70 %			
8021-FT02A	117081039-09	***No***	NAD
3	**Location:** H3-Green FT		(by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Green, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 30 %, Non-fibrous 70 %			
8021-FT01B	117081039-10	***No***	NAD
4	**Location:** H4-Black Mastic & Tar Paper		(by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 50 %, Non-fibrous 50 %			
8021-FT02B	117081039-11	***No***	NAD
4	**Location:** H4-Black Mastic & Tar Paper		(by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 50 %, Non-fibrous 50 %			
8021-TP01	117081039-12	***No***	NAD
5	**Location:** H5-Black Tar Paper		(by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Black, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 50 %, Non-fibrous 50 %			
8021-TP02	117081039-13	***No***	NAD
5	**Location:** H5-Black Tar Paper		(by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Black, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 50 %, Non-fibrous 50 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

41-090914; 8021 Tuckaseegee

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
8021-SPR1 6	117081039-14 **Location:** H6-White Spray-On	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
8021-SPR2 6	117081039-15 **Location:** H6-White Spray-On	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
8021-SPR3 6	117081039-16 **Location:** H6-White Spray-On	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
8021-WRP1 7	117081039-17 **Location:** H7-White Duct Joint Wrap	***Yes***	60 % (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: White, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** Chrysotile 60.0 % **Other Material:** Cellulose 20 %, Non-fibrous 20 %			
8021-WRP2 7	117081039-18 **Location:** H7-White Duct Joint Wrap		NA/PS
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:**			
8021-SHG1 8	117081039-19 **Location:** H8-Black Shingle	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Fibrous glass 7 %, Non-fibrous 93 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

41-090914; 8021 Tuckaseegee

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
8021-SHG2 8	117081039-20 **Location:** H8-Black Shingle	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Gray/Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Fibrous glass 7 %, Non-fibrous 93 %			
8021-SHG1A 9	117081039-21 **Location:** H9-Black Tar Paper	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Black, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 50 %, Non-fibrous 50 %			
8021-SHG2A 9	117081039-22 **Location:** H9-Black Tar Paper	***No***	NAD (by CVES) by William M. Dunstan on 08/02/17
Analyst Description: Black, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 50 %, Non-fibrous 50 %			

Reporting Notes:

Analyzed by: William M. Dunstan Wm ~ Dstn Date: 8/2/2017 Reviewed by: Wm ~ Dstn

*NAD = no asbestos detected, Detection Limit <1%, Reporting Limits: CVES = 1%, 400 Pt Ct = 0.25%, 1000 Pt Ct = 0.1%; "Present" or NVA = "No Visible Asbestos" are observations made during a qualitative analysis; NA = not analyzed; NA/PS = not analyzed / positive stop; PLM Bulk Asbestos Analysis by EPA 600/R-93/116 per 40 CFR 763 (NVLAP Lab Code 101904-0) and ELAP PLM Analysis Protocol 198.1 for New York friable samples which includes quantitation of any vermiculite observed (198.6 for NOB samples) or EPA 400 pt ct by EPA 600/M4-82-020 (NYSDOH ELAP Lab # 10984); CA ELAP Lab # 2508; Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar NOB materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). NIST Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the laboratory. This PLM report relates ONLY to the items tested.

117081039

ROY CONSULTING GROUP CORPORATION

Chain of Custody Sheet

9823 Balmoral Circle
Charlotte, NC 28210
Phone - 704.968.4111
Fax - 704.553.9458

Client:___COC_____
Project Name/Location:_8021 Tuckaseegee
Project #:___41-090914_____

Notes: 1 day turnaround
Analysis required : Bulk Identification by PLM
RUN FIRST POSITIVE STOP

SAMPLE ID	Comments
8021-WB01	H1-White Skim, Gray Base and Gray WB
8021-WB02	
8021-WB03	
8021-WB04	
8021-WB05	
8021-FT01	H2-Lt Brown Vinyl
8021-FT02	
8021-FT01A	H3-Green FT
8021-FT02A	
8021-FT01B	H4-Black Mastic & Tar Paper
8021-FT02B	
8021-TP01	H5-Black Tar Paper
8021-TP02	

SAMPLE ID	Comments
8021-SPR1	H6-White Spray-on
8021-SPR2	
8021-SPR3	
8021-WRP1	H7-White Duct Joint Wrap
8021-WRP2	
8021-SHG1	H8-Black Shingle
8021-SHG2	
8021-SHG1A	H9-Black Tar Paper
8021-SHG2A	

Released By:_Jim Roy_ Signature_____Jim Roy_____ Date/Time:____7/31/17_____17:10 hrs_____

RECEIVED
AUG 01 2017
By

Received By:_____ Signature_____ Date and Time:_____

APPENDIX C

PHOTOS

PHOTO 1 – FRONT OF HOUSE

PHOTO 2 – WHITE HVAC DUCT JOINT WRAP – BASEMENT

PHOTO 3 – WHITE HVAC DUCT JOINT WRAP – CRAWLSPACE

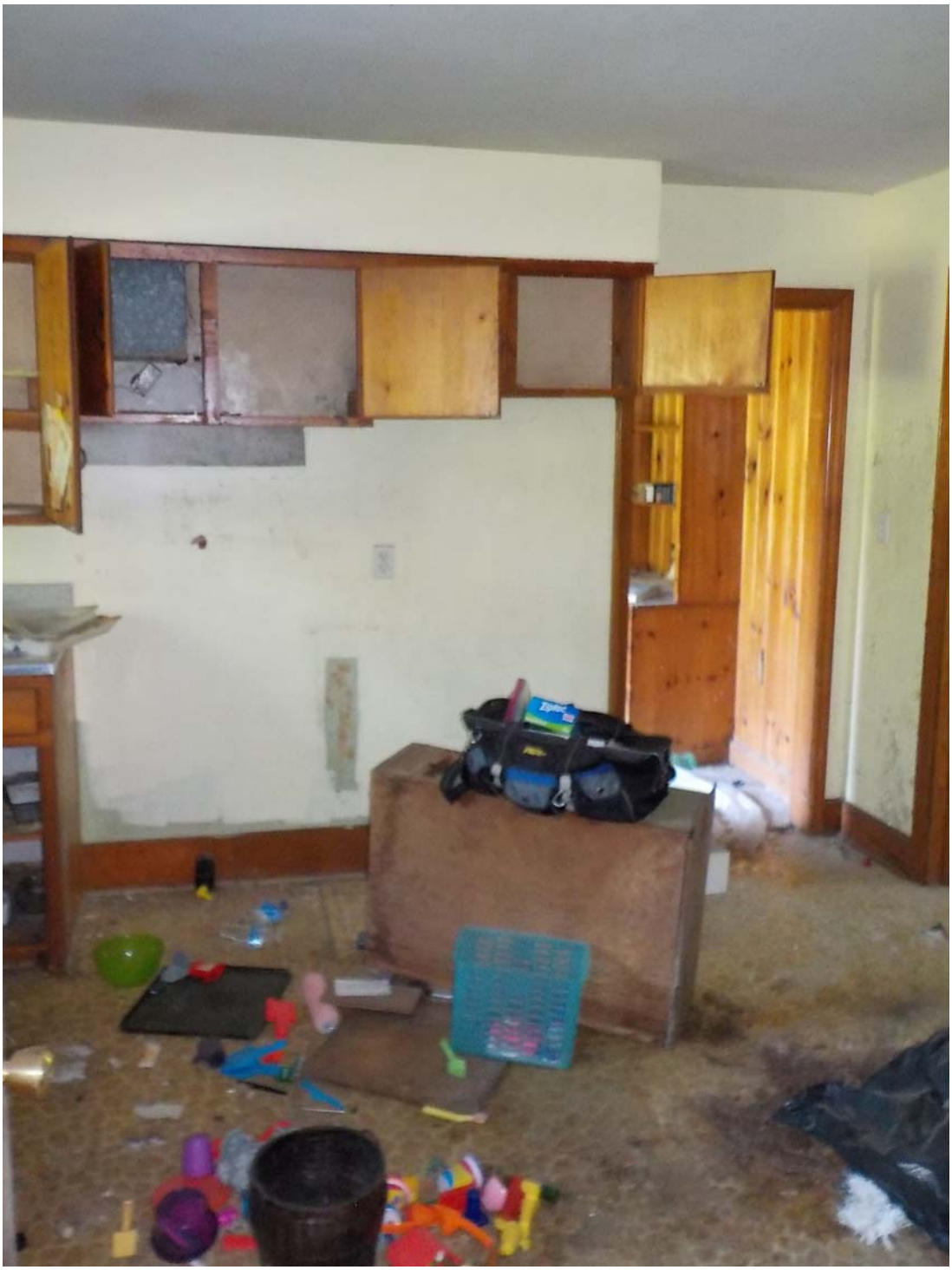


PHOTO 4 – KITCHEN

PHOTO 5 – LIGHT BROWN VINYL FLOOR (LAYER 1) – KITCHEN

ATTACHMENT 9

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ATTACHMENT 9
PUBLIC AND AGENCY INVOLVEMENT

I. AVAILABILITY OF THE DRAFT EA

The City of Charlotte has provided an opportunity for a public hearing as outlined in FAA Order 5050.4B, Section 404. NOTICE OF OPPORTUNITY FOR A PUBLIC HEARING. A notice, containing all required information, was published in the Charlotte Observer on May 24, 2018. This document is available at the CLT administrative offices for public review and comment through June 22, 2018. A copy of the Draft EA was also made available to regulatory agencies. Copies of newspaper notices and distribution letters will be included in this appendix. If any comments are received or a request for a public hearing is made, that information will also be included in this appendix.

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Notice of Availability of a Draft Environmental Assessment (EA) for the construction of the Quattro Development at the Charlotte Douglas International Airport (CLT). This notice and opportunity for public involvement is pursuant to FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions.*

A Public Hearing can be held if an interest is presented. Should anyone wish to attend a public hearing on this proposed action or submit a comment on the proposed development please state your request or comment in writing to:

Sarah Potter, Managing Consultant, Landrum & Brown, 11279 Cornell Park Dr., Cincinnati, OH 45242 or email: spotter@landrum-brown.com.

Written requests for a public hearing will be accepted until 5:00 p.m. (EST) Monday June 4, 2018.

The Draft EA is available for public review until June 22, 2018 during normal business hours at the CLT Center, 5601 Wilkinson Blvd, Charlotte, NC 28219. This Draft EA is also available online at: https://www.airportprojects.net/clt-quattro-ea/. Copies of the Draft EA have also been provided to relevant Federal, state, and local agencies.

By including your name, address and telephone number, email or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information - may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

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11279 Cornell Park Dr.
Cincinnati, OH 45242
USA
T +1 513 530 5333
F +1 513 530 1278
landrum-brown.com

May 22, 2018

Ms. Lauren Scott
Charlotte Douglas International Airport
5601 Wilkinson Blvd.
Charlotte, NC 28208

Subject: Charlotte Douglas International Airport
Availability of DRAFT Environmental Assessment Document

Dear Ms. Scott:

Enclosed for your review is a copy of the *DRAFT Environmental Assessment (EA) for the Proposed Quattro Development at the Charlotte Douglas International Airport (CLT)*. The Draft EA is also available online at: https://www.airportprojects.net/clt-quattro-ea/. Please make this document easily accessible in your facility so that interested parties may view it. This document should be made available to the public, at a minimum, through June 22, 2018.

If you have any questions about these instructions please contact me at (513) 530-1271 (voice) or email: spotter@landrum-brown.com.

Sincerely,

Sarah Potter
Senior Managing Consultant
Landrum & Brown, Incorporated

Enclosure

11279 Cornell Park Dr.
Cincinnati, OH 45242
USA
T +1 513 530 5333
F +1 513 530 1278
landrum-brown.com

May 22, 2018

Mr. David Shaeffer
Charlotte Regulatory Office
U.S. Army Corps of Engineers
8430 University Executive Park Drive, Suite 615
Charlotte, NC 28262

Subject: Charlotte Douglas International Airport
Availability of DRAFT Environmental Assessment Document

Dear Mr. Shaeffer:

Enclosed for your review is a copy of the *DRAFT Environmental Assessment (EA) for the Proposed Quattro Development at the Charlotte Douglas International Airport (CLT)*. The Draft EA is also available online at: https://www.airportprojects.net/clt-quattro-ea/. Per Federal Aviation Administration (FAA) Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions, we are making this document available for public and regulatory agency review and comment. This document is also being sent to the North Carolina State Environmental Review Clearinghouse to coordinate the review by state agencies.

Seefried Industrial Properties has been coordinating with your office on CLT. All coordination is attached and included as part of the Draft EA. We request that any comments you may have be returned by June 22, 2018. If you have any questions please contact me at (513) 530-1271 (voice) or email: spotter@landrum-brown.com. Thank you in advance for your time and assistance in this matter.

Sincerely,

Sarah Potter
Senior Managing Consultant
Landrum & Brown, Incorporated

Enclosure

11279 Cornell Park Dr.
Cincinnati, OH 45242
USA
T +1 513 530 5333
F +1 513 530 1278
landrum-brown.com

May 22, 2018

Ms. Janet Mizzi
U.S. Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa Street
Asheville, NC 28801

Subject: Charlotte Douglas International Airport
Availability of DRAFT Environmental Assessment Document

Dear Ms. Mizzi:

Enclosed for your review is a copy of the *DRAFT Environmental Assessment (EA) for the Proposed Quattro Development at the Charlotte Douglas International Airport (CLT)*. The Draft EA is also available online at: https://www.airportprojects.net/clt-quattro-ea/. Per Federal Aviation Administration (FAA) Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions, we are making this document available for public and regulatory agency review and comment. This document is also being sent to the North Carolina State Environmental Review Clearinghouse to coordinate the review by state agencies.

We request that any comments you may have be returned by June 22, 2018. If you have any questions please contact me at (513) 530-1271 (voice) or email: spotter@landrum-brown.com. Thank you in advance for your time and assistance in this matter.

Sincerely,

Sarah Potter
Senior Managing Consultant
Landrum & Brown, Incorporated

Enclosure

11279 Cornell Park Dr.
Cincinnati, OH 45242
USA
T +1 513 530 5333
F +1 513 530 1278
landrum-brown.com

May 22, 2018

Ms. Crystal Best
State Environmental Review Clearinghouse
1301 Mail Service Center
Raleigh, NC 27699

Subject: Charlotte Douglas International Airport
Availability of DRAFT Environmental Assessment Document

Dear Ms. Best:

Enclosed for your review are two (2) hard copies of the *DRAFT Environmental Assessment (EA) for the Proposed Quattro Development at the Charlotte Douglas International Airport (CLT)*. The Draft EA is also available online at: https://www.airportprojects.net/clt-quattro-ea/. Per Federal Aviation Administration (FAA) Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions, we are making this document available for public and regulatory agency review and comment.

We request that any comments you may have be returned by June 22, 2018. If you have any questions please contact me at (513) 530-1271 (voice) or email: spotter@landrum-brown.com. Thank you in advance for your time and assistance in this matter.

Sincerely,

Sarah Potter
Senior Managing Consultant
Landrum & Brown, Incorporated

Enclosure