

September 20, 2023

*Via Federal Express*

James M. Zeoli  
First Selectman  
Orange Town Hall  
617 Orange Center Road  
Orange, CT 06477

**Re: Submission of Technical Information Concerning a Proposal to Construct a  
Wireless Telecommunications Facility at 425 Old Tavern Road, Orange,  
Connecticut**

Dear Mr. Zeoli:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”), in its proposal to construct a new wireless telecommunications facility in the westerly portion of a 12-acre parcel at 425 Old Tavern Road in Orange, Connecticut (the “Property”). The Property is owned by Frederick A. Knight and is used, in part, for residential purposes. The proposed telecommunications facility is identified as Cellco’s “Orange South Facility”.

This Technical Report is submitted pursuant to Connecticut General Statutes (“Conn. Gen. Stat.”) § 16-50(l)(g), which establishes local input requirements for the siting of a wireless telecommunications facility under the exclusive jurisdiction of the Connecticut Siting Council (the “Council”). This statutory provision requires the submission of technical information to officials in the municipality where the proposed facility will be located and any municipality within 2,500 feet of the proposed facility location. Given the Property’s location immediately north of the Orange – Milford town boundary, copies of this information have also been provided to public officials in the City of Milford (“Milford”).

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Correspondence and/or communications regarding the information contained in this report should be addressed to:

Elizabeth Glidden  
Real Estate Regulatory Specialist  
Cellco Partnership d/b/a Verizon Wireless  
20 Alexander Drive  
Wallingford, CT 06492

A copy of all such correspondence or communications should also be sent to Cellco's attorneys:

Kenneth C. Baldwin, Esq.  
Robinson & Cole LLP  
280 Trumbull Street  
Hartford, CT 06103-3597

Cellco intends to submit an application to the Council for a Certificate of Environmental Compatibility and Public Need ("Certificate") for the construction, maintenance and operation of a wireless telecommunications facility at the Property. The Orange South Facility will provide improved wireless service to residential and commercial land uses in the area around the Property and will interact with Cellco's existing cell sites in Orange and Milford. For orientation purposes, a Site Location Map and Site Schematic are included in Attachment 1. Coverage plots showing Cellco's "existing" wireless service in the area and "existing and proposed" wireless service in the area, including the proposed Orange South Facility at Celloc's 700 MHz, 850 MHz, 1900 MHz, and 2100 MHz frequency ranges are included in Attachment 2.

### **Proposed Cell Site Information**

Cellco proposes to construct a 120-foot tall monopole tower within the limits of a 30 foot x 100 foot fenced compound in the westerly portion of the Property.<sup>1</sup> Cellco would install antennas and remote radio heads on an antenna platform at the top of the tower. Equipment cabinets associated with Cellco's antennas, a battery cabinet, a propane-fueled backup generator and a 1000-gallon propane fuel tank would be located within the fenced compound. Access to the proposed Orange South Facility would extend from Woodruff Road along a new gravel access driveway to the proposed tower site. The access driveway has been designed to limit

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<sup>1</sup> The narrow compound shape allows Cellco to maintain adequate setbacks from existing on-site wetland areas.

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direct views of the tower compound from Woodruff Road. Electric and fiber optic connections to the tower site would extend from existing service along Woodruff Road, a distance of approximately 300 feet. Included in Attachment 3 is a set of project plans for the proposed Orange South Facility.

## **Connecticut Siting Council Jurisdiction**

Municipal jurisdiction over the siting of the proposed telecommunications facility described in this report is pre-empted by provisions of the Public Utilities Environmental Standards Act (“PUESA”), Conn. Gen. Stat. § 16-50g *et seq.* The PUESA gives exclusive jurisdiction over the location, type and modification of telecommunications towers, to the Council (Conn. Gen. Stat. § 16-50x(a); 16-50i(a)(6)). Accordingly, the telecommunications facility described in this report is exempt from the Town’s land use (zoning and inland wetlands) regulations.

Upon receipt of an application, the Council will assign a docket number and, following a completeness review, set the schedule for the docket, including a hearing date. At that time, the Town of Orange may choose to become an intervenor or party in the proceeding. Other procedures followed by the Council include serving the applicant and other participants with interrogatories, holding a pre-hearing conference, and conducting a public hearing. Following the public hearing, the Council will issue findings of fact, an opinion and a decision and order. Prior to construction, the Council will also require the Applicant to submit a development and management plan (“D&M Plan”) which is, in essence, a final site development plan showing the details of the facility, incorporating any conditions imposed by the Council. These procedures are also outside the scope of the Town’s jurisdiction and are governed by the Connecticut General Statutes, the Regulations of Connecticut State Agencies, and the Council’s Rules of Practice. If the Council approves the cell site described in this report, Cellco will submit to the Building Official an application for approval of a local building permit. Under Section 16-50x of the General Statutes, which provides for the exclusive jurisdiction of the Council, the building official must honor the Council’s decision.

## **Municipal Consultation Process**

Pursuant to Section 16-50*l* of the General Statutes, Town officials are entitled to receive technical information regarding the proposed telecommunications facility at least ninety (90) days prior to the filing of an application with the Council. This Technical Report is provided to officials in the Town of Orange and the City of Milford in accordance with these provisions and includes information on the need for improved reliable wireless service in the area; the location

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of existing wireless facilities in and around the area; details of the proposed facility; the location of alternative sites considered and rejected; the location of schools and commercial day care facilities in the area and the aesthetic impacts of the facility on those schools and day care facilities, if any; a description of the site selection process; and a discussion of potential environmental effects associated with the proposed facility.

Not later than sixty (60) days after the initial municipal consultation, the municipality may, in cooperation with Cellco, hold a public information meeting on the facility proposal. If such a hearing is held, the Applicant must notify all abutting landowners and publish notice of the hearing in a local newspaper of general circulation in the municipality, at least fifteen (15) days prior to the hearing.

Not later than thirty (30) days after the initial consultation meeting, the municipality may present the prospective applicant with alternative sites, including municipal parcels, for its consideration. If not previously considered, these alternatives will be evaluated and discussed in its application to the Council.

Pursuant to Section 16-50(e) of the General Statutes, Cellco must provide a summary of any comments and/or recommendations received to the Council within fifteen (15) days of the filing of an application.

## **Need for the Proposed Wireless Facility**

The Orange South Facility is needed so that Cellco can provide enhanced reliable wireless service (coverage) in southern portions of Orange and northern portions of Milford. The Orange South Facility will also provide network capacity relief to its surrounding Orange 1, Orange 4, Milford S II and Old Gate cell sites. The proposed Orange South Facility will also interact, to some extent with Cellco's Milford NE, Orange 3 and Forest Heights Relo macro cell facilities and several small cell facilities in the vicinity.

## **Environmental Effects**

In our experience, the primary impact of a wireless facility such as the proposed Orange South Facility is visual. The visual impact of the proposed Orange South Facility tower will vary from place to place around the site location, depending upon factors such as vegetation, topography, distance from the tower, and the location of buildings or other structures (utility infrastructure) in the sight-line of the cell site.

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To more fully assess the visual impact of the Orange South Facility, Cellco's consultant, All-Points Technology Corporation ("APT") has prepared a Visibility Analysis for the proposed tower location. The Visibility Analysis indicates that a significant majority of the views of the tower would be "seasonal" through the surrounding trees. Year round visibility of the proposed tower would be limited to small pockets within the two-mile radius study area. (See Attachment 4).

Pursuant to the provisions of Conn. Gen. Stat. § 16-50p(a)(3)(G), new telecommunications facilities must be located at least 250 feet from buildings containing schools (defined in C.G.S. §10-154a) and commercial day care facilities (defined in C.G.S. §19a-77(a)(1)) unless the location selected is acceptable to the Town's chief elected official or the Council finds that the facility will not have a substantial adverse effect on the aesthetics or scenic quality of the neighborhood where the school or commercial day care use is located. The proposed Orange South Facility is not located within 250 feet of any building containing a school or commercial day care facility.

Based on field surveys, Cellco has determined that the construction of the Orange South Facility will have no direct impact on inland wetlands or watercourses, near the tower compound. Cellco anticipates that all other physical environmental effects associated with the proposed facility would be minimal.

### **Radio Frequency Emissions**

The Federal Communications Commission ("FCC") has adopted a standard (the "Standard") for exposure of radio frequency ("RF") emissions from telecommunications base stations like the Orange South Facility. To ensure compliance with the Standard, Cellco has performed a Far Field radio frequency emissions calculation for the proposed facility according to the methodology described in FCC Office of Science and Technology Bulletin No. 65 ("OST Bulletin 65"). This calculation is a conservative, far-field worst-case approximation of RF emissions at the closest accessible point to the antenna (six feet above surrounding grade) at various locations around the tower site. The calculation assumes that all antennas are transmitting simultaneously, on all channels, at full power. The calculated RF emissions level for Cellco's antennas on the proposed 120-foot tower would be 6.2% of the FCC Standard. (See Attachment 5). Actual RF emissions levels from this facility will be far less than this "worst-case" approximation.

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## **Scenic Natural Historic or Recreational Impacts**

To further assess the environmental impacts of the proposed facility, Cellco will be working with its consultant team to prepare a National Environmental Policy Act (“NEPA”) Environmental Screening Checklist (the “NEPA Checklist”) and other related environmental reviews to determine if the facility will have any significant adverse environmental effects. The NEPA Checklist will include information from the Environmental and Geographic Information Center of the Connecticut Department of Energy and Environmental Protection (“DEEP”), the U.S. Fish and Wildlife Service (“USFWS”) and the State Historic Preservation Officer (“SHPO”). Copies of the DEEP, USFWS and the SHPO determinations will also be submitted as a part of the Council’s Certificate Application.

## **Site Search Process**

Cellco conducted a search for suitable cell sites in southern Orange and identified the Property as a site that would satisfy its wireless service objectives in the area. In addition, Cellco investigated six (6) other locations in the area. A complete list of alternative parcels investigated is included in Attachment 6.

## **Tower Sharing**

As stated above, Cellco intends to build a tower that is capable of supporting its antennas and those of other wireless telecommunications providers, the surrounding municipalities, and emergency service providers, if a need exists. The provision to share the tower is consistent with the intent of the General Assembly when it adopted Conn. Gen. Stat. § 16-50aa and with Council policy. The availability of space on the proposed tower may reduce, if not eliminate, the need for additional towers in the area for the foreseeable future.

## **Conclusion**

This Technical Report is submitted in accordance with Conn. Gen. Stat. § 16-50l which requires Cellco to supply the Town of Orange and City of Milford with information regarding its proposed Orange South Facility. This report includes information regarding the site selection process, public need, and the potential environmental impacts of the facility. Cellco submits that its proposed Orange South Facility would not have any significant adverse environmental effects. Moreover, Cellco submits that the public need for high quality wireless service, and a competitive framework for providing such service has been determined by the FCC to be in the public interest and that such public need far outweighs any perceived environmental effects of

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the proposed facility.

Please contact me if you have any additional questions regarding the proposed facility.

Sincerely,



Kenneth C. Baldwin

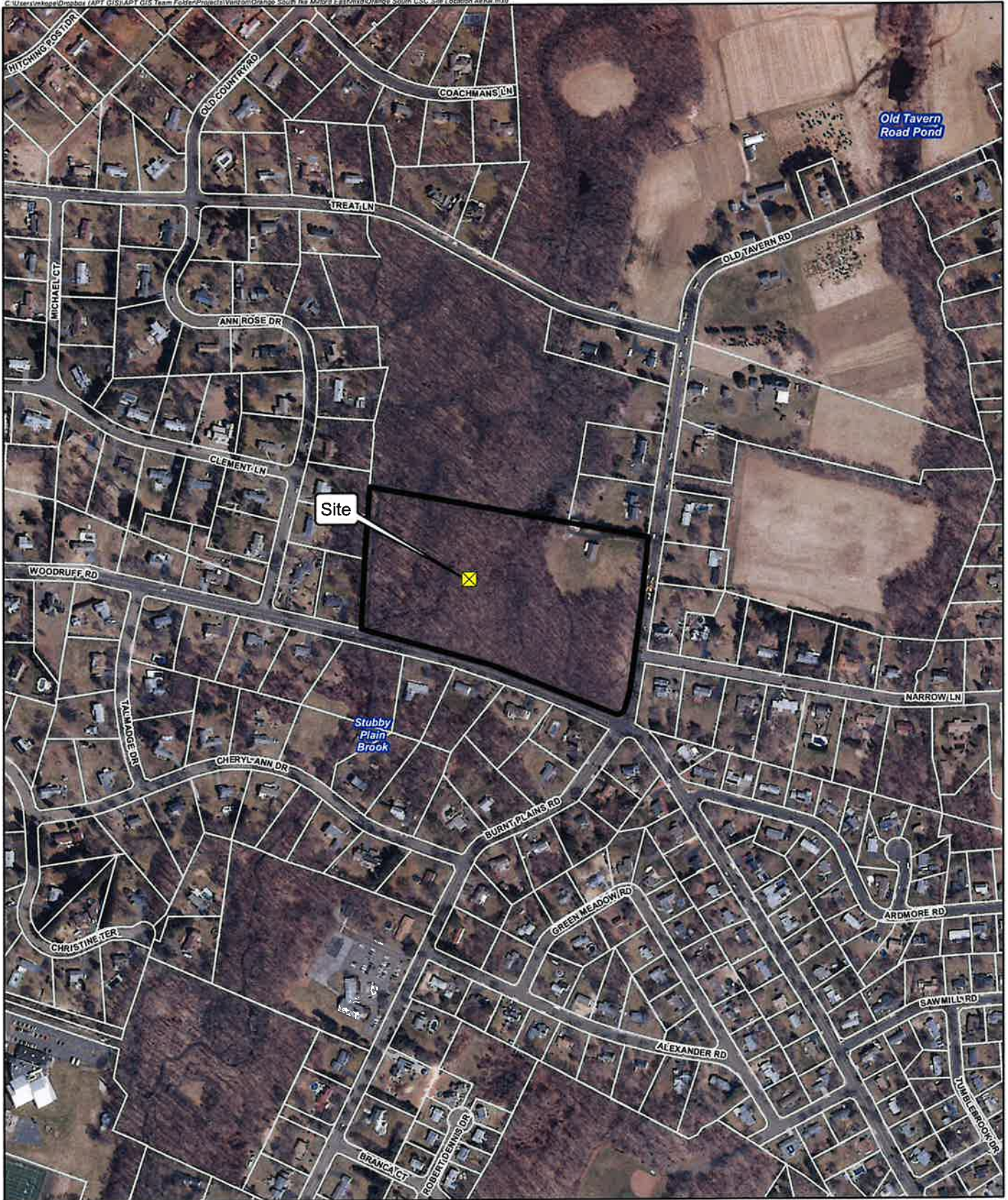
Enclosures

Copy to:




Oscar Parente, Esq., Chair, Orange Plan & Zoning Commission  
Ron Ruotolo, Chairman, Orange Inland Wetlands & Water Courses Commission  
Benjamin G. Blake, Mayor City of Milford  
Jim Quish, Chairman, Milford Planning and Zoning Board  
Brendan Magnan, Chairman, Milford Inland Wetlands Agency  
Tim Parks, Verizon Wireless  
Elizabeth Glidden, Verizon Wireless  
Ziad Cheiban, Verizon Wireless RF Engineer

# **ATTACHMENT 1**





**Legend**

-  Site
-  Subject Property
-  Approximate Parcel Boundary

**Map Notes:**  
 Base Map Source: CT ECO 2019 Imagery  
 Map Scale: 1 Inch = 500 feet  
 Map Date: March 2023



**Site Location Map**

Proposed Wireless  
 Telecommunications Facility  
 Orange South CT  
 425 Old Tavern Road  
 Orange, Connecticut





Proposed Verizon Wireless Equipment Cabinets and Generator on Proposed 20' x 10' Concrete Pad with Roof Canopy Above

Proposed Verizon Wireless Underground Gas Line and 1,000 Gal. Propane Tank on Proposed 18' x 5' Concrete Pad

Proposed Verizon Wireless Padmount Transformer and Electrical Equipment

Proposed Verizon Wireless Electrical and Telco Conduits Routed Underground

Proposed Verizon Wireless 20' Wide Access Easement

Proposed Verizon Wireless Monopole within Proposed Verizon Wireless 100' x 30' Fenced Compound

WOODRUFF RD

Orange  
Milford

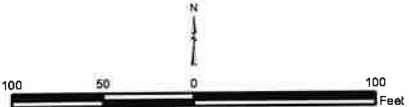
**Legend**

- Proposed Verizon Wireless Equipment Compound
- Proposed Verizon Wireless Equipment
- Proposed Verizon Wireless Access Easement
- Proposed Verizon Conduit
- Proposed Verizon Wireless Gas Line
- Existing Utility Pole (By Others)
- Subject Property
- Approximate Parcel Boundary

**Site Schematic**

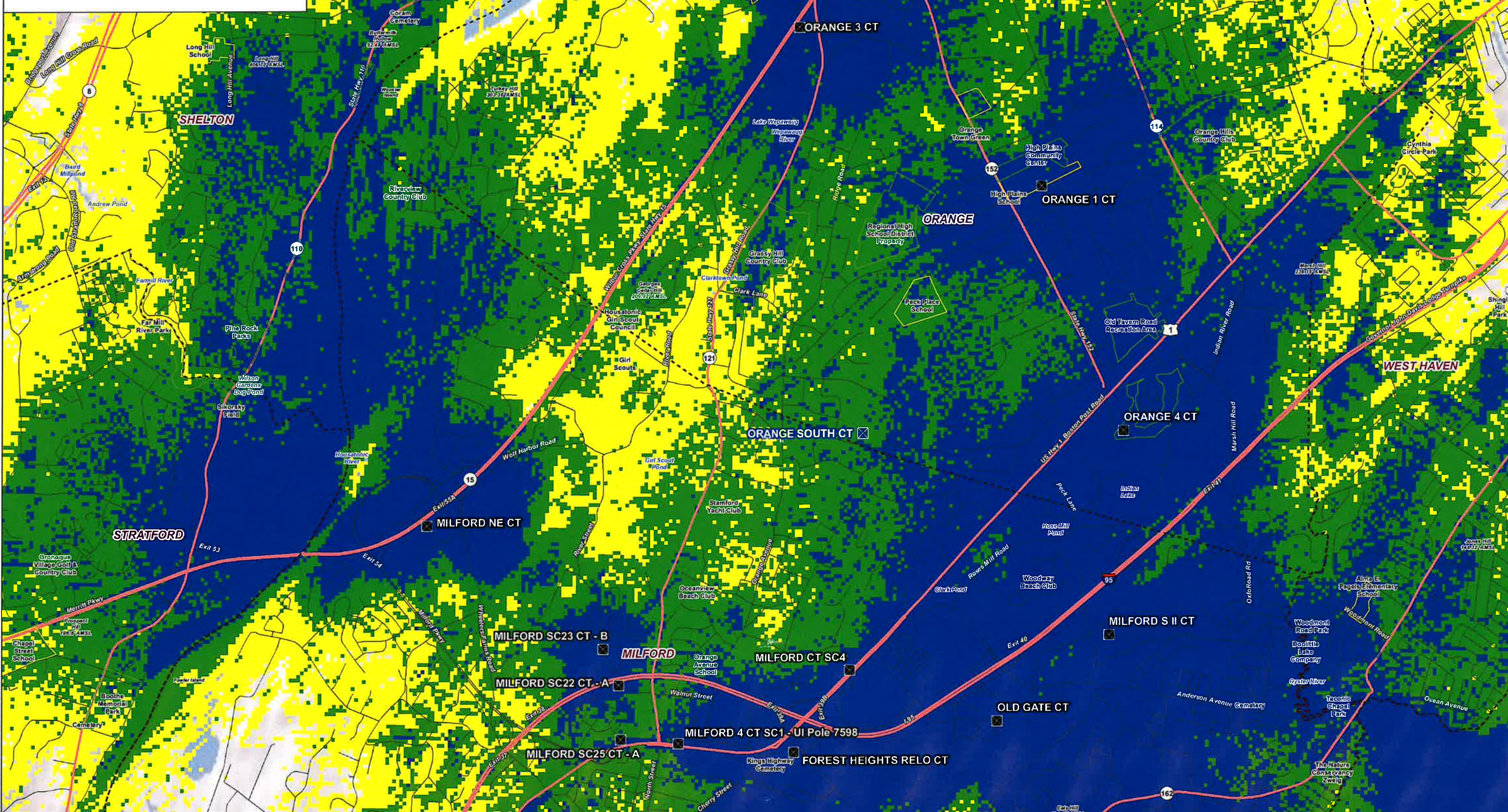
Proposed Wireless Telecommunications Facility  
 Orange South CT  
 425 Old Tavern Road  
 Orange, Connecticut

Map Notes:  
 Base Map Source: 2019 CT ECO Imagery  
 Map Scale: 1 Inch = 100 feet  
 Map Date: March 2023



# **ATTACHMENT 2**

**Existing Verizon Wireless 700 MHz Coverage  
Orange, Connecticut and Surrounding Area  
(\*Map Scale is 1:14,000)**



**Legend**

- Proposed Verizon Wireless Facility
- Existing RSRP >= -85 (in building)
- Existing Verizon Wireless Facilities
- Existing RSRP >= -95 (vehicular)
- Existing RSRP >= -105 (outdoor)
- Major Route
- - - Town Line

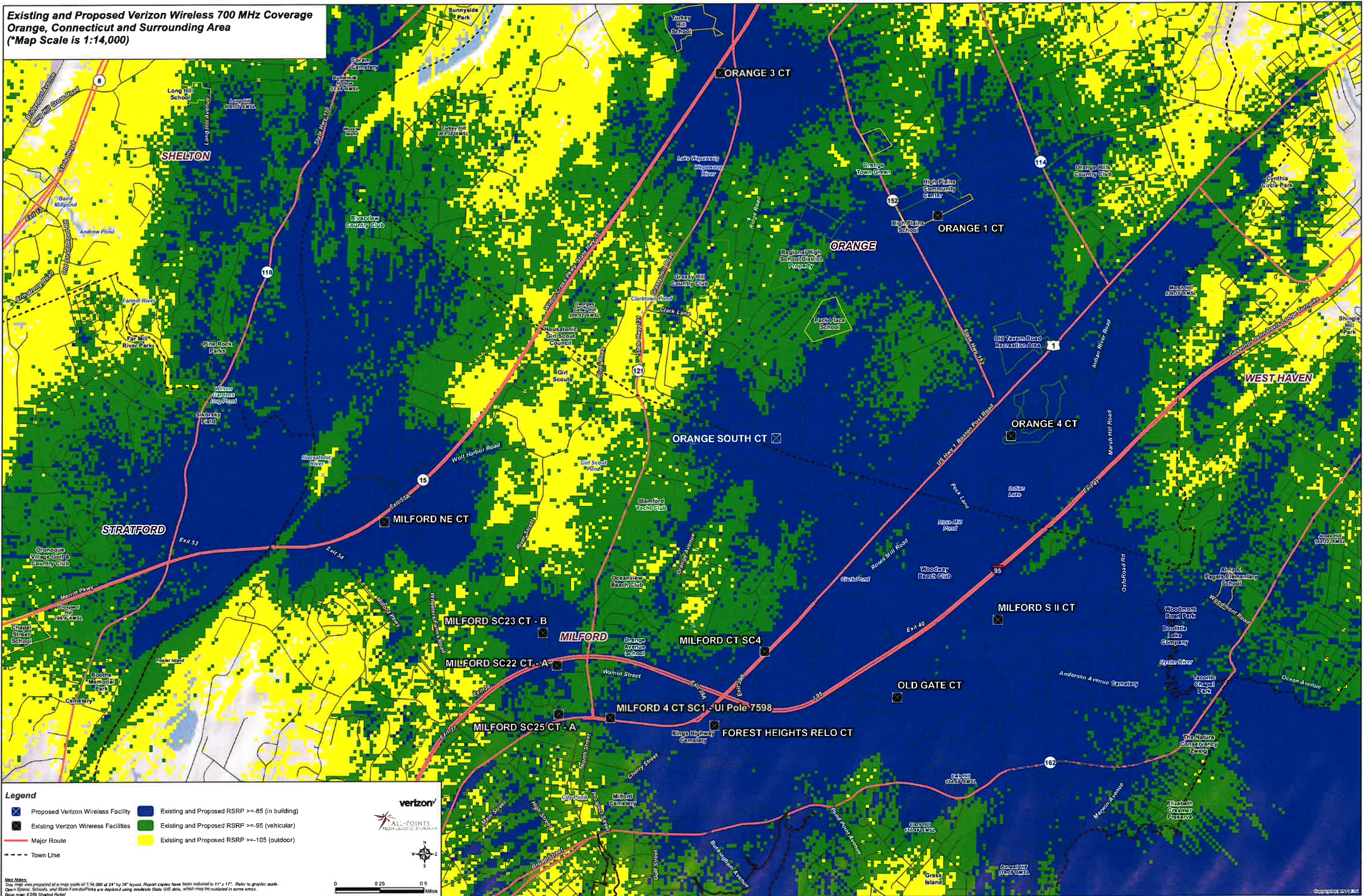
**Verizon**  
AL-POINTS  
TECHNOLOGICAL SOLUTIONS

This map was prepared at a map scale of 1:14,000 at 24" by 28" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.  
Open Space, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.  
Base map: ESRI Shaded Relief

0 0.25 0.5 Miles

This map was prepared at a map scale of 1:14,000 at 24" by 28" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.  
 Open Space, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.  
 Base map: ESRI Shaded Relief

**Existing and Proposed Verizon Wireless 700 MHz Coverage  
Orange, Connecticut and Surrounding Area  
(\*Map Scale is 1:14,000)**



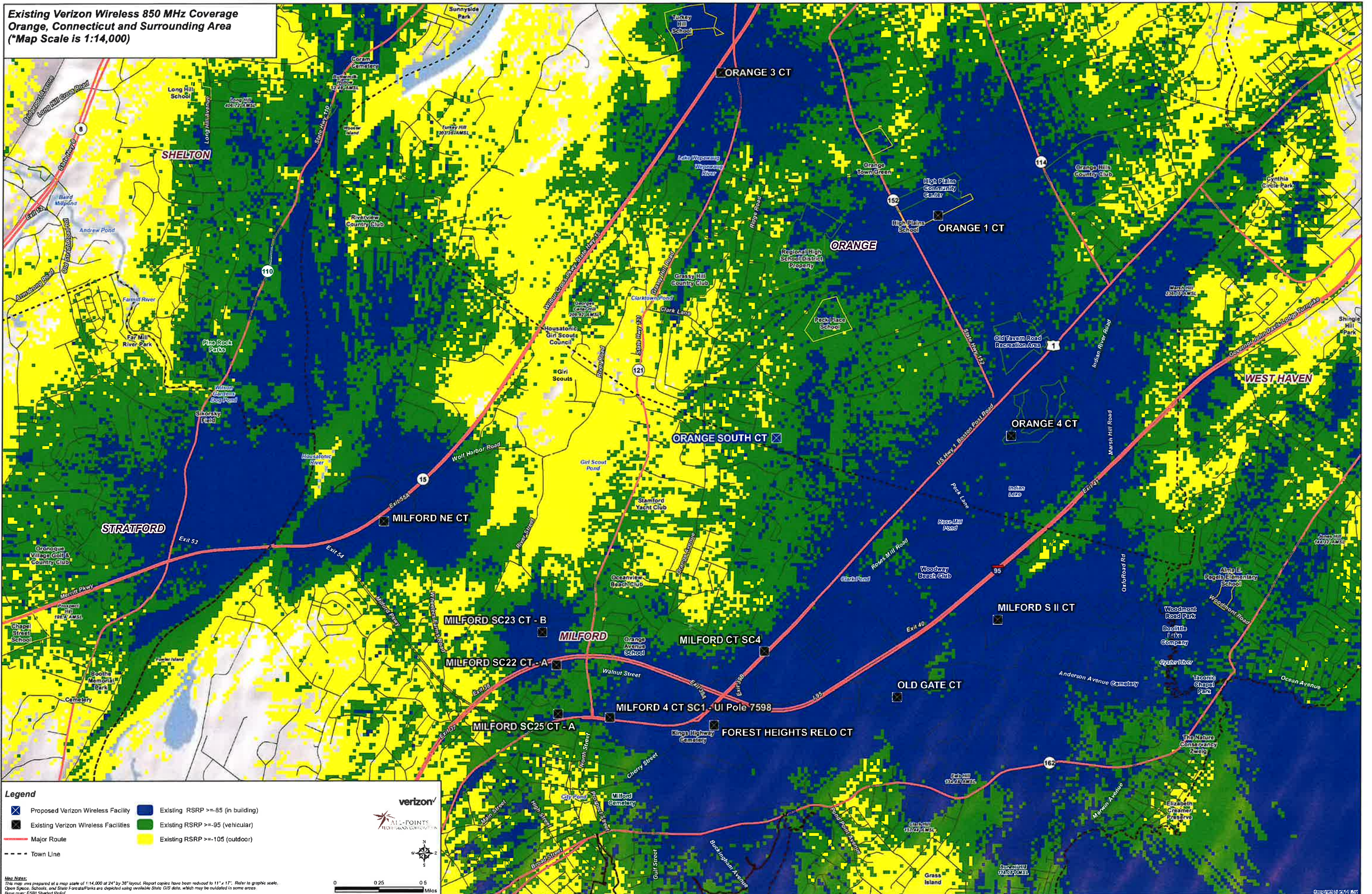
**Legend**

- Existing and Proposed RSRP >=105 (outdoor)
- Existing and Proposed RSRP >=95 (vehicular)
- Existing and Proposed RSRP >=85 (in building)
- Existing Verizon Wireless Facilities
- Proposed Verizon Wireless Facility
- Major Route
- Town Line

**Map Notes:**  
This map was prepared at a map scale of 1:14,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.  
Open Space, schools, and State Facilities are depicted using available State GIS data, which may not be updated in some areas.  
Base map: ESRI Shaded Relief

0 0.25 0.5 Miles

**Existing Verizon Wireless 850 MHz Coverage  
Orange, Connecticut and Surrounding Area  
(\*Map Scale is 1:14,000)**

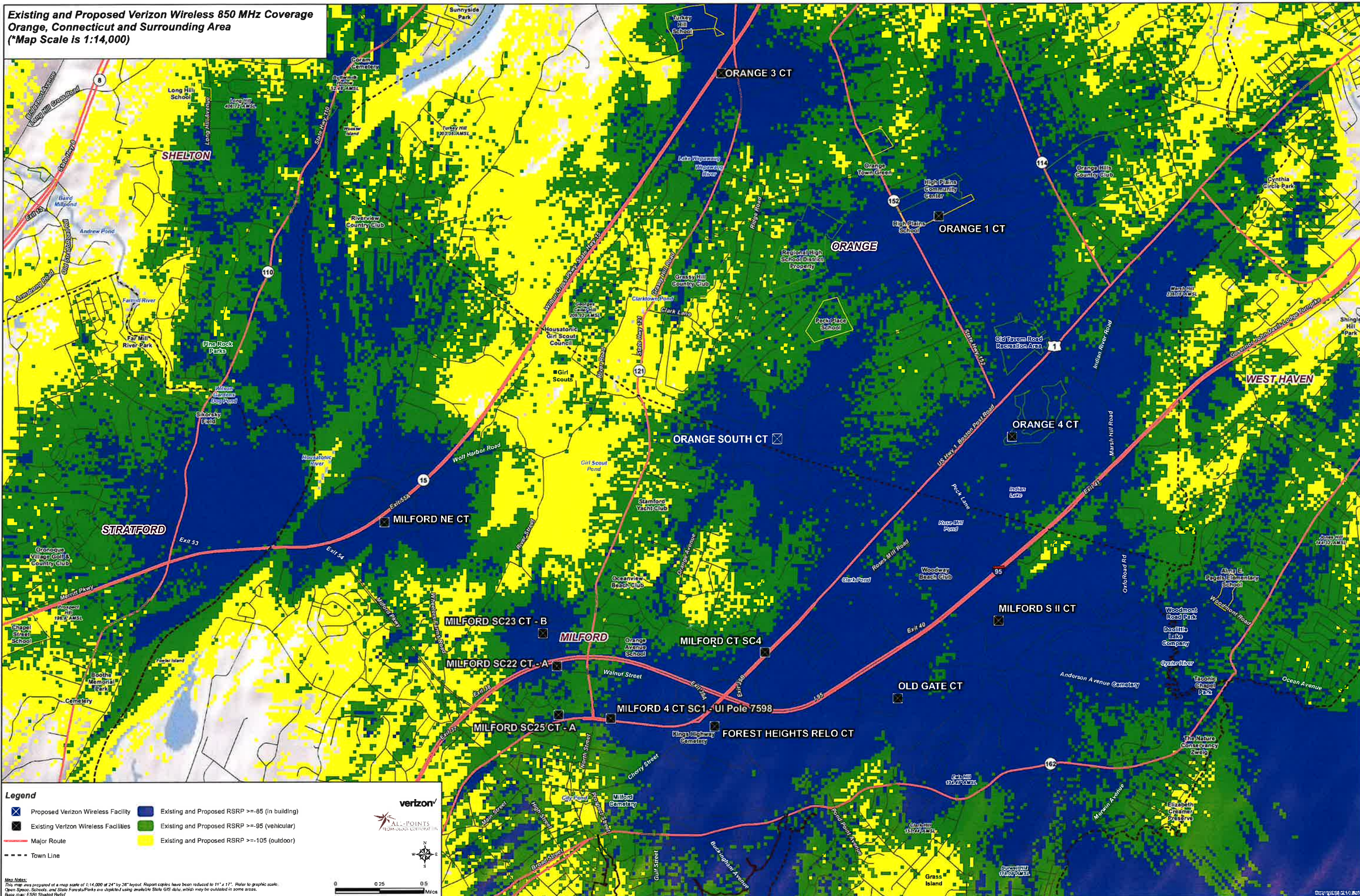


- Legend**
- ✕ Proposed Verizon Wireless Facility
  - ✕ Existing Verizon Wireless Facilities
  - ✕ Existing RSRP >=105 (outdoor)
  - ✕ Existing RSRP >=95 (vehicular)
  - ✕ Existing RSRP >=85 (in building)
  - Major Route
  - - - Town Line



**Map Notes:**  
This map was prepared at a map scale of 1:14,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.  
Open Space, Schools, and State Parks are depicted using available State GIS data, which may be outdated in some areas.  
Base map: ESRI Shaded Relief

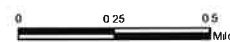
**Existing and Proposed Verizon Wireless 850 MHz Coverage  
Orange, Connecticut and Surrounding Area  
(\*Map Scale is 1:14,000)**



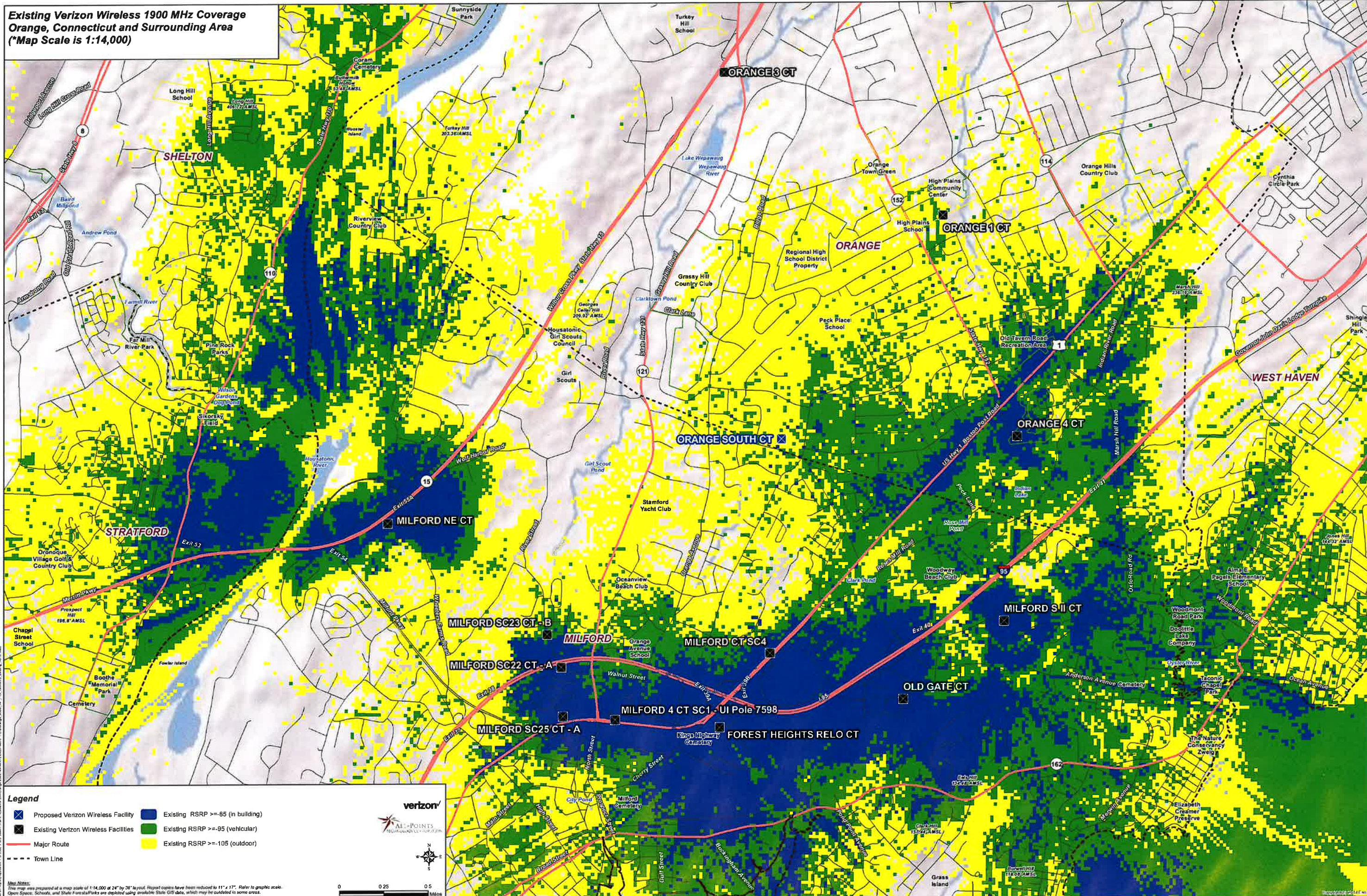
- Legend**
- Proposed Verizon Wireless Facility
  - Existing Verizon Wireless Facilities
  - Existing and Proposed RSRP >= -85 (in building)
  - Existing and Proposed RSRP >= -95 (vehicular)
  - Existing and Proposed RSRP >= -105 (outdoor)
  - Major Route
  - - - - Town Line



**Map Notes:**  
This map was prepared at a map scale of 1:14,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.  
Open Space, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.  
Base map: ESRI Shaded Relief



**Existing Verizon Wireless 1900 MHz Coverage  
Orange, Connecticut and Surrounding Area  
(\*Map Scale is 1:14,000)**



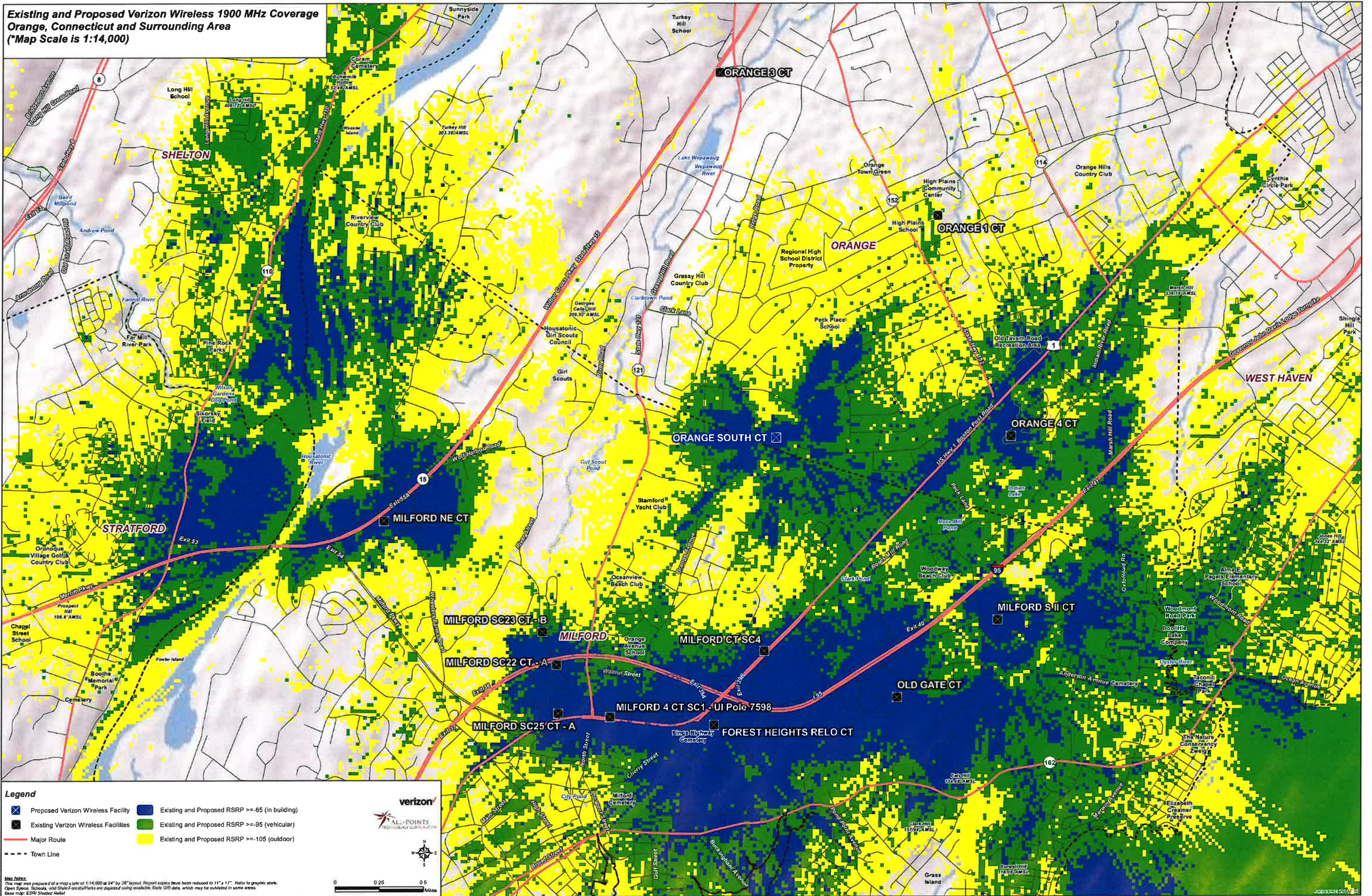
- Legend**
- ✕ Proposed Verizon Wireless Facility
  - Existing Verizon Wireless Facilities
  - Major Route
  - - - Town Line
  - Existing RSRP >=-85 (in building)
  - Existing RSRP >=-95 (vehicular)
  - Existing RSRP >=-105 (outdoor)



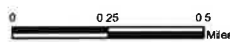
Notes:  
This map was prepared at a map scale of 1:14,000 at 24" x 36" to post. Report copies have been reduced to 11" x 17". Refer to graphic scale.  
Open Space, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.  
Base map: ESRI Shaded Relief



**Existing and Proposed Verizon Wireless 1900 MHz Coverage  
Orange, Connecticut and Surrounding Area  
(\*Map Scale is 1:14,000)**

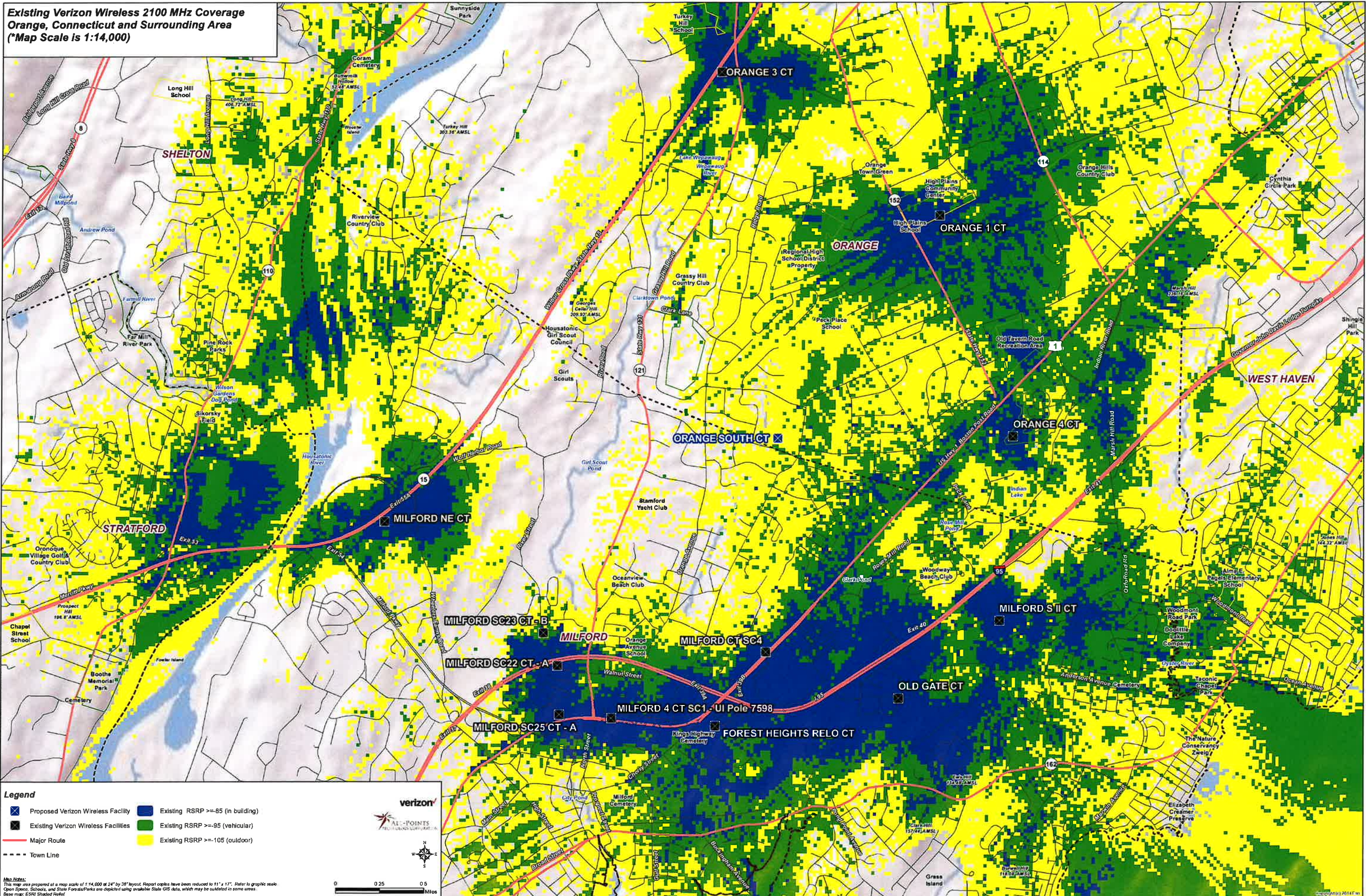


- Legend**
- Proposed Verizon Wireless Facility
  - Existing and Proposed RSRP >=85 (in building)
  - Existing Verizon Wireless Facilities
  - Existing and Proposed RSRP >=95 (vehicular)
  - Major Route
  - Existing and Proposed RSRP >=105 (outdoor)
  - Town Line



**Map Notes:**  
This map was prepared at a map scale of 1:14,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.  
Open Spaces, Schools, and State Facilities are depicted using available State GIS data, which may be omitted in some areas.  
Base map: ESRI Shaded Relief

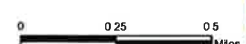
**Existing Verizon Wireless 2100 MHz Coverage  
Orange, Connecticut and Surrounding Area  
(\*Map Scale is 1:14,000)**



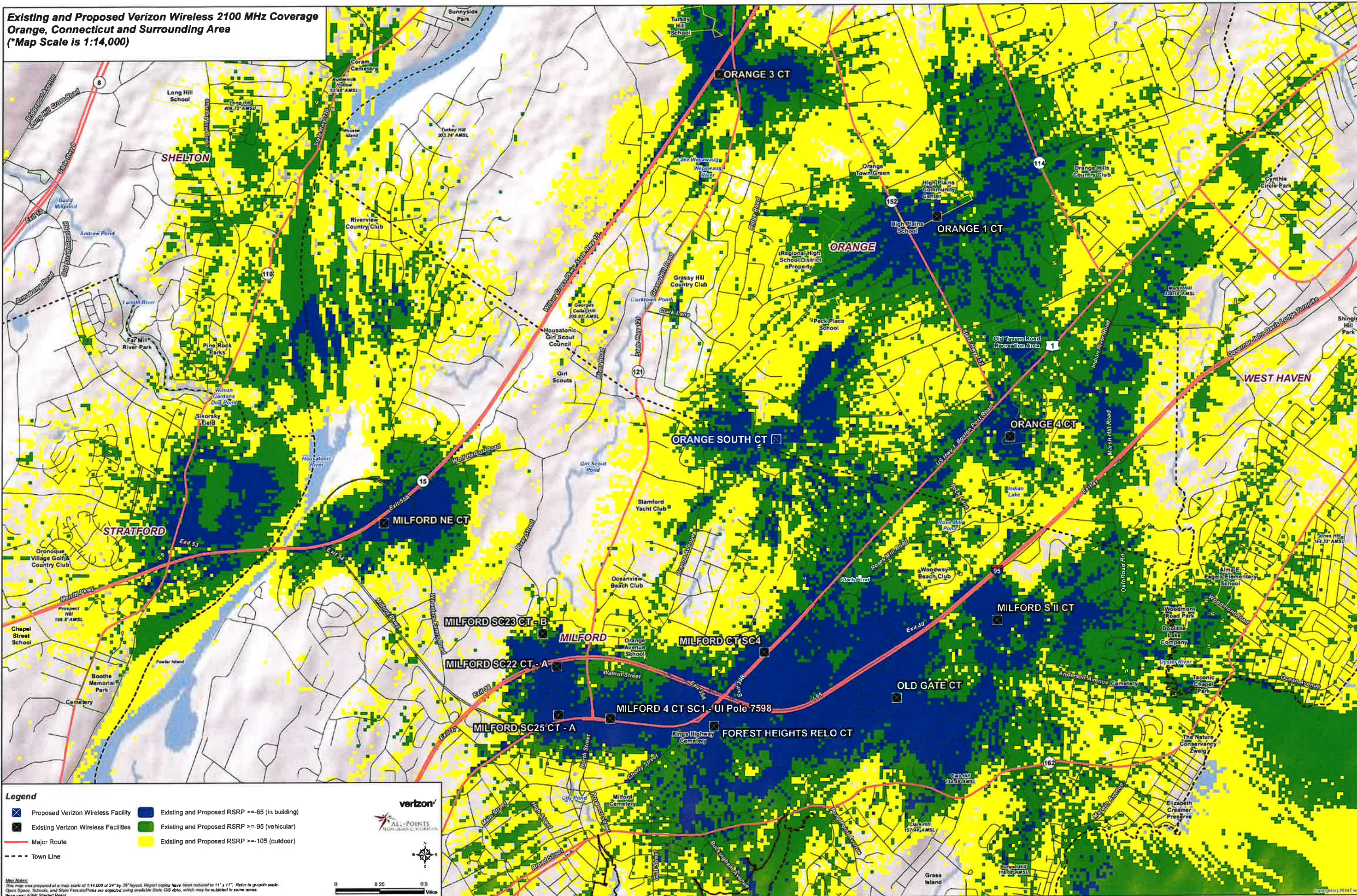
- Legend**
- ✕ Proposed Verizon Wireless Facility
  - ✕ Existing Verizon Wireless Facilities
  - Major Route
  - - - Town Line
  - Existing RSRP >= -85 (in building)
  - Existing RSRP >= -95 (vehicular)
  - Existing RSRP >= -105 (outdoor)



**Map Notes:**  
This map was prepared at a map scale of 1:14,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale for Open Spaces, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas. Base map: ESRI Shaded Relief



**Existing and Proposed Verizon Wireless 2100 MHz Coverage  
Orange, Connecticut and Surrounding Area  
(\*Map Scale is 1:14,000)**



**Legend**

- Proposed Verizon Wireless Facility
- Existing Verizon Wireless Facilities
- Major Route
- - - Town Line
- Existing and Proposed RSRP >=85 (in building)
- Existing and Proposed RSRP >=95 (vehicular)
- Existing and Proposed RSRP >=105 (outdoor)

**Map Notes:**  
This map was prepared at a map scale of 1:14,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.  
Open Spaces, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.  
Base map: ESRI Shaded Relief

**verizon**  
ALL-POINTS  
TECHNOLOGY CORPORATION

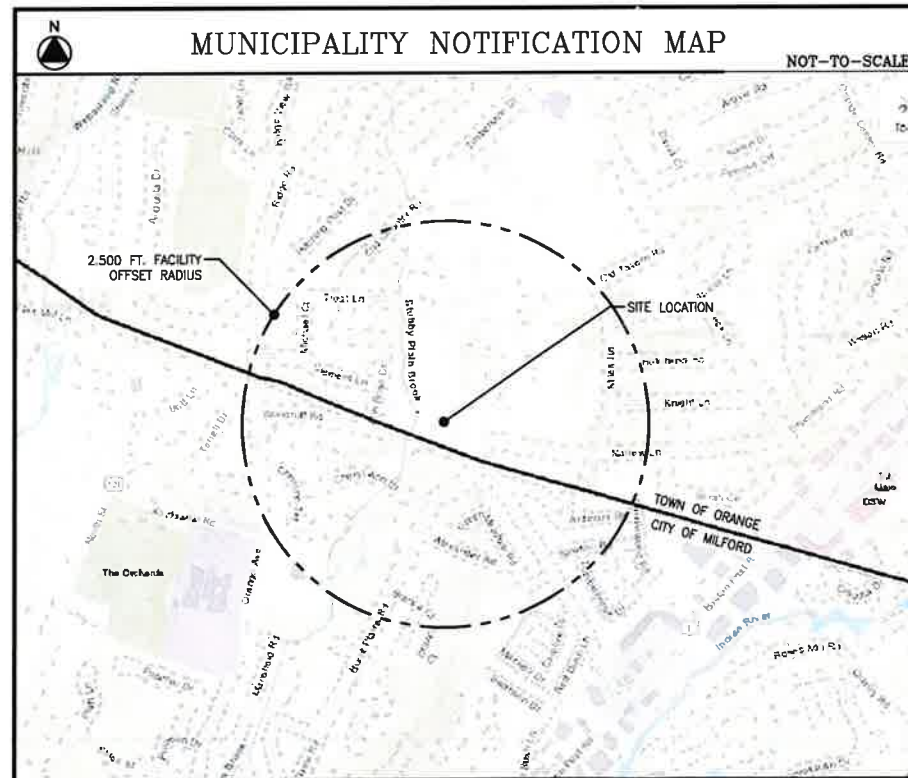
# **ATTACHMENT 3**



## WIRELESS COMMUNICATIONS FACILITY

SITE NAME: ORANGE SOUTH CT

425 OLD TAVERN RD.  
ORANGE, CT 06477



### PROJECT DESCRIPTION

- INSTALLATION OF A 120 FT. MONOPOLE/TOWER AND FENCED-IN COMPOUND AT GRADE
- INSTALLATION OF OUTDOOR CABINETS AND A PROPANE FUELED BACK-UP EMERGENCY GENERATOR ON A 20'-0"X10'-0" EQUIPMENT PAD WITHIN THE COMPOUND
- INSTALLATION OF (12) PANEL ANTENNAS AND ASSOCIATED DEVICES ON THE MONOPOLE
- INSTALLATION OF CABLING FROM EQUIP. CABINETS TO ANTENNAS
- ELECTRICAL & TELEPHONE SERVICES ROUTED UNDERGROUND TO EXISTING UTILITY DEMARCATION POINTS AT STREET

### PROJECT SUMMARY

SITE NAME:	ORANGE SOUTH CT
SITE ADDRESS:	425 OLD TAVERN RD. ORANGE, CT 06477
PROPERTY OWNER:	FREDERICK A. KNIGHT 332 LAMBERT RD. ORANGE, CT 06477
PARCEL ID:	4-1-1
TOWER COORDINATES:	41° 15' 19.25" N 73° 02' 10.35" W
APPLICANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 20 ALEXANDER DR. WALLINGFORD, CT 06492
VERIZON WIRELESS CONTACTS:	BRYON MORAWSKI - CONSTRUCTION DAVE TIVNAN - SITE ACQUISITION
LEGAL/REGULATORY COUNSEL:	KENNETH C. BALDWIN, ESQ. ROBINSON & COLE, LLP (860) 275-8345

### DRAWING SCHEDULE

SHEET NO.	SHEET DESCRIPTION
T-1	TITLE SHEET
C-1	SITE PLAN
C-2	ENLARGED SITE PLAN
C-3	COMPOUND PLAN, NORTH ELEVATION & ANTENNA PLAN

Cellco Partnership  
d/b/a Verizon Wireless



WIRELESS COMMUNICATIONS FACILITY  
20 ALEXANDER DRIVE  
WALLINGFORD, CT 06492

On Air Engineering, LLC

88 Foundry Pond Road  
Cold Spring, NY 10516  
onair@optonline.net  
201-456-4624

LICENSURE

DAVID WEINPAHL, P.E.  
CT LIC. NO. 22144

NO. DATE SUBMISSIONS

0 02/23/23 CSC TECH DWGS

DRAWN BY: MF CHECKED BY: DW

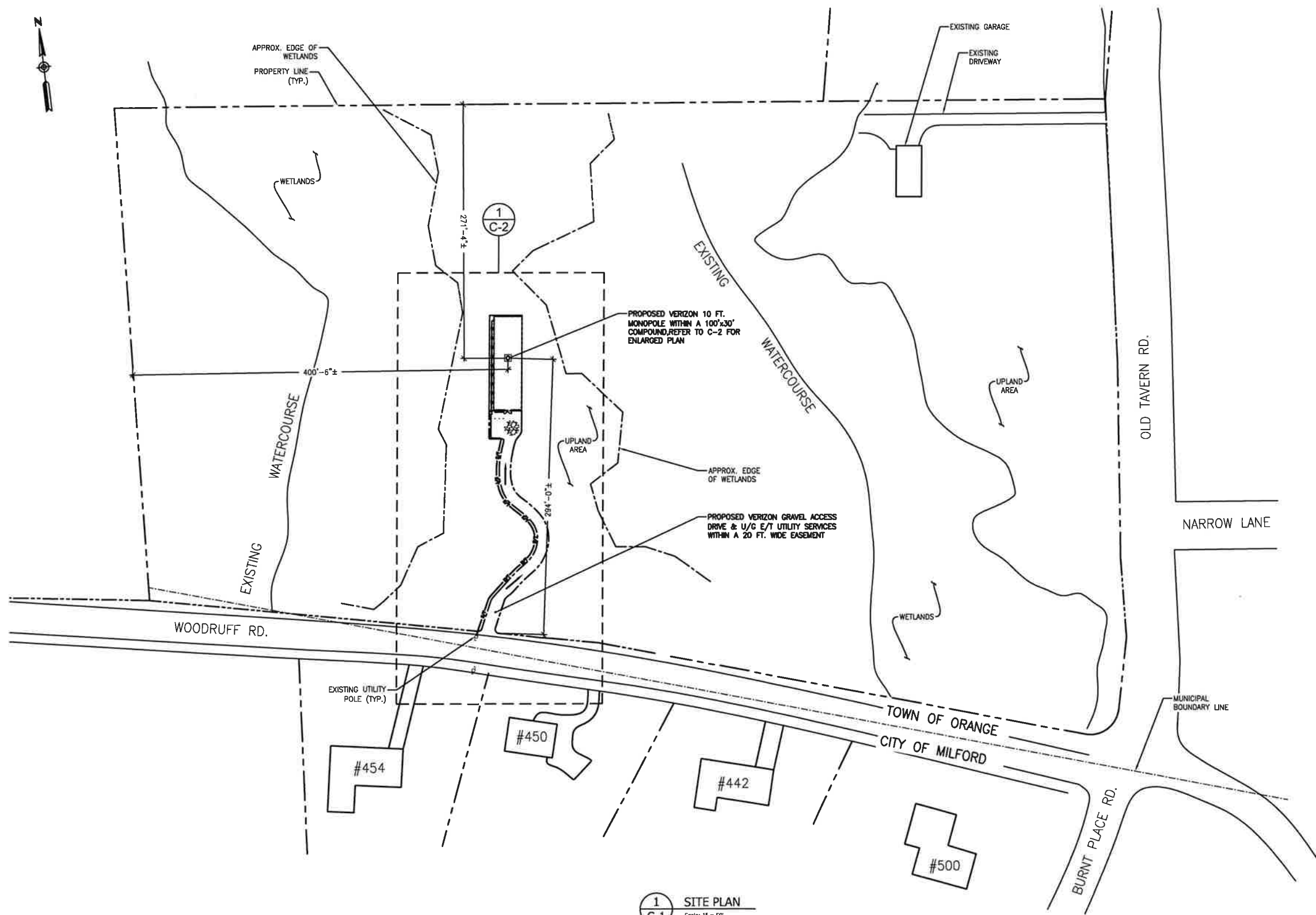
NEW BUILD MACRO

SITE NAME:  
ORANGE SOUTH CT

PROJECT INFORMATION:  
KNIGHT PROPERTY  
425 OLD TAVERN RD.  
ORANGE, CT 06477

DRAWING TITLE:  
TITLE SHEET

SHEET NUMBER:  
T-1



1 C-1 SITE PLAN  
Scale: 1" = 50'

Cellco Partnership  
d/b/a Verizon Wireless



WIRELESS COMMUNICATIONS FACILITY  
20 ALEXANDER DRIVE  
WALLINGFORD, CT 06492

On Air Engineering, LLC

88 Foundry Pond Road  
Cold Spring, NY 10516  
onair@optonline.net  
201-456-4624

LICENSURE

DAVID WEINPAHL, P.E.  
CT LIC. NO. 22144

NO. DATE SUBMISSIONS

0	02.23.23	CSC TECH DWGS.

DRAWN BY: CHECKED BY:

MF

DW

NEW BUILD MACRO

SITE NAME:

ORANGE SOUTH CT

PROJECT INFORMATION:

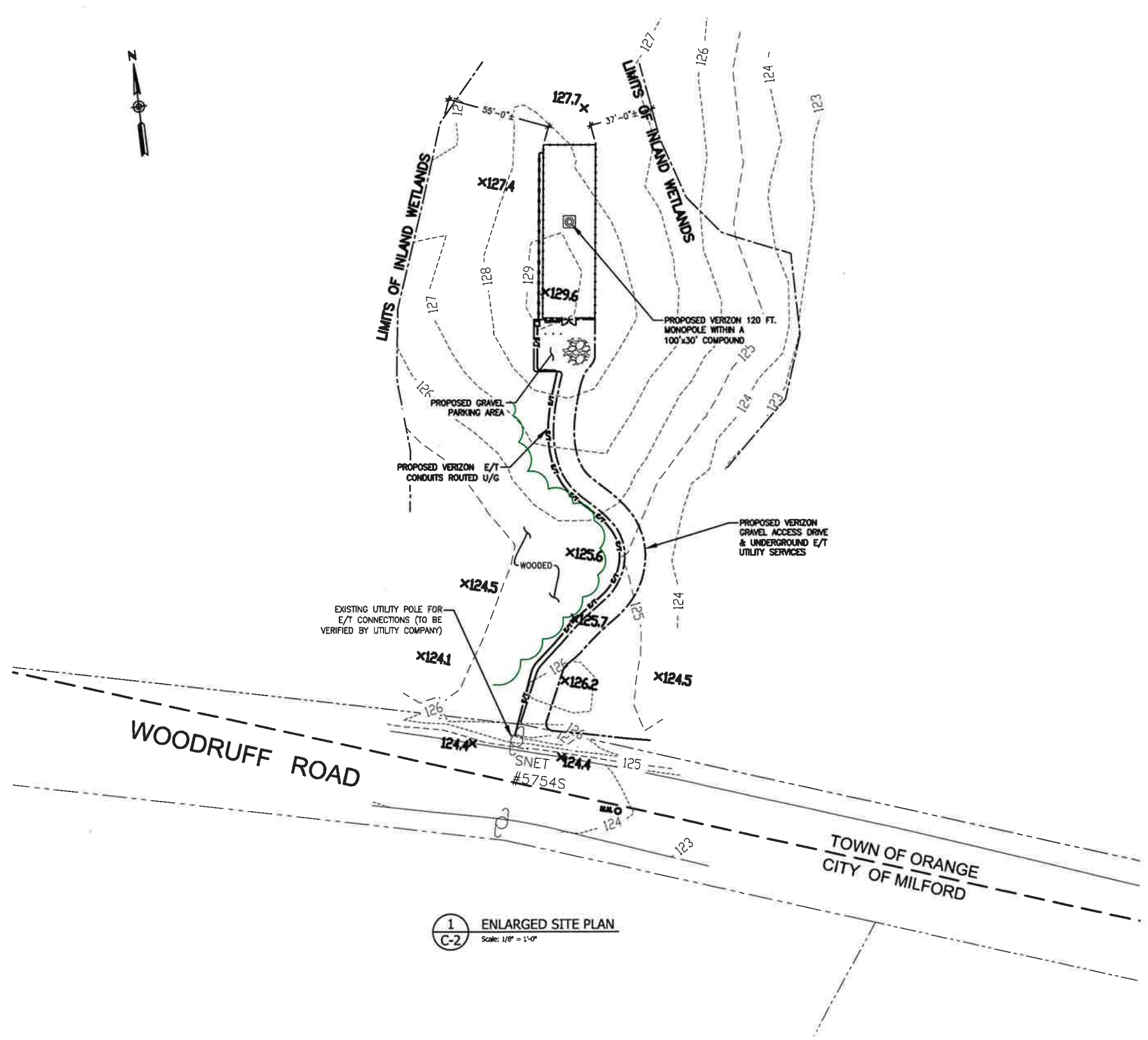
KNIGHT PROPERTY  
425 OLD TAVERN RD.  
ORANGE, CT 06477

DRAWING TITLE:

SITE PLAN

SHEET NUMBER:

C-1



1 ENLARGED SITE PLAN  
 C-2 Scale: 1/8" = 1'-0"

Cellco Partnership  
 d/b/a Verizon Wireless



WIRELESS COMMUNICATIONS FACILITY  
 20 ALEXANDER DRIVE  
 WALLINGFORD, CT 06492

On Air Engineering, LLC  
 88 Foundry Pond Road  
 Cold Spring, NY 10516  
 onair@optonline.net  
 201-456-4624

LICENSURE

DAVID WEINPAUL, P.E.  
 CT LIC. NO. 22144

NO.	DATE	SUBMISSIONS
0	02.23.23	CSC TECH DWGS

DRAWN BY: MF  
 CHECKED BY: DW

NEW BUILD MACRO

SITE NAME:  
 ORANGE SOUTH CT

PROJECT INFORMATION:  
 KNIGHT PROPERTY  
 425 OLD TAVERN RD.  
 ORANGE, CT 06477

DRAWING TITLE:  
 ENLARGED SITE PLAN

SHEET NUMBER:  
 C-2

Cellco Partnership  
d/b/a Verizon Wireless



WIRELESS COMMUNICATIONS FACILITY  
20 ALEXANDER DRIVE  
WALLINGFORD, CT 06492

**On Air Engineering, LLC**  
88 Foundry Pond Road  
Cold Spring, NY 10516  
onair@optonline.net  
201-456-4624

LICENSURE

DAVID WEINPAHL P.E.  
CT LIC NO 22144

NO.	DATE	SUBMISSIONS
0	02.23.23	CSC TECH DWGS

DRAWN BY: MF  
CHECKED BY: DW

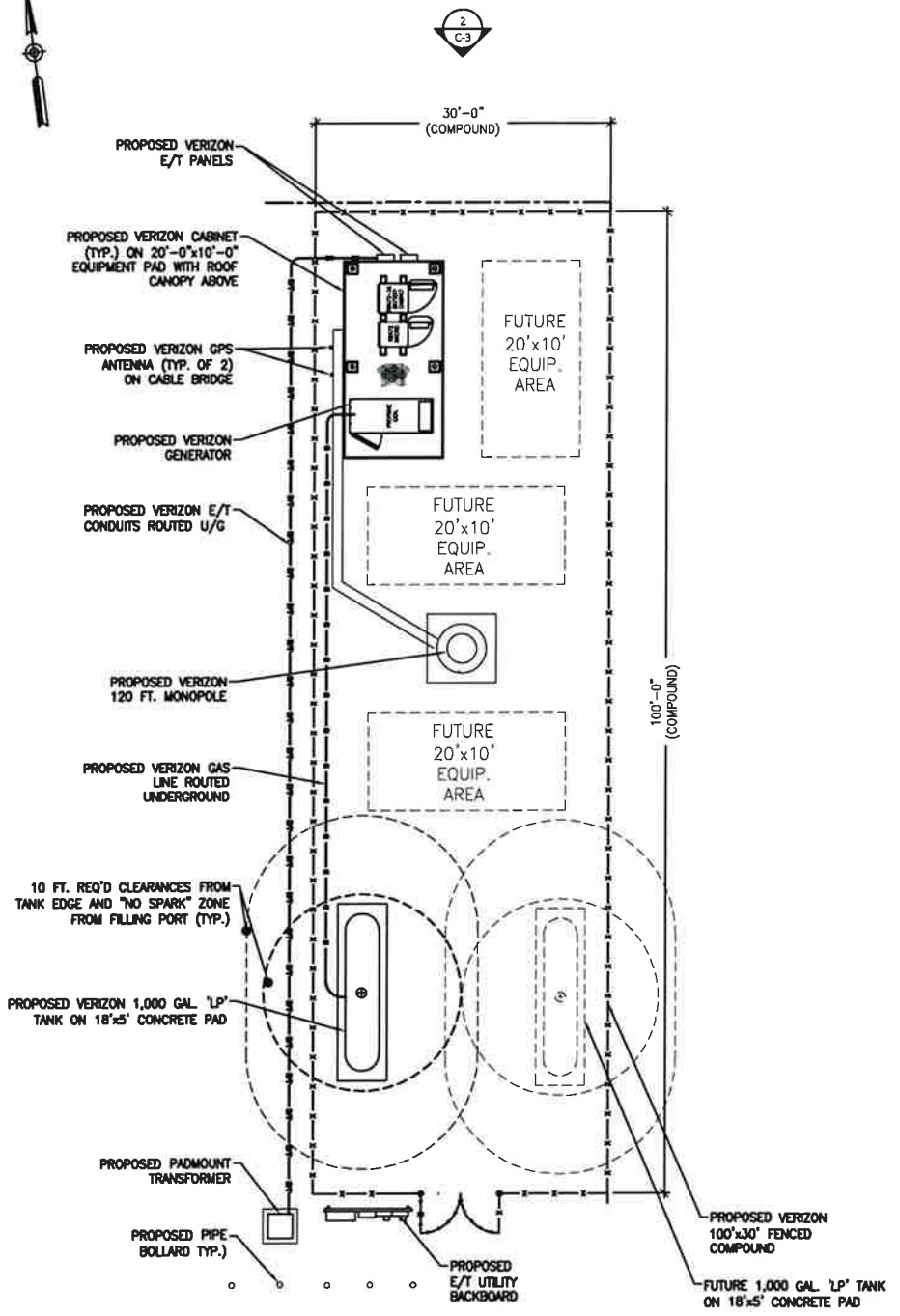
NEW BUILD MACRO

SITE NAME:  
ORANGE SOUTH CT

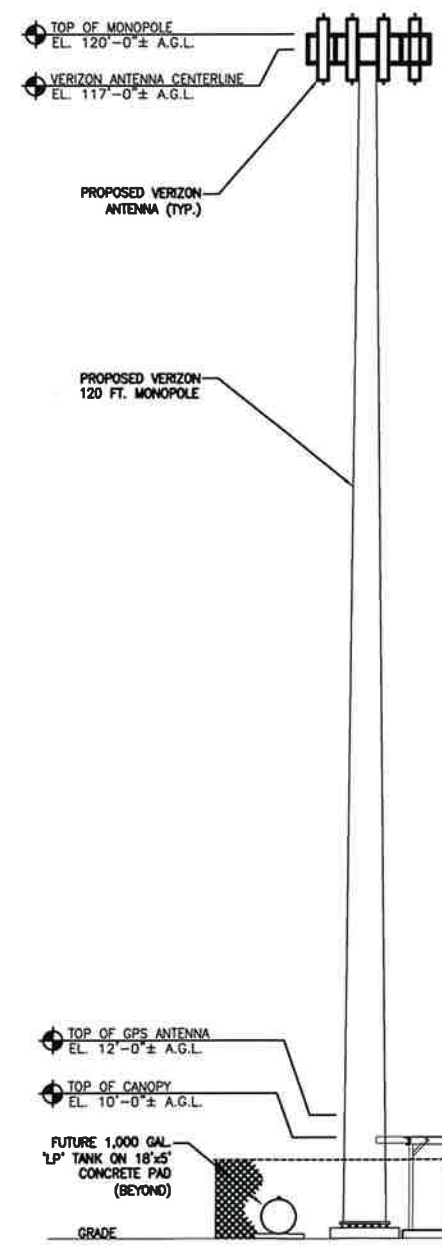
PROJECT INFORMATION:  
KNIGHT PROPERTY  
425 OLD TAVERN RD.  
ORANGE, CT 06477

DRAWING TITLE:  
COMPOUND PLAN,  
NORTH ELEVATION  
& ANTENNA PLAN

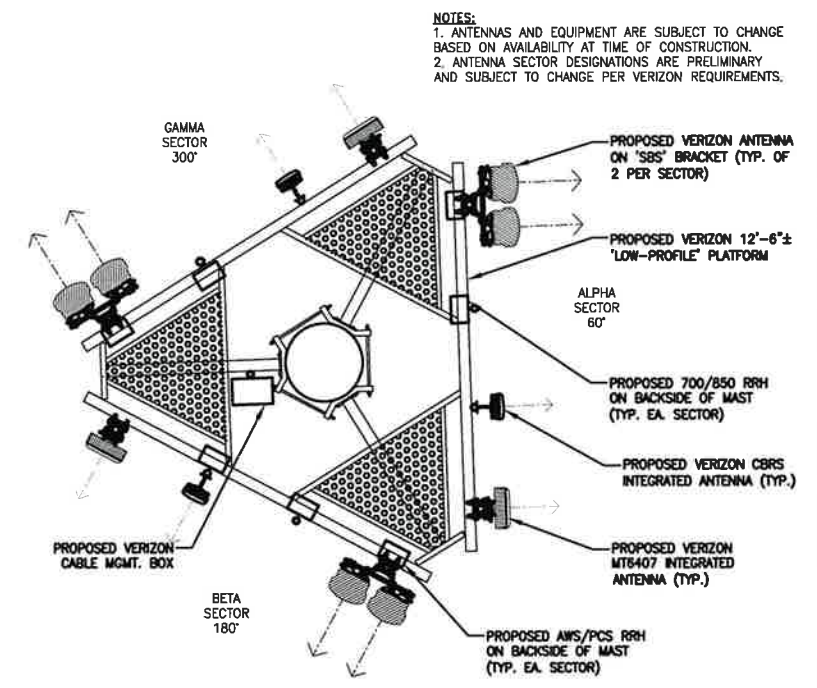
SHEET NUMBER:  
**C-3**



**1**  
C-3  
COMPOUND PLAN  
Scale: 1/8" = 1'-0"



**2**  
C-3  
NORTH ELEVATION  
Scale: 1/8" = 1'-0"



**3**  
C-3  
ANTENNA PLAN @ 117 FT. A.G.L.  
Scale: 3/8" = 1'-0"



# **ATTACHMENT 4**



# VISIBILITY ANALYSIS



**ORANGE SOUTH CT  
425 OLD TAVERN ROAD  
ORANGE, CT**

PREPARED FOR:



PREPARED BY:

**All-Points Technology Corporation, P.C.  
567 Vauxhall Street Extension – Suite 311  
Waterford, CT 06320**

## **VISUAL ASSESSMENT & PHOTO-SIMULATIONS**

Cellco Partnership, d/b/a Verizon Wireless ("Verizon Wireless") is seeking approval for the development of a new wireless communications facility (the "Facility") at 425 Old Tavern Road in Orange, Connecticut (the "Host Property"). All-Points Technology Corporation, P.C. ("APT") completed this assessment to evaluate the potential visual effects of the proposed Facility from within a two-mile radius (the "Study Area"). The municipal boundary between Orange and Milford bisects the Study Area.

### **Project Setting**

The Host Property is a mostly wooded  $\pm 12$ -acre parcel located immediately north of the Town of Orange and the City of Milford municipal border. The proposed Facility would be located in the central portion of the Host Property ("Site"). The immediate area surrounding the Host Property is heavily wooded. Land use within the vicinity is primarily residential, with agricultural fields to the east and north. Commercial development associated with Boston Post Road extends generally northeast to southwest to the southeast of the Site, beyond the residential development.

The topography within the Study Area consists of relatively level terrain. Ground elevations range from approximately 1 foot above mean sea level ("AMSL") approximately 1 mile southeast of the Site along the Indian River to approximately 254 feet AMSL approximately 1.8 miles northwest of the Site. Tree cover (consisting primarily of mixed deciduous hardwoods) occupies approximately 3,834 acres (or  $\pm 47.67\%$ ) of the 8,042-acre Study Area.

### **Project Undertaking**

Based on information contained in CT Siting Council Drawings (prepared by On Air Engineering, LLC, dated February 23, 2023), the proposed Facility would be located at a ground elevation of approximately 128 feet AMSL and include a 120-foot-tall monopole. Associated ground-mounted equipment would be placed within a 30' by 100' gravel based fenced compound surrounded by an 8-foot-high chain link fence. Verizon Wireless would install antennas at a centerline of 117' above ground level ("AGL"). The Facility has been designed to accommodate multiple service providers. A new gravel access drive would be constructed off Woodruff Road extending north to the proposed compound.

## **Methodology**

APT used the combination of a predictive computer model, in-field analysis, and various data sources to evaluate the visibility associated with the proposed Facility on both a quantitative and qualitative basis. The predictive model provides a measurable assessment of visibility throughout the entire Study Area, including private properties and other areas inaccessible for direct observations. The in-field analysis consisted of a balloon float and field reconnaissance of the Study Area to record existing conditions, verify results of the model, inventory seasonal and year-round view locations, and provide photographic documentation from publicly accessible areas. A description of the procedures used in the analysis is provided below.

### **Preliminary Computer Modeling**

To conduct this assessment, a predictive computer model was developed specifically for this project using ESRI's ArcMap GIS<sup>1</sup> software and available GIS data. The predictive model incorporates Project- and Study Area-specific data, including the Site location, its ground elevation and the proposed Facility height, as well as the surrounding topography, existing vegetation, and structures (the primary features that can block direct lines of sight).

A digital surface model ("DSM"), capturing both the natural and built features on the Earth's surface, was generated for the extent of the Study Area utilizing State of Connecticut 2016 LiDAR<sup>2</sup> LAS<sup>3</sup> data points. LiDAR is a remote-sensing technology that develops elevation data by measuring the time it takes for laser light to return from the surface to the instrument's sensors. The varying reflectivity of objects also means that the "returns" can be classified based on the characteristics of the reflected light, normally into categories such as "bare earth," "vegetation," "road," "surface water" or "building." Derived from the 2016 LiDAR data, the LAS datasets contain the corresponding elevation point data and return classification values. The Study Area DSM incorporates the first return LAS dataset values that are associated with the highest feature in the landscape, typically a treetop, top of a building, and/or the highest point of other tall structures.

Once the DSM was generated, ESRI's Viewshed Tool was utilized to identify locations within the Study Area where the proposed Facility may be visible. ESRI's Viewshed Tool predicts visibility by identifying those cells<sup>4</sup> within the DSM that can be seen from an observer location. Cells where visibility was indicated were extracted and converted from a raster dataset to a polygon

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<sup>1</sup> ArcMap is a Geographic Information System desktop application developed by the Environmental Systems Research Institute for creating maps, performing spatial analysis, and managing geographic data.

<sup>2</sup> Light Detection and Ranging

<sup>3</sup> An LAS file is an industry-standard binary format for storing airborne LiDAR data.

<sup>4</sup> Each DSM cell size is 1 square meter.

feature which was then overlaid onto aerial photograph and topographic base maps. Since the DSM includes the highest relative feature in the landscape, isolated “visible” cells are often indicated within heavily forested areas (e.g., from the top of the highest tree) or on building rooftops during the initial processing. It is recognized that these areas do not represent typical viewer locations and overstate visibility. As such, the resulting polygon feature is further refined by extracting those areas. The viewshed results are also cross-checked against the most current aerial photographs to assess whether significant changes (a new housing development, for example) have occurred since the time the LiDAR-based LAS datasets were captured.

The results of the preliminary analysis are intended to provide a representation of those areas where portions of the Facility may potentially be visible to the human eye without the aid of magnification, based on a viewer eye-height of five (5) feet above the ground and the combination of intervening topography, trees and other vegetation, and structures. However, the Facility may not necessarily be visible from all locations within those areas identified by the predictive model, which has its limitations. For instance, the computer model cannot account for mass density, tree diameters and branching variability of trees, or the degradation of views that occurs with distance. As a result, some areas depicted on the viewshed maps as theoretically offering potential visibility of the Facility may be over-predictive because the quality of those views is not sufficient for the human eye to recognize the Facility or discriminate it from other surrounding or intervening objects.

### **Seasonal Visibility**

Visibility also varies seasonally with increased, albeit obstructed, views occurring during “leaf-off” conditions. Beyond the variabilities associated with density of woodland stands found within any given Study Area, each individual tree also has its own unique trunk, pole timber and branching patterns that provide varying degrees of screening in leafless conditions which, as introduced above, cannot be precisely modeled. Seasonal visibility is therefore estimated based on a combination of factors including the type, size, and density of trees within a given area; topographic constraints; and other visual obstructions that may be present. Considering these dynamics, areas depicting seasonal visibility on the viewshed maps are intended to represent locations from where there is a potential for views through intervening trees, as opposed to indicating that leaf-off views will exist from within an entire seasonally-shaded area.

### **Balloon Test and Field Reconnaissance**

To supplement and fine tune the results of the computer modeling efforts, APT completed in-field verification activities consisting of a balloon test, vehicular and pedestrian reconnaissance, and photo-documentation. The balloon test and field reconnaissance were completed on April 4, 2023. The balloon test consisted of raising a brightly-colored (red), approximately 4-foot

diameter, helium-filled balloon tethered to a string height of ±120 feet AGL<sup>5</sup> at the proposed Site. Weather conditions were favorable for the in-field activities with calm winds and mostly sunny skies. APT conducted a reconnaissance of the Study Area by driving along roads and other publicly accessible locations to document and inventory where the balloon could be seen above and through the tree canopy and other visual obstructions.

### **Photographic Documentation and Simulations**

Visual observations from the reconnaissance were used to evaluate the results of the preliminary visibility mapping, including identifying any discrepancies in the initial modeling, and to obtain photo-documentation from representative locations within the Study Area. Photographs were taken with a Canon EOS 6D digital camera body<sup>6</sup> and Canon EF 24 to 105 millimeter (“mm”) zoom lens. The coordinates of the balloon (i.e., the proposed tower location) were entered as a “waypoint” into a handheld global positioning system (“GPS”) device, with the “find” tool on the GPS unit then used to provide the distance and orientation to the flag position. The geographic coordinates of each photo location were recorded as meta data using GPS technology internal to the camera.

APT typically uses a standard focal length of 50 mm to present a consistent field of view. On occasion, photos are taken at lower focal lengths to provide a greater depth of field and to provide context to the scene by including surrounding features within the photograph. During this evaluation, four (4) photographs presented in the attached photo-documentation were taken at a 35 mm focal length and one (1) photograph was taken at a 24 mm focal length, as noted in Table 1 - Photo Locations attached to this report.

Photographic simulations were generated to portray scaled renderings of the proposed Facility from 13 locations presented herein where the Facility may be recognizable above or through the trees. Using field data, site plan information and 3-dimensional (3D) modeling software, spatially referenced models of the Site and Facility were generated and merged. The geographic coordinates obtained in the field for the photograph locations were incorporated into the model to produce virtual camera positions within the spatial 3D model. Photo-simulations were then created using a combination of renderings generated in the 3D model and photo-rendering software programs, which were ultimately composited and merged with the existing conditions photographs (using Adobe Photoshop image editing software). The scale of the subjects in the photograph (the balloon) and the corresponding simulation (the Facility) is proportional to their surroundings. In some instances, where the balloon was visible but heavily obscured by

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<sup>5</sup> The bottom of the balloon represented the top of the monopole.

<sup>6</sup> The Canon EOS 6D is a full-framed camera which includes a lens receptor of the same size as the film used in 35 mm cameras. As such, the images produced are comparable to those taken with a conventional 35 mm camera.

intervening vegetation, simulations were not produced. These photos are labeled as “obscured” on the attached Photo Locations table and the photographs attached to this report.

For presentation purposes in this report, the photographs were produced in an approximate 7-inch by 10.5-inch format. When reproducing the images in this format size, we believe it is important to present the largest view while providing key contextual landscape elements (existing developments, street signs, utility poles, etc.) so that the viewer can determine the proportionate scale of each object within the scene. Photo-documentation of the field reconnaissance and photo-simulations of the proposed Facility are presented in the attachment at the end of this report. The field reconnaissance photos that include the balloon in the view provide visual reference points for the approximate height and location of the proposed Facility relative to the scene. The corresponding photo-simulations depict the proposed monopole and antennas. The photo-simulations are intended to provide the reader with a general understanding of the different view characteristics associated with the Facility from various locations. Photographs were taken from publicly accessible areas and unobstructed view lines were chosen wherever possible.

Table 1 – Photo Locations (provided as attachment) summarizes the photographs and simulations presented in this report, and includes a description of each location, view orientation, distance from where the photo was taken relative to the Site, and the general characteristics of the view. The photo locations are depicted on the photolog and viewshed maps provided as attachments to this report.

### **Final Visibility Mapping**

Information obtained during the field reconnaissance was incorporated into the mapping data layers, including observations of the field reconnaissance, the photograph locations, areas that experienced recent land use changes and those places where the initial model was found to over or under-predict visibility. Once the additional data was integrated into the model, APT recalculated the visibility of the proposed Facility within the Study Area.

### **Conclusions**

As presented on the attached viewshed maps and verified during the balloon float, seasonal visibility accounts for most of the visibility in the Study Area. Representative seasonal views of the Facility are depicted in photos 3, 7, 12, and 20. Due to the dense vegetation in the immediate vicinity of the Site, it will be difficult to discern the Facility as it would be obscured by intervening trees. (See Photos 8 and 19.)

Year-round visibility of the Facility would be limited to small pockets of the Study Area, generally over open fields to the east/northeast of the Site, and along roadways within 0.5-mile of the site to the west, southwest, and east of the Site. The monopole would only extend modestly above the tree canopy to a maximum height of 40 feet (see Photos 2, 5, 10, 15, and 17).

The combined predicted visibility associated with the proposed Facility totals  $\pm 260$  acres, or  $\pm 3.23\%$  of the 8,042-acre Study Area. Seasonal visibility ( $\pm 252$  acres) accounts for approximately 97% of that total.

The results of the viewshed modeling and balloon test photographs demonstrate that much of the Facility's visibility would be limited to areas within 0.5-mile of the Site ( $\pm 92.3\%$ ). As is the case with the overall character of visibility in the Study Area, residential properties in the Site vicinity will experience primarily seasonal views.

#### **Proximity to Schools And Commercial Child Day Care Centers**

No schools or commercial child day care centers are located within 250 feet of the proposed Facility. Platt Technical High School is approximately 0.61-mile southwest of the Site at 600 Orange Avenue in Milford. The Holly Hill Childcare & Learning Center is located approximately 0.87-mile east of the Site at 308 Peck Lane in Orange. It is not anticipated that the Facility will be visible from either location.



## **Limitations**

The viewshed maps presented in the attachment to this report depict areas where the proposed Facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of five (5) feet above the ground and intervening topography, tree canopy, and structures. This analysis may not account for all visible locations, as it is based on the combination of computer modeling, incorporating aerial photographs, and in-field observations from publicly accessible locations. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.

The photo-simulations provide a representation of the Facility under similar settings as those encountered during the field review and reconnaissance. Views of the Facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle and intensity of the sun; and the specific viewer location. Weather conditions on the day of the field review included calm winds and partly cloudy skies.

## **ATTACHMENTS**

**Table 1 - Photo Locations**

Photo	Location	Orientation	Distance	Visibility
1	CLEMENT LANE AT MICHAEL COURT	ESE	+/- 0.35 MILE	NOT VISIBLE
2	MICHAEL COURT	ESE	+/- 0.34 MILE	YEAR ROUND
3	CLEMENT LANE	ESE	+/- 0.18 MILE	SEASONAL
4	ANN ROSE DRIVE	E	+/- 0.14 MILE	SEASONAL
5	TALMADGE DRIVE	E	+/- 0.24 MILE	YEAR ROUND
6	WOODRUFF ROAD AT ANN ROSE DRIVE	E	+/- 0.17 MILE	SEASONAL
7	WOODRUFF ROAD*	ENE	+/- 497 FEET	SEASONAL
8	WOODRUFF ROAD**	NNW	+/- 421 FEET	OBSCURED
9	NARROW LANE*	WNW	+/- 0.21 MILE	NOT VISIBLE
10	OLD TAVERN ROAD*	W	+/- 0.15 MILE	YEAR ROUND
11	TREAT LANE*	S	+/- 0.22 MILE	NOT VISIBLE
12	ANN ROSE DRIVE	SE	+/- 0.31 MILE	SEASONAL
13	TREAT LANE AT MICHAEL COURT	SE	+/- 0.43 MILE	NOT VISIBLE
14	ORANGE AVENUE	ESE	+/- 0.43 MILE	NOT VISIBLE
15	ORANGE AVENUE AT WOODRUFF ROAD	E	+/- 0.42 MILE	YEAR ROUND
16	CHERYL ANN DRIVE	ENE	+/- 0.34 MILE	NOT VISIBLE
17	CHERYL ANN DRIVE AT TALMADGE DRIVE	ENE	+/- 0.30 MILE	YEAR ROUND
18	CHERYL ANN DRIVE	NE	+/- 0.20 MILE	YEAR ROUND
19	BURNT PLAINS ROAD AT ALEXANDER ROAD	N	+/- 0.30 MILE	OBSCURED
20	BURNT PLAINS ROAD	NNW	+/- 0.18 MILE	SEASONAL
21	COLONY ROAD AT GREEN MEADOW ROAD	NNW	+/- 0.46 MILE	NOT VISIBLE
22	SAWMILL ROAD AT TUMBLEBROOK DRIVE	NW	+/- 0.47 MILE	OBSCURED
23	RITA LANE	WNW	+/- 0.36 MILE	NOT VISIBLE

\* Photograph was taken at 35 mm focal length.

\*\* Photograph was taken at 24 mm focal length.

**Table 1 - Photo Locations Continued**

Photo	Location	Orientation	Distance	Visibility
24	LAVIOLA LANE AT NARROW LANE	WNW	+/- 0.39 MILE	OBSCURED
25	MILES ROAD	W	+/- 0.42 MILE	NOT VISIBLE
26	HOTCHKISS ROAD	WSW	+/- 0.48 MILE	NOT VISIBLE
27	OLD TAVERN ROAD	SW	+/- 0.42 MILE	YEAR ROUND
28	OLD TAVERN ROAD	SW	+/- 0.29 MILE	OBSCURED

\* Photograph was taken at 35 mm focal length.  
 \*\* Photograph was taken at 24 mm focal length.



# PHOTO LOG

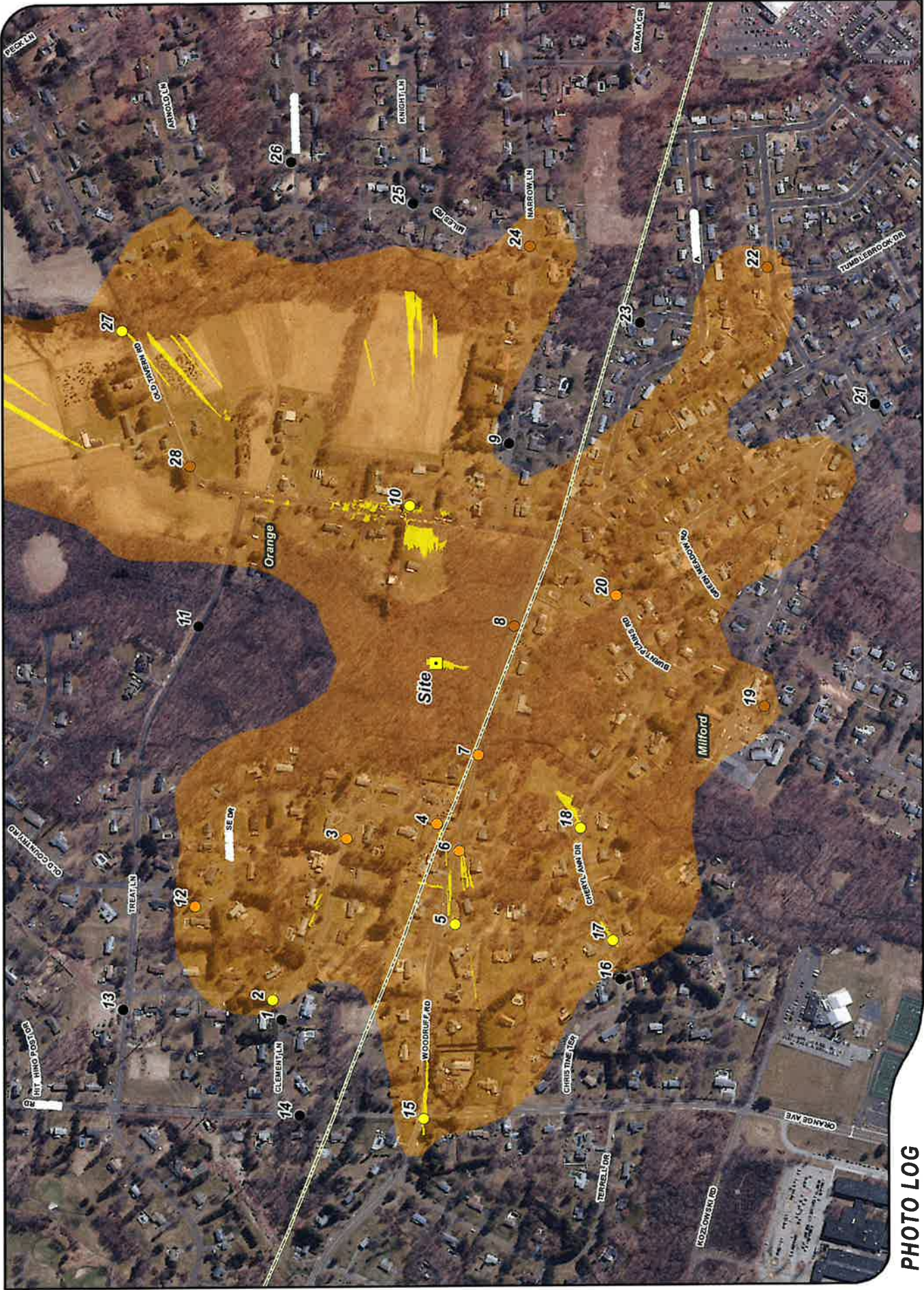
Legend

- Site
- Seasonal
- Not Visible
- Year-Round
- Obscured
- Municipal Boundary



1 inch = 600 feet

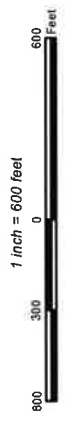




# PHOTO LOG

- Legend**
- Site
  - Seasonal
  - Year-Round
  - Not Visible
  - Obscured
  - Predicted
  - Year-Round Visibility
  - Year-Round Visibility
  - Municipal Boundary

\*Visibility layers obtained from  
viewshed analysis mapping  
contained in this document



**EXISTING**



PHOTOGRAPHED ON 4/4/2023

PHOTO  
1

LOCATION

**CLEMENT LANE AT MICHAEL COURT**

ORIENTATION

**ESE**

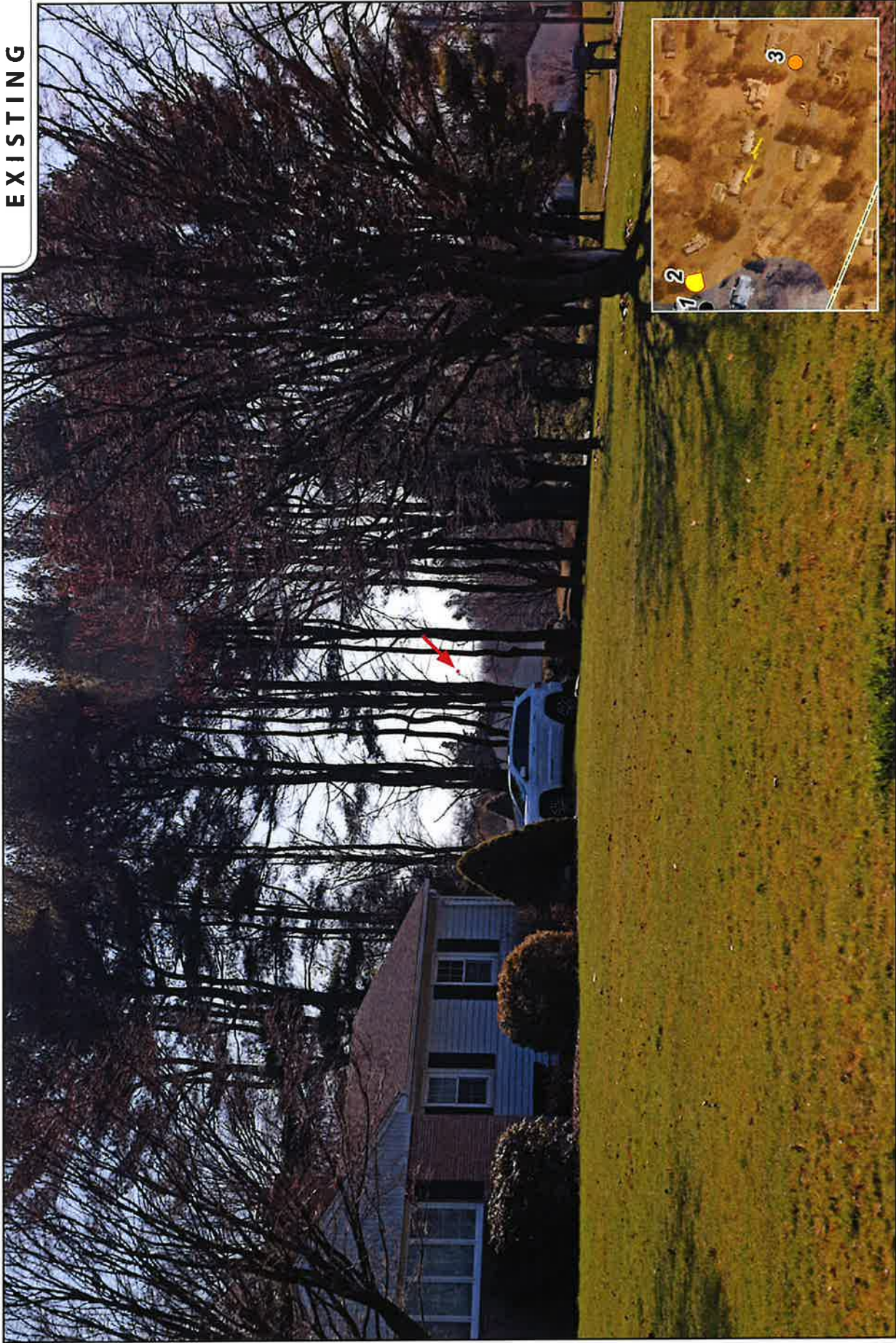
DISTANCE TO SITE

**+/- 0.35 MILE**

VISIBILITY

**NOT VISIBLE**

**EXISTING**



PHOTOGRAPHED ON 4/4/2023

PHOTO

2

LOCATION

**MICHAEL COURT**

ORIENTATION

**ESE**

DISTANCE TO SITE

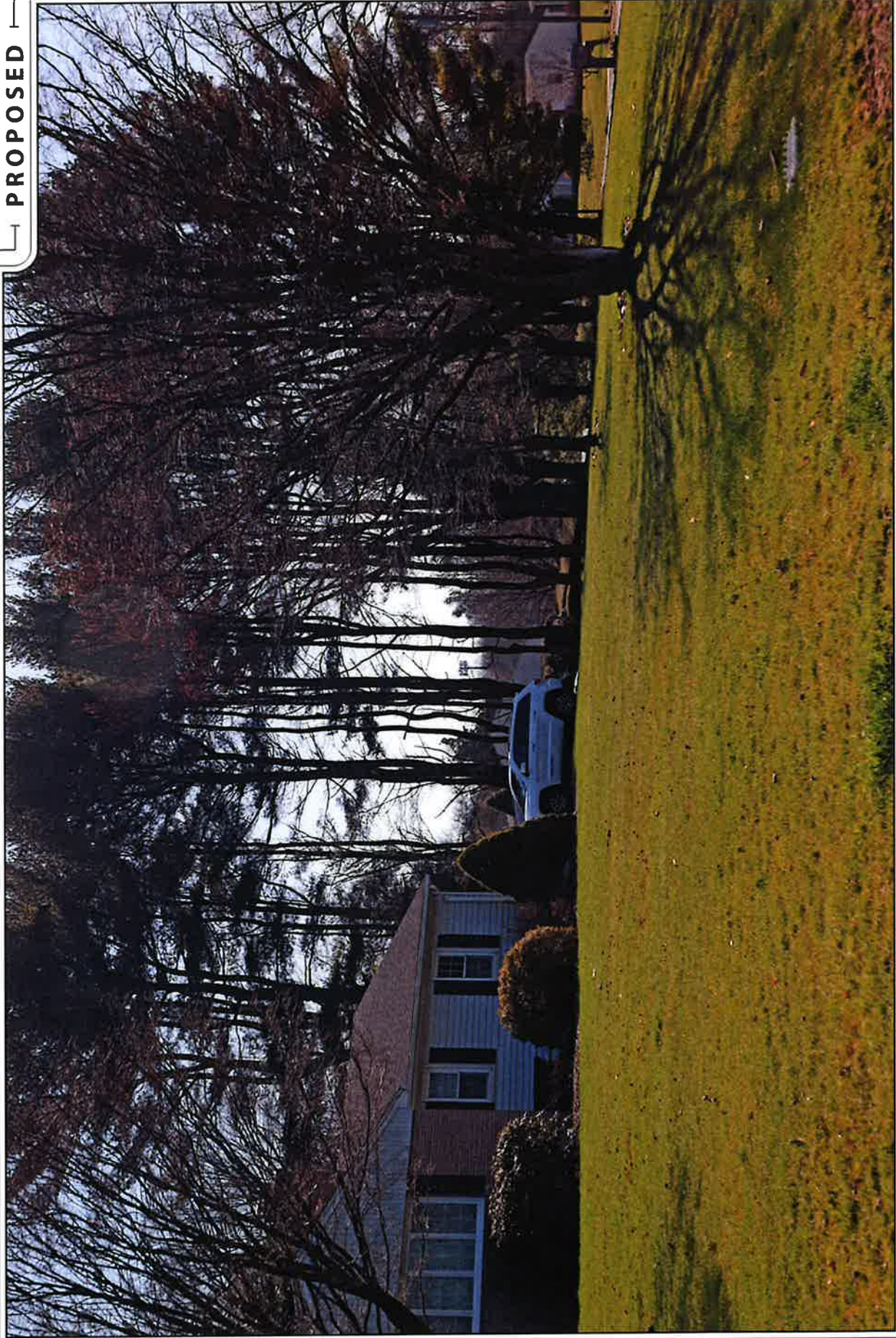
**+/- 0.34 MILE**

VISIBILITY

**YEAR ROUND**



**PROPOSED**



PHOTO

2

LOCATION

**MICHAEL COURT**

ORIENTATION

**ESE**

DISTANCE TO SITE

**+/- 0.34 MILE**

VISIBILITY

**YEAR ROUND**

**EXISTING**



PHOTOGRAPHED ON 4/4/2023

PHOTO  
3

LOCATION  
**CLEMENT LANE**

ORIENTATION  
**ESE**

DISTANCE TO SITE  
**+/- 0.18 MILE**

VISIBILITY  
**SEASONAL**

**PROPOSED**



PHOTO

3

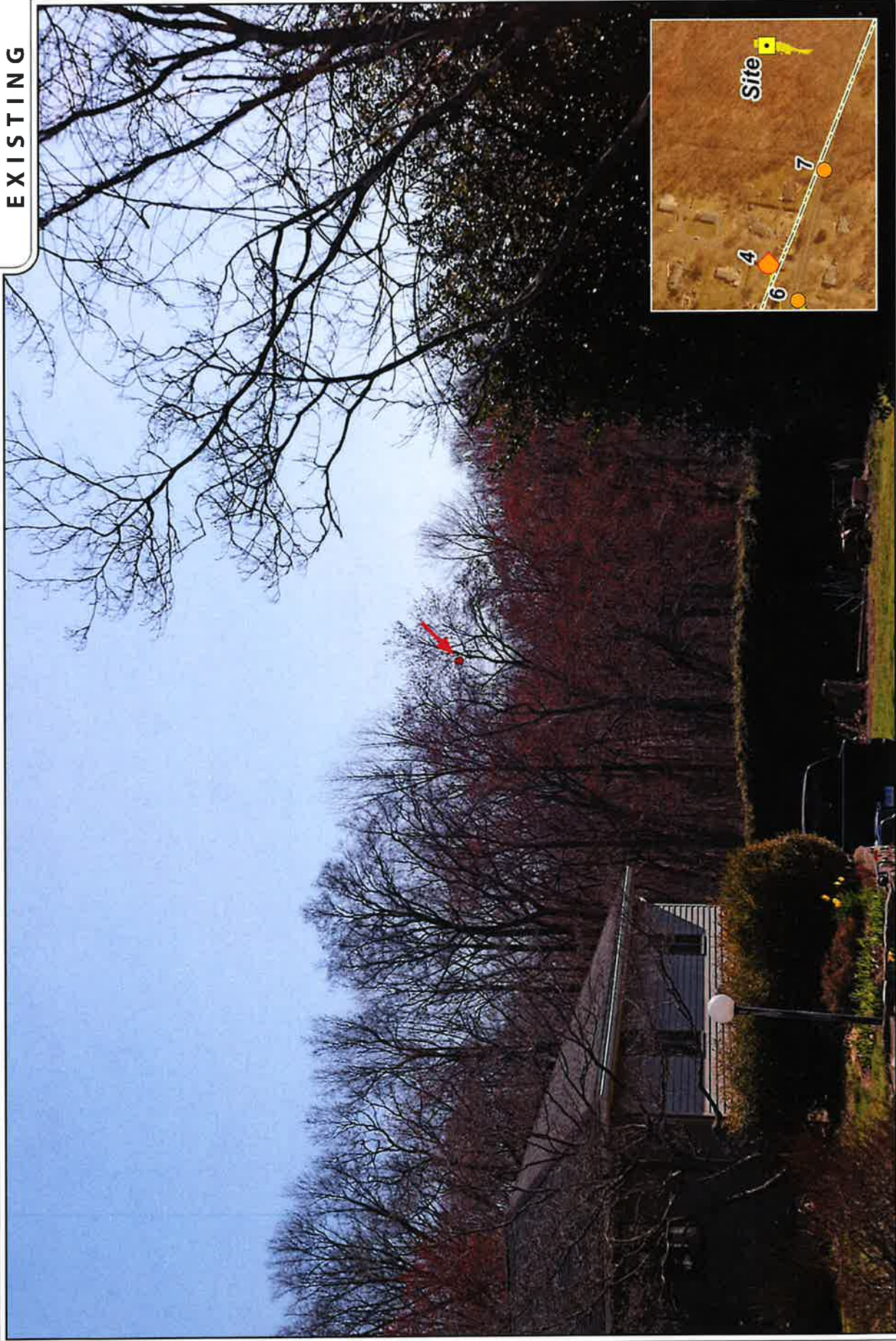
LOCATION  
**CLEMENT LANE**

ORIENTATION  
**ESE**

DISTANCE TO SITE  
**+/- 0.18 MILE**

VISIBILITY  
**SEASONAL**

**EXISTING**



PHOTOGRAPHED ON 4/4/2023

PHOTO

4

LOCATION

**ANN ROSE DRIVE**

ORIENTATION

**E**

DISTANCE TO SITE

**+/- 0.14 MILE**

VISIBILITY

**SEASONAL**

PROPOSED



PHOTO

4

LOCATION

ANN ROSE DRIVE

ORIENTATION

E

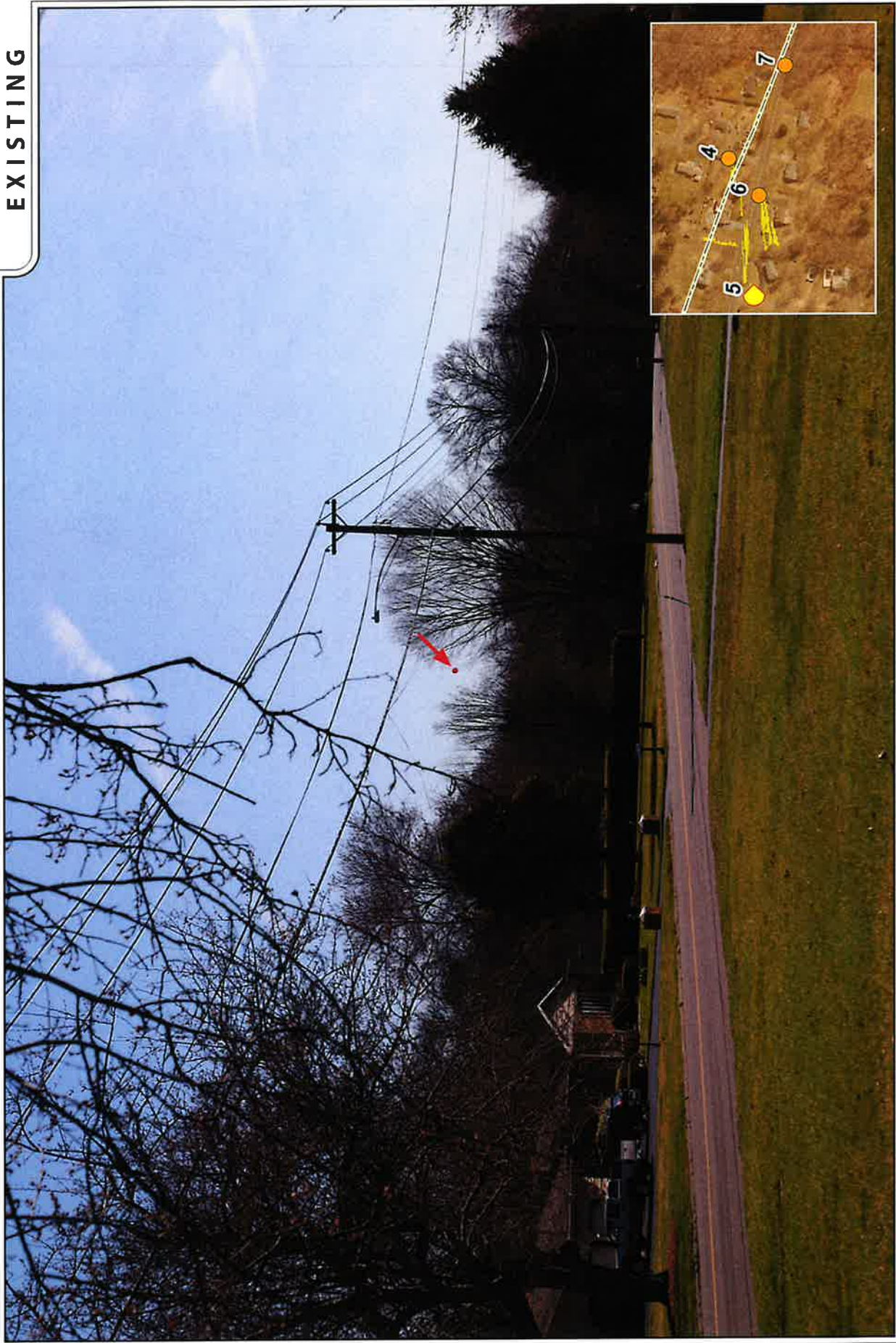
DISTANCE TO SITE

+/- 0.14 MILE

VISIBILITY

SEASONAL

**EXISTING**



PHOTOGRAPHED ON 4/1/2023

PHOTO

5

LOCATION

TALMADGE DRIVE

ORIENTATION

E

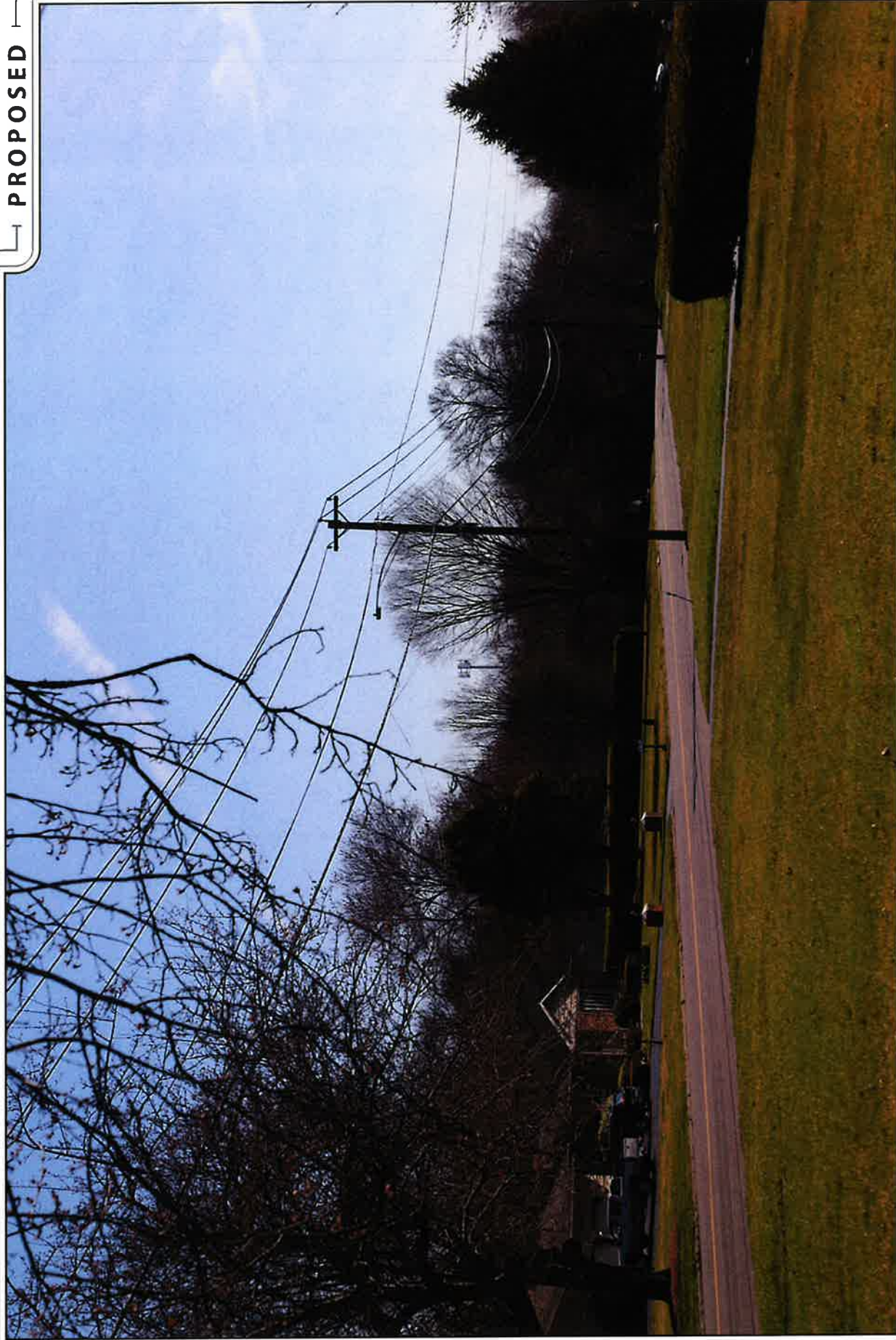
DISTANCE TO SITE

+/- 0.24 MILE

VISIBILITY

YEAR ROUND

PROPOSED



PHOTO

5

LOCATION

TALMADGE DRIVE

ORIENTATION

E

DISTANCE TO SITE

+/- 0.24 MILE

VISIBILITY

YEAR ROUND

**EXISTING**



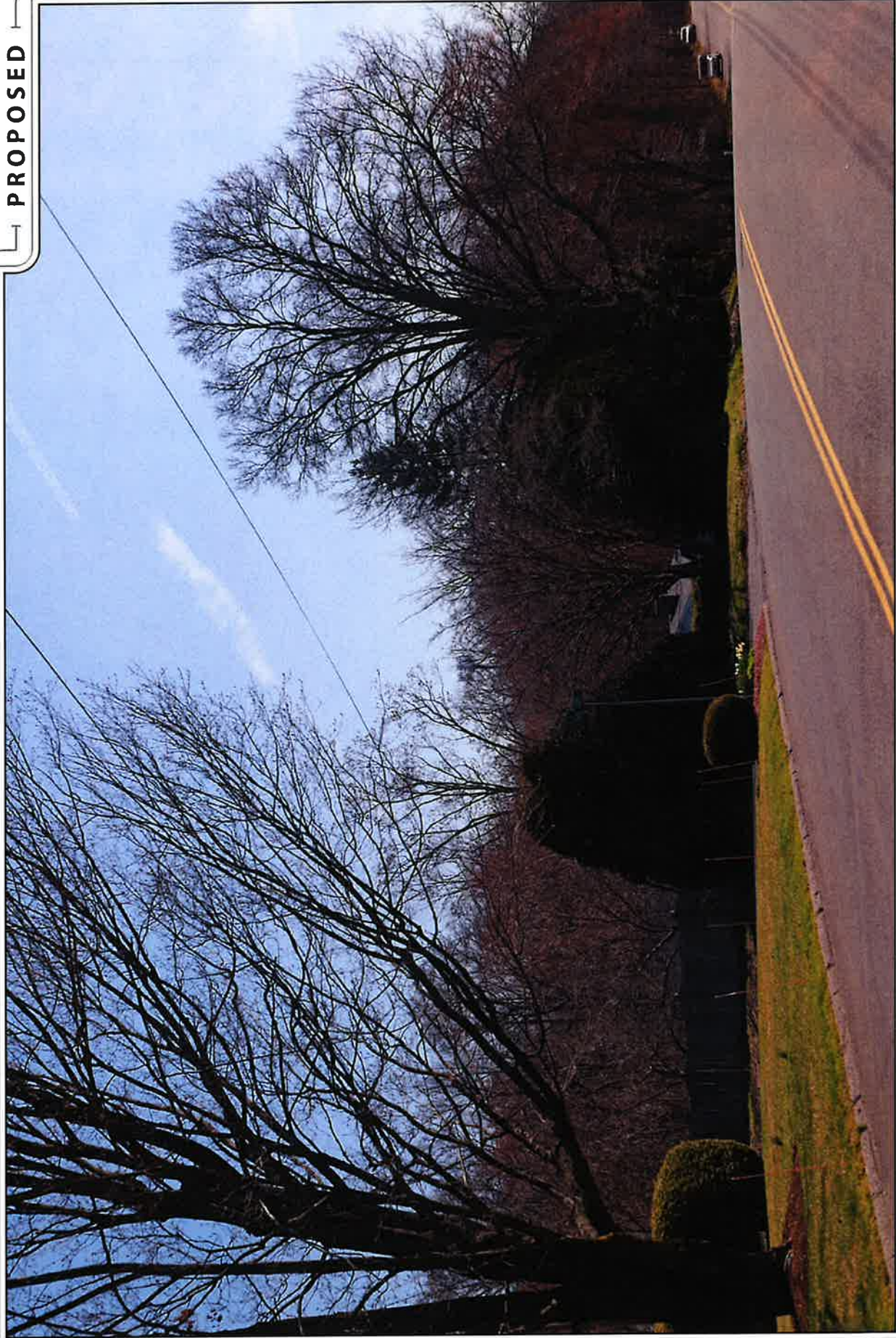
PHOTOGRAPHED ON 4/1/2023

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	WOODRUFF ROAD AT ANN ROSE DRIVE	E	+/- 0.17 MILE	SEASONAL





PROPOSED



PHOTO

6

LOCATION

WOODRUFF ROAD AT ANN ROSE DRIVE

ORIENTATION

E

DISTANCE TO SITE

+/- 0.17 MILE

VISIBILITY

SEASONAL



ALL-POINTS  
FIELD SERVICES

verizon

**EXISTING**



PHOTOGRAPHED ON 4/4/2023  
35mm Focal Length

PHOTO  
7

LOCATION  
WOODRUFF ROAD

ORIENTATION  
ENE

DISTANCE TO SITE  
+/- 497 FEET

VISIBILITY  
SEASONAL

**PROPOSED**



PHOTO

7

LOCATION

**WOODRUFF ROAD**

ORIENTATION

**ENE**

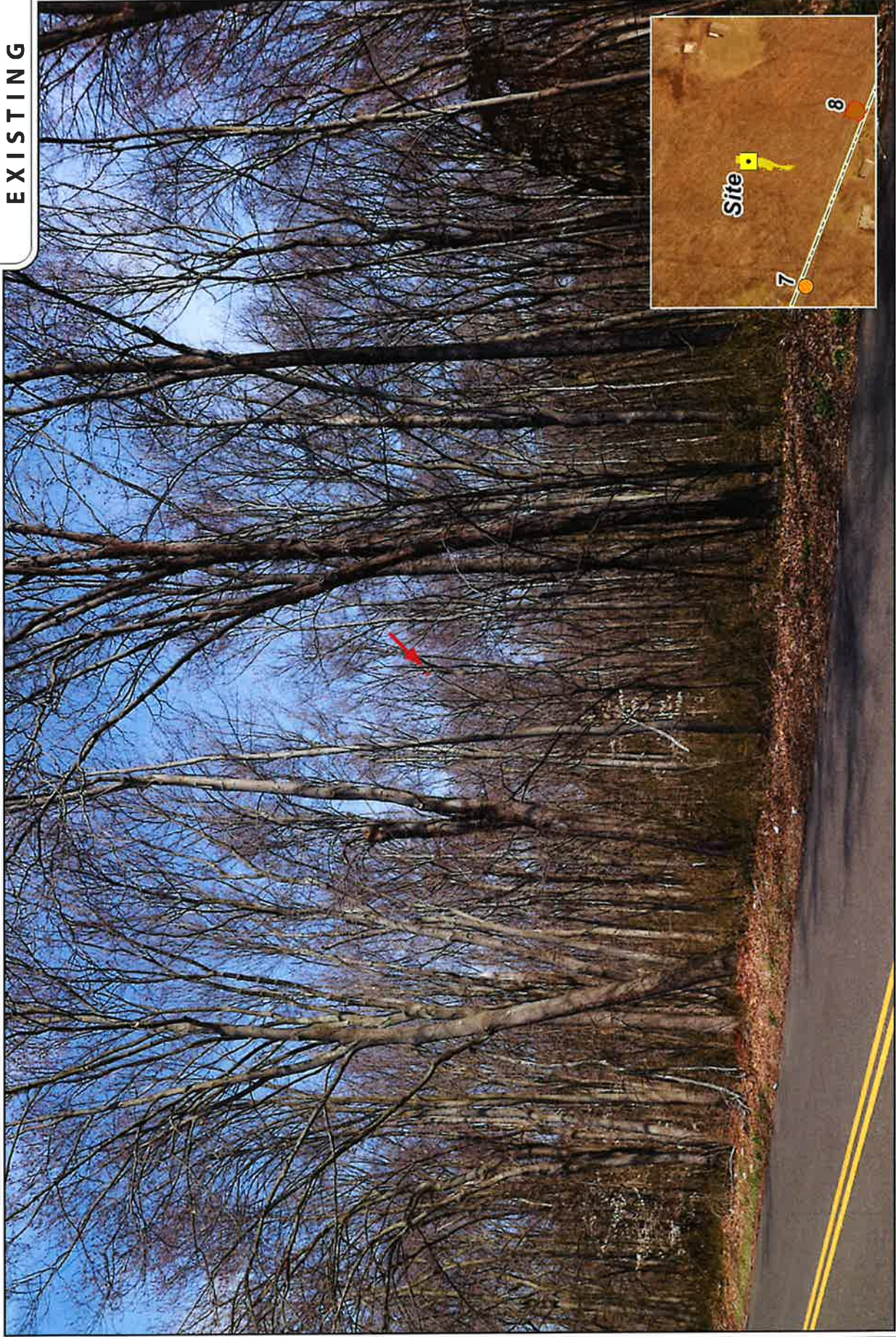
DISTANCE TO SITE

**+/- 497 FEET**

VISIBILITY

**SEASONAL**

**EXISTING**



PHOTOGRAPHED ON 4/4/2023  
2mm focal length

PHOTO  
8

LOCATION  
**WOODRUFF ROAD**

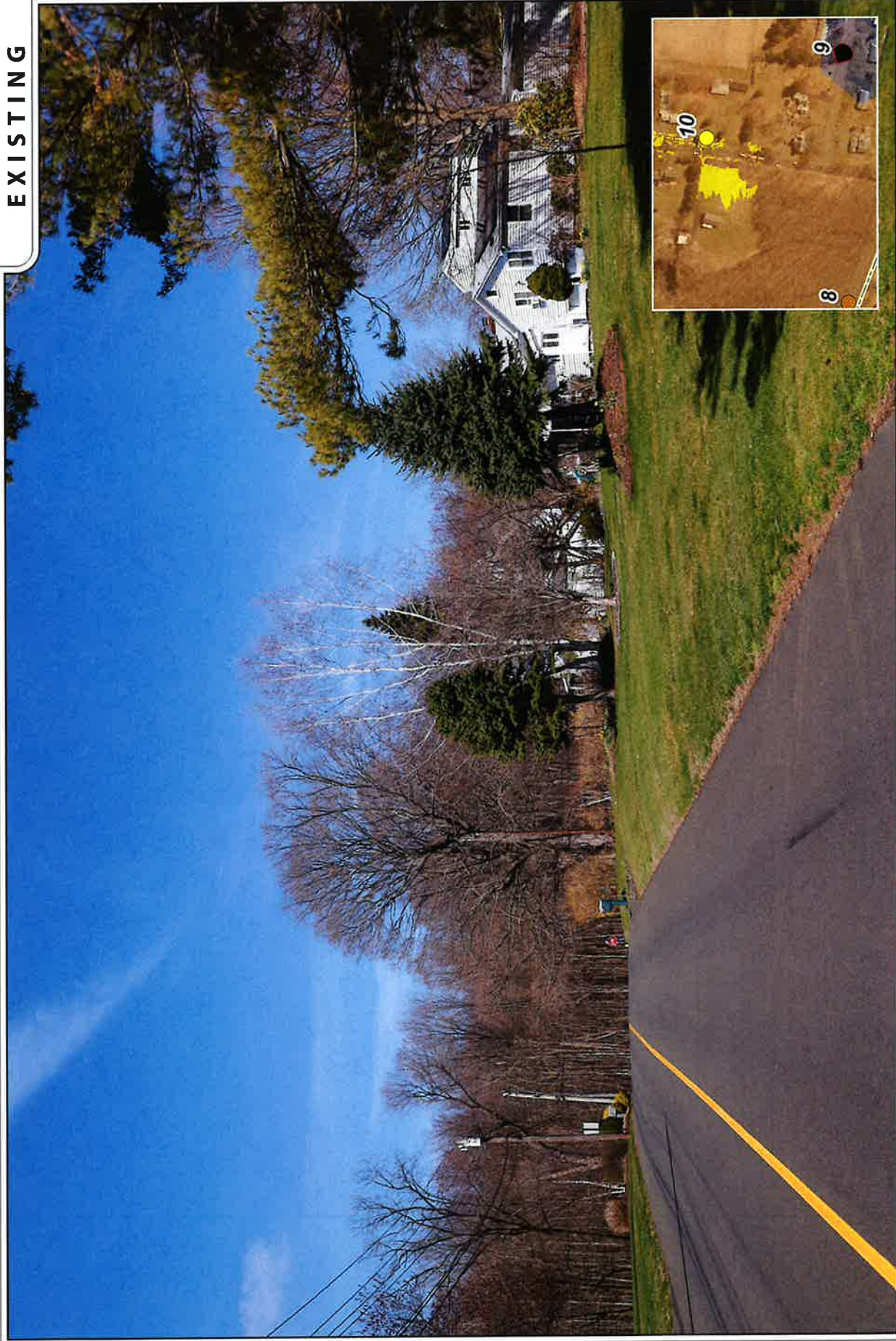
ORIENTATION  
**NNW**

DISTANCE TO SITE  
**+/- 421 FEET**

VISIBILITY  
**OBSCURED**



**EXISTING**



PHOTOGRAPHED ON 4/4/2023  
35mm focal length

PHOTO

**9**

LOCATION

**NARROW LANE**

ORIENTATION

**WNW**

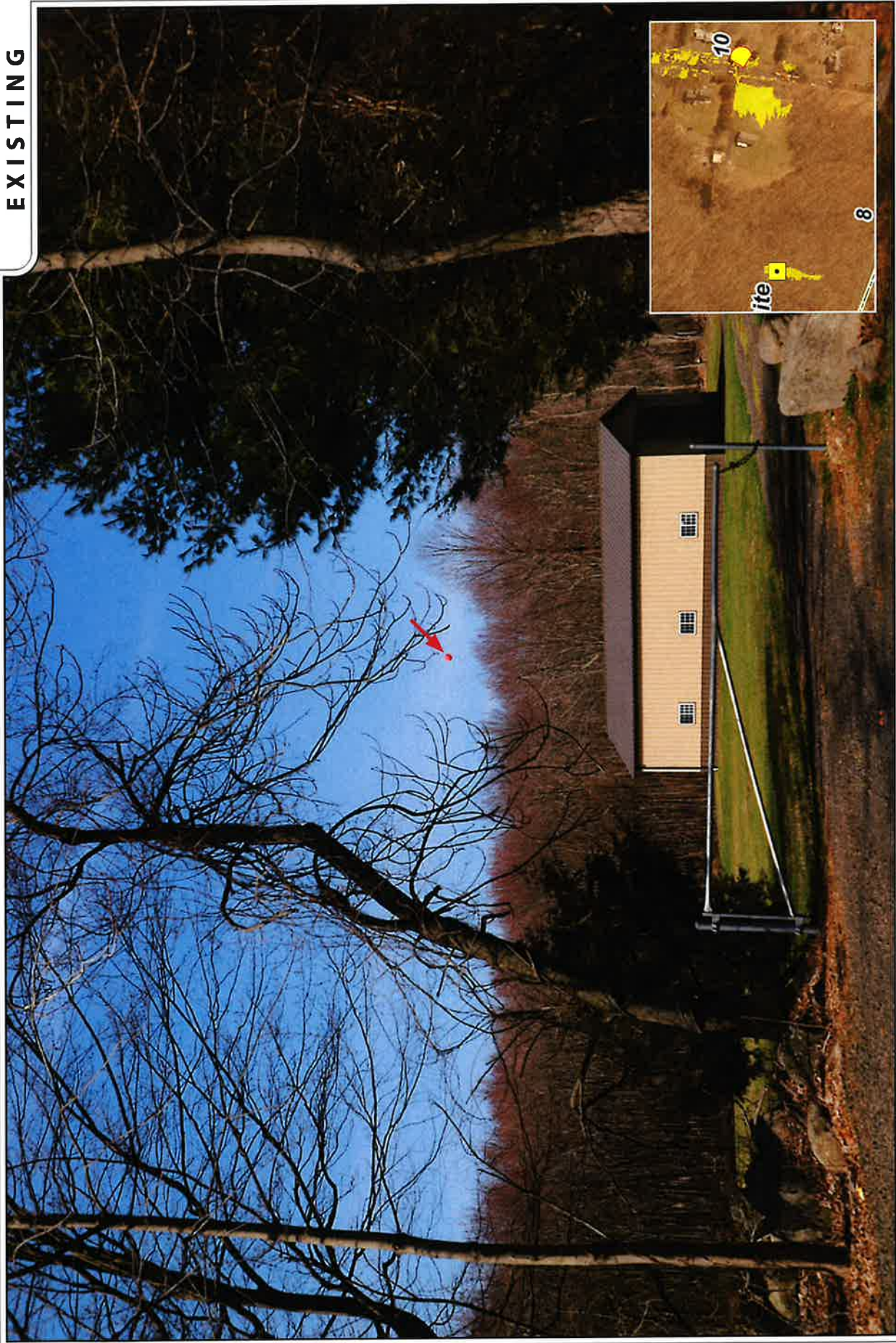
DISTANCE TO SITE

**+/- 0.21 MILE**

VISIBILITY

**NOT VISIBLE**

**EXISTING**



PHOTOGRAPHED ON 4/4/2023  
35mm Focal Length

PHOTO  
10

LOCATION  
OLD TAVERN ROAD

ORIENTATION  
W

DISTANCE TO SITE  
+/- 0.15 MILE

VISIBILITY  
YEAR ROUND

PROPOSED



PHOTO

10

LOCATION

OLD TAVERN ROAD

ORIENTATION

W

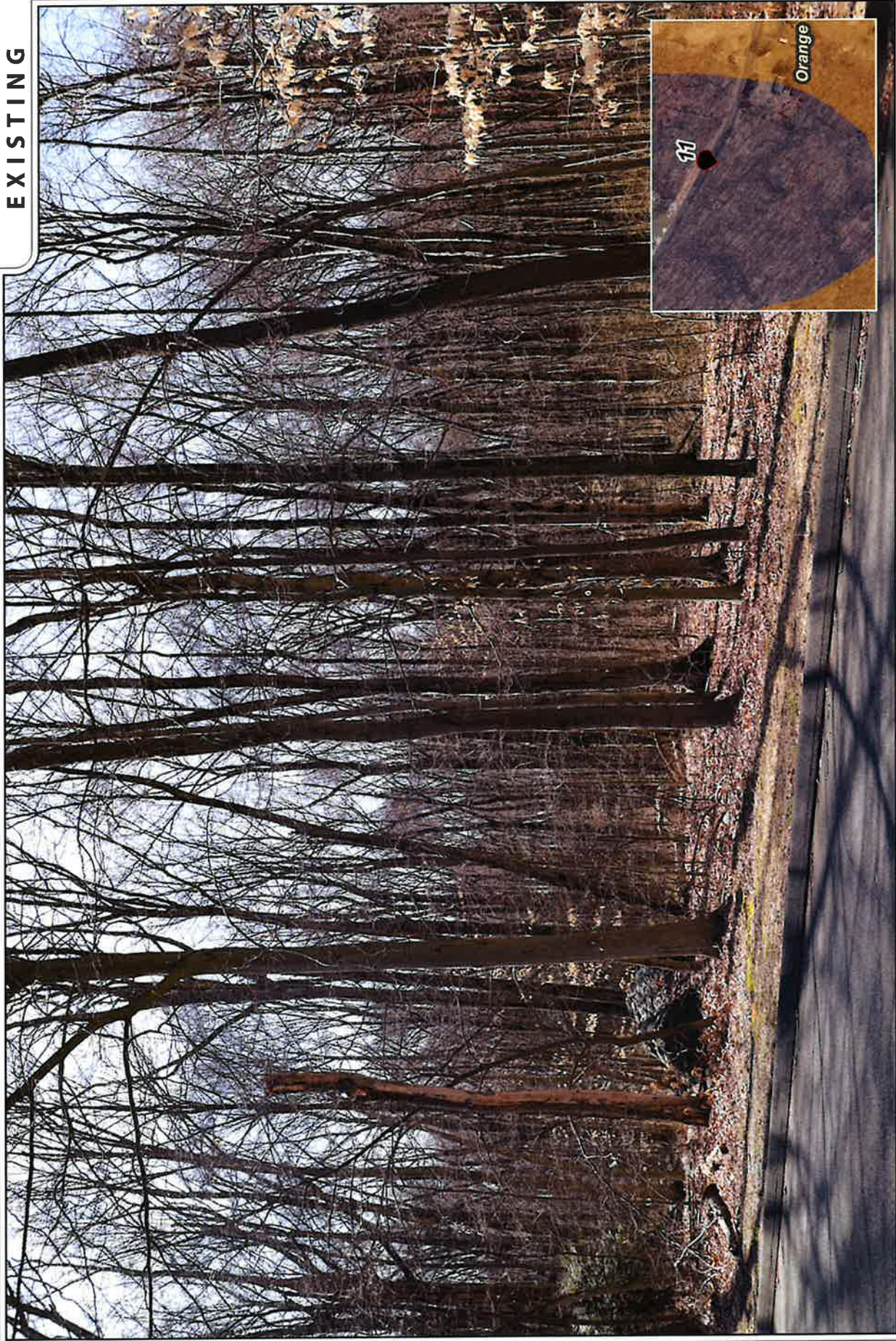
DISTANCE TO SITE

+/- 0.15 MILE

VISIBILITY

YEAR ROUND

**EXISTING**



PHOTOGRAPHED ON 4/4/2023  
35mm focal length

PHOTO

11

LOCATION  
**TREAT LANE**

ORIENTATION  
**S**

DISTANCE TO SITE  
**+/- 0.22 MILE**

VISIBILITY  
**NOT VISIBLE**



**EXISTING**



PHOTOGRAPHED ON 4/4/2023

PHOTO

**12**

LOCATION

**ANN ROSE DRIVE**

ORIENTATION

**SE**

DISTANCE TO SITE

**+/- 0.31 MILE**

VISIBILITY

**SEASONAL**

**PROPOSED**



PHOTO

12

LOCATION

**ANN ROSE DRIVE**

ORIENTATION

**SE**

DISTANCE TO SITE

**+/- 0.31 MILE**

VISIBILITY

**SEASONAL**

**EXISTING**



PHOTOGRAPHED ON 4/4/2023

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
13	TREAT LANE AT MICHAEL COURT	SE	+/- 0.43 MILE	NOT VISIBLE

**EXISTING**



PHOTO

14

LOCATION

**ORANGE AVENUE**

ORIENTATION

**ESE**

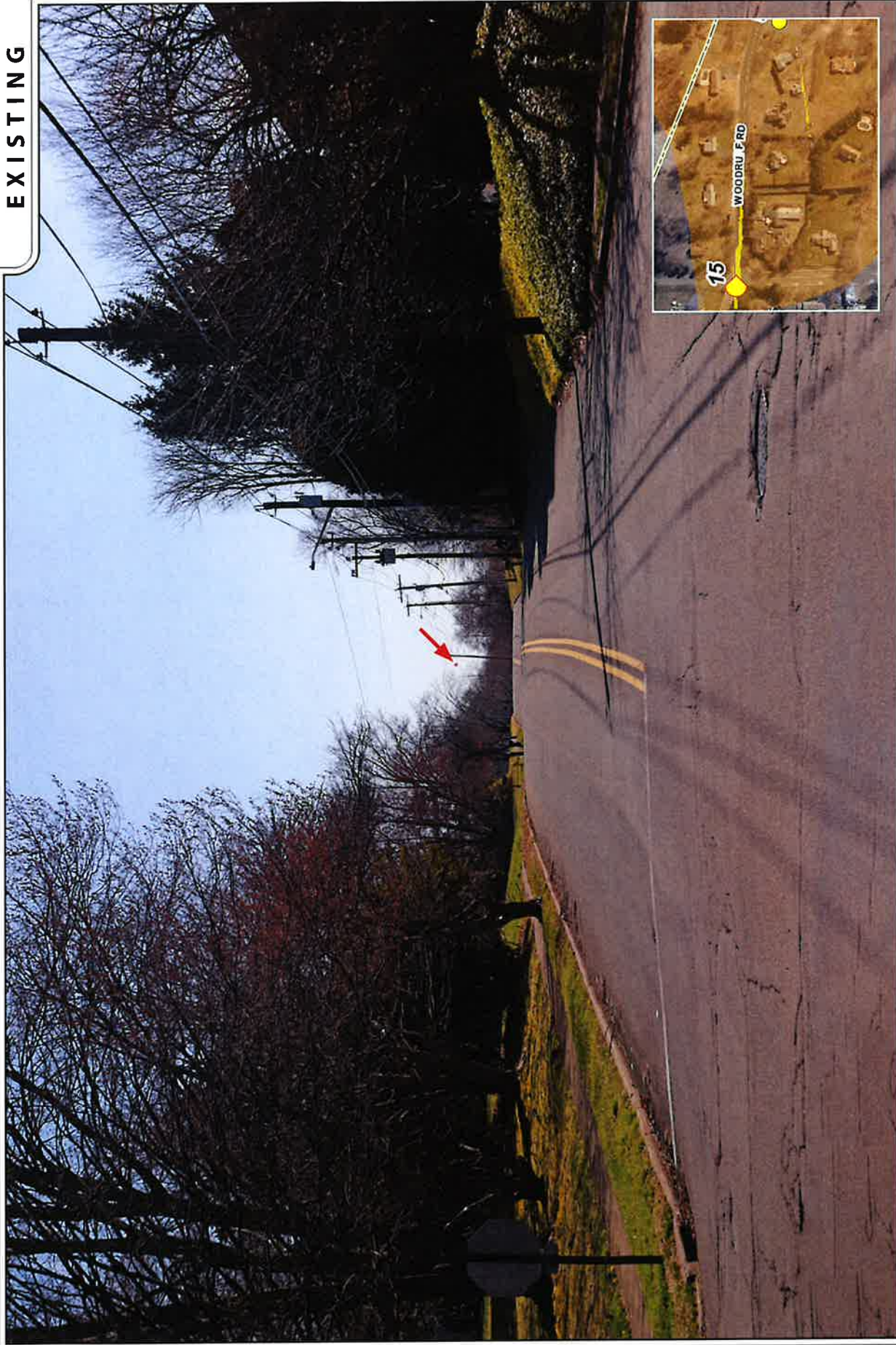
DISTANCE TO SITE

**+/- 0.43 MILE**

VISIBILITY

**NOT VISIBLE**

**EXISTING**



PHOTOGRAPHED ON 4/14/2023

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
15	ORANGE AVENUE AT WOODRUFF ROAD	E	+/- 0.42 MILE	YEAR ROUND

PROPOSED

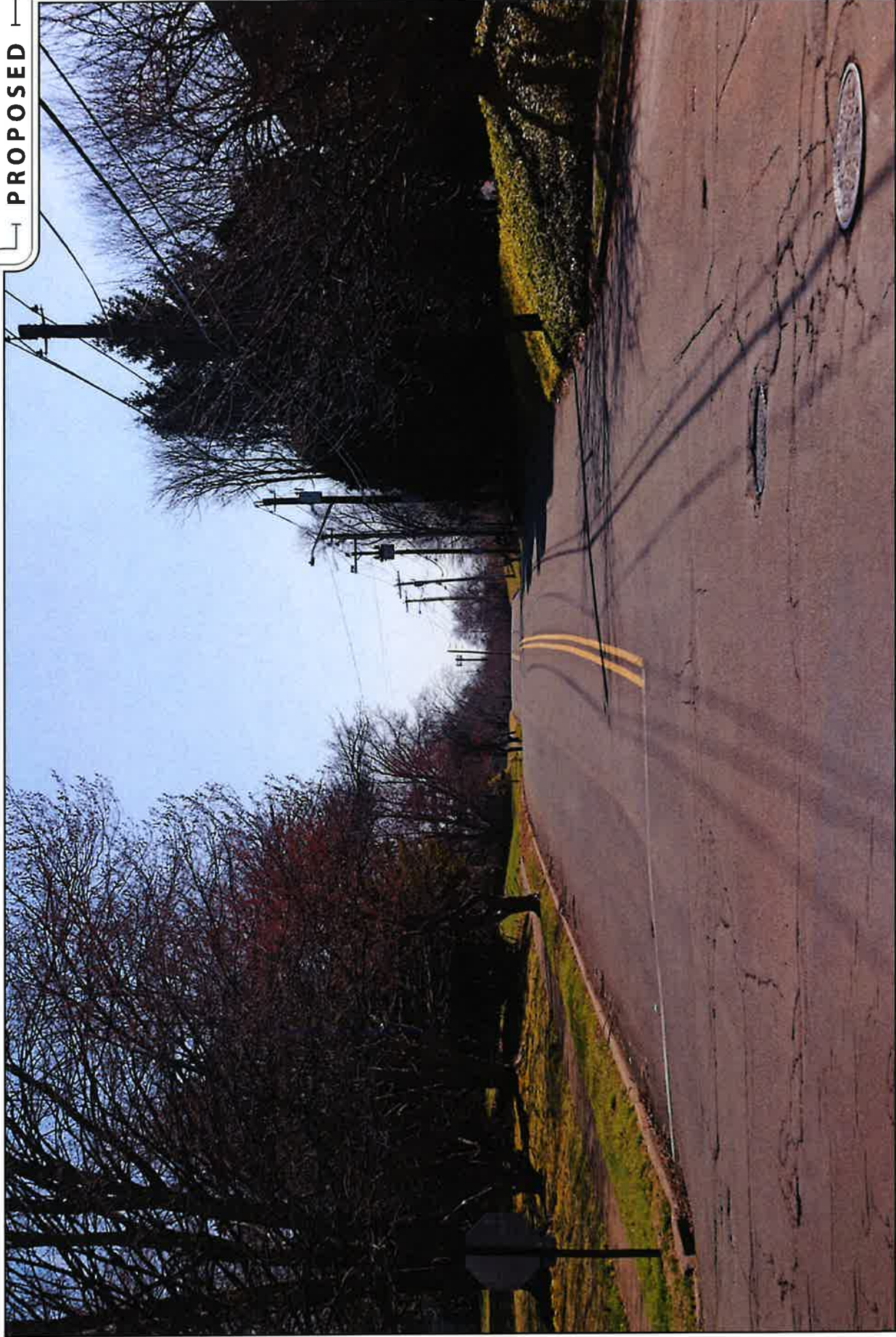


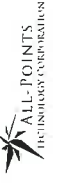
PHOTO  
15

LOCATION  
ORANGE AVENUE AT WOODRUFF ROAD

ORIENTATION  
E

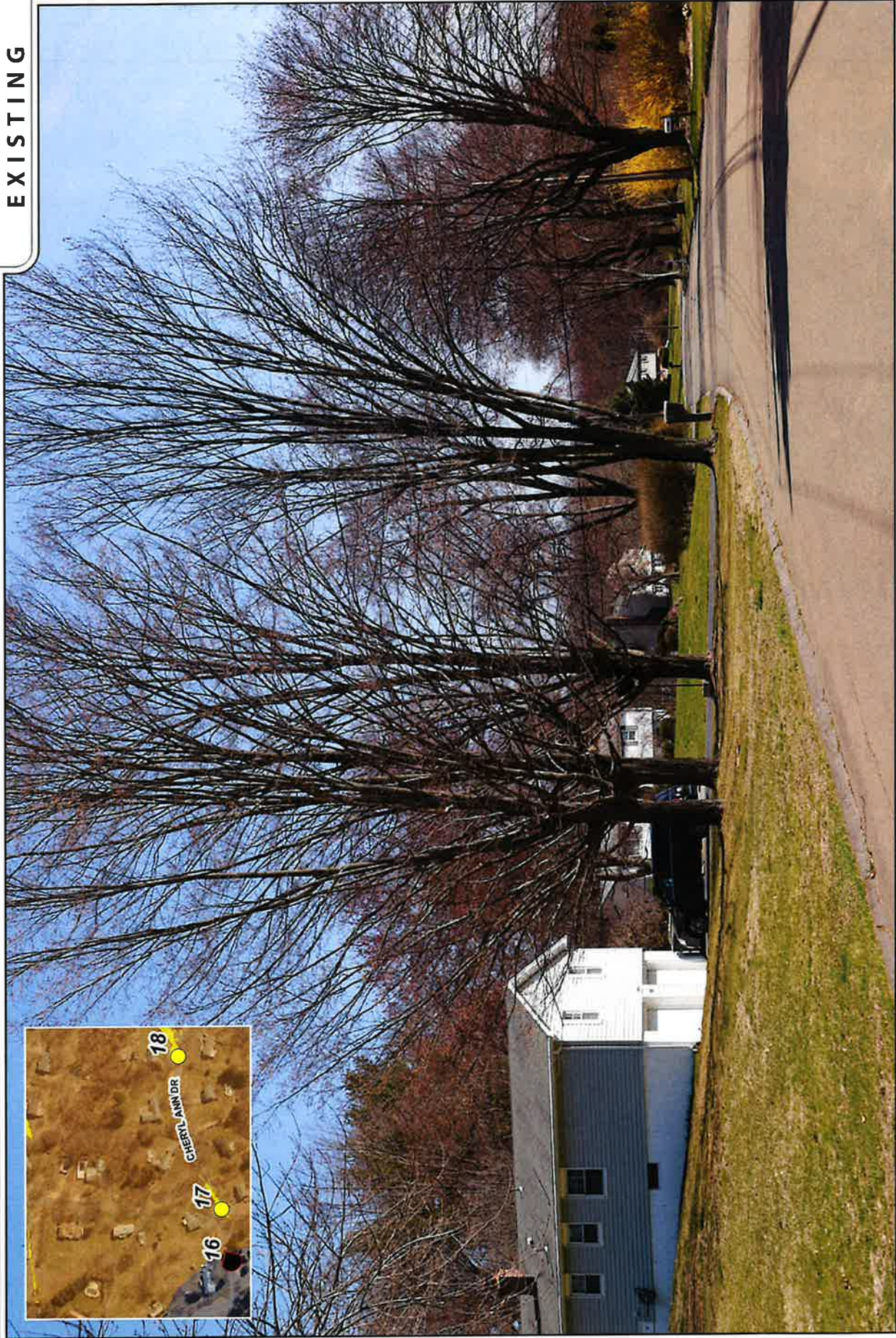
DISTANCE TO SITE  
+/- 0.42 MILE

VISIBILITY  
YEAR ROUND



verizon

**EXISTING**



PHOTOGRAPHED ON 4/4/2023

PHOTO

16

LOCATION

CHERYL ANN DRIVE

ORIENTATION

ENE

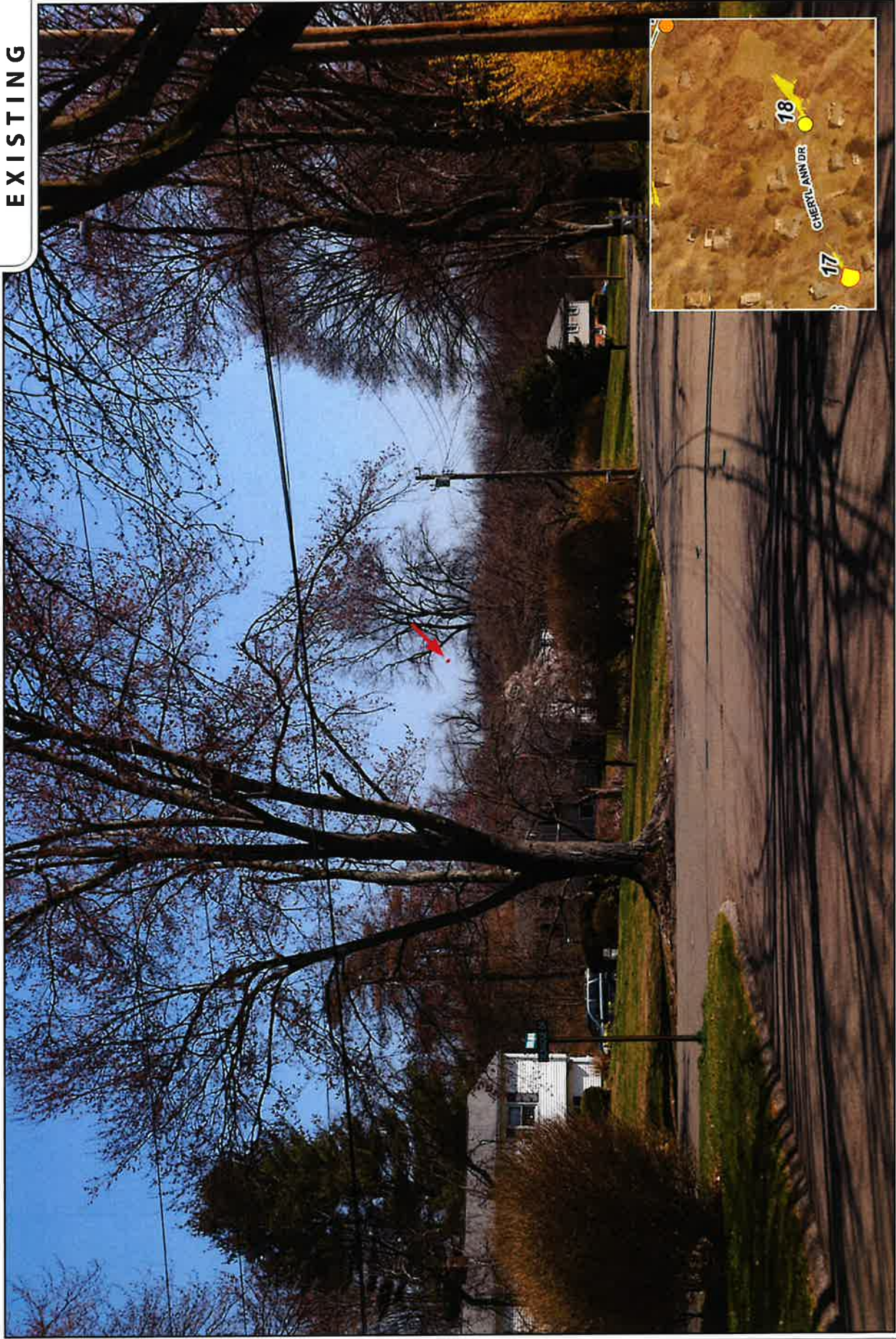
DISTANCE TO SITE

+/- 0.34 MILE

VISIBILITY

NOT VISIBLE

**EXISTING**

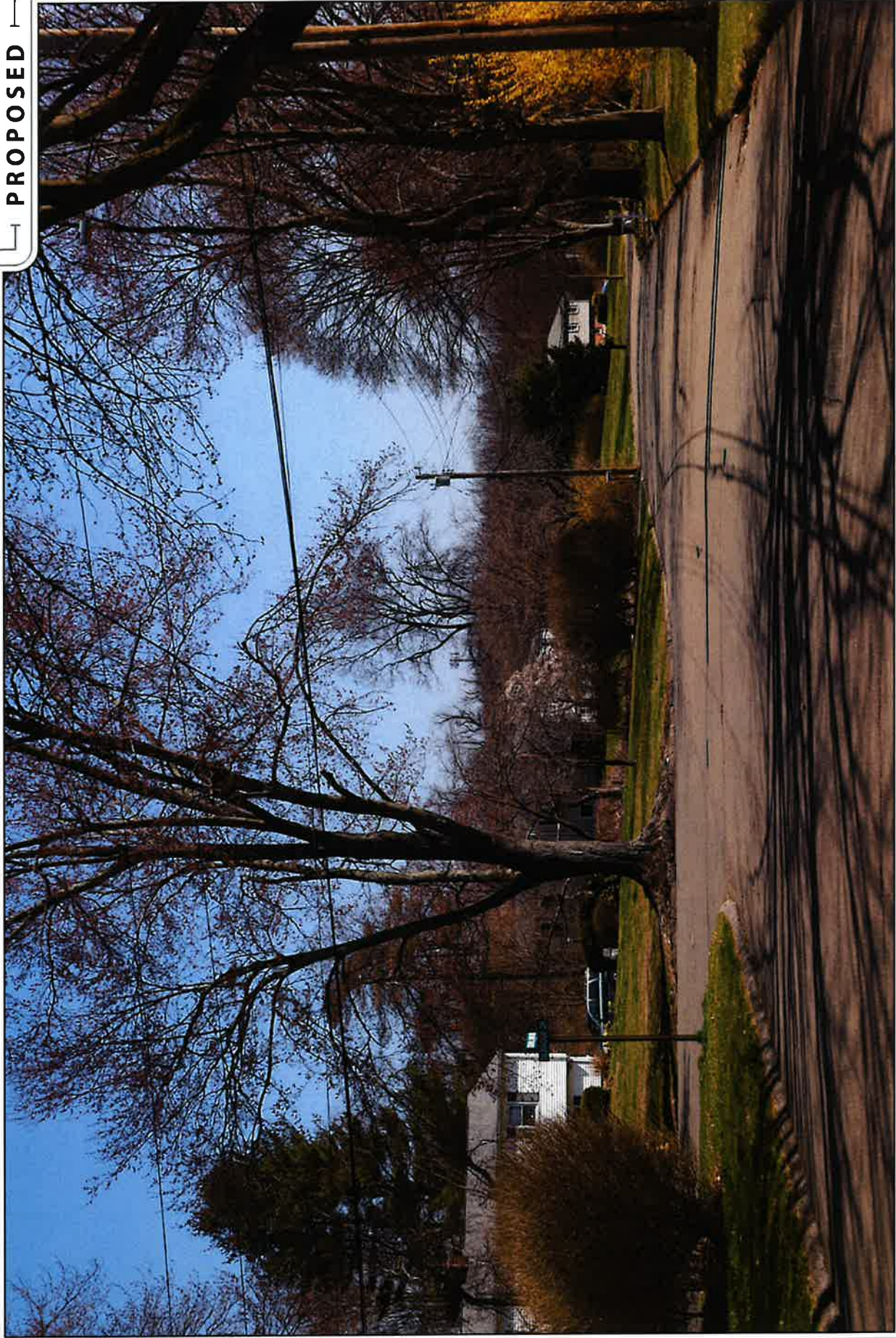


PHOTOGRAPHED ON 4/4/2023

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
17	CHERYL ANN DRIVE AT TALMADGE DRIVE	ENE	+/- 0.30 MILE	YEAR ROUND



PROPOSED



PHOTO

17

LOCATION

CHERYL ANN DRIVE AT TALMADGE DRIVE

ORIENTATION

ENE

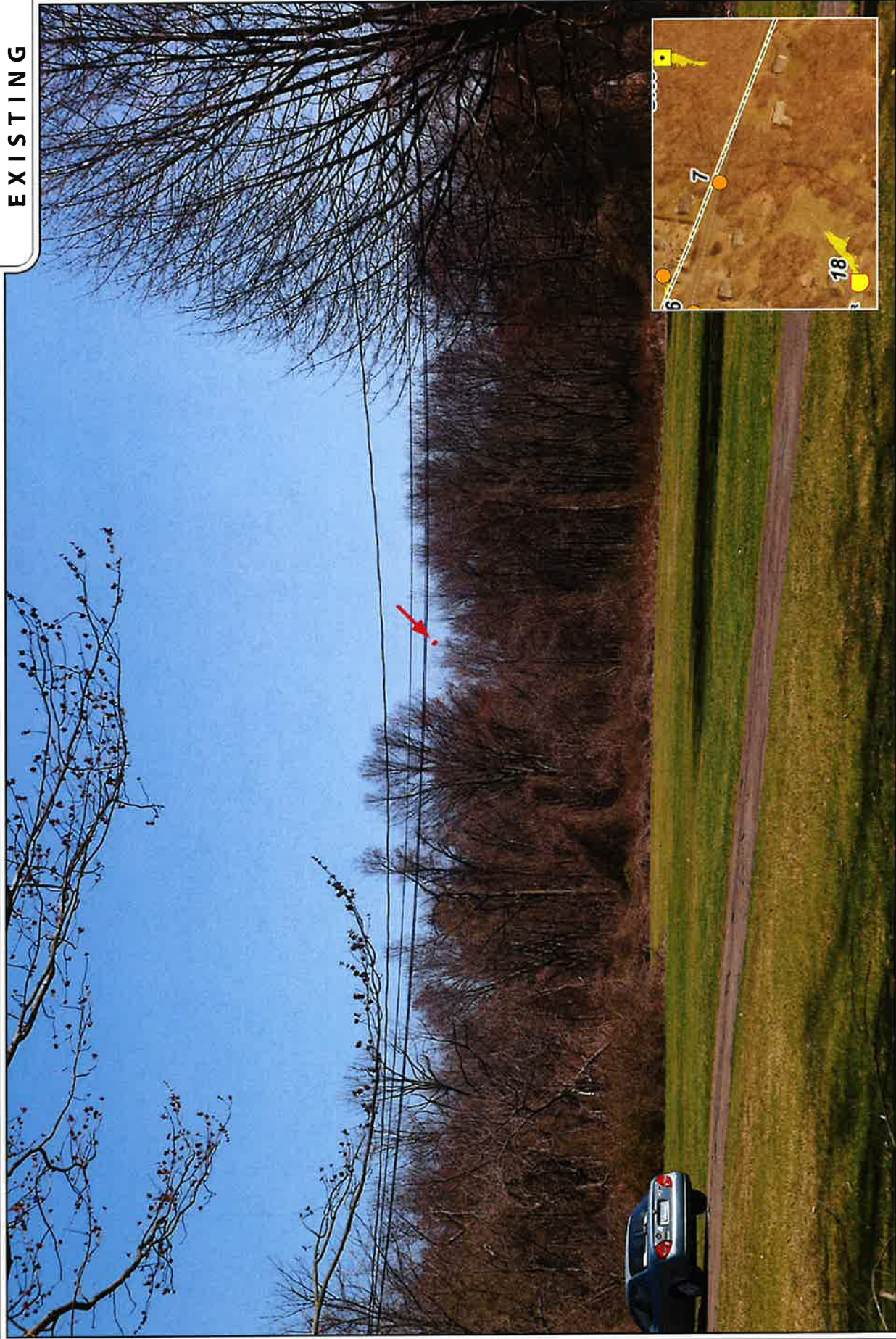
DISTANCE TO SITE

+/- 0.30 MILE

VISIBILITY

YEAR ROUND

**EXISTING**

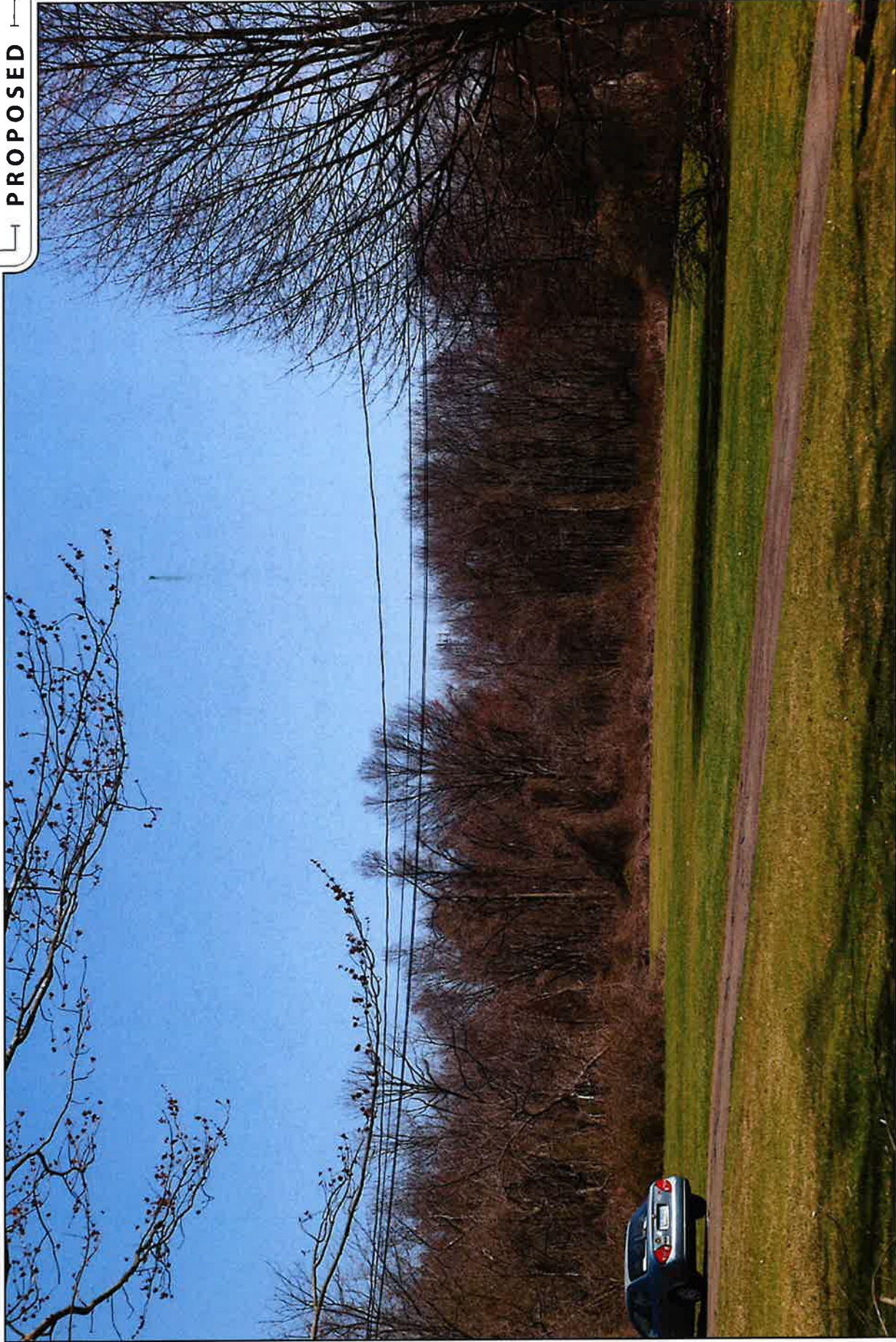


PHOTOGRAPHED ON 4/2/2023

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
18	CHERYL ANN DRIVE	NE	+/- 0.20 MILE	YEAR ROUND



PROPOSED



PHOTO

18

LOCATION

CHERYL ANN DRIVE

ORIENTATION

NE

DISTANCE TO SITE

+/- 0.20 MILE

VISIBILITY

YEAR ROUND



ALL-POINTS  
ENVIRONMENTAL CORPORATION



EXISTING



PHOTOGRAPHED ON 4/14/2023

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	BURNT PLAINS ROAD AT ALEXANDER ROAD	N	+/- 0.30 MILE	OBSCURED

**EXISTING**



PHOTOGRAPHED ON 4/17/23

PHOTO  
**20**

LOCATION  
**BURNT PLAINS ROAD**

ORIENTATION  
**NNW**

DISTANCE TO SITE  
**+/- 0.18 MILE**

VISIBILITY  
**SEASONAL**

PROPOSED



PHOTO

20

LOCATION

**BURNT PLAINS ROAD**

ORIENTATION

**NNW**

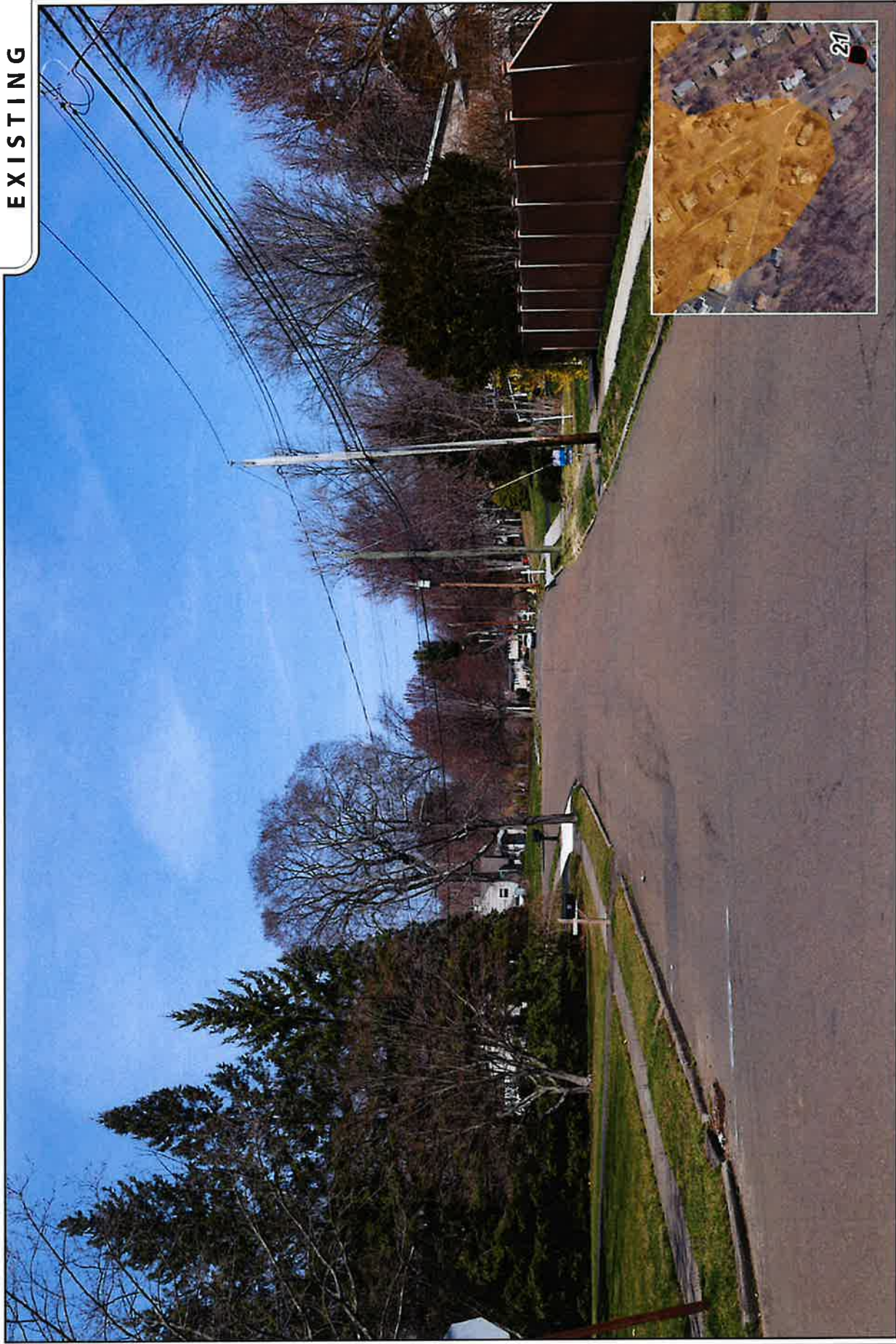
DISTANCE TO SITE

**+/- 0.18 MILE**

VISIBILITY

**SEASONAL**

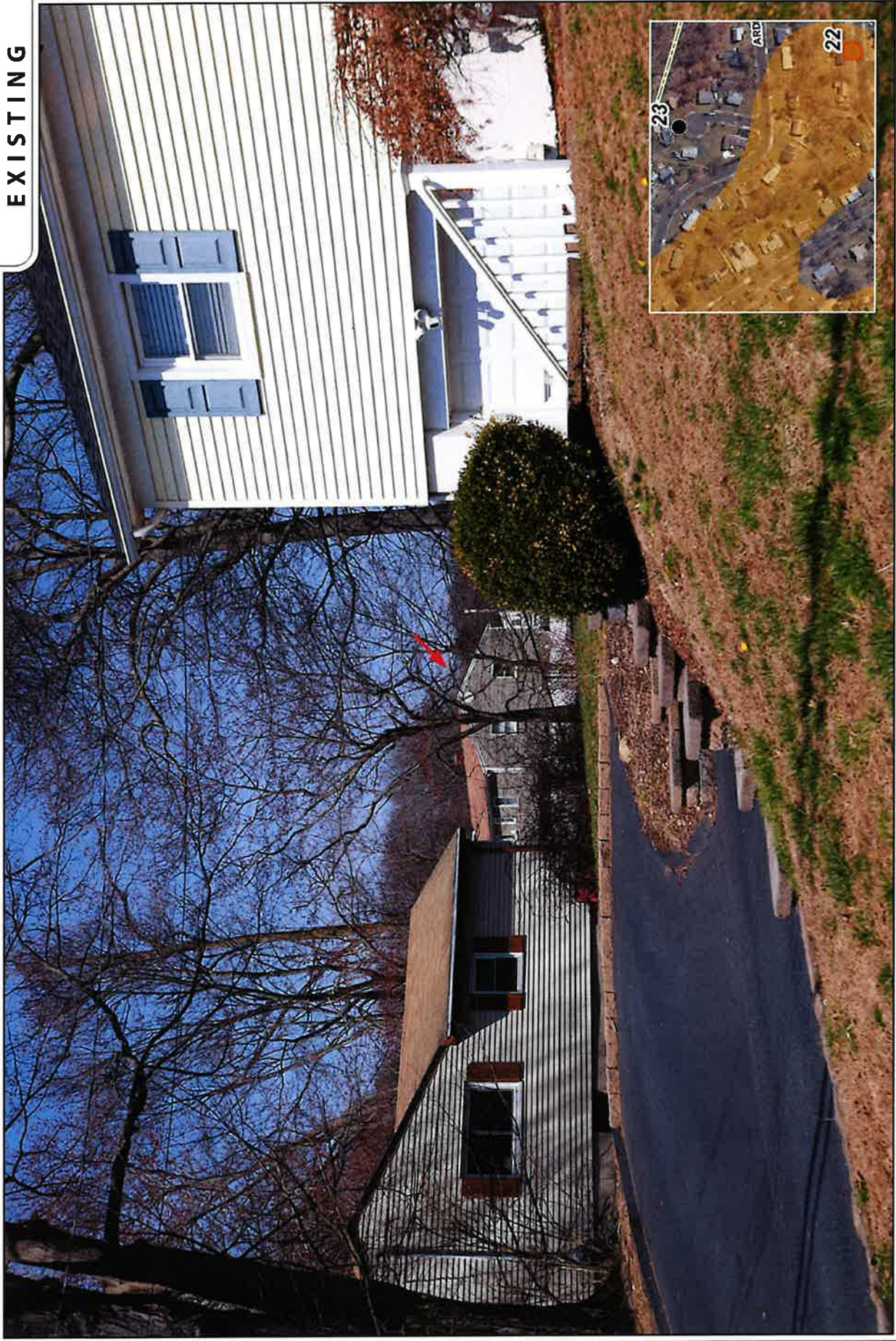
**EXISTING**



PHOTOGRAPHED ON 4/4/2023

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
21	COLONY ROAD AT GREEN MEADOW ROAD	NNW	+/- 0.46 MILE	NOT VISIBLE

**EXISTING**

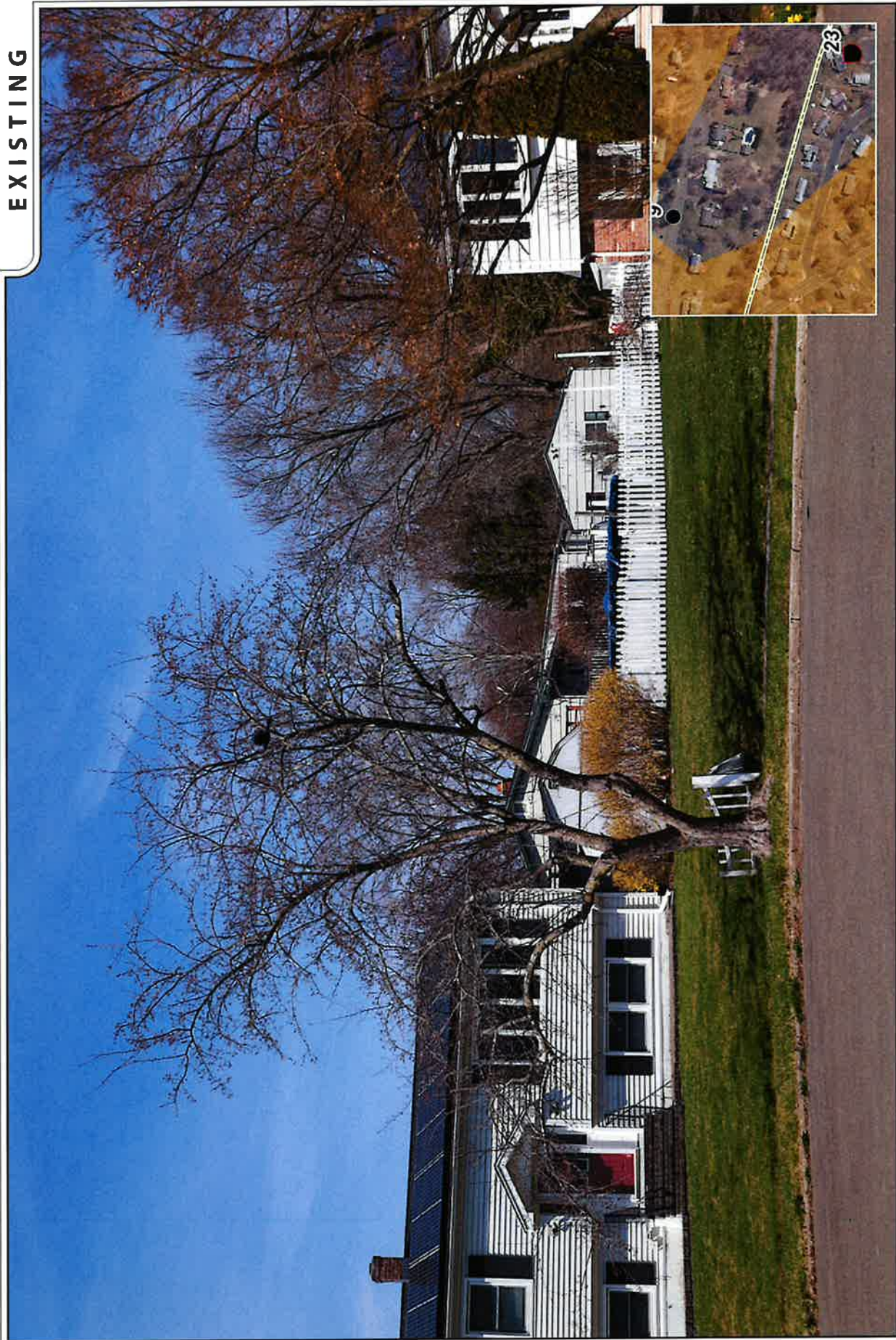


PHOTOGRAPHED ON 4/4/2023

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
22	SAWMILL ROAD AT TUMBLEBROOK DRIVE	NW	+/- 0.47 MILE	OBSCURED



**EXISTING**



PHOTOGRAPHED ON 4/17/23

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
23	RITA LANE	WNW	+/- 0.36 MILE	NOT VISIBLE

**EXISTING**



PHOTOGRAPHED ON 4/20/23

PHOTO  
24

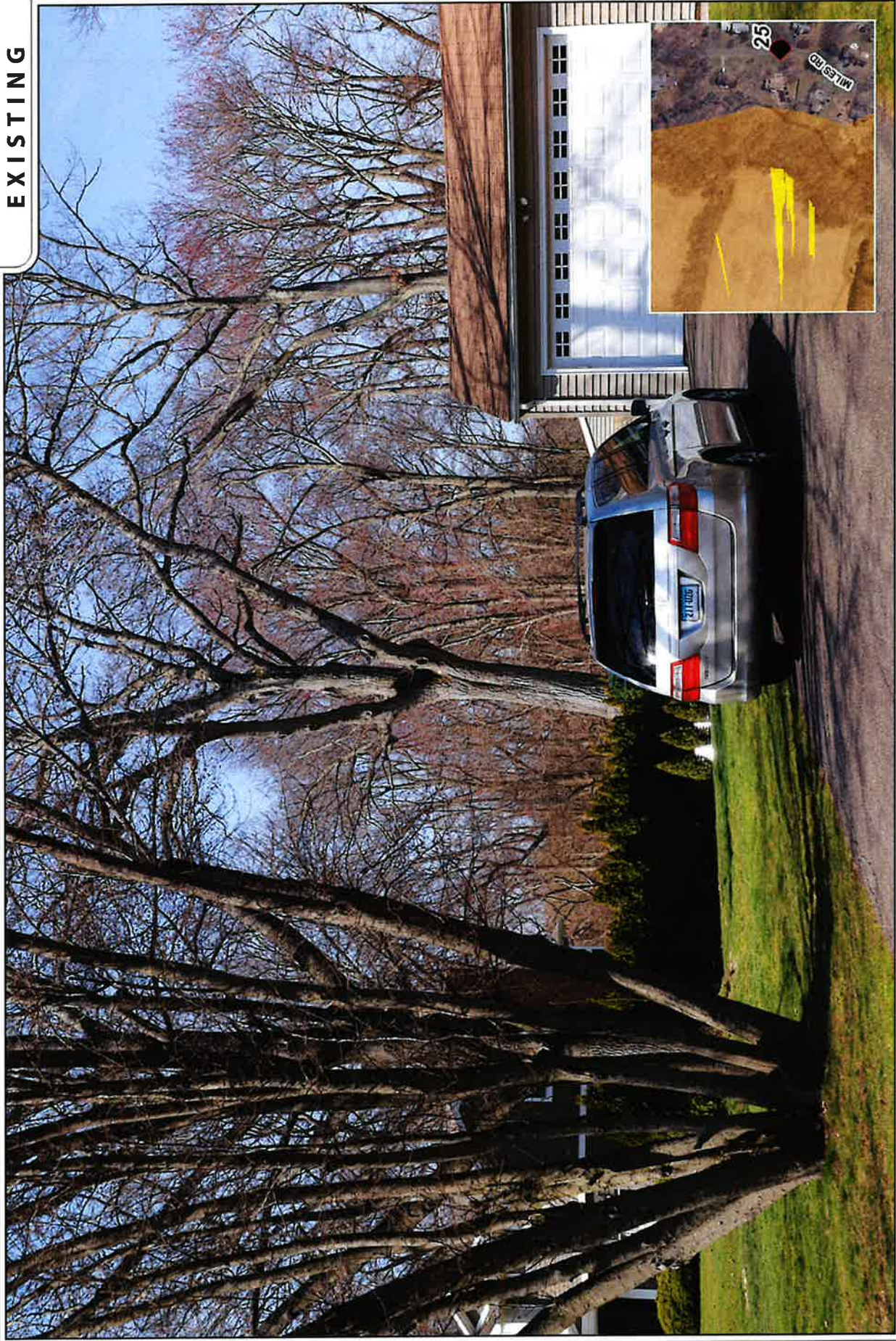
LOCATION  
LAVIOLA LANE AT NARROW LANE

ORIENTATION  
WNW

DISTANCE TO SITE  
+/- 0.39 MILE

VISIBILITY  
OBSCURED

**EXISTING**



PHOTOGRAPHED ON 4/4/2023

PHOTO

25

LOCATION

MILES ROAD

ORIENTATION

W

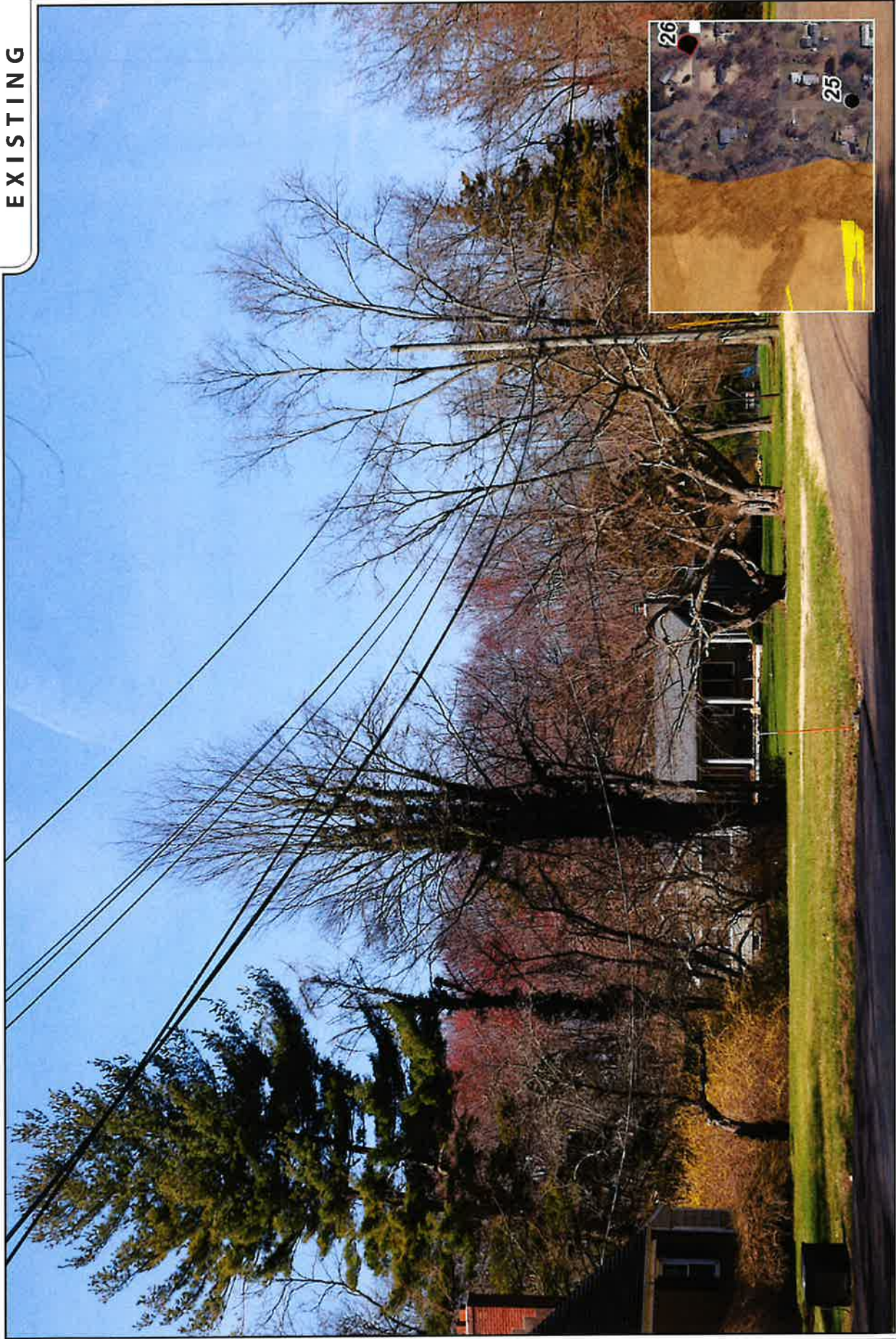
DISTANCE TO SITE

+/- 0.42 MILE

VISIBILITY

NOT VISIBLE

**EXISTING**



PHOTOGRAPHED ON 4/14/2023

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
26	HOTCHKISS ROAD	WSW	+/- 0.48 MILE	NOT VISIBLE

**EXISTING**



PHOTO  
**27**

LOCATION  
**OLD TAVERN ROAD**

ORIENTATION  
**SW**

DISTANCE TO SITE  
**+/- 0.42 MILE**

VISIBILITY  
**YEAR ROUND**

PROPOSED



PHOTO

27

LOCATION

OLD TAVERN ROAD

ORIENTATION

SW

DISTANCE TO SITE

+/- 0.42 MILE

VISIBILITY

YEAR ROUND

**EXISTING**



PHOTOGRAPHED ON 4/4/2023

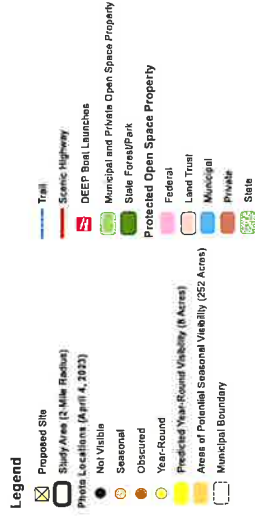
PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
28	OLD TAVERN ROAD	SW	+/- 0.29 MILE	OBSCURED



## Viewshed Analysis Map

Orange South CT  
425 Old Tavern Road  
Orange, Connecticut

Proposed facility height is 120 feet AGL.  
Forest canopy height is derived from LIDAR data.  
Study area encompasses a two-mile radius and includes 8,042 acres.  
Existing conditions field verified by APT on April 4, 2023  
Base Map Source: 2019 Aerial Photograph (CTECO)  
Map Date: July 2023



### Data Sources:

#### Physical Geography / Meteorological Data

A digital surface model (DSM) was created from the State of Connecticut 2015 LIDAR LAS data points. The DSM captures the natural and built features on the Earth's surface.

Municipal Open Spaces, State Recreation Areas, Trails, County Recreation Areas, and Town Boundary data obtained from CT DEEP. Scientific Reports: CT DOT State Score: Highways (2015); Municipal Science Road (compiled by APT)

#### Designated Open Space & Recreation Areas

Connecticut Department of Energy and Environmental Protection (DEEP); DEEP Property (May 2007); Federal Open Space (1997); Municipal and Private Open Spaces (1997); DEEP Boat Launches (1994)

Connecticut Forest & Park Association; Connecticut Walk Books: East & West

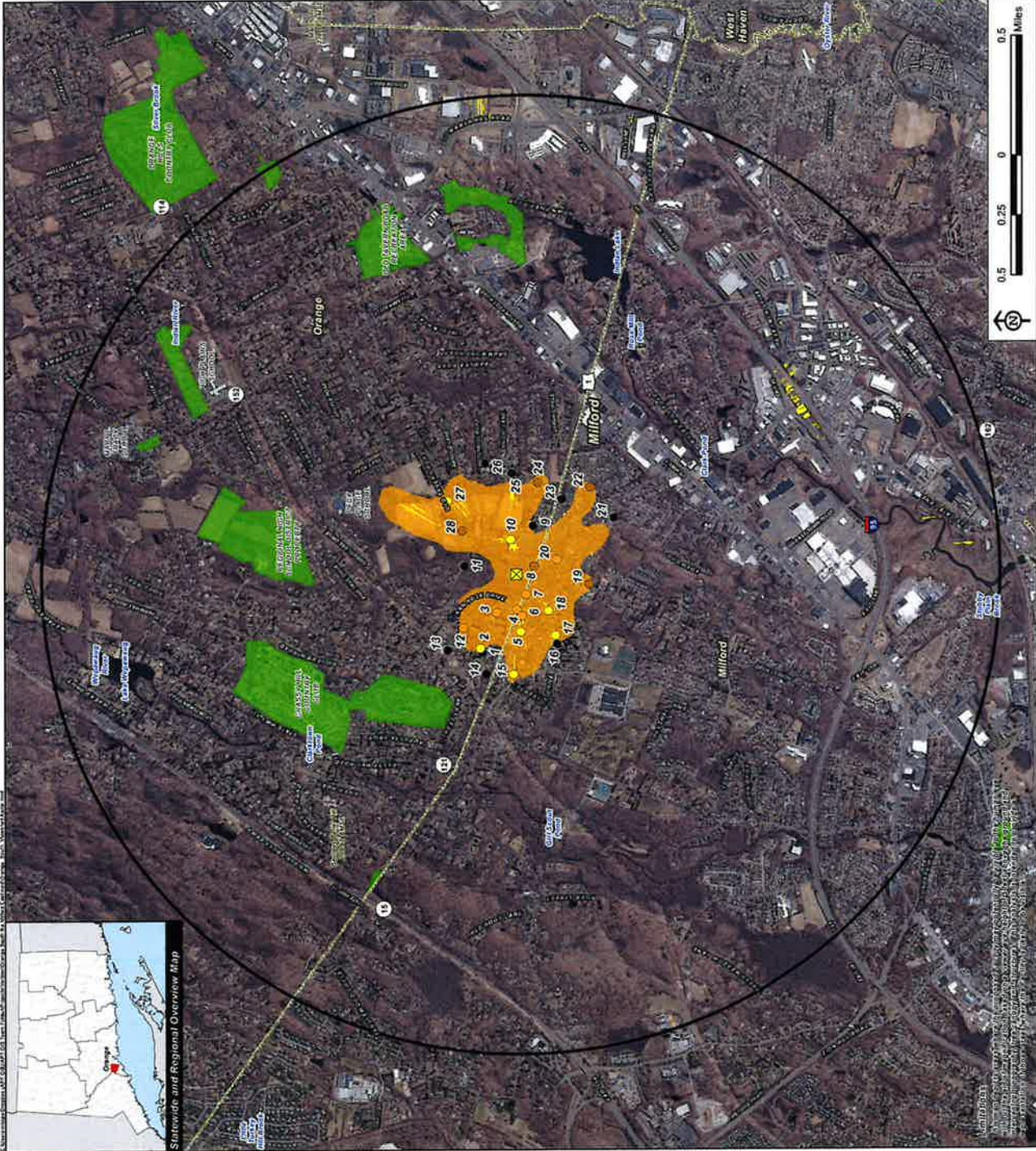
GISdata

CTDOT Static Shp (based on Department of Transportation data)

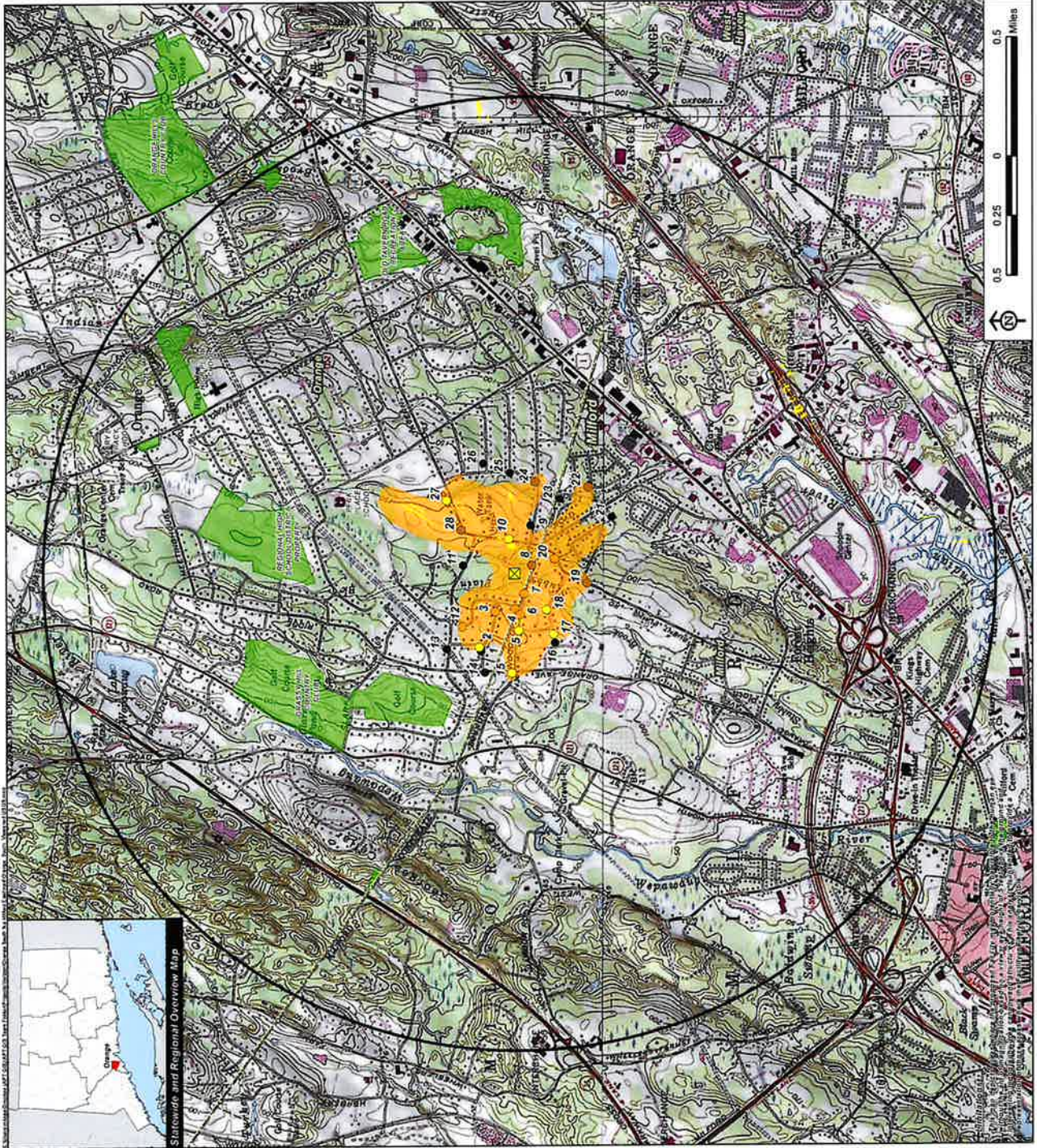
### Notes:

\*Not all the sources listed above appear on the Viewshed Maps. Only those features within the scale of the graphic are shown.

verizon







## Viewshed Analysis Map

Orange South CT  
 425 Old Tavern Road  
 Orange, Connecticut

Proposed facility height is 120 feet AGL.  
 Forest canopy height is derived from LIDAR data.  
 Study area encompasses a two-mile radius and includes 8,042 acres.  
 Existing conditions field verified by APT on April 4, 2023.  
 Base Map Source: USGS 7.5 Minute Topographic Quadrangle Maps, Ansonia, CT (1984), Milford, CT (1984), New Haven, CT (1984), and Woodmont, CT (1976)  
 Map Date: July 2023

- Legend**
- Proposed Site
  - Study Area (2-Mile Radius)
  - Photo Locations (April 4, 2023)
  - Not Visible
  - Seasonal
  - Obscured
  - Year-Round
  - Predicted Year-Round Visibility (8 Acres)
  - Areas of Potential Seasonal Visibility (252 Acres)
  - Municipal Boundary
  - Trail
  - Scenic Highway
  - DEEP Road Launches
  - Municipal and Private Open Space Property
  - State Forest/Park
  - Protected Open Space Property
  - Federal
  - Land Trust
  - Municipal
  - Private
  - State

**Data Sources:**

**Physical Geography/Background Data**  
 A digital surface model (DSM) was created from the State of Connecticut 2016 LIDAR LAS data points. The DSM captures the natural and built features on the Earth's surface.  
 Municipal Open Space, State Recreation Areas, Trails, County Recreation Areas, and Town Boundary data obtained from CT DEEP.  
 Scenic Roads, CT DOT State Scenic Highways (2019), Municipal Scenic Roads (compiled by APT).  
**Identified Open Spaces & Recreational Areas**  
 Connecticut Department of Energy and Environmental Protection (DEEP, DEEP Property Map 2007; Federal Open Space (1997), Municipal and Private Open Space (1997), DEEP Boat Launches (1995).  
 Connecticut Forest & Parks Association, Connecticut Walk, North East & West

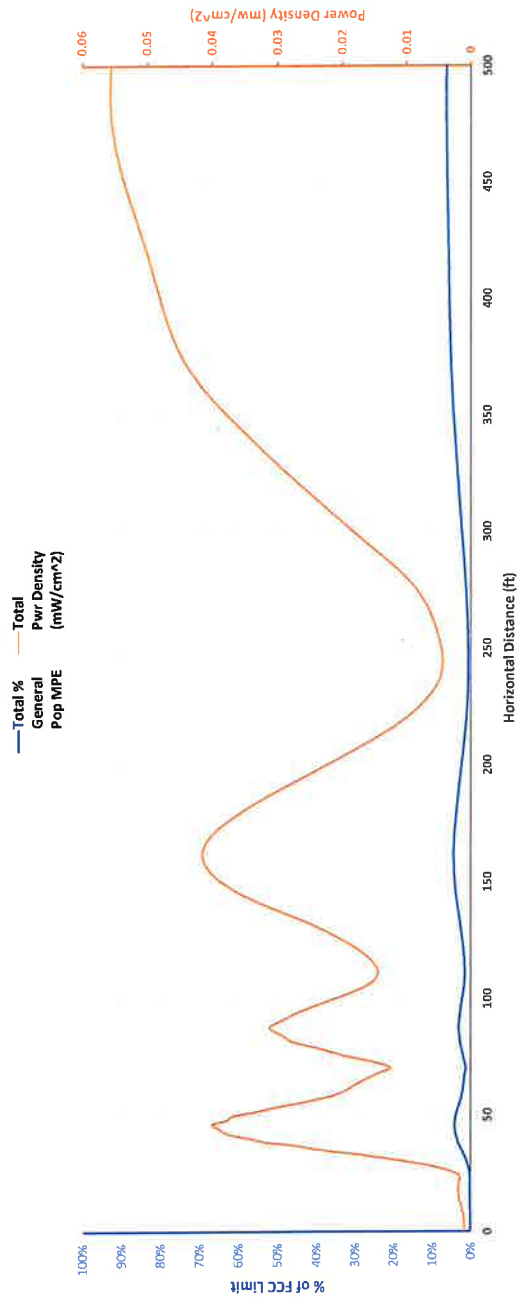
**DEEP**  
 CT DOT Scenic Sites (based on Department of Transportation data)

**Notes**  
 \*Not all the sources listed above appear on the Viewshed Maps. Only those features within the scale of the graphic are shown.

# **ATTACHMENT 5**

Orange South CT 9/13/2023					
Location Date	C-Band	CBRS	AWS	PCS	700
Operating Frequency (MHz)	3,700	3,550	2,145	1,970	860
General Population MPE (mW/cm <sup>2</sup> )	1	1	1	1	0.596666667
ERP Per Transmitter (Watts)	34,277	54	1,841	822	981
Number of Transmitters	2	0	4	4	4
Antenna Configuration (feet)	120	120	120	120	120
Scal ERP (Watts)	68,554	0	7,363	6,872	3,289
Total ERP (dBSm)	78	N/A	69	68	65
Assumption of General Population Size	6.2%				

### RF Exposure 6ft Above Ground Level Far Field Formula (per FCC OET65)



Angle Below Horizon	Power Density (mW/cm <sup>2</sup> )					Percent of General Population MPE					Distance	Total Pwr Density (mW/cm <sup>2</sup> )	Total General Pop MPE	
	C-Band	CBRS	AWS	PCS	700 MHz	C-Band	CBRS	AWS	PCS	700 MHz				
90	0.000950745	0	1.43911E-06	7.78205E-06	4.42684E-05	3.2055E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.0001046714	0.11%
89	0.000950668	0	2.09922E-06	5.4709E-06	4.34569E-05	3.2799E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001047616	0.11%
88	0.000950436	0	2.44879E-06	5.88779E-06	4.2262E-05	3.12431E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001046417	0.11%
87	0.000950046	0	3.02534E-06	8.16159E-06	4.02508E-05	2.79625E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001046402	0.11%
86	0.000949502	0	4.27096E-06	1.06298E-05	3.71985E-05	2.40064E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00104638	0.11%
85	0.00094988	0	6.1123E-06	1.20898E-05	3.35594E-05	2.09707E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001045113	0.11%
84	0.000952615	0	8.0684E-06	1.23257E-05	2.93837E-05	1.74829E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00108479	0.11%
83	0.001087211	0	9.80266E-06	1.18126E-05	2.59026E-05	1.5457E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001175083	0.12%
82	0.001163516	0	1.14763E-05	1.15028E-05	2.3703E-05	1.43749E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001250621	0.13%
81	0.001244961	0	1.39575E-05	1.26819E-05	2.34446E-05	1.42885E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001334054	0.14%
80	0.001313872	0	1.79564E-05	1.64624E-05	2.50318E-05	1.5007E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001432269	0.15%
79	0.001424594	0	2.31591E-05	2.33196E-05	2.90216E-05	1.63126E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001540599	0.16%
78	0.001523491	0	2.80459E-05	3.2499E-05	3.54707E-05	1.7938E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001661587	0.17%
77	0.00162805	0	3.05152E-05	4.28487E-05	4.44568E-05	1.9488E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001787831	0.19%
76	0.001663	0	3.01247E-05	5.34468E-05	5.57086E-05	2.0498E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001841873	0.19%
75	0.001697429	0	2.7658E-05	6.4598E-05	6.8851E-05	2.0447E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00189541	0.20%
74	0.00173221	0	2.50995E-05	7.70253E-05	8.08413E-05	1.90298E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.001959959	0.20%
73	0.001767359	0	2.37878E-05	9.1486E-05	9.1486E-05	1.624E-05	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.002001965	0.21%
72	0.001721685	0	2.444897E-05	0.000108139	9.88516E-05	1.28761E-05	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%	0.001976505	0.21%



# **ATTACHMENT 6**

**Cellco Partnership d/b/a Verizon Wireless  
425 Old Tavern Road  
Orange, Connecticut**

**Orange South Facility**

**Site Search Summary**

Section 16-50j-74(j) of the Regulations of Connecticut State Agencies requires the submission of a statement that describes “the narrowing process by which other possible sites were considered and eliminated.” In accordance with this requirement, descriptions of the general site search process, the identification of the applicable search area and the alternative locations considered for development of the proposed Orange South Facility are provided below.

**Site Search Process**

To initiate its site selection process in an area where wireless service problems have been identified, Cellco first establishes a “site search ring” or “site search area”. In any search ring or search area, Cellco seeks to avoid the unnecessary proliferation of towers and to reduce the potential adverse environmental effects of the cell site, while at the same time maximizing the quality of service provided from a facility. These objectives are achieved by initially locating existing towers and other sufficiently tall structures within and near the site search area. If any are found, they are evaluated to determine whether they can support Cellco’s telecommunications antennas and related equipment at a location and elevation that satisfies its technical requirements.

The list of available locations may be further reduced if, after preliminary discussions, the property owners withdraw a site from consideration. From among the remaining locations, the proposed sites are selected by eliminating those that have greater potential for adverse environmental effects and fewer benefits to the public (i.e., those requiring taller towers; those with substantial adverse environmental impacts, or in densely populated residential areas; and those with limited ability to share space with other public or private telecommunications service providers). It should be noted that in any given site search, the weight afforded to factors considered in the selection process will vary depending upon the availability and nature of sites within the search area.

**Need for the Orange South Facility**

Within approximately two (2) miles of the proposed Orange South Facility, Cellco maintains seven (7) macro-cell and five (5) small cell facilities. The locations of these existing facilities are included on the attached Site Vicinity Map.

Cellco’s Milford South II East macro-cell facility consists of antennas on a tower at 185 Research Parkway in Milford. Cellco’s Old Gate macro-cell facility consists of antennas on a tower at 311 Old Gate Road in Milford. Cellco’s Milford NE macro-cell facility consists of

antennas on the tower at 528 Wheelers Farm Road in Milford. Cellco's Orange 4 macro-cell facility consists of antennas on the tower at 100 Red Cedar Road in Orange. Cellco's Orange 3 macro-cell facility consists of antennas on the tower at 700 Grassy Hill Road in Orange. Cellco's Forest Heights Relo West macro-cell facility consists of antennas on the tower at 1063 Boston Post Road in Milford. Cellco's Orange 1 macro-cell facility consists of antennas on a tower at 525 Orange Center Road in Orange.

Cellco's five (5) existing small cell facilities consist of antennas and related equipment attached to utility poles generally along Boston Post Road in Milford. These small cell facilities include Milford CT SC4 off Boston Post Road; Milford 4 CT SC1 adjacent to 771 Boston Post Road; Milford SC22 CT adjacent to 200 Walnut Street; Milford SC25 CT adjacent to 696 Boston Post Road; and Milford SC23 CT adjacent to 466 West River Street.

These existing facilities currently provide some level of wireless service in the area around the proposed Orange South Facility location. However, significant gaps in reliable wireless service persist in the area particularly in Cellco's 1900 MHz and 2100 MHz frequency ranges. In addition to its coverage benefits, the Orange South Facility will help provide capacity relief to Cellco's existing Orange 1 (Gamma Sector) cell site, Orange 4 (Gamma Sector) cell site; Milford S II (Gamma Sector) cell site and Old Gate (Alpha Sector) cell site.

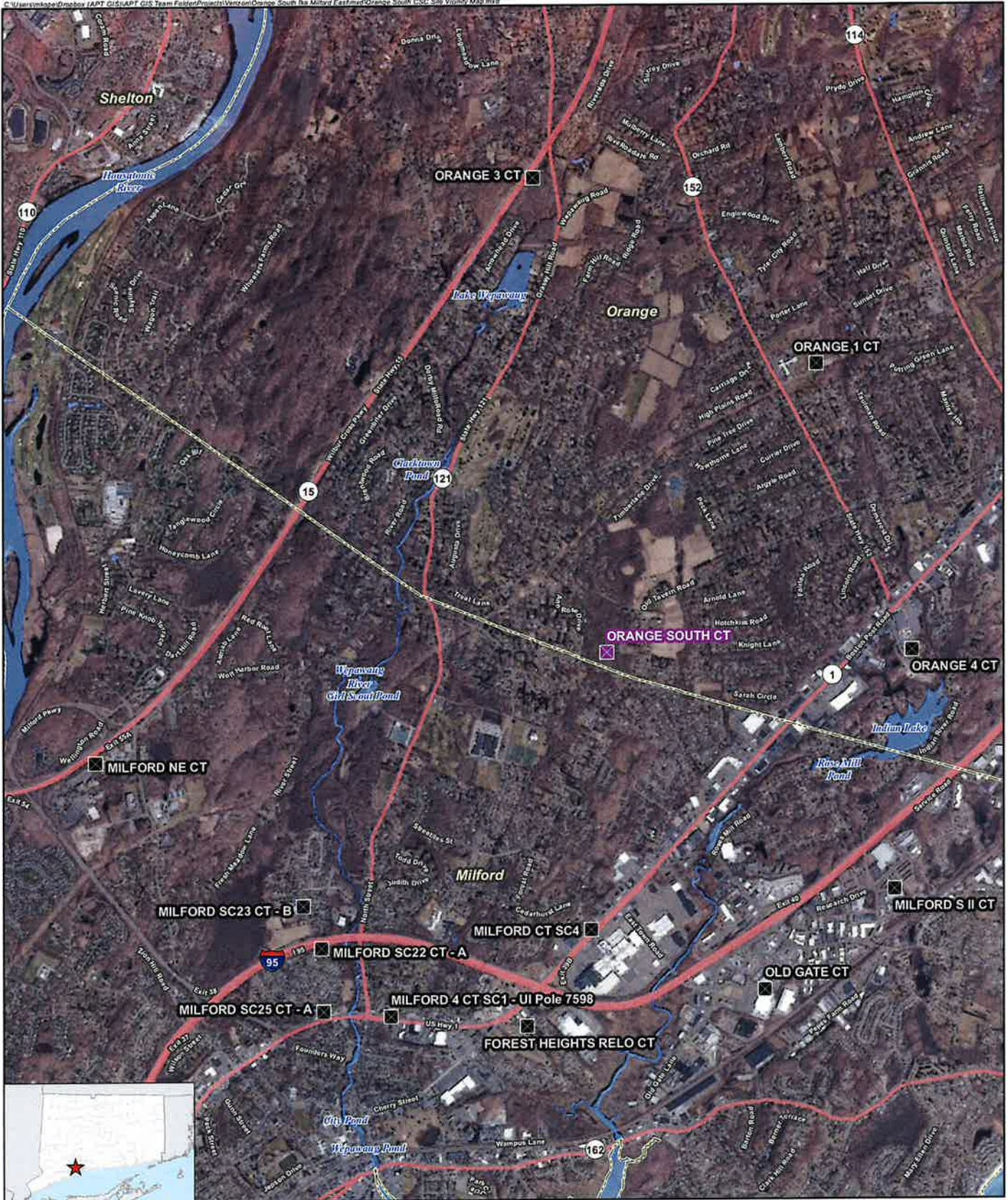
#### Sites Investigated

The Orange South site search was initiated in March of 2020. Cellco identified and investigated a total of seven (7) sites in southern Orange. A listing of the sites investigated is provided below.

1. **425 Old Tavern Road, Orange:** Cellco entered into a lease agreement with Frederick Knight, the owner of this parcel, for the development of the Orange South Facility.
2. **361 Old Tavern Road, Orange CT:** Cellco explored the development of a new tower on this parcel. The owner (Treat Farm – Addie Associates LLC) was interested initially but decided to use its property for other purposes.
3. **500 Peck Lane (Orange Middle School), Orange CT:** Cellco explored the development of a new tower on this parcel. Cellco attempted to contact the Town's First Selectman to discuss the proposal but received no response.
4. **Old Tavern Road, Orange CT:** Cellco explored the development of a new tower on this parcel. The owner (John and Lynn Marie Knight) had no interest.
5. **360 Old Tavern Road, Orange CT:** Cellco explored the development of a new tower on this parcel. Cellco contacted the owner (Susan Wilson 2005 Family Rev Trust) but received no response.
6. **397 Old Tavern Road, Orange CT:** Cellco explored the development of a new tower on this parcel. Cellco attempted to contact the owner (Betty Gagel Life Use/David Gagel) but received no response.

7. **298 Ridge Road, Orange CT:** Cellco explored the use of an electric transmission line tower near this parcel. Cellco contacted Eversource, but they rejected the site, not wanting antennas above the electric conductors.





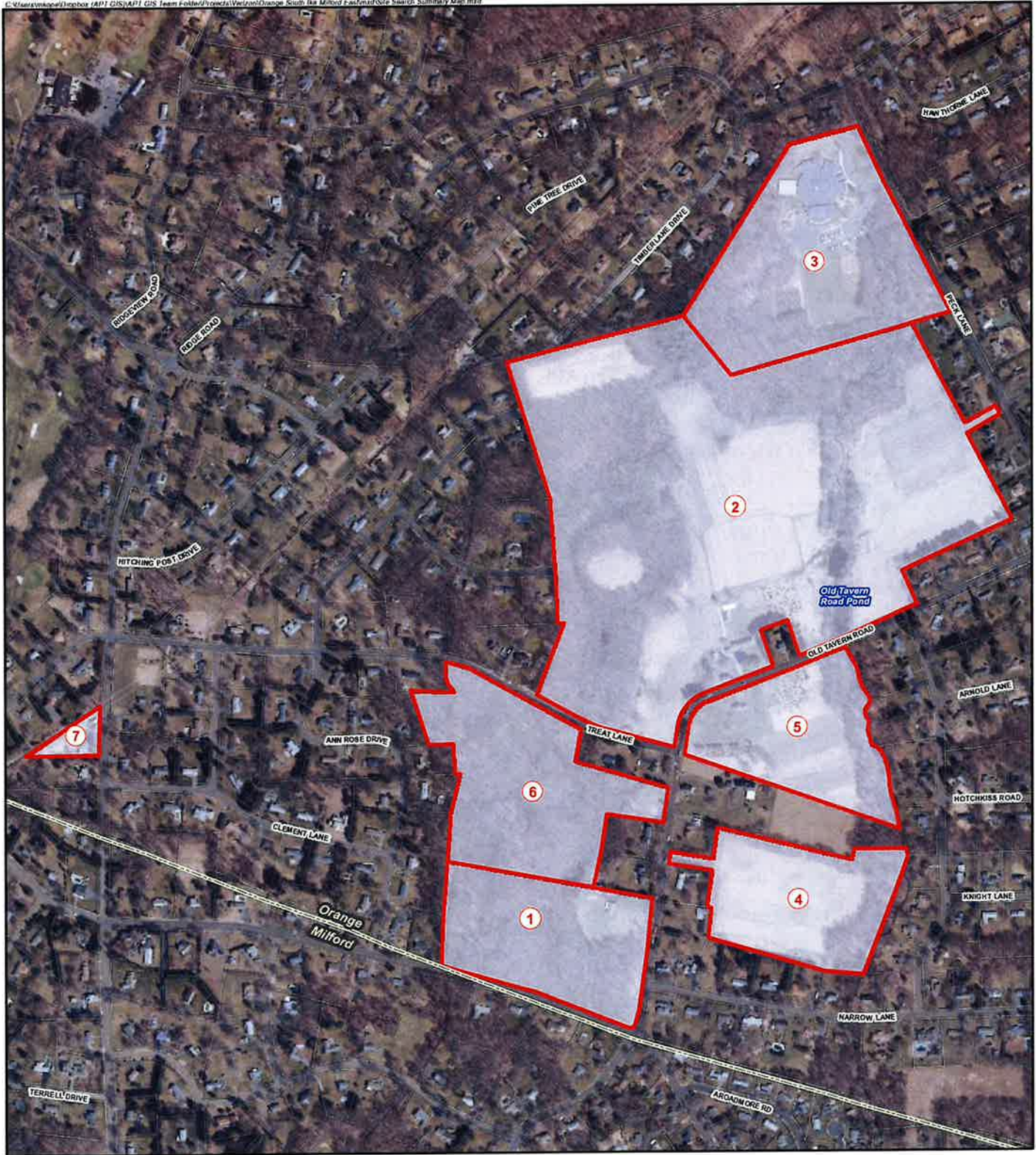
**Legend**

- Proposed Verizon Wireless Facility
- Surrounding Verizon Wireless Facilities
- Municipal Boundary

**Site Vicinity Map**

Proposed Wireless Telecommunications Facility  
 Orange South CT  
 425 Old Tavern Road  
 Orange, Connecticut





**Legend**

- Site Investigated
- Approximate Parcel Boundary
- Municipal Boundary

**Sites Investigated:**

- ① 425 Old Tavern Road, Orange, CT
- ② 361 Old Tavern Road, Orange CT
- ③ 500 Peck Lane (Orange Middle School), Orange CT
- ④ Old Tavern Road, Orange CT
- ⑤ 360 Old Tavern Road, Orange CT
- ⑥ 397 Old Tavern Road, Orange CT
- ⑦ 296 Rudge Road, Orange CT

**Site Search Summary Map**

Proposed Wireless  
Telecommunications Facility  
Orange South CT  
425 Old Tavern Road  
Orange, Connecticut

**Map Notes:**  
Base Map Source: 2019 Aerial  
Photograph (CT ECO)  
Map Scale: 1 inch = 700 feet  
Map Date: September 2023

