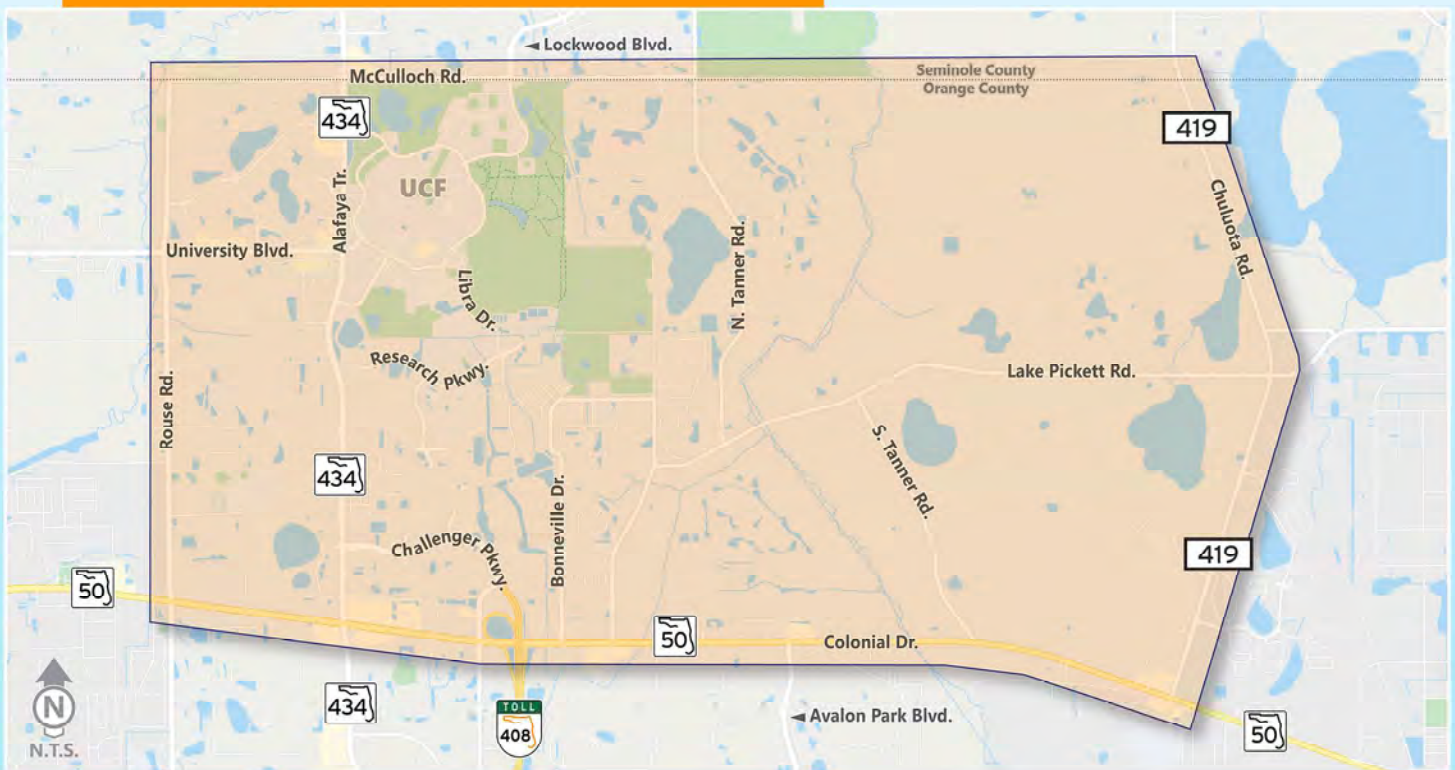


***APPENDIX P: EXISTING ENVIRONMENTAL REPORT***

October 2021

# North East Orange County Areawide Transportation Study (NEOCATS)

Draft Existing Conditions Report  
Section 6.0 - Environmental





The purpose of this Existing Environmental Conditions Report is to document existing land uses, historical and/or archeological sites, cultural features, utilities, and identified and potentially hazardous sites completed for the North East Orange County Transportation Study (NEOCATS) Area. The natural environment includes soils, hydraulic and natural features and threatened endangered species. Due to the large extent of the overall project area, the environmental review has been broken down into four (4) study area quadrants as depicted in **Exhibit 6.1.0** to allow for more detailed mapping of individual resources.

## 6.1 LAND USE / DEVELOPMENT PLANS

Relevant land use information has been compiled for the study area from a variety of sources including Orange County's FastTrack online system, Orange County's Comprehensive Plan, Orange County's Board of County Commission (BCC) and Planning 2021 GIS layers, FDOT's Florida Land Use, Cover and Forms Classification System (FLUCFCS), as well as desktop reviews.

### 6.1.1 Zoning Districts

The Orange County BCC and Planning 2021 GIS zoning layer was used to identify the zoning districts for the study area. **Tables 6.1.1** through **6.1.4** summarize the zoning districts located within each of the study area quadrants, respectively for Quadrants 1 through 4. The Study Area zoning map series for each of the Quadrants can be found in **Exhibits 6.1.1** through **6.1.4**.

| <b>TABLE 6.1.1 - ZONING DISTRICTS IN QUADRANT 1</b> |   |                 |                      |
|---|---|-----------------|----------------------|
| <b>Map Unit Symbol</b>                              | <b>Map Unit Name</b>  | <b>Q1 Acres</b> | <b>Percent of Q1</b> |
| A-2   | Farmland Rural District   | 156.07          | 4.96%                |
| IND-2/IND-3   | Industrial District (General)   | 433.78          | 13.79%               |
| P-D   | Planned Development District, including Regulating Plans (PDRP) and Unified Neighborhood Plans (PD-UNP) | 296.66          | 9.43%                |
| R-1   | Single-Family Dwelling Districts  | 276.07          | 8.78%                |
| R-1A  | Single-Family Dwelling Districts  | 329.96          | 10.49%               |
| R-1AA   | Single-Family Dwelling Districts  | 4.44            | 0.14%                |
| R-1A-C  | Single-Family Dwelling Districts  | 172.75          | 5.49%                |
| 2R-2  | Residential District  | 0.01            | 0.01%                |
| R-3   | Multiple-Family Dwelling District   | 1,212.72        | 38.56%               |
| R-CE  | Country Estate  | 13.38           | 0.43%                |
| U-R-3   | University Residential District   | 52.40           | 1.67%                |
|   | Roads and Highways  | 196.56          | 6.25%                |
| <b>Totals for Area of Interest</b>                  |   | <b>3,144.80</b> | <b>100.00%</b>       |



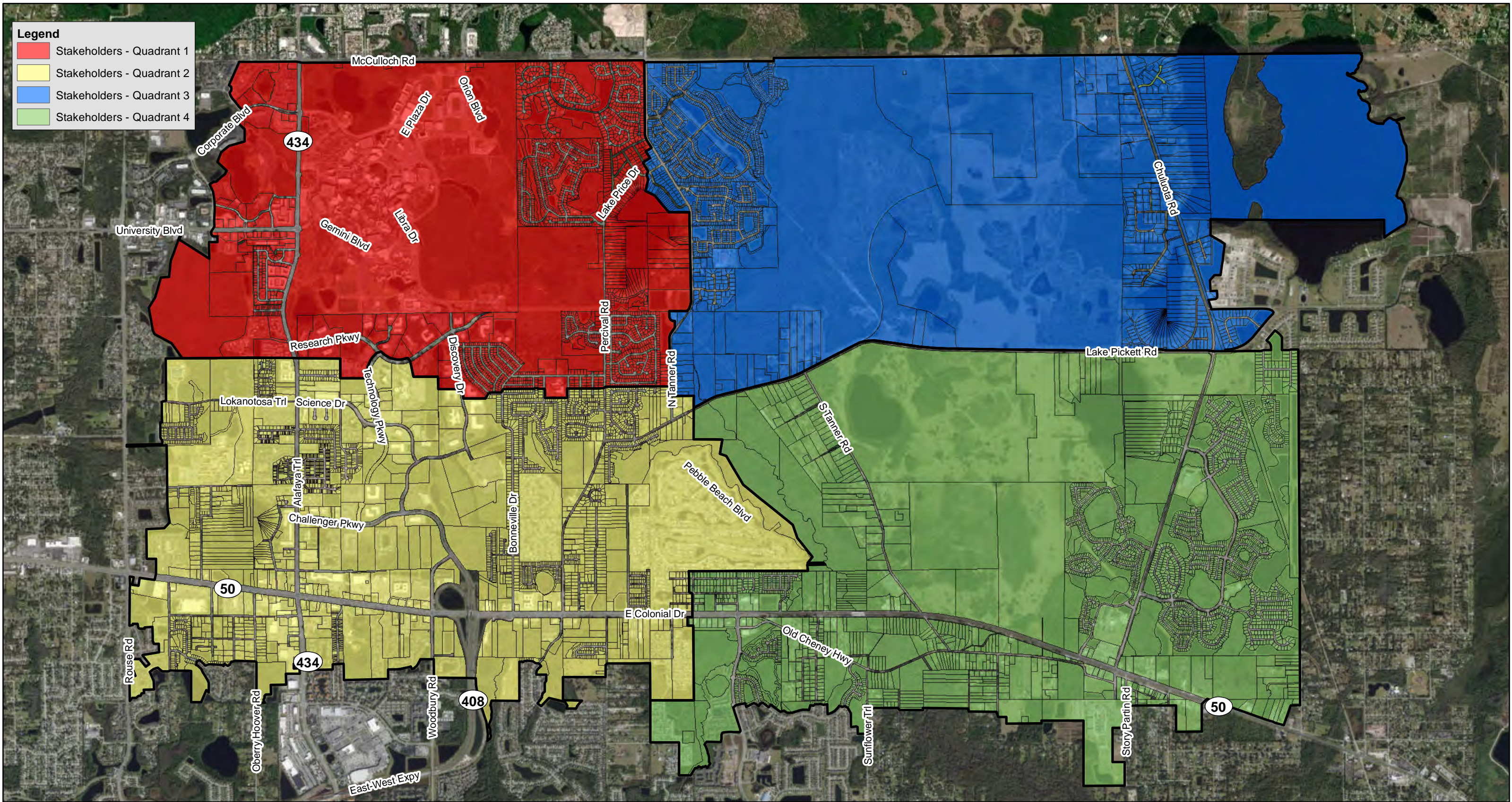
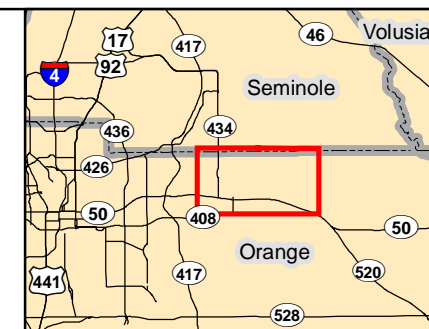


EXHIBIT - 6.1.0

# North East Orange County Areawide Transportation Study (NEOCATS) Study Quadrant Overview Map

NEOCATS - Study Area



Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar  
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and  
the GIS User Community



Quadrant 1 has the greatest acreage of land zoned for Multiple-Family Dwelling Districts (R-3), followed by Industrial District (IND-2/IND-3) and various Single Family Dwelling District zoning types. The area zoned as Multiple-Family Dwelling Districts (R-3) includes the University of Central Florida campus.

**TABLE 6.1.2 - ZONING DISTRICTS IN QUADRANT 2**

| <b>Map Unit Symbol</b>             | <b>Map Unit Name</b>  | <b>Q2 Acres</b> | <b>Percent of Q2</b> |
|------------------------------------|---|-----------------|----------------------|
| A-1                                | Citrus Rural District                                       | 40.70           | 1.09%                |
| A-2                                | Farmland Rural District                                     | 211.33          | 5.66%                |
| C-1                                | Retail Commercial District                                  | 187.93          | 5.03%                |
| C-2                                | General Commercial District                                 | 34.91           | 0.94%                |
| C-3                                | Wholesale Commercial District                               | 12.69           | 0.34%                |
| IND-2/IND-3                        | Industrial District (General)                               | 527.87          | 14.13%               |
| P-D                                | Multiple-Family Dwelling District                           | 482.81          | 12.93%               |
| P-O                                | Professional Office District                                | 30.70           | 0.82%                |
| R-1                                | Single-Family Dwelling Districts                            | 628.53          | 16.83%               |
| R-1A                               | Single-Family Dwelling Districts                            | 34.87           | 0.93%                |
| R-1AAA                             | Single-Family Dwelling Districts                            | 0.68            | 0.02%                |
| R-2                                | Residential District  | 234.18          | 6.27%                |
| R-3                                | Multiple-Family Dwelling District                           | 267.94          | 7.17%                |
| R-CE                               | Country Estate District                                     | 11.32           | 0.30%                |
| Restricted R-2                     | Restricted Residential District                             | 4.97            | 0.13%                |
| Restricted R-3                     | Restricted Multiple-Family Dwelling District                | 5.96            | 0.16%                |
| RSTD C-2                           | Restricted General Commercial District                      | 53.24           | 1.43%                |
| RSTD R-1                           | Restricted Single-Family Dwelling Districts                 | 0.07            | 0.00%                |
| RSTD R-T                           | Restricted Mobile Home Park District                        | 82.13           | 2.20%                |
| R-T                                | Mobile Home Park District                                   | 423.21          | 11.33%               |
| R-T-1                              | Mobile Home Subdivision District                            | 0.92            | 0.02%                |
| R-T-2                              | Combination Mobile Home and Single-Family Dwelling District | 11.41           | 0.31%                |
| U-R-3                              | University Residential District                             | 40.31           | 1.08%                |
|                                    | Roads and Highways  | 406.22          | 10.88%               |
| <b>Totals for Area of Interest</b> |   | <b>3,734.90</b> | <b>100.00%</b>       |

Quadrant 2 has the greatest acreage of land zoned for Single-Family Dwelling Districts (R-1) followed by Industrial District (IND-2/IND-3) and Multiple-Family Dwelling District (R-3).

| <b>TABLE 6.1.3 - ZONING DISTRICTS IN QUADRANT 3</b> |   |                 |                      |
|---|---|-----------------|----------------------|
| <b>Map Unit Symbol</b>                              | <b>Map Unit Name</b>  | <b>Q3 Acres</b> | <b>Percent of Q3</b> |
| A-2   | Farmland Rural District   | 2,288.34        | 53.93%               |
| PD  | Planned Development District, including Regulating Plans (PDRP) and Unified Neighborhood Plans (PD-UNP) | 549.28          | 12.94%               |
| R-1   | Single-Family Dwelling Districts  | 45.81           | 1.08%                |
| R-1A  | Single-Family Dwelling Districts  | 24.56           | 0.58%                |
| R-1AAAA   | Residential Urban District  | 31.69           | 0.75%                |
| R-CE  | Country Estate District   | 1,009.49        | 23.79%               |
| R-CE-C  | Country Estate District Cluster   | 182.95          | 4.31%                |
|   | Roads and Highways  | 111.15          | 2.62%                |
| <b>Totals for Area of Interest</b>                  |   | <b>4,243.27</b> | <b>100.00%</b>       |

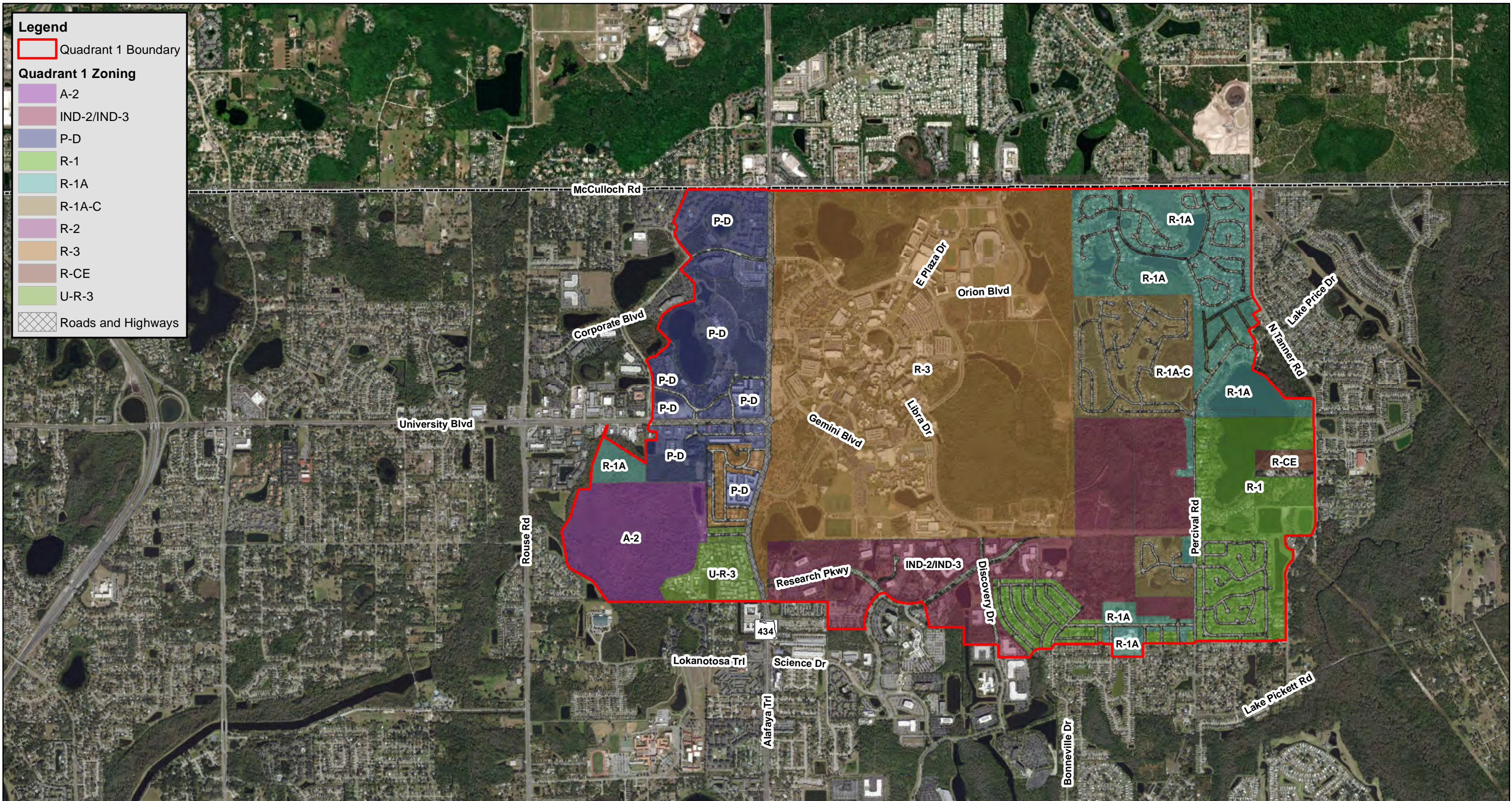


The largest zoning area for Quadrant 3 is Farmland Rural District (A-2). Farmland Rural District covers over half of the quadrant. The remaining land in the quadrant is zoned for Country Estate District (R-CE), Planned Development District (PD), and various residential zoning districts.

| <b>TABLE 6.1.4 - ZONING DISTRICTS IN QUADRANT 4</b> |   |                 |                      |
|---|---|-----------------|----------------------|
| <b>Map Unit Symbol</b>                              | <b>Map Unit Name</b>  | <b>Q4 Acres</b> | <b>Percent of Q4</b> |
| A-1   | Citrus Rural District   | 1.00            | 0.02%                |
| A-2   | Farmland Rural District   | 1,073.30        | 23.42%               |
| C-1   | Retail Commercial District  | 73.17           | 1.60%                |
| C-2   | General Commercial District   | 12.39           | 0.27%                |
| C-3   | Wholesale Commercial District   | 52.76           | 1.15%                |
| P-D   | Planned Development District, including Regulating Plans (PDRP) and Unified Neighborhood Plans (PD-UNP) | 2,746.53        | 59.93%               |
| R-2   | Residential District  | 1.06            | 0.02%                |
| R-CE  | Country Estate District   | 1.79            | 0.04%                |
| R-CE-5  | Rural Country Estate Residential District   | 48.40           | 1.05%                |
| R-CE-C  | Country Estate District Cluster   | 42.05           | 0.92%                |
| RSTD C-2  | Restricted General Commercial District  | 0.95            | 0.02%                |
| RSTD C-3  | Restricted Wholesale Commercial District  | 23.73           | 0.52%                |
| RSTD R-T-1  | Restricted Mobile Home Subdivision District   | 0.87            | 0.02%                |
| R-T   | Mobile Home Park District   | 72.23           | 1.57%                |
| R-T-1   | Mobile Home Subdivision District  | 11.77           | 0.26%                |
| R-T-2   | Combination Mobile Home and Single-Family Dwelling District   | 103.43          | 2.26%                |
|   | Roads and Highways  | 317.40          | 6.93%                |
| <b>Totals for Area of Interest</b>                  |   | <b>4,582.83</b> | <b>100.00%</b>       |

Over half of the land in Quadrant 4 is zoned as Planned Development District (PD). The remainder of the quadrant is Farmland Rural District (A-2), Roads and Highways, and various commercial districts. A large development application in Quadrant 4 is the GROW.





**EXHIBIT - 6.1.1**

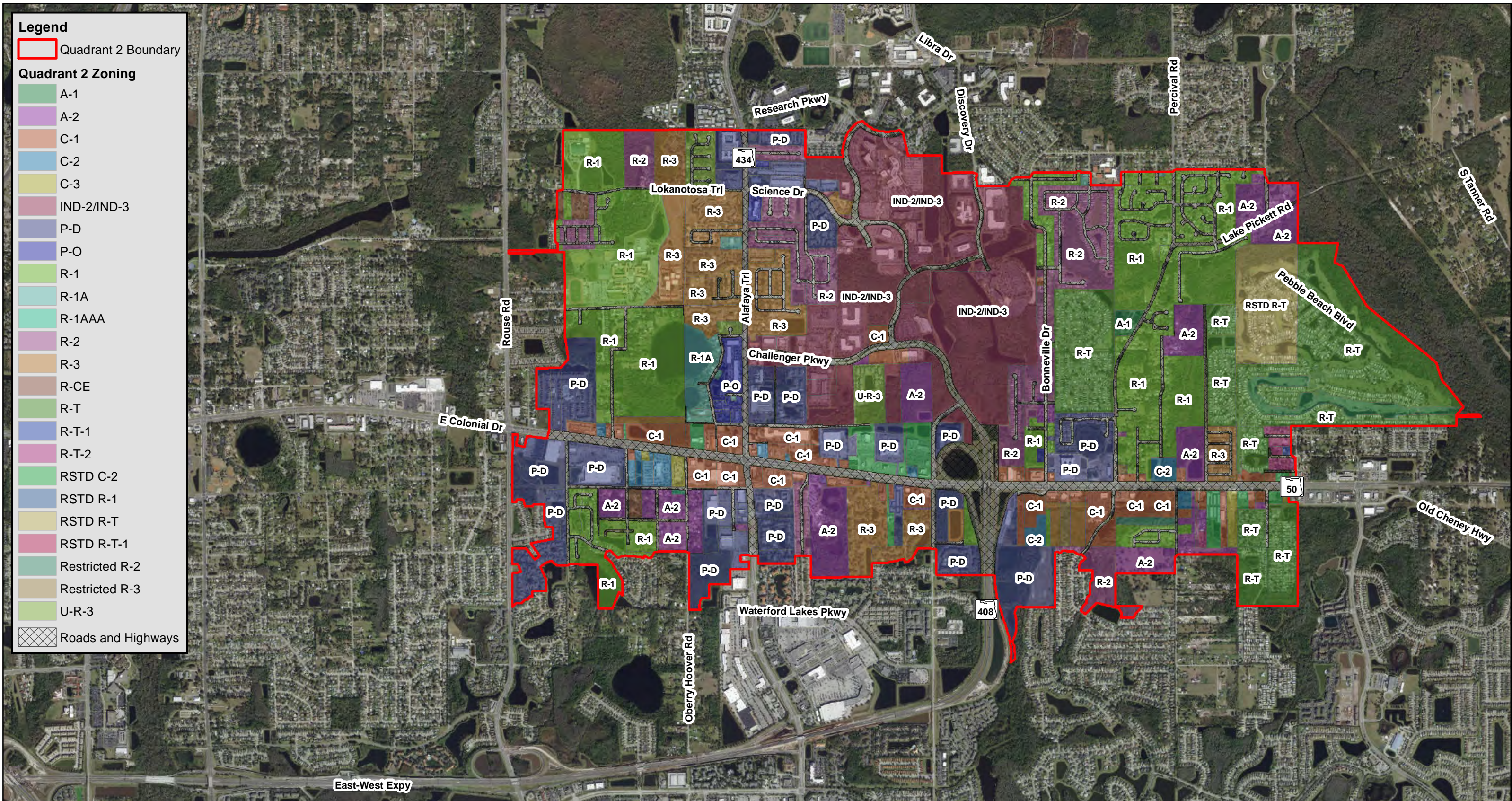
Note: Existing Zoning - Orange County, 2021.

**North East Orange County Areawide  
Transportation Study (NEOCATS)**  
  
**Quadrant 1: Existing Zoning**  
  
 NEOCATS - June 2021

0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





# EXHIBIT - 6.1.2

Note: Existing Zoning - Orange County, 2021.

## North East Orange County Areawide Transportation Study (NEOCATS)

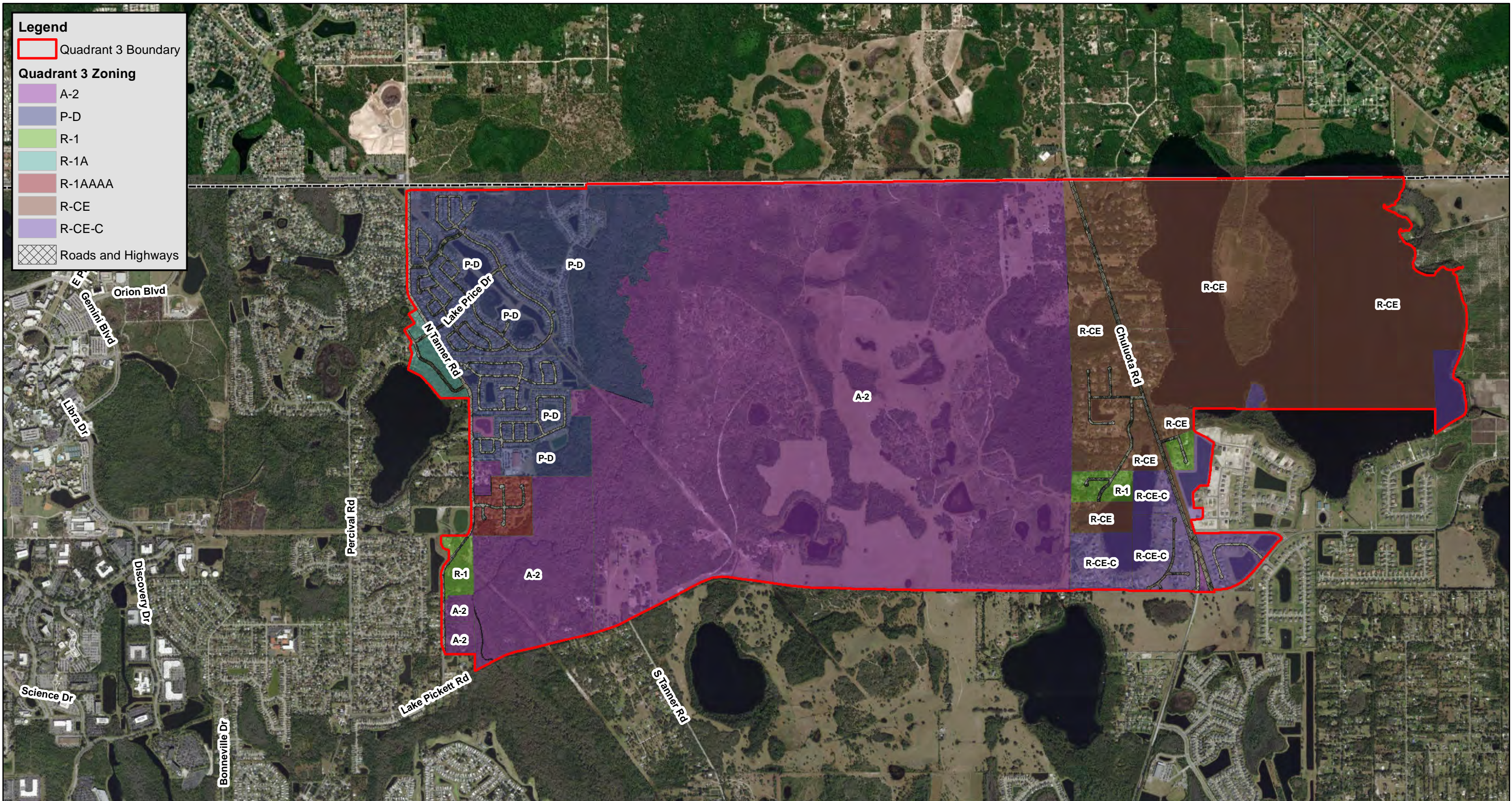
### Quadrant 2: Existing Zoning

NEOCATS - June 2021

0 2,000 4,000 Feet

Source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





**EXHIBIT - 6.1.3**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 3: Existing Zoning**

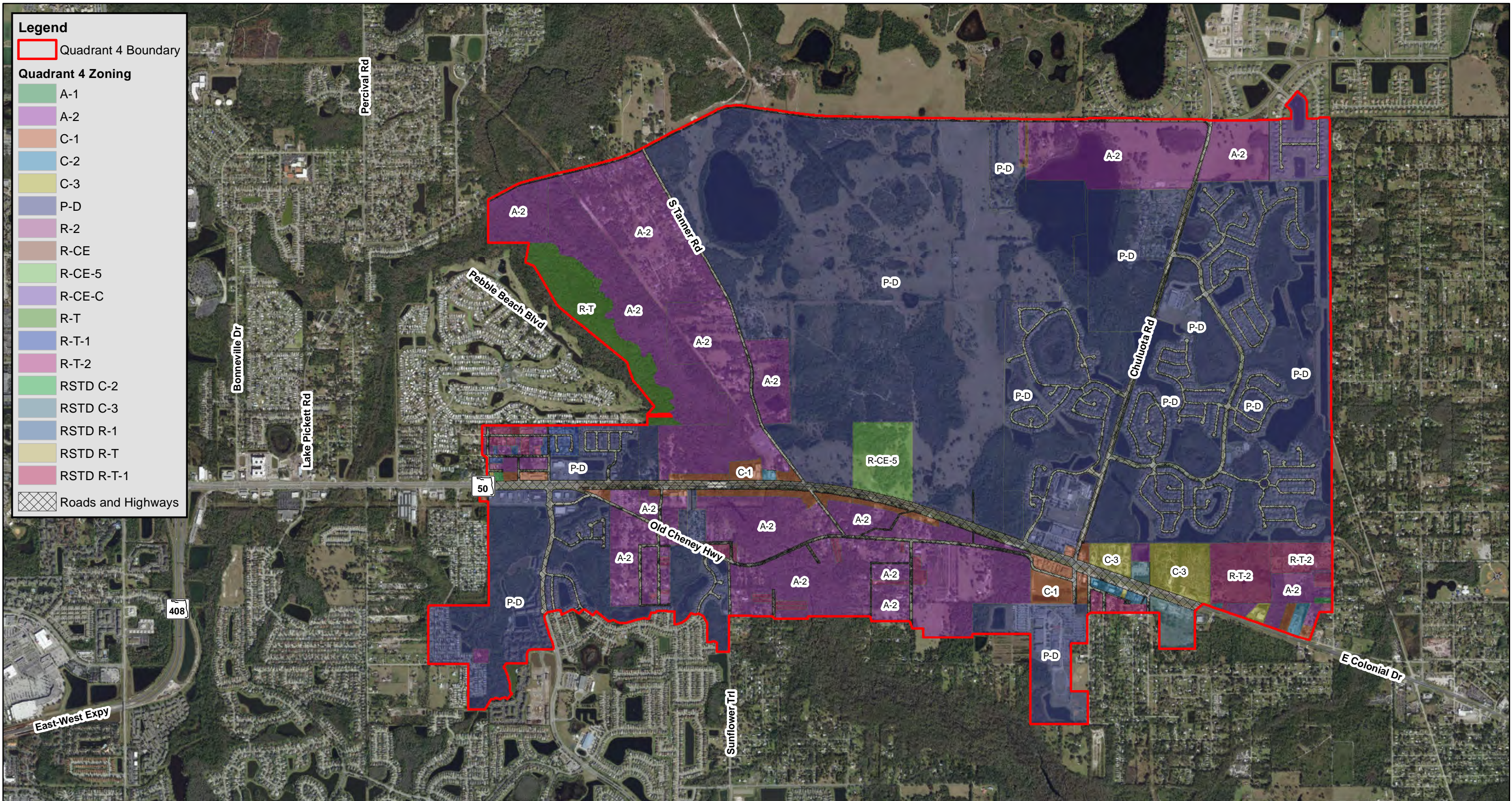
Note: Existing Zoning - Orange County, 2021.

NEOCATS - June 2021

0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





# EXHIBIT - 6.1.4

Note: Existing Zoning - Orange County, 2021.

## North East Orange County Areawide Transportation Study (NEOCATS)

### Quadrant 4: Existing Zoning

NEOCATS - June 2021

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 2,000 4,000 Feet



### 6.1.2 Future Land Use

The Orange County's BCC and Planning 2021 GIS layers were used to identify the future land uses for the project area. **Tables 6.1.5** through **6.1.8** summarize the future land uses located within each of the study area quadrants, respectively for Quadrants 1 through 4. The Study Area future land use for each of the Quadrants can be found in **Exhibits 6.1.5** through **6.1.8**.

| <b>TABLE 6.1.5 - FUTURE LAND USES IN QUADRANT 1</b> |                            |                 |                      |
|---|----------------------------|-----------------|----------------------|
| <b>Map Unit Symbol</b>                              | <b>Map Unit Name</b>       | <b>Q1 Acres</b> | <b>Percent of Q1</b> |
| C   | Commercial                 | 30.78           | 0.98%                |
| I   | Industrial                 | 418.50          | 13.31%               |
| IN  | Institutional              | 1,266.18        | 40.26%               |
| LD  | Low Density Residential    | 654.01          | 20.80%               |
| LM  | Low Medium Density         | 0.04            | 0.00%                |
| MD  | Medium Density Residential | 134.93          | 4.29%                |
| O   | Office                     | 175.75          | 5.59%                |
| PD  | Planned Development        | 35.86           | 1.14%                |
| WB  | Water Body                 | 228.93          | 7.28%                |
|   | Roads and Highways         | 199.82          | 6.35%                |
| <b>Totals for Area of Interest</b>                  |                            | <b>3,144.80</b> | <b>100.00%</b>       |

Within Quadrant 1, the most prominent future land use remains Institutional, followed by Low Density Residential and Industrial land uses.

| <b>TABLE 6.1.6 - FUTURE LAND USES IN QUADRANT 2</b> |                            |                 |                      |
|---|----------------------------|-----------------|----------------------|
| <b>Map Unit Symbol</b>                              | <b>Map Unit Name</b>       | <b>Q2 Acres</b> | <b>Percent of Q2</b> |
| C   | Commercial                 | 341.23          | 9.14%                |
| I   | Industrial                 | 580.61          | 15.55%               |
| IN  | Institutional              | 163.95          | 4.39%                |
| LD  | Low Density Residential    | 554.60          | 14.85%               |
| LM  | Low Medium Density         | 933.16          | 24.98%               |
| MD  | Medium Density Residential | 371.05          | 9.93%                |
| O   | Office                     | 39.05           | 1.05%                |
| P/R   | Park/Recreation            | 38.49           | 1.03%                |
| PD  | Planned Development        | 195.05          | 5.22%                |
| PRES  | Preservation               | 0.01            | 0.00%                |
| R   | Rural                      | 3.54            | 0.09%                |
| WB  | Water Body                 | 113.11          | 3.03%                |
|   | Roads and Highways         | 401.05          | 10.74%               |
| <b>Totals for Area of Interest</b>                  |                            | <b>3,734.90</b> | <b>100.00%</b>       |

The prominent future land uses in Quadrant 2 are Low Medium Density, followed by Industrial and Low Density Residential land uses.

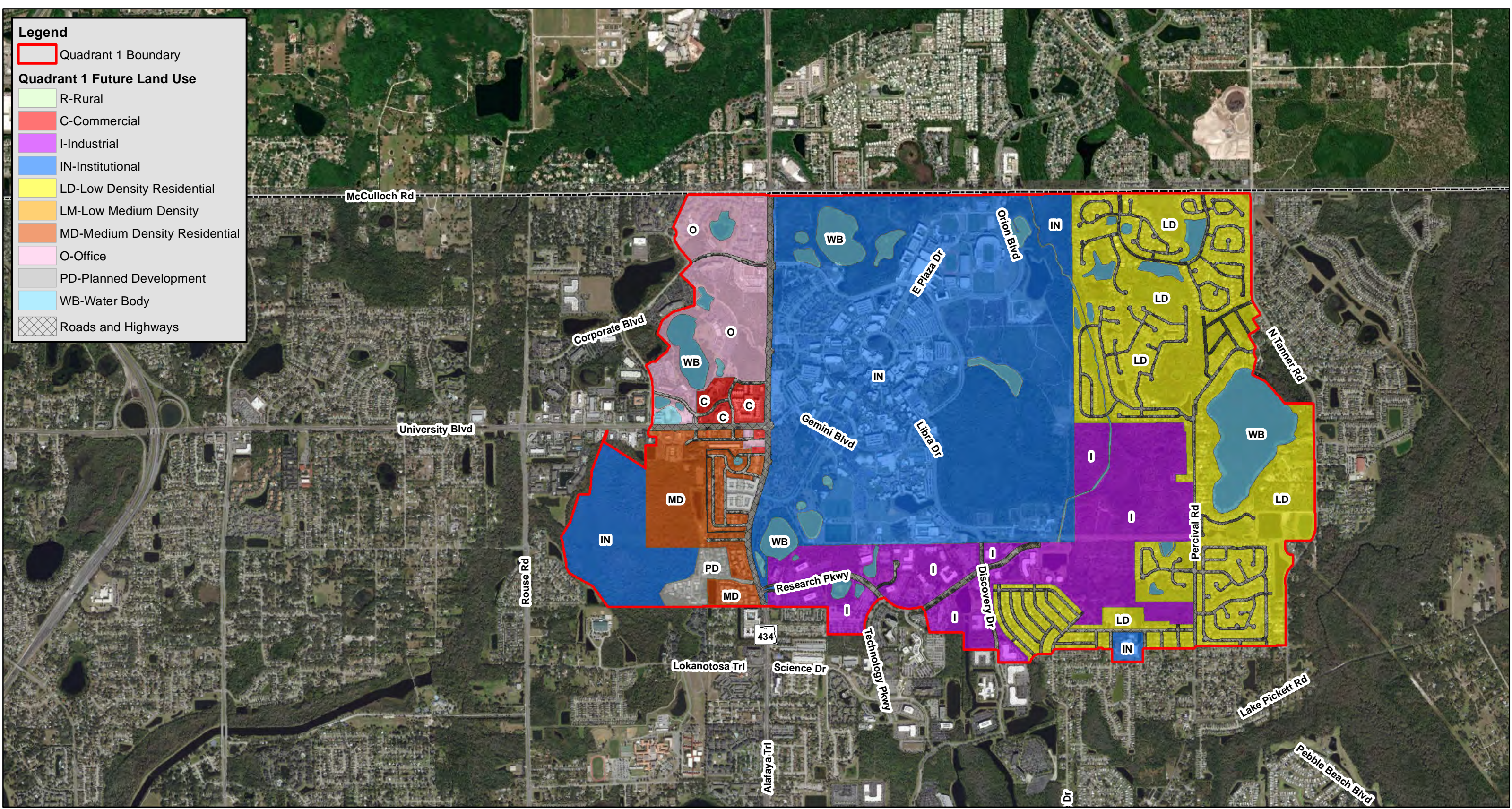
| <b>TABLE 6.1.7 - FUTURE LAND USES IN QUADRANT 3</b> |                                 |                 |                      |
|---|---------------------------------|-----------------|----------------------|
| <b>Map Unit Symbol</b>                              | <b>Map Unit Name</b>            | <b>Q3 Acres</b> | <b>Percent of Q3</b> |
| 1/1   | Rural 1/1                       | 574.77          | 13.55%               |
| C   | Commercial                      | 4.38            | 0.10%                |
| LD  | Low Density Residential         | 418.74          | 9.87%                |
| LM  | Low Medium Density              | 29.83           | 0.70%                |
| PRES  | Preservation                    | 67.72           | 1.60%                |
| R   | Rural                           | 1,435.50        | 33.83%               |
| WB  | Water Body                      | 716.02          | 16.87%               |
|   | Roads, Highways, and Unassigned | 996.31          | 23.48%               |
| <b>Totals for Area of Interest</b>                  |                                 | <b>4,243.27</b> | <b>100.00%</b>       |

In Quadrant 3, the largest area remains as Rural in the future, followed by Road, Highways, and Unassigned, and Water Bodies. The category Roads, Highways, and Unassigned includes 961.66 acres of land that was not assigned a future land use category, but which appears to include the area of the planned Sustanee development.

| <b>TABLE 6.1.8 - FUTURE LAND USES IN QUADRANT 4</b> |                         |                 |                      |
|---|-------------------------|-----------------|----------------------|
| <b>Map Unit Symbol</b>                              | <b>Map Unit Name</b>    | <b>Q4 Acres</b> | <b>Percent of Q4</b> |
| 1/1   | Rural 1/1               | 370.69          | 8.09%                |
| C   | Commercial              | 179.24          | 3.91%                |
| E   | Education               | 87.68           | 1.91%                |
| IN  | Institutional           | 45.23           | 0.99%                |
| LD  | Low Density Residential | 1,066.17        | 23.26%               |
| LM  | Low Medium Density      | 299.39          | 6.53%                |
| LP  | Lake Pickett            | 1,087.31        | 23.73%               |
| P/R   | Park/Recreation         | 69.66           | 1.52%                |
| PD  | Planned Development     | 25.26           | 0.55%                |
| PRES  | Preservation            | 139.00          | 3.03%                |
| R   | Rural                   | 714.01          | 15.58%               |
| WB  | Water Body              | 177.41          | 3.87%                |
|   | Roads and Highways      | 321.78          | 7.03%                |
| <b>Totals for Area of Interest</b>                  |                         | <b>4,582.83</b> | <b>100.00%</b>       |

In Quadrant 4, the most prominent future land use is the Lake Pickett future land use, which is the area planned for The GROW development, followed by Low Density Residential, and Rural 1/1 future land uses.





**EXHIBIT - 6.1.5**

### North East Orange County Areawide Transportation Study (NEOCATS)

#### Quadrant 1: Future Land Use

NEOCATS - June 2021

0

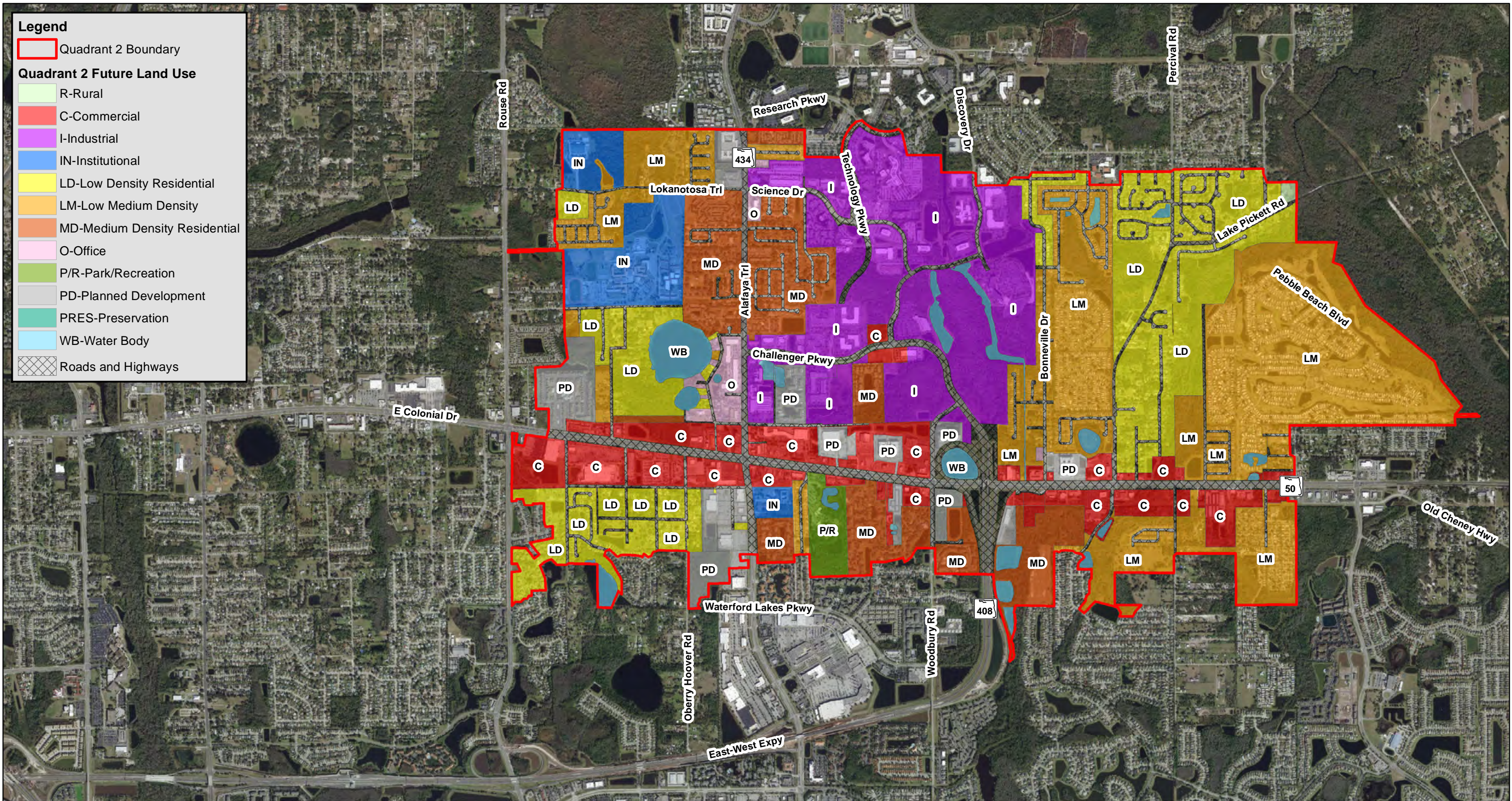
2,000

4,000

Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





**EXHIBIT - 6.1.6**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 2: Future Land Use**


NEOCATS - June 2021

Note: Future Land Use - Orange County, 2021.

**North East Orange County Areawide Transportation Study (NEOCATS)**

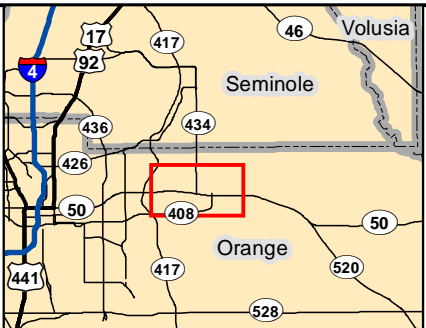
**Quadrant 2: Future Land Use**

NEOCATS - June 2021

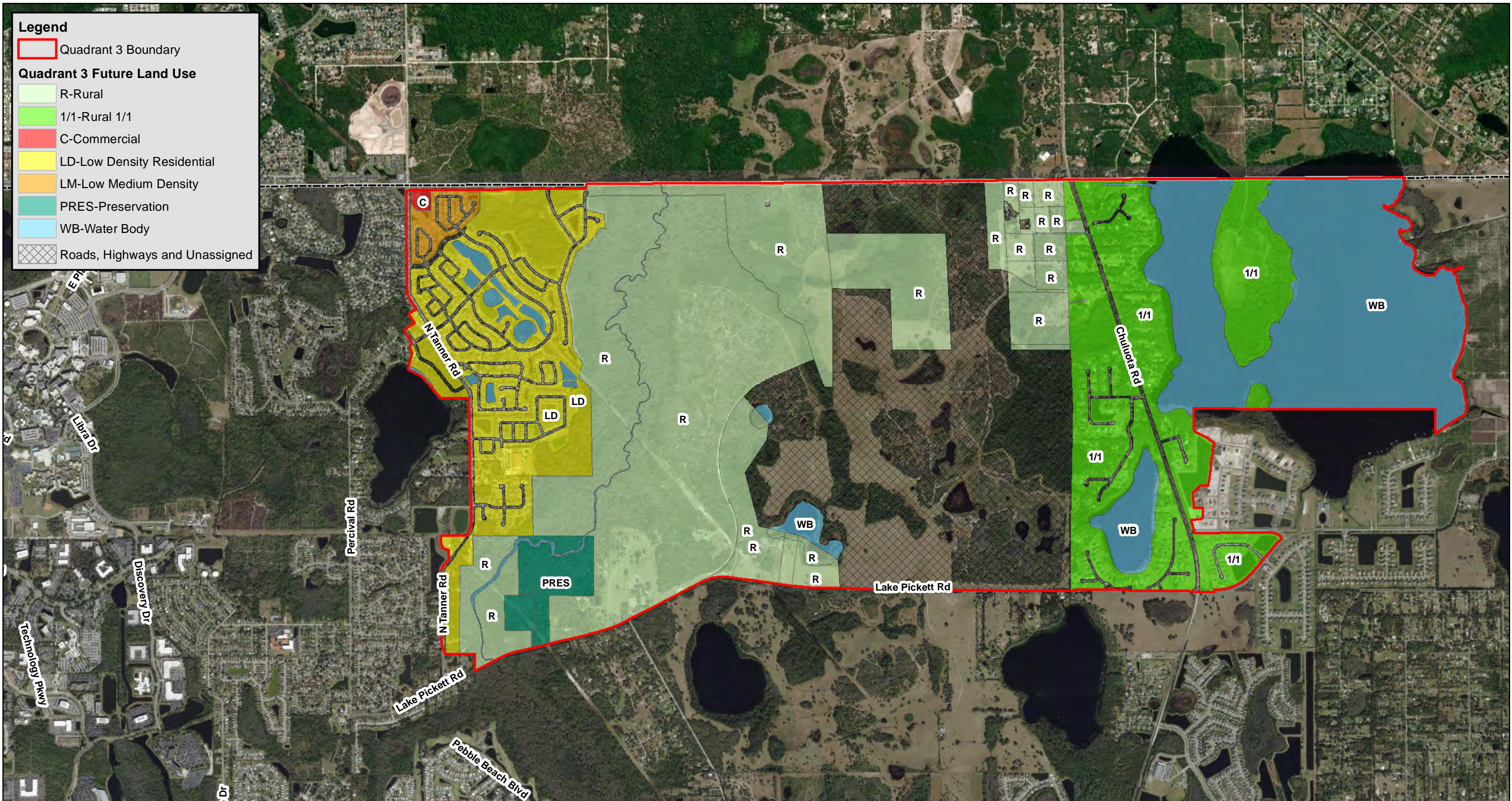


0 2,000 4,000 Feet

Source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community







**EXHIBIT - 6.1.7**

Note: Future Land Use - Orange County, 2021.

**North East Orange County Areawide  
Transportation Study (NEOCATS)**

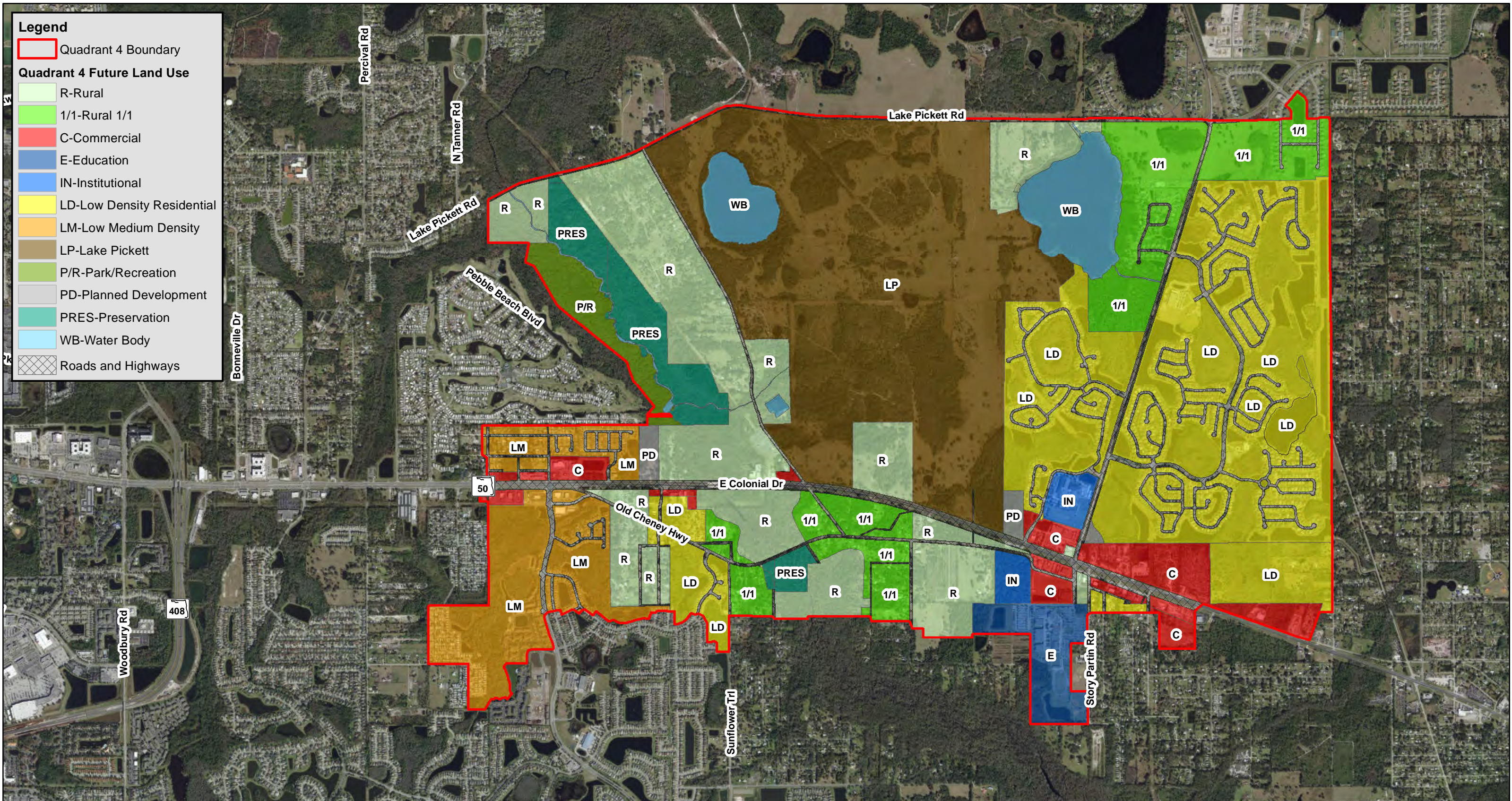
**Quadrant 3: Future Land Use**

NEOCATS - June 2021

0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
Earthstar Geographics, CNES/Airbus DS, USDA, USGS,  
AeroGRID, IGN, and the GIS User Community





**EXHIBIT - 6.1.8**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 4: Future Land Use**

NEOCATS - June 2021

0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Note: Future Land Use - Orange County, 2021.



### 6.1.3 Rural Settlements and Urban Service Area

Rural Settlements recognize and preserve communities that existed as of adoption of the 1991 Comprehensive Plan. New construction on rural settlements (RS) must be approved by the BCC. **Tables 6.1.9** and **6.1.10** summarize the rural settlements located within each of the study area quadrants, respectively for Quadrants 3 and 4. Rural settlements in the project area exist only on the project's eastern side of the study area in Quadrants 3 and 4. The Study Area rural settlement map for Quadrants 3 and 4 can be found in **Exhibits 6.1.9** and **6.1.10**.

**Table 6.1.9: Summary of Rural Settlements in Quadrant 3**

| Rural Settlement | Within Study Area |
|------------------|-------------------|
| Lake Pickett     | 1                 |
| Corner Lake      | 1                 |

Source: Orange County BCC and Planning 2021 GIS layer

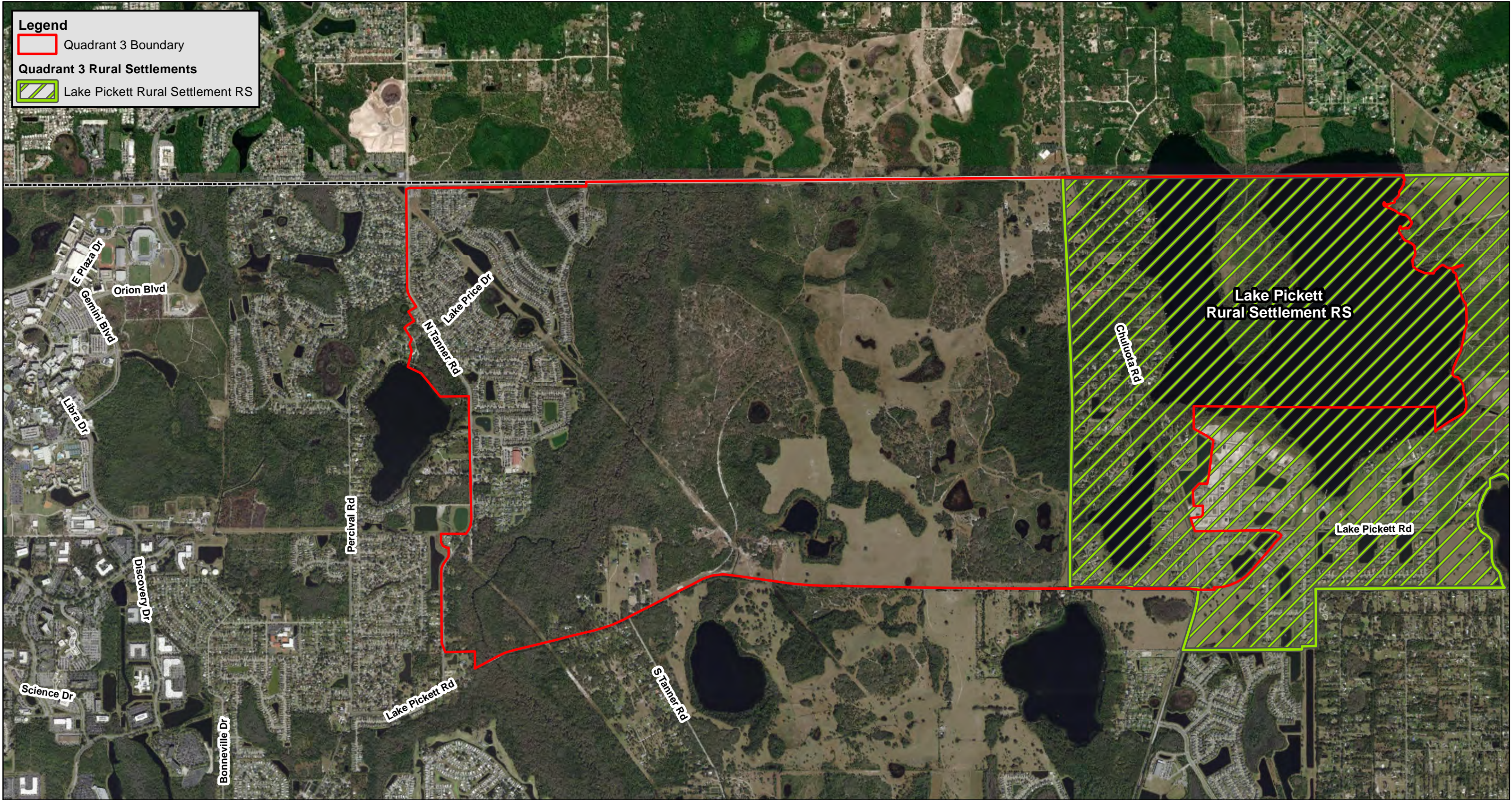
**Table 6.1.10: Summary of Rural Settlements in Quadrant 4**

| Rural Settlement | Within Study Area |
|------------------|-------------------|
| Corner Lake      | 1                 |
| Bithlo           | 1                 |
| Sunflower Trail  | 1                 |

Source: Orange County BCC and Planning 2021 GIS layer

The urban service area includes lands where urban development patterns exist or are planned and typically are areas where the County provides infrastructure and services such as utilities to support urban development. Orange County's urban service area exists on the west side of the study area and includes the area west of the Econlockhatchee River.





**EXHIBIT - 6.1.9**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 3: Rural Settlements**

Note: Rural Settlements - Orange County, 2020.

NEOCATS - June 2021

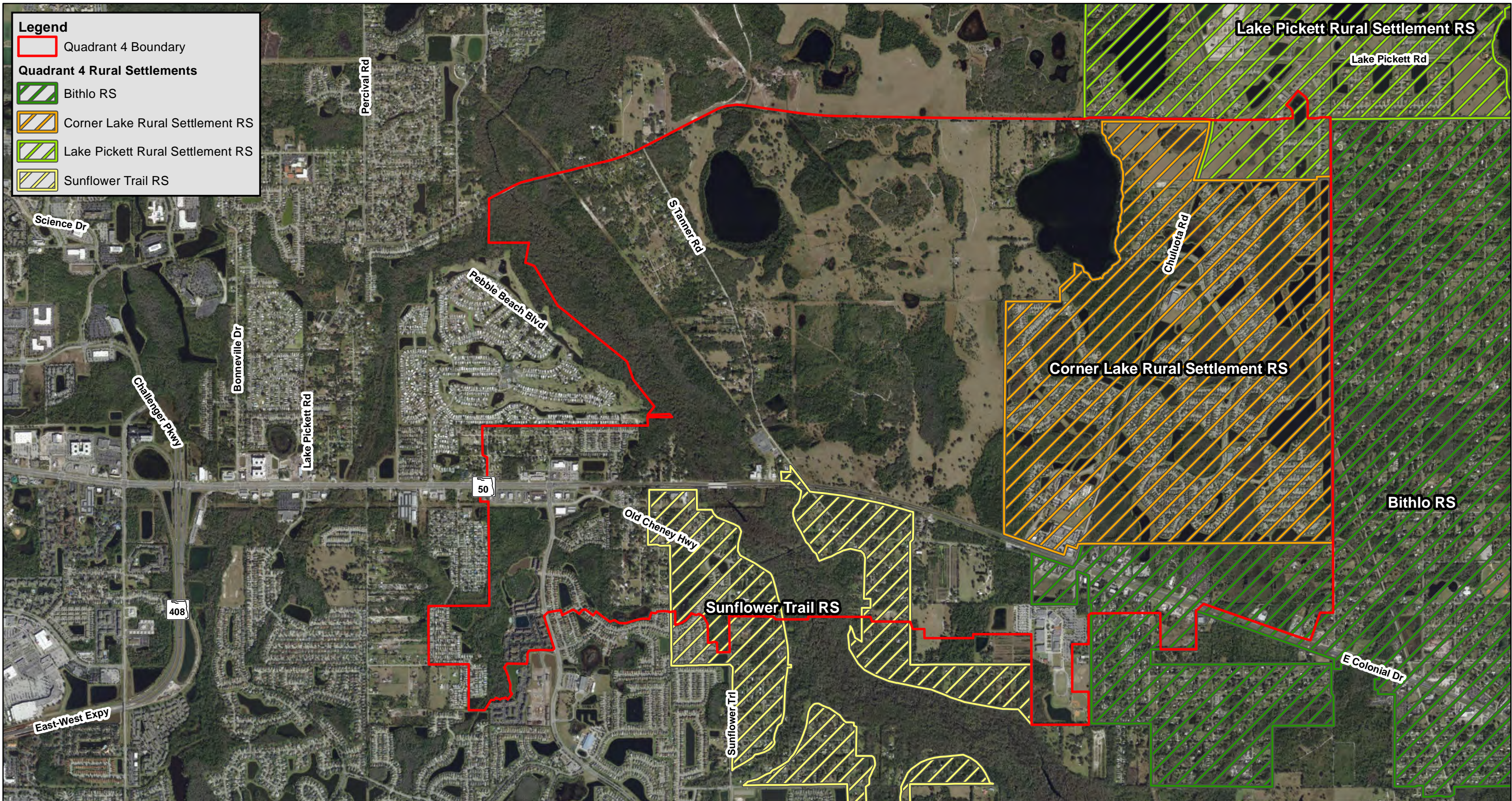
Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**ORANGE COUNTY GOVERNMENT FLORIDA**

0 2,000 4,000 Feet

N





**EXHIBIT - 6.1.10**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 4: Rural Settlements**

Note: Rural Settlements - Orange County, 2020.

NEOCATS - June 2021

0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



#### 6.1.4 Major Developments and Developments of Regional Impact (DRIs)

There are several major developments and developments of regional impact (DRIs) within the project study area. DRIs are large scale developments that are projected to have regional impacts and affect more than just Orange County. **Tables 6.1.11** through **6.1.14** summarize the major developments and DRIs located within each of the study area quadrants, respectively for Quadrants 1 through 4. The Study Area Major Developments/DRIs for each of the Quadrants can be found in **Exhibits 6.1.11** through **6.1.14**. The information reported is based on information obtained from the East Central Florida Regional Planning Council's DRI Plus tool, the Florida Department of Economic Opportunity Developments of Regional Impact Repository, Orange County's FastTrack online system and the Florida Geographic Database Library (FGDL).

**Table 6.1.11: Summary of Major Developments/DRIs in Quadrant 1**

| Major Development/DRI             | Within Study Area |
|-----------------------------------|-------------------|
| Quadrangle DRI                    | 1                 |
| Central Florida Research Park DRI | 1                 |

Source: ECFRPC DRI Plus Tool, FGDL

Quadrangle DRI is a 473.15-acre mixed-use development located northwest of the intersection of Alafaya Trail and University Boulevard, approved in 1984 with conditions. After several amendments, the approved land use plan includes 313,000 square feet of commercial retail, 2,560,000 square feet of office, 588 hotel rooms, and 1,490 multi-family dwelling units, per Map "H" of the Non-Substantial Deviation Amendment to Development Order for the Quadrangle Development of Regional Impact, approved by the BCC on February 17, 2009. This amendment also extended the build-out date to December 30, 2010.

The Central Florida Research Park DRI, formerly known as the UCF Research Park, was originally approved for mixed-use development on 1,027.4 acres located at the northeast corner of SR 434 and SR 50. The original development order approved in 1984 included 5,419,300 square feet of research and development space, a 6,000 square foot bank, 200 hotel rooms, 209,500 square feet office, and 141,500 square feet commercial. In 2007 approximately 217 acres were transferred from the Orange County Research & Development Authority to the Trustees of the Internal Improvement Trust Fund, leaving the approximately 810 remaining acres shown in Exhibits 6.1.11 and 6.1.12. The developer also applied for additional development with conditions to include 884,900 square feet research and development space, 500 hotel rooms, and 126,300 square feet commercial, per the most recently available annual report for the reporting period October 1, 2012, through September 30, 2013.



**Table 6.1.12: Summary of Major Developments/DRI in Quadrant 2**

| <b>Major Development/DRI</b>      | <b>Within Study Area</b> |
|-----------------------------------|--------------------------|
| Central Florida Research Park DRI | 1                        |
| Waterford Lakes DRI               | 1                        |
| High Point of Orlando PD          | 1                        |

Source: ECFRPC DRI Plus Tool, FGDL, Orange County FastTrack Online System

The Central Florida Research Park also falls within Quadrant 1 and is described above.

The Waterford Lakes DRI, formerly known as Huckleberry, was approved for a mixed-use development on 36,028 acres located south of SR 50 along the east side of Alafaya Trail. The original development order approved in 1983 included 1,602 multi-family dwelling units, 440,900 square feet of office, 1,514,607 square feet of town center, 450,900 square feet of office/commercial, and 115,000 square feet of retail. After several amendments, the approved land use plan includes 675 multi-family dwelling units, 1,055,900 square feet of office, and 1,601,607 square feet of commercial retail per the Non-Substantial Deviation Amendment to Development Order for the Waterford Lakes Town Center Development Program DRI, approved by the BCC on May 23, 2000. This DRI is mostly built out.

High Point of Orlando originated as a DRI but was later reclassified as a Planned Development (PD). It includes lands developed as retail/commercial at the intersection of Rouse Road and SR 50, and the Highpoint Club Apartments and Sylvan Pond subdivision on Rouse Road. Along Bloomfield Road, the PD includes the Dean Point, Shannon Trace, Briar Bay, Huntridge, and Cypress Lakes II subdivisions, as well as the Pine Harbour apartment complex. It also includes Lawton Chiles Elementary School, industrial tracts south of Lake Underhill Road and 100,101 SF of self-storage. This PD is mostly built out.

**Table 6.1.13: Summary of Major Developments/DRI in Quadrant 3**

| <b>Major Development/DRI</b> | <b>Within Study Area</b> |
|------------------------------|--------------------------|
| Rybolt Park DRI (withdrawn)  | 1                        |
| Sustanee                     | 1                        |

Source: ECFRPC DRI Plus Tool, FGDL, Orange County FastTrack Online System



The proposed, but later withdrawn, Rybolt Park DRI is located south of the Orange/Seminole County Line and McCulloch Road, west of Chuluota Road (SR 419), north of Lake Pickett Road and east of the Rybolt Reserve, Stonemeade, and Tanner Crossing subdivisions. Rybolt Park was a proposed DRI with a preapplication in 2008 that had not yet been approved. The proposed development plan for the 1,441-acre property included 2,000,000 square feet of office park, 150,000 square feet of retail, 50,000 square feet of office, 25,000 square feet of civic use, 3,300 multi-family dwelling units, 300 hotel rooms, 1,700 single family dwelling units, and one K-8 school. The DRI application was withdrawn; however, a portion of the Rybolt Park DRI property later became known as Lake Pickett North and is currently known as the planned Sustanee development.

The Sustanee development includes approximately 1,436 gross acres of land generally north of Lake Pickett Road, west of Chuluota Road, and east of the Econlockhatchee Sandhills Conservation Area. An application has been submitted to adopt a Conceptual Regulating Plan (CRP) that is consistent with the Lake Pickett future land use designation. The proposed development plan is less intense than the previous Rybolt Park DRI and includes 2,400 residential dwelling units and the community resources to support the development (a community center, a planned fire station, and a school site). A traffic study has been submitted and an agreement to address transportation improvements will be required.

**Table 6.1.14: Summary of Major Developments/DRI in Quadrant 4**

| <b>Major Development/DRI</b> | <b>Within Study Area</b> |
|------------------------------|--------------------------|
| The GROW                     | 1                        |

Source: Orange County FastTrack Online System

The GROW community, also known as Lake Pickett South, is a proposed farm-like, mixed-use community development located north of East Colonial Drive, west of Chuluota Road, south of Lake Pickett Road, and east of South Tanner Road and Econlockhatchee Sandhills Conservation Area. The total acreage of the property is 1,188 acres and includes 1,778 single-family dwelling units, 300 townhomes, 165,000 square feet of retail/commercial, and 7,000 square feet of office space. The 2016 Land Use Plan was approved, but the associated Preliminary Subdivision Plan has not yet been approved.

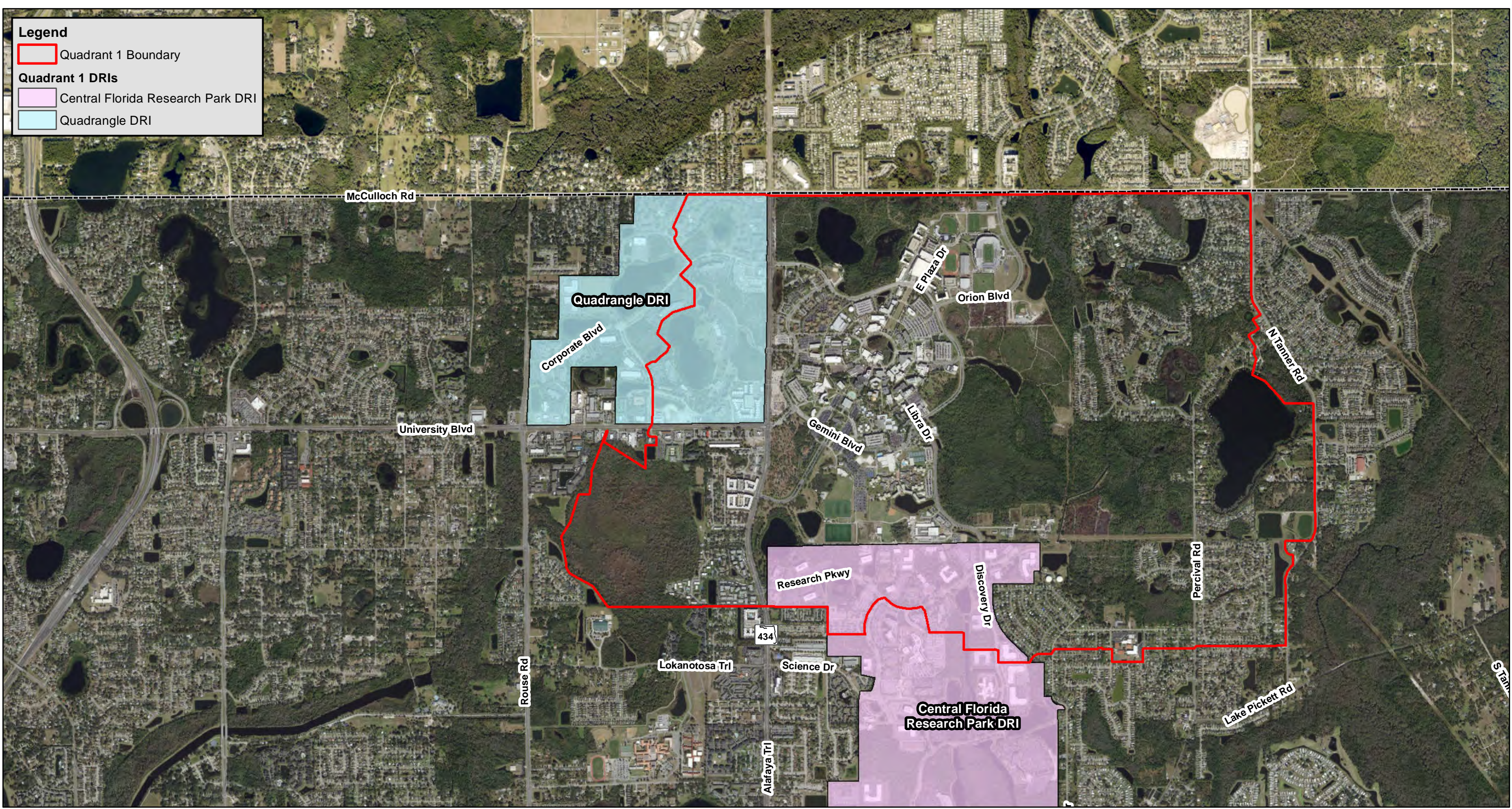


It should be noted that the River Cross development, proposed just north of the overall study area in Seminole County as a land swap for the Econ Wilderness Area, as of the writing of this technical memo, will not proceed. This development, which was proposed for up to 1,338 residential units and 200,000 square feet of offices and commercial uses, could have had a significant impact on traffic and the environment. However, the River Cross development received pushback from the developer after initial denial, and in June 2021 a federal judge ruled that the county commissioners' unanimous rejection was fair and valid and that the land swap and River Cross community would not go forward with development. However, a notice has been filed that the developer plans to appeal the federal judge's ruling.


#### 6.1.5 Special Area Studies / Plans

The project area is included within the study area boundary of the East Central Florida Corridor Task Force (ECFCTF) Study published in 2014 and submitted to then-Governor Rick Scott. The ECFCTF Study described the importance of conservation of regionally significant natural resources such as the Econlockhatchee River, and preservation of natural lands, including the Econlockhatchee Sandhills Conservation Area. The ECFCTF Study also identified future transportation corridor needs for east/west travel between Orange/Osceola counties and Brevard County as well as north/south travel in eastern Orange and Osceola counties. One alternative presented in the ECFCTF Study includes the preservation and enhancement of the existing SR 50 corridor, recognizing the need for connectivity between high-technology research and employment centers such as the University of Central Florida within the project study area. A result of this study was a PD&E Study conducted by the Central Florida Expressway Authority in 2015 and the extension of SR 408 to SR 50.







**Legend**

 Quadrant 1 Boundary

**Quadrant 1 DRIs**

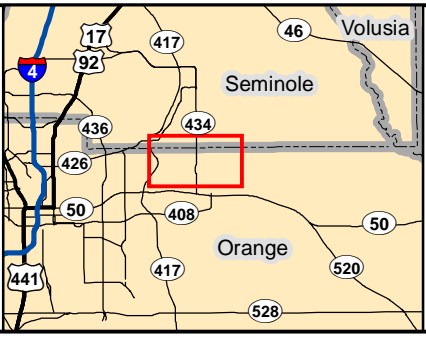
 Central Florida Research Park DRI


 Quadrangle DRI

**EXHIBIT - 6.1.11**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 1: Major Developments/DRIs**





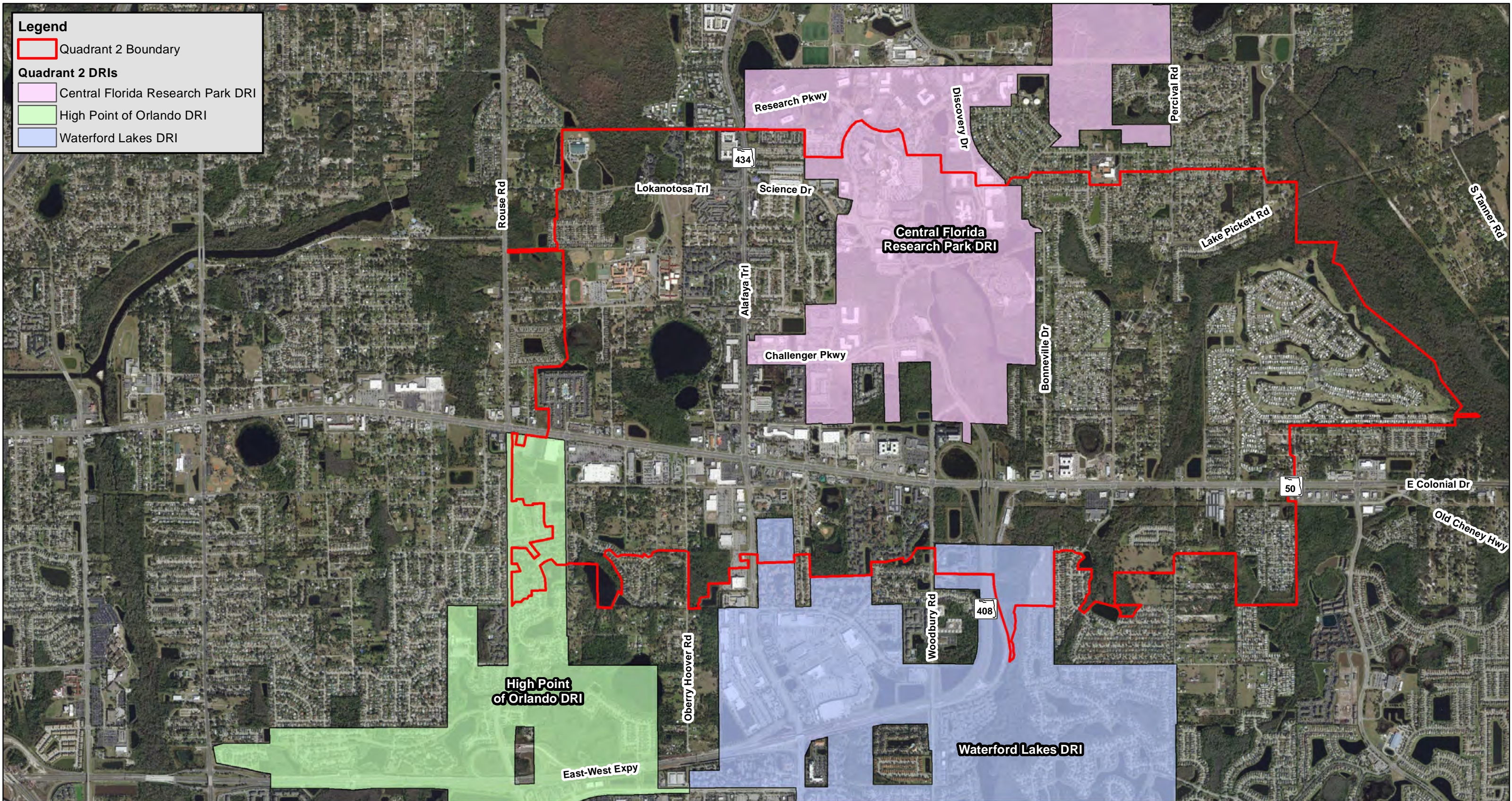
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Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Note: Development of Regional Impact (DRI) - Florida Department of Economic Opportunity, 2018. Planned Developments - Orange County, 2019

NEOCATS - June 2021





**EXHIBIT - 6.1.12**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 2: Major Developments/DRIs**

Note: Development of Regional Impact (DRI) - Florida Department of Economic Opportunity, 2018. Planned Developments - Orange County, 2019

NEOCATS - June 2021

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Source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



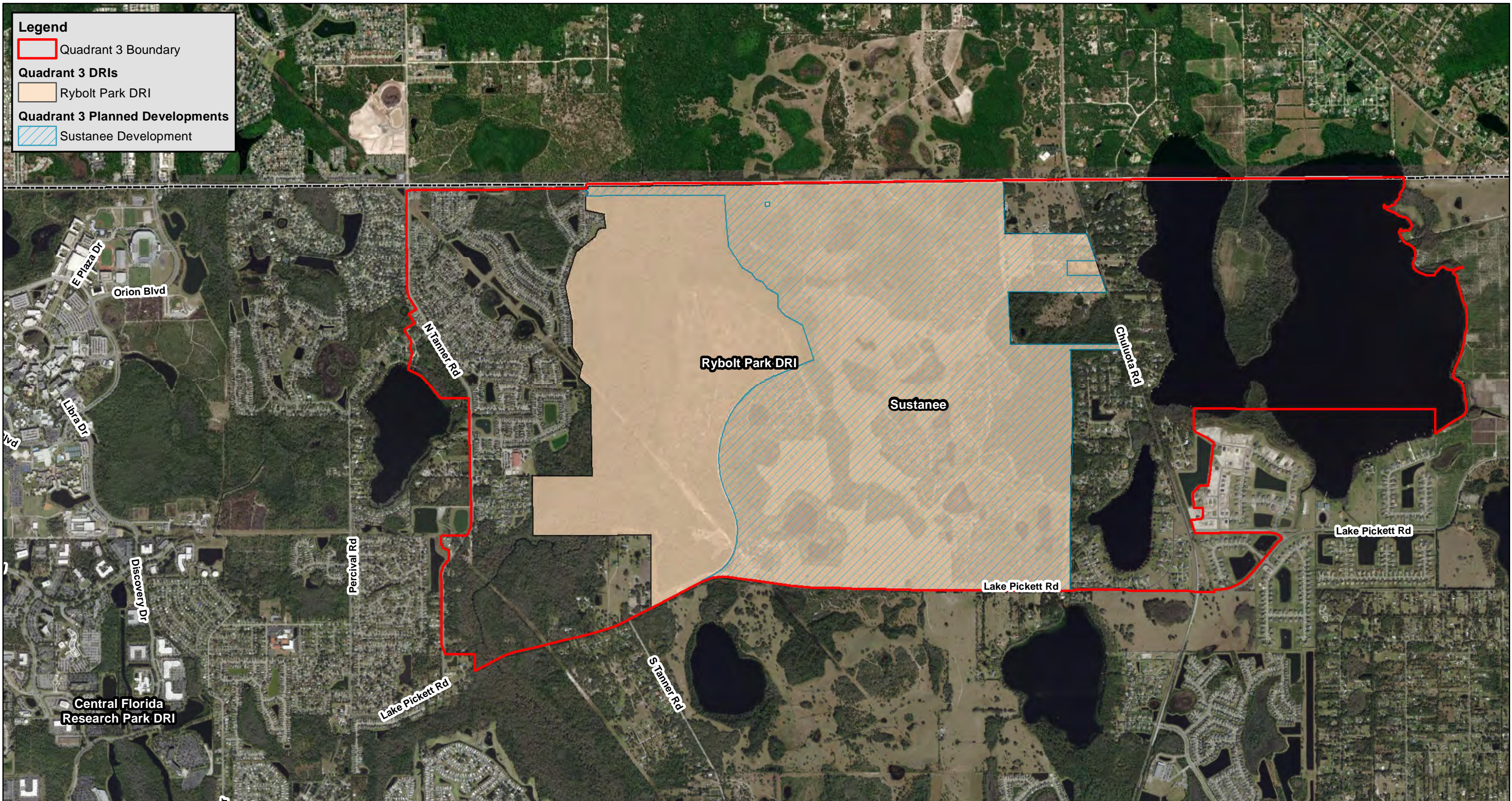


EXHIBIT - 6.1.13

Note: Development of Regional Impact (DRI) - Florida Department of Economic Opportunity, 2018. Planned Developments - Orange County, 2019

North East Orange County Areawide Transportation Study (NEOCATS)

Quadrant 3: Major Developments/DRIs

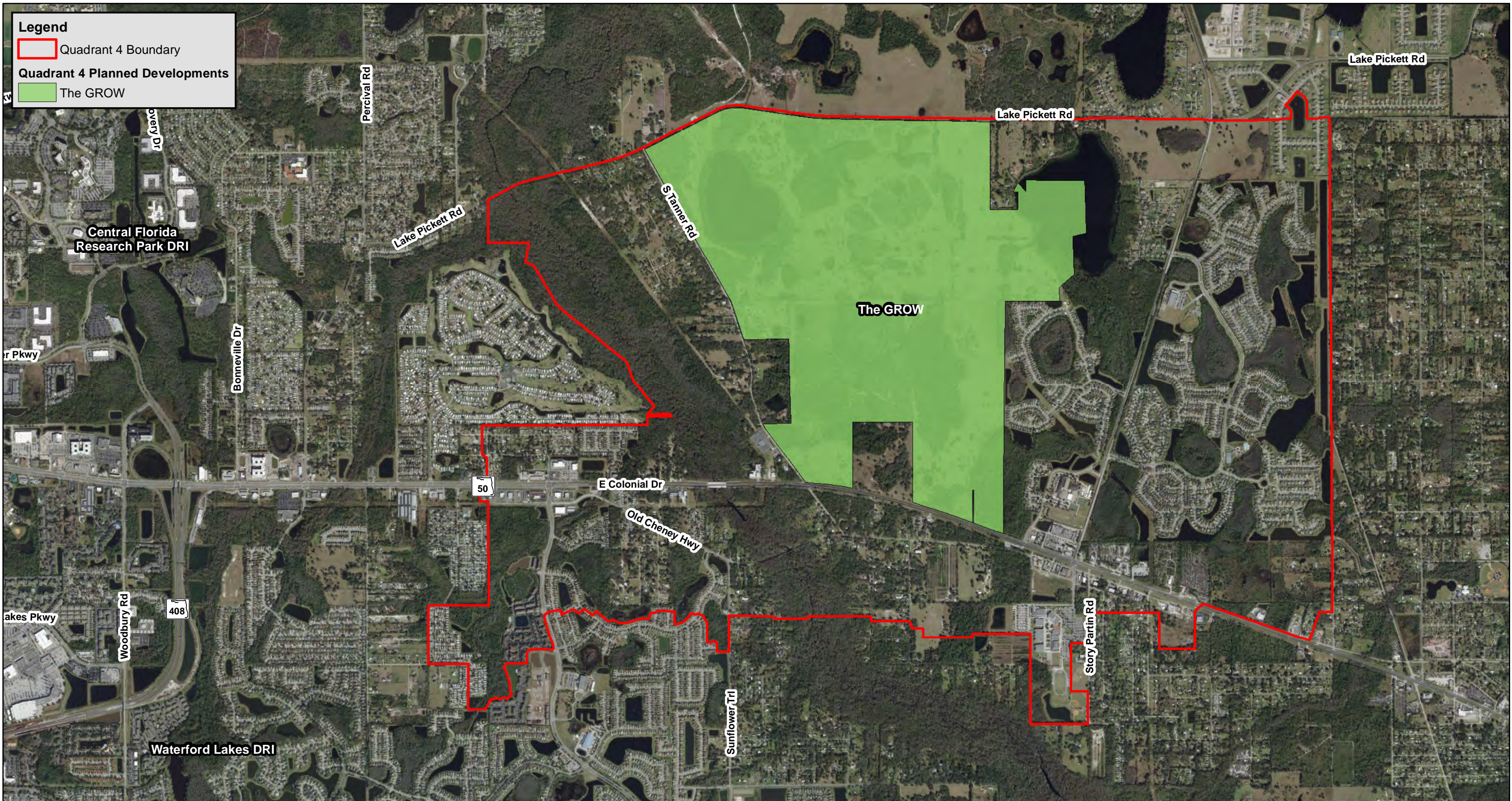
NEOCATS - June 2021

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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**EXHIBIT - 6.1.14**

Note: Development of Regional Impact (DRI) - Florida Department of Economic Opportunity, 2018. Planned Developments - Orange County, 2019

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 4: Major Developments/DRIs**

NEOCATS - June 2021

0 2,000 4,000 Feet

Source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



### 6.1.6 Existing Land Use

The Florida Land Use, Cover, and Forms Classification System (FLUCFCS) was used to identify the existing land uses for the project area. **Tables 6.1.15** through **6.1.18** summarize the existing land uses located within each of the study area quadrants, respectively for Quadrants 1 through 4. Within Quadrant 1, the most prominent land use is Institutional, due to the University of Central Florida, followed by High Density Residential and Pine Flatwoods land uses. In Quadrant 2, the most prominent land use is High Density Residential, followed by Commercial and Services. While the northwest portion of Quadrant 4 is still mostly undeveloped, the southern and eastern portions are significantly residential. The most prominent existing land uses in Quadrant 4 are Improved Pastures, followed by High Density Residential and Low Density Residential. The Study Area existing land use for each of the Quadrants can be found in **Exhibits 6.1.15** through **6.1.18**.



**TABLE 6.1.15 - EXISTING LAND USES IN QUADRANT 1**

| <b>Map Unit Symbol</b>             | <b>Map Unit Name</b>                     | <b>Q1 Acres</b> | <b>Percent of Q1</b> |
|------------------------------------|--|-----------------|----------------------|
| 1100                               | Residential, Low Density                 | 35.66           | 1.13%                |
| 1200                               | Residential, Medium Density              | 278.55          | 8.86%                |
| 1300                               | Residential, High Density                | 388.48          | 12.35%               |
| 1400                               | Commercial and Services                  | 320.64          | 10.20%               |
| 1700                               | Institutional                            | 636.86          | 20.25%               |
| 1850                               | Parks and Zoos                           | 4.92            | 0.16%                |
| 1860                               | Community Recreational Facilities        | 2.58            | 0.08%                |
| 1900                               | Open Land                                | 6.36            | 0.20%                |
| 2150                               | Field Crops                              | 2.78            | 0.09%                |
| 3100                               | Herbaceous Upland Non-Forested           | 21.39           | 0.68%                |
| 3200                               | Shrub and Bushland                       | 62.09           | 1.97%                |
| 3300                               | Mixed Upland Non-Forested                | 2.48            | 0.08%                |
| 4110                               | Pine Flatwoods                           | 381.47          | 12.13%               |
| 4200                               | Upland Hardwood Forests                  | 1.85            | 0.06%                |
| 4340                               | Upland Mixed Coniferous/Hardwood         | 61.00           | 1.94%                |
| 5200                               | Lakes                                    | 135.98          | 4.32%                |
| 5250                               | Open Water Within a Freshwater Marsh     | 7.11            | 0.23%                |
| 5300                               | Reservoirs – Pits, Retention Ponds, Dams | 99.57           | 3.17%                |
| 6110                               | Bay Swamp (If Distinct)                  | 6.41            | 0.20%                |
| 6170                               | Mixed Wetland Hardwoods                  | 75.86           | 2.41%                |
| 6210                               | Cypress                                  | 35.61           | 1.13%                |
| 6250                               | Hydric Pine Flatwoods                    | 98.86           | 3.14%                |
| 6300                               | Wetland Forested Mixed                   | 254.40          | 8.09%                |
| 6410                               | Freshwater Marshes                       | 35.12           | 1.12%                |
| 6430                               | Wet Prairies                             | 38.48           | 1.22%                |
| 6440                               | Emergent Aquatic Vegetation              | 14.04           | 0.45%                |
| 6460                               | Mixed Scrub-Shrub Wetland                | 42.27           | 1.34%                |
| 8140                               | Roads and Highways                       | 43.26           | 1.38%                |
| 8200                               | Communications                           | 0.84            | 0.03%                |
| 8310                               | Electrical Power Facilities              | 2.13            | 0.07%                |
| 8320                               | Electrical Power Transmission Lines      | 13.83           | 0.44%                |
| 8330                               | Water Supply Plants                      | 8.28            | 0.26%                |
| 8340                               | Sewage Treatment                         | 16.61           | 0.53%                |
| 8370                               | Surface Water Collection Ponds           | 9.03            | 0.29%                |
| <b>Totals for Area of Interest</b> |  | <b>3,144.80</b> | <b>100.00%</b>       |



**TABLE 6.1.16 - EXISTING LAND USES IN QUADRANT 2**

| <b>Map Unit Symbol</b>             | <b>Map Unit Name</b>   | <b>Q2 Acres</b> | <b>Percent of Q2</b> |
|------------------------------------|--|-----------------|----------------------|
| 1100                               | Residential, Low Density   | 175.75          | 4.71%                |
| 1200                               | Residential, Medium Density  | 244.32          | 6.54%                |
| 1300                               | Residential, High Density  | 1053.82         | 28.22%               |
| 1400                               | Commercial and Services  | 643.14          | 17.22%               |
| 1490                               | Commercial and Services Under Construction                               | 3.55            | 0.10%                |
| 1700                               | Institutional  | 161.74          | 4.33%                |
| 1820                               | Golf Courses   | 86.68           | 2.32%                |
| 1890                               | Other Recreational (Stables, Go-Carts)                                   | 3.47            | 0.09%                |
| 1900                               | Open Land  | 27.84           | 0.75%                |
| 2110                               | Improved Pastures (Monocult, Planted Forage Crops)                       | 13.96           | 0.37%                |
| 2410                               | Tree Nurseries   | 6.46            | 0.17%                |
| 3100                               | Herbaceous Upland Non-Forested   | 16.90           | 0.45%                |
| 3200                               | Shrub and Brushland (Wax Myrtle or Saw Palmetto, Occasionally Scrub Oak) | 6.80            | 0.18%                |
| 3300                               | Mixed Upland Non-Forested  | 12.93           | 0.35%                |
| 4110                               | Pine Flatwoods   | 310.80          | 8.32%                |
| 4340                               | Upland Mixed Coniferous/Hardwood   | 42.47           | 1.14%                |
| 5100                               | Streams and Waterways  | 0.48            | 0.01%                |
| 5200                               | Lakes  | 33.70           | 0.90%                |
| 5300                               | Reservoirs - Pits, Retention Ponds, Dams                                 | 184.48          | 4.94%                |
| 6110                               | Bay Swamp (if Distinct)  | 4.18            | 0.11%                |
| 6170                               | Mixed Wetland Hardwoods  | 161.82          | 4.33%                |
| 6210                               | Cypress  | 9.35            | 0.25%                |
| 6250                               | Hydric Pine Flatwoods  | 48.06           | 1.29%                |
| 6300                               | Wetland Forested Mixed   | 223.01          | 5.97%                |
| 6410                               | Freshwater Marshes   | 35.97           | 0.96%                |
| 6430                               | Wet Prairies   | 1.44            | 0.04%                |
| 6440                               | Emergent Aquatic Vegetation  | 18.63           | 0.50%                |
| 6460                               | Mixed Scrub-Shrub Wetland  | 8.45            | 0.23%                |
| 7420                               | Borrow Areas   | 8.93            | 0.24%                |
| 8140                               | Roads and Highways (Divided 4-Lanes with Medians)                        | 144.33          | 3.86%                |
| 8310                               | Electrical Power Facilities  | 1.14            | 0.03%                |
| 8320                               | Electrical Power Transmission Lines                                      | 7.05            | 0.19%                |
| 8330                               | Water Supply Plants  | 1.27            | 0.03%                |
| 8370                               | Surface Water Collection Ponds   | 31.98           | 0.86%                |
| <b>Totals for Area of Interest</b> |  | <b>3,734.90</b> | <b>100.00%</b>       |



**TABLE 6.1.17 - EXISTING LAND USES IN QUADRANT 3**

| <b>Map Unit Symbol</b>             | <b>Map Unit Name</b>   | <b>Q3 Acres</b> | <b>Percent of Q3</b> |
|------------------------------------|--|-----------------|----------------------|
| 1100                               | Residential, Low Density   | 261.13          | 6.15%                |
| 1180                               | Rural Residential  | 92.38           | 2.18%                |
| 1200                               | Residential, Medium Density  | 71.62           | 1.69%                |
| 1300                               | Residential, high density  | 313.88          | 7.40%                |
| 1400                               | Commercial and Services  | 1.48            | 0.03%                |
| 1700                               | Institutional  | 11.68           | 0.28%                |
| 1900                               | Open Land  | 3.99            | 0.09%                |
| 2110                               | Improved Pastures (Monocult, Planted Forage Crops)                       | 461.90          | 10.89%               |
| 2120                               | Unimproved Pastures  | 390.64          | 9.21%                |
| 2130                               | Woodland Pastures  | 458.31          | 10.80%               |
| 2210                               | Citrus Groves  | 53.38           | 1.26%                |
| 2510                               | Horse Farms  | 37.82           | 0.89%                |
| 3100                               | Herbaceous Upland Non-Forested   | 12.23           | 0.29%                |
| 3200                               | Shrub and Brushland (Wax Myrtle or Saw Palmetto, Occasionally Scrub Oak) | 22.24           | 0.52%                |
| 4110                               | Pine Flatwoods   | 36.78           | 0.87%                |
| 4210                               | Xeric Oak  | 52.36           | 1.23%                |
| 4340                               | Upland Mixed Coniferous/Hardwood   | 30.79           | 0.73%                |
| 5200                               | Lakes  | 647.05          | 15.25%               |
| 5300                               | Reservoirs - Pits, Retention Ponds, Dams                                 | 49.28           | 1.16%                |
| 6110                               | Bay Swamp (If Distinct)  | 49.40           | 1.16%                |
| 6170                               | Mixed Wetland Hardwoods  | 146.12          | 3.44%                |
| 6210                               | Cypress  | 59.41           | 1.40%                |
| 6250                               | Hydric Pine Flatwoods  | 46.32           | 1.09%                |
| 6300                               | Wetland Forested Mixed   | 705.26          | 16.62%               |
| 6410                               | Freshwater Marshes   | 48.57           | 1.14%                |
| 6430                               | Wet Prairies   | 9.98            | 0.24%                |
| 6440                               | Emergent Aquatic Vegetation  | 44.21           | 1.04%                |
| 6460                               | Mixed Scrub-Shrub Wetland  | 76.42           | 1.80%                |
| 8200                               | Communications   | 0.69            | 0.02%                |
| 8320                               | Electrical Power Transmission Lines                                      | 46.41           | 1.09%                |
| 8370                               | Surface Water Collection Ponds   | 1.54            | 0.04%                |
| <b>Totals for Area of Interest</b> |  | <b>4,243.27</b> | <b>100.00%</b>       |



**TABLE 6.1.18 - EXISTING LAND USES IN QUADRANT 4**

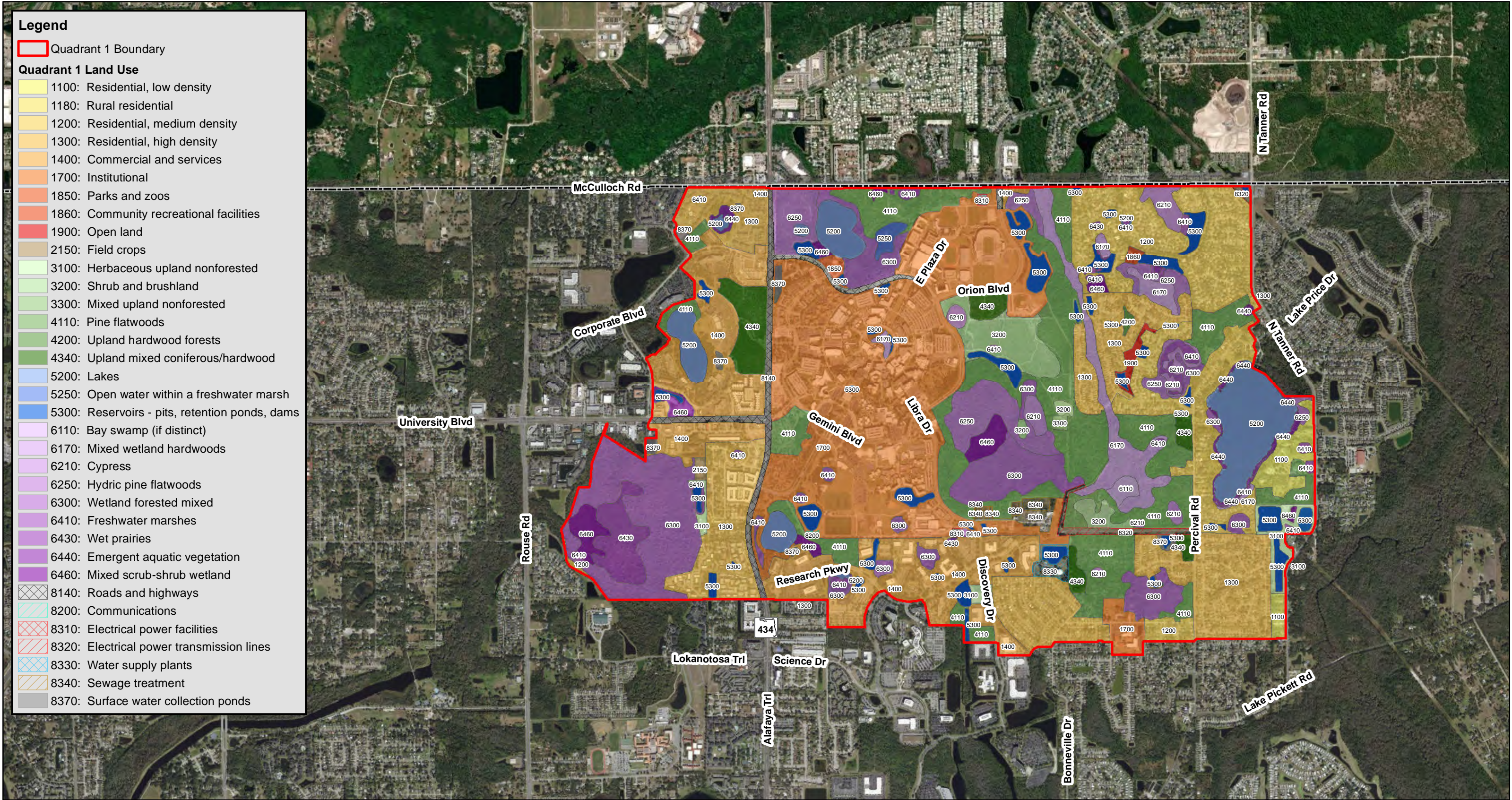
| <b>Map Unit Symbol</b> | <b>Map Unit Name</b>   | <b>Q4 Acres</b> | <b>Percent of Q4</b> |
|------------------------|--|-----------------|----------------------|
| 1100                   | Residential, Low Density   | 426.09          | 9.30%                |
| 1180                   | Rural Residential  | 51.97           | 1.13%                |
| 1200                   | Residential, Medium Density  | 394.47          | 8.61%                |
| 1300                   | Residential, High Density  | 453.51          | 9.90%                |
| 1400                   | Commercial and Services  | 146.72          | 3.20%                |
| 1490                   | Commercial and Services Under Construction                               | 1.07            | 0.02%                |
| 1550                   | Other Light Industrial   | 12.26           | 0.27%                |
| 1700                   | Institutional  | 115.54          | 2.52%                |
| 1860                   | Community Recreational Facilities  | 13.34           | 0.29%                |
| 1900                   | Open Land  | 16.97           | 0.37%                |
| 2110                   | Improved Pastures (Monocult, Planted Forage Crops)                       | 741.31          | 16.18%               |
| 2120                   | Unimproved Pastures  | 56.72           | 1.24%                |
| 2130                   | Woodland Pastures  | 184.39          | 4.02%                |
| 2210                   | Citrus Groves  | 10.20           | 0.22%                |
| 2400                   | Nurseries and Vineyards  | 4.40            | 0.10%                |
| 2430                   | Ornamentals  | 18.24           | 0.40%                |
| 2500                   | Specialty Farms  | 2.81            | 0.06%                |
| 3100                   | Herbaceous Upland Non-Forested   | 36.16           | 0.79%                |
| 3200                   | Shrub and Brushland (Wax Myrtle or Saw Palmetto, Occasionally Scrub Oak) | 48.35           | 1.06%                |
| 3300                   | Mixed Upland Non-Forested  | 25.31           | 0.55%                |
| 4110                   | Pine Flatwoods   | 173.97          | 3.80%                |
| 4200                   | Upland Hardwood Forests  | 10.77           | 0.23%                |
| 4340                   | Upland Mixed Coniferous/Hardwood   | 54.94           | 1.20%                |
| 5100                   | Streams and Waterways  | 0.83            | 0.02%                |
| 5200                   | Lakes  | 152.77          | 3.33%                |
| 5300                   | Reservoirs - Pits, Retention Ponds, Dams                                 | 183.38          | 4.00%                |
| 6170                   | Mixed Wetland Hardwoods  | 390.05          | 8.51%                |
| 6210                   | Cypress  | 145.31          | 3.17%                |
| 6250                   | Hydric Pine Flatwoods  | 185.46          | 4.05%                |
| 6300                   | Wetland Forested Mixed   | 323.62          | 7.06%                |
| 6410                   | Freshwater Marshes   | 24.92           | 0.54%                |
| 6430                   | Wet Prairies   | 18.87           | 0.41%                |
| 6440                   | Emergent Aquatic Vegetation  | 25.45           | 0.56%                |
| 6460                   | Mixed Scrub-Shrub Wetland  | 36.06           | 0.79%                |



**TABLE 6.1.18 - EXISTING LAND USES IN QUADRANT 4**

| <b>Map Unit Symbol</b>             | <b>Map Unit Name</b>                             | <b>Q4 Acres</b> | <b>Percent of Q4</b> |
|------------------------------------|--|-----------------|----------------------|
| 8140                               | Road and Highways (Divided 4-Lanes with Medians) | 55.11           | 1.20%                |
| 8200                               | Communications                                   | 1.95            | 0.04%                |
| 8310                               | Electrical Power Facilities                      | 11.31           | 0.25%                |
| 8320                               | Electrical Power Transmission Lines              | 21.40           | 0.47%                |
| 8370                               | Surface Water Collection Ponds                   | 6.83            | 0.14%                |
| <b>Totals for Area of Interest</b> |  | <b>4,582.83</b> | <b>100.00%</b>       |





**EXHIBIT - 6.1.15**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 1: Existing Land Use**

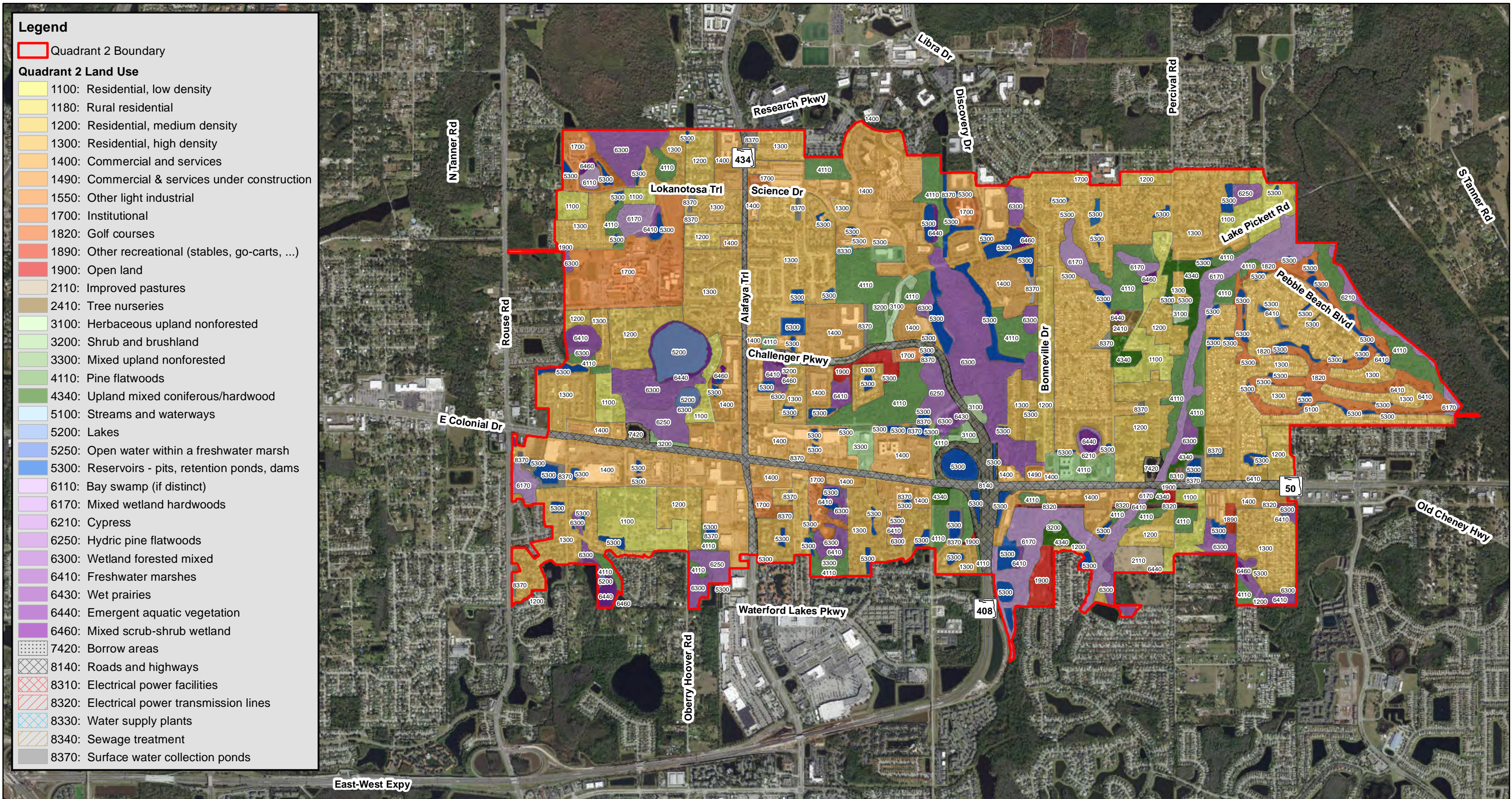
Note: Existing Land Use - SJWMD, Land Use Land Code FLUCFCS, 2016.

NEOCATS - June 2021

0 2,000 4,000 Feet

Source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





**EXHIBIT - 6.1.16**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 2: Existing Land Use**

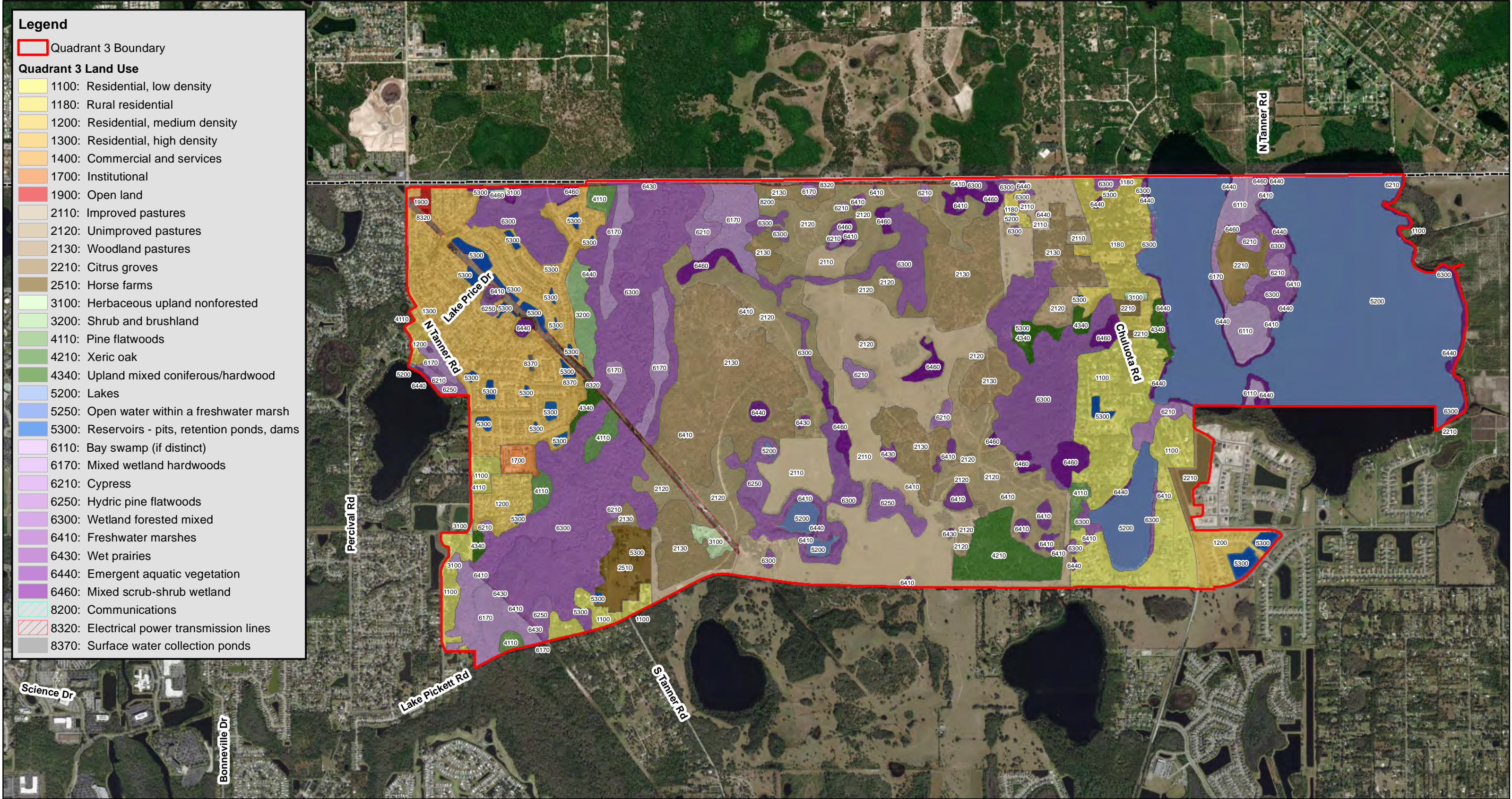
Note: Existing Land Use - SJWMD, Land Use Land Code FLUCFCS, 2016.

NEOCATS - June 2021

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 2,000 4,000 Feet





**EXHIBIT - 6.1.17**


**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 3: Existing Land Use**

Note: Existing Land Use - SJWMD, Land Use Land Code FLUCFCS, 2016.

NEOCATS - June 2021

The inset map shows the location of Quadrant 3 (highlighted in red) within the larger context of Orange County and surrounding areas. It includes major roads like I-4, I-95, and US-17, and nearby cities like Volusia, Seminole, and Orange.

 **ORANGE COUNTY GOVERNMENT FLORIDA**

0 2,000 4,000 Feet

Source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



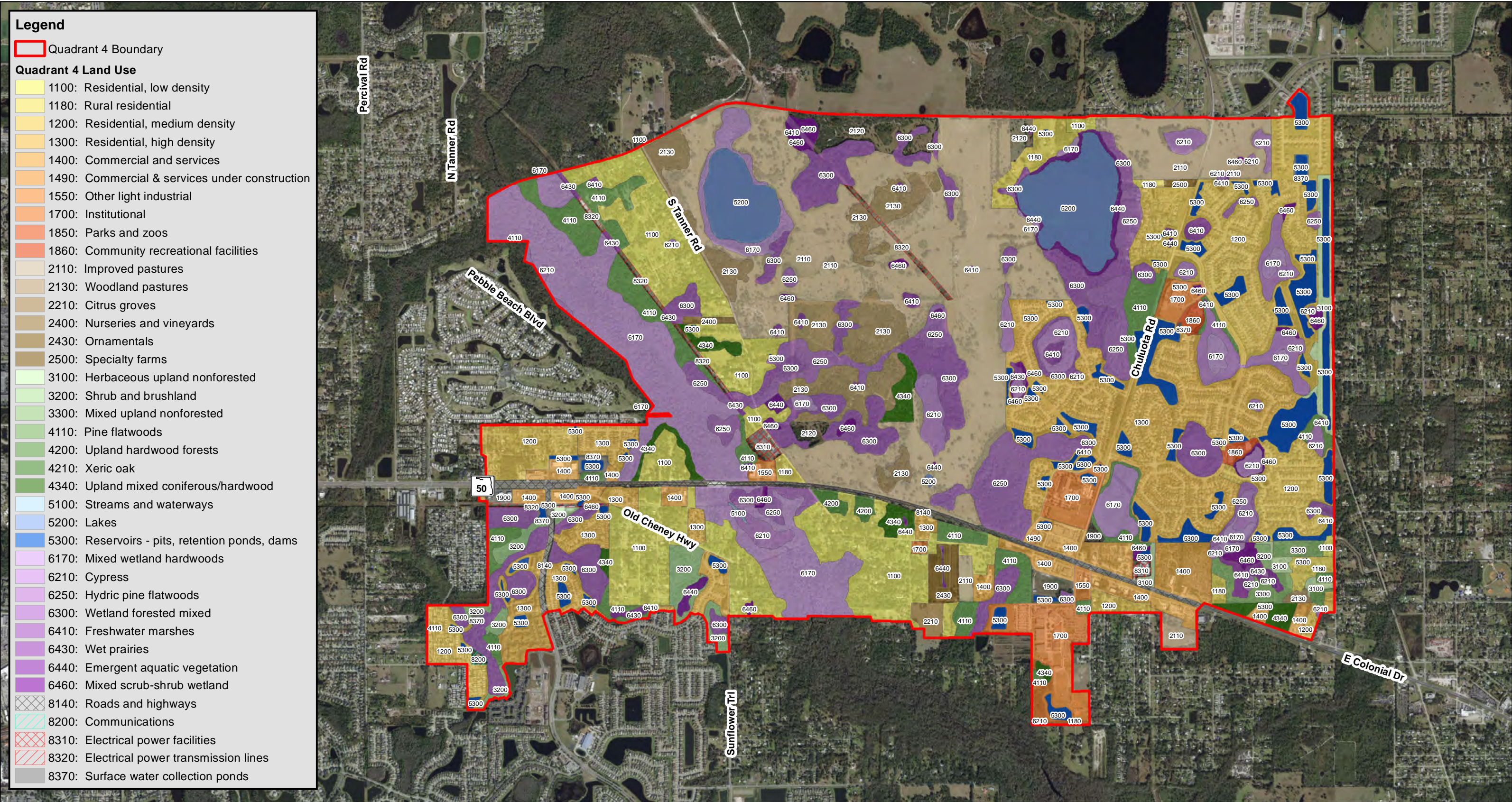


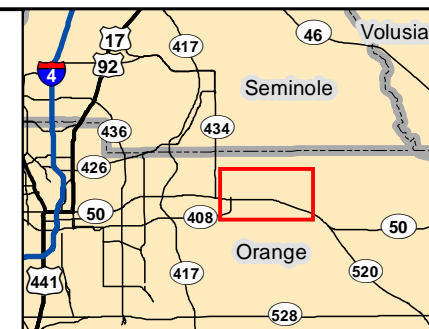
EXHIBIT - 6.1.18

## North East Orange County Areawide Transportation Study (NEOCATS)

### Quadrant 4: Existing Land Use

Note: Existing Land Use - SJWMD, Land Use Land Code FLUCFCS, 2016.

NEOCATS - June 2021



Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID,  
IGN, and the GIS User Community



## 6.2 ARCHAEOLOGICAL AND HISTORIC FEATURES

Cultural resources are defined by the National Historic Preservation Act (NHPA) of 1966 and governed by federal and state regulations. Section 106 of the NHPA provides a general process for cultural resource assessments and requires historic and archaeological resources be considered in project planning for federally funded or permitted projects. Cultural resources or "historic properties" include any "prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places (NRHP)." Any archaeological sites or historic resources that are listed, determined eligible, or considered potentially eligible by the State Historic Preservation Office (SHPO) for listing in the NRHP, are identified in **Tables 6.2.1** through **6.2.4**, respectively for Quadrants 1 through 4. These sites along with other state recorded sites and survey locations for each of the Quadrants can be found in **Exhibits 6.2.1** through **6.2.4**.

**Table 6.2.1: Summary of Cultural Resources in Quadrant 1**

| <b>Cultural Resources</b>                    | <b>Within Study Area</b> |
|--|--------------------------|
| SHPO Structures                              | 0                        |
| SHPO Bridges                                 | 0                        |
| SHPO Resource Groups                         | 0                        |
| National Register (Site, District, Building) | 0                        |
| Archaeological Sites                         | 0                        |
| SHPO Surveys                                 | 12                       |

Source: FGDL, FMSF

According to the Florida Master Site File (FMSF), there are no historic sites, resource groups, or archaeological sites within the Quadrant 1 Study Area. However, 12 cultural resource assessment surveys have been conducted within and in the vicinity of the Study Area. These previous surveys cover the majority of the Quadrant 1.



**Table 6.2.2: Summary of Cultural Resources in Quadrant 2**

| <b>Cultural Resources</b>                    | <b>Within Study Area</b> |
|--|--------------------------|
| SHPO Structures                              | 23                       |
| SHPO Bridges                                 | 0                        |
| SHPO Resource Groups                         | 1                        |
| National Register (Site, District, Building) | 0                        |
| Archaeological Sites                         | 0                        |
| SHPO Surveys                                 | 12                       |

Source: FGDL, FMSF

According to the Florida Master Site File (FMSF), there are 23 historic sites within Quadrant 2. All 23 sites are listed as ineligible for inclusion in the NRHP but six (6) of the 23 sites have not been evaluated by SHPO. All six (6) sites are private residential homes and five (5) of the sites are classified as being potential contributors to the National Register District due to the potential ability of meeting the required criteria put forth by SHPO. There is one (1) historic resource group located in Quadrant 2 that is associated with a drainage canal and is ineligible for inclusion in the NRHP due to the lack of historical significance. In addition, 12 cultural resource assessment surveys have been conducted within and in the vicinity of Quadrant 2.

**Table 6.2.3: Summary of Cultural Resources in Quadrant 3**

| <b>Cultural Resources</b>                    | <b>Within Study Area</b> |
|--|--------------------------|
| SHPO Structures                              | 5                        |
| SHPO Bridges                                 | 0                        |
| SHPO Resource Groups                         | 0                        |
| National Register (Site, District, Building) | 0                        |
| Archaeological Sites                         | 0                        |
| SHPO Surveys                                 | 12                       |

Source: FGDL, FMSF



According to the Florida Master Site File (FMSF), there are five (5) historic sites within Quadrant 3. All five sites are listed as ineligible for inclusion in the NRHP but two (2) have not been evaluated by SHPO. Both sites are registered as private residences and are classified as being potential contributors to the National Register District. In addition, 12 cultural resource assessment surveys have been conducted within and in the vicinity of Quadrant 3.

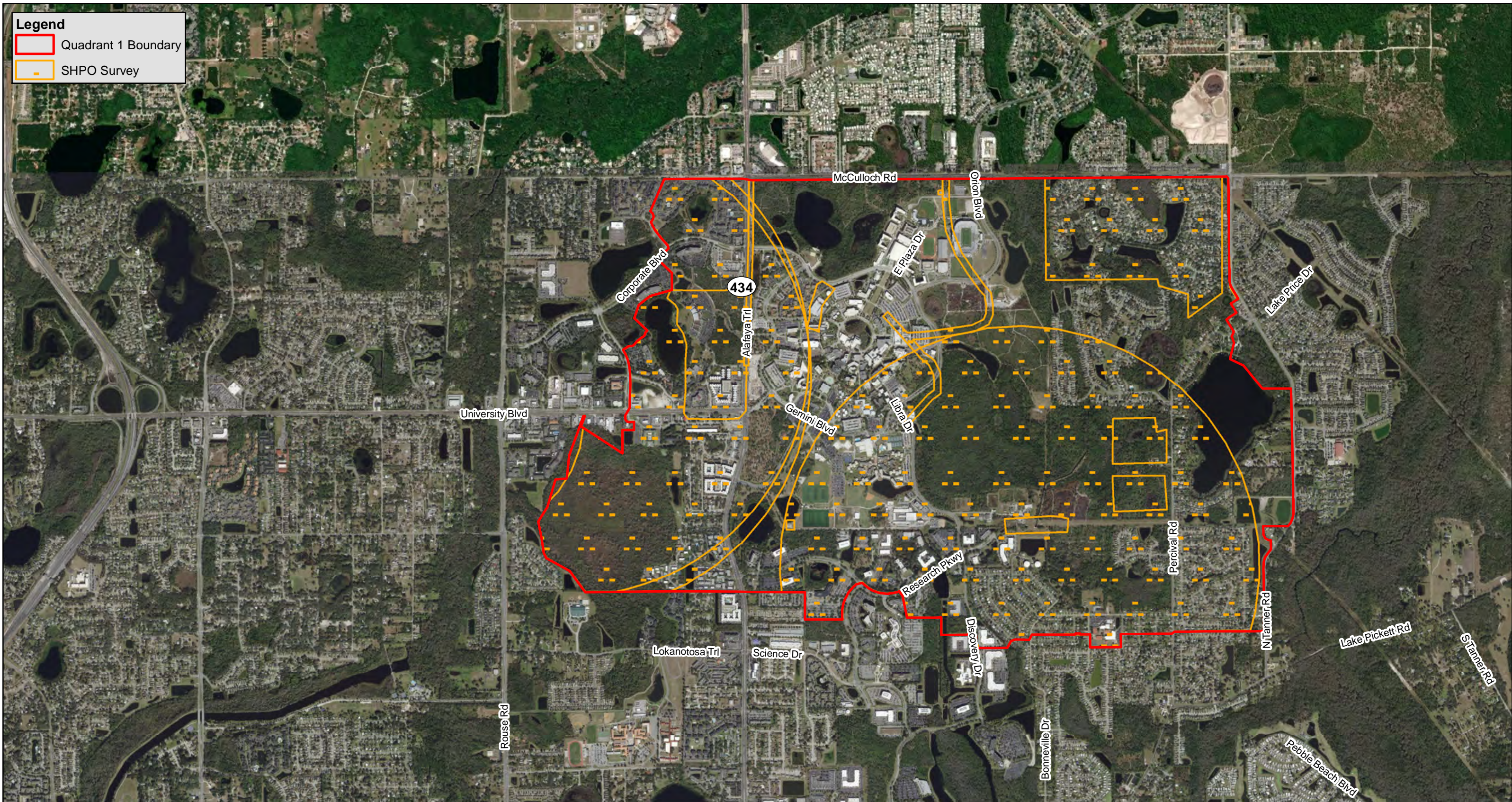
**Table 6.2.4: Summary of Cultural Resources in Quadrant 4**

| <b>Cultural Resources</b>                    | <b>Within Study Area</b> |
|--|--------------------------|
| SHPO Structures                              | 125                      |
| SHPO Bridges                                 | 2                        |
| SHPO Resource Groups                         | 7                        |
| National Register (Site, District, Building) | 0                        |
| Archaeological Sites                         | 0                        |
| SHPO Surveys                                 | 20                       |

Source: FGDL, FMSF

According to the Florida Master Site File (FMSF), there are 125 historic sites within the Quadrant 4. All 125 sites are listed as ineligible for inclusion in the NRHP but two (2) have not been evaluated by SHPO. Both sites are listed as a private residence and are potential contributors to the National Register District. Two (2) bridges are located within the Quadrant but are ineligible for inclusion in the NRHP. Seven (7) historic resource groups were identified; however, all groups are ineligible for inclusion in the NRHP due to lack of sufficient historic significance and architectural distinction. In addition, 20 cultural resource assessment surveys have been conducted within and in the vicinity of Quadrant 4.





**Exhibit 6.2.1**

Note: GIS data downloaded from FGDL June 2021 and sourced to Florida Master Site File

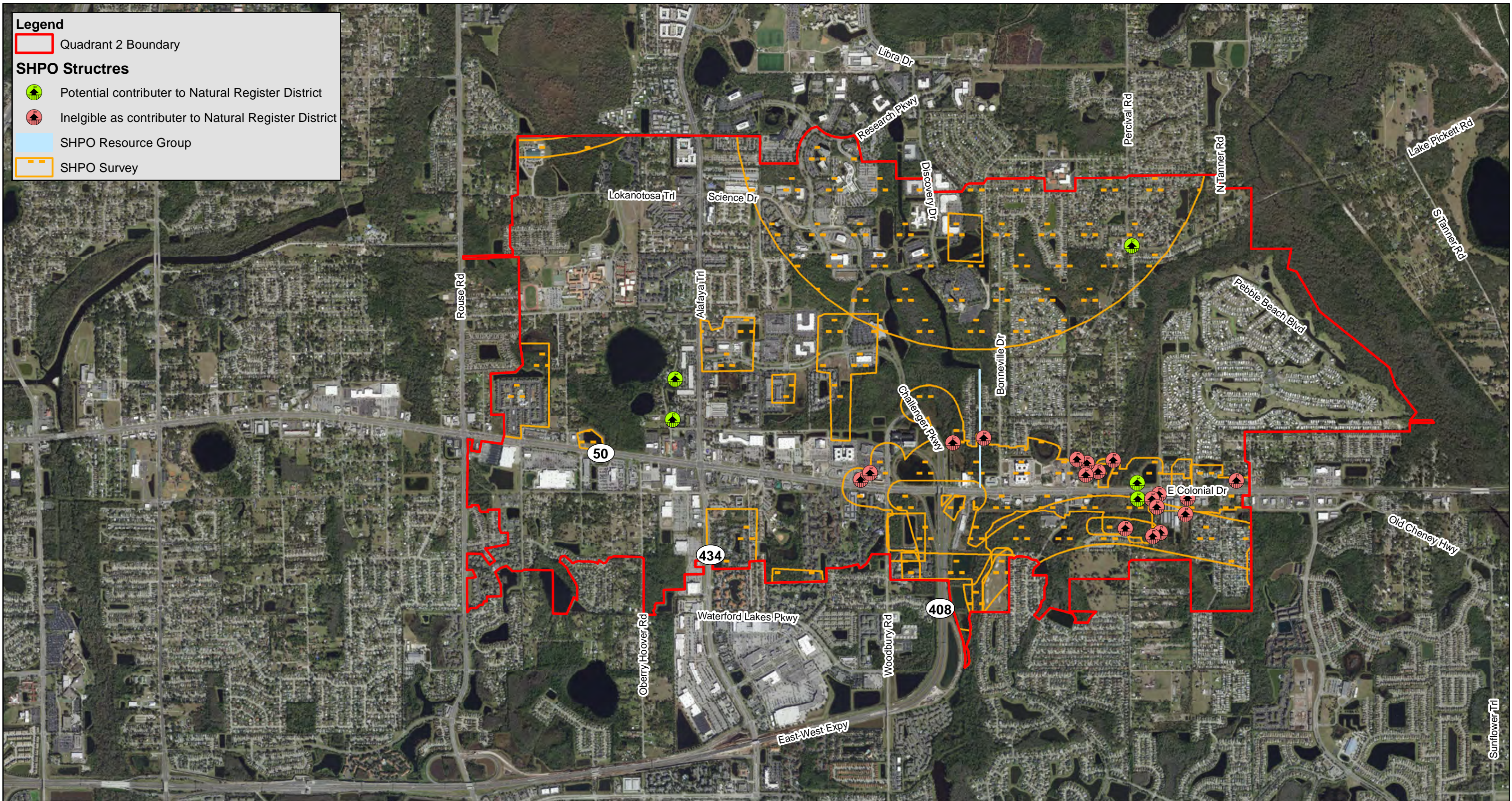
**North East Orange County Areawide Transportation Study (NEOCATS)**  
**Quadrant 1: Cultural Resources Map**

NEOCATS - June 2021

0 2,000 4,000 Feet

Source: Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





**Exhibit 6.2.2**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 2: Cultural Resources Map**

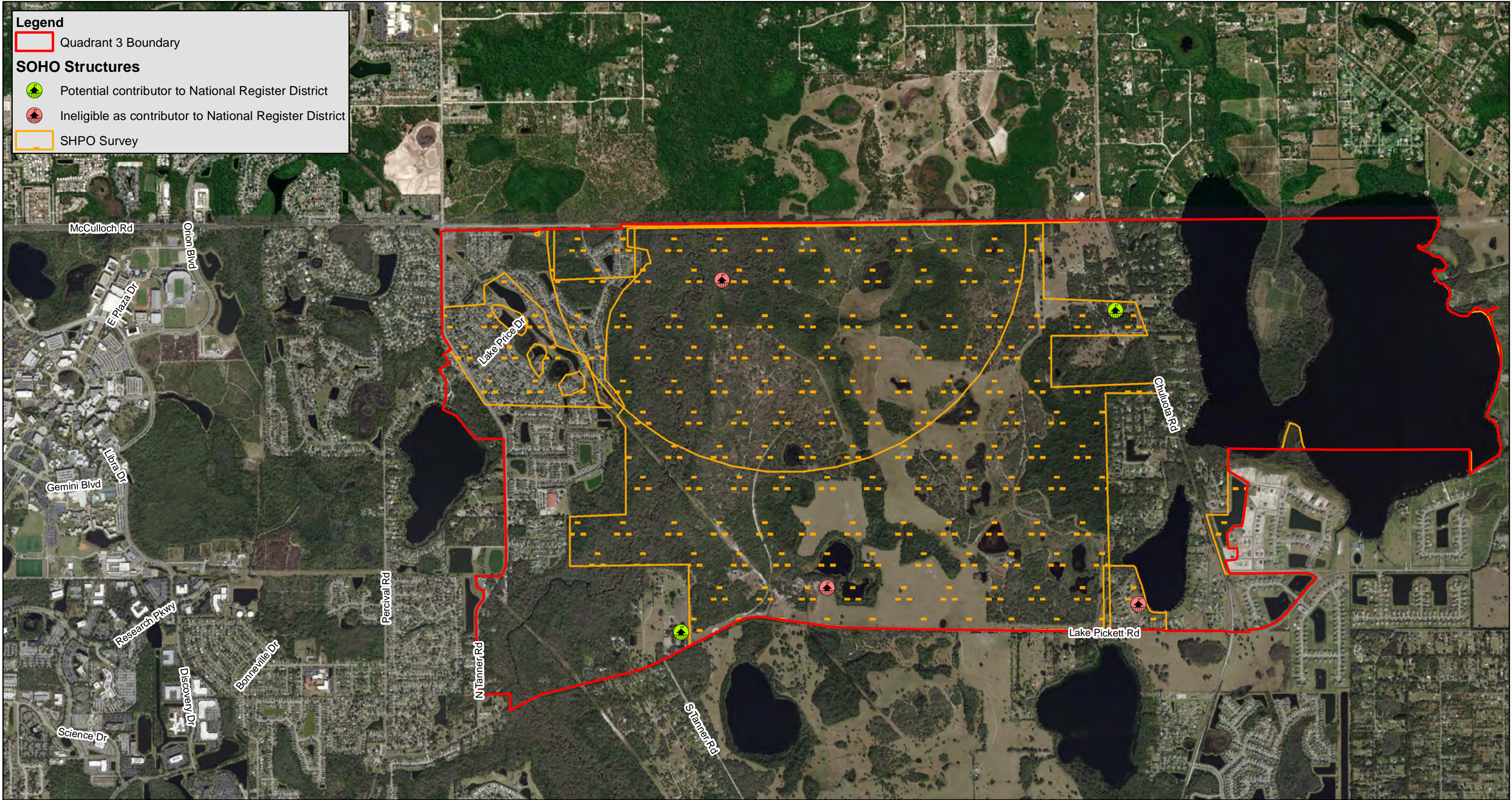
Note: GIS data downloaded from FGDL June 2021 and sourced to Florida Master Site File

NEOCATS - June 2021

0 2,000 4,000 Feet

Source: Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





**Exhibit 6.2.3**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 3: Cultural Resources Map**

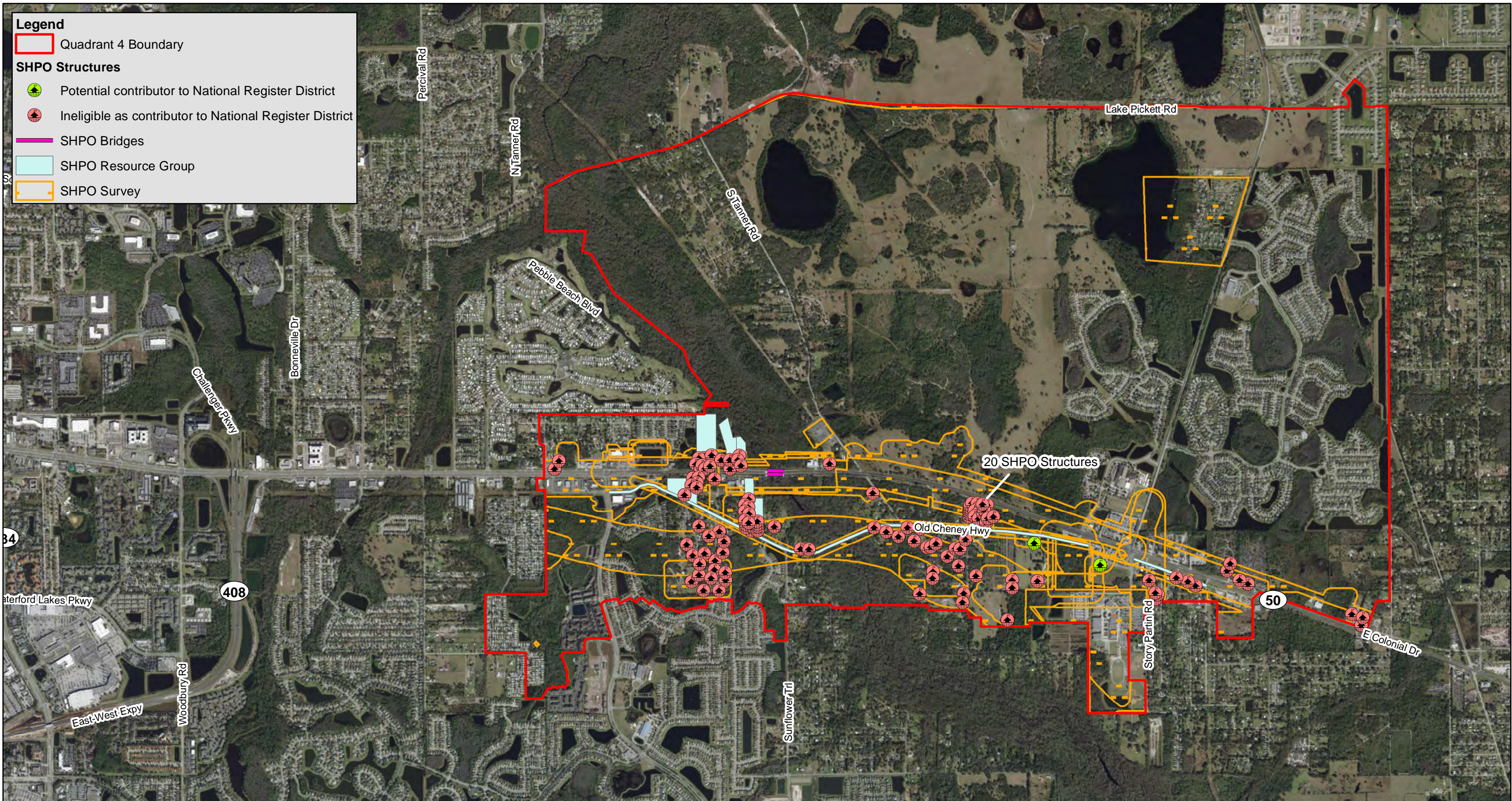
Note: GIS data downloaded from FGDL June 2021 and sourced to Florida Master Site File

NEOCATS - June 2021

0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar  
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and  
the GIS User Community





### Exhibit 6.2.4

Note: GIS data downloaded from FGDL June 2021 and sourced to Florida Master Site File

## North East Orange County Areawide Transportation Study (NEOCATS)

### Quadrant 4: Cultural Resources Map

NEOCATS - June 2021

Source:  
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



### 6.3 SOCIAL RESOURCES

Social resources/facilities include, but are not limited to, trails, parks, schools, and recreational areas as well as the neighborhoods they serve. Many of these features are protected under the Department of Transportation Act (DOT Act) of 1966, section 4(f) which limits the use of public land. **Tables 6.3.1** through **6.3.4** summarize the number of sites that are in public ownership or use, respectively for Quadrants 1 through 4. The locations of social resources are provided for each of the Quadrants in **Exhibits 6.3.1** through **6.3.4**.

**Table 6.3.1: Summary of Social Resources in Quadrant 1**

| Social Resources        | Within Study Area |
|-------------------------|-------------------|
| Cemetery                | 0                 |
| Civic Center            | 6                 |
| Conservation Lands      | 9                 |
| Cultural Center         | 0                 |
| Fire Station            | 1                 |
| Government Building     | 0                 |
| Health Care Facility    | 0                 |
| Hospital                | 0                 |
| Law Enforcement         | 1                 |
| Park                    | 2                 |
| Religious Center        | 3                 |
| School                  | 5                 |
| Social Service Facility | 0                 |
| Veteran Facility        | 0                 |

Source: FGDL



As shown in **Exhibit 6.3.1**, there are two parks (Student Union Cypress Dome and Arboretum South Entrance Trailhead) that are associated with the University of Central Florida and consist of walking trails and neighborhood/nature parks. The student Union Cypress Dome is also listed as a one of the nine (9) conservation lands as upland habitat restoration is also occurring in the area. Therefore, Quadrant 1 also includes eight (8) additional plots of conservation lands, though several are part of a single unit but are physically disconnected from each other. All plots are owned by the state and managed by the University of Central Florida to be restored and/or maintained as various natural communities such as mesic flatwoods, scrub oak, and wet prairies. There are six (6) civic centers located in the study area and all are associated with the University of Central Florida as arenas/stadiums or athletic/recreational fields. In addition, the area encompasses the Orange Co./Seminole Co. Fire Station 65, the University of Central Florida Police Department, three (3) religious centers, and five (5) schools which are comprised of four (4) University of Central Florida buildings and one (1) elementary school.

**Table 6.3.2: Summary of Social Resources in Quadrant 2**

| <b>Social Resources</b> | <b>Within Study Area</b> |
|-------------------------|--------------------------|
| Cemetery                | 0                        |
| Civic Center            | 0                        |
| Conservation Lands      | 2                        |
| Cultural Center         | 0                        |
| Fire Station            | 1                        |
| Government Building     | 0                        |
| Health Care Facility    | 7                        |
| Hospital                | 1                        |
| Law Enforcement         | 0                        |
| Park                    | 1                        |
| Religious Center        | 2                        |
| School                  | 8                        |
| Social Service Facility | 0                        |
| Veteran Facility        | 1                        |

Source: FGDL



As shown in **Exhibit 6.3.2**, there is one park, The East Orange Neighborhood Park, that consists of mixed-use recreation with walking trails. Quadrant 2 also includes two (2) plots of conservation lands that are situated along the study area boundary on the far east side, but largely contained within Quadrant 4. One plot is associated with the Big Econlockhatchee River Sanctuary and is owned and managed by the Florida Audubon Society. The plot is designated to protect part of the floodplain of the Big Econlockhatchee River an Outstanding Florida Water (OFW). The second plot is associated with the Ken Bosserman Econlockhatchee River Preserve and is owned and managed by Orange County in order to maintain various natural communities. In addition, the area encompasses the Orange County Fire Department and Rescue Station 80, seven (7) health care facilities, one (1) hospital, two (2) religious centers, eight (8) schools (one (1) elementary school, two (2) high schools, and five (5) university level schools), and one (1) veteran facility.

**Table 6.3.3: Summary of Social Resources in Quadrant 3**

| <b>Social Resources</b> | <b>Within Study Area</b> |
|-------------------------|--------------------------|
| Cemetery                | 0                        |
| Civic Center            | 0                        |
| Conservation Lands      | 4                        |
| Cultural Center         | 0                        |
| Fire Station            | 0                        |
| Government Building     | 0                        |
| Health Care Facility    | 0                        |
| Hospital                | 0                        |
| Law Enforcement         | 0                        |
| Park                    | 1                        |
| Religious Center        | 0                        |
| School                  | 1                        |
| Social Service Facility | 0                        |
| Veteran Facility        | 1                        |

Source: FGDL



As shown in **Exhibit 6.3.3**, there is one park, the Econlockhatchee Sandhills Conservation Area, that consists of a trailhead and a nature park. Quadrant 3 also includes four (4) plots of conservation lands. Two plots known as the Ken Bosserman Econlockhatchee River Preserve and Circle C Ranch II are owned and managed by Orange County while the third plot known as the Rybolt Property is co-owned by Orange County and the St. Johns River Water Management District (SJRWMD) but is managed solely by SJRWMD. The fourth plot known as the Econlockhatchee River Wilderness Area is owned and managed by Seminole County and lies in alignment with and adjacent to the northern boundary of Quadrant 3 but is largely encompassed in Quadrant 4. All four properties are designated to maintain various natural communities. In addition, the area encompasses one (1) school (an elementary school) and one (1) veteran facility.

**Table 6.3.4: Summary of Social Resources in Quadrant 4**

| <b>Social Resources</b> | <b>Within Study Area</b> |
|-------------------------|--------------------------|
| Cemetery                | 0                        |
| Civic Center            | 0                        |
| Conservation Lands      | 6                        |
| Cultural Center         | 0                        |
| Fire Station            | 0                        |
| Government Building     | 0                        |
| Health Care Facility    | 0                        |
| Hospital                | 0                        |
| Law Enforcement         | 0                        |
| Park                    | 0                        |
| Religious Center        | 3                        |
| School                  | 3                        |
| Social Service Facility | 0                        |
| Veteran Facility        | 1                        |

Source: FGDL

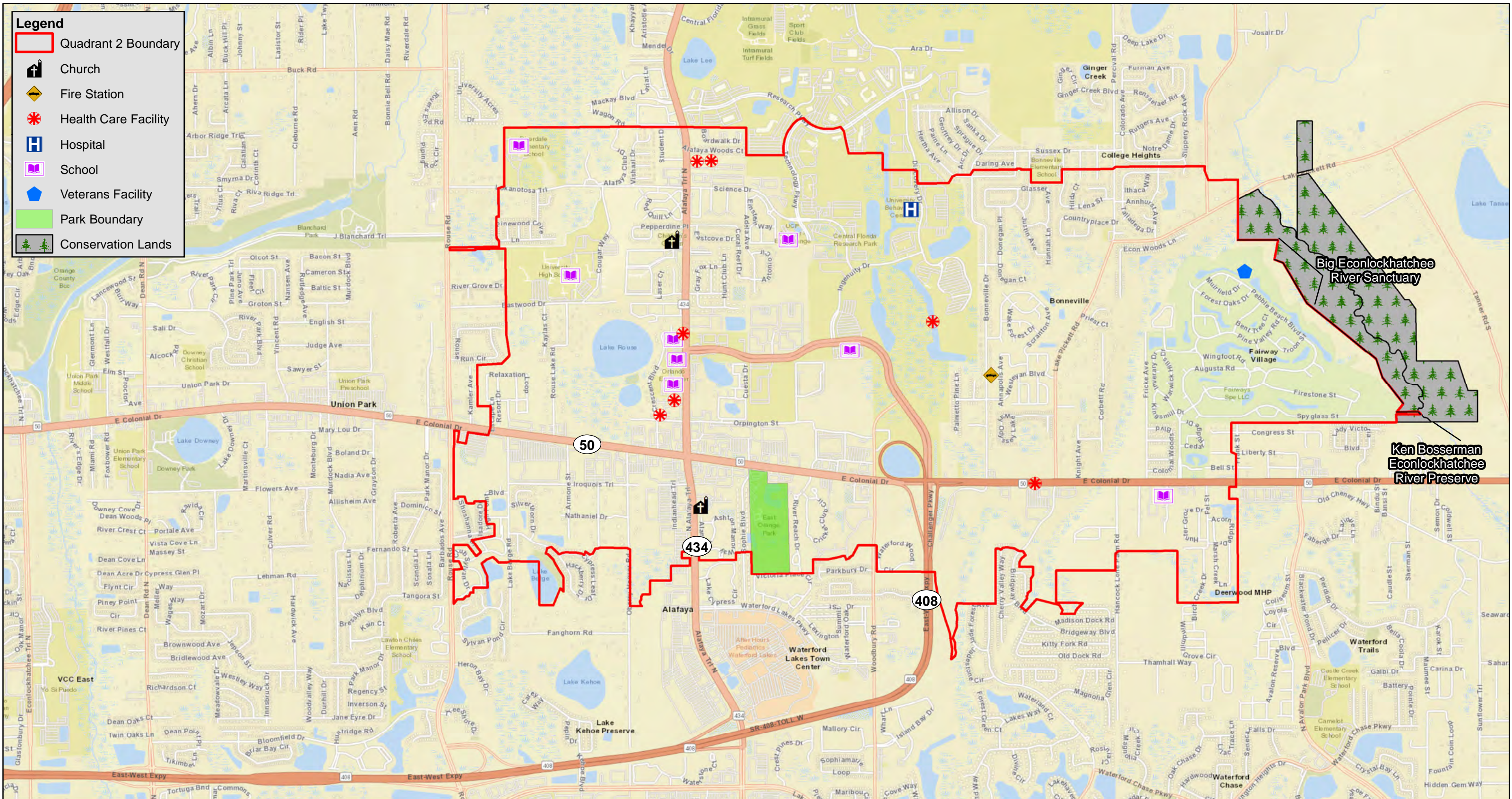


As shown in **Exhibit 6.3.4**, Quadrant 4 includes six (6) plots of conservation lands although two (2) lie along and adjacent to the boundary (Circle C Ranch II and Rybolt Property), with the majority of those site encompassed in Quadrant 3. Four plots, Ken Bosserman Econlockhatchee River Preserve, Circle C Ranch II, Evans Property, and Nunnally Property are all owned and managed by Orange County. One plot, Big Econlockhatchee River Sanctuary, is owned and managed by the Florida Audubon Society, Inc. The last plot, Rybolt property, is co-owned by Orange County and SJRWMD but is managed solely by SJRWMD. Ken Bosserman Econlockhatchee River Preserve, Circle C Ranch II and Rybolt Property are designated to preserve native habitats, while the Evans, Nunnally, and Big Econlockhatchee River Sanctuary are designated to protect the floodplain of the Econlockhatchee River due to its designation as an OFW. In addition, the area encompasses three (3) religious centers, three (3) schools (an elementary, middle and high school), and one (1) veteran facility.









### Exhibit 6.3.2

Note: GIS data downloaded from FGDL June 2021

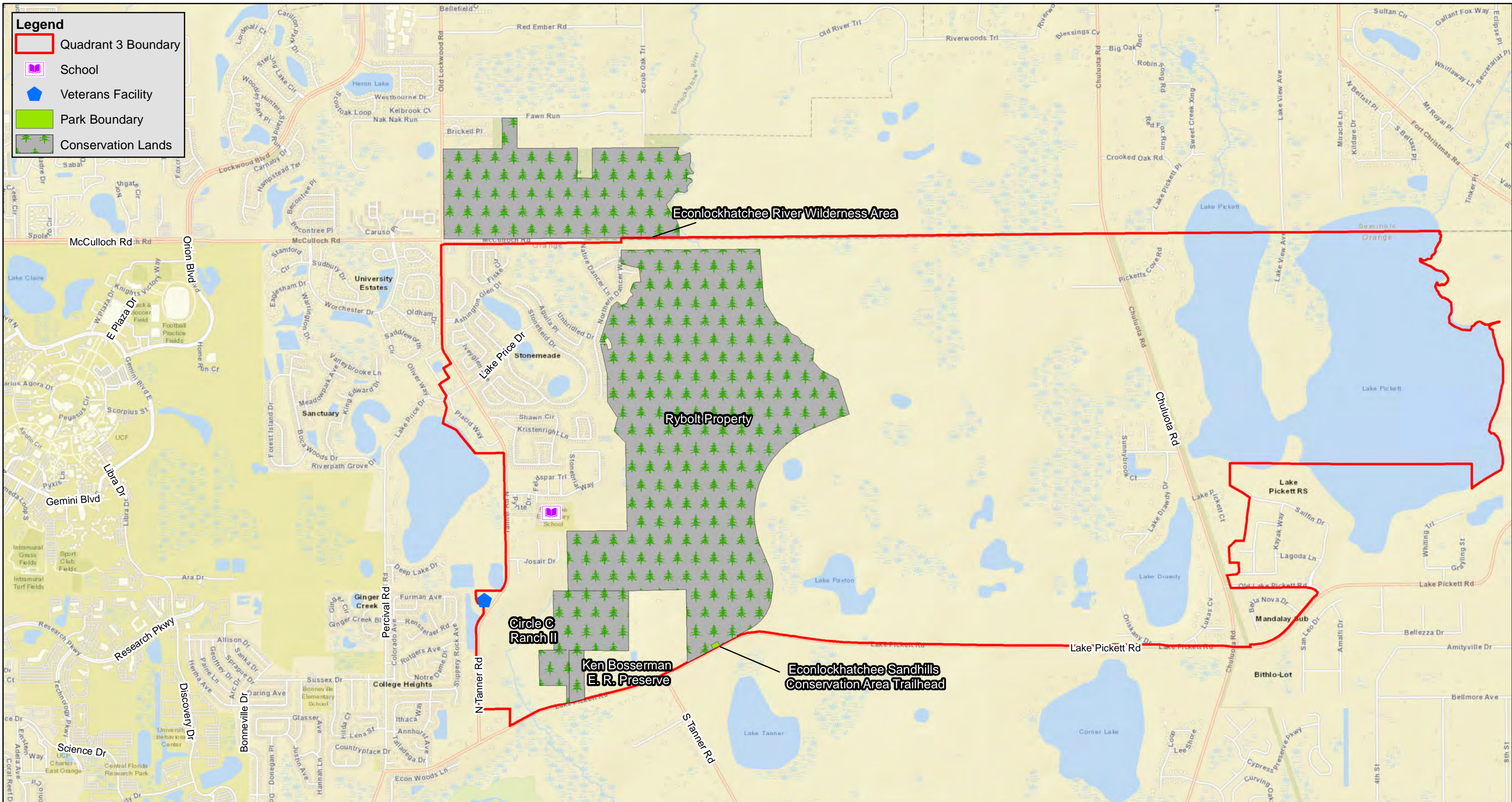
## North East Orange County Areawide Transportation Study (NEOCATS)

### Quadrant 2: Social Resources Map

NEOCATS - June 2021

Source:  
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community





### Exhibit 6.3.3

Note: GIS data downloaded from FGDL June 2021

## North East Orange County Areawide Transportation Study (NEOCATS)

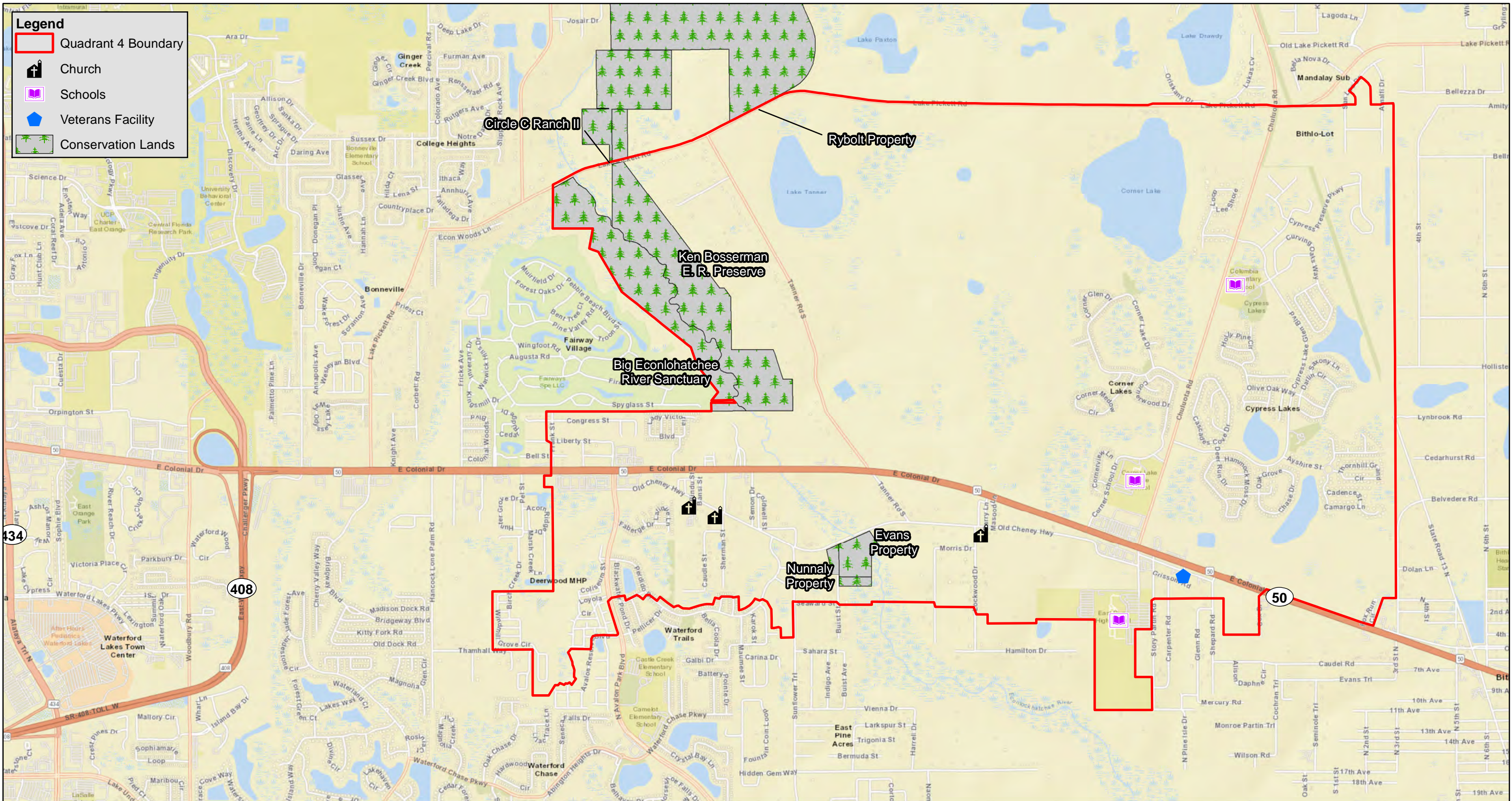
### Quadrant 3: Social Resources Map

NEOCATS - June 2021

0 2,000 4,000 Feet

Source: Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community





# Exhibit 6.3.4

## North East Orange County Areawide Transportation Study (NEOCATS)

### Quadrant 4: Social Resources Map

Note: GIS data downloaded from FGDL June 2021

NEOCATS - June 2021

0 2,000 4,000 Feet

Source: Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



## 6.4 UTILITIES

To better evaluate the various corridor alternatives and potential impacts with existing utilities, available information on the existing utilities was research and compiled for the study area. Due to the size of the study area, research was performed with a focus on major utilities and existing utility facilities in easements or on property owned by the utility company. This approach allows for the identification of possible fatal flaws with existing utilities and additional project cost estimates due to reimbursable utility relocations. Types of major utilities include transmission electric lines, power substations, transmission water/wastewater mains, municipal treatment facilities, water towers/tanks, booster pump stations, large natural gas pipelines, petroleum pipelines, cell towers, and large communication duct banks. Utility Agency/Owners (UAO's) have been identified within the study area through our Sunshine 811 Design Ticket. Additionally, utility information was compiled through research of available GIS information for transmission electric lines and Orange County Utilities, National Pipeline Mapping System, antenna/cell tower mapper, municipality master plans, as-built plans, plats, utility permits, Orange County Property Appraiser, and desktop review of the study area. Existing UAOs and utility facilities for Quadrants 1 through 4 are identified in **Tables 6.4.1** through **6.4.4**, and are graphically depicted for each of the quadrants in **Exhibits 6.4.1** through **6.4.4**, respectively.

Twenty-three (23) UAO's have been identified in Quadrant 1. Six (6) of these UAO's include facilities identified as major utilities that may require special consideration with alternatives being evaluated. Twenty-six (26) UAO's have been identified in Quadrant 2. Five (5) of these UAO's include facilities identified as major utilities that may require special consideration with alternatives being evaluated. Eleven (11) UAO's have been identified in Quadrant 3. Two (2) of these UAO's have facilities identified as major utilities that may require special consideration with alternatives being evaluated. Nineteen (19) UAO's have been identified in Quadrant 4. Seven (7) of these UAO's include facilities identified as major utilities that may require special consideration with alternatives being evaluated.



**Table 6.4.1: Summary of Existing Utilities in Quadrant 1**

| Utility Company               | Description  |
|-------------------------------|--|
| *Duke Energy                  | <ul style="list-style-type: none"> <li>Electric distribution service throughout the project</li> <li>69 kV runs on the south side of McCullouch Rd enters/exits a substation (<b>private property - UCF</b>) on the southwest corner of McCulloch Rd and N. Orion Blvd</li> </ul>  |
| *Florida Power and Light      | <ul style="list-style-type: none"> <li>3-230 kV lines cut across the top right corner of the quadrant running northwest to southeast (<b>110' easement</b>)</li> <li>2-69 kV line runs east to west between SR 434 and N Tanner Road (<b>160' easement</b>)</li> <li>69 kV line runs north to south on the west side of N Tanner Road</li> </ul> |
| Utilities and Energy Services | <ul style="list-style-type: none"> <li>Electric, Gas, Water, Fiber and Wastewater distribution service within the UCF campus area</li> </ul>   |
| TECO Peoples Gas              | <ul style="list-style-type: none"> <li>Gas distribution service throughout the study area</li> </ul>   |
| AT&T Distribution             | <ul style="list-style-type: none"> <li>Telephone throughout the study area</li> </ul>  |
| Black & Veatch Orlando        | <ul style="list-style-type: none"> <li>Fiber throughout the study area</li> </ul>  |
| CenturyLink                   | <ul style="list-style-type: none"> <li>Fiber and telephone throughout the study area</li> </ul>  |
| Charter Communications        | <ul style="list-style-type: none"> <li>Aerial CATV, Fiber and telephone throughout the study area</li> </ul>   |
| Comcast Communications        | <ul style="list-style-type: none"> <li>CATV throughout the study area</li> </ul>   |
| Crown Castle                  | <ul style="list-style-type: none"> <li>Fiber throughout the study area</li> </ul>  |
| Embarq Comm.                  | <ul style="list-style-type: none"> <li>Fiber throughout the study area</li> </ul>  |
| MCI                           | <ul style="list-style-type: none"> <li>Communication lines and fiber throughout the study area</li> </ul>  |
| NAWCTSD                       | <ul style="list-style-type: none"> <li>Naval Air Warfare Center Training Systems Division and Federal, State, and University Network at UCF campus Fiber</li> </ul>  |



**Table 6.4.1: Summary of Existing Utilities in Quadrant 1**

| Utility Company               | Description   |
|-------------------------------|---|
| *Orange County Utilities      | <ul style="list-style-type: none"> <li>• 12" DIP WM on SR 434</li> <li>• 24" DIP WM at bottom of quadrant north of Research Pkwy and south of UCF</li> <li>• 20" DIP WM on N Tanner</li> <li>• 6", 8" and 10" WM in upper right corner of quadrant (neighborhood)</li> <li>• 16" DIP WM on Research Pkwy</li> <li>• 12" PVC WM south of McCulloch Rd</li> <li>• Ground Storage Tanks located southeast to the dead end of Research Parkway (<b>private property – Orange County BBC</b>)</li> <li>• Water tower on the southeast corner of Gemini Blvd. S and Libra Dr. (<b>private property – UCF</b>)</li> <li>• 12" PVC Pressurized Sewer on N Alafaya Trail</li> <li>• 12" PVC Pressurized Sewer at bottom of quadrant and along N. Tanner</li> <li>• 6" and 8" pressurized sewer in neighborhoods</li> </ul> |
|                               |   |
|                               |   |
|                               |   |
|                               |   |
|                               |   |
|                               |   |
|                               |   |
|                               |   |
|                               |   |
| Smart City Telecom            | <ul style="list-style-type: none"> <li>• Fiber and telephone throughout the study area</li> </ul>   |
| Summit Broadband              | <ul style="list-style-type: none"> <li>• Fiber and telephone throughout the study area</li> </ul>   |
| Uniti Fiber                   | <ul style="list-style-type: none"> <li>• Fiber throughout the study area</li> </ul>   |
| University of Central Florida | <ul style="list-style-type: none"> <li>• Fiber and telephone on UCF campus</li> </ul>   |
|                               | <ul style="list-style-type: none"> <li>• 18" Force main on Gemini Blvd. that turns north and runs along the east side of SR 434. This main heads west on McCulloch Road and goes to the Iron Bridge RWRf.</li> </ul>  |
| Zayo Group                    | <ul style="list-style-type: none"> <li>• Fiber throughout the study area</li> </ul>   |
| Campus Communications         | <ul style="list-style-type: none"> <li>• UCF Fiber on campus</li> </ul>   |



**Table 6.4.1: Summary of Existing Utilities in Quadrant 1**

| Utility Company | Description  |
|-----------------|--|
| *T-Mobile       | <ul style="list-style-type: none"> <li>Cell tower north of the intersection of Knights Victory Way and W. Plaza Dr. (<b>private property - UCF</b>)</li> <li>Cell tower between the lakes to the west of a group of six athletic fields (<b>private property - UCF</b>)</li> <li>Cell tower southwest of the roundabout on Walden Woods Dr. (<b>private property - UCF</b>)</li> </ul> |
| *AT&T Mobility  | <ul style="list-style-type: none"> <li>Cell tower in the project area southwest of the roundabout on Walden Woods Dr. (<b>private property - UCF</b>)</li> </ul>   |
| *Verizon        | <ul style="list-style-type: none"> <li>Cell tower north of the intersection of Knights Victory Way and W. Plaza Dr. (<b>private property - UCF</b>)</li> <li>Cell tower southwest of the roundabout on Walden Woods Dr. (<b>private property - UCF</b>)</li> </ul>   |

\*Major Utility



**Table 6.4.2: Summary of Existing Utilities in Quadrant 2**

| Utility Company               | Description  |
|-------------------------------|--|
| *Duke Energy                  | <ul style="list-style-type: none"> <li>Electric distribution service throughout the project</li> <li>230 kV lines on the south side of E. Colonial Dr and enters/exits a substation north of E. Colonial drive and east of Lake Picket Road (<i>private property – Duke Energy</i>)</li> </ul> |
| Utilities and Energy Services | <ul style="list-style-type: none"> <li>Electric, Gas, Water, Fiber and Wastewater distribution service within the UCF campus area</li> </ul>   |
| American Traffic Solutions    | <ul style="list-style-type: none"> <li>Red light running facilities and fiber throughout the project</li> </ul>  |
| TECO Peoples Gas              | <ul style="list-style-type: none"> <li>Gas distribution service throughout the project</li> </ul>  |
| Lovelace Gas Services         | <ul style="list-style-type: none"> <li>Propane gas storage tanks throughout the project</li> </ul>   |
| AT&T Distribution             | <ul style="list-style-type: none"> <li>Telephone throughout the study area</li> </ul>  |
| AT&T Corp.                    | <ul style="list-style-type: none"> <li>High-capacity fiber throughout the study area</li> </ul>  |
| Black and Veatch Orlando      | <ul style="list-style-type: none"> <li>Fiber throughout the study area</li> </ul>  |
| CFX                           | <ul style="list-style-type: none"> <li>Fiber throughout the study area</li> </ul>  |
| CenturyLink                   | <ul style="list-style-type: none"> <li>Fiber and telephone throughout the study area</li> </ul>  |
| Charter Communications        | <ul style="list-style-type: none"> <li>Aerial CATV, Fiber and telephone throughout the study area</li> </ul>   |
| Comcast Communications        | <ul style="list-style-type: none"> <li>CATV throughout the study area</li> </ul>   |
| Crown Castle                  | <ul style="list-style-type: none"> <li>Fiber throughout the study area</li> </ul>  |
| Embarq Comm.                  | <ul style="list-style-type: none"> <li>Fiber throughout the study area</li> </ul>  |
| MCI                           | <ul style="list-style-type: none"> <li>Communication lines and fiber throughout the study area</li> </ul>  |
| NAWCTSD                       | <ul style="list-style-type: none"> <li>Naval Air Warfare Center Training Systems Division and Federal, State, and University Network at UCF campus Fiber</li> </ul>  |



**Table 6.4.2: Summary of Existing Utilities in Quadrant 2**

| Utility Company                   | Description   |
|-----------------------------------|---|
| *Orange County Utilities          | • 16" WM on Research Parkway  |
|                                   | • 6", 8", 12" WM in neighborhoods   |
|                                   | • 20" DIP WM on Lake Pickett  |
|                                   | • 24" and 8" WM on Bonneville Dr  |
|                                   | • 16" DIP WM on Orpington St.   |
|                                   | • 20" DIP WM on SR 434  |
|                                   | • 6" Pressurized Sewer on SR 434  |
|                                   | • 16" PVC Pressurized Sewer Main on Lake Pickett  |
| Smart City Telecom                | • Fiber and telephone throughout the study area   |
| Summit Broadband                  | • Fiber and telephone throughout the study area   |
| Uniti Fiber                       | • Fiber throughout the study area   |
| University of Central Florida     | • Fiber and telephone throughout the study area   |
| Zayo Group                        | • Fiber throughout the study area   |
| Campus Communications Group, Inc. | • Fiber throughout the study area   |
| *T-Mobile                         | • Cell tower north of Orpington St. and east of SR 434 ( <b>private property – Self-Stor Alafaya Partners LTD</b> ) |
| *Sprint                           | • Cell tower north of Orpington St. and east of SR 434 ( <b>private property – Self-Stor Alafaya Partners LTD</b> ) |



**Table 6.4.2: Summary of Existing Utilities in Quadrant 2**

| Utility Company | Description   |
|-----------------|---|
| *Verizon        | <ul style="list-style-type: none"> <li>Cell tower north of Orpington St. and east of SR 434 (<b><i>private property – Self-Stor Alafaya Partners LTD</i></b>)</li> <li>Cell tower southeast of the intersection of 408 and E. Colonial Dr. (<b><i>private property – Sun Wen Fang</i></b>)</li> </ul> |

\*Major Utility



**Table 6.4.3: Summary of Existing Utilities in Quadrant 3**

| Utility Company                     | Description   |
|-------------------------------------|---|
| *Duke Energy                        | <ul style="list-style-type: none"> <li>Electric distribution service throughout the project</li> <li>69 kV runs on the south side of McCullough Rd</li> </ul>   |
| *Florida Power and Light - Seminole | <ul style="list-style-type: none"> <li>Electric distribution service throughout the project</li> <li>3-230 kV lines cut across the quadrant running northwest to southeast (<b>110' easement</b>)</li> <li>69 kV line runs north to south on the west side of N Tanner Road and cuts from N Tanner Road to the southeast (<b>easement</b>)</li> </ul> |
| TECO Peoples Gas                    | <ul style="list-style-type: none"> <li>Gas distribution service throughout the project</li> </ul>   |
| AT&T Distribution                   | <ul style="list-style-type: none"> <li>Telephone throughout the study area</li> </ul>   |
| CenturyLink                         | <ul style="list-style-type: none"> <li>Fiber and telephone throughout the study area</li> </ul>   |
| Charter Communications              | <ul style="list-style-type: none"> <li>CATV, Fiber and telephone throughout the study area</li> </ul>   |
| Comcast Communications              | <ul style="list-style-type: none"> <li>CATV throughout the study area</li> </ul>  |
| Crown Castle                        | <ul style="list-style-type: none"> <li>Fiber throughout the study area</li> </ul>   |
| Orange County Utilities             | <ul style="list-style-type: none"> <li>Limited service, 6" and 8" WM in neighborhood areas in the west of the quadrant</li> <li>12" PVC Pressurized Sewer along N. Tanner</li> <li>6" and 8" pressurized sewer in neighborhood areas in the west of the quadrant</li> </ul>   |
| Summit Broadband                    | <ul style="list-style-type: none"> <li>Fiber and telephone throughout the study area</li> </ul>   |
| Zayo Group                          | <ul style="list-style-type: none"> <li>Fiber throughout the study area</li> </ul>   |
| *Major Utility                      |   |



**Table 6.4.4: Summary of Existing Utilities in Quadrant 4**

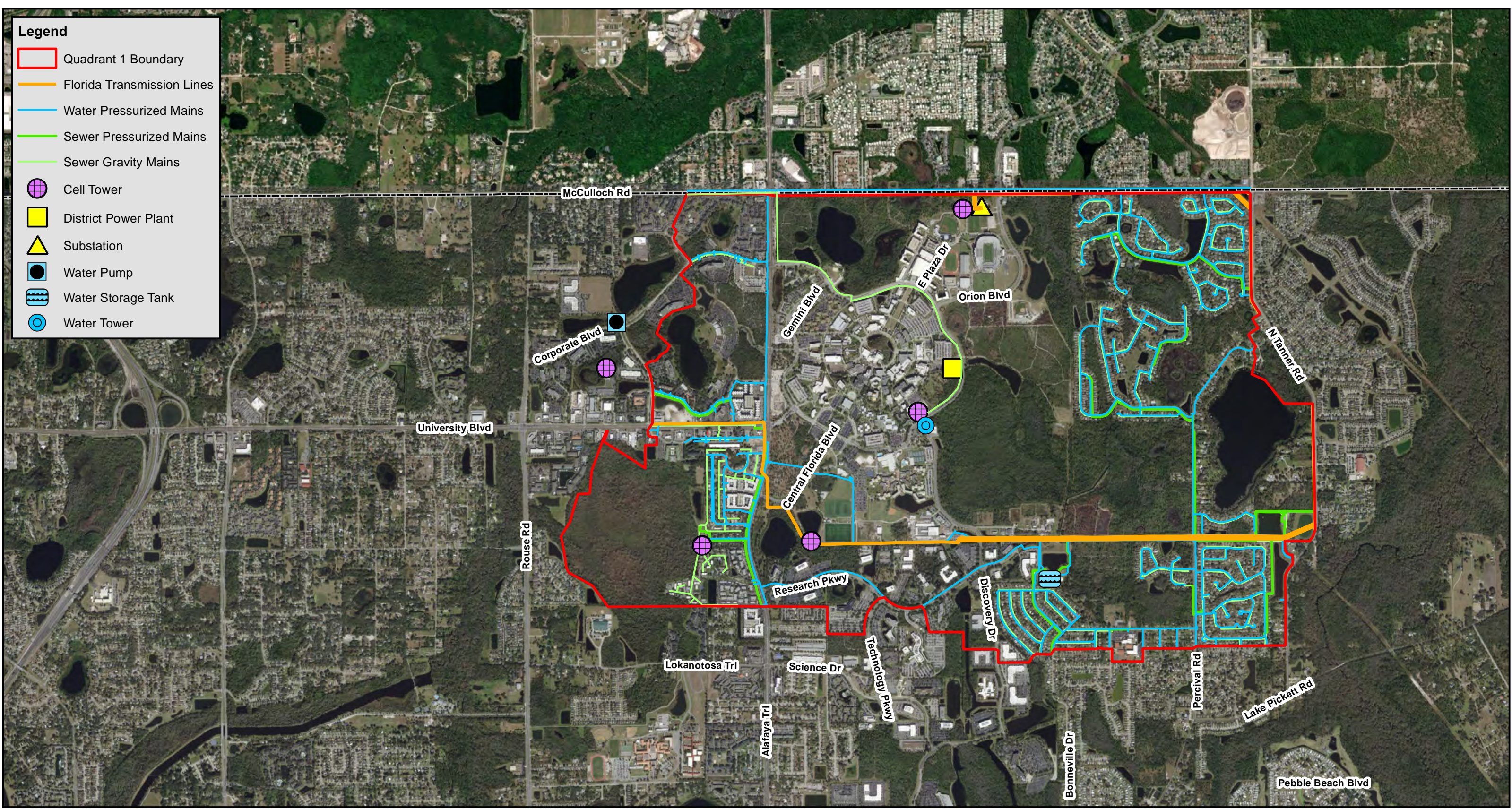
| Utility Company            | Description  |
|----------------------------|--|
| *Duke Energy               | <ul style="list-style-type: none"> <li>Electric distribution service throughout the project.</li> <li>Substation at the northwest corner of SR 50 and S Tanner Rd (<b>private property – Duke</b>)</li> <li>2-69 kV line runs south of SR 50 (<b>easement</b>)</li> </ul>  |
| *Florida Power and Light   | <ul style="list-style-type: none"> <li>3-230 kV lines run northwest to southeast through rural land in the middle of the quadrant. (<b>110' easement</b>)</li> <li>2-230 kV lines run between the substation and the 3-230 kV lines (<b>easement</b>)</li> <li>69 kV line runs northwest to southeast on the west side of S Tanner Rd (<b>easement</b>)</li> </ul> |
| American Traffic Solutions | <ul style="list-style-type: none"> <li>Red light running facilities and fiber throughout the project</li> </ul>  |
| AT&T Distribution          | <ul style="list-style-type: none"> <li>Telephone throughout the study area</li> </ul>  |
| AT&T Corp.                 | <ul style="list-style-type: none"> <li>High-capacity fiber throughout the study area</li> </ul>  |
| Black & Veatch Orlando     | <ul style="list-style-type: none"> <li>Fiber throughout the study area</li> </ul>  |
| CenturyLink                | <ul style="list-style-type: none"> <li>Fiber and telephone throughout the study area</li> </ul>  |
| Charter Communications     | <ul style="list-style-type: none"> <li>CATV, Fiber and telephone throughout the study area</li> </ul>  |
| Comcast Communications     | <ul style="list-style-type: none"> <li>CATV throughout the study area</li> </ul>   |
| Crown Castle               | <ul style="list-style-type: none"> <li>Fiber throughout the study area</li> </ul>  |
| MCI                        | <ul style="list-style-type: none"> <li>Communication lines and fiber throughout the study area</li> </ul>  |



**Table 6.4.4: Summary of Existing Utilities in Quadrant 4**

| Utility Company                         | Description  |
|---|--|
| *Orange County Utilities                | • 24" DIP WM along E Colonial Dr   |
|   | • 16" PVC WM on CR 419   |
|   | • 20" DIP WM on Lake Pickett   |
|   | • 6" and 8" PVC WM in neighborhoods  |
|   | • 12" PVC Pressurized Sewer on CR 419  |
|   | • 12" PVC Pressurized Sewer on Cypress Lake Glen Blvd  |
|   | • 16" PVC Pressurized Sewer Main on Lake Pickett   |
| • 8" Pressurized Sewer in Neighborhoods |  |
| Summit Broadband                        | • Fiber and telephone throughout the study area  |
| Uniti Fiber                             | • Fiber throughout the study area  |
| Zayo Group                              | • Fiber throughout the study area  |
| *T-Mobile                               | • Cell tower northwest of the intersection of SR 50 and S. Tanner Rd.<br><b>(private property – Crown Castle South LLC)</b>      |
|   | • Cell tower southeast of the intersection of SR 419 and Lake Pickett Rd<br><b>(private property – Nelson &amp; Company Inc)</b> |
| *AT&T Mobility                          | • Cell tower northwest of the intersection of SR 50 and S. Tanner Rd.<br><b>(private property – Crown Castle South LLC)</b>      |
|   | • Cell tower southeast of the intersection of SR 419 and Lake Pickett Rd<br><b>(private property – Nelson &amp; Company Inc)</b> |
| *Verizon                                | • Cell tower southeast of the intersection of SR 419 and Lake Pickett Rd<br><b>(private property – Nelson &amp; Company Inc)</b> |
| *Sprint                                 | • Cell tower southeast of the intersection of SR 419 and Lake Pickett Rd<br><b>(private property – Nelson &amp; Company Inc)</b> |
| *Major Utility                          |  |



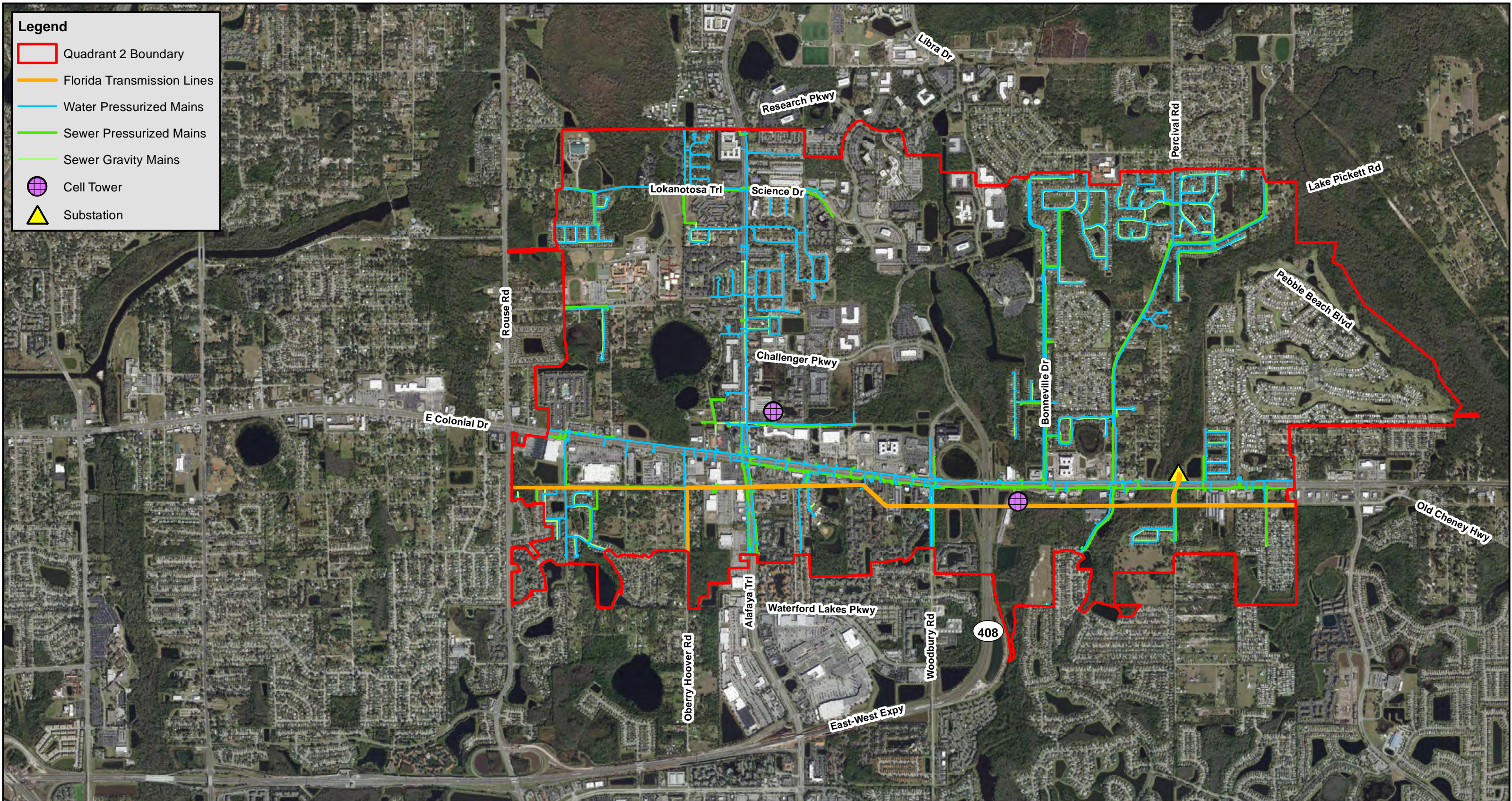


**EXHIBIT - 6.4.1**  
  
Note: Water and Sewer Mains - OUC, Orange County 2018  
Power and Substation - OUC, Orange County 2019  
Transmission Lines - FGDL 2017 & OUC 2019  
Cell Tower -

**North East Orange County Areawide  
Transportation Study (NEOCATS)**  
  
**Quadrant 1: Existing Utilities**  
  
NEOCATS - June 2021

0 2,000 4,000 Feet  
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





**EXHIBIT - 6.4.2**

Note: Water and Sewer Mains - OUC, Orange County 2018  
 Power and Substation - OUC, Orange County 2019  
 Transmission Lines - FGDL 2017 & OUC 2019  
 Cell Tower -

**North East Orange County Areawide  
Transportation Study (NEOCATS)**

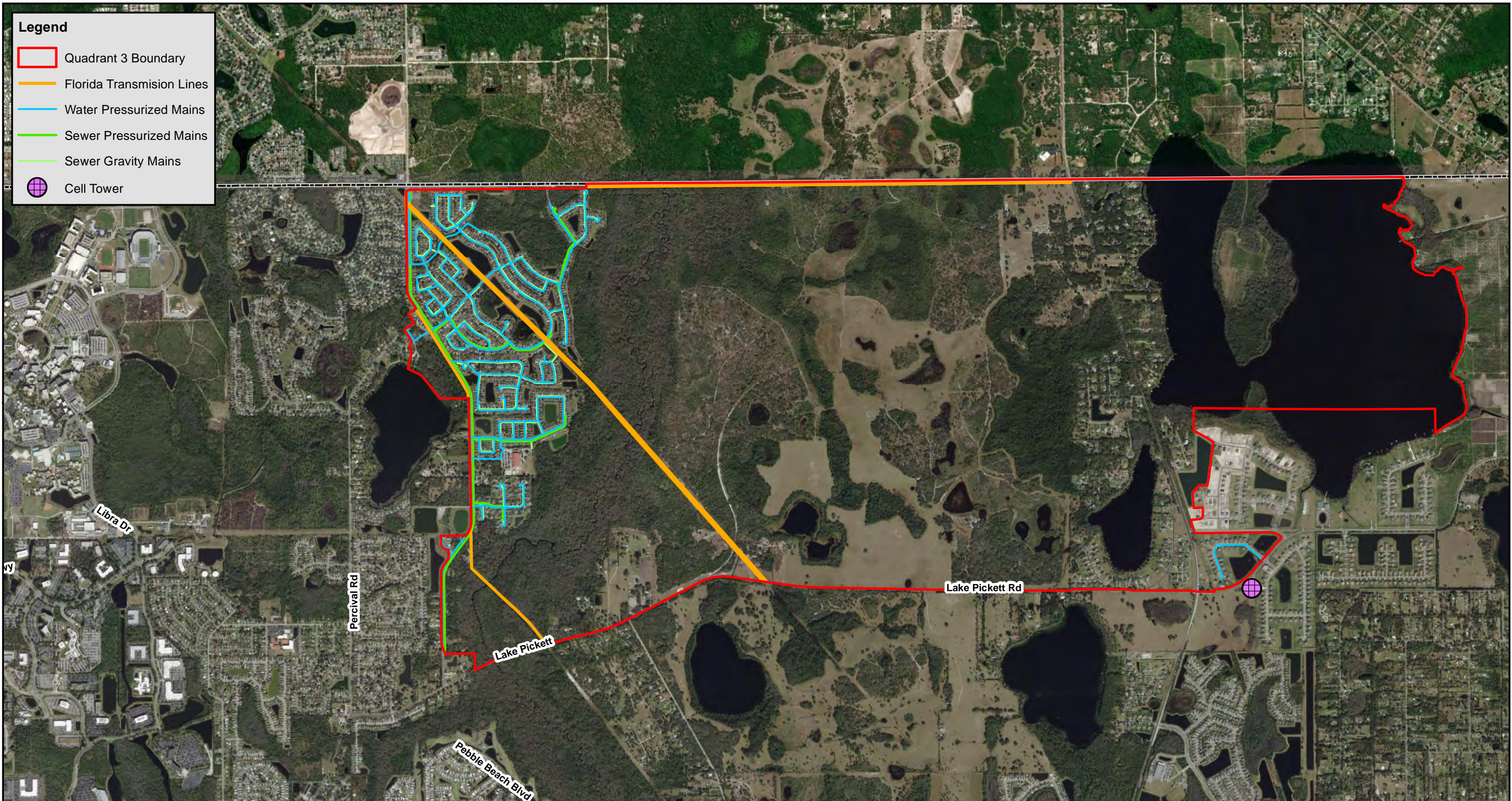
**Quadrant 2: Existing Utilities**

NEOCATS - June 2021

0 2,000 4,000 Feet

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





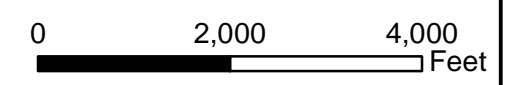
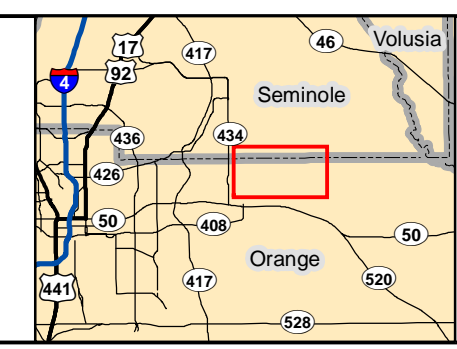
**EXHIBIT - 6.4.3**

Note: Water and Sewer Mains - OUC, Orange County 2018  
Power and Substation - OUC, Orange County 2019  
Transmission Lines - FGDL 2017 & OUC 2019  
Cell Tower -

**North East Orange County Areawide  
Transportation Study (NEOCATS)**

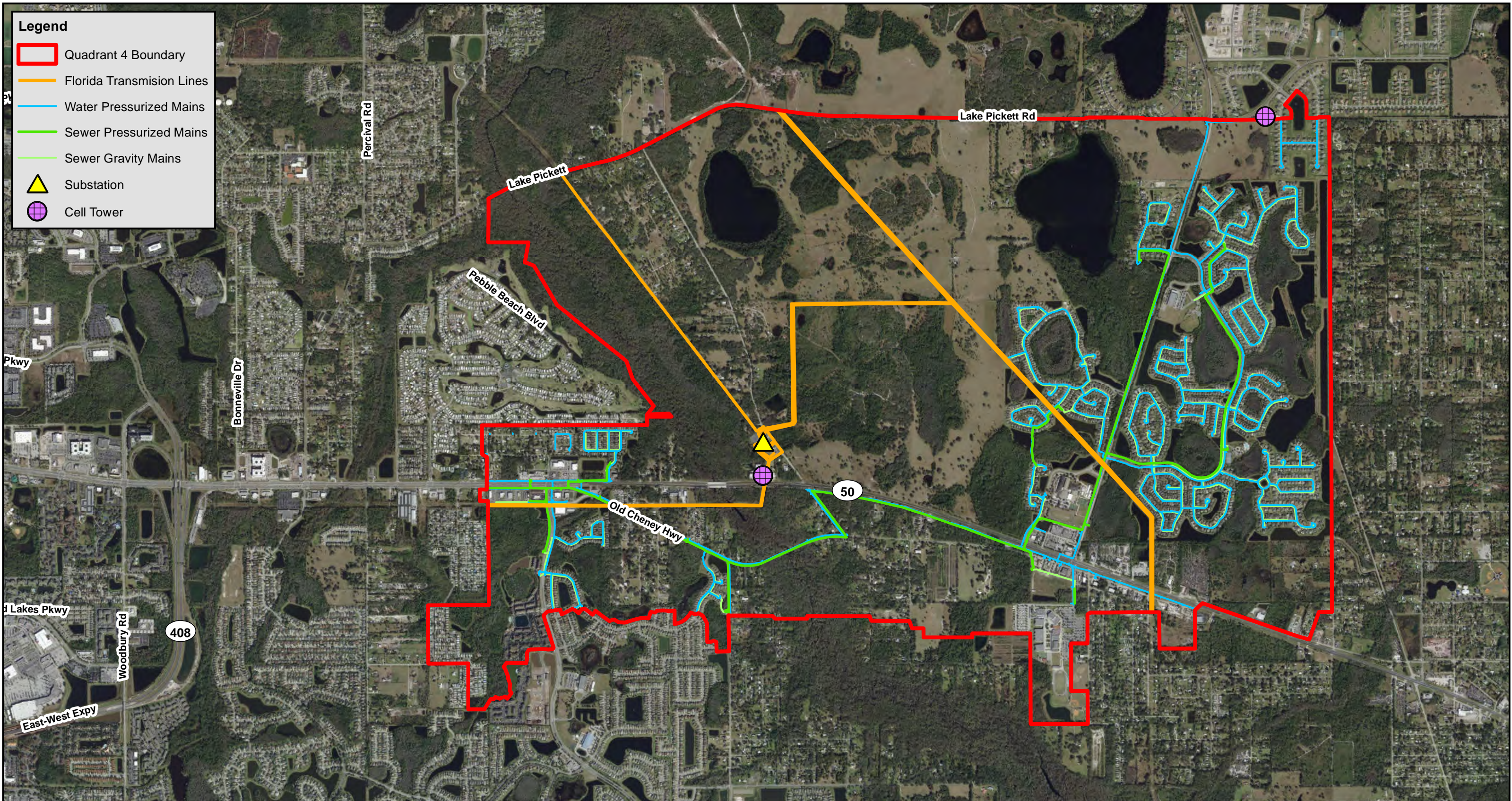
**Quadrant 3: Existing Utilities**

NEOCATS - June 2021



Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID,  
IGN, and the GIS User Community





**EXHIBIT - 6.4.4**

Note: Water and Sewer Mains - OUC, Orange County 2018  
 Power and Substation - OUC, Orange County 2019  
 Transmission Lines - FGDL 2017 & OUC 2019  
 Cell Tower -

**North East Orange County Areawide  
 Transportation Study (NEOCATS)**

**Quadrant 4: Existing Utilities**

NEOCATS - June 2021

0 2,000 4,000 Feet

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



#### 6.4.1 Utility Mitigation and Avoidance

Due to the nature of the existing conditions throughout the study area, there is a potential for impacts of major utility facilities on the project. Major utility facilities potentially impacted include large diameter water and wastewater mains owned by Orange County Utilities, transmission electric lines owned by Duke, substations, cell towers and gas lines.

Mitigation measures should be taken during the study phase of the project to minimize impacts to the existing utilities to the fullest extent possible. If impacts are unavoidable, design alternatives would be reviewed to allow for relocation of impacted facilities in a manner that minimizes cost to the UAO and disruption to their customers.

Since relocations of facilities located in easements and on private property would likely be eligible for reimbursement, all measures will be taken to avoid impacting the existing utility facilities identified in easements or privately owned parcels. Though relocation of other facilities within the existing right-of-way are anticipated, all efforts will be made during the study to minimize impacts to existing pipelines, power plants, substations, booster/metering stations, and transmission facilities, to the greatest extent possible.

#### 6.5 HAZARDOUS SITES

Contaminated sites within the Study Area were identified using data made available by the Florida Department of Health (DOH) and the Florida Department of Environmental Protection (FDEP). **Tables 6.5.1** through **6.5.4** and **Exhibits 6.5.1** through **6.5.4** summarize the number of sites that have the potential for contamination or are being monitored, respectively for Quadrants 1 through 4. It must be noted that the facilities shown are regulated facilities which have the potential for contamination or environmental concern but are not necessarily contaminated.



**Table 6.5.1: Summary of Contamination Analysis Quadrant 1**

| <b>Analysis Type</b>  | <b>Within Study Area</b> |
|---|--------------------------|
| Biomedical Waste Facility   | 24                       |
| Brownfield Area   | 0                        |
| Hazardous Waste Facility  | 17                       |
| National Pollutant Discharge Elimination System (NPDES)   | 50                       |
| Petroleum Contamination Monitoring Site (PCMS)  | 6                        |
| Storage Tank Contamination Monitoring (STCM)  | 21                       |
| SUPER Act Risk Sources  | 9                        |
| US Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) Regulated Facilities | 14                       |
| Toxic Release Inventory Sites   | 0                        |
| Waste Cleanup Responsible Party Sites - Open  | 0                        |

Source: FGDL, DOH, FDEP, USEPA

As shown in **Exhibit 6.5.1**, Quadrant 1 contains twenty-four (24) biomedical waste facilities, several of which are associated with the University of Central Florida and are classified as facilities that generate, transport, store, or treat biomedical waste. There are also seventeen (17) hazardous waste facilities which are facilities that are in possession of waste that are characterized by 40 CFR Part 261, Subpart C as hazardous by exhibiting one of the four characteristics, ignitability, corrosivity, reactivity, or toxicity. The National Pollutant Discharge Elimination System (NPDES) was created in 1972 by the Clean Water Act to address water pollution by regulating point sources that discharge pollutants to waters of the U.S. of which fifty (50) sites are located within Quadrant 1; however, forty-two (42) have been terminated. Petroleum Contamination Monitoring Sites (PCMS) are storage tank facilities registered with the FDEP that are being tracked for active storage tanks, storage tank history, or petroleum clean up activity and Quadrant 1 contains six (6) such facilities with four (4) having work underway and two (2) being closed. There are also twenty-one (21) Storage Tank Contamination Monitoring (STCM) sites, which are being tracked by petroleum storage tank registration, compliance and clean up; however, only thirteen (13) of these sites are open and most of them are associated with refueling structures such as gas stations. The State Underground Petroleum Environmental Response (SUPER) Act was created to conduct drinking water well sampling and investigations around known or suspected contaminated petroleum facilities of which nine (9) are located within Quadrant 1. There are fourteen (14) U.S. EPA Resource Conservation and Recovery Act (RCRA) regulated facilities which include the generation, transportation, treatment, storage and/or the disposal of hazardous waste within Quadrant 1.



**Table 6.5.2: Summary of Contamination Analysis Quadrant 2**

| <b>Analysis Type</b>  | <b>Within Study Area</b> |
|---|--------------------------|
| Biomedical Waste Facility   | 36                       |
| Brownfield Area   | 0                        |
| Hazardous Waste Facility  | 27                       |
| National Pollutant Discharge Elimination System (NPDES)   | 82                       |
| Petroleum Contamination Monitoring Site (PCMS)  | 20                       |
| Storage Tank Contamination Monitoring (STCM)  | 44                       |
| SUPER Act Risk Sources  | 12                       |
| US Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) Regulated Facilities | 31                       |
| Toxic Release Inventory Sites (TRI)   | 1                        |
| Waste Cleanup Responsible Party Sites - Open  | 0                        |

Source: FGDL, DOH, FDEP, USEPA

As shown in **Exhibit 6.5.2**, Quadrant 2 contains thirty-six (36) biomedical waste facilities and twenty-seven (27) hazardous waste facilities. There are eighty-two (82) NPDES sites identified; however, sixty-eight (68) have been terminated, and one (1) has expired. The Quadrant also contains twenty (20) facilities being monitored for petroleum contamination where four (4) are closed and one (1) does not require cleanup. There are an additional forty-four (44) STCM sites; however, only thirty-one (31) of these sites are open and the majority of them are associated with refueling structures such as gas stations. There are also twelve (12) SUPER Act Risk Sources located within the quadrant also largely associated with refueling structures. In addition, there are thirty-one (31) RCRA regulated facilities which include the generation, transportation, treatment, storage and/or the disposal of hazardous waste. There is also one (1) Toxic Release Inventory Site (TRI) within Quadrant 2 that is related to tracking a chemical, styrene, that is manufactured or released by Cook Composites & Polymers Company. The TRI database provides a summary of on-site releases and management, off-site transfer and releases, and off-site transfer and waste management.



**Table 6.5.3: Summary of Contamination Analysis in Quadrant 3**

| Analysis Type   | Within Study Area |
|---|-------------------|
| Biomedical Waste Facility   | 1                 |
| Brownfield Area   | 0                 |
| Hazardous Waste Facility  | 1                 |
| National Pollutant Discharge Elimination System (NPDES)   | 3                 |
| Petroleum Contamination Monitoring Site (PCMS)  | 1                 |
| Storage Tank Contamination Monitoring (STCM)  | 2                 |
| SUPER Act Risk Sources  | 0                 |
| US Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) Regulated Facilities | 1                 |
| Toxic Release Inventory Sites   | 0                 |
| Waste Cleanup Responsible Party Sites - Open  | 0                 |

Source: FGDL, DOH, FDEP, USEPA

As shown in **Exhibit 6.5.3**, Quadrant 3 contains one (1) biomedical waste facility and one (1) hazardous waste facility. There are three (3) NPDES sites identified; however, two (2) have been terminated. Within the Quadrant, there is also one (1) petroleum contamination monitoring site (which has been closed), and one (1) RCRA regulated facility. There are also two (2) STCM sites that are both open within the Quadrant.

**Table 6.5.4: Summary of Contamination Analysis in Quadrant 4**

| Analysis Type   | Within Study Area |
|---|-------------------|
| Biomedical Waste Facility   | 4                 |
| Brownfield Area   | 0                 |
| Hazardous Waste Facility  | 19                |
| National Pollutant Discharge Elimination System (NPDES)   | 48                |
| Petroleum Contamination Monitoring Site (PCMS)  | 4                 |
| Storage Tank Contamination Monitoring (STCM)  | 16                |
| SUPER Act Risk Sources  | 4                 |
| US Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) Regulated Facilities | 20                |
| Toxic Release Inventory Sites   | 0                 |
| Waste Cleanup Responsible Party Sites - Open  | 0                 |

Source: FGDL, DOH, FDEP, USEPA



As shown in **Exhibit 6.5.4**, Quadrant 4 contains four (4) biomedical waste facilities and nineteen (19) hazardous waste facilities. There are also forty-eight (48) NPDES sites, though thirty-eight (38) have been terminated and one (1) has expired. The Quadrant contains four (4) facilities being monitored for petroleum contamination, however all of them are closed. There are also sixteen (16) STCM sites; however, only seven (7) of these sites are open. Additionally, there are four (4) SUPER Act Risk Sources located within the Quadrant. Finally, there are twenty (20) RCRA regulated facilities.



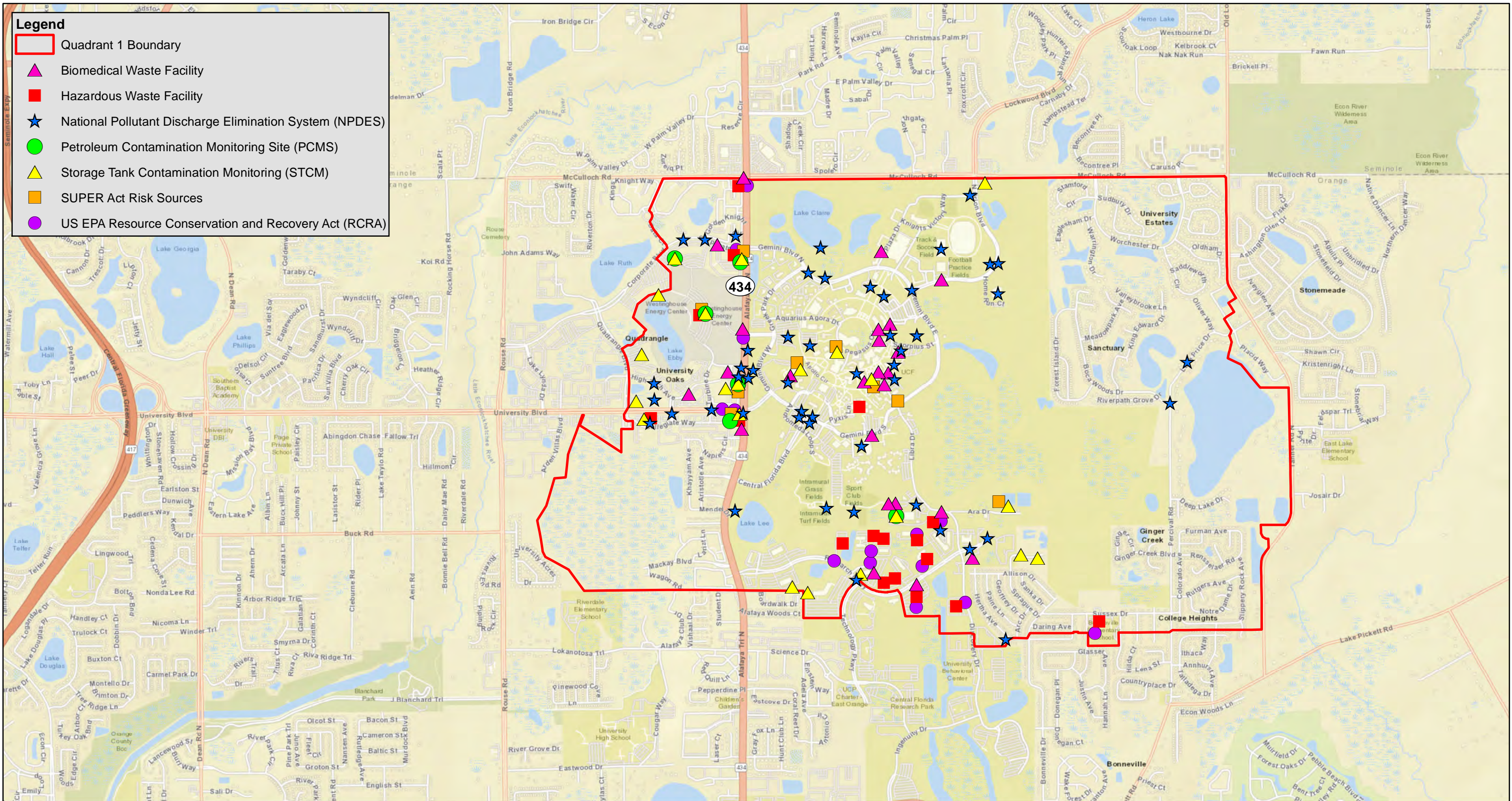


Exhibit 6.5.1

North East Orange County Areawide Transportation Study (NEOCATS)

Quadrant 1: Contamination Map

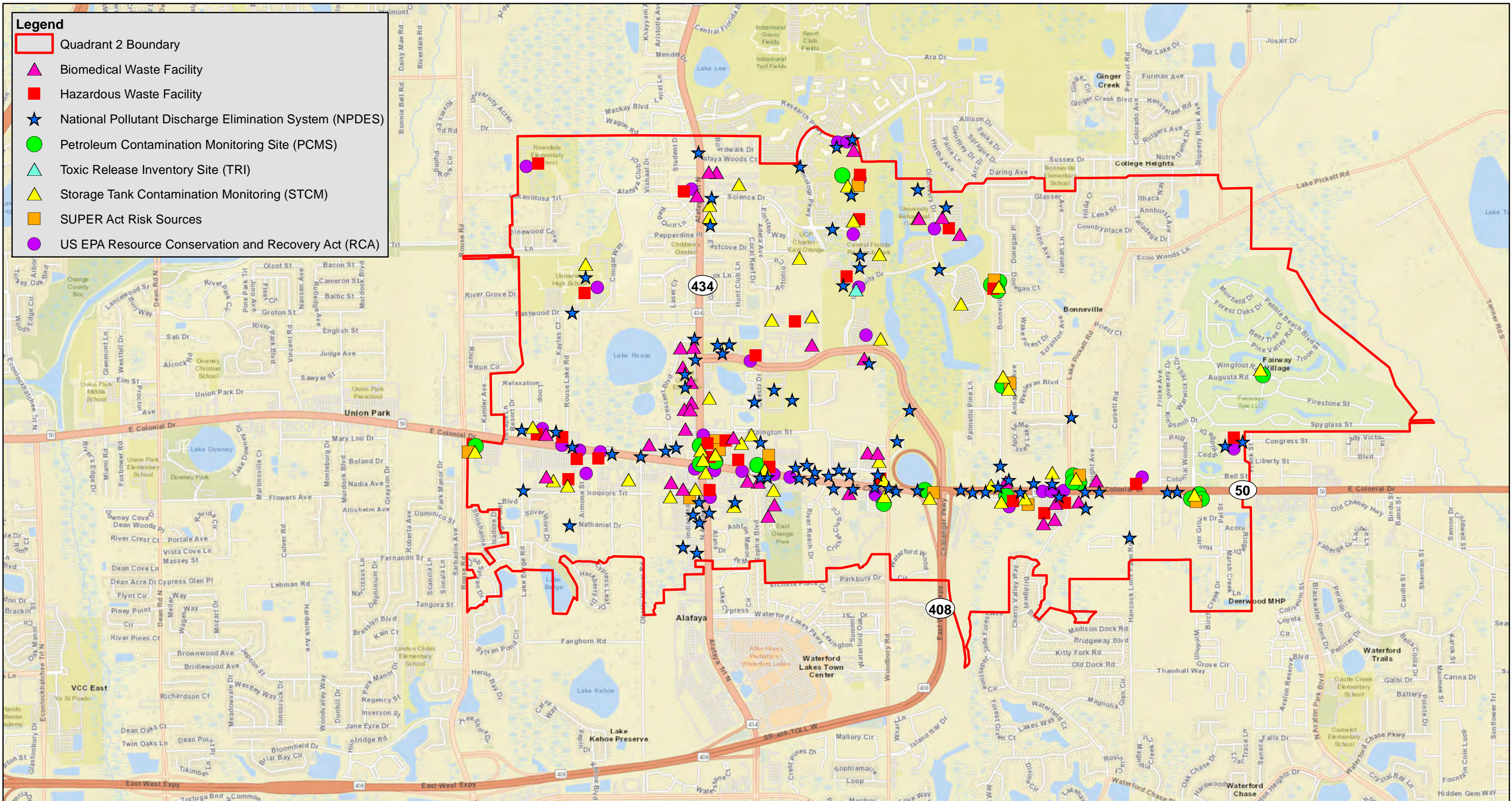
Note: GIS data downloaded from FGDL June 2021 and sourced to FDOH (Biomedical, SUPER Act), FDEP (PCMS, STCM, Hazardous Waste), FDEP/DWM/BWC (Brownfield), USEPA (NPDES).

NEOCATS - June 2021

02,0004,000Feet

Source:  
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community





### Exhibit 6.5.2

Note: GIS data downloaded from FGDL June 2021 and sourced to FDOH (Biomedical, SUPER Act), FDEP (PCMS, STCM, Hazardous Waste), FDEP/DWM/BWC (Brownfield), USEPA (NPDES).

## North East Orange County Areawide Transportation Study (NEOCATS)

### Quadrant 2: Contamination Map

NEOCATS - June 2021

0 2,000 4,000 Feet

Source: Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



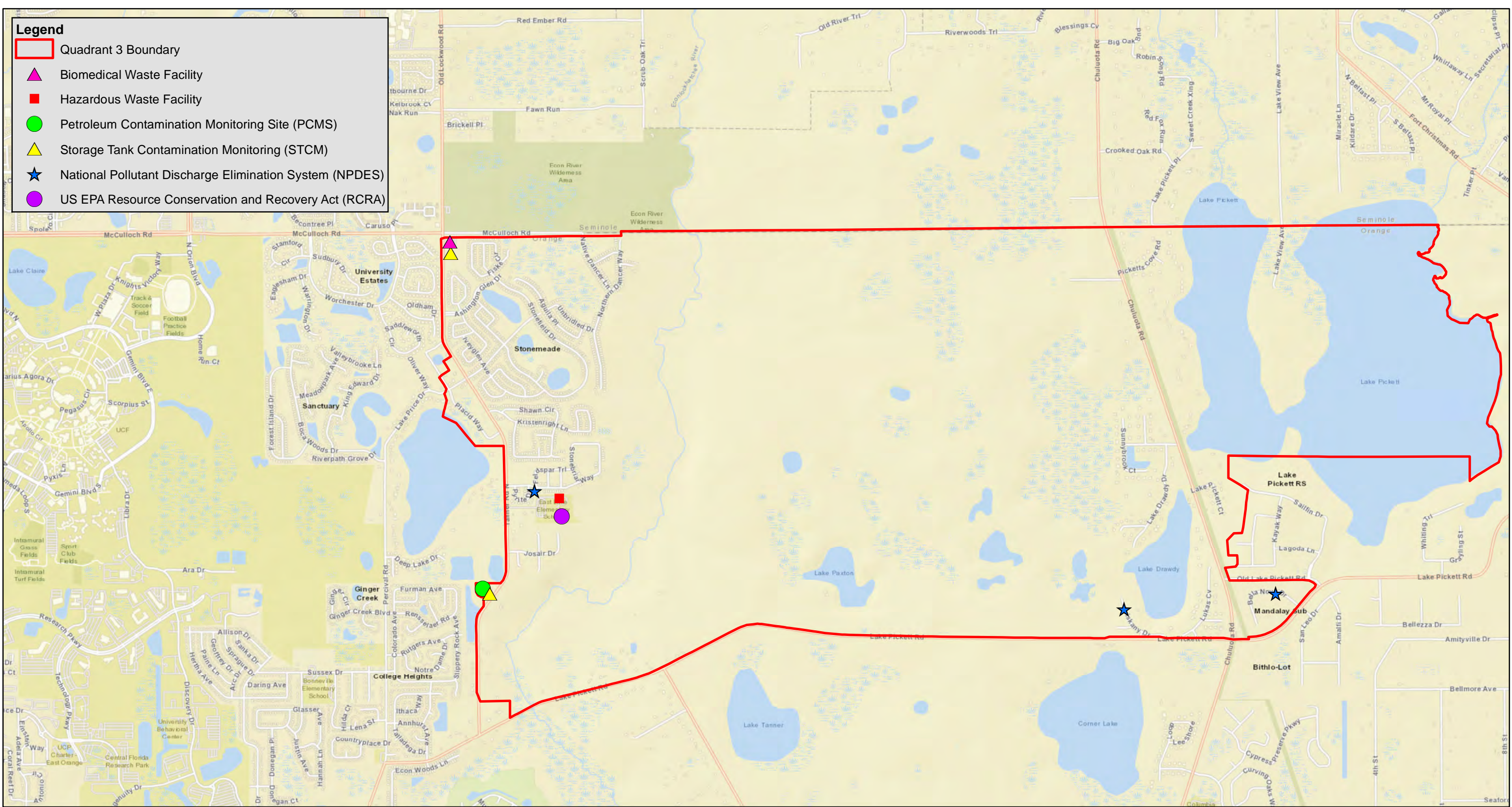


Exhibit 6.5.3

North East Orange County Areawide Transportation Study (NEOCATS)

Quadrant 3: Contamination Map

Note: GIS data downloaded from FGDL June 2021 and sourced to FDOH (Boimedical, SUPER Act), FDEP (PCMS, STCM, Hazardous Waste), FDEP/DWM/BWC (Brownfield), USEPA (NPDES).

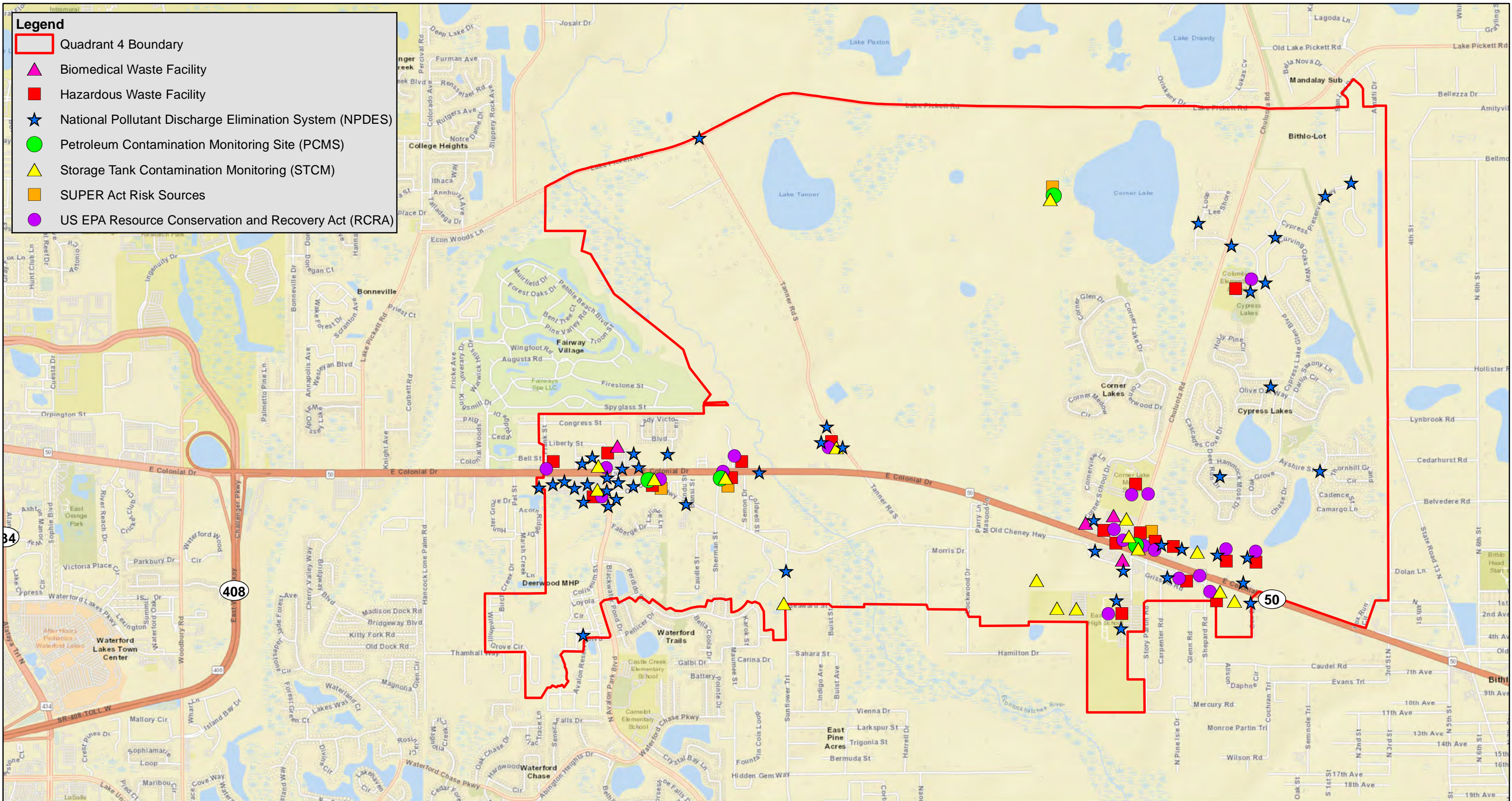
NEOCATS - June 2021

02,0004,000 Feet

Source:  
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

North Arrow





## Exhibit 6.5.4

Note: GIS data downloaded from FGDL June 2021 and sourced to FDOH (Biomedical, SUPER Act), FDEP (PCMS, STCM, Hazardous Waste), FDEP/DWM/BWC (Brownfield), USEPA (NPDES).

# North East Orange County Areawide Transportation Study (NEOCATS)

## Quadrant 4: Contamination Map

NEOCATS - June 2021

Source: Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

0 2,000 4,000 Feet

North Arrow



## 6.6 SOILS

Soil types were mapped within the Study Area using GIS data obtained from the Natural Resources Conservation Service (NRCS). **Tables 6.6.1** through **6.6.4** summarize the soil types located within each of the Quadrants, respectively for Quadrants 1 through 4. Following the tables are general descriptions of the soil types and their characteristics, taken from the USDA *Soil Survey of Orange County, Florida* (August 1989). Hydric and non-hydric soil designations are based on the *Hydric Soils of Florida Handbook*. Non-hydric soils are typically associated with uplands and hydric soils are generally associated with wetlands. The NRCS soils map for each of the Quadrant can be found in **Exhibits 6.6.1** through **6.6.4**.



**TABLE 6.6.1 - SUMMARIZED SOIL TYPES IN QUADRANT 1**

| <b>Map Unit Symbol</b>             | <b>Map Unit Name</b>                                | <b>Q1 Acres</b> | <b>Percent of Q1</b> | <b>Hydric Status</b> |
|------------------------------------|---|-----------------|----------------------|----------------------|
| 1                                  | Arents, nearly level                                | 4.85            | 0.15%                | Non-Hydric Soil      |
| 2                                  | Archbold fine sand, 0 to 5 percent slopes           | 235.76          | 7.50%                | Non-Hydric Soil      |
| 3                                  | Basinger fine sand, depressional                    | 119.30          | 3.79%                | Hydric Soil          |
| 4                                  | Candler fine sand, 0 to 5 percent slopes,           | 13.81           | 0.44%                | Non-Hydric Soil      |
| 7                                  | Candler-urban land complex, 0 to 5 percent slopes   | 1.77            | 0.06%                | Non-Hydric Soil      |
| 15                                 | Felda fine sand, frequently flooded                 | 35.48           | 1.13%                | Hydric Soil          |
| 19                                 | Hontoon muck  | 211.75          | 6.73%                | Hydric Soil          |
| 26                                 | Ona fine sand                                       | 0.02            | less than 0.01%      | Hydric Inclusions    |
| 27                                 | Ona-urban land complex                              | 4.15            | 0.13%                | Hydric Inclusions    |
| 33                                 | Pits  | 1.94            | 0.06%                | Hydric Inclusions    |
| 34                                 | Pomello fine sand, 0 to 5 percent slopes            | 279.19          | 8.88%                | Non-Hydric Soil      |
| 35                                 | Pomello- urban land complex, 0 to 5 percent slopes  | 36.06           | 1.15%                | Hydric Inclusions    |
| 37                                 | St. Johns fine sand                                 | 37.97           | 1.21%                | Hydric Inclusions    |
| 38                                 | St. Lucie fine sand, 0 to 5 percent slopes          | 3.22            | 0.10%                | Non-Hydric Soil      |
| 39                                 | St. Lucie-Urban land complex, 0 to 5 percent slopes | 86.09           | 2.74%                | Non-Hydric Soil      |
| 40                                 | Samsula muck  | 5.60            | 0.18%                | Hydric Soil          |
| 41                                 | Samsula-Hontoon-Basinger association, depressional  | 95.99           | 3.05%                | Hydric Soil          |
| 42                                 | Sanibel muck  | 191.39          | 6.09%                | Hydric Soil          |
| 43                                 | Seffner fine sand                                   | 8.80            | 0.28%                | Hydric Inclusions    |
| 44                                 | Smyrna Fine sand                                    | 1,046.87        | 33.29%               | Hydric Inclusions    |
| 45                                 | Smyrna-Urban land complex                           | 161.33          | 5.13%                | Hydric Inclusions    |
| 46                                 | Tavares fine sand, 0 to 5 percent slopes            | 99.72           | 3.17%                | Non-Hydric Soil      |
| 48                                 | Tavares-Urban land complex, 0 to 5 percent slopes   | 55.26           | 1.76%                | Non-Hydric Soil      |
| 50                                 | Urban land  | 33.32           | 1.06%                | Non-Hydric Soil      |
| 54                                 | Zolfo fine sand                                     | 166.15          | 5.28%                | Non-Hydric Soil      |
| 99                                 | Water   | 209.01          | 6.65%                | Unranked             |
| <b>Totals for Area of Interest</b> |   | <b>3,144.80</b> | <b>100.00%</b>       |                      |



**TABLE 6.6.2 - SUMMARIZED SOIL TYPES IN QUADRANT 2**

| <b>Map Unit Symbol</b>             | <b>Map Unit Name</b>                                | <b>Q2 Acres</b> | <b>Percent of Q2</b> | <b>Hydric Status</b> |
|------------------------------------|---|-----------------|----------------------|----------------------|
| 1                                  | Arents, nearly level                                | 0.03            | less than 0.01%      | Non-Hydric Soil      |
| 2                                  | Archbold fine sand, 0 to 5 percent slopes           | 185.46          | 4.97%                | Non-Hydric Soil      |
| 3                                  | Basinger fine sand, depressional                    | 285.84          | 7.65%                | Hydric Soil          |
| 15                                 | Felda fine sand, frequently flooded                 | 77.97           | 2.09%                | Hydric Soil          |
| 19                                 | Hontoon muck  | 49.50           | 1.33%                | Hydric Soil          |
| 20                                 | Immokalee fine sand                                 | 69.00           | 1.85%                | Hydric Inclusions    |
| 26                                 | Ona fine sand                                       | 35.48           | 0.95%                | Hydric Inclusions    |
| 27                                 | Ona-Urban land complex                              | 4.80            | 0.13%                | Hydric Inclusions    |
| 33                                 | Pits  | 4.25            | 0.11%                | Hydric Inclusions    |
| 34                                 | Pomello fine sand, 0 to 5 percent slopes            | 467.81          | 12.53%               | Hydric Inclusions    |
| 35                                 | Pomello-Urban land complex, 0 to 5 percent slopes   | 19.54           | 0.52%                | Hydric Inclusions    |
| 37                                 | St. Johns fine sand                                 | 106.09          | 2.84%                | Hydric Inclusions    |
| 38                                 | St. Lucie fine sand, 0 to 5 percent slopes          | 40.43           | 1.08%                | Non-Hydric Soil      |
| 39                                 | St. Lucie-Urban land complex, 0 to 5 percent slopes | 33.74           | 0.90%                | Non-Hydric Soil      |
| 40                                 | Samsula muck  | 24.22           | 0.65%                | Hydric Soil          |
| 42                                 | Sanibel muck  | 174.09          | 4.66%                | Hydric Soil          |
| 44                                 | Smyrna fine sand                                    | 1,469.50        | 39.34%               | Hydric Inclusions    |
| 45                                 | Smyrna-Urban land complex                           | 118.97          | 3.19%                | Hydric Inclusions    |
| 46                                 | Tavares fine sand, 0 to 5 percent slopes            | 165.63          | 4.43%                | Non-Hydric Soil      |
| 48                                 | Tavares-Urban land complex, 0 to 5 percent slopes   | 6.96            | 0.19%                | Non-Hydric Soil      |
| 54                                 | Zolfo fine sand                                     | 280.95          | 7.52%                | Non-Hydric Soil      |
| 55                                 | Zolfo-Urban land complex                            | 12.18           | 0.33%                | Non-Hydric Soil      |
| 99                                 | Water   | 102.46          | 2.74%                | Unranked             |
| <b>Totals for Area of Interest</b> |   | <b>3,734.90</b> | <b>100.00%</b>       |                      |



**TABLE 6.6.3 - SUMMARIZED SOIL TYPES IN QUADRANT 3**

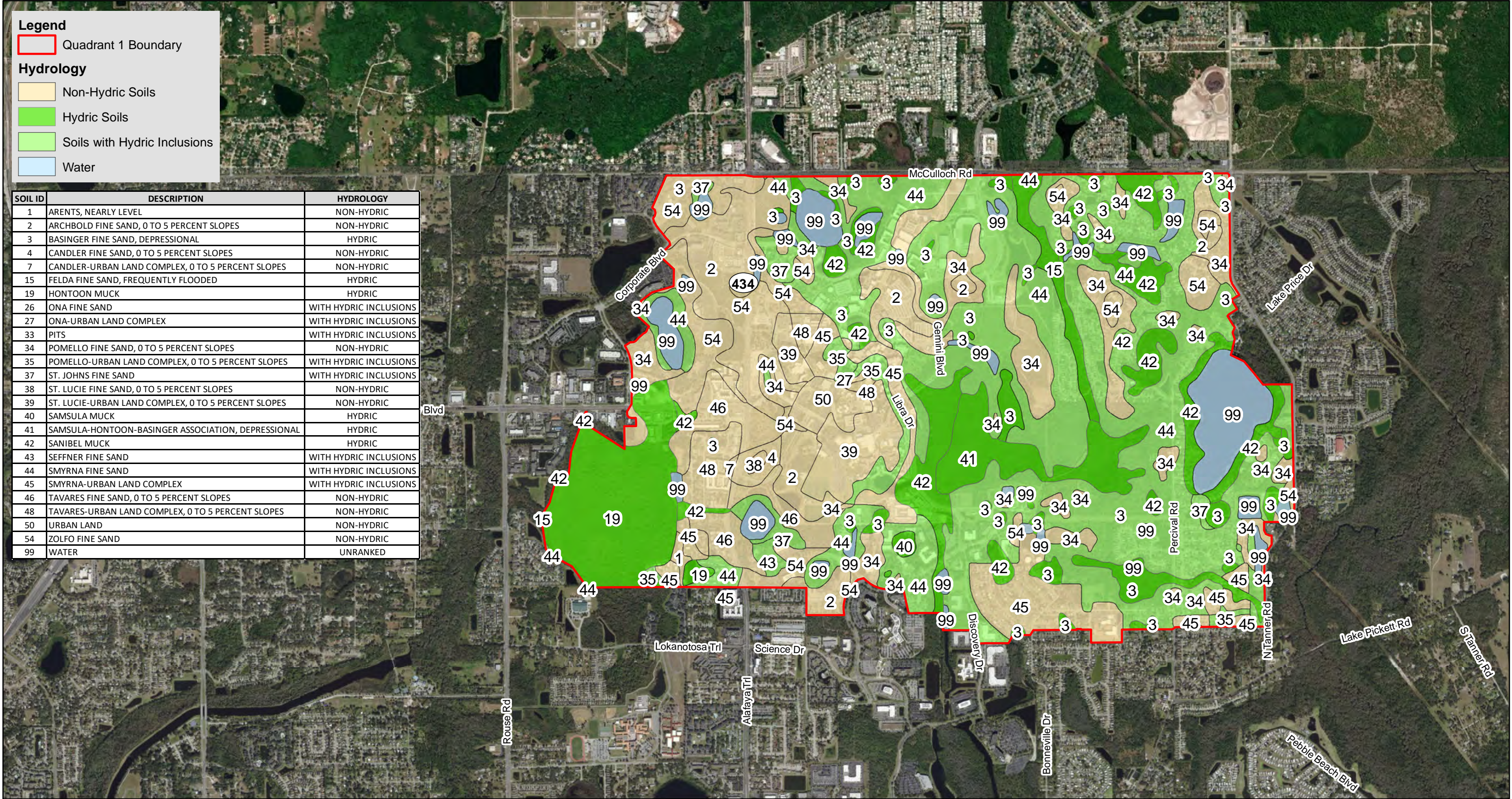
| <b>Map Unit Symbol</b>             | <b>Map Unit Name</b>                               | <b>Q3 Acres</b> | <b>Percent of Q3</b> | <b>Hydric Status</b> |
|------------------------------------|--|-----------------|----------------------|----------------------|
| 1                                  | Arents, nearly level                               | 1.35            | 0.03%                | Non-Hydric Soil      |
| 2                                  | Archbold fine sand, 0 to 5 percent slopes          | 88.47           | 2.08%                | Non-Hydric Soil      |
| 3                                  | Basinger fine sand, depressional                   | 203.13          | 4.79%                | Hydric Soil          |
| 4                                  | Candler fine sand, 0 to 5 percent slopes           | 12.94           | 0.31%                | Non-Hydric Soil      |
| 15                                 | Felda fine sand, frequently flooded                | 337.60          | 7.96%                | Hydric Soil          |
| 20                                 | Immokalee fine sand                                | 21.78           | 0.51%                | Hydric Inclusions    |
| 26                                 | Ona fine sand                                      | 20.18           | 0.48%                | Hydric Inclusions    |
| 34                                 | Pomello fine sand, 0 to 5 percent slopes           | 225.13          | 5.31%                | Hydric Inclusions    |
| 37                                 | St. Johns fine sand                                | 121.27          | 2.86%                | Hydric Inclusions    |
| 40                                 | Samsula muck                                       | 15.34           | 0.36%                | Hydric Soil          |
| 41                                 | Samsula-Hontoon-Basinger association, depressional | 49.23           | 1.16%                | Hydric Soil          |
| 42                                 | Sanibel muck                                       | 454.90          | 10.72%               | Hydric Soil          |
| 43                                 | Seffner fine sand                                  | 13.58           | 0.32%                | Hydric Inclusions    |
| 44                                 | Smyrna fine sand                                   | 873.76          | 20.59%               | Hydric Inclusions    |
| 46                                 | Tavares fine sand, 0 to 5 percent slopes           | 26.93           | 0.63%                | Non-Hydric Soil      |
| 54                                 | Zolfo fine sand                                    | 1,073.13        | 25.29%               | Non-Hydric Soil      |
| 99                                 | Water  | 704.55          | 16.60%               | Unranked             |
| <b>Totals for Area of Interest</b> |  | <b>4,233.23</b> | <b>100.00%</b>       |                      |



**TABLE 6.6.4 - SUMMARIZED SOIL TYPES IN QUADRANT 4**

| <b>Map Unit Symbol</b>             | <b>Map Unit Name</b>                                | <b>Q4 Acres</b> | <b>Percent of Q4</b> | <b>Hydric Status</b> |
|------------------------------------|---|-----------------|----------------------|----------------------|
| 2                                  | Archbold fine sand, 0 to 5 percent slopes           | 18.23           | 0.40%                | Non-Hydric Soil      |
| 3                                  | Basinger fine sand, depressional                    | 326.30          | 7.12%                | Hydric Soil          |
| 15                                 | Felda fine sand, frequently flooded                 | 306.54          | 6.69%                | Hydric Soil          |
| 20                                 | Immokalee fine sand                                 | 106.99          | 2.33%                | Hydric Inclusions    |
| 22                                 | Lochloosa fine sand                                 | 16.46           | 0.36%                | Non-Hydric Soil      |
| 26                                 | Ona fine sand                                       | 18.49           | 0.40%                | Hydric Inclusions    |
| 30                                 | Pineda fine sand                                    | 2.97            | 0.06%                | Hydric Soil          |
| 34                                 | Pomello fine sand, 0 to 5 percent slopes            | 308.80          | 6.74%                | Hydric Inclusions    |
| 37                                 | St. Johns fine sand                                 | 189.52          | 4.14%                | Hydric Inclusions    |
| 39                                 | St. Lucie-Urban land complex, 0 to 5 percent slopes | 0.90            | 0.02%                | Non-Hydric Soil      |
| 40                                 | Samsula muck  | 121.06          | 2.64%                | Hydric Soil          |
| 42                                 | Sanibel muck  | 288.65          | 6.30%                | Hydric Soil          |
| 44                                 | Smyrna fine sand                                    | 1,920.77        | 41.91%               | Hydric Inclusions    |
| 45                                 | Smyrna -Urban land complex                          | 1.27            | 0.03%                | Hydric Inclusions    |
| 46                                 | Tavares fine sand, 0 to 5 percent slopes            | 6.72            | 0.15%                | Non-Hydric Soil      |
| 51                                 | Wabasso fine sand                                   | 27.73           | 0.61%                | Non-Hydric Soil      |
| 53                                 | Wauberg fine sand                                   | 1.32            | 0.03%                | Hydric Soil          |
| 54                                 | Zolfo fine sand                                     | 751.44          | 16.40%               | Non-Hydric Soil      |
| 99                                 | Water   | 168.67          | 3.68%                | Unranked             |
| <b>Totals for Area of Interest</b> |   | <b>4,582.83</b> | <b>100.00%</b>       |                      |







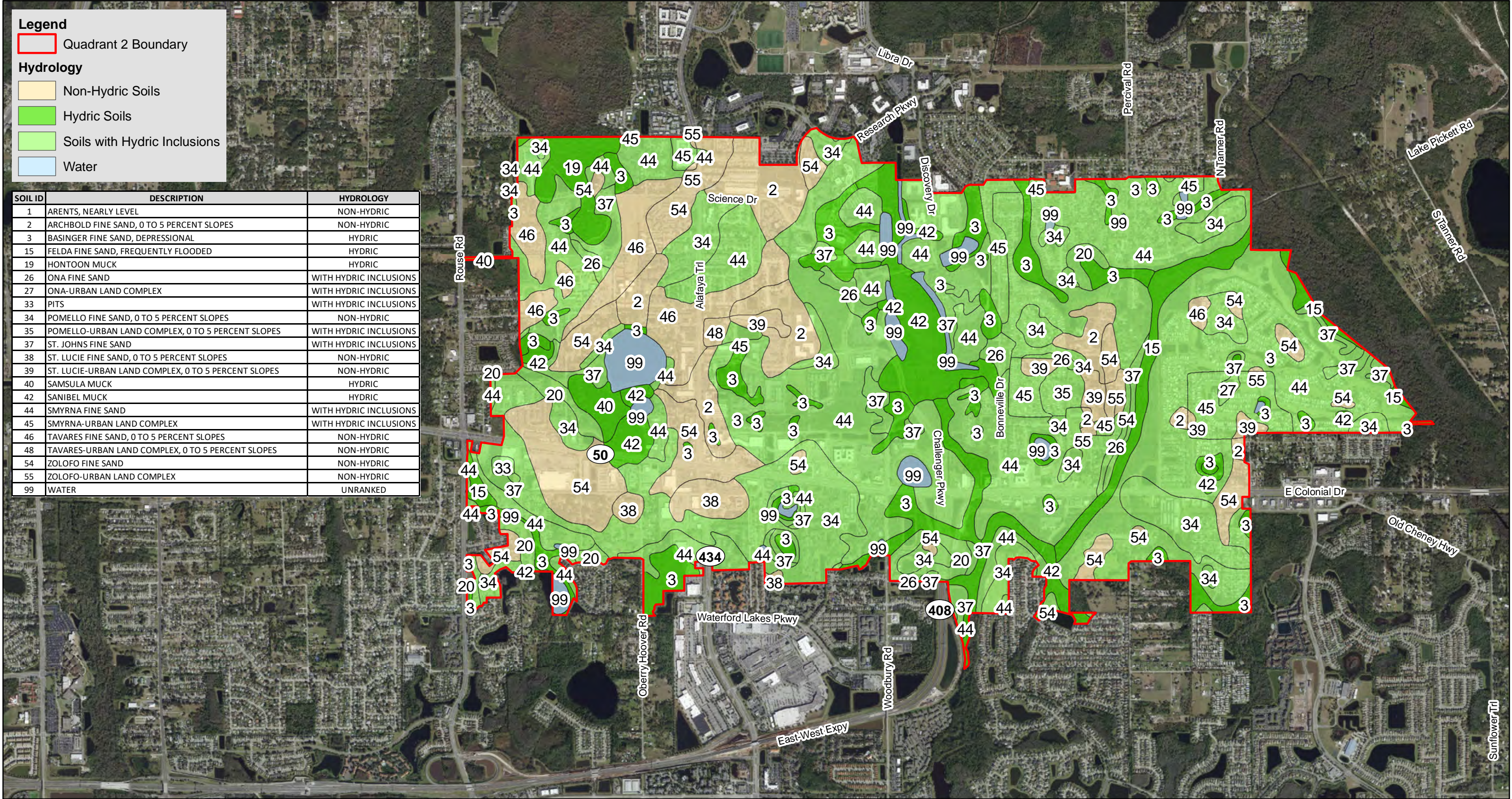


Exhibit 6.6.2

North East Orange County Areawide Transportation Study (NEOCATS)

Quadrant 2: NRCS Soils Map

NEOCATS - June 2021

02,0004,000

Feet

Source:  
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar  
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and  
the GIS User Community



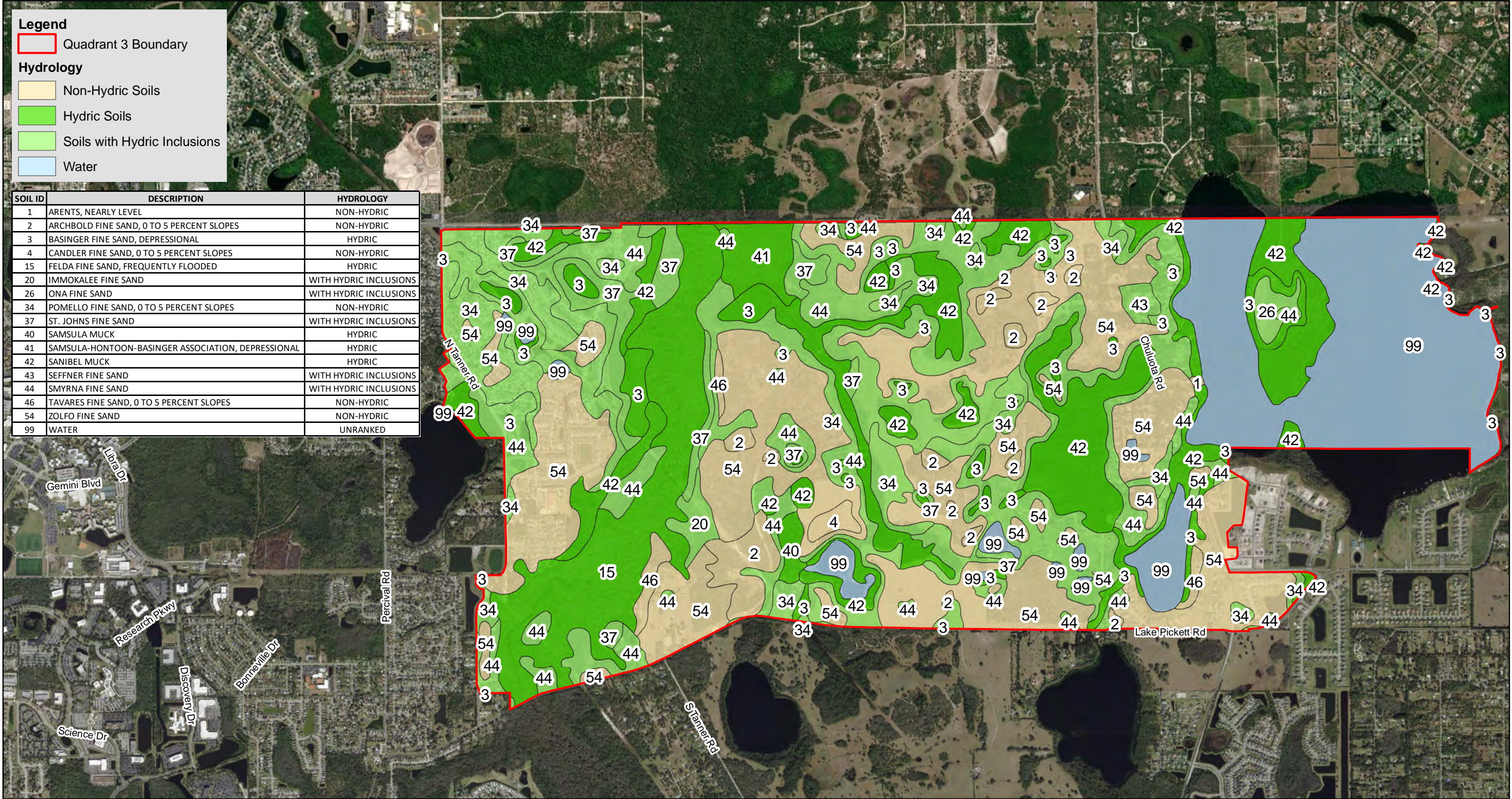


Exhibit 6.6.3

North East Orange County Areawide Transportation Study (NEOCATS)

Quadrant 3: NRCS Soils Map

Source: NRCS Soils GIS data

NEOCATS - June 2021

ORANGE COUNTY GOVERNMENT FLORIDA

0 2,000 4,000 Feet

Source: Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



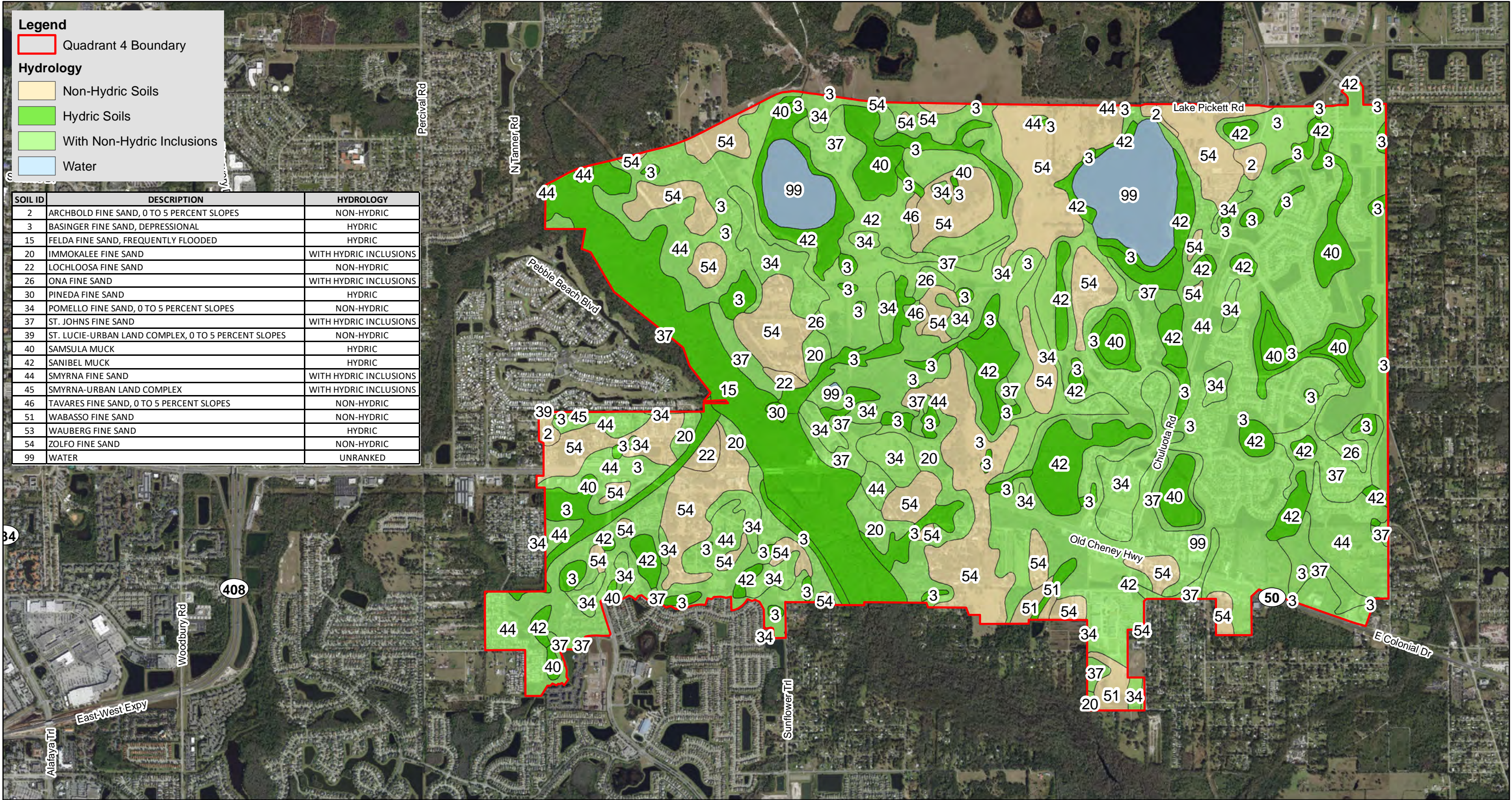
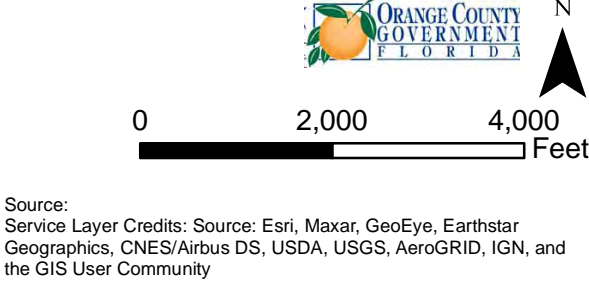
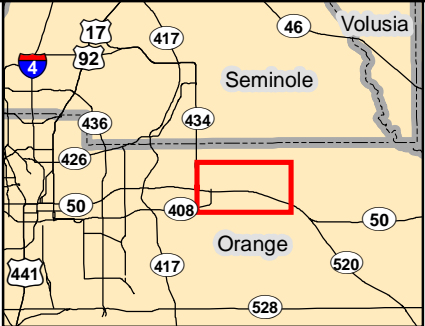


Exhibit 6.6.4

North East Orange County Areawide  
Transportation Study (NEOCATS)  
Quadrant 4: NRCS Soils Map

Source: NRCS Soils GIS data

NEOCATS - June 2021





### 6.6.1 Soil Description Summaries

Arents, nearly level (1)- Arents consist of material dug from several areas that have different kinds of soil. This soil is used to fill such areas as sloughs, depressions, and other low-lying areas above their natural ground levels during land-leveling operations. Slopes are smooth to concave and range from 0 to 2 percent. A seasonal high-water table varies with the amount of fill material and artificial drainage in any mapped area. In most years, a seasonal high-water table is at depth of 24 to 36 inches for 3 to 4 months. It recedes to a depth of about 60 inches or more during extended dry periods. The water capacity property is variable and also depends on the amount of fill material and artificial drainage in any mapped area. This is considered a non-hydric soil typically indicative of uplands in developed urban areas.

Archbold Fine Sand, 0 to 5 percent slopes (2) - This nearly level to gently sloping and moderately well drained soil is typically found on low ridges and knolls on the flatwoods. Slopes are smooth and convex. The seasonal high-water table is at depth of 42 to 60 inches of the surface for about 6 months, and it recedes to a depth of 60 to 80 inches for the rest of the year. It is at a depth of 24 to 40 inches for about 1 month to 4 months during extended wet periods. It recedes to a depth of more than 80 inches during extended dry periods. The permeability is very rapid throughout. The available water capacity is very low. This is considered a non-hydric soil and can be indicative of marine terraces on coastal plains.

Basinger Fine Sand, Depressional (3)-This nearly level and very poorly drained soil is found on shallow depressions and sloughs and along the edges of freshwater marshes and swamps. Slopes range from 0 to 2 percent. Under natural conditions, the water table is above the surface for 6 to 9 months or more each year and is within 12 inches of the surface for the rest of the year. Permeability is rapid throughout. The available water capacity is low in the surface and subsurface layers and in the substratum and is medium in the subsoil. This is considered a hydric soil associated with wetlands.

Candler Fine Sand, 0 to 5 percent slopes (4)-This nearly level to gently sloping and excessively drained soil is typically located on uplands. Slopes are nearly smooth to convex. The seasonal high-water table is typically at a depth of more than 80 inches. The permeability is rapid in the surface and subsurface layers, and it is rapid to moderately rapid in the subsoil. The available water capacity is very low in the surface and subface layers and low in the subsoil. This is considered a non-hydric soil and is indicative of uplands.

Candler-Urban Land Complex, 0 to 5 percent slopes (7)-This nearly level to gently sloping and excessively drained soil in areas of urban land is typically located on uplands. Slopes are nearly smooth to convex. The seasonal high-water table is typically at a depth of more than 80 inches. The permeability is rapid in the surface and subsurface layers, and it is rapid to moderately rapid in the subsoil. The available water capacity is very low in the surface and subsurface layers and



low in the subsoil. This disturbed soil designation is considered a non-hydric soil associated with developed lands which are typically classified as uplands.

Felda Fine Sand, Frequently Flooded (15)-This nearly level and poorly drained soil is typically located on flood plains of Econlockhatchee River and of other minor streams. Slopes are nearly smooth to slightly concave and range from 0 to 2 percent. The seasonal high-water table is typically within 10 inches of the surface for 2 to 6 months. Flooding occurs frequently during rainy periods. Flooding normally lasts from 1 month to 4 months. The permeability is rapid in the surface and subsurface layers, and it is moderately in the subsoil. The available water capacity is very low in the surface and subface layers and in in the substratum and is medium in the subsoil. This is considered a hydric soil indicative of wetlands.

Hontoon Muck (19)-This nearly level and very poorly drained soil is typically located in freshwater swamps and in marshes. Slopes are smooth and less than 1 percent. The seasonal high-water table is typically within 10 inches of the surface, but under natural conditions this soil can be ponded for most of the year. In drained areas the water table is typically controlled at a depth of 10 to 36 inches in which the water table is at or above the surface for short periods after heavy rains. The permeability is rapid throughout. The available water capacity is very high. This is considered a hydric soil indicative of wetlands.

Immokalee Fine Sand (20)-This nearly level and poorly drained soil is typically located on broad flatwoods. Slopes are smooth and range from 0 to 2 percent. The seasonal high-water table is within 10 inches of the surface for 1 month to 3 months, and it recedes to a depth of 10 to 40 inches for more than 6 months. The permeability is rapid on the surface and subsurface layers and in the substratum and is moderate in the subsoil. The available water capacity is very low in the surface and subsurface layers and in the substratum and is medium in the subsoil. This is considered a soil with hydric inclusions and can be indicative of uplands or wetlands depending on where it lies in the landscape.

Lochloosa fine sand (22)- This nearly level and poorly drained soil is typically located in the slightly high positions on the flatwoods. Slopes are smooth to convex and range from 0 to 2 percent. The seasonal high-water table is within 30 to 60 inches of the surface for 1 month to 4 months. It may recede to more than 60 inches during prolonged dry periods. The permeability is moderately rapid to rapid in the surface and subsurface layers, moderate to moderately slow in the subsoil, and slow to moderately slow in the substratum. This is considered non-hydric soil indicative of uplands.

Ona Fine Sand (26)-This nearly level and poorly drained soil is typically located in broad areas on the flatwoods. Slopes are smooth and range from 0 to 2 percent. The seasonal high-water table is typically within 10 inches of the surface for 1 month or 2 months. It recedes to a depth of 10 to 40 inches for periods of 6 months or more. The permeability is rapid in surface and subsurface layers, and it is moderate in the subsoil. The available water capacity is medium in the surface



layer and subsoil and is low in the substratum. This is considered a soil with hydric inclusions and can be indicative of uplands or wetlands depending on where it lies in the landscape.

Ona-Urban Land Complex (27)-This nearly level and poorly drained soil and of areas and of Urban land is typically located on the flatwoods. Slopes are smooth and range from 0 to 2 percent. The seasonal high-water table is typically within 10 inches of the surface for 1 month or 2 months. The permeability is rapid in surface layer and in the substratum and is moderate in the subsoil. The available water capacity is moderate in the surface layer and subsoil and is low in the substratum. This disturbed soil designation is considered a soil with hydric inclusions and can be indicative of uplands or wetlands depending on where it lies in the landscape.

Pineda Fine Sand (30)- This nearly level and poorly drained soil is typically located on low hammocks, in broad, poorly defined drainageways, and in sloughs. Slopes are smooth to concave and range from 0 to 2 percent. The seasonal high-water table is within 10 inches of the surface for 1 month to 6 months. It recedes to a depth of 10 to 40 inches for more than 6 months. The permeability is rapid in the surface and subsurface layers and the upper part of the subsoil, and moderately slow in the lower part of the subsoil and substratum. The available water capacity is very low in the surface and subsurface layers and in the upper part of the subsoil, and it is medium in the lower part of the subsoil and substratum. This is considered a hydric soil and is indicative of wetlands.

Pits (33)-This soil consists of excavated areas of unconsolidated or heterogenous soil and geologic materials which have been removed primarily for use in road construction or as fill material for low areas and building foundations. Most soil properties area variable according to the type and amount of fill material removed. This disturbed soil designation is considered a soil with hydric inclusions and can be associated with uplands or wetlands/surface water features.

Pomello Fine Sand, 0 to 5 percent slopes (34)-This nearly level to gently sloping and moderately well drained soil is typically located on low ridges and knolls on the flatwoods. Slopes are smooth to convex. The seasonal high-water table is at a depth to 24 to 40 inches for 1 month to 4 months and recedes to a depth of 40 to 60 inches during dry periods. The permeability is very rapid in surface layer and subsurface layers, moderately rapid in the subsoil, and rapid in the substratum. The available water capacity is very low in the surface and subsurface layers and in the substratum, and it is medium in the subsoil. This is considered a soil with hydric inclusions and can be indicative of uplands or wetlands depending on where it lies in the landscape.

Pomello-Urban Land Complex, 0 to 5 percent slopes (35)-This nearly level to gently sloping and moderately well drained soil is associated with urban areas but can be located on low ridges and knolls on the flatwoods. The urban land part of this complex is covered by concrete, asphalt, buildings, or another impervious surface. Slopes are smooth to convex. The seasonal high-water table is at a depth to 24 to 40 inches for 1 month to 4 months and recedes to a depth of 40 to 60 inches during dry periods. The permeability is very rapid in surface layer and subsurface layers,



moderately rapid in the subsoil, and rapid in the substratum. The available water capacity is very low in the surface and subsurface layers and in the substratum, and it is medium in the subsoil. This is considered a soil with hydric inclusions and can be indicative of uplands or wetlands depending on where it lies in the landscape.

St. Johns Fine Sand (37)-This nearly level and poorly drained soil is typically located on broad flats in the flatwoods. Slopes are smooth to concave and range from 0 to 2 percent. The seasonal high-water table is within 10 inches of the surface for 6 to 12 months and between depths of 10 and 40 inches for more than 6 months. In rainy period, it rises to the surface for brief periods. The permeability is rapid in surface layer and subsurface layers and the substratum, and it is moderately slow to moderate in the subsoil. The available water capacity is medium in the surface layer, very low to low in the subsurface layer, and substratum, and medium to very high in the subsoil. This is considered a soil with hydric inclusions and can be indicative of uplands or wetlands depending on where it lies in the landscape.

St. Lucie Fine Sand, 0 to 5 percent slopes (38)-This deep, nearly level to gently sloping, and excessively drained soil is typically located on uplands. Slopes are uniform and range from 0 to 5 percent. The seasonal high-water table is at a depth of 72 inches or more. The permeability is very rapid. The available water capacity is very slow. This is considered a non-hydric soil and can be indicative of uplands.

St. Lucie-Urban Land Complex, 0 to 5 percent slopes (39)-This complex consists of St. Lucie soil that is nearly level to gently sloping, and excessively drained. It is typically associated with urban lands. The seasonal high-water table is at a depth of 72 inches or more. The permeability is very rapid. The available water capacity is very slow. This soil type is considered a non-hydric soil associated with uplands and developed land.

Samsula Muck (40) - This nearly level and very poorly drained soil is typically located in freshwater marshes and swamps. Slopes are smooth and are less than 1 percent. The seasonal high-water table fluctuates between depths of about 10 inches to above the surface. The permeability is rapid throughout. The available water capacity is very high in the organic matter and is very low in the underlying sandy material. This is considered a hydric soil typically indicative of wetlands.

Samsula-Hontoon-Basinger Association, Depressional (41) - This nearly level and very poorly drained soil is typically located in freshwater swamps, depressions, slough, and broad, poorly defined drainageways. Slopes are smooth to concave and range from 0 to 2 percent. The seasonal high-water table fluctuates between depths of about 10 inches and the surface. The permeability is rapid throughout. The available water capacity is very high in the organic matter and is very low in the underlying sandy material. This is considered a hydric soil typically indicative of wetlands.

Sanibel Muck (42) - This nearly level and very poorly drained soil is typically located in depressions, freshwater swamps and marshes, and in poorly defined drainageways. Slopes are concave and are less than 1 percent. The seasonal high-water table fluctuates between depths of about 10 inches



and the surface for 2 to 6 months. The permeability is rapid throughout. The available water capacity is very high in the organic matter and is medium to low in the underlying sandy material. This is considered a hydric soil typically indicative of wetlands.

Seffner Fine Sand (43) - This nearly level and somewhat poorly drained soil is typically located on the rims of depressions and on broad, low ridges on the flatwood. Slopes are smooth to concave and range from 0 to 2 percent. The seasonal high-water table is within 18 to 40 inches of the surface for 2 to 4 months and between depths of 10 to 20 inches for periods of up to 2 weeks during wet periods. It recedes to a depth of less than 60 inches during extended dry periods. The permeability is rapid throughout. The available water capacity is medium in the surface layer, and it is low to very low in the underlying material. This is considered a soil with hydric inclusions and can be indicative of uplands or wetlands depending on where it lies in the landscape.

Smyrna Fine Sand (44) - This nearly level and poorly drained soil is typically located on broad flatwoods. Slopes are smooth to concave and range from 0 to 2 percent. The seasonal high-water table is within 10 inches of the surface for 1 month to 4 months. It recedes to a depth of 10 to 40 inches for more than 6 months. The permeability is rapid in the surface and subsurface layers and in the substratum, and it is moderate to moderately rapid in the subsoil. The available water capacity is low to very low in the surface and subsurface layers and in the substratum, and it is medium in the subsoil. This is considered soil with hydric inclusions and can be indicative of uplands or wetlands depending on where it lies in the landscape.

Smyrna-Urban Land Complex (45) - This complex contains nearly level and poorly drained soil and area of urban lands. It is typically located on the flatwoods. Slopes are smooth to concave and range from 0 to 2 percent. The seasonal high-water table is within 10 inches of the surface for 1 month to 4 months. The permeability is rapid in the surface and subsurface layers and in the substratum, and it is moderate to moderately rapid in the subsoil. The available water capacity is low to very low in the surface and subsurface layers and in the substratum, and it is medium in the subsoil. This is considered a soil with hydric inclusions and can be indicative of uplands or wetlands depending on where it lies in the landscape.

Tavares Fine Sand, 0 to 5 percent slopes (46) - This nearly level to gently sloping and moderately well drained soil is typically located on low ridges and knolls on the uplands. Slopes are smooth to concave. The seasonal high-water table is at a depth of 40 to 80 inches for more than 6 months, and it recedes to a depth of more than 80 inches during extended dry periods. The permeability is very rapid throughout. The available water capacity is very low. This is considered a non-hydric soil and can be indicative of uplands.

Tavares-Urban Land Complex, 0 to 5 percent slopes (48) - This complex of nearly level to gently sloping and moderately well drained soil typically contains urban land, but is also located on low ridges and knolls on the uplands and in the flatwoods. Slopes are smooth to concave and range from 0 to 5 percent. The seasonal high-water table is at a depth of 40 to 80 inches for more than



6 months, and it recedes to a depth of more than 80 inches during extended dry periods. The permeability is very rapid throughout. The available water capacity is very low. This soil designation is considered a non-hydric soil associated with uplands and developed land.

Urban Land (50)-This soil designation is a result of natural soils that cannot be observed or identified because it is covered by urban facilities such as shopping centers, parking lots, industrial buildings, houses, streets, airports, and other structures. Soils in unoccupied areas such as lawns, vacant lots, playgrounds and parks, mostly consist of Candler, Florahome, Millhopper, Ona, Pomello, St. Lucie, Smyrna, Tavares, and Wabasso soils. These soils have been altered by grading and shaping, or a fill material has been used to cover the natural soils to a depth of 12 inches. Drainage systems have been established in most areas and the seasonal high-water table is highly variable. This disturbed soil designation is considered a non-hydric soil associated with uplands and developed land.

Wabasso Fine Sand (51)- This nearly level and poorly drained soil is typically located on broad flatwoods. Slopes are smooth to slightly convex and range from 0 to 2 percent. The seasonal high-water table is at a depth of less than 10 inches for 1 month to 5 months and recedes to a depth of more than 40 inches during dry periods. The permeability is rapid in the surface and subsurface layers and in the substratum and moderate in the sandy part of the subsoil and slow or very slow in the loamy part. The water capacity is very low in the surface and subsurface layers, medium in the subsoil, and low in the substratum. This is considered a non-hydric soil typically indicative of uplands.

Wauberg Fine Sand (53) - This nearly level and poorly drained soil is typically located in low areas in the flatwoods. Slopes are nearly smooth to slightly concave and range from 0 to 2 percent. The seasonal high-water is within 12 inches of the surface for a period of 6 months and can recede to a depth of more than 40 inches during dry periods. The permeability is rapid in the surface and subsurface layers, very slow in the upper part of the subsoil and substratum and moderately slow in the lower part of the subsoil. The water capacity is low to medium in the surface layer, subsoil, and substratum. This is considered a hydric soil typically indicative of wetlands.

Zolfo Fine Sand (54) - This nearly level and somewhat poorly drained soil is typically located on broad, slightly higher positions adjacent to the flatwoods. Slopes are smooth to convex and range from 0 to 5 percent. The seasonal high-water table is at a depth of 24 to 40 inches for 2 to 6 months, and it is a depth of 10 to 24 inches during periods of heavy rains. It recedes to a depth of about 60 inches during extended dry periods. The permeability is rapid in the surface and subsurface layers, and it is moderate in the subsoil. The available water capacity is low in the surface and subsurface layers and is medium in the subsoil. This is considered a non-hydric soil indicative of uplands.

Zolfo-Urban land complex (55) – This complex is nearly level and somewhat poorly drained and contains urban lands. It can be found on broad, slightly higher positions adjacent to flatwoods.



Slopes are smooth and range from 0 to 2 percent. The seasonal high water table is at a depth of 24 to 40 inches for 2 to 6 months and at a depth of 10 to 24 inches during periods of high rainfall. It recedes to a depth of 60 inches during extended droughts. When altered and drained in urban areas, the water table is highly variable. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. This is considered a non-hydric soil typically associated with uplands and developed land.

Water (99) - Water is a miscellaneous area including areas of open water, lakes, ponds, rivers, and streams. There is no hydric soil classification associated with open water and therefore it is an unranked category.

## 6.7 HYDRAULIC AND NATURAL FEATURES

The most recent, publicly available information and Geographic Information System (GIS) data regarding environmental resources in or with the potential to occur in the project area were reviewed. This information and data included local topography, floodplains, wetlands, documented wildlife observations, management plans, and other historical records. Other information included but was not limited to:

- Historic and recent aerial photography;
- U.S. Geological Survey (USGS) Topographic Maps;
- NRCS Soil Maps;
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Maps;
- USFWS Wood Stork Colony Core Foraging Area Maps;
- USFWS Consultation Areas;
- Florida Fish and Wildlife Conservation Commission (FWC) Bald Eagle Nests;
- FWC Imperiled and Managed Species Lists and Occurrence Data;
- Florida Land Use, Cover and Forms Classification System (FLUCFCS) Maps;
- USFWS IPaC Information for Planning and Consultation;
- St. Johns River Water Management District (SJRWMD) Conservation/Regulatory Easements;
- SJRWMD existing Environmental Resource Permits;
- U.S. Army Corps of Engineers (USACE) CWA 404 Retained Waters;
- Florida Natural Areas Inventory (FNAI) Biodiversity Index and Field Guides



### 6.7.1 Floodplains and Floodways

The extent of floodplains and floodways within the project study area was determined via a desktop GIS analysis using the FEMA Flood Hazard data from October 2020. **Tables 6.7.1** through **6.7.4** below include the floodplain types and descriptions, and approximate acreages of each floodplain type within the project study area by quadrant for Quadrants 1 through 4. Floodplains and floodways for each of the quadrants within the project study area are depicted in **Exhibits 6.7.1** through **6.7.4**.

FEMA floodplain type A indicates areas that are subject to a 1% annual chance flood event or a 100-Year floodplain, using approximations, resulting in a lack of provided base flood depths. FEMA floodplain type AE indicates areas that are subject to a 1% annual chance flood event or a 100-Year floodplain, using detailed methods, providing base flood elevations. FEMA floodplain type X indicates areas that are not within the Special Flood Hazard Zone. Type X is between the limits of the base flood and the 0.2 percent annual chance for flood, or 500-Year floodplain.

| <b>TABLE 6.7.1 – FLOODPLAINS AND FLOODWAYS IN QUADRANT 1</b> |                                    |                 |                      |
|--|------------------------------------|-----------------|----------------------|
| <b>FEMA Floodplain Type</b>                                  | <b>FEMA Floodplain Description</b> | <b>Q1 Acres</b> | <b>Q1 Percentage</b> |
| A  | 100-Year Floodplain                | 616.16          | 19.59%               |
| AE   | 100-Year Floodplain                | 182.77          | 5.81%                |
| X  | 500-Year Floodplain                | 0.82            | 0.03%                |
|  | Outside Floodplain                 | 2,345.05        | 74.57%               |
| <b>Total for Area of Interest</b>                            |                                    | <b>3,144.80</b> | <b>100.00%</b>       |

Approximately one-fourth of Quadrant 1 is located within a FEMA floodplain. Floodplain type A, followed by type AE, make up the floodplains within the quadrant.



| <b>TABLE 6.7.2 – FLOODPLAINS AND FLOODWAYS IN QUADRANT 2</b> |                                    |                 |                      |
|--|------------------------------------|-----------------|----------------------|
| <b>FEMA Floodplain Type</b>                                  | <b>FEMA Floodplain Description</b> | <b>Q2 Acres</b> | <b>Q2 Percentage</b> |
| A  | 100-Year Floodplain                | 414.14          | 11.09%               |
| AE   | 100-Year Floodplain                | 317.93          | 8.51%                |
| X  | 500-Year Floodplain                | 61.06           | 1.63%                |
|  | Outside Floodplain                 | 2,941.77        | 78.77%               |
| <b>Total for Area of Interest</b>                            |                                    | <b>3,734.90</b> | <b>100.00%</b>       |

Approximately one-fifth of Quadrant 2 is located within a FEMA floodplain. These floodplains include floodplain type A, with small portions of type AE and type X 500-year floodplain.

| <b>TABLE 6.7.3 – FLOODPLAINS AND FLOODWAYS IN QUADRANT 3</b> |                                    |                 |                      |
|--|------------------------------------|-----------------|----------------------|
| <b>FEMA Floodplain Type</b>                                  | <b>FEMA Floodplain Description</b> | <b>Q3 Acres</b> | <b>Q3 Percentage</b> |
| A  | 100-Year Floodplain                | 180.38          | 4.25%                |
| AE   | 100-Year Floodplain                | 1,607.10        | 37.88%               |
| X  | 500-Year Floodplain                | 201.28          | 4.74%                |
|  | Outside Floodplain                 | 2,254.51        | 53.13%               |
| <b>Total for Area of Interest</b>                            |                                    | <b>4,243.27</b> | <b>100.00%</b>       |

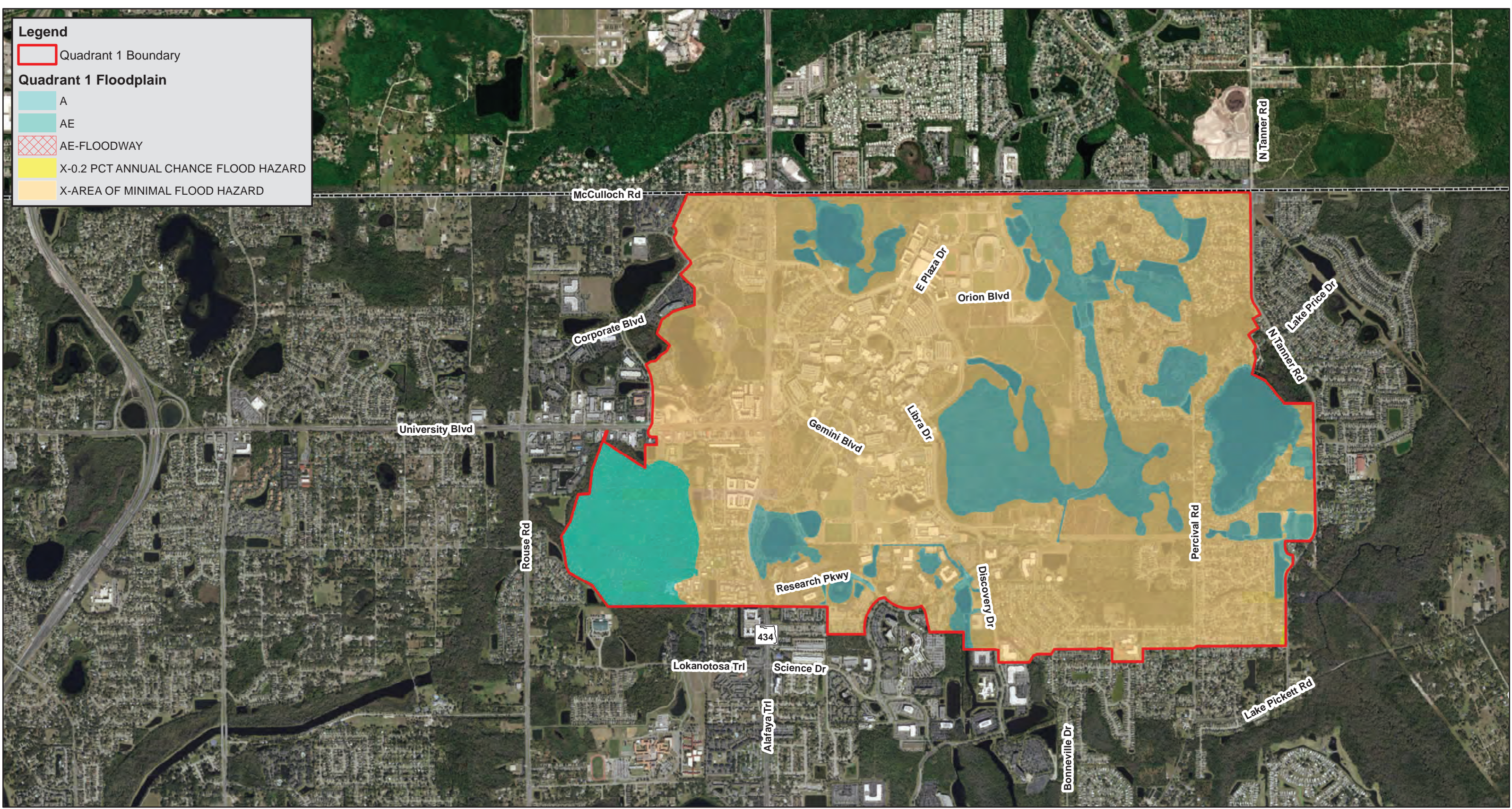
A large portion of Quadrant 3, almost half, is located within a floodplain. The largest floodplain type is type AE, with small portions of type A and X 500-year floodplain.



| <b>TABLE 6.7.4 – FLOODPLAINS AND FLOODWAYS IN QUADRANT 4</b> |                                    |                 |                      |
|--|------------------------------------|-----------------|----------------------|
| <b>FEMA Floodplain Type</b>                                  | <b>FEMA Floodplain Description</b> | <b>Q4 Acres</b> | <b>Q4 Percentage</b> |
| A  | 100-Year Floodplain                | 707.70          | 15.44%               |
| AE   | 100-Year Floodplain                | 723.52          | 15.79%               |
| X  | 500-Year Floodplain                | 154.91          | 3.38%                |
|  | Outside Floodplain                 | 2,996.70        | 65.39%               |
| <b>Total for Area of Interest</b>                            |                                    | <b>4,582.83</b> | <b>100.00%</b>       |

Floodplains and floodways make up approximately one-third of Quadrant 4. FEMA floodplain types A and AE are the primary floodplain types, followed by a small portion of type X 500-year floodplain.





**Legend**

Quadrant 1 Boundary

**Quadrant 1 Floodplain**

A

AE

AE-FLOODWAY

X-0.2 PCT ANNUAL CHANCE FLOOD HAZARD

X-AREA OF MINIMAL FLOOD HAZARD

**EXHIBIT - 6.7.1**

**North East Orange County Areawide  
Transportation Study (NEOCATS)**

Quadrant 1: Floodplains

NEOCATS - October 2021

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
Earthstar Geographics, CNES/Airbus DS, USDA, USGS,  
AeroGRID, IGN, and the GIS User Community

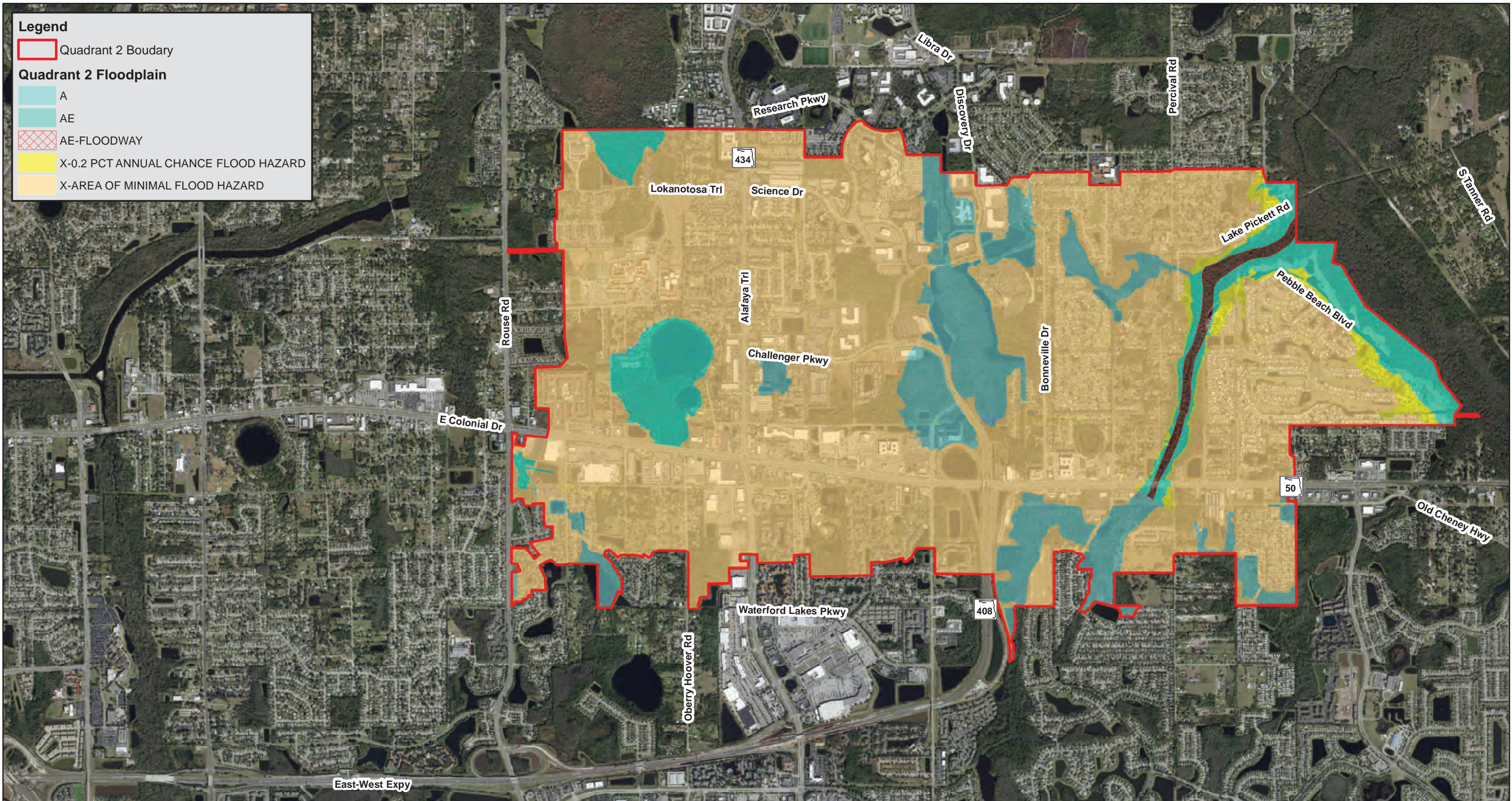
0 2,000 4,000 Feet

ORANGE COUNTY  
GOVERNMENT  
FLORIDA

0 2,000 4,000 Feet

Note: Floodplains - FEMA Flood Hazard, October 2020.





**EXHIBIT - 6.7.2**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 2: Floodplains**

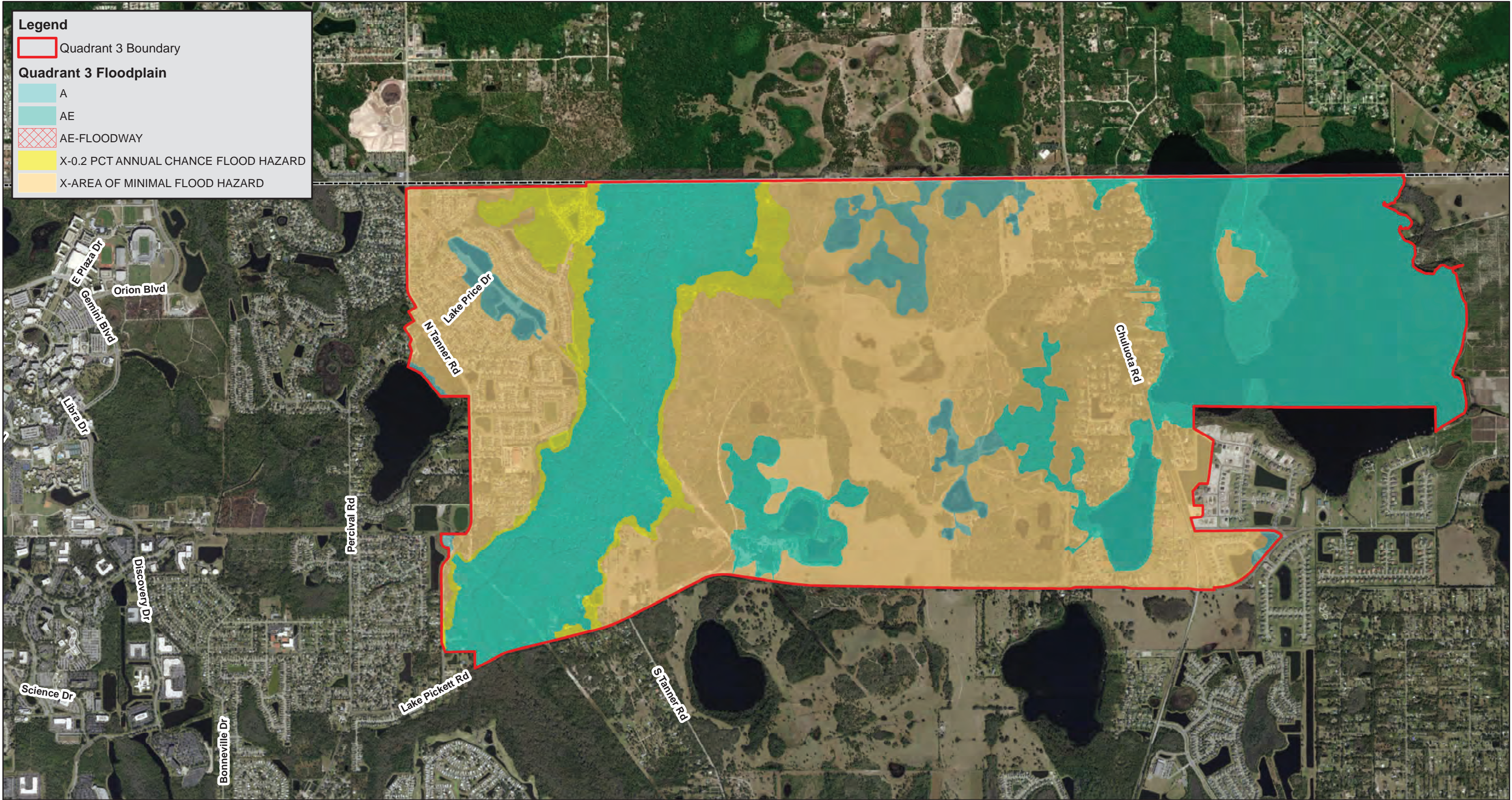
Note: Floodplains - FEMA Flood Hazard, October 2020.

NEOCATS - October 2021

0 2,000 4,000 Feet

Source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community






**EXHIBIT - 6.7.3**

**North East Orange County Areawide  
Transportation Study (NEOCATS)**

**Quadrant 3: Floodplains**

Note: Floodplains - FEMA Flood Hazard, October 2020.

NEOCATS - October 2021

 **ORANGE COUNTY  
GOVERNMENT  
FLORIDA**

0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
Earthstar Geographics, CNES/Airbus DS, USDA, USGS,  
AeroGRID, IGN, and the GIS User Community



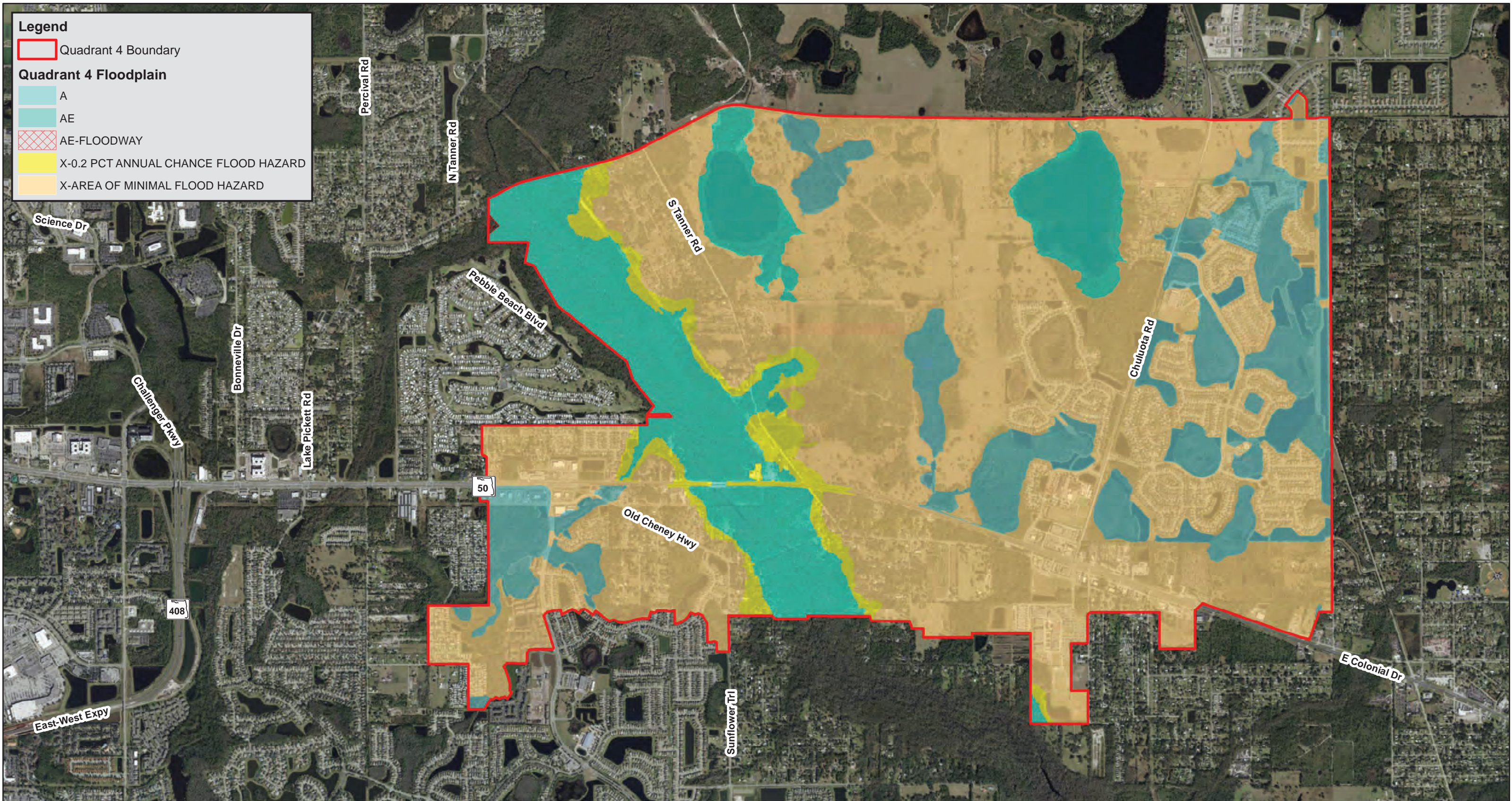


EXHIBIT - 6.7.4

Note: Floodplains - FEMA Flood Hazard, October 2020.

North East Orange County Areawide  
Transportation Study (NEOCATS)

Quadrant 4: Floodplains

NEOCATS - October 2021

02,0004,000

Feet

Source:

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



### 6.7.2 Wetlands and Surface Waters

The extent of wetlands and surface waters within the project study area was determined via a desktop GIS analysis using a combination of the SJRWMD Land Use/Land Cover data, USFWS NWI data, and USDA NRCS soils data. **Tables 6.7.5** through **6.7.8** below include the classification, using both FLUCFCS and NWI nomenclature, and approximate acreage of wetlands and surface waters within the project study area by quadrant, respectively for Quadrants 1 through 4. Wetlands and surface waters for each of the Quadrant within the project study area are depicted in **Exhibits 6.7.5** through **6.7.8**. NWI code descriptions are included in the exhibits.

It should be noted that Orange County Code Chapter 15, Article XI, the Econlockhatchee River Protection Ordinance, requires development projects within the Econlockhatchee River Protection Area to have additional setback and buffer requirements as follows:

- River Corridor Protection Zone – 1,100 feet landward of stream's edge, 550 feet landward of the stream's edge of major tributaries, and 50 feet landward of the edge of wetlands abutting the Econlockhatchee River and its named tributaries;
- Undisturbed upland buffers with an average width of 50 feet and a minimum width of 25 feet from the landward edge of Class I and Class II conservation areas

In addition, the SJRWMD has established special permitting criteria for projects within the Econlockhatchee River Hydrologic Basin that are outlined in Section 13.4 of the Permit Information Manual (PIM) (SJRWMD 2018). In addition to specific stormwater management requirements, the SJRWMD has established two additional permitting criteria specific to the Econlockhatchee River: (1) Riparian Wildlife Habitat Standard (PIM Sec. 13.4.3) and (2) Off-Site Land Preservation as Mitigation in the Econlockhatchee River Hydrologic Basin (PIM Sec. 13.4.4). These requirements are summarized below:

#### Riparian Wildlife Protection Standard

- The standard includes wetlands contiguous with the Econlockhatchee River and the following tributaries: Little Econlockhatchee River north of University Boulevard, Mills Creek, Silcox Branch (branch of Mills Creek), Mills Branch (branch of Mills Creek), Long Branch, Hart Branch, Cowpen Branch, Green Branch, Turkey Creek, Little Creek, and Fourmile Creek
- Uplands which are within 50 feet landward of the landward extent of wetlands above
- The uplands which are within 550 feet landward of the stream's edge as defined as the waterward extent of the forested wetlands abutting the Econlockhatchee River and the above named tributaries. In the absence of forested wetlands abutting these streams, the stream's edge shall be defined, for the purpose of this subsection, as the mean annual surface water elevation of the stream; however, if hydrologic records are unavailable, the landward extent of the herbaceous



emergent wetland vegetation growing in these streams shall be considered to be the stream's edge.

- Development and/or construction activities are considered to adversely affect the Riparian Habitat Protection Zone (RHPZ) with the exception of any activity which promotes a more endemic state such as construction undertaken to return lands to managed for agriculture or silviculture to a vegetative community that is more compatible with endemic land cover.
- Applicants seeking to develop within the RHPZ must demonstrate that their development will have no adverse effect on functions provided by the Zone to aquatic or wetland dependent species. This can be accomplished through preservation, creation/enhancement of viable wildlife habitat, and other means as outlined in the PIM.
- Roads and other traversing works have a potential to fragment habitat within the RHPZ. Projects of this type must demonstrate the need for regional transportation, regional utility services, or reasonable property access, in addition to meeting the other requirements outlined above.

#### Off-Site Land Preservation as Mitigation in the Econlockhatchee River Hydrologic Basin

- Mitigation in the Basin must offset impacts to the RHPZ as well as wetlands and include lands that are regionally significant.
- Land to be preserved as mitigation must be located entirely within the Econlockhatchee River Basin.
- Prior to proposing mitigation, the applicant must demonstrate that alternatives that avoid impacts to the RHPZ and wetlands outside of the RHPZ have been evaluated.
- A functional analysis must be performed to ensure that the ecological value (function) of the land proposed for mitigation meet or exceed those of the lands to be impacted.



**TABLE 6.7.5 - WETLANDS AND SURFACE WATERS IN QUADRANT 1**

| FLUCFCS Code                      | FLUCFCS Description         | NWI Code  | Q1 Acres        |
|-----------------------------------|-----------------------------|---|-----------------|
| 5000-5999                         | Water                       | L1UBH, PAB4Fx, PUBH, R4SBC, R5UBFx, R5UBH, PAB4Fx, PUBH, PUBHx, PUSC <sub>x</sub> | 247.99          |
| 6000-6199                         | Hardwood Forested Wetland   | PFO1Bd, PFO1C, PFO1Cd, PFO1F, PFO1Fd, PSS1Bd, PSS1Cd, PSS1F, PSS1Fd               | 94.26           |
| 6200-6299                         | Coniferous Forested Wetland | PFO2Cd, PFO2F, PFOFd, PFO4A, PFO4Bd, PFO4C, PFO4Cd, PSS3/FO3Bd, PSS3C             | 148.13          |
| 6300-6399                         | Mixed Forested Wetland      | PFO1/3B, PFO1/3Bd, PFO1/3C, PFO1/3Cd,   | 454.86          |
| 6400-6499                         | Non-Forested Wetland        | PEM1/SS1Cd, PEM1Ad, PEM1Bd, PEM1C, PEM1Cd, PEM1F, PEM1Fd                          | 138.56          |
| <b>Total for Area of Interest</b> |                             |   | <b>1,083.80</b> |

Wetlands and Surface Waters in Quadrant 1 include water and both forested and non-forested wetlands. Water areas within the quadrant consist of lakes and reservoirs. Wetland areas within the quadrant include mostly Mixed Forested Wetlands, followed by Coniferous Forested Wetlands, Non-Forested Wetlands, and Hardwood Forested Wetlands.

**TABLE 6.7.6 - WETLANDS AND SURFACE WATERS IN QUADRANT 2**

| FLUCFCS Code                      | FLUCFCS Description         | NWI Code  | Q2 Acres        |
|-----------------------------------|-----------------------------|---|-----------------|
| 5000-5999                         | Water                       | L1UBH, L2AB4H, R4SBC, R5UBFx, R5UBH, PAB4Fx, PAB4H, PAB4Hx  | 228.39          |
| 6000-6199                         | Hardwood Forested Wetland   | PFO1C, PFO1Cd, PFO1F, PFO1Fd, PSS1C, PSS1Cd, PSS1Fd, PSS3Cd | 466.90          |
| 6200-6299                         | Coniferous Forested Wetland | PFO2F, PFO2Fd, PFO4B, PFO4Bd, PFO4Cd,                       | 61.43           |
| 6300-6399                         | Mixed Forested Wetland      | PFO1/3B, PFO1/3Bd, PFO1/3C, PFO1/3Cd, PFO1/EM1Fd,           | 618.16          |
| 6400-6499                         | Non-Forested Wetland        | PEM1Ad, PEM1Bd, PEM1C, PREM1Cd, PEM1Cx, PEM1F, PEM1Fd       | 38.84           |
| <b>Total for Area of Interest</b> |                             |   | <b>1,413.72</b> |



Wetlands and Surface Waters in Quadrant 2 include water and both forested and non-forested wetlands. Water land uses within the quadrant include lakes and reservoirs. The wetlands within the quadrant consist mostly of Mixed Forested Wetland, followed by Hardwood Forested Wetland, Coniferous Forested Wetland, and Non-Forested Wetland.

| <b>TABLE 6.7.7 - WETLANDS AND SURFACE WATERS IN QUADRANT 3</b> |                             |   |                 |
|--|-----------------------------|---|-----------------|
| <b>FLUCFCS Code</b>  | <b>FLUCFCS Description</b>  | <b>NWI Code</b>   | <b>Q3 Acres</b> |
| 5000-5999  | Water                       | L1UBH, L1UBHx, L2AB4F, L2AB4H, PAB4F, PAB4Fx, PAB4H, PAB4Hx             | 904.70          |
| 6000-6199  | Hardwood Forested Wetland   | PFO1A, PFO1B, PFO1C, PFO1F, PFO1Fd, PFO6F, PSS1C, PSS1Cd, PSS1F, PSS1Fd | 495.37          |
| 6200-6299  | Coniferous Forested Wetland | PFO2C, PFO2Cd, PFO2F, PFO2Fd, PFO4A, PFO4B, PFO4Bd, PFO4C, PSS3C,       | 145.08          |
| 6300-6399  | Mixed Forested Wetland      | PFO1/3B, PFO1/3Bd, PFO1/3C, PFO1/3Cd,                                   | 1,777.88        |
| 6400-6499  | Non-Forested Wetland        | PEM1Ad, PEM1Bd, PEM1C, PEM1Cd, PEM1F, PEM1Fd                            | 46.77           |
| <b>Total for Area of Interest</b>                              |                             |   | <b>3,369.80</b> |

Wetlands and Surface Waters in Quadrant 3 include water and both forested and non-forested wetlands. Water areas within the quadrant are made up of lakes and reservoirs. Wetland types within the quadrant include mostly Mixed Forested Wetland, followed by Hardwood Forested Wetland, Coniferous Forested Wetland, and Non-Forested Wetland.

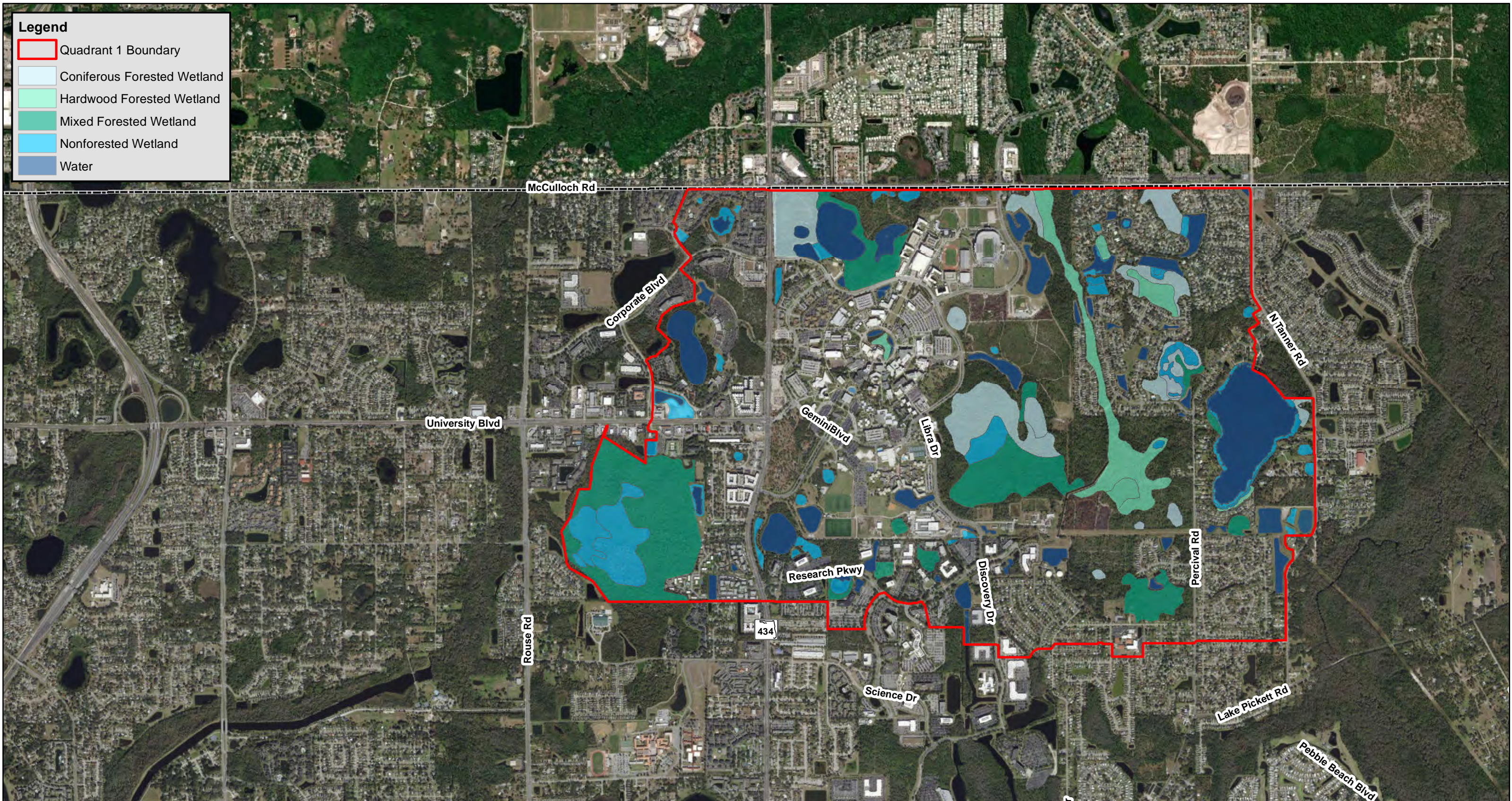
Wetlands and Surface Waters in Quadrant 4 include water and both forested and non-forested wetlands. Water land uses within the quadrant include lakes and reservoirs. Wetland types in this quadrant consist mostly of Hardwood Forested Wetland, followed by Coniferous Forested Wetland, Mixed Forested Wetland, and Non-Forested Wetland.



**TABLE 6.7.8 - WETLANDS AND SURFACE WATERS IN QUADRANT 4**

| <b>FLUCFCS Code</b>               | <b>FLUCFCS Description</b>  | <b>NWI Code</b>  | <b>Q4 Acres</b> |
|-----------------------------------|-----------------------------|--|-----------------|
| 5000-5999                         | Water                       | L1UBH, L2AB4H, PAB4Fx  | 336.89          |
| 6000-6199                         | Hardwood Forested Wetland   | PFO1Bd, PFO1C, PFO1Cd, PFO1F, PFO1Fd, PSS1Bd, PSS1C, PSS1Cd, PSS1F, PSS1Fd | 732.55          |
| 6200-6299                         | Coniferous Forested Wetland | PFO2Cd, PFO2F, PFO2Fd, PFO4B, PFO4Bd, PFO4C, PFO4Cd, PSS7C                 | 605.91          |
| 6300-6399                         | Mixed Forested Wetland      | PFO1/3Ad, PFO1/3B, PFO1/3Bd, PFO1/3C, PFO1/3Cd, PFO1/4C                    | 550.82          |
| 6400-6499                         | Non-Forested Wetland        | PEM1A, PEM1Ad, PEM1Bd, PEM1C, PEM1Cd, PEM1Fd                               | 22.04           |
| <b>Total for Area of Interest</b> |                             |  | <b>2,248.21</b> |





**Legend**

- Quadrant 1 Boundary
- Coniferous Forested Wetland
- Hardwood Forested Wetland
- Mixed Forested Wetland
- Nonforested Wetland
- Water

**EXHIBIT - 6.7.5**

**North East Orange County Areawide  
Transportation Study (NEOCATS)**

Quadrant 1: Wetlands and Surface Waters

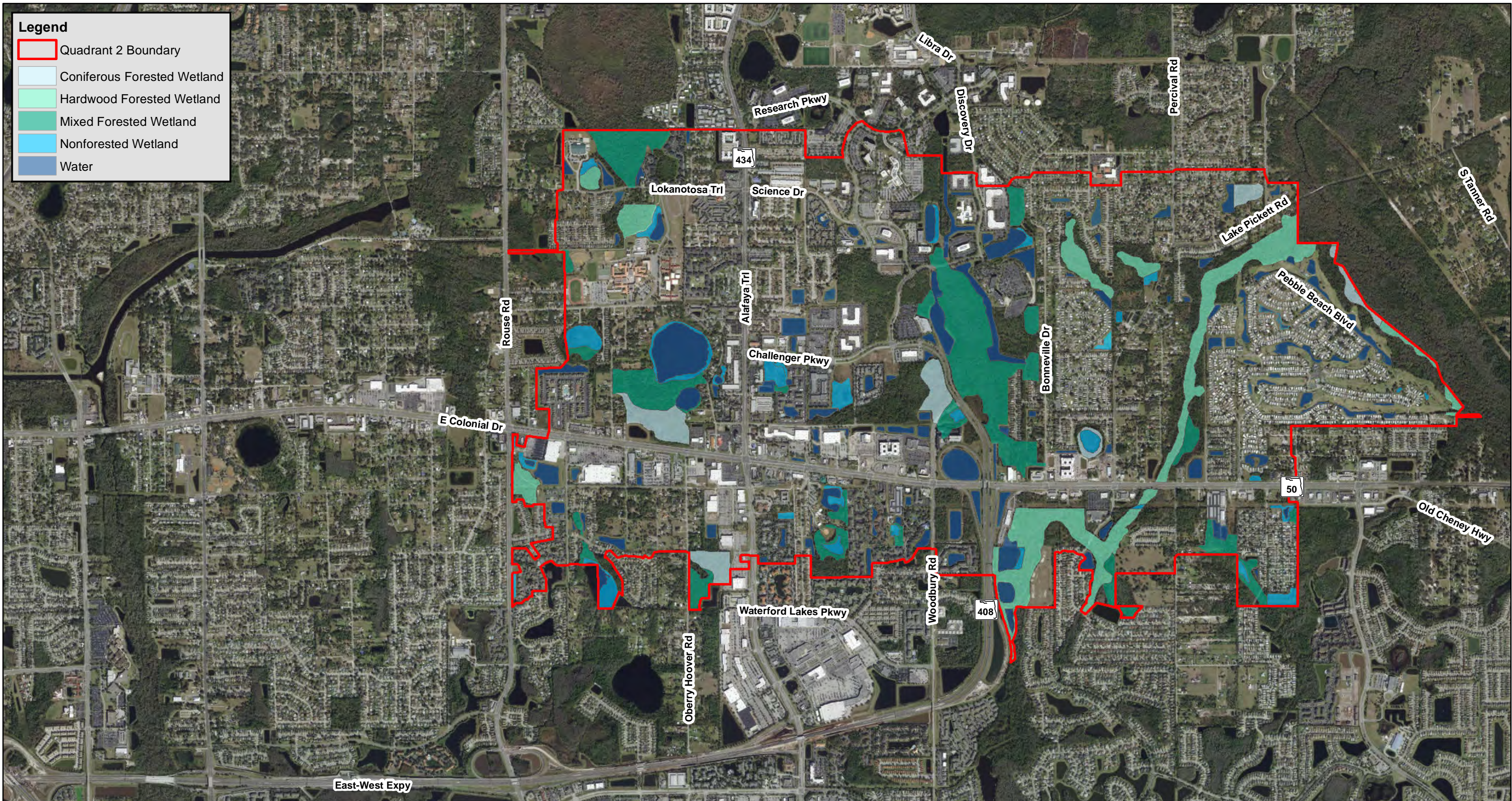
Note: Existing Land Use - SJWMD, Land Use Land Code FLUCFCS, 2016.

NEOCATS - June 2021

0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
Earthstar Geographics, CNES/Airbus DS, USDA, USGS,  
AeroGRID, IGN, and the GIS User Community





**EXHIBIT - 6.7.6**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 2: Wetlands and Surface Waters**

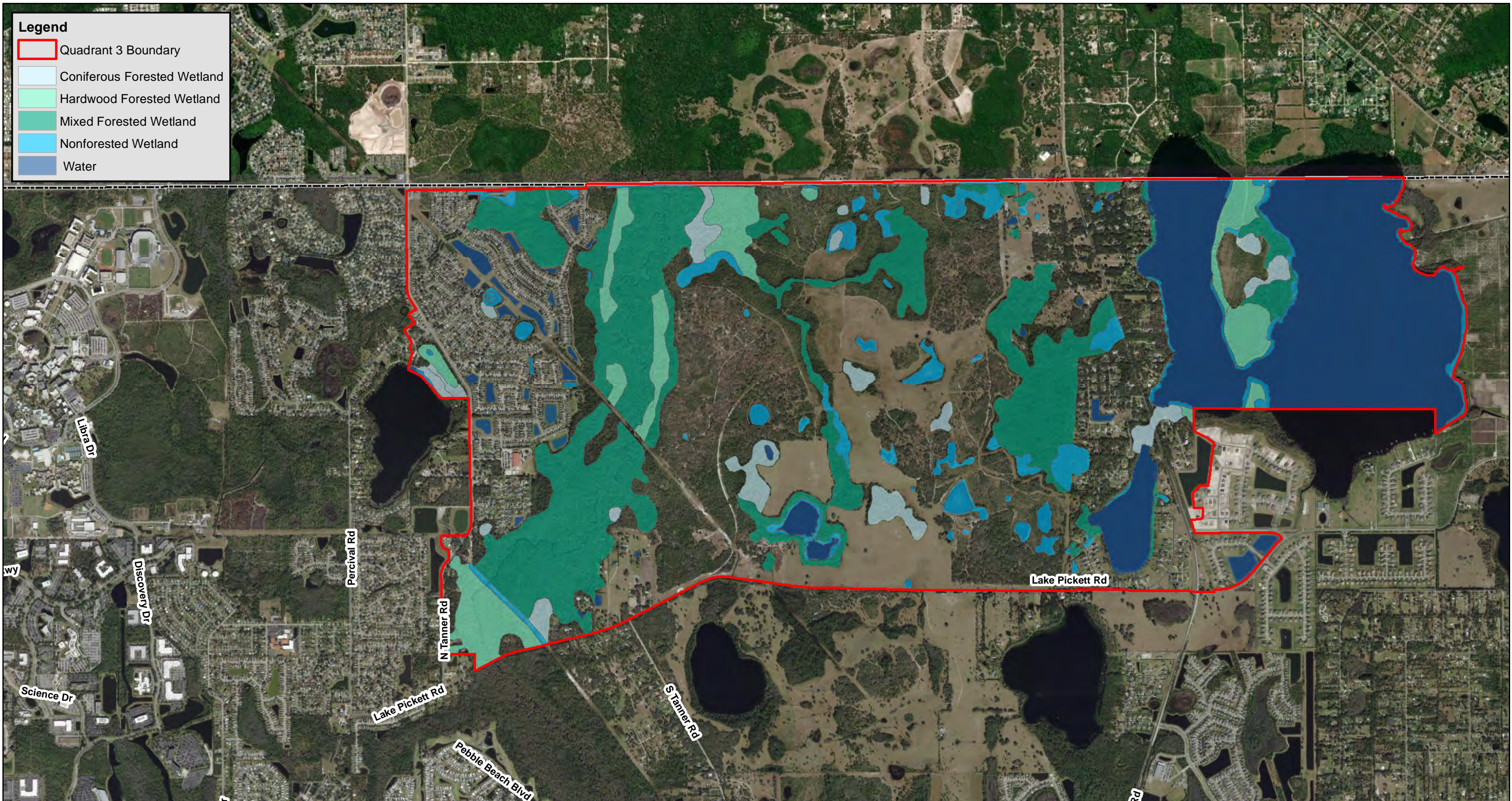
Note: Existing Land Use - SJWMD, Land Use Land Code FLUCFCS, 2016.

NEOCATS - June 2021

0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





**EXHIBIT - 6.7.7**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 3: Wetlands and Surface Waters**

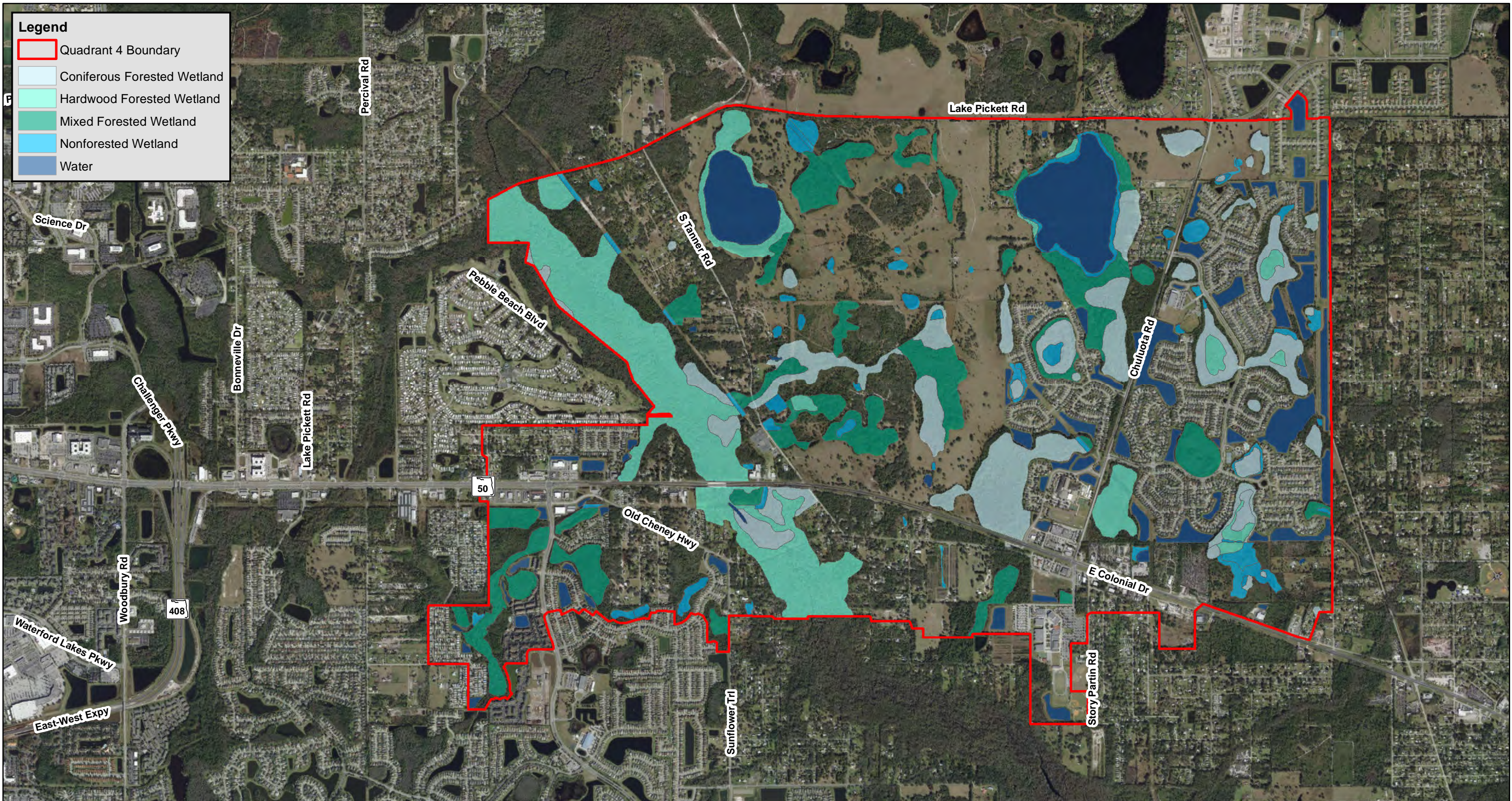
Note: Existing Land Use - SJWMD, Land Use Land Code FLUCFCS, 2016.

NEOCATS - June 2021

0 2,000 4,000 Feet

Source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community






**EXHIBIT - 6.7.8**

**North East Orange County Areawide  
Transportation Study (NEOCATS)**

**Quadrant 4: Wetlands and Surface Waters**

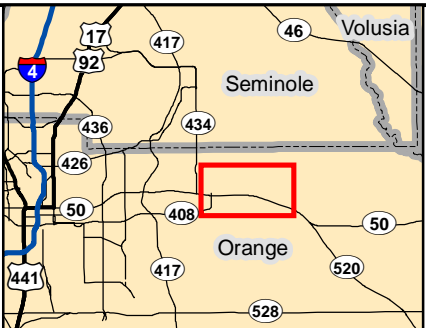
Note: Existing Land Use - SJWMD, Land Use Land Code FLUCFCS, 2016.

NEOCATS - June 2021




0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
Earthstar Geographics, CNES/Airbus DS, USDA, USGS,  
AeroGRID, IGN, and the GIS User Community



N





### 6.7.3 Wetland and Surface Water Qualitative Assessment

Wetlands and surface waters within the overall project study area range in size from 0.08 acres to 1,024.00 acres and include a mixture of urban systems with little to no connectivity, in-tact natural systems, and large, regionally significant systems such as the Econlockhatchee River and its associated floodplains and tributaries. For development and restoration projects in Florida, the methodology generally used to determine the quality of wetlands and surface waters is the Uniform Mitigation Assessment Methodology (UMAM), which is described in detail in Chapter 62-345 of the Florida Administrative Code (FAC).

UMAM includes two parts: a qualitative description (Part I) and a quantification (Part II) for each assessment area. Part I provides a description of the native community type and current condition of the assessment area, including details such as anticipated wildlife usage; potential listed species usage; significant nearby features; uniqueness or rarity of the habitat; and geographic relationship and hydrologic connection with wetlands, other surface waters and uplands. Part II provides quantification of the current (or without mitigation) and anticipated condition (after project) using numerical scoring of the location and landscape support, water environment, and the community structure. Scoring ranges from 0 to 10 per category, where each point represents a 10% change in perceived function of the assessment area compared to the optimal reference habitat. The scores are then applied to the Assessment Area (AA). The AA is the area that is affected by the action and included in the UMAM assessment.

When conducting a qualitative assessment of wetlands and surface waters within the project study area, a full UMAM assessment, without a specific development or restoration project, is premature. However, the identification of regionally significant wetland and surface water features within the project study area is critical to understanding the local ecology as well as potential regulatory requirements that would likely be associated with development in and around these systems. **Tables 6.7.9** through **6.7.12** identify regionally and ecologically significant wetland and surface water features within each quadrant, respectively for Quadrants 1 through 4.



| <b>TABLE 6.7.9 - SIGNIFICANT WETLAND AND SURFACE WATER FEATURES<br/>IN QUADRANT 1</b> |  |
|---|--|
| <b>Q1 Feature</b>   | <b>Comment</b>   |
| Unnamed Tributary of Little Econlockhatchee River                                     | Linear system with associated wetlands/floodplain connecting wetlands and habitats within the UCF Riparian Area to the Little Econ River |
| Unnamed Tributary of Little Econlockhatchee River                                     | Linear system with associated wetlands/floodplain in the UCF McKay Tract that outfalls to the Little Econ River                          |
| Lake Lee  | ~12-acre lake near SR 434 and Research Pkwy  |
| Lake Claire   | ~23-acre lake on the northern portion of UCF campus  |
| Lake Price  | ~77-acre lake west of Tanner Rd in the western portion of Quadrant 1   |
| Lake Ebby   | ~19-acre lake in the northwest portion of Quadrant 1   |

Quadrant 1 has six (6) significant wetland and surface water features. The largest lake, Lake Price, is a private lake served by the Big Econ River Drainage basin and managed by the St. Johns River Water Management District. Lake Lee, Lake Claire, and Lake Ebby are private lakes occurring within the Little Econ Watershed.

| <b>TABLE 6.7.10 - SIGNIFICANT WETLAND AND SURFACE WATER FEATURES<br/>IN QUADRANT 2</b> |   |
|--|---|
| <b>Q2 Feature</b>  | <b>Comment</b>  |
| Unnamed Tributary of Econlockhatchee River   | Linear system with associated wetlands NE of Challenger Pkwy connecting to the Econ River |
| Lake Rouse   | ~27-acre lake with adjacent wetlands due east of SR 434 and Challenger Pkwy intersection  |

Quadrant 2 has two (2) significant wetland and surface water features. The lake located in this quadrant, Lake Rouse, is a private lake within the Little Econ Watershed.



| <b>TABLE 6.7.11 - SIGNIFICANT WETLAND AND SURFACE WATER FEATURES<br/>IN QUADRANT 3</b> |  |
|--|--|
| <b>Q3 Feature</b>  | <b>Comment</b>   |
| Econlockhatchee River and associated tributaries                                       | Major river system with associated wetlands and floodplain. Serves as the primary wildlife corridor bisecting the project study area |
| Lake Pickett   | Large lake system connected to Lake Drawdy and Corner Lake (Quad. 4).  |
| Lake Drawdy  | ~50-acre lake connected to Lake Pickett  |
| Lake Paxton  | ~11-acre lake connected to Econ River  |

Quadrant 3 has four (4) significant wetland and surface water features. The Econlockhatchee River spans beyond this quadrant and is 44.7 miles long. The river's headwaters are an unnamed swamp located west of South County Road 13. Lake Pickett, Lake Drawdy, and Lake Paxton are private lakes within the Big Econ Watershed.

| <b>TABLE 6.7.12 - SIGNIFICANT WETLAND AND SURFACE WATER FEATURES<br/>IN QUADRANT 4</b> |  |
|--|--|
| <b>Q4 Feature</b>  | <b>Comment</b>   |
| Econlockhatchee River and associated tributaries                                       | Major river system with associated wetlands and floodplain. Serves as the primary wildlife corridor bisecting the project study area |
| Lake Tanner  | ~57-acre lake located in rural section in central portion of Quadrant 4  |
| Corner Lake  | ~95-acre lake and associated wetlands in northern section of Quadrant 4  |

Quadrant 4 has three (3) significant wetland and surface water features. A segment of the 44.7-mile-long Econlockhatchee River exists within this quadrant. Lake Tanner and Corner Lake are both private lakes within the Big Econ Watershed.



#### 6.7.4 Conservation Easements and Public Lands

There are 127 conservation and/or regulatory easements, not including areas recorded by plat, within the project study area. **Tables 6.7.13** through **6.7.15** provide an overview of public lands located in each quadrant. These easements are included for Quadrants 1, 3, and 4 in **Exhibits 6.7.9** through **6.7.11** and include: all or portions of major wetland systems within the project study area, including the Econlockhatchee River, Lake Pickett, Lake Drawdy; several unnamed wetland systems associated with major tributaries to the Econlockhatchee and Little Econlockhatchee River; and smaller easements associated with various development projects within the area. There are several parcels within public ownership that are shown in the aforementioned map series.

| <b>TABLE 6.7.13 - PUBLIC LANDS IN QUADRANT 1</b> |                                |                              |
|--|--------------------------------|------------------------------|
| <b>Map Label</b>                                 | <b>Parcel Name</b>             | <b>Owner/Managing Entity</b> |
| 1  | UCF Arboretum                  | UCF                          |
| 2  | UCF East Parcel                | UCF                          |
| 3  | UCF Lake Lee                   | UCF                          |
| 4  | UCF McKay Tract                | UCF                          |
| 5  | UCF Northwest Parcel           | UCF                          |
| 6  | UCF Natural Area               | UCF                          |
| 7  | UCF Pond Pine                  | UCF                          |
| 8  | UCF Riparian Area              | UCF                          |
| 9  | UCF Student Union Cypress Dome | UCF                          |

Quadrant 1 has the largest number of public land parcels of the four quadrants within the project study area. Each of the nine (9) parcels of public lands within Quadrant 1 are owned by UCF. The majority of the public lands in Quadrant 1 are natural areas that may include hiking trails on or near the UCF campus. There are no public lands in Quadrant 2.

| <b>TABLE 6.7.14 - PUBLIC LANDS IN QUADRANT 3</b> |  |                              |
|--|--|------------------------------|
| <b>Map Label</b>                                 | <b>Parcel Name</b>                           | <b>Owner/Managing Entity</b> |
| 10*  | Ken Bosserman Econlockhatchee River Preserve | Orange Co.                   |
| 11   | Rybolt Property                              | SJRWMD and Orange Co.        |

\*Parcel is located within both Quadrants 3 & 4



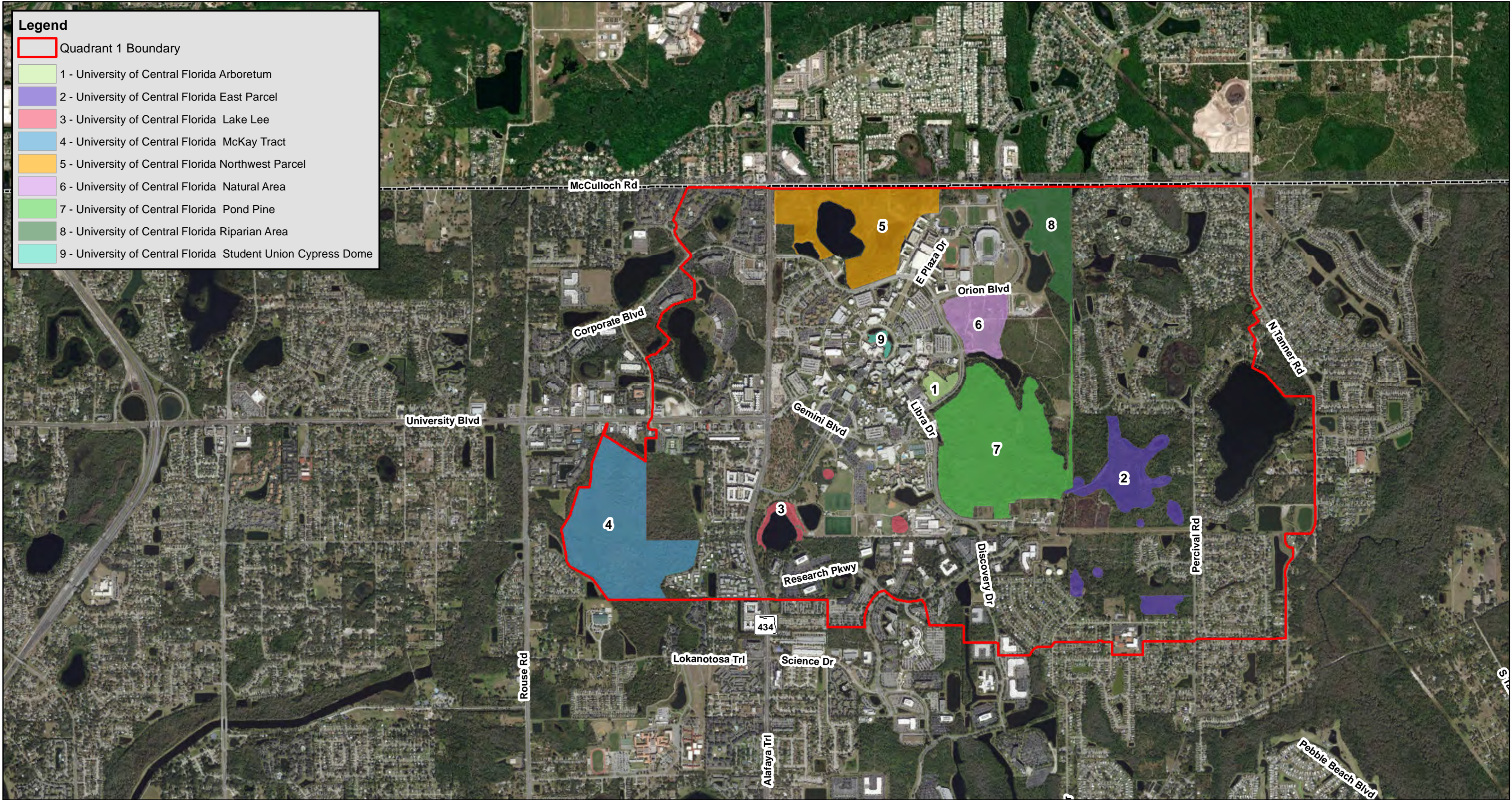
Quadrant 3 includes two (2) parcels that contain public lands. Orange County owns the Ken Bosserman Econlockhatchee River Preserve located in the quadrant's southwest corner. The St. John's River Water Management District (SJRWMD) and Orange County jointly own (SJRWMD 91.1% interest/Orange County 8.9% interest) the Rybolt Property located in the western portion of Quadrant 3, spanning from the northern border to the southern border of the quadrant.

| <b>TABLE 6.7.15 - PUBLIC LANDS IN QUADRANT 4</b> |  |                              |
|--|--|------------------------------|
| <b>Map Label</b>                                 | <b>Parcel Name</b>                           | <b>Owner/Managing Entity</b> |
| 10*  | Ken Bosserman Econlockhatchee River Preserve | Orange Co.                   |
| 12   | Evans Property                               | Orange Co.                   |
| 13   | Nunnally Property                            | Orange Co.                   |

\*Parcel is located within both Quadrants 3 & 4

Quadrant 4 includes three (3) parcels of public land. Orange County owns each of the public land parcels within this quadrant. The Ken Bosserman Econlockhatchee River Preserve is in the quadrant's northwest corner. The Evans Property and the Nunnally Property are adjacent to each other in the quadrant's southern central portion.





**EXHIBIT - 6.7.9**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 1: Conservation Easements and Public Lands**

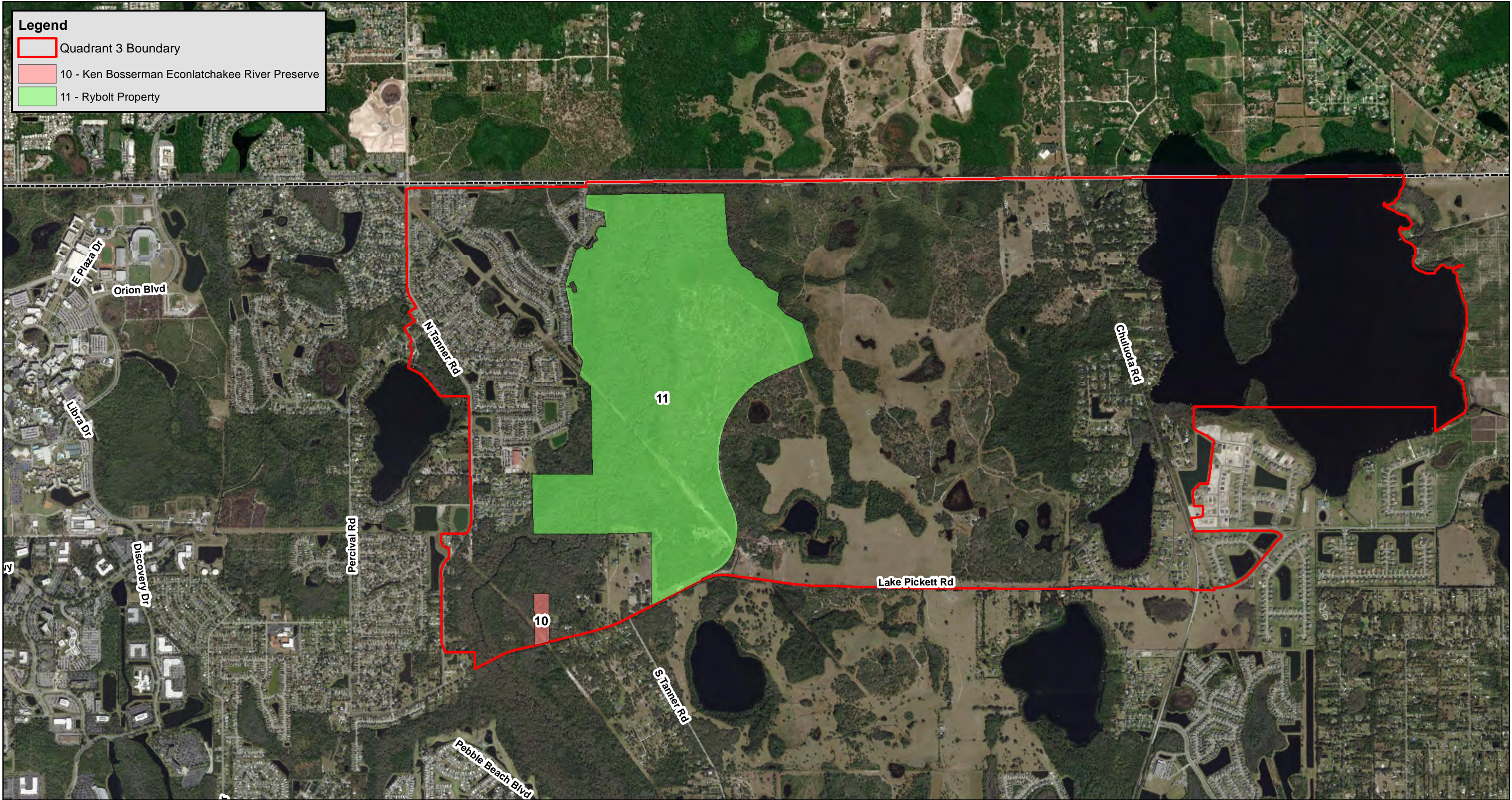
Note: Conservation Easement and Public Land - Florida Natural Areas Inventory, FLMA 2020

NEOCATS - June 2021

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 2,000 4,000 Feet  
N






**EXHIBIT - 6.7.10**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 3: Conservation Easements and Public Lands**

Note: Conservation Easement and Public Land - Florida Natural Areas Inventory, FLMA 2020

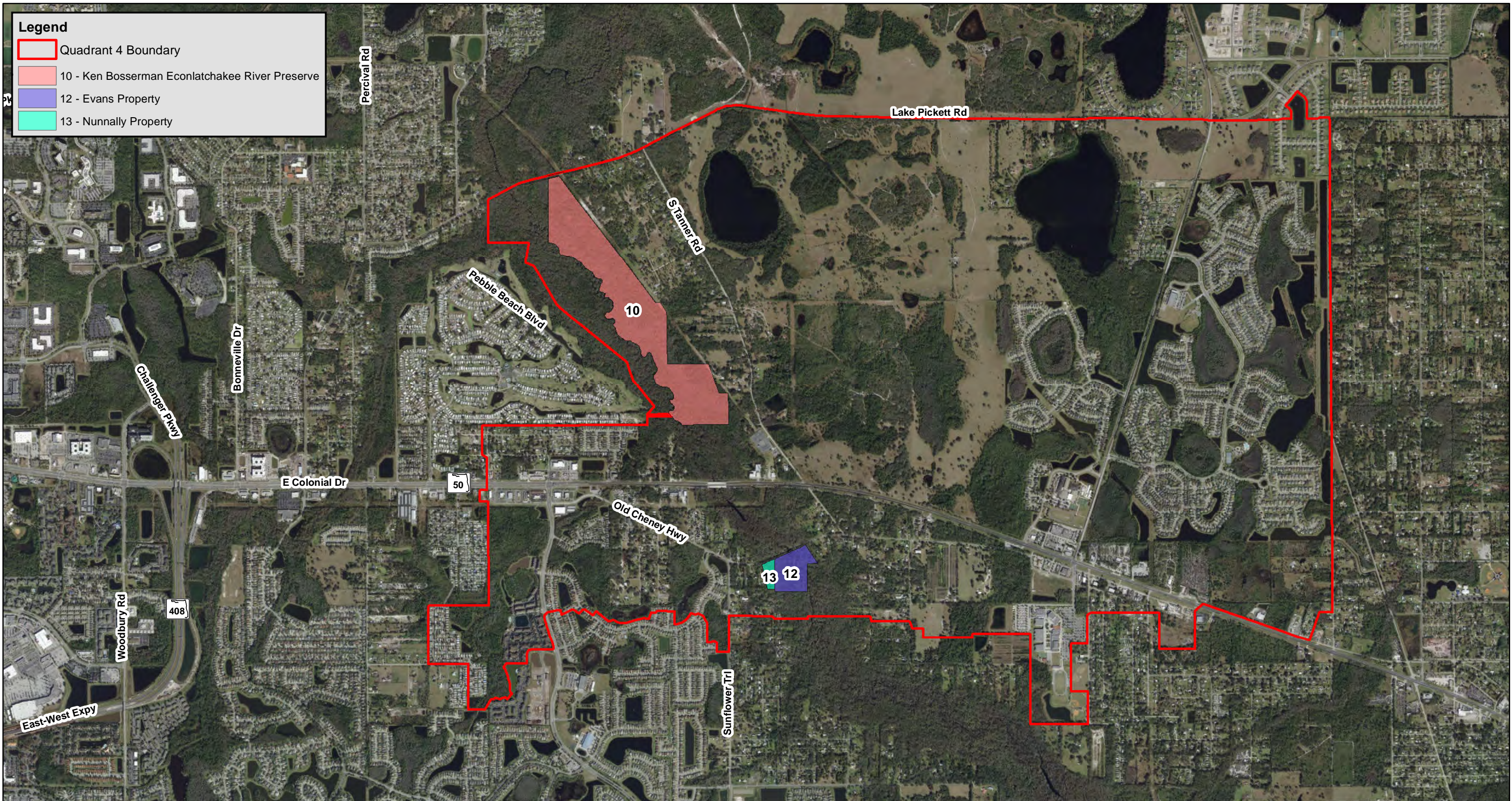
NEOCATS - June 2021

 **ORANGE COUNTY GOVERNMENT FLORIDA**

0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





**EXHIBIT - 6.7.11**

### North East Orange County Areawide Transportation Study (NEOCATS)

#### Quadrant 4: Conservation Easements and Public Lands

Note: Conservation Easement and Public Land - Florida Natural Areas Inventory, FLMA 2020

NEOCATS - June 2021

N

02,0004,000

Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



### 6.7.5 Wildlife Crossings and Habitat Connectivity

Roads can have negative impacts on wildlife, most notably through habitat fragmentation and genetic isolation. Vehicle traffic on roads can lead to wildlife-vehicle collisions and roadkill, which may imperil local wildlife populations. Improved habitat connectivity, road permeability, and deterrents onto roads are all important factors when developing mitigation strategies for wildlife on future road projects. Roads have also surpassed hunting as the leading direct cause of wildlife mortality (Forman and Alexander 1998), particularly among amphibians and reptiles, large mammal species with low reproductive rates and large home ranges, and more mobile bird species (Smith and Dodd 2003, Rytwinski and Fahrig 2011, Rytwinski and Fahrig 2012, Smith et al. 2015). Consequently, roads pose a major obstacle to habitat and wildlife conservation.

In reviewing the existing transportation infrastructure within the project study area, seven locations were identified as having the potential to warrant a wildlife crossing or habitat connectivity enhancements. The wildlife crossing and habitat connectivity enhancement recommendations for Quadrants 2, 3, and 4 are provided in **Exhibits 6.7.12** through **6.7.14**.

In Quadrant 1 there were no identified locations for potential wildlife crossings.

Quadrant 2 contains two (2) locations with the potential to warrant wildlife crossings or connectivity enhancements (**Exhibit 6.7.12**): Challenger Parkway north of Woodbury Road and SR 50 over Econlockhatchee Tributary west of Hancock Lone Palm Road.

1. Challenger Parkway north of Woodbury Road

Challenger Parkway bisects a large, forested wetland system north of SR 50 that is under a conservation easement. As a major roadway corridor, Challenger Parkway constitutes a substantial impediment to terrestrial wildlife movement. Retrofit improvements such as wildlife shelves within existing cross drains could serve to reduce roadkill and improve the overall permeability of the roadway for wildlife.

2. SR 50 over Econlockhatchee Tributary west of Hancock Lone Palm Road

This wetland system serves as one of the few wildlife corridors crossing SR 50 within the project study area. Improvements to SR 50 and/or work on the existing stream crossing to include increased accommodations for wildlife movement are recommended.

Quadrant 3 has three (3) locations with the potential to warrant wildlife crossings or connectivity enhancements (**Exhibit 6.7.13**): Chuluota Road north of Countrybrook Lane and Lake Pickett Road over the Econlockhatchee River.

3. Lake Pickett Road over the Econlockhatchee River

The Econlockhatchee River and its associated wetlands, floodplain, and riparian areas constitute the largest and most significant wildlife corridor within the project study area,



including the Ken Bosserman Econlockhatchee River Preserve (owned by Orange County) and the Rybolt Property (owned jointly by SJRWMD and Orange County). The Econlockhatchee connects major conservation lands to the south of the project study area such as Hal Scott Preserve, Long Branch Park, and the TM Econ Mitigation Bank to northern preserves such as the Econ River Wilderness Area, Little Big Econ State Forest, and the St. Johns River. Wildlife movement within the corridor would benefit from added habitat connectivity if capacity improvements to Lake Pickett Road at the crossing over the Econlockhatchee River are proposed. This wildlife crossing is on the border of both Quadrants 3 and 4.

4. Chuluota Road north of Countrybrook Lane

Lake Pickett consists of a large open water and wetland habitat with limited connectivity for terrestrial species attempting to access the mosaic of wetland and upland habitat to the west. Several habitat connectivity enhancement locations occur at existing cross drains between Lake Pickett Court and north of Countrybrook Lane.

5. Lake Pickett Road between the Rybolt Property and Chuluota Road

This location was identified to increase the permeability of the Lake Pickett Road corridor for small species. The location is not specific. However, the overall location within an undeveloped area with a mixture of upland and wetland habitats is ideal for numerous species. It is recommended that future improvements to Lake Pickett Road consider one or more habitat connectivity enhancements to increase permeability of the roadway corridor for smaller species. This wildlife crossing is on the border of both Quadrants 3 and 4.

Quadrant 4 contains two (2) locations, in addition to locations 3 and 5 which lie on the border between Quadrants 3 and 4, which have the potential to warrant wildlife crossings or connectivity enhancements **(Exhibit 6.7.14)**: S. Tanner Road north of SR 50 and SR 50 over the Econlockhatchee River.

6. South Tanner Road north of SR 50

This location provides an opportunity to facilitate wildlife movement east and west across Tanner Road, connecting habitat abutting the Ken Bosserman Econlockhatchee River Preserve with undeveloped wetland and upland systems on the east side of Tanner Rd.

7. SR 50 over the Econlockhatchee River

As stated above, the Econlockhatchee River is the most significant wildlife corridor within the project study area. Constraints, such as roadway crossings, often serve as a bottleneck for wildlife, especially terrestrial species attempting to cross during the wetter months when the river is above its normal stage. If future bridge work is required, lengthening the bridges to also include riparian areas for wildlife to cross is recommended. Additional options include wildlife shelves to facilitate usage by terrestrial species year-round.



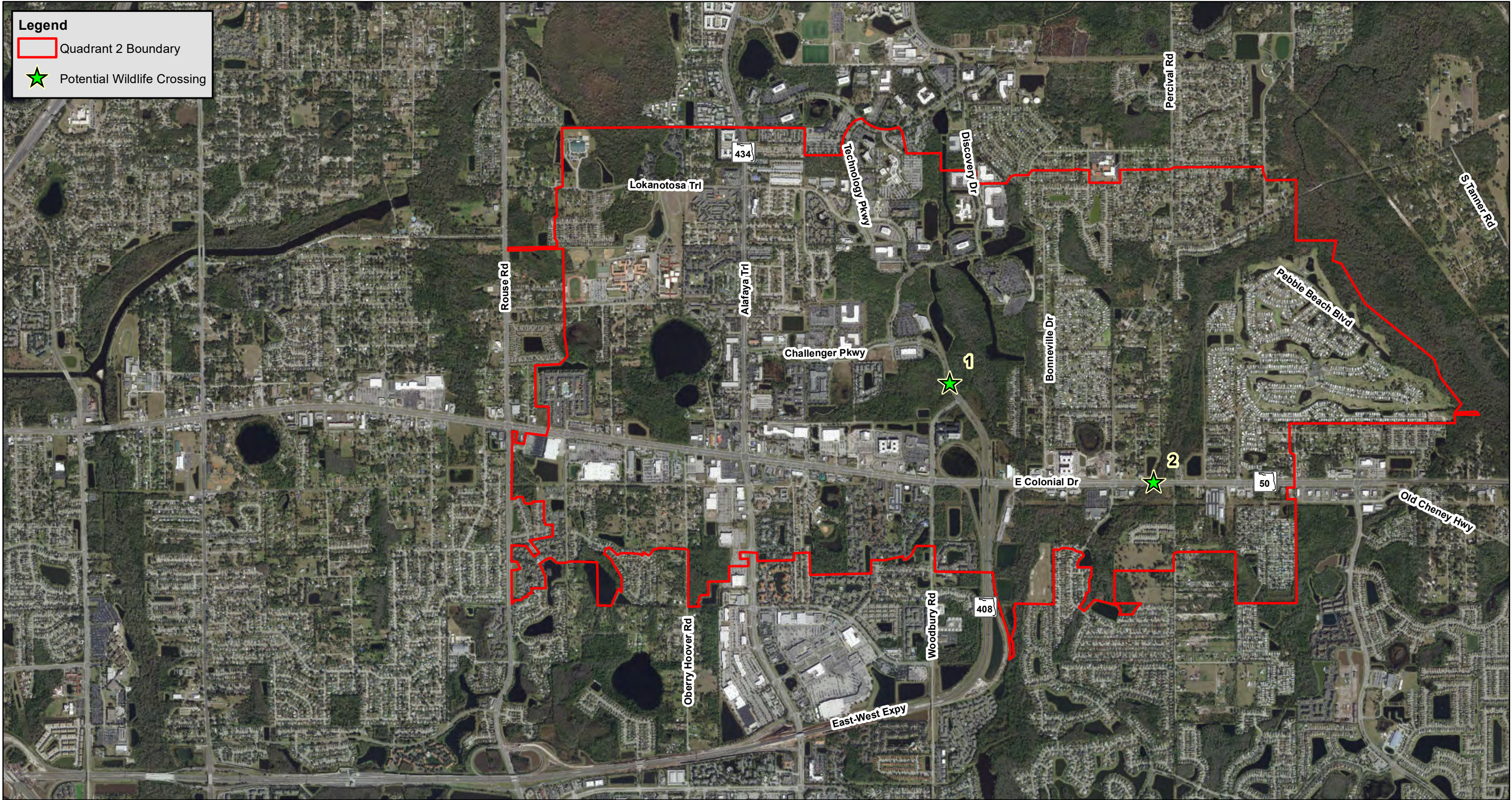
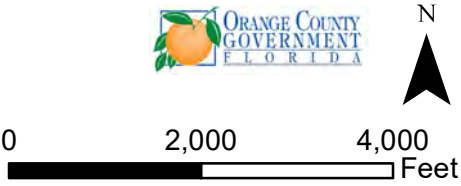
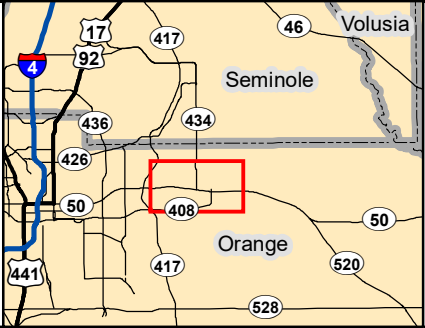


EXHIBIT - 6.7.12

**North East Orange County Areawide  
Transportation Study (NEOCATS)**

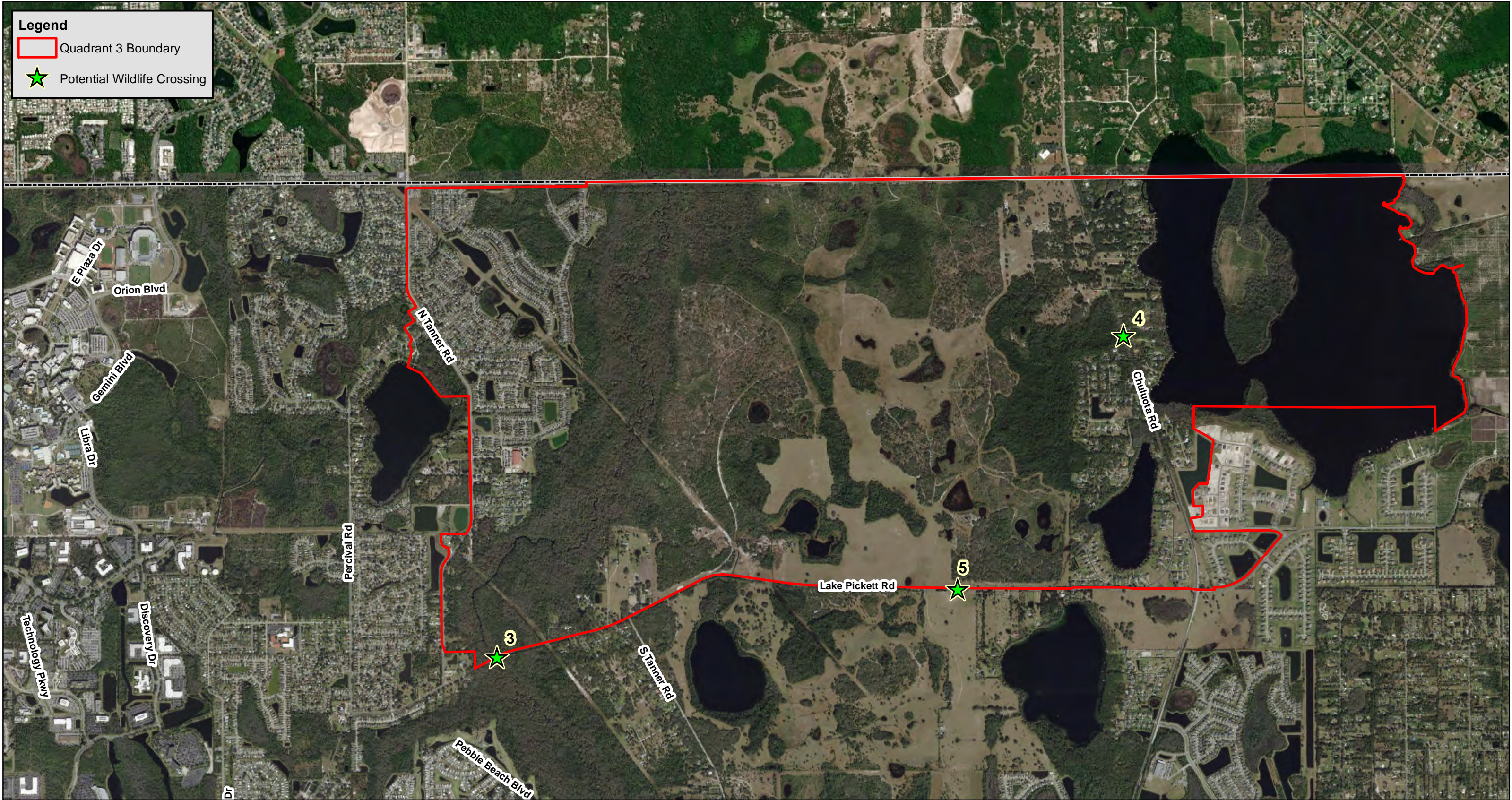
**Quadrant 2: Potential Wildlife Crossings**

NEOCATS - June 2021



Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
Earthstar Geographics, CNES/Airbus DS, USDA, USGS,  
AeroGRID, IGN, and the GIS User Community





**EXHIBIT - 6.7.13**

**North East Orange County Areawide  
Transportation Study (NEOCATS)**

Quadrant 3: Potential Wildlife Crossings

NEOCATS - June 2021

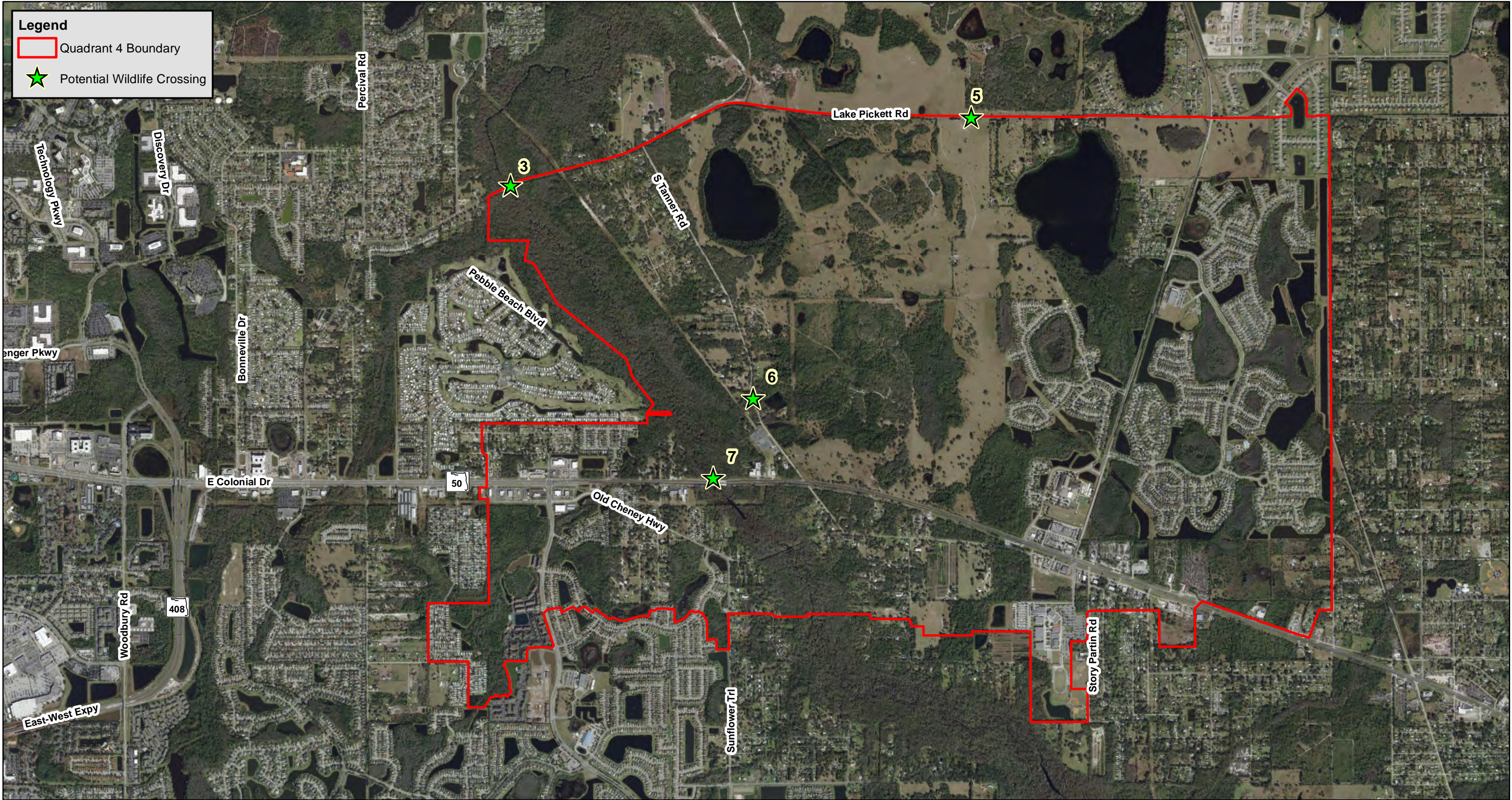
The inset map shows the location of Quadrant 3 within Orange County, Florida. It highlights the county's boundaries and major roads, with a red box indicating the specific area shown in the main map. The map includes labels for Volusia, Seminole, and Orange counties, as well as various road numbers like 17, 92, 417, 436, 434, 426, 50, 408, 520, 528, 441, and 46.

ORANGE COUNTY GOVERNMENT FLORIDA

0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
Earthstar Geographics, CNES/Airbus DS, USDA, USGS,  
AeroGRID, IGN, and the GIS User Community





**EXHIBIT - 6.7.14**

**North East Orange County Areawide Transportation Study (NEOCATS)**

**Quadrant 4: Potential Wildlife Crossings**

NEOCATS - June 2021

The inset map shows the entire Orange County, Florida, with major highways and surrounding areas like Volusia and Seminole counties. A red rectangle highlights the specific area covered by the main map, located in the north-eastern part of the county near the intersection of US-408 and US-50.

0 2,000 4,000 Feet

Source:  
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



## 6.8 Threatened and Endangered Species

A Threatened and Endangered Species Assessment was conducted using GIS data collected from sources listed in Section 6.7. The term “protected species” refers to those protected by law, regulation, or rule. Species included in the assessment included those identified in the Endangered Species Act (ESA) of 1973, as amended; the Florida Endangered and Threatened Species Act, Section 379.2291, Florida Statutes, and the Florida Regulated Plant Index (58-40.0055, FAC).

### 6.8.1 Potentially Occurring Protected Species

A total of fifty-one (51) protected species have the potential to occur within the project study area. These include twelve (12) avian, two (2) mammal, five (5) reptile, and thirty-two (32) plant species, all of which are included below in **Table 6.8.1**. Because the ranges of these species extend well beyond the project study area, the assessment was conducted for the study area as a whole since each quadrant has potential to support protected species. However, a map depicting the potential for Endangered Species for each of the Quadrants is provided in **Exhibits 6.8.1** through **6.8.4**, respectively for Quadrants 1 through 4.

Ecologists determine a species’ potential occurrence in the study area based on its habitat preferences and distributions, existing site conditions, and historical data, when available. The likelihood of occurrence was rated as low, moderate, or high. A low rating indicates that the species occurs in Orange County, but suitable habitat is not present within the study area and the species has not been observed or documented within the study area. A moderate rating indicates that the species occurs in Orange County, suboptimal habitat or limited suitable habitat occurs within the study area, but the species has not been documented within the study area. A high rating indicates that the species occurs within Orange County, suitable habitat is present within the study area and the species is suspected to occur or has been previously documented within the study area.



**TABLE 6.8.1 - LISTED SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT STUDY AREA**

| Group    | Scientific Name                       | Common Name                   | USFWS   | FWC | FDACS | Potential Occurrence |
|----------|---------------------------------------|-------------------------------|---------|-----|-------|----------------------|
| Avian    | <i>Ajaia ajaja</i>                    | Roseate Spoonbill             |         | T   |       | Low                  |
|          | <i>Aphelocoma coerulescens</i>        | Florida Scrub-Jay             | T       |     |       | Low                  |
|          | <i>Athene cunicularia floridana</i>   | Florida Burrowing Owl         |         | T   |       | Low                  |
|          | <i>Egretta caerulea</i>               | Little Blue Heron             |         | T   |       | High                 |
|          | <i>Egretta tricolor</i>               | Tricolor Heron                |         | T   |       | High                 |
|          | <i>Falco sparverius paulus</i>        | Southeastern American Kestrel |         | T   |       | High                 |
|          | <i>Grus canadensis</i>                | Sandhill Crane                | MBTA    | T   |       | High                 |
|          | <i>Haliaeetus leucocephalus</i>       | Bald Eagle                    | BGEPA   |     |       | High                 |
|          | <i>Mycteria americana</i>             | Wood Stork                    | T       |     |       | High                 |
|          | <i>Pandion haliaetus</i>              | Osprey                        | MBTA    | M   |       | High                 |
|          | <i>Picoides borealis</i>              | Red-Cockaded Woodpecker       | E       |     |       | Moderate             |
|          | <i>Polyborus plancus</i>              | Audubon's Crested Caracara    | T       |     |       | Moderate             |
| Mammal   | <i>Rostrhamus sociabilis plumbeus</i> | Everglade Snail Kite          | E       |     |       | Low                  |
|          | <i>Trichechus manatus latirostris</i> | West Indian Manatee           | T       |     |       | N/A                  |
| Reptiles | <i>Ursus americanus floridanus</i>    | Florida Black Bear            |         | M   |       | High                 |
|          | <i>Alligator mississippiensis</i>     | American Alligator            | T (S/A) |     |       | High                 |
|          | <i>Drymarchon corais couperi</i>      | Eastern Indigo Snake          | T       |     |       | High                 |



**TABLE 6.8.1 - LISTED SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT STUDY AREA**

| Group              | Scientific Name                   | Common Name              | USFWS | FWC | FDACS | Potential Occurrence |
|--------------------|-----------------------------------|--------------------------|-------|-----|-------|----------------------|
|                    | <i>Gopher polyphemus</i>          | Gopher Tortoise          | C     | T   |       | High                 |
|                    | <i>Pituophis melanoleucus</i>     | Florida Pine Snake       |       | T   |       | Moderate             |
|                    | <i>Stilosoma extenuatum</i>       | Short-Tailed Snake       |       | T   |       | Low                  |
| Plants and Lichens | <i>Bonamia grandiflora</i>        | Florida Bonamia          | T     |     | E     |                      |
|                    | <i>Calopogon multiflorus</i>      | Many-Flowered Grass-Pink |       |     | T     |                      |
|                    | <i>Centrosema arenicola</i>       | Sand Butterfly Pea       |       |     | E     |                      |
|                    | <i>Chionanthus pygmaeus</i>       | Pygmy Fringe Tree        | E     |     | E     |                      |
|                    | <i>Clitoria fragrans</i>          | Scrub Pigeon-Wing        | T     |     | E     |                      |
|                    | <i>Coelorachis tuberculosa</i>    | Piedmont Jointgrass      |       |     | T     |                      |
|                    | <i>Coleataenia abscissa</i>       | Cutthroatgrass           |       |     | E     |                      |
|                    | <i>Deeringothamnus pulchellus</i> | Beautiful Pawpaw         | E     |     | E     |                      |
|                    | <i>Eriogonum floridanum</i>       | Scrub Buckwheat          | T     |     | E     |                      |
|                    | <i>Glandularia tampensis</i>      | Tampa Vervain            |       |     | E     |                      |
|                    | <i>Illicium parviflorum</i>       | Star-Anise               |       |     | E     |                      |
|                    | <i>Salix floridana</i>            | Florida Willow           |       |     | E     |                      |
|                    | <i>Schizachyrium niveum</i>       | Scrub Bluestem           |       |     | E     |                      |
|                    | <i>Lechea cernua</i>              | Nodding Pinweed          |       |     | T     |                      |
|                    | <i>Lechea divaricate</i>          | Pine Pinweed             |       |     | E     |                      |
|                    | <i>Lupinus aridorum</i>           | Scrub Lupine             | E     |     | E     |                      |
|                    | <i>Matelea floridana</i>          | Florida Spiny-Pod        |       |     | E     |                      |



**TABLE 6.8.1 - LISTED SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT STUDY AREA**

| Group | Scientific Name                                   | Common Name              | USFWS | FWC | FDACS | Potential Occurrence |
|-------|---|--------------------------|-------|-----|-------|----------------------|
|       | <i>Monotropa hypopithys</i>                       | Pinesap                  |       |     | E     |                      |
|       | <i>Najas filifolia</i>                            | Narrowleaf Naiad         |       |     | T     |                      |
|       | <i>Nemastylis floridana</i>                       | Celestial Lily           |       |     | E     |                      |
|       | <i>Nolina atopocarpa</i>                          | Florida beargrass        |       |     | T     |                      |
|       | <i>Nolina brittoniana</i>                         | Britton's Beargrass      | E     |     | E     |                      |
|       | <i>Ophioglossum palmatum</i>                      | Hand Fern                |       |     | E     |                      |
|       | <i>Paronychia chartacea</i> var. <i>chartacea</i> | Paper-Like Nailwort      | T     |     | E     |                      |
|       | <i>Pecluma plumula</i>                            | Plume Polypody           |       |     | E     |                      |
|       | <i>Platanthera integra</i>                        | Yellow Fringeless Orchid |       |     | E     |                      |
|       | <i>Polygonella myriophylla</i>                    | Small's Jointweed        | E     |     | E     |                      |
|       | <i>Prunus geniculata</i>                          | Scrub Plum               | E     |     | E     |                      |
|       | <i>Pteroglossaspis ecristata</i>                  | Giant Orchid             |       |     | T     |                      |
|       | <i>Stylisma abdita</i>                            | Scrub Stylisma           |       |     | E     |                      |
|       | <i>Warea amplexifolia</i>                         | Clasping Warea           | E     |     | E     |                      |
|       | <i>Zephyranthes simpsonii</i>                     | Redmargin Zephyrlily     |       |     | T     |                      |

E = Endangered; T = Threatened; M = Managed; C = Candidate

BGEPA = Bald and Golden Eagle Protection Act

MBTA = Migratory Bird Treaty Act

T (S/A) = Threatened Due to similarity of Appearance

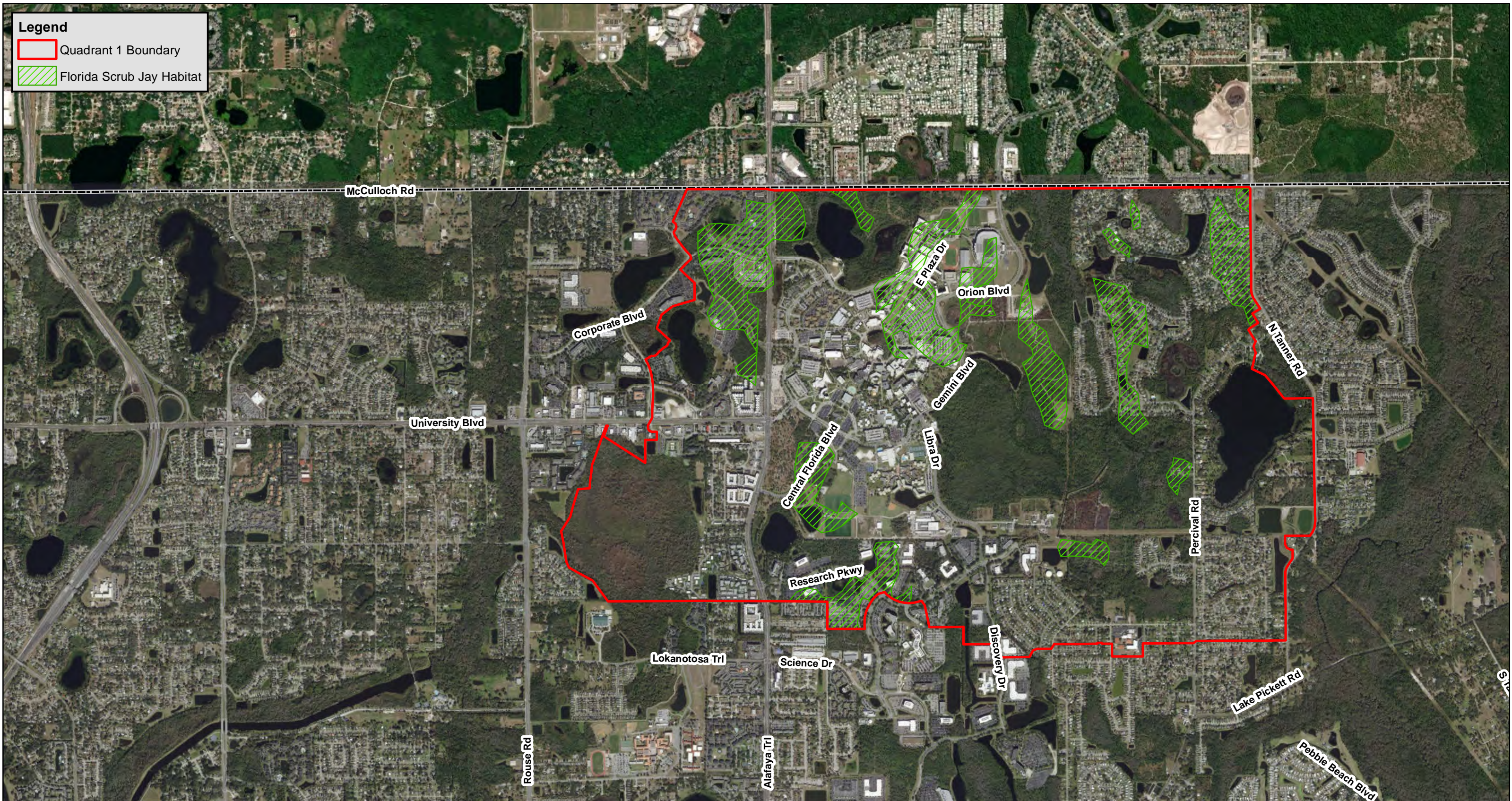
N/A = Not Applicable due to lack of habitat

USFWS = United States Fish and Wildlife Service

FWC = Florida Fish and Wildlife Conservation Commission

FDACS = Florida Department of Agriculture and Consumer Services





**EXHIBIT - 6.8.1**

Note: Bald Eagle Nest and 660 ft Buffer  
 FWC 2016 Historic Scrub Jay Habitat - FWC, 1992-1993.  
 Portion of CA for Caracara and Red Cockaded Woodpecker  
 CA for Everglade Snail Kite  
 Portions contain Wood Stork CFA, all within SFH

**North East Orange County Areawide  
 Transportation Study (NEOCATS)**

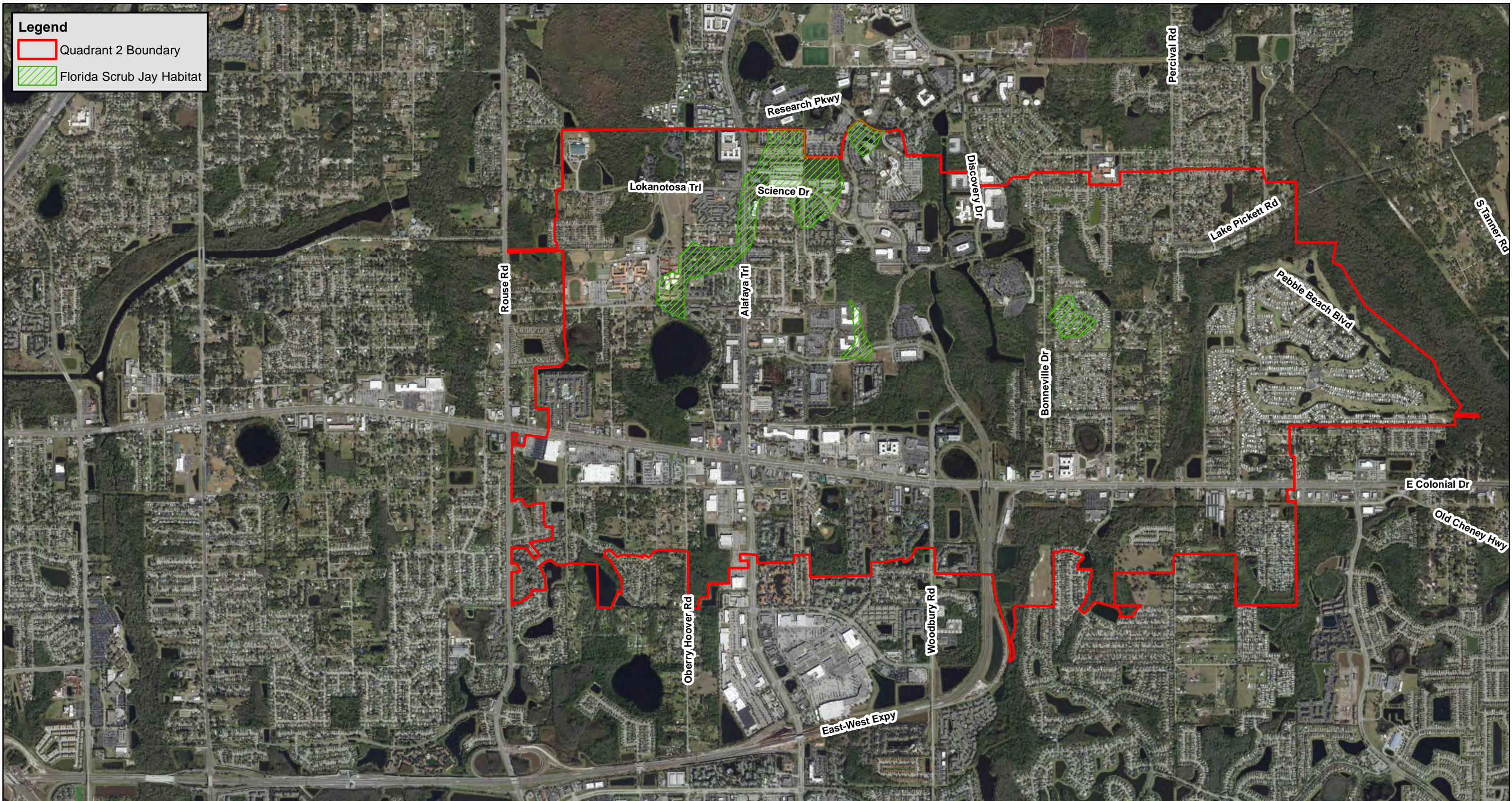
**Quadrant 1: Threatened and Endangered Species**

NEOCATS - June 2021

0 2,000 4,000 Feet

Source:  
 Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
 Earthstar Geographics, CNES/Airbus DS, USDA, USGS,  
 AeroGRID, IGN, and the GIS User Community





**EXHIBIT - 6.8.2**

Note: Historic Scrubjay Habitat - FWC, 1992-1993. Rev 2018  
 Portion of CA for Caracara  
 CA for Everglade Snail Kite and Red Cockaded Woodpecker  
 Portions contain Wood Stork CFA, all within SFH

**North East Orange County Areawide  
 Transportation Study (NEOCATS)**

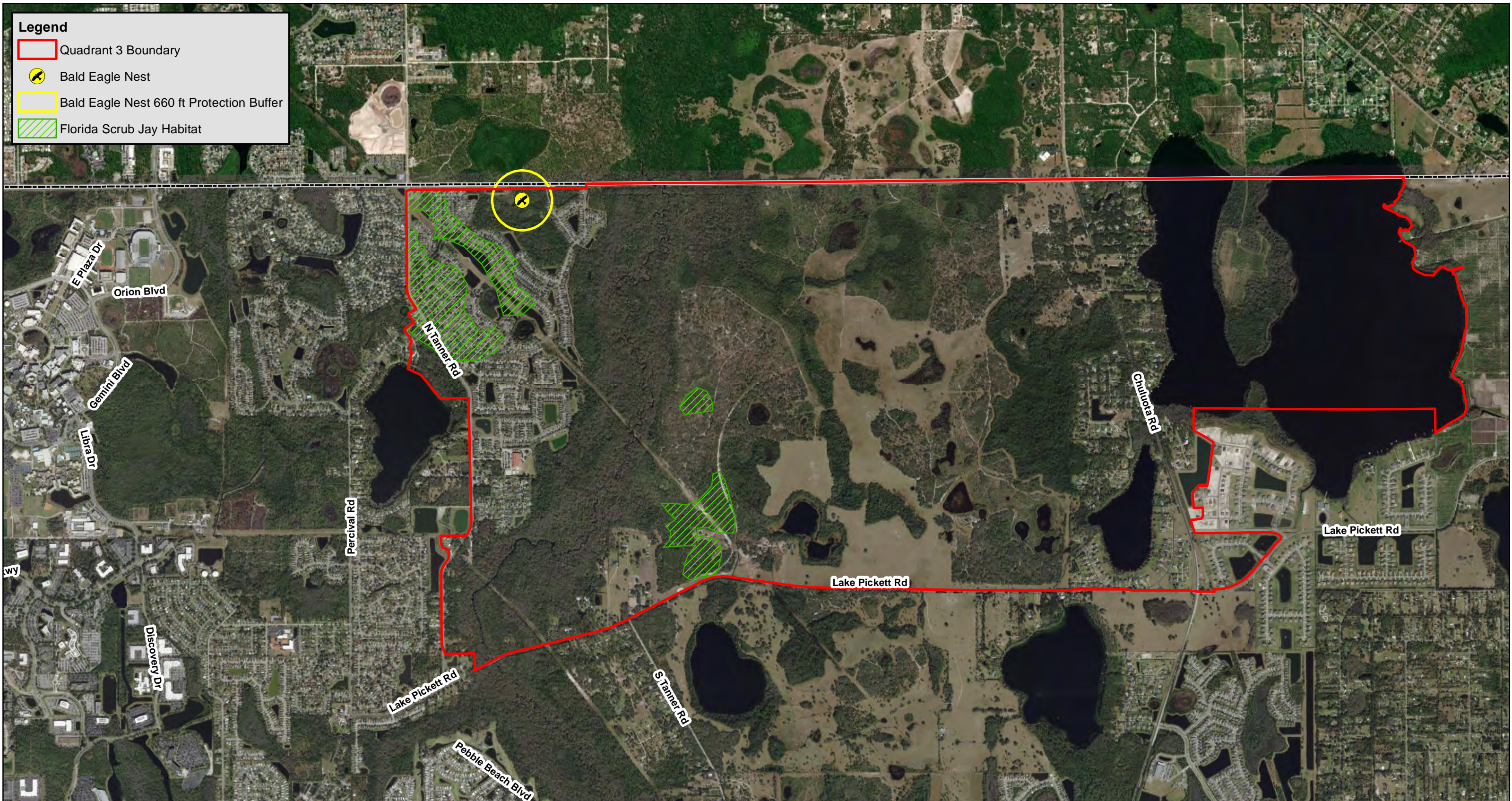
**Quadrant 2: Threatened and Endangered Species**

NEOCATS - June 2021

0 2,000 4,000 Feet

Source:  
 Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
 Earthstar Geographics, CNES/Airbus DS, USDA, USGS,  
 AeroGRID, IGN, and the GIS User Community





### EXHIBIT - 6.8.3

Note: Bald Eagle Nest and 660 ft Buffer - FWC 2016  
 Historic Scrub Jay Habitat - FWC, 1992-1993.  
 Portion of CA for Red Cockaded Woodpecker  
 CA for Caracara, Everglade Snail Kite  
 Portions contain Wood Stork CFA, all within SFH

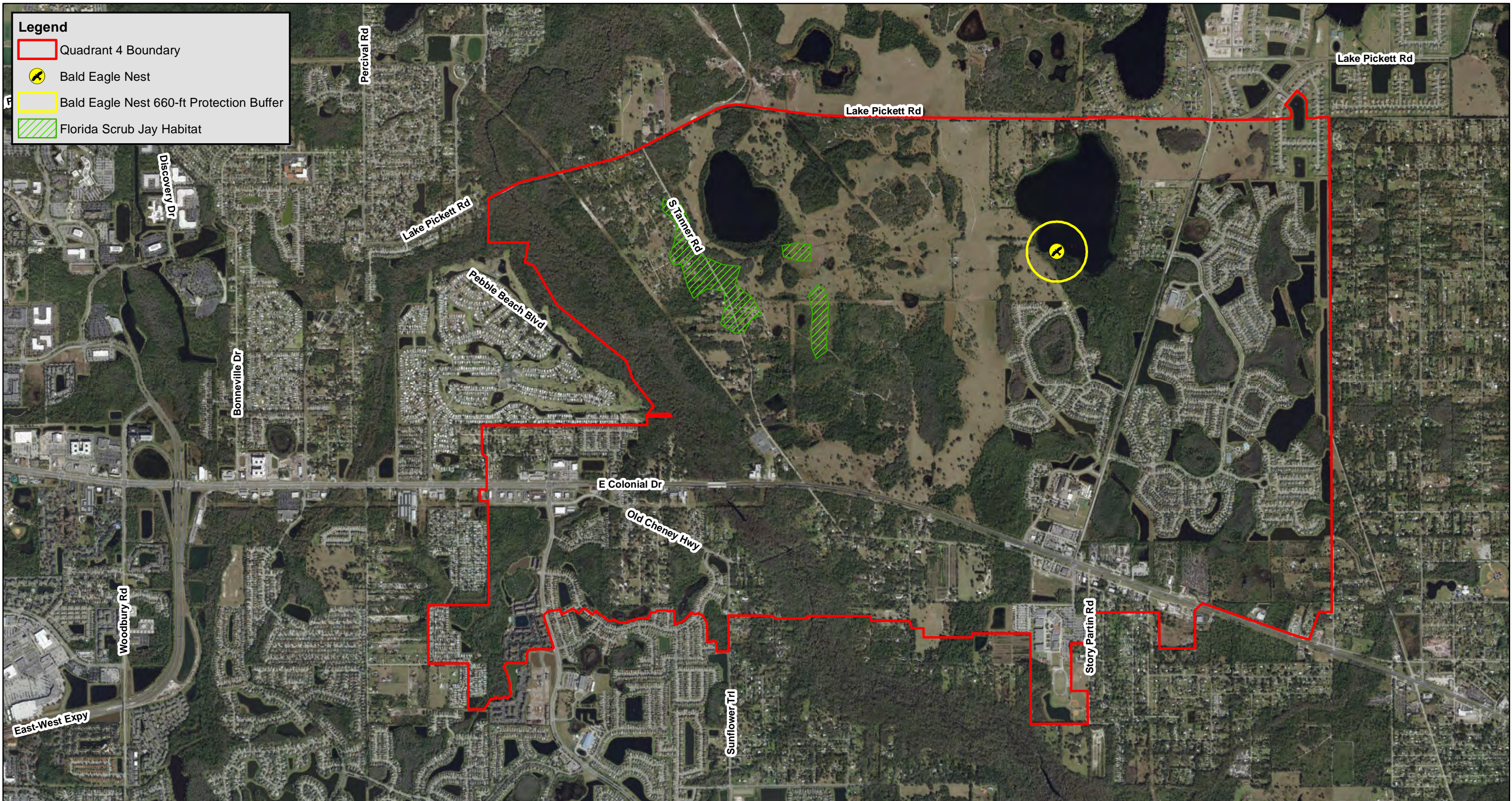
## North East Orange County Areawide Transportation Study (NEOCATS)

### Quadrant 3: Threatened and Endangered Species

NEOCATS - June 2021

Source:  
 Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
 Earthstar Geographics, CNES/Airbus DS, USDA, USGS,  
 AeroGRID, IGN, and the GIS User Community





# EXHIBIT - 6.8.4

Note: Bald Eagle Nest and 660 ft Buffer  
 FWC 2016 Historic Scrub Jay Habitat - FWC, 1992-1993.  
 CA for Caracara, Everglade Snail Kite, Red Cockaded Woodpecker  
 Portions contain Wood Stork CFA, all within SFH

## North East Orange County Areawide Transportation Study (NEOCATS)

### Quadrant 4: Threatened and Endangered Species

NEOCATS - June 2021

0 2,000 4,000 Feet

Source:  
 Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye,  
 Earthstar Geographics, CNES/Airbus DS, USDA, USGS,  
 AeroGRID, IGN, and the GIS User Community



#### 6.8.1.1 *USFWS Consultation Areas*

The study area is located within or partially within the USFWS Consultation Area (CA) of the Audubon's crested caracara, Everglade snail kite, Florida scrub-jay, and red-cockaded woodpecker. A Consultation Area is intended to identify the geographical landscape where each federally listed species is most likely to occur. Portions of the study area also fall within two wood stork Core Foraging Areas (CFA), which include suitable foraging areas important to the reproductive success of known wood stork nesting colonies. The existing habitats in the study area may also support other federally protected species including the American alligator, bald eagle, eastern indigo snake, and gopher tortoise, a candidate species.

#### 6.8.1.2 *Federally Protected Species*

##### Audubon's Crested Caracara

USFWS Audubon's crested caracara CA is located over the eastern sections of Quadrants 1 and 2 and includes the entirety of Quadrants 3 and 4. The caracara is a resident, non-migratory species in Florida that prefers grasslands and pastures in the south-central region of the state, particularly in Glades, DeSoto, Highlands, Okeechobee, and Osceola Counties (USFWS, 1999). Historically, caracara inhabited dry or wet prairies with scattered cabbage palms (*Sabal palmetto*) and occasionally used lightly wooded areas next to those prairies. Many of those areas were converted and frequently replaced by pastures with non-native sod-forming grasses that still support caracaras. Areas of suitable habitat primarily include open pasture east of the Econlockhatchee River and west Chuluota Road in Quadrants 3 and 4. The caracara is classified as threatened because of habitat losses and population declines (Layne, 1996). No critical habitat has been designated for the Audubon's crested caracara.

##### Everglade Snail Kite

USFWS Everglade snail kite CA is located over the entire project study area. The Everglade snail kite is classified as endangered due to a "very small population and increasingly limited amount of fresh marsh with sufficient water to ensure an adequate supply of snails" (Bureau of Sport Fisheries and Wildlife, 1973, p. 120). The USFWS has designated critical habitat for snail kites, which consists mostly of marshes near south Florida. The Everglade snail kite is a non-migratory subspecies only found in Florida, particularly near large watersheds (e.g., Everglades, Lake Okeechobee) and the shallow vegetated edges of lakes that support apple snails, the primary component of the snail kite's diet. The project study area generally lacks the marshes and large waterbodies suited for snails and snail kites. No critical habitat for the snail kite occurs within the project corridor.



### Florida Scrub-Jay

USFWS Florida scrub-jay CA is located over the entire project study area. The scrub-jay is classified as threatened due to habitat loss, degradation, and fragmentation (USFWS, 1987). They only occur on ancient dune ecosystems and scrub habitats of peninsular Florida. The USFWS and FWC have not documented any occurrences of the scrub-jay within the project study area.

According to the scrub-jay habitats described by Fitzpatrick et al. (1991) and identified by the FWC during their 1992-1993 scrub-jay survey, suitable habitat exists within all four quadrants in the project study area and is depicted in **Exhibits 6.8.1** through **6.8.4**. Currently, these habitats are disjunct or have been developed and consist mostly of Type II, Type III, or non-ranked (i.e., non-suitable) scrub-jay habitats. Scrub-jay habitat classifications include the following:

Type I- any upland plant community in which scrub oak species is greater than or equal to 15 percent cover.

Type II – any plant community in which one or more scrub oak species is present but is less than or equal to 15 percent cover.

Type III – any upland or seasonally dry wetland within 400 meters (0.25 miles) of any area designated as TYPE I or Type II habitat.

### Red-Cockaded Woodpecker

The USFWS red-cockaded woodpecker (RCW) CA includes portions of Quadrants 1 and 3 and all of Quadrants 2 and 4. The RCW is listed by the USFWS as endangered due to habitat loss, degradation and fragmentation (35 FR 16047). The species is still widely distributed throughout the state, but the largest populations occur on federally managed lands in the panhandle (USFWS, 1999). RCW habitat consists of pine stands or pine-dominated forests with little to no understory and numerous old growth pines, particularly longleaf pines. It excavates cavities in the living part of pine trees, typically choosing trees greater than 80 years old. No critical habitat has been designated for the RCW.

No RCW habitat has been documented within the project study area and no RCWs have been documented. The closest reported sighting is from FWC in 2010 south of Quadrant 2 near the SR 434/SR 408 interchange in the Waterford Lakes area.

### Wood Stork

The wood stork is listed by the USFWS as threatened. Wood storks are associated with freshwater and estuarine wetlands that are used for nesting, roosting, and foraging. Nesting typically occurs in medium to tall trees that occur in stands located in swamps or islands surrounded by open water (Odgen, 1991; Rodgers et al. 1996). Preferred foraging habitat includes wetlands with a mosaic of submerged and/or emergent aquatic vegetation, and shallow open-water areas. Particularly attractive feeding sites are depressions in marshes or swamps where fish become concentrated during periods of receding water levels. No critical habitat has been designated for the wood stork.



According to the USFWS's North Florida Ecological Service Office, the habitats within 15 miles of a wood stork breeding colony are considered to be wood stork CFAs. Portions of the project study area fall within the CFA of two wood stork breeding colonies: Lake Mary Jane and Rookery No. 612320. Suitable Foraging Habitat (SFH) for wood storks is located throughout the study area including marshes, wet pastures, and roadside ditches and canals, and areas within stormwater management facility locations.

#### American Alligator

The American alligator is listed as threatened due to its similarity of appearance to the American crocodile (*Crocodylus actus*). This listing status allows for state-approved management and control programs in addition to federal protections. Alligators occur throughout Florida but prefer to use freshwater lakes and slow-moving rivers and their associated wetlands. No critical habitat has been designated for the American alligator. Suitable habitat for the American alligator occurs throughout the project the study area and includes swamps and marshes along with artificial waters such as ditches, canals, and stormwater management facilities.

#### Bald Eagle

The bald eagle was removed from the ESA in 2007 and Florida's Endangered and Threatened Species list in 2008; however, it remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The bald eagle is a member of the Accipitridae family. Bald eagles tend to nest in the tops of very tall trees that provide unobstructed lines of sight to nearby habitats, particularly lakes and other open waters. Because eagles are piscivorous (fish-eating) raptors, nearly all eagles' nests occur within 1.8 miles of water (Wood et al., 1989). No critical habitat has been designated for the bald eagle.

According to the FWC's Eagle Nest locator, which maintains the location of known eagles' nests in the state, two nests are located within the study area. One nest (Nest ID OR036) is in the northwest portion of Quadrant 3 and one nest (Nest ID OR074) is located in the northeast section of Quadrant 4. The bald eagle is afforded a 660-foot nest protection buffer. Work within 660 feet of an active eagle nest requires additional coordination with the USFWS and, potentially, additional conservation measures either prior to or during construction activities. The location of both nests along with the 660-foot nest protection buffers are shown in **Exhibits 6.8.3** and **6.8.4**.

#### Eastern Indigo Snake

The eastern indigo snake is listed by the USFWS as threatened due to over-collecting for the pet trade as well as habitat loss and fragmentation (USFWS, 1999). The eastern indigo snake is widely distributed throughout central and south Florida. They occur in a broad range of habitats, from scrub and sandhill to wet prairies and mangrove swamps. Indigo snakes are most closely associated with habitats occupied by gopher tortoises whose burrows provide refugia from cold or desiccating conditions (USFWS, 1999). No critical habitat has been designated for the eastern indigo snake.



As a habitat generalist, the eastern indigo snake has the potential to occur throughout the project study area, including developed areas. However, there are no eastern indigo snakes documented in the resources reviewed within the project study area. Generally, effect determinations for eastern indigo snake for construction projects are made using the USFWS Eastern Indigo Snake Effect Determination Key (USFWS 2010 and as amended 2013) and often include utilizing the Standard Protection Measures for the Eastern Indigo Snake (USFWS 2013).

#### Gopher Tortoise

The gopher tortoise is a Candidate for listing under the ESA by the USFWS and listed as Threatened by the FWC. This species occurs in the southeastern Coastal Plain from Louisiana to South Carolina; the largest portion of the total population is located in Florida (FWC 2012). Gopher tortoises require well-drained, sandy soils for burrowing and nest construction, with a generally open canopy and an abundance of herbaceous groundcover, particularly broadleaf grasses, wiregrass (*Aristida stricta*), legumes, and fruits for foraging. Gopher tortoises can be found in most types of upland communities including disturbed areas and pastures. No critical habitat has been designated for the gopher tortoise. Suitable gopher tortoise habitat is located throughout the project study area, including some developed areas such as dry retention ponds or side slopes on ditches and canals.

#### Federally Protected Plant Species

According to the USFWS and FNAI, eleven (11) of the thirty-two (32) plant species in **Table 6.8.1** above are federally protected and have the potential to occur within the study area. Generally, these species tend to be endemic and/or habitat specialists. Protected plant surveys are recommended prior to any site alteration, especially in previously undisturbed areas.

##### *6.8.1.3 State Protected Species*

The FWC maintains the list of animals designated as federally endangered, federally threatened, state threatened, or species of special concern. While the USFWS has primary responsibility for federally endangered or threatened species in Florida, the FWC works as a cooperating agency to help conserve these species and other imperiled species found in the state. Some listed and non-listed species are considered 'managed species' because of the well-developed programs that address their species' conservation, management, or recovery. The FWC has developed a comprehensive management plan and species action plans for the state's 59 state-listed species (FWC, 2016, 2020).

#### Florida Burrowing Owl

The FWC listed the Florida burrowing owl as threatened due to loss of native habitat, dependence on altered habitat, and lack of regulatory protections (FWC, 2013a). The burrowing owl is a non-migratory, year-round breeding resident of Florida, and maintains home ranges and territories while nesting. Burrowing owls inhabit upland areas that are sparsely vegetated. Natural habitats include dry prairie and sandhill, but they will make use of ruderal areas such as pastures, airports, parks, and road rights-of-way because much of their native habitat has been altered or converted to other uses.



Burrowing owls have not been documented within the project study area. However, suitable habitat to support burrowing owls has been identified within the project study area. Burrowing owls usually dig their own burrows but are known to utilize gopher tortoise burrows and armadillo burrows as well. Gopher tortoise burrows and mammal burrows have been documented within the project study area. If burrowing owls are observed onsite, coordination with the FWC is required to discuss avoidance, minimization, and permitting options. Avoidance measures that eliminate the need for FWC incidental take permitting include: avoiding acts that kill or injure burrowing owls or eggs; maintaining a minimum 10-foot buffer during non-breeding season (July 11-February 14) and a minimum 33-foot buffer during breeding season (February 15 – July 10) around the entrance of Potentially Occupied Burrows (POB); and ensuring that the project does not impact 50% or greater of foraging habitat within a 1,970-foot radius of a POB.

#### Southeastern American Kestrel

The southeastern American kestrel is listed by the FWC as threatened due to habitat loss, degradation and fragmentation, as well as lack of regulatory protection (FWC 2013d). The southeastern American kestrel is the only non-migratory, permanent resident kestrel in Florida. However, the seasonal occurrence of a migratory subspecies of the northern American kestrel (*Falco sparverius sparverius*) occurs from September through March in Florida. Confident identification of southeastern American kestrels can only be made during the portion of the breeding season when migratory species are not present (FWC, 2013d). The southeastern American kestrel is a secondary cavity nester, preferring habitats of sandhill and open pine savannah maintained by fire. They can be found in open pine habitats, woodland edges, prairies, pastures, and other agricultural lands.

Suitable kestrel habitat is documented throughout the study area. Activities within the 492 feet (150 meter) buffer of an active nest are considered to cause take. Pre-construction surveys are required to adhere to the components of the Imperiled Species Management Plan (ISMP).

#### Florida Sandhill Crane

The FWC listed the Florida sandhill crane as threatened due to the loss and degradation to nesting and foraging habitat from development and hydrologic alteration to their potential nesting habitat (FWC, 2013c). It is widely distributed throughout most of peninsular Florida. Sandhill cranes rely on shallow marshes for roosting and nesting and open upland and wetland habitats for foraging (Wood and Nesbitt 2001).

Florida sandhill cranes have been documented throughout the study area. The marshes and wet prairies within the study area provide potential nesting and roosting habitat for the sandhill crane. The pastures and other open uplands, including the roadway right-of-way, provide foraging habitat. Avoidance measures that eliminate the need for FWC take permitting include: avoid impacts to natural wetlands used for breeding, feeding, or sheltering; avoid activities within 400 feet of an active nest; and avoid land used conversion within 1,500 feet of the nest site until after young are capable of sustained flight.



### Florida Black Bear

The Florida black bear was removed from Florida's Endangered and Threatened Species list in 2012; however, it remains protected under Chapter 68A-4.009 F.A.C., the Florida Black Bear Conservation Plan. The project study area is outside of the primary subpopulations of Chassahowitzka, Glades, and Ocala, but remains inside of the overall black bear range in Florida.

The black bear requires large amounts of space for its home range and a variety of forested habitats, including flatwoods, swamps, scrub oak ridges, bayheads, and hammocks. Self-sustaining populations of bears are generally found on large tracks of contiguous forests with understories of berry producing shrubs or trees. These types of habitats do not occur specifically within the project study area. However, the Econlockhatchee River serves as a major corridor for wildlife, including bears, and may be utilized to connect larger habitats outside of the project study area itself. Bears seldom occur within the project study area, as evidenced by roadkill data, nuisance incidence data, and telemetry data published by FWC. However, bears have been recently reported at bird feeders along the Econlockhatchee River and the issue has gained local attention, including being featured on the County Commissioners website.

### Florida Pine Snake

The Florida pine snake is listed by the FWC as threatened due to habitat loss, fragmentation, and degradation to upland habitats from development and fire suppression (FWC, 2013b). They inhabit areas that feature well-drained sandy soils with a moderate to open canopy (Franz 1992, Ernst and Ernst 2003). Preferred habitats include sandhill and former sandhill, including old fields and pastures, sand pine scrub, and scrubby flatwoods. The pine snake often coexists with gopher tortoises and pocket gophers, spending the majority of its time underground.

No pine snakes have been documented within the project study area. However, due to the cryptic nature of this species and its known association with gopher tortoise, mammal burrows, and pocket gopher mounds, it is reasonable to assume that pine snakes are likely to be found within the project study area. Current FWC guidelines for the relocation of the Florida pine snake state that any incidentally captured pine snake should be released on-site or allowed to escape unharmed if habitat will remain post-development.

### Short-Tailed Snake

The short-tailed snake is listed by the FWC as Threatened. It is a member of the Colubridae family. This snake is endemic to Florida and is only found from the Suwannee River south to Highlands County (FNAI 2001). Short-tailed snakes are rarely seen above ground as they spend most of the time burrowed in sandy soils. They primarily inhabit areas with well-drained sandy soils, particularly longleaf pine and xeric oak habitats, but may also be found in scrub and xeric hammock habitats (Van Duyn 1939, Carr 1940, Campbell and Moler 1992, Engel 1997). Limited habitat for the short-tailed snake occurs within the project study area as it is limited to xeric habitats with open, sandy soils.



### Wading Birds

Three wading birds have the potential to occur in the study area. These species are the roseate spoonbill, little blue heron, and tricolor heron. All are listed by the FWC as Threatened. While the spoonbill is generally limited to coastal systems and can be occasionally found inland, both species of herons are widely distributed throughout peninsular Florida. Wading birds depend on healthy wetlands and vegetated areas suitable for resting and breeding which are near foraging areas (FWC, 2013e). They forage in freshwater, brackish, and saltwater habitats. They tend to nest in multi-species colonies of a variety of woody vegetation types including cypress, willow, maple, black mangrove, and cabbage palm (FNAI, 2001). No wading bird rookeries are documented within the project study area.



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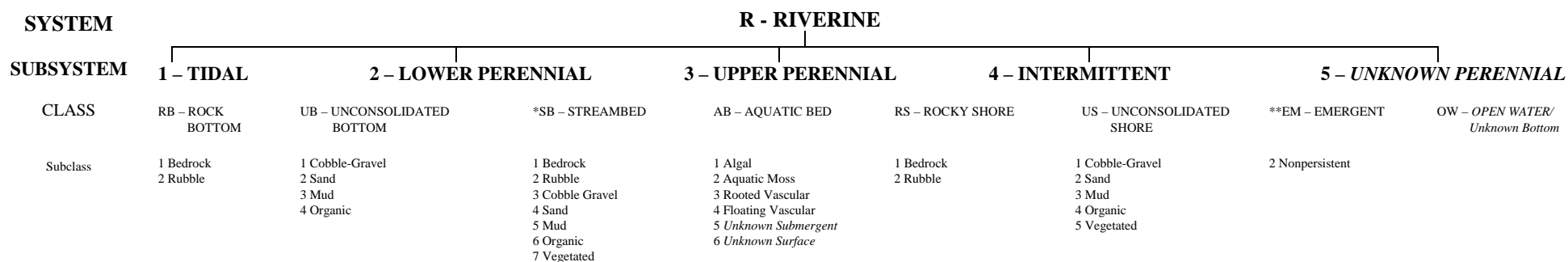
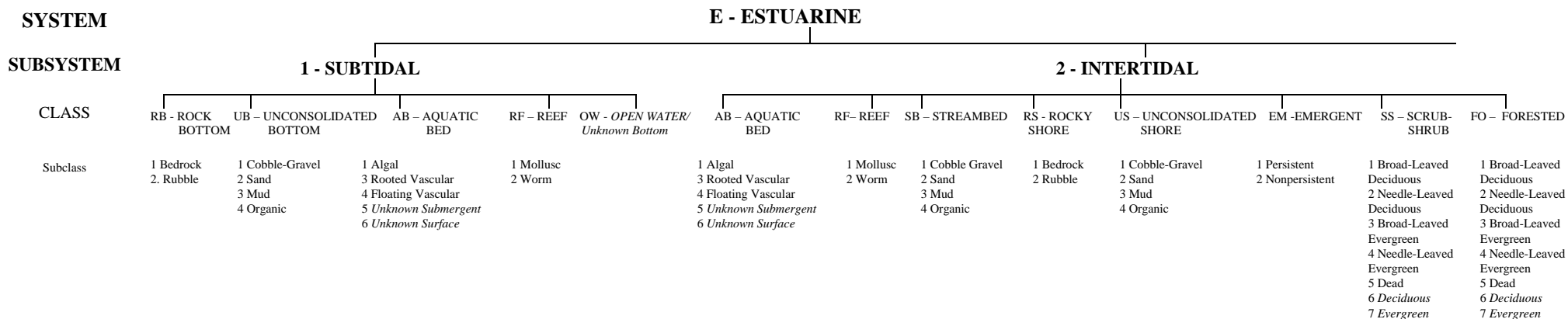
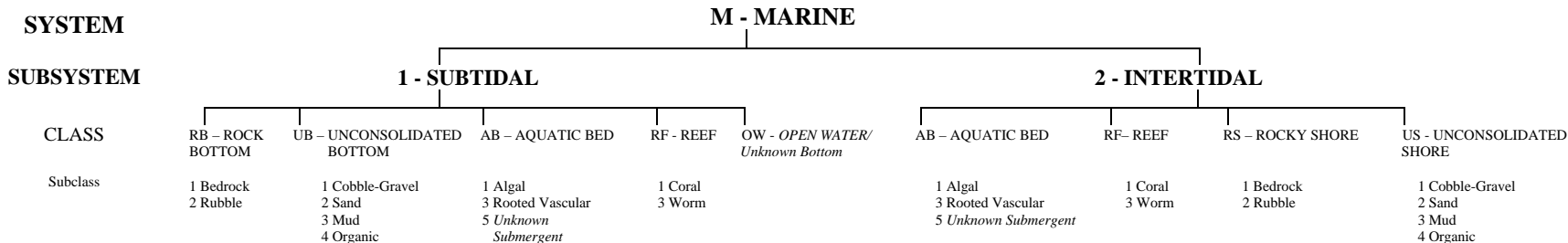
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# WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



\* STREAMBED is limited to TIDAL and INTERMITTENT SUBSYSTEMS, and comprises the only CLASS in the INTERMITTENT SUBSYSTEM.

\*\* EMERGENT is limited to TIDAL and LOWER PERENNIAL SUBSYSTEMS.

*Classification of Wetlands and Deepwater Habitats of the United States  
Cowardin ET AL. 1979 as modified for National Wetland Inventory Mapping Convention*



# WETLANDS AND DEEPWATER HABITATS CLASSIFICATION

| SYSTEM    | L - LACUSTRINE        |   |  |   |                       |   |  |                       |  |                 |   |  |
|-----------|-----------------------|---|--|---|-----------------------|---|--|-----------------------|--|-----------------|---|--|
| SUBSYSTEM | 1 - LIMNETIC          |   |  |   | 2 - LITTORAL          |   |  |                       |  |                 |   |  |
| CLASS     | RB - ROCK<br>BOTTOM   | UB - UNCONSOLIDATED<br>BOTTOM                   | AB - AQUATIC<br>BED  | OW - OPEN WATER/<br><i>Unknown Bottom</i> | RB - ROCK<br>BOTTOM   | UB - UNCONSOLIDATED<br>BOTTOM                   | AB - AQUATIC<br>BED  | RS - ROCKY<br>SHORE   | US - UNCONSOLIDATED<br>SHORE                                   | EM - EMERGENT   | OW - OPEN WATER/<br><i>Unknown Bottom</i> |  |
| Subclass  | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 <i>Unknown Submergent</i><br>6 <i>Unknown Surface</i> |   | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 <i>Unknown Submergent</i><br>6 <i>Unknown Surface</i> | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic<br>5 Vegetated | 2 Nonpersistent |   |  |

| SYSTEM   | P - PALUSTRINE        |   |  |  |                    |                                 |  |  |   |  |
|----------|-----------------------|---|--|--|--------------------|---------------------------------|--|--|---|--|
| CLASS    | RB - ROCK BOTTOM      | UB - UNCONSOLIDATED BOTTOM                      | AB - AQUATIC BED   | US - UNCONSOLIDATED SHORE                                      | ML - MOSS-LICHEN   | EM - EMERGENT                   | SS - SCRUB-SHRUB   | FO - FORESTED  | OW - OPEN WATER/<br><i>Unknown Bottom</i> |  |
| Subclass | 1 Bedrock<br>2 Rubble | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic | 1 Algal<br>2 Aquatic Moss<br>3 Rooted Vascular<br>4 Floating Vascular<br>5 <i>Unknown Submergent</i><br>6 <i>Unknown Surface</i> | 1 Cobble-Gravel<br>2 Sand<br>3 Mud<br>4 Organic<br>5 Vegetated | 1 Moss<br>2 Lichen | 1 Persistent<br>2 Nonpersistent | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6 <i>Deciduous</i><br>7 <i>Evergreen</i> | 1 Broad-Leaved Deciduous<br>2 Needle-Leaved Deciduous<br>3 Broad-Leaved Evergreen<br>4 Needle-Leaved Evergreen<br>5 Dead<br>6 <i>Deciduous</i><br>7 <i>Evergreen</i> |   |  |

## MODIFIERS

In order to more adequately describe the wetland and deepwater habitats one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

| WATER REGIME                             |                                    |                               |                        | WATER CHEMISTRY                  |                 |                                  | SOIL                   | SPECIAL MODIFIERS                  |                          |  |
|--|------------------------------------|-------------------------------|------------------------|----------------------------------|-----------------|----------------------------------|------------------------|------------------------------------|--------------------------|--|
| Non-Tidal                                |                                    | Tidal                         |                        | Coastal Halinity                 | Inland Salinity | pH Modifiers for all Fresh Water | g Organic<br>n Mineral | b <i>Beaver</i>                    | h <i>Diked/Impounded</i> |  |
| A Temporarily Flooded                    | H Permanently Flooded              | K <i>Artificially Flooded</i> | *S Temporary-Tidal     | 1 Hyperhaline                    | 7 Hypersaline   |                                  |                        | d <i>Partially Drained/Ditched</i> | r Artificial Substrate   |  |
| B Saturated                              | J Intermittently Flooded           | L Subtidal                    | *R Seasonal-Tidal      | 2 Euthaline                      | 8 Eusaline      | a Acid                           |                        | f Farmed                           | s <i>Spoil</i>           |  |
| C Seasonally Flooded                     | K Artificially Flooded             | M Irregularly Exposed         | *T Semipermanent-Tidal | 3 Mixohaline ( <i>Brackish</i> ) | 9 Mixosaline    | t Circumneutral                  |                        |                                    | x Excavated              |  |
| D <i>Seasonally Flooded/Well Drained</i> | W Intermittently Flooded/Temporary | N Regularly Flooded           | *V Permanent-Tidal     | 4 Polyhaline                     | 0 Fresh         | i Alkaline                       |                        |                                    |                          |  |
| E <i>Seasonally Flooded/Saturated</i>    | Y Saturated/Semipermanent/Seasonal | P Irregularly Flooded         | U <i>Unknown</i>       | 5 Mesohaline                     |                 |                                  |                        |                                    |                          |  |
| F Semipermanently Flooded                | Z Intermittently Exposed/Permanent |                               |                        | 6 Oligohaline                    |                 |                                  |                        |                                    |                          |  |
| G Intermittently Exposed                 | U <i>Unknown</i>                   |                               |                        | 0 Fresh                          |                 |                                  |                        |                                    |                          |  |
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