VISUAL RESOURCE EVALUATION

PROPOSED 120' TALL
TELECOMMUNICATIONS STRUCTURE

Diddell Road
Diddell Road
Town of Wappinger
Dutchess County, New York 12590

Submitted by:

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May 9, 2023

VISUAL RESOURCE EVALUATION

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. (Tectonic), was contracted by Verizon Wireless, to conduct a "Visual Resource Evaluation" to determine which areas within the Town of Wappinger and the surrounding areas will contain views of the proposed 120 foot tall (124 overall height) wireless telecommunications structure.

Setting:

The proposed site is located at Diddell Road, in the Town of Wappinger, Dutchess County, New York 12590. The surrounding land use is predominantly wooded/undeveloped land with scattered residential, commercial and industrial development. Within the study area the topography ranges in elevation from 98' +/- AMSL (Above Mean Sea Level) to 580' +/- AMSL. The predominant forest trees are mixed deciduous and coniferous, with an estimated height of 60 to 70 feet. The field study for this visual resource evaluation was conducted in the early spring season during leaf on conditions.

Methodology:

On April 21, 2023, Tectonic conducted a field investigation for the purpose of evaluating the viewshed associated with the proposed installation of the 120-foot tall monopole tower (structure). The structure will have a total height of 124-feet above ground level (AGL) with the addition of the lighting rod. Conditions were clear, approximately 75°-80°, with wind speeds of approximately 3-7 mph in the morning. The study area consisted of a two (2) mile radius from the project site. The two (2) mile radius generally consists of wooded/undeveloped areas, residential properties, commercial properties, recreational properties, the Town of Wappinger, and Diddell Road. Creating a viewshed greater than a two (2) mile radius is generally unwarranted. Due to the fact that objects tend to appear smaller the farther they are from the viewer, in this case, the structure would appear very small, if visible at all, from a distance of more than two (2) miles.

The methodology utilized during this field investigation is referred to as a "balloon test." The height of the proposed structure was simulated by floating a three (3) foot diameter, helium-filled weather balloon at 120 feet AGL. The 120-foot height was utilized during the balloon test, as this is the proposed height of the structure.

Prior to being on site, desktop-level review viewshed maps for a two (2) mile radius from the proposed tower location were computer generated utilizing the ArcGIS Desktop/ArcMap program, digital elevation data, and land cover data. The digital elevation data was provided by New York State via the digital elevation models (DEMs) produced cooperatively between the United States Geological Service and New York State's Department of Environmental Conservation. The DEM represents topography only data, without buildings, structures, or other development on the elevation model. As such, the Multi-Resolution Land Characteristics (MRLC) land cover data, cooperatively compiled by federal agencies, was utilized to provide approximate land cover data information; this data set was up to date as of 2019. This land cover data provides information associated with various types of development densities and vegetation, including types of forests, woody wetlands, and shrublands. The land cover data associated with the approximate locations of primarily deciduous forests, evergreen forests, mixed forests, and woody wetlands for the study area were extracted from this comprehensive land data source into a raster form. Once extracted, an estimate was created for the height of the trees within these areas. This extracted forest cover location data along with the estimated tree height elevations were then added onto a copy of

the topographic only DEM in order to represent forested or wooded areas within the study area, creating a DEM that represents the topography and vegetated areas within the study area.

Next, the tower location was generated within ArcGIS Desktop with the proposed tower elevations, in a format that could be utilized by ArcGIS Desktop in order to run the Spatial Analyst "Viewshed" tool to evaluate surface areas within the two-mile study area where the tower could potentially be seen by observers within the study area. This tool takes into consideration the average height of a person above the ground surface at the observer locations when looking towards the proposed tower location, and makes note where something, either topography or vegetation, will be blocking the tower from sight by the person standing at that location. This process is run twice – once for topography only and once for the combined topography and vegetation. This method ensures that areas "blocked by topography" are differentiated from areas "blocked by vegetation". Areas "blocked by topography" are places where the tower will be blocked from view to an observer due to intervening topography, such as hills, mountains, or other features. Areas "blocked by vegetation" are areas where the tower will potentially not be visible to an observer due to vegetated land cover. Colors are used to differentiate between areas from which the structure will be visible (White/No color) and areas from which a view of the structure will be blocked by topography (Red) or vegetation (Yellow). These computer-generated maps were created in order to provide the best- and worse-case scenarios the different heights would have on visibility within the two (2) mile study area.

Tectonic traveled the study area along publicly accessible roadways to confirm the potential visibility of the structure based on the computer-generated viewshed map. Areas delineated as "blocked by topography" and "blocked by vegetation" were confirmed by viewing the site from public roadways within a two (2) mile radius. It was found that the topography only computer-generated viewshed map was correct and accurate within the areas surveyed, and that the balloon was in fact not visible from areas indicated to be blocked by topography. The combined computer-generated and in-field review of the viewshed analysis resulted in the discovery that the proposed structure would be visible from only a select few locations within the two (2) mile radius, represented on the attached Combined Viewshed Map. Photograph locations are shown on the Photographic Log Map. The in-field review noted the visibility of the structure will be limited to the immediately surrounding areas to the proposed Tower location where vegetation has been cleared on Diddell Road, Wildflower Ridge, Strawberry Lane, Maloney Road and Smith Crossing Road.

Photographs were taken from various vantage points within the study area to document the actual view towards the proposed structure, as well as the general character of the viewshed. Each photograph attached includes a brief description of the location and orientation from which it was taken, and the photo number corresponds to the key number on the attached photograph log map.

Process:

Photographs of the weather balloon from the viewpoints noted were taken with a Nikon D3200 using a 55-120 focal length lens, as determined by the field personnel to best mimic the view as observed from the human eye. A three (3) foot diameter red helium filled balloon was floated to a height of 120 feet.

In order to analyze the potential visual impacts of the proposed structure, Tectonic took photographs of the balloons from locations within the search area for the purpose of preparing simulations of the proposed structure. Photographs for which there is a corresponding simulated view (#4, 7, 13, 15, 39, and 40) of the proposed structure were produced by first creating a 3-dimensional (3D) structure based

on the proposed design plans and scaling, then mimicking the site conditions and view looking towards the proposed site where the marker balloon was set to a height of 120' AGL. This 3D structure was then rendered to produce a digital image of the proposed structure to scale and at the proposed perspective. The digital images of the field photograph and rendered image were then merged and scaled through the use of the image editing software, "Krita", an open-source Adobe Photoshop alternative. During this process, the rendered structure's height and width is checked against the known height and width by scaling the similar type structure using measurements obtained from the marker balloon. The similar type structure used has an antenna array that spans eight (8) feet high and eight (8) feet wide. By measuring the balloon diameter of three (3) foot, one can determine the proper scaling of the antenna array by multiplying the balloon height and width by a factor of of 2.67. The image and structure are then composited together and the image exported, producing the final digital image.

We note that the simulations provided are artistic renderings of views from chosen locations and should not be interpreted to be the actual view of the tower following construction. While we utilize best efforts to simulate the view of the proposed tower from a particular location, some variance between the simulations, manufacturer products, and final installed towers is to be expected.

Conclusion:

The Viewshed Analysis Map presents a conservative delineation of the viewshed within the study area and along public roadways and public parks. The photo simulations have been prepared per the methodology described above and provide a general depiction of the appearance of the structure from the photographed viewpoints.

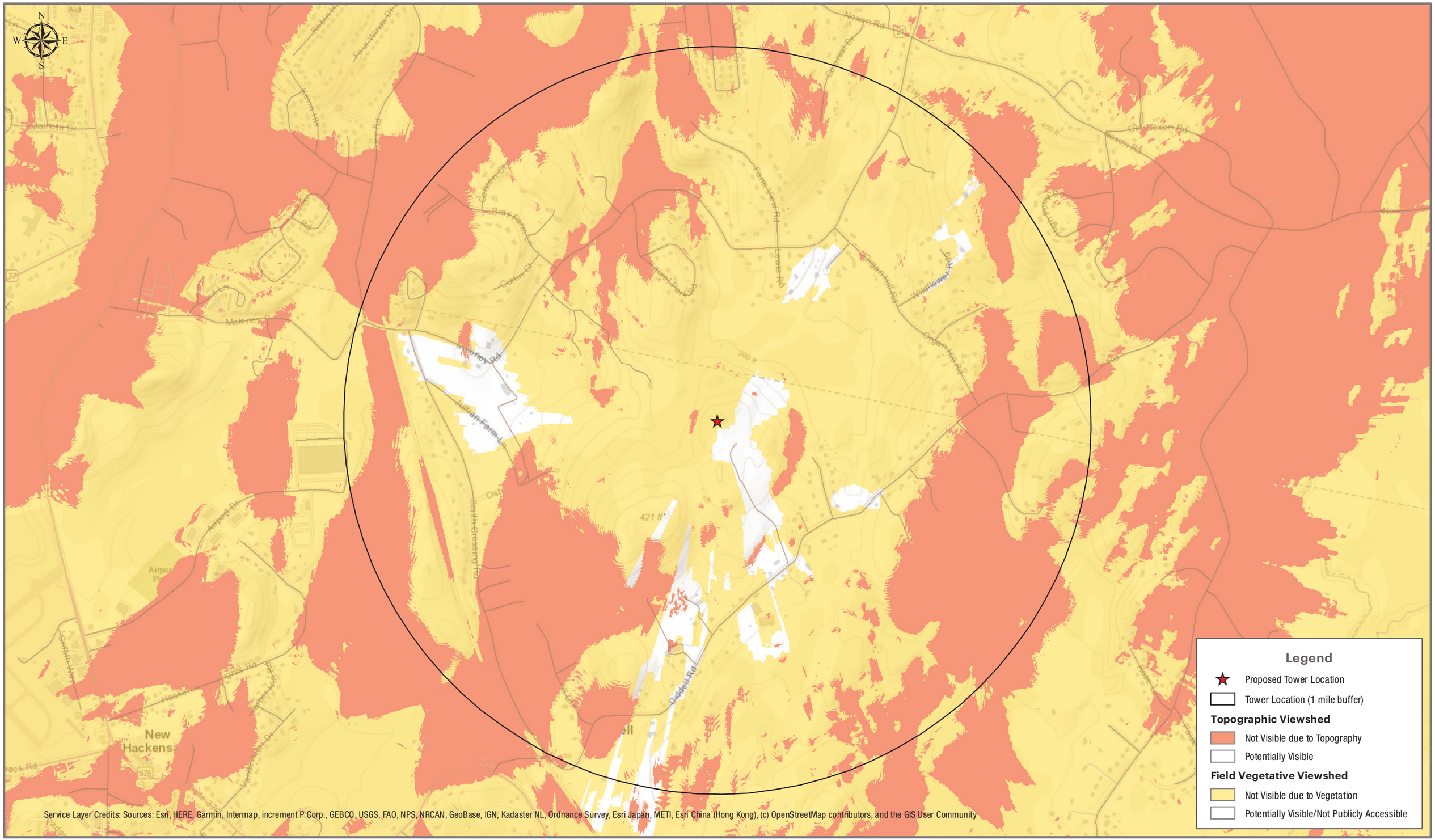
Sincerely,
TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS & LAND SURVEYORS, D.P.C.

By:

Dina Peoples
GIS Specialist

Reviewed By:

Lori A. Bart
Environmental Project Manager



Legend

★ Proposed Tower Location
☐ Tower Location (1 mile buffer)

Topographic Viewshed

🟥 Not Visible due to Topography
☐ Potentially Visible

Field Vegetative Viewshed

🟨 Not Visible due to Vegetation
☐ Potentially Visible/Not Publicly Accessible

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

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

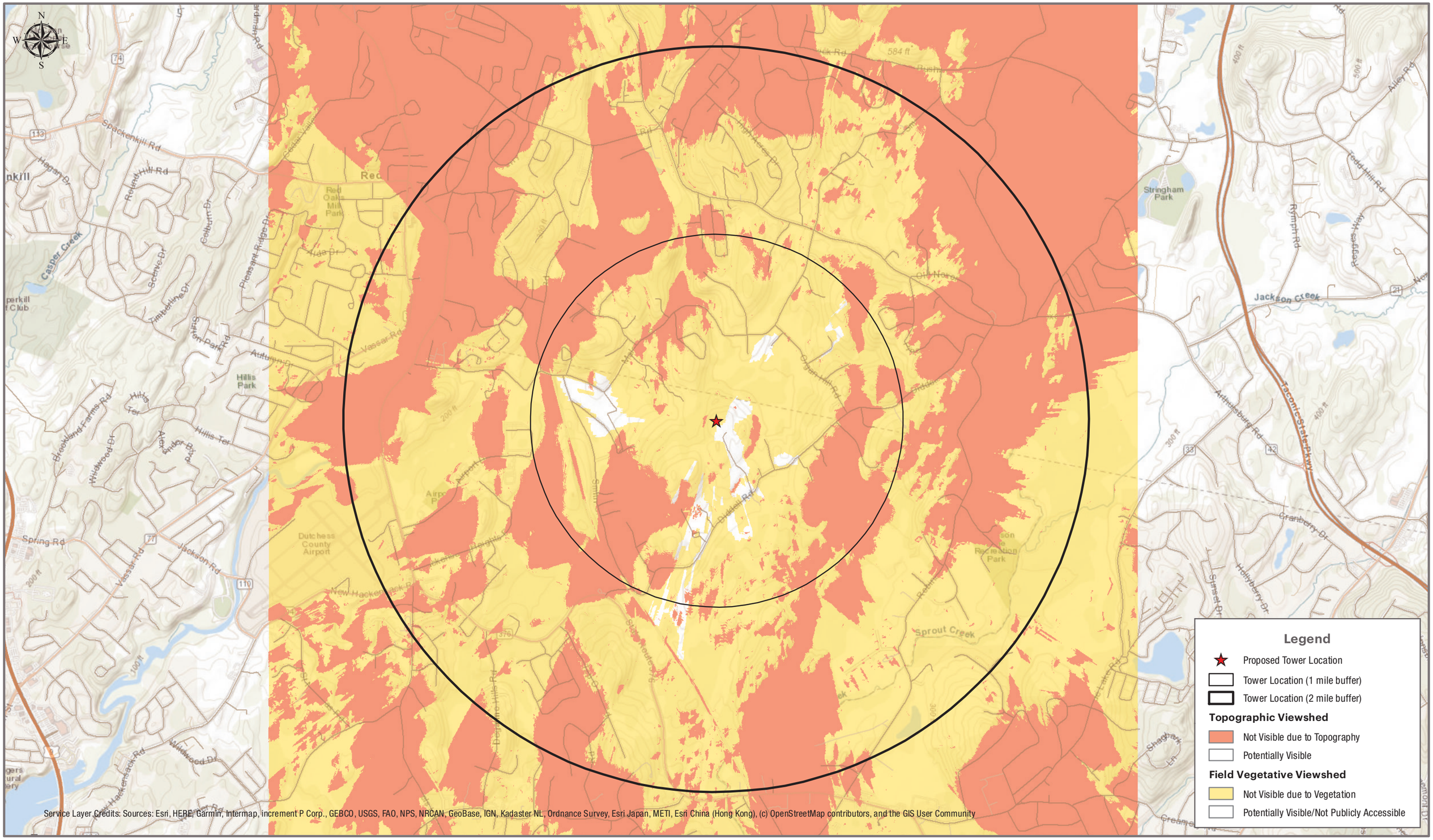
120ft Tower Viewshed
Field Conditions Update for
Publicly Accessible Areas

Diddell Road
Diddell Road
Wappingers, NY 12590

0 0.125 0.25 0.5 Miles

Combined Viewshed Map

11272.014A



Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

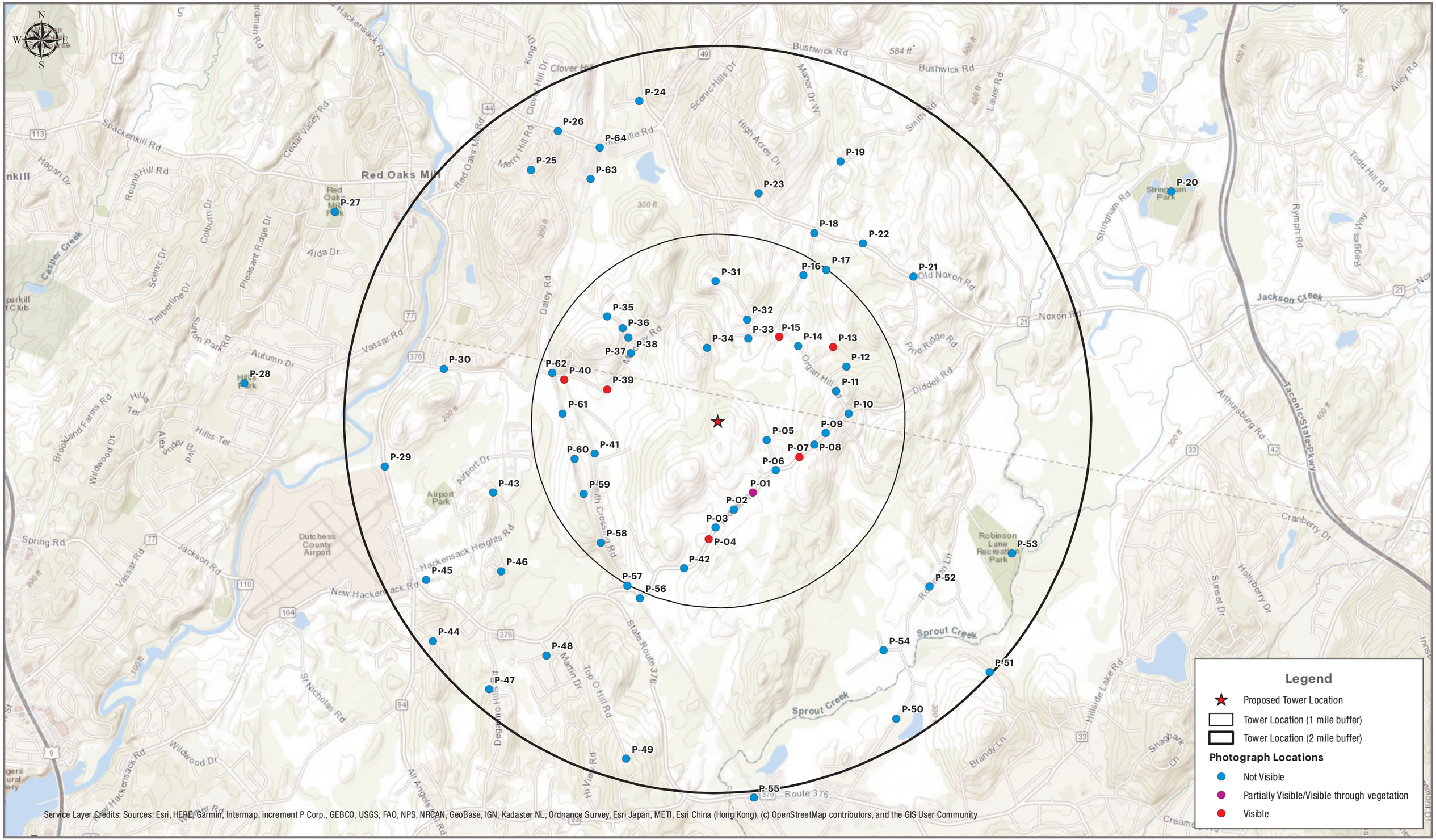
120ft Tower Viewshed
Field Conditions Update for
Publicly Accessible Areas

Diddell Road
Diddell Road
Wappingers, NY 12590

0 0.25 0.5 1 Miles

Combined Viewshed Map

11272.014A



Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

120ft Tower

Diddell Road
Diddell Road
Wappingers, NY 12590

0 0.25 0.5 1 Miles

Photograph Log
11272.014A

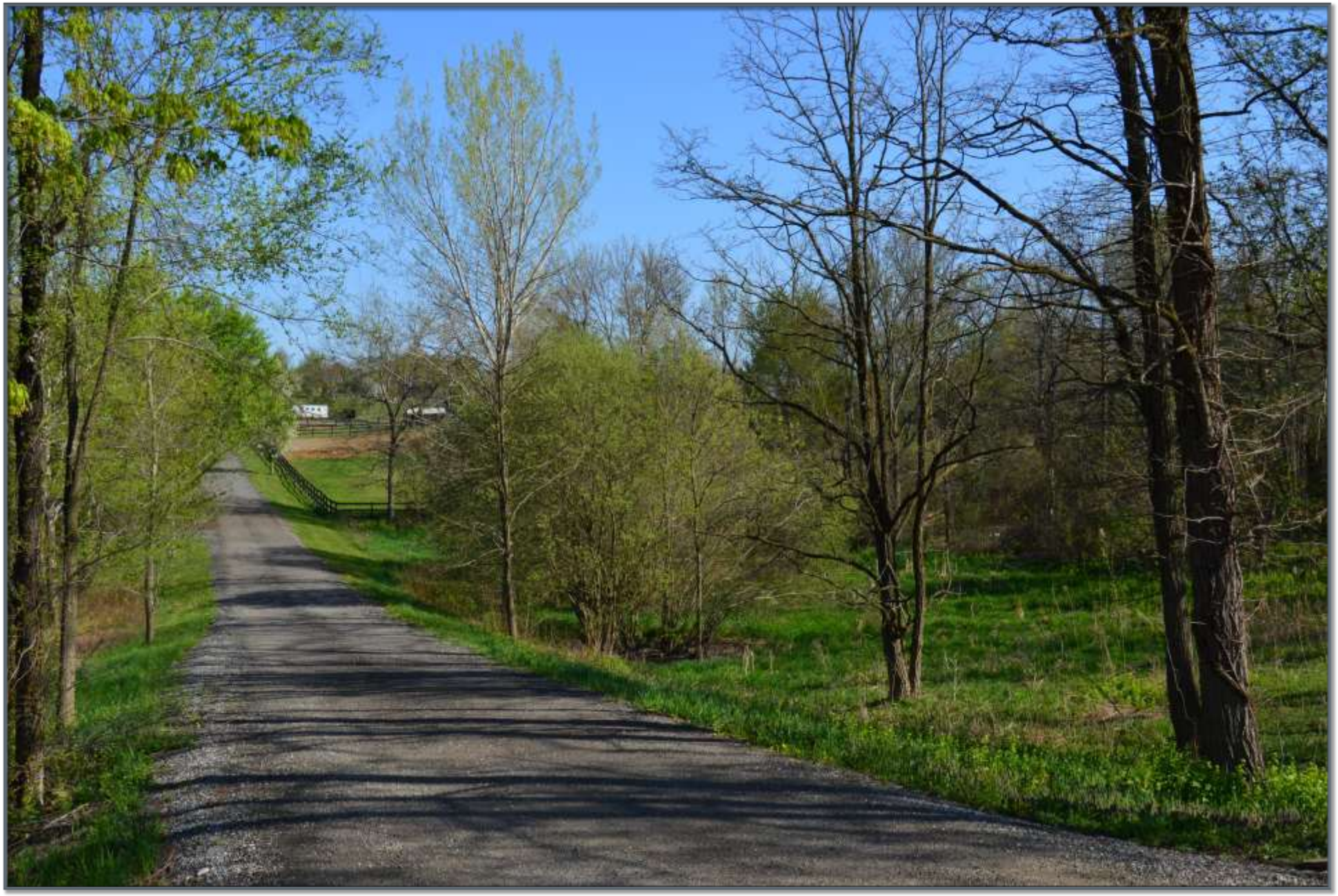
Tectonic

Looking northwest from the entrance of the site at 116 Diddell Road.
Proposed installation will be visible through vegetation from this location.

Distance from the photographic location to the proposed installation is ±0.43 miles.

P-1

11272.014A



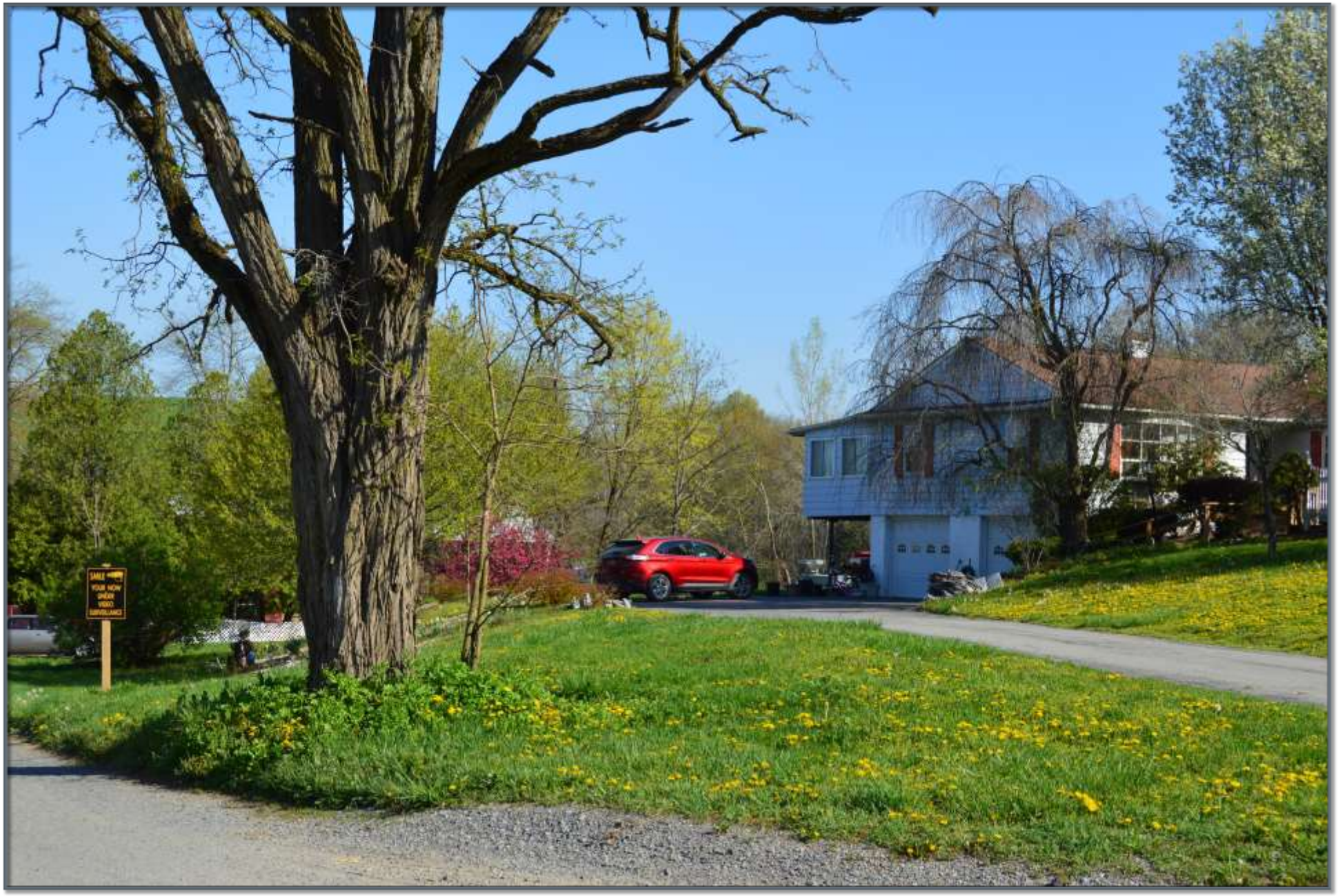
Tectonic

Looking north from the entrance of Misty Mountain Stables.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.48 miles.

P-2

11272.014A



Tectonic

Looking north-northeast from the intersection of Spring Hill Court and Diddell Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.57 miles.

P-3

11272.014A

Tectonic

Looking north-northeast from the intersection of Rose Lane and Diddell Road.
Proposed installation will be visible from this location.

Distance from the photographic location to the proposed installation is ±0.63 miles.

P-4

11272.014A

Tectonic

Looking north-northeast from the intersection of Rose Lane and Diddell Road.
Proposed installation will be visible from this location.

Distance from the photographic location to the proposed installation is ±0.63 miles.

S-4

11272.014A

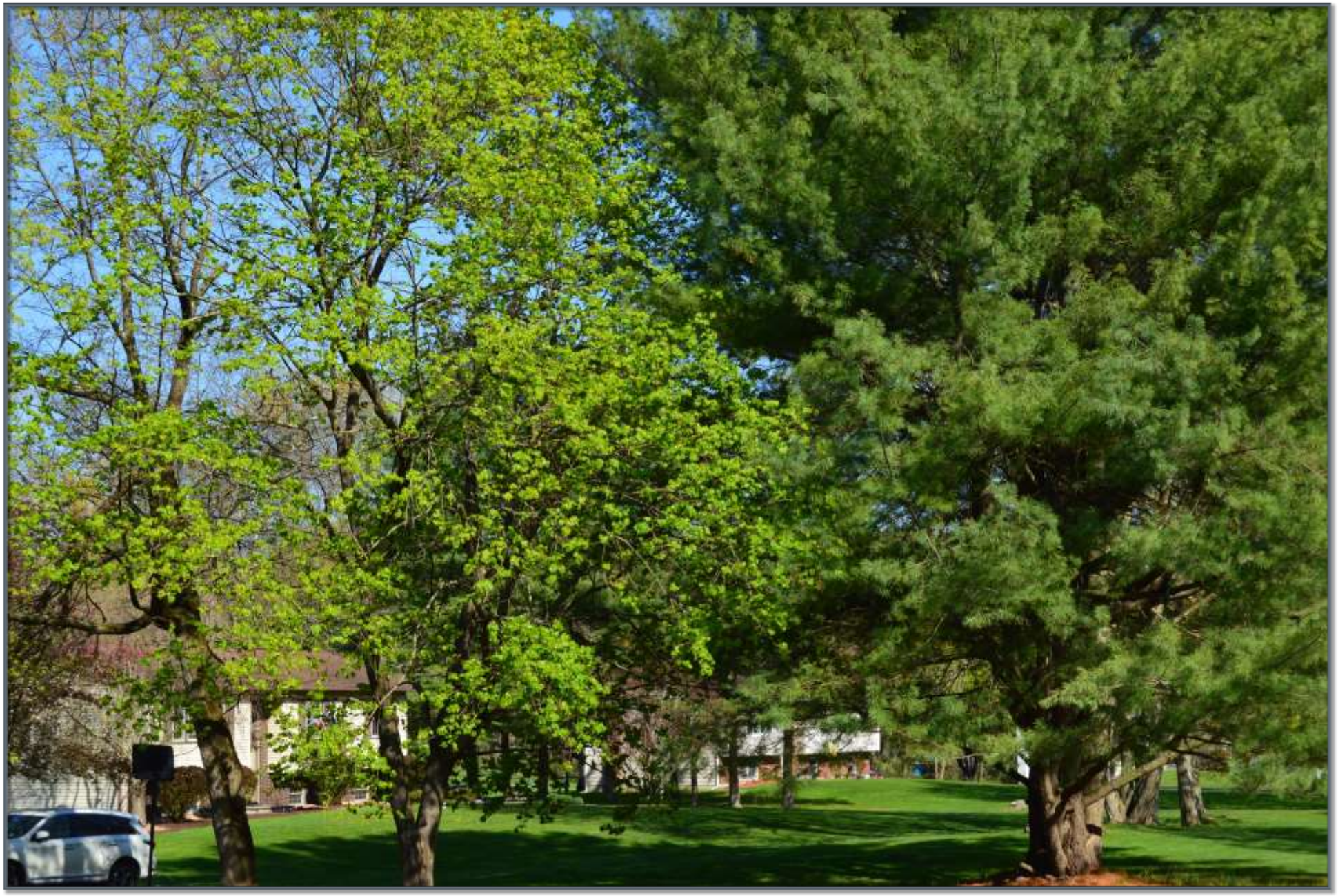
Tectonic

Looking northwest from the cul de sac of Daniel Sabia Drive.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.28 miles.

P-5

11272.014A



Tectonic

Looking northwest from the intersection of Daniel Sabia Drive and Diddell Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.40 miles.

P-6

11272.014A

Tectonic

Looking northwest from 146 Diddell Road.
Proposed installation will be visible from this location.

Distance from the photographic location to the proposed installation is ±0.47 miles.

P-7

11272.014A

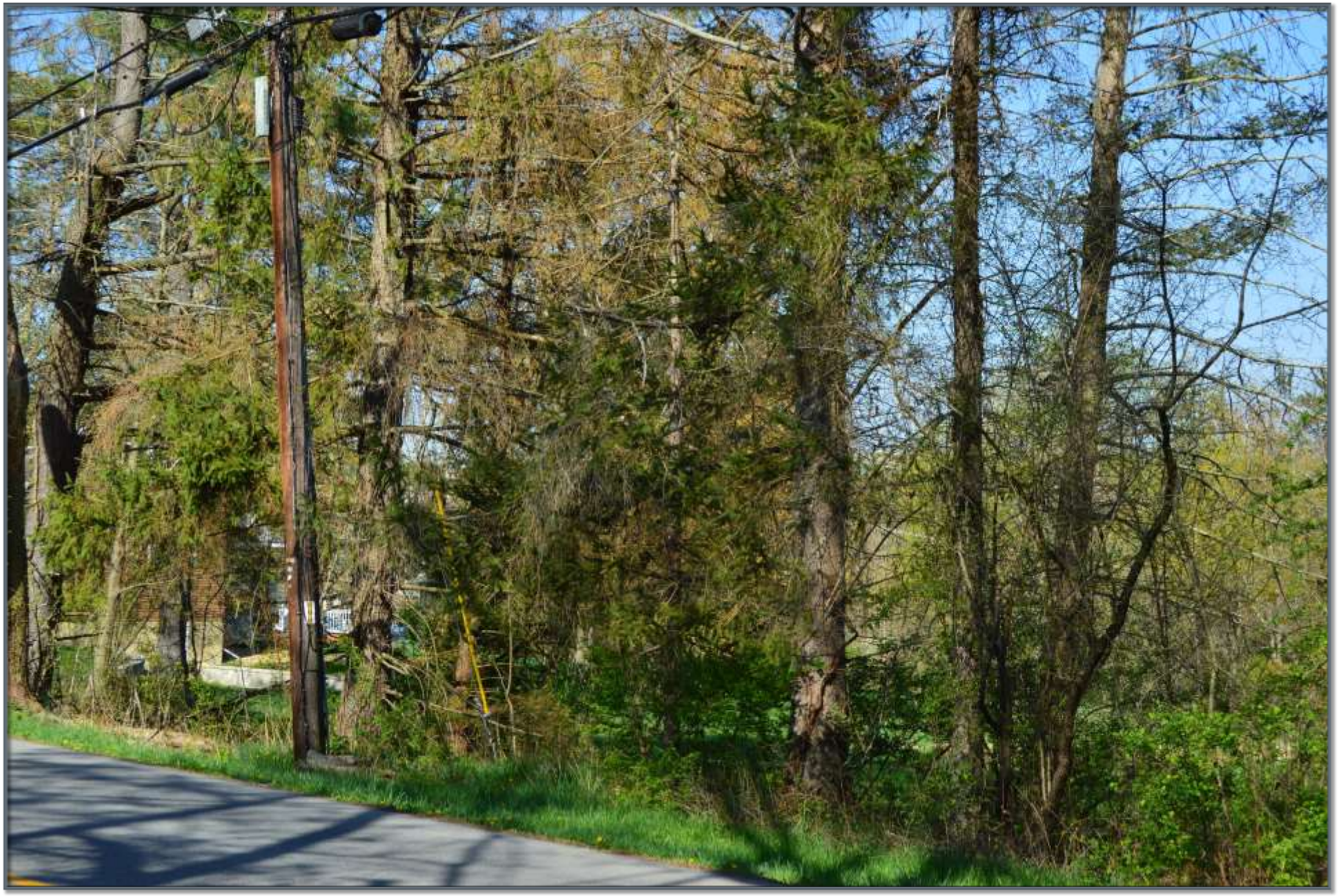
Tectonic

Looking northwest from 146 Diddell Road.
Proposed installation will be visible from this location.

Distance from the photographic location to the proposed installation is ±0.47 miles.

S-7

11272.014A



Tectonic

Looking west-northwest from the intersection of Corbin Lane and Diddell Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.53 miles.

P-8

11272.014A

Tectonic

Looking west-northwest from 169 Diddell Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.58 miles.

P-9

11272.014A

Tectonic

Looking west from the intersection of Organ Hill Road and Diddell Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.70 miles.

P-10

11272.014A

Tectonic

Looking west-southwest from the intersection of Organ Hill Road and Diddell Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.65 miles.

P-11

11272.014A

Tectonic

Looking southwest from 7 Elbern Drive.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.75 miles.

P-12

11272.014A

Tectonic

Looking southwest from 28 Wildflower Ridge.
Proposed installation will be visible from this location.

Distance from the photographic location to the proposed installation is ±0.73 miles.

P-13

11272.014A

Tectonic

Looking southwest from 28 Wildflower Ridge.
Proposed installation will be visible from this location.

Distance from the photographic location to the proposed installation is ±0.73 miles.

S-13

11272.014A

Tectonic

Looking south-southwest from utility ROW near 9 Organ Hill Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.59 miles.

P-14

11272.014A

Tectonic

Looking south-southwest from near 7 Strawberry Lane.
Proposed installation will be visible from this location.

Distance from the photographic location to the proposed installation is ±0.56 miles.

P-15

11272.014A

Tectonic

Looking south-southwest from near 7 Strawberry Lane.
Proposed installation will be visible from this location.

Distance from the photographic location to the proposed installation is ±0.56 miles.

S-15

11272.014A

Tectonic

Looking south-southwest from the intersection of Maloney Road and Annie Lane.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.90 miles.

P-16

11272.014A

Tectonic

Looking south-southwest from the cul de sac of Frieda Lane.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.00 miles.

P-17

11272.014A

Tectonic

Looking south-southwest from the intersection of Maloney Road and Noxon Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.13 miles.

P-18

11272.014A

Tectonic

Looking south-southwest from the intersection of Smith Road and Old Smith Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.54 miles.

P-19

11272.014A

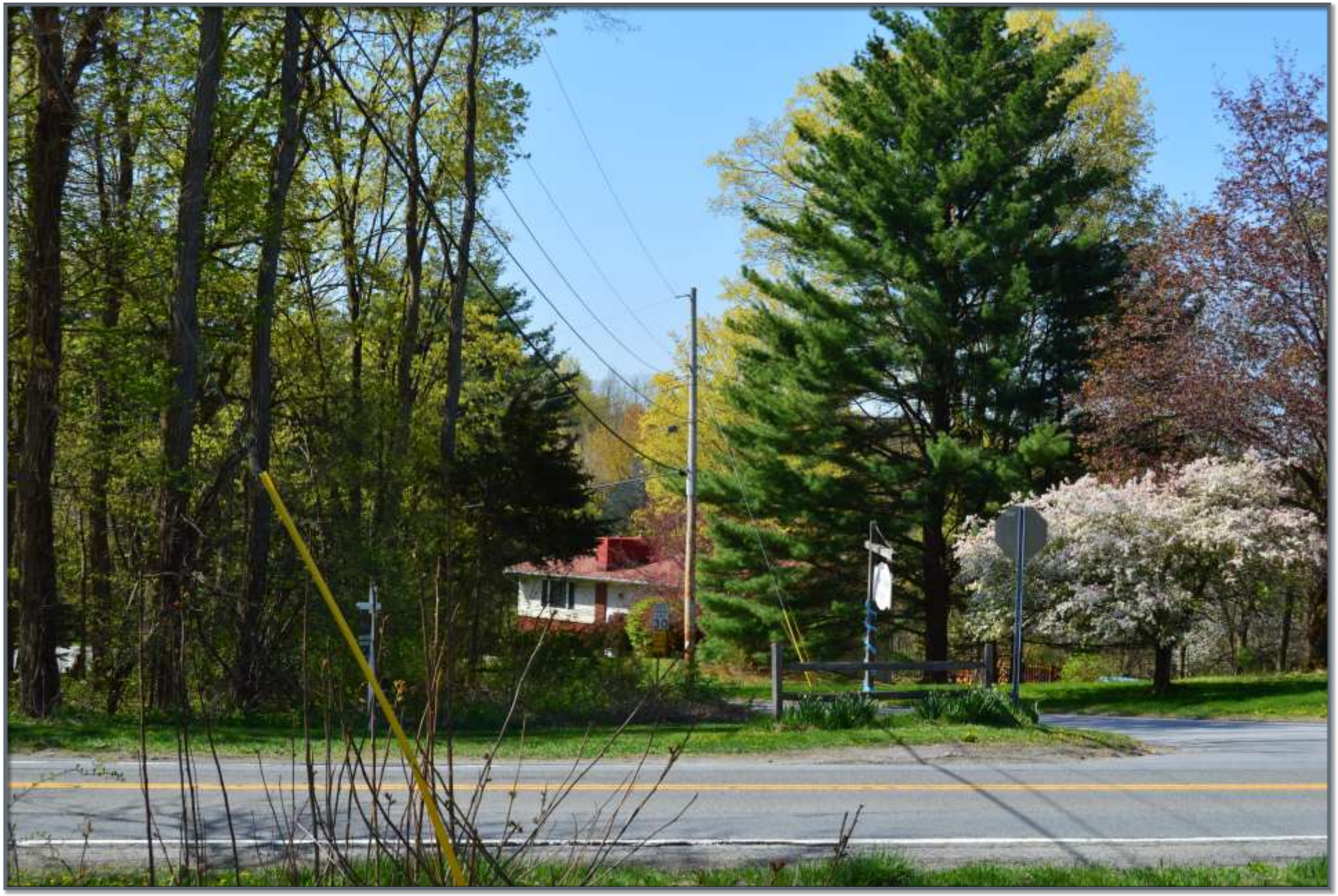
Tectonic

Looking southwest from Stringham Park.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±2.72 miles.

P-20

11272.014A



Tectonic

Looking southwest from the intersection of Noxon Road and Old Noxon Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.30 miles.

P-21

11272.014A

Tectonic

Looking south-southwest from the entrance of The Vale Fox Distillery on Noxon Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.23 miles.

P-22

11272.014A

Tectonic

Looking south from the intersection of Honeymoon Lane and Noxon Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.24 miles.

P-23

11272.014A

Tectonic

Looking south-southeast from the intersection of Feller Road and Noxon Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.76 miles.

P-24

11272.014A

Tectonic

Looking southeast from 6 Arbor Hill Drive.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.68 miles.

P-25

11272.014A

Tectonic

Looking south-southeast from the intersection of Titusville Road and Partners Trace.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.77 miles.

P-26

11272.014A

Tectonic

Looking southeast from the Red Oaks Mill Baseball Fields on 15 Alda Drive.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±2.34 miles.

P-27

11272.014A

Tectonic

Looking east-southeast from Hillis Park at 32 Hampton Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±2.54 miles.

P-28

11272.014A

Tectonic

Looking east from Hudson Valley Regional Airport runway along New Hackensack Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.80 miles.

P-29

11272.014A

Tectonic

Looking east-southeast from the intersection of Haifa Road and Malone Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.50 miles.

P-30

11272.014A

Tectonic

Looking south-southwest from 17 Farm View Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.75 miles.

P-31

11272.014A

Tectonic

Looking south-southwest from 17 Farm View Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.57 miles.

P-32

11272.014A

Tectonic

Looking south-southwest from 1 Lewis Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.47 miles.

P-33

11272.014A

Tectonic

Looking south-southeast from 34 Laurel Park Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.40 miles.

P-34

11272.014A

Tectonic

Looking southeast from 11 Bray Farm Lane.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.81 miles.

P-35

11272.014A

Tectonic

Looking southeast from 6 Bray Farm Lane.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.71 miles.

P-36

11272.014A

Tectonic

Looking southeast from the intersection of Curtin Court and Bray Farm Lane.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.66 miles.

P-37

11272.014A

Tectonic

Looking southeast from Mountain View Farms at 333 Maloney Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.59 miles.

P-38

11272.014A

Tectonic

Looking southeast from Mountain View Ranch at Smith Crossing Road.
Proposed installation will be visible from this location.

Distance from the photographic location to the proposed installation is ±0.62 miles.

P-39

11272.014A

Tectonic

Looking southeast from Mountain View Ranch at Smith Crossing Road.
Proposed installation will be visible from this location.

Distance from the photographic location to the proposed installation is ±0.62 miles.

S-39

11272.014A

Tectonic

Looking southeast from 97 Smith Crossing Road.
Proposed installation will be visible from this location.

Distance from the photographic location to the proposed installation is ±0.85 miles.

P-40

11272.014A

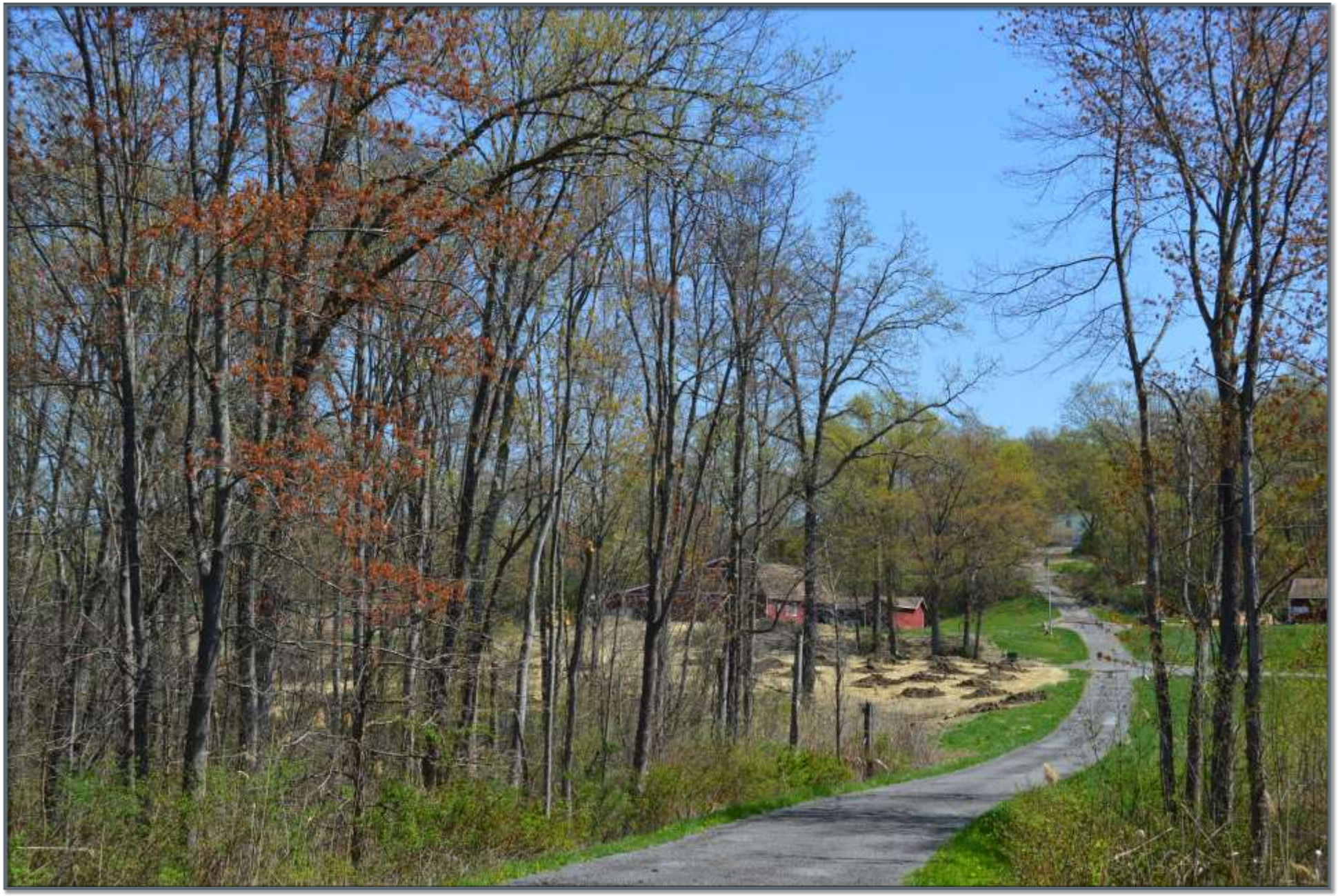
Tectonic

Looking southeast from 97 Smith Crossing Road.
Proposed installation will be visible from this location.

Distance from the photographic location to the proposed installation is ±0.82 miles.

S-40

11272.014A



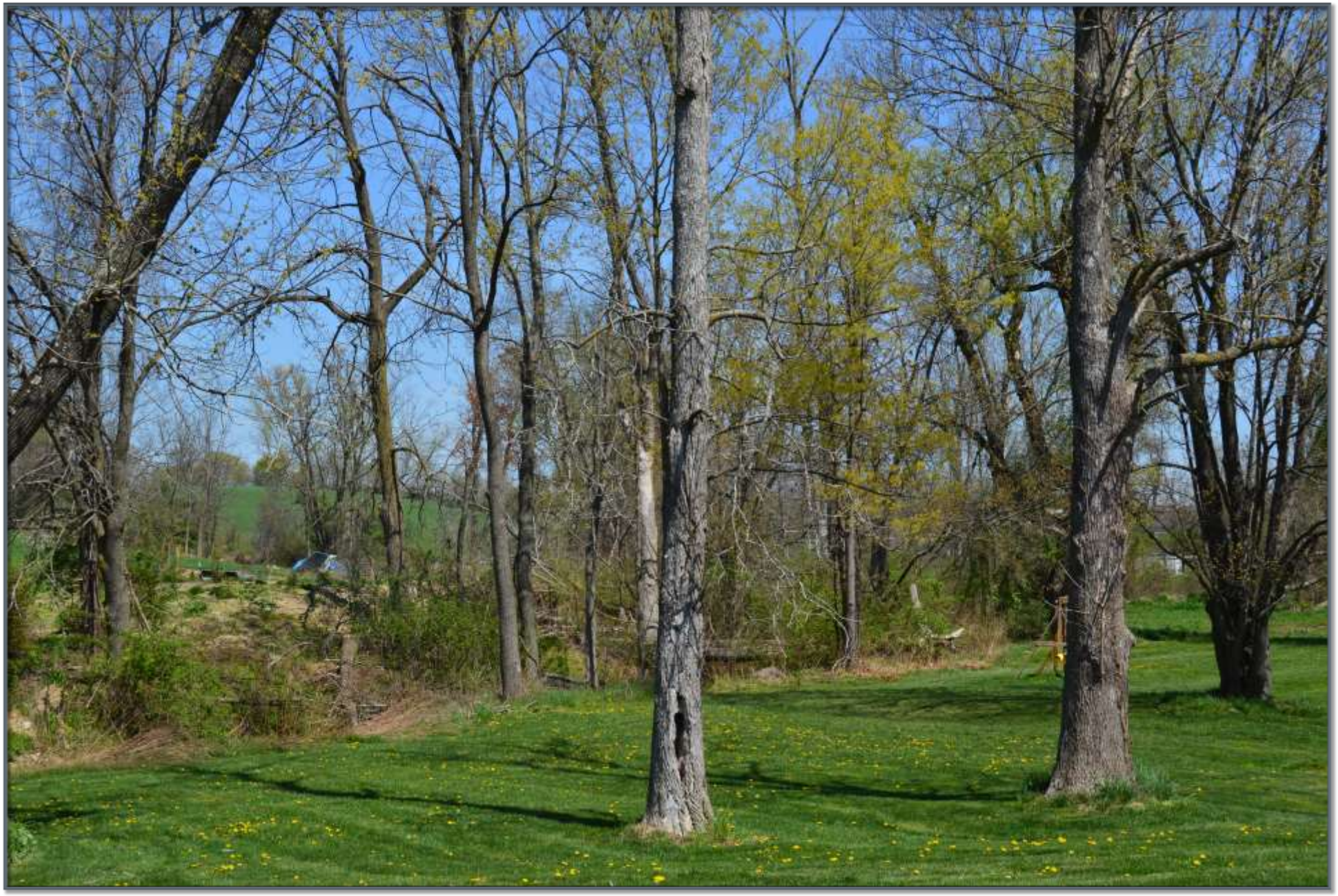
Tectonic

Looking east from 61 Smith Crossing Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.68 miles.

P-41

11272.014A



Tectonic

Looking north-northeast from 46 Diddell Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.81 miles.

P-42

11272.014A

Tectonic

Looking east-northeast from the cul de sac of Hackensack Heights Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.26 miles.

P-43

11272.014A

Tectonic

Looking northeast from the intersection of Baker Court and Lane Gate Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.93 miles.

P-44

11272.014A

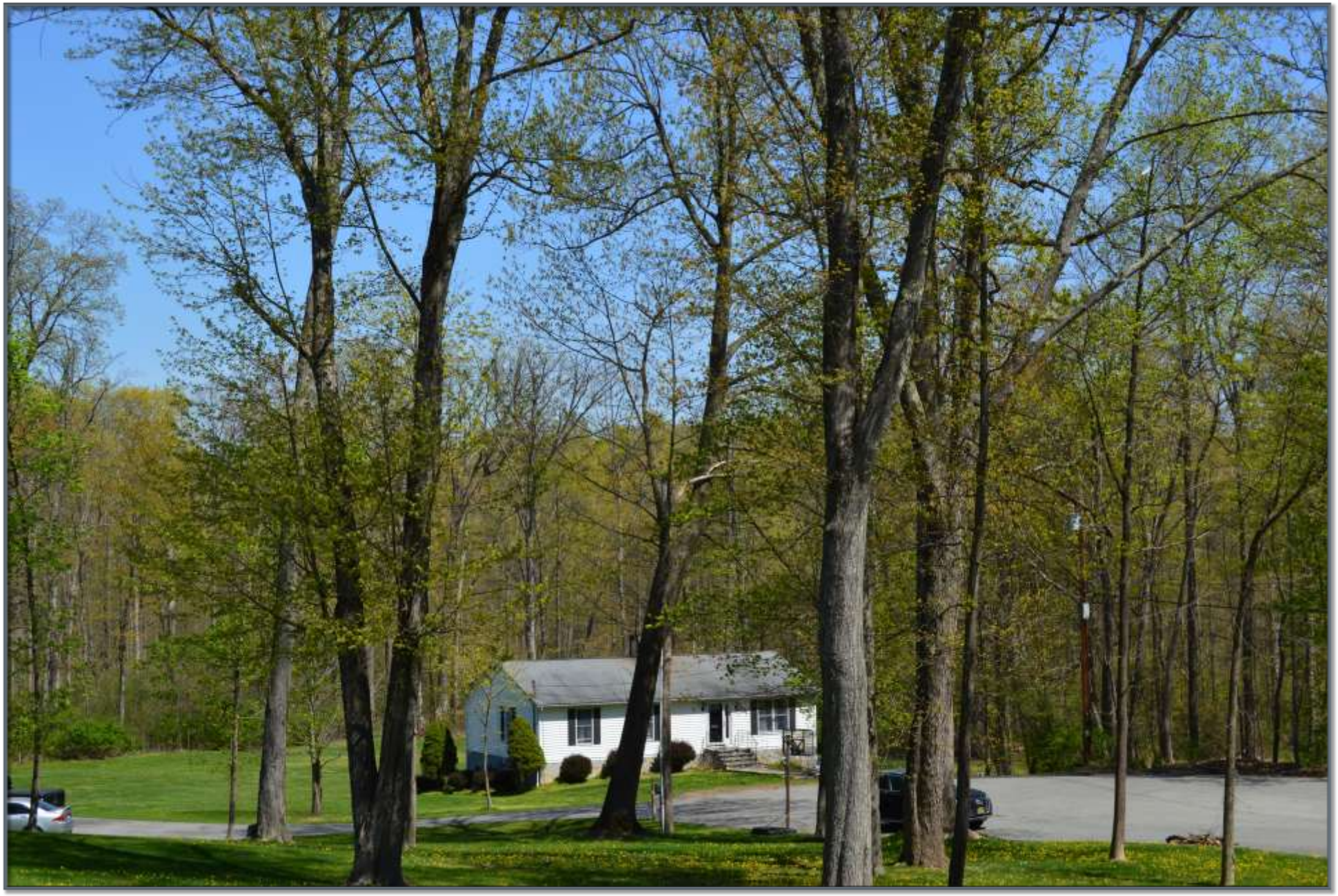
Tectonic

Looking northeast from the parking lot of New Hackensack Reformed Church.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.78 miles.

P-45

11272.014A



Tectonic

Looking northeast from 33 Corbin Street.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.41 miles.

P-46

11272.014A

Tectonic

Looking northeast from 63 Degarmo Hills Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.88 miles.

P-47

11272.014A

Tectonic

Looking northeast from 14 Joel Place.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.56 miles.

P-48

11272.014A

Tectonic

Looking north-northeast from the cul de sac of Top O Hill Road.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.88 miles.

P-49

11272.014A

Tectonic

Looking northwest from the intersection of Old Pace Building Road and Robinson Lane.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.86 miles.

P-50

11272.014A

Tectonic

Looking northwest from the intersection of Legere Court and Gellatly Drive.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.98 miles.

P-51

11272.014A

Tectonic

Looking northwest from the intersection of Robinson Lane and Lindsey Court.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.44 miles.

P-52

11272.014A

Tectonic

Looking west-northwest from Robinson Lane Park.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.73 miles.

P-53

11272.014A

Tectonic

Looking northwest from the intersection of Gerhard Court and Viola Court.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.51 miles.

P-54

11272.014A

Tectonic

Looking north from the Dutchess Rail Trail Van Wyck Pedestrian Bridge.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±2.03 miles.

P-55

11272.014A

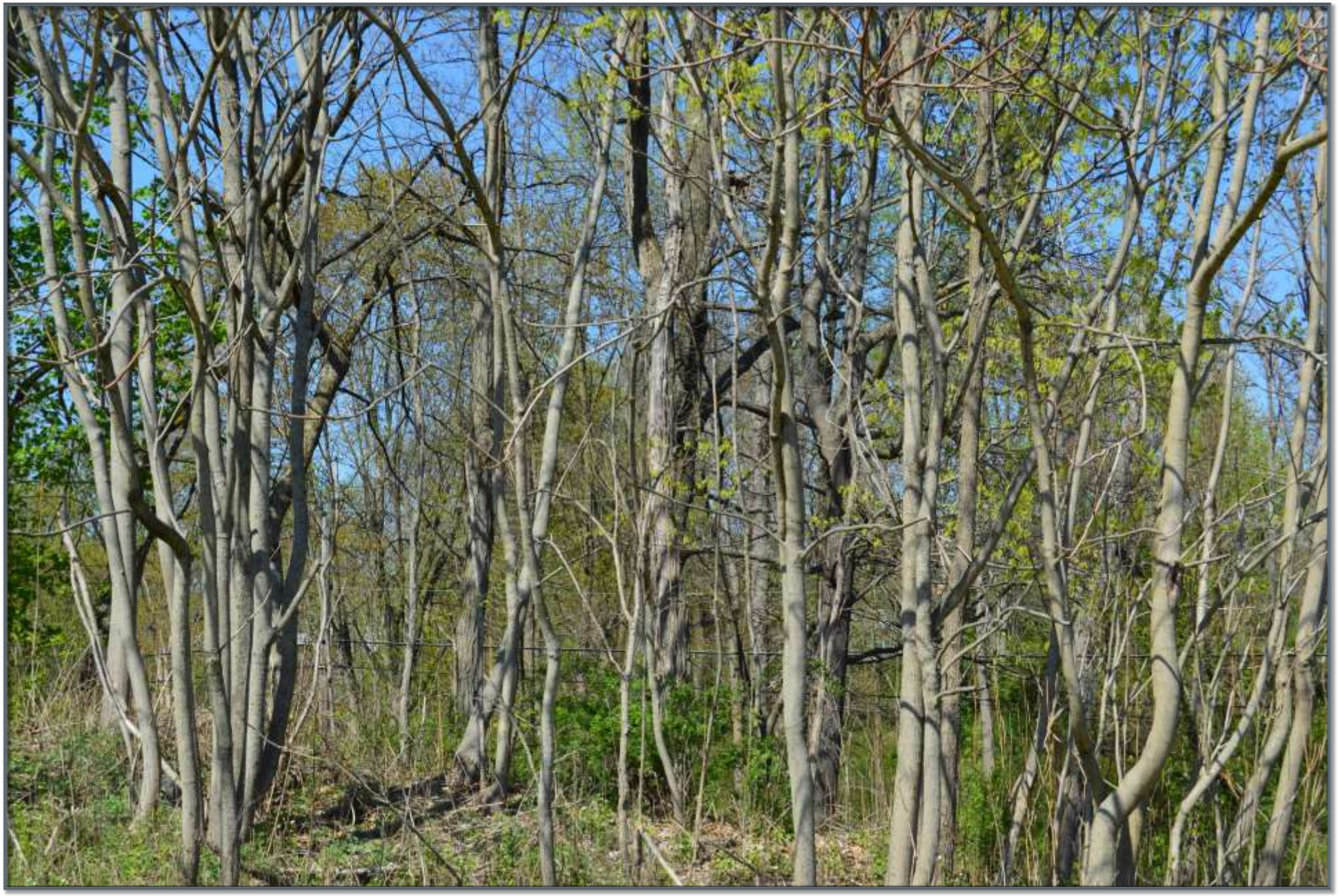
Tectonic

Looking northeast from the Dutchess Rail Trail Diddell parking area.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.04 miles.

P-56

11272.014A



Tectonic

Looking northeast from the Dutchess Rail Trail Diddell pedestrian crossway.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.01 miles.

P-57

11272.014A

Tectonic

Looking northeast from the Dutchess Rail Trail.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.90 miles.

P-58

11272.014A

Tectonic

Looking north-northeast from the Dutchess Rail Trail.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.82 miles.

P-59

11272.014A

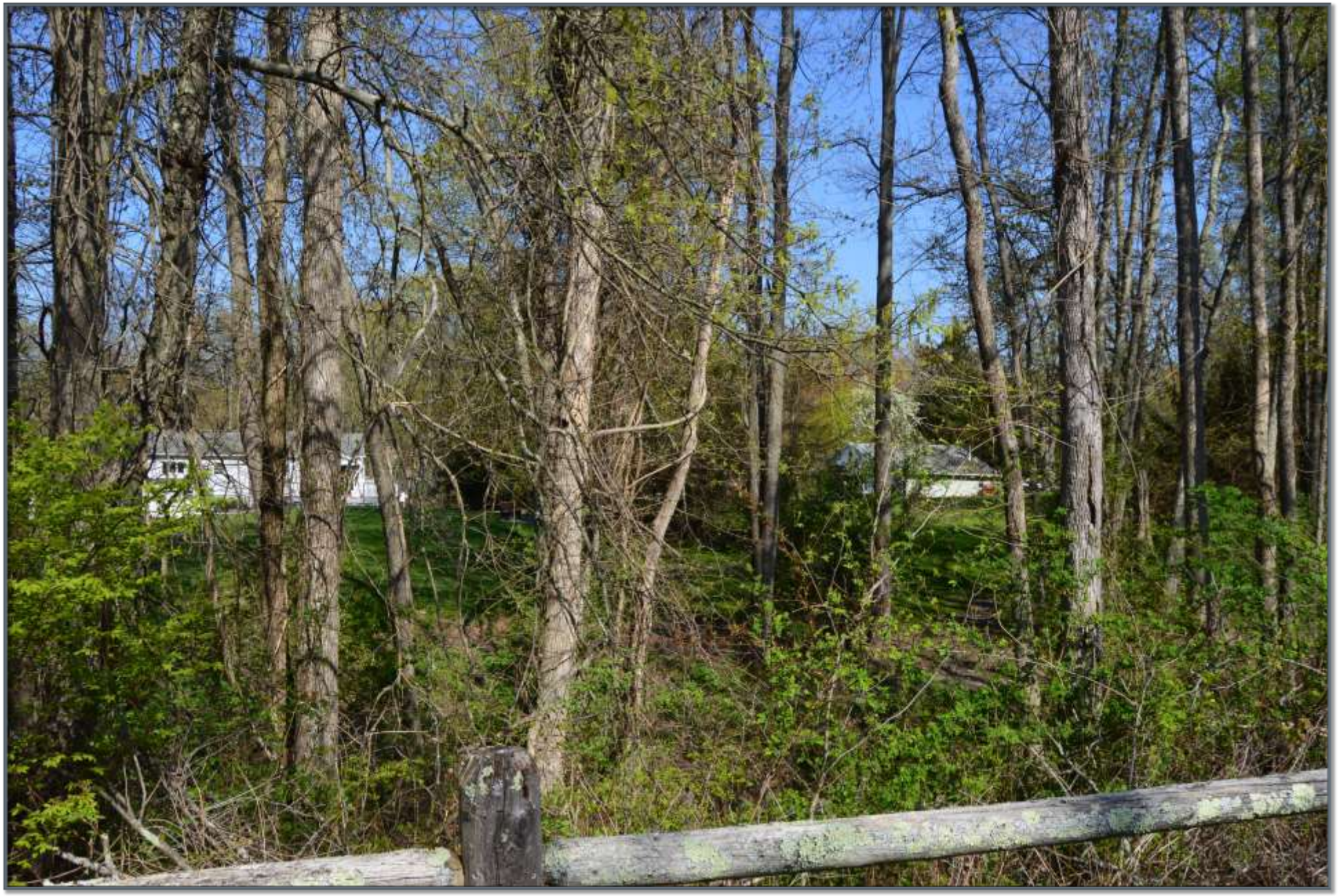
Tectonic

Looking north-northeast from the Dutchess Rail Trail.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.79 miles.

P-60

11272.014A



Tectonic

Looking east-southeast from the Dutchess Rail Trail.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.83 miles.

P-61

11272.014A

Tectonic

Looking east-southeast from the Dutchess Rail Trail.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±0.92 miles.

P-62

11272.014A

Tectonic

Looking southeast from the Titusville Road Dutchess Rail Trail entrance.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.46 miles.

P-63

11272.014A

Tectonic

Looking southeast from the Titusville Road Dutchess Rail Trail pedestrian bridge.
Proposed installation will not be visible from this location.

Distance from the photographic location to the proposed installation is ±1.60 miles.

P-64

11272.014A