



# AT&T: RICHMOND WIRELESS FACILITIES

Town of Richmond Selectboard, March 24, 2014

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*Presented By Andrew Kingman (A T & T), William J. Dodge (D R M), & Elizabeth L. Kohler (D R M)*





# Overview: Presentation

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- ❖ I. Drivers of AT&T Mobility Expansion in Vermont and Nationwide



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- ❖ IV. Site Specific Information for AT&T Facilities



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- ❖ V. Section 248a Process



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- ❖ IV. Site Specific Information for AT&T Facilities
- ❖ V. Section 248a Process
- ❖ VI. Question and Answer Period



# 2007 – The iPhone Changed Everything



- In 2007, AT&T and Apple forged a partnership that would revolutionize the wireless industry
- Concept of data as critical piece of wireless phone experience
- 70-75% of AT&T customers now have smartphones



# The Evolution

- Challenges: A robust, sustainable network built for the present **as well as the future**
- Customer needs:
  - Data, not voice (wireless plans now charge only for data)
  - Wireless, not wireline (1/3 of U.S. Households have no wireline phone, growing 465,000 households/month)
  - Video, not text
  - **Connection**
- The result: **Project VIP**



# Richmond, VT – A Tale of 3 Sites

## 1. Cochran Road

- Work in progress
- Site needed for I-89 / VT Route 2 capacity and residential areas
- Opportunities for aesthetic mitigation

## 2. Jericho Road

- Limited public input to date
- Site needed for Jericho Road, I-89, and Village of Richmond.

## 3. Williams Hill Road

- Greater than expected aesthetic and natural resource issues.
- Prompted questions regarding focus of coverage and additional opportunities.
- Officially withdrawn today but AT&T will be re-defining search ring.



# AT&T's Process in Richmond

- Received Certificate of Public Good for Verburg Silo in September 2013;
- Met with town officials in October 2013 to preview plans;
- At town's request, suspended Cochran Rd. pre-filing clock (45 days) & submitted all notices at end of February 2014;
- Met with Cochran Road neighbors twice, moved tower location twice, 2 balloon tests (3<sup>rd</sup> being scheduled);
- Met with Williams Hill Rd. neighborhood group yesterday to discuss concerns.

# II. AT&T Network Coverage / Capacity Issues

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- ❖ New facilities permitted or under construction in currently include multiple sites in Chittenden County, including Colchester, Essex, Richmond, and Williston.





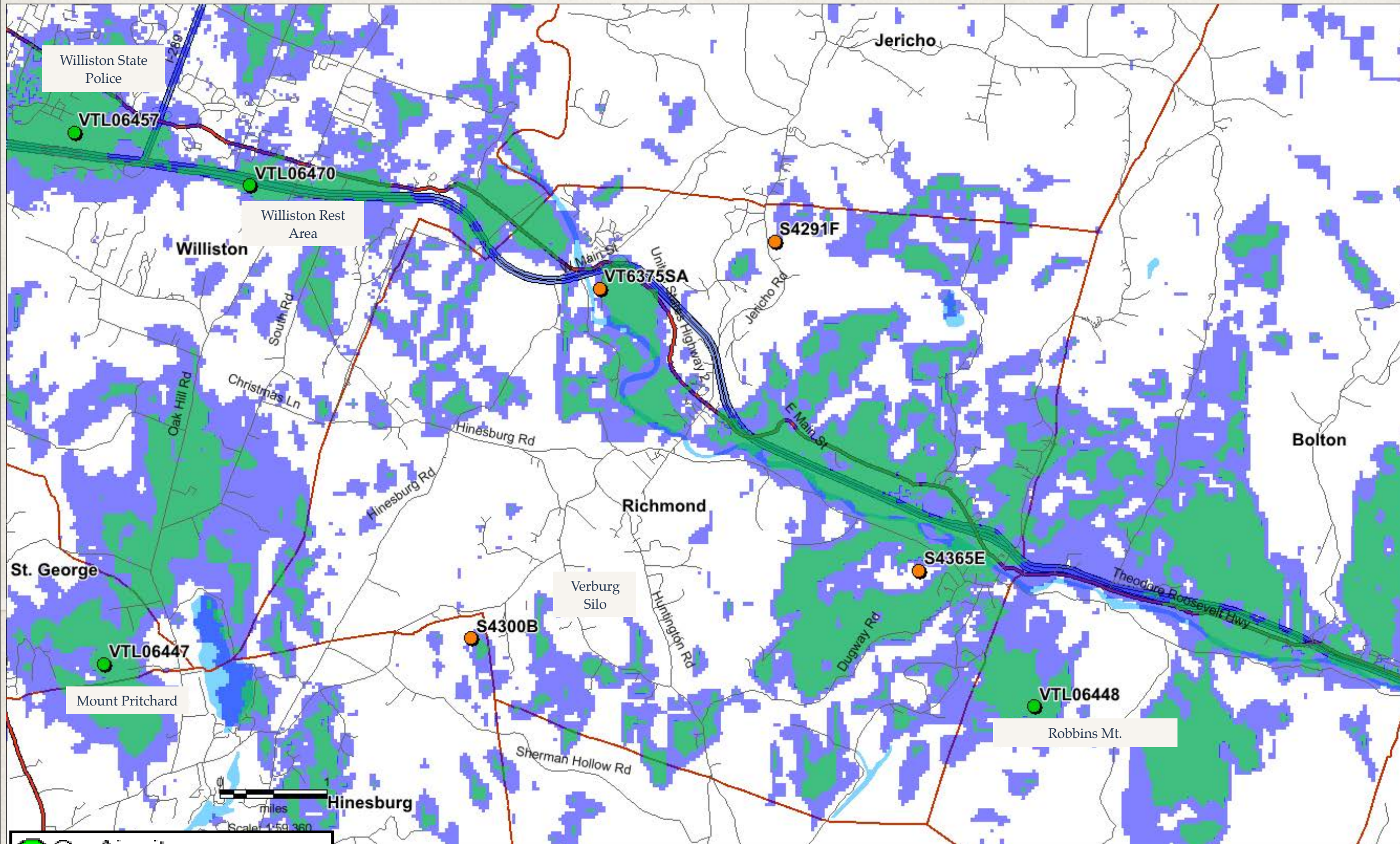
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- ❖ Establishing more AT&T-specific 4G and 3G sites will answer dramatic consumer growth in smartphone usage (projected as 850% industry-wide in next 10 years), and ensure reliable access to emergency services through E-911 on busiest state and town highways and roads, and areas of expansion.





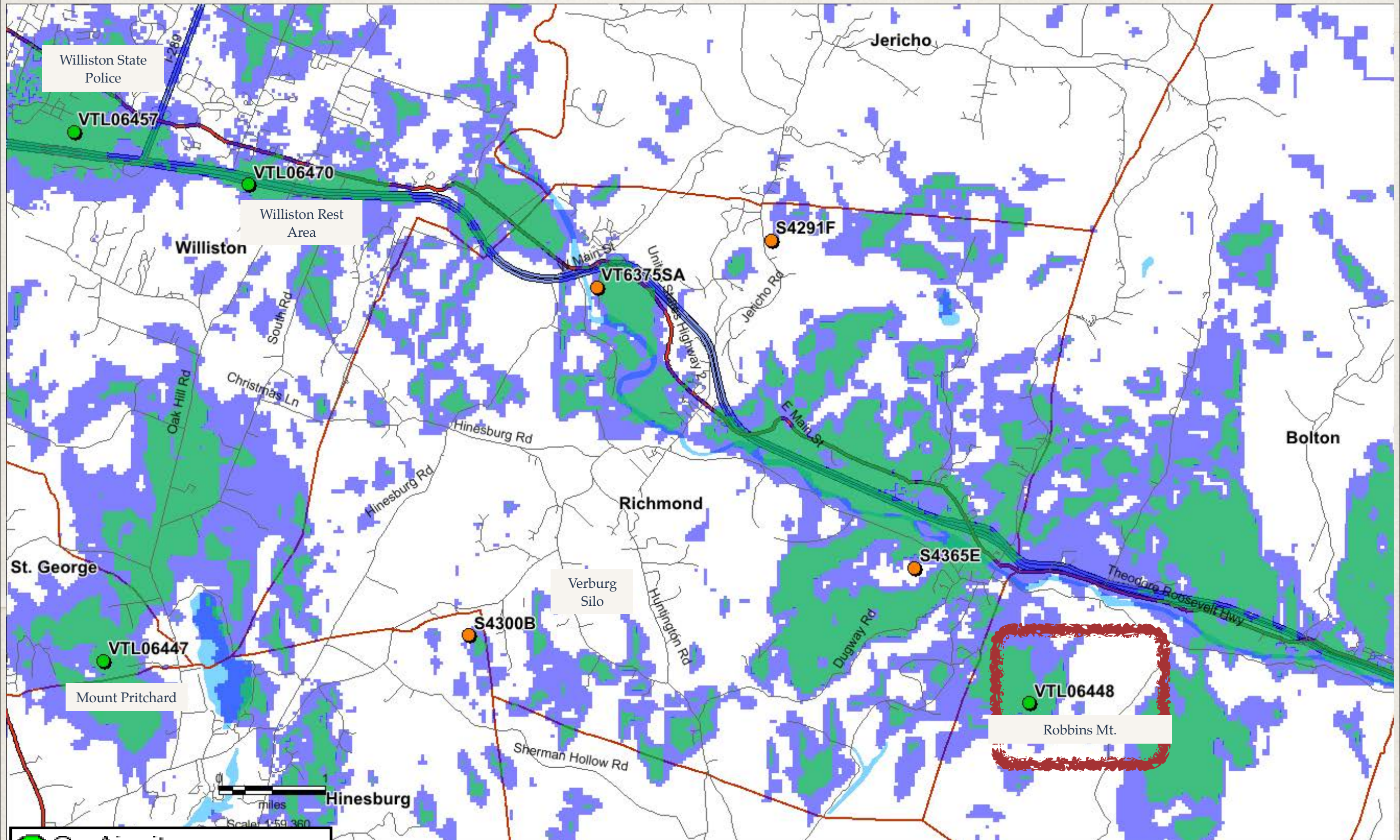
# Existing Coverage in Richmond (Regs. 6.12.8)



- On Air sites
- Proposed sites
- 98dBm Enhanced Data Rate
- 108dBm Reliable Coverage



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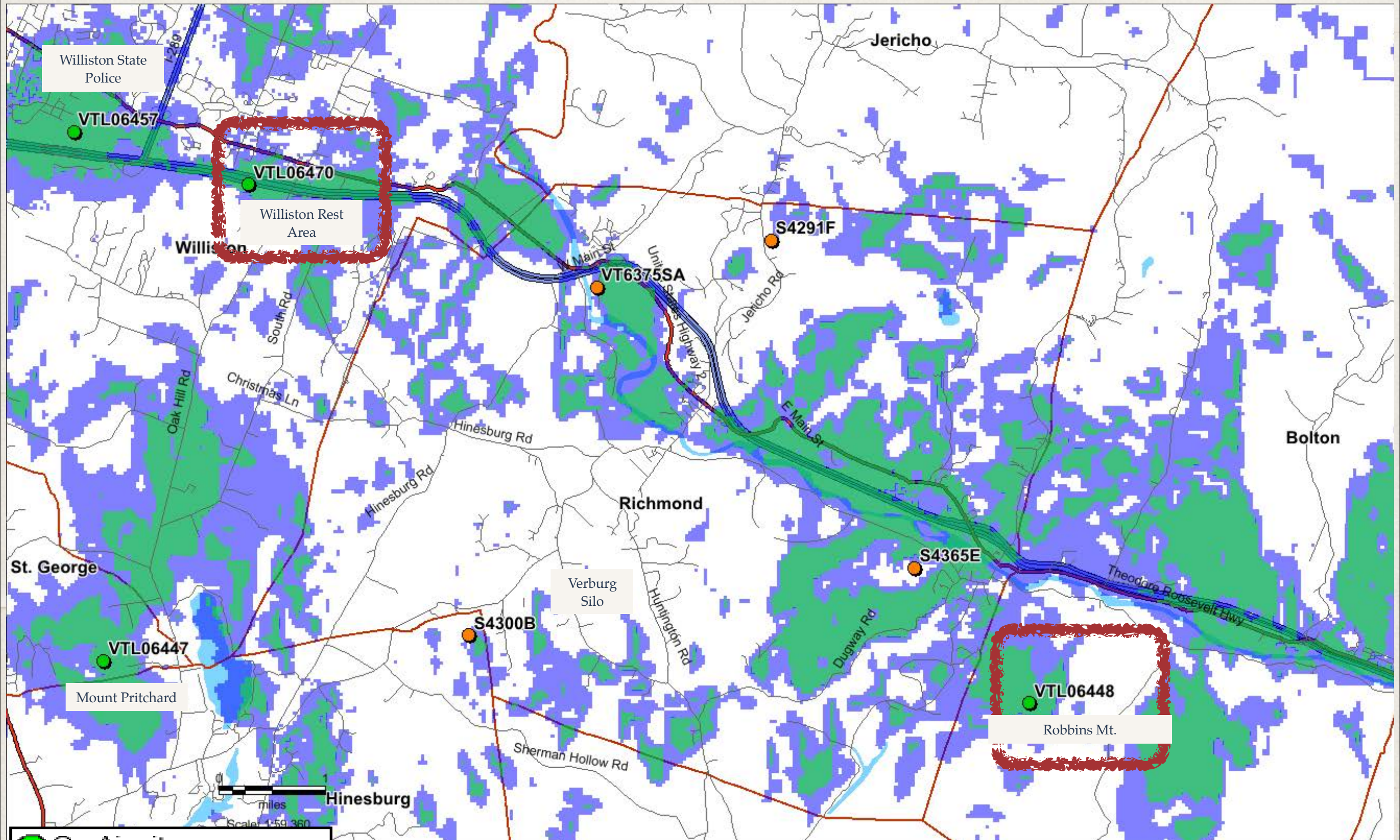






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Scale: 1:59,380  
miles



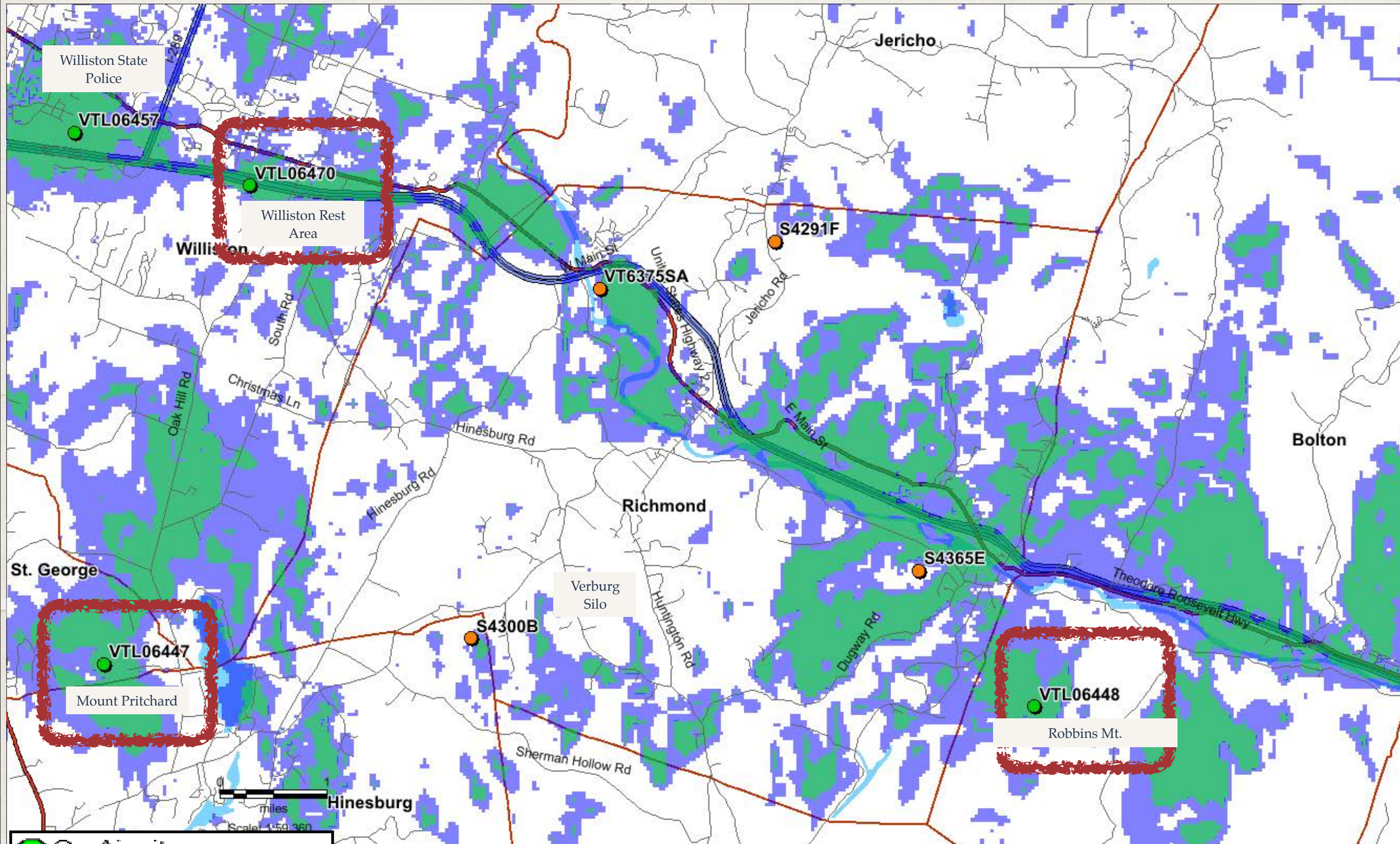
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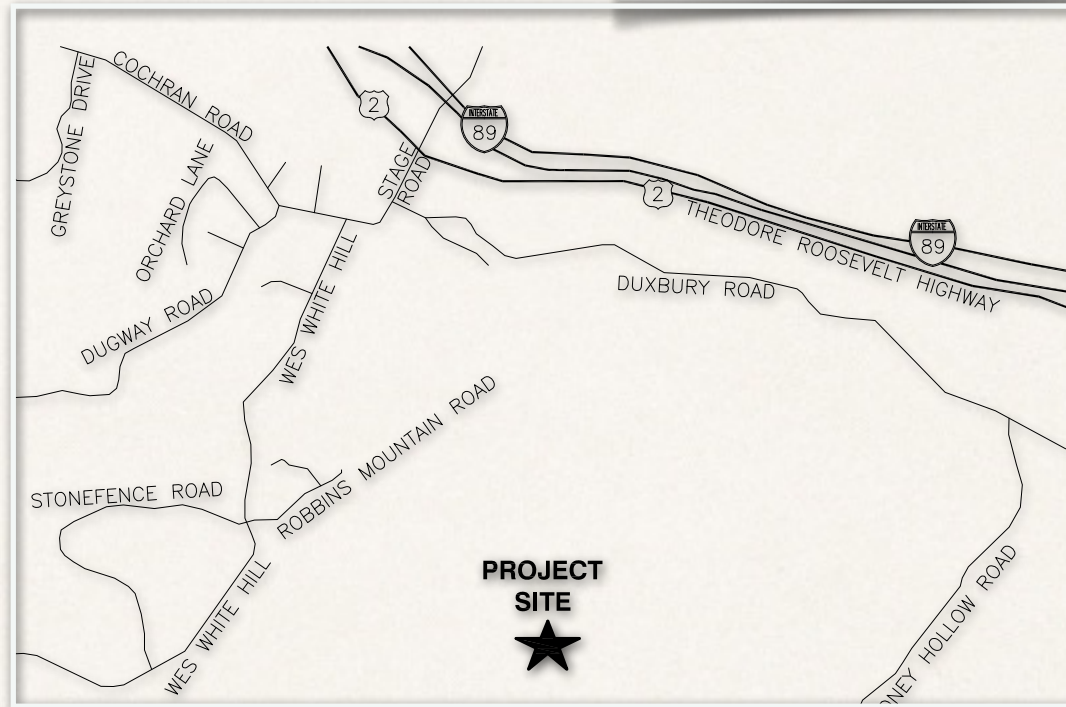
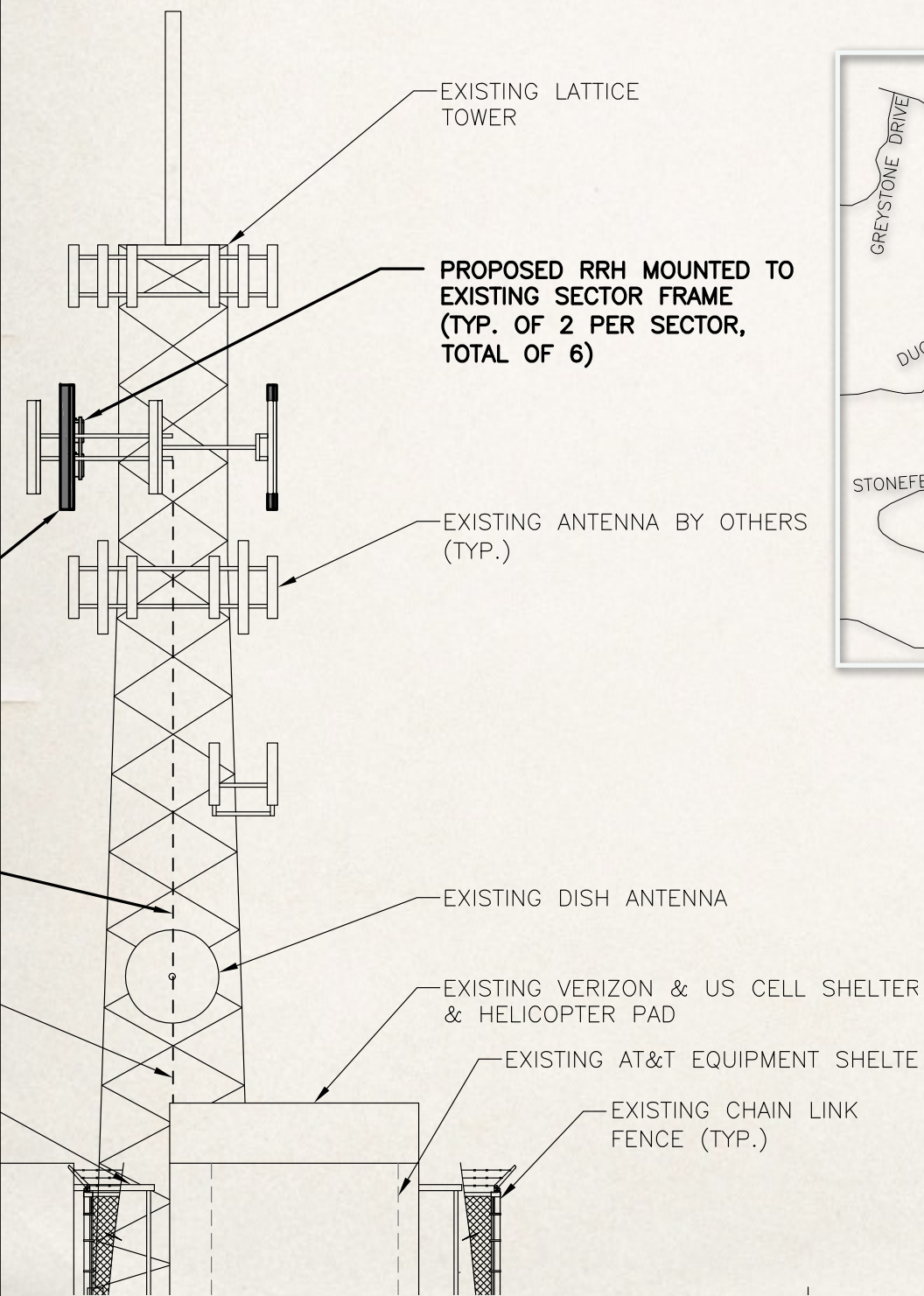
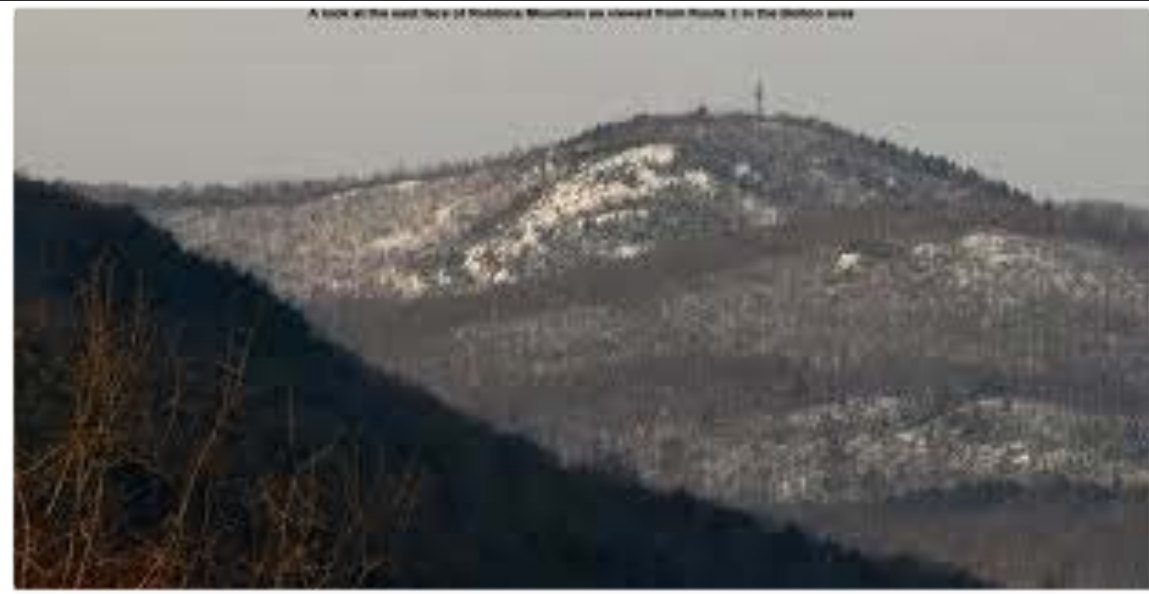
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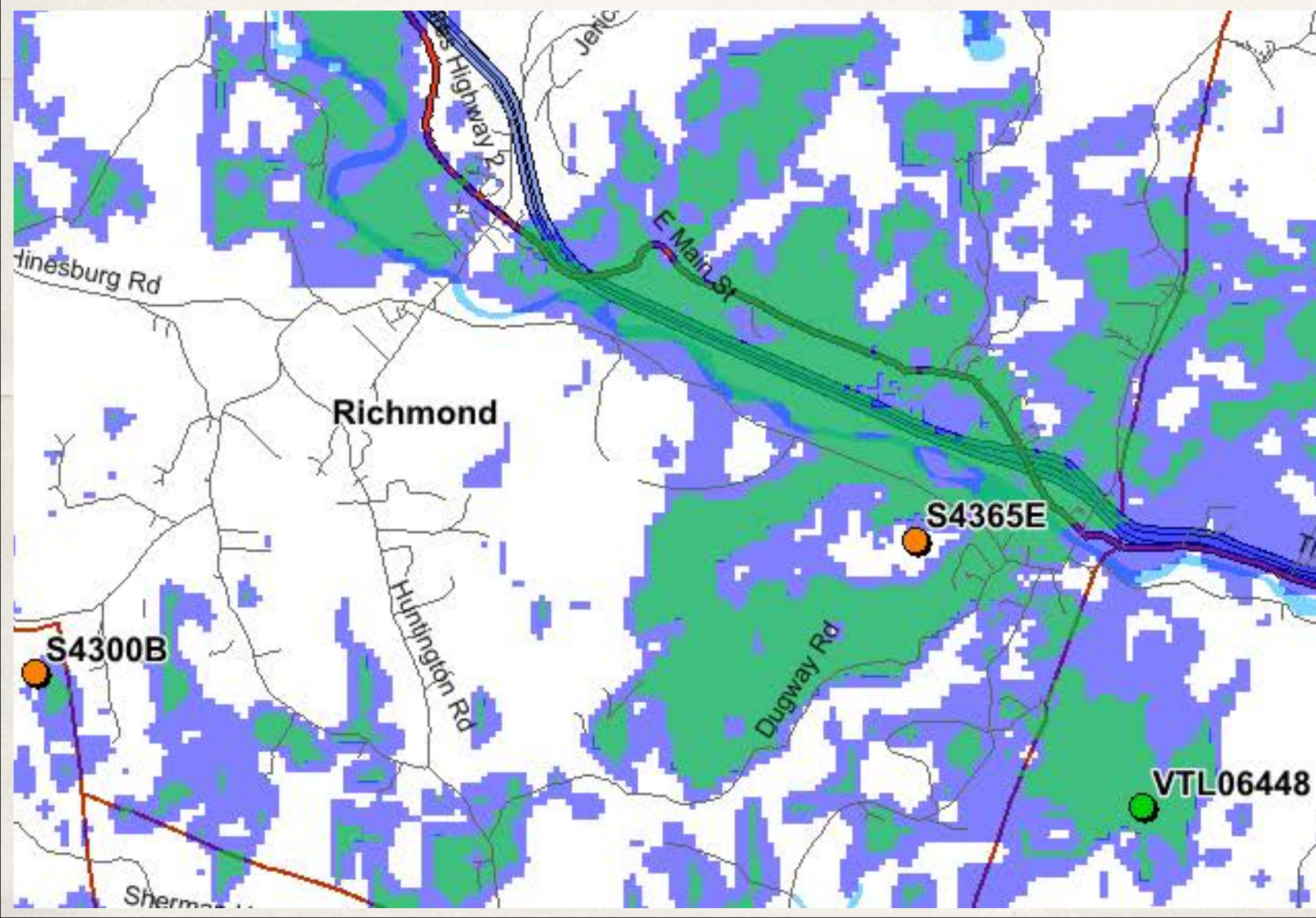
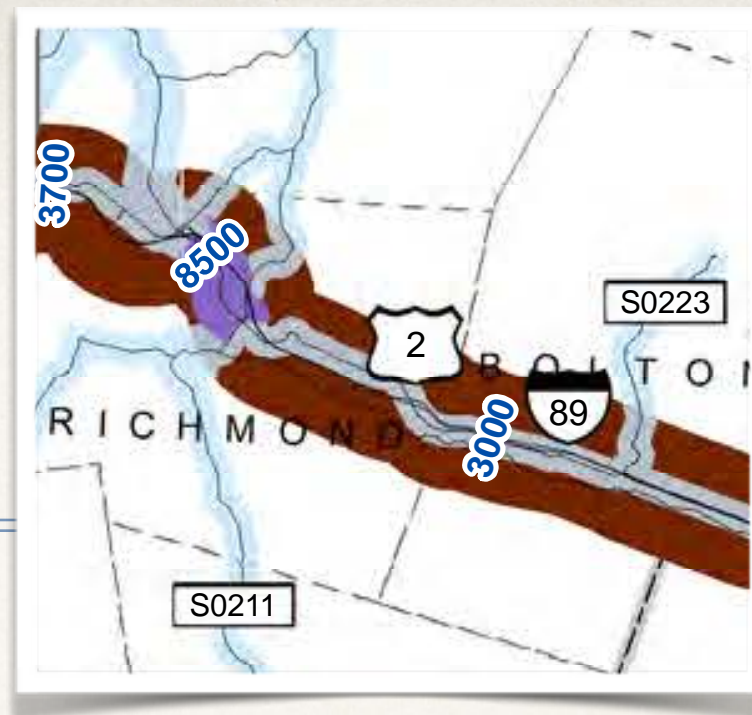
# Existing Coverage: Robbins Mountain (Bolton, VT)



- ❖ Main source of LTE coverage in parts of Richmond — constructed in '80s.
- ❖ AT&T antennas at 56' AGL — no additional room for down tilting without height increase: too far for effective LTE deployment on I-89

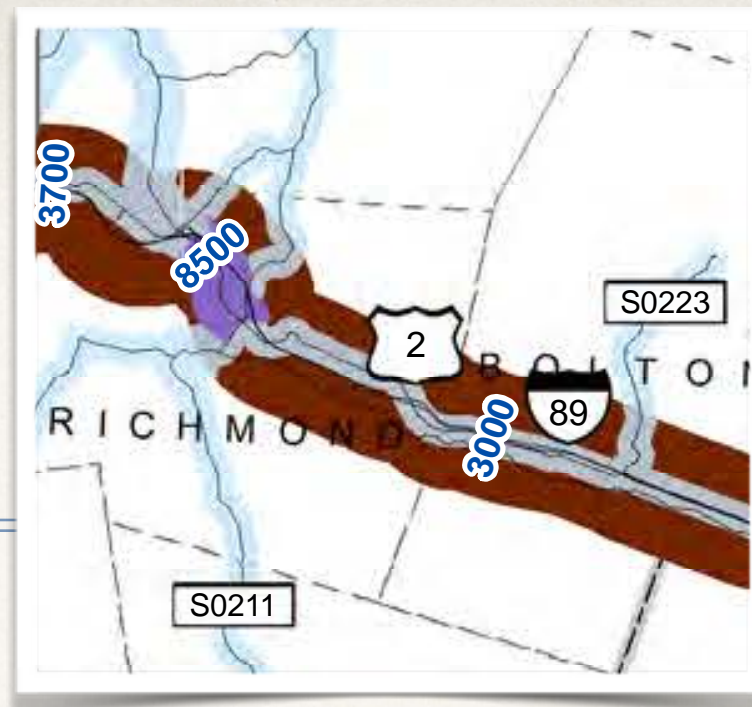


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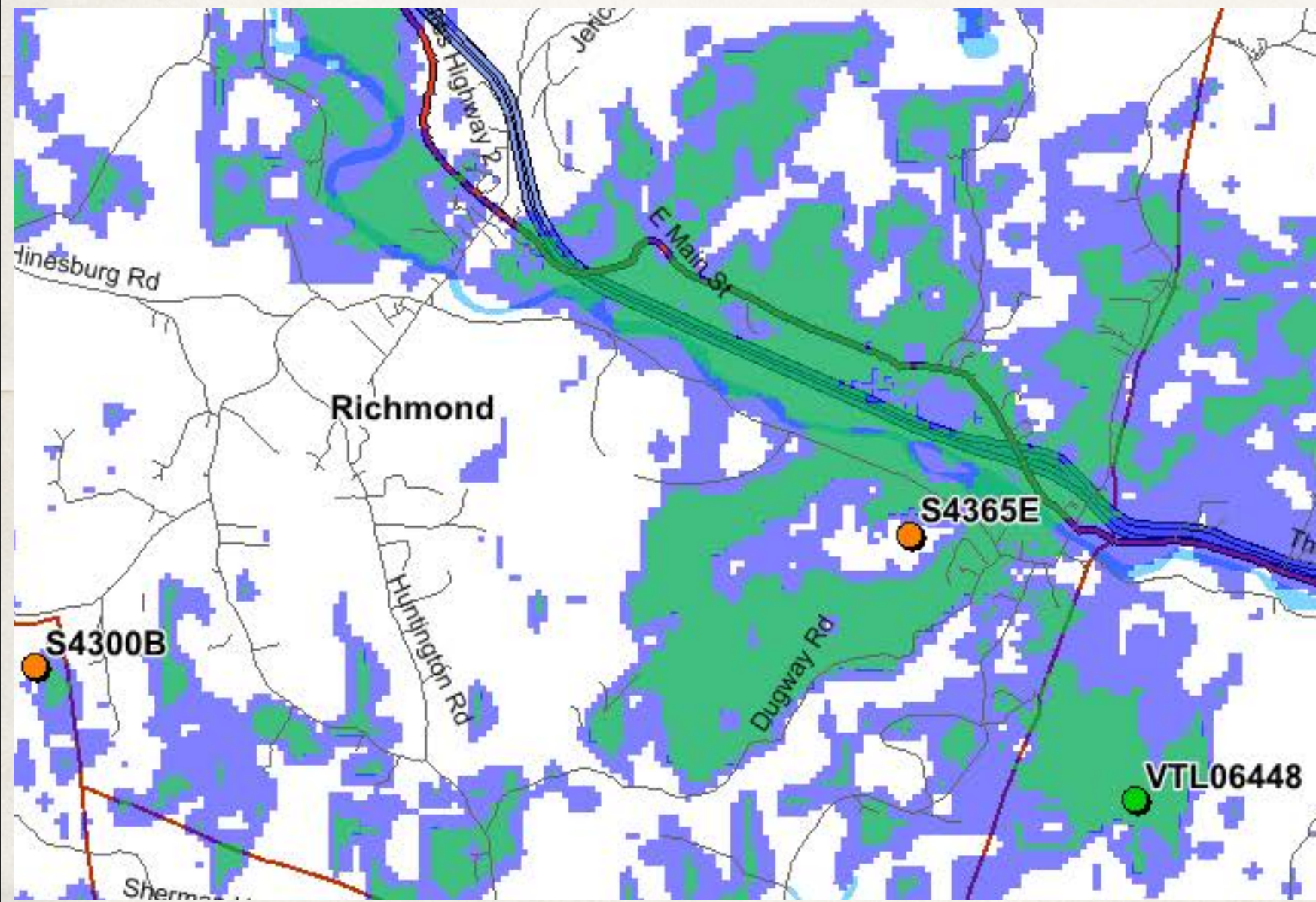




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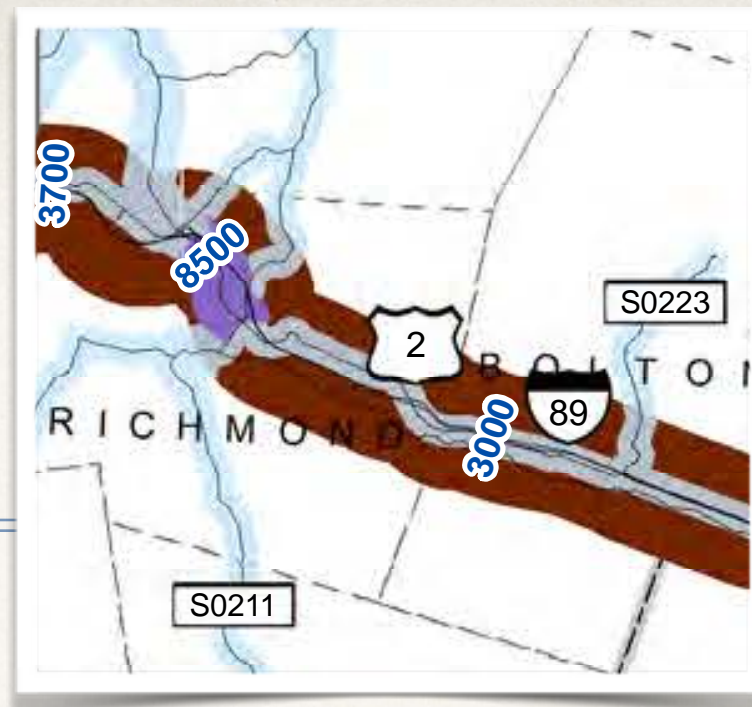


- \* Coverage between Jonesville and Rt 2 / I-89 overpass cannot handle volume of traffic.

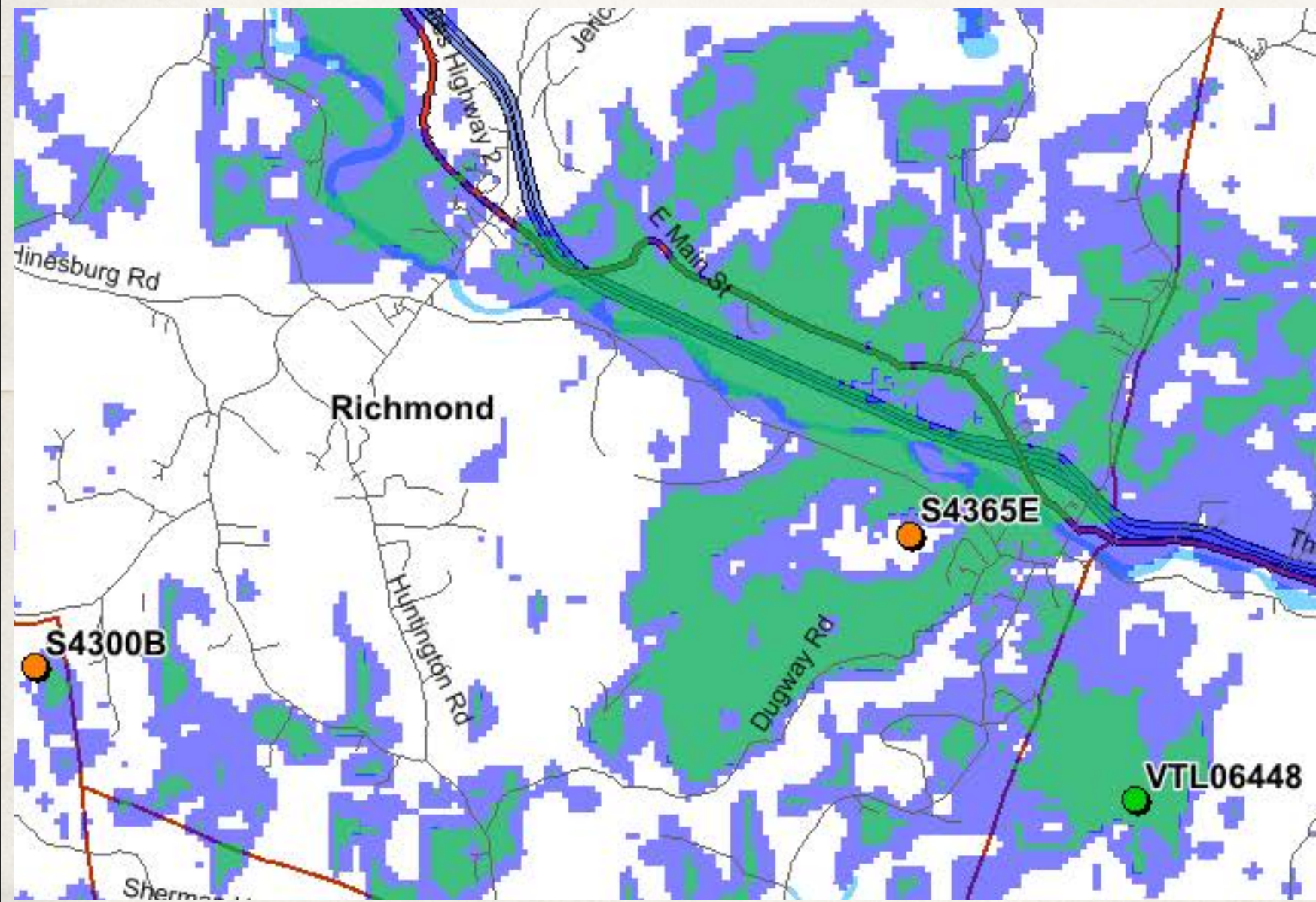




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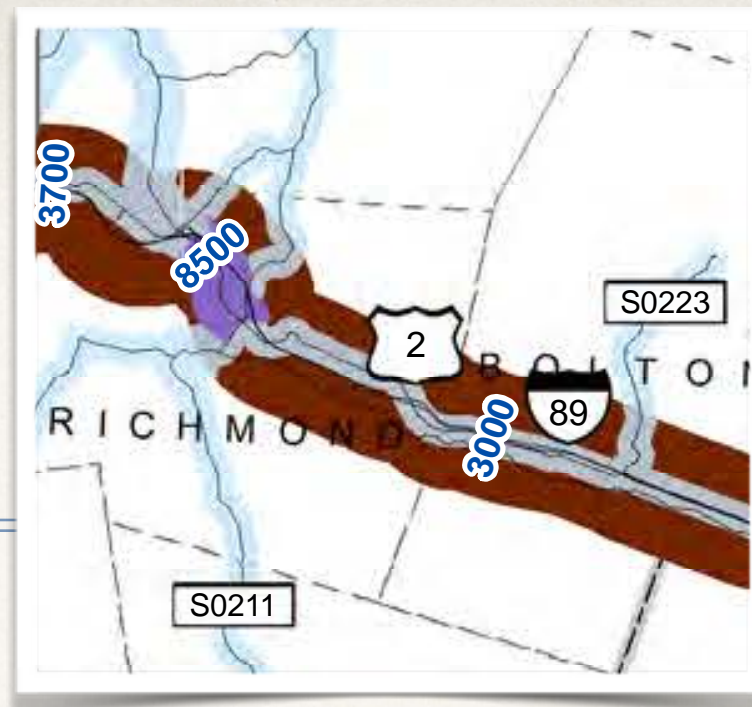


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- ❖ Reported problems include blocked and dropped calls, slow data, no connection, poor voice quality.

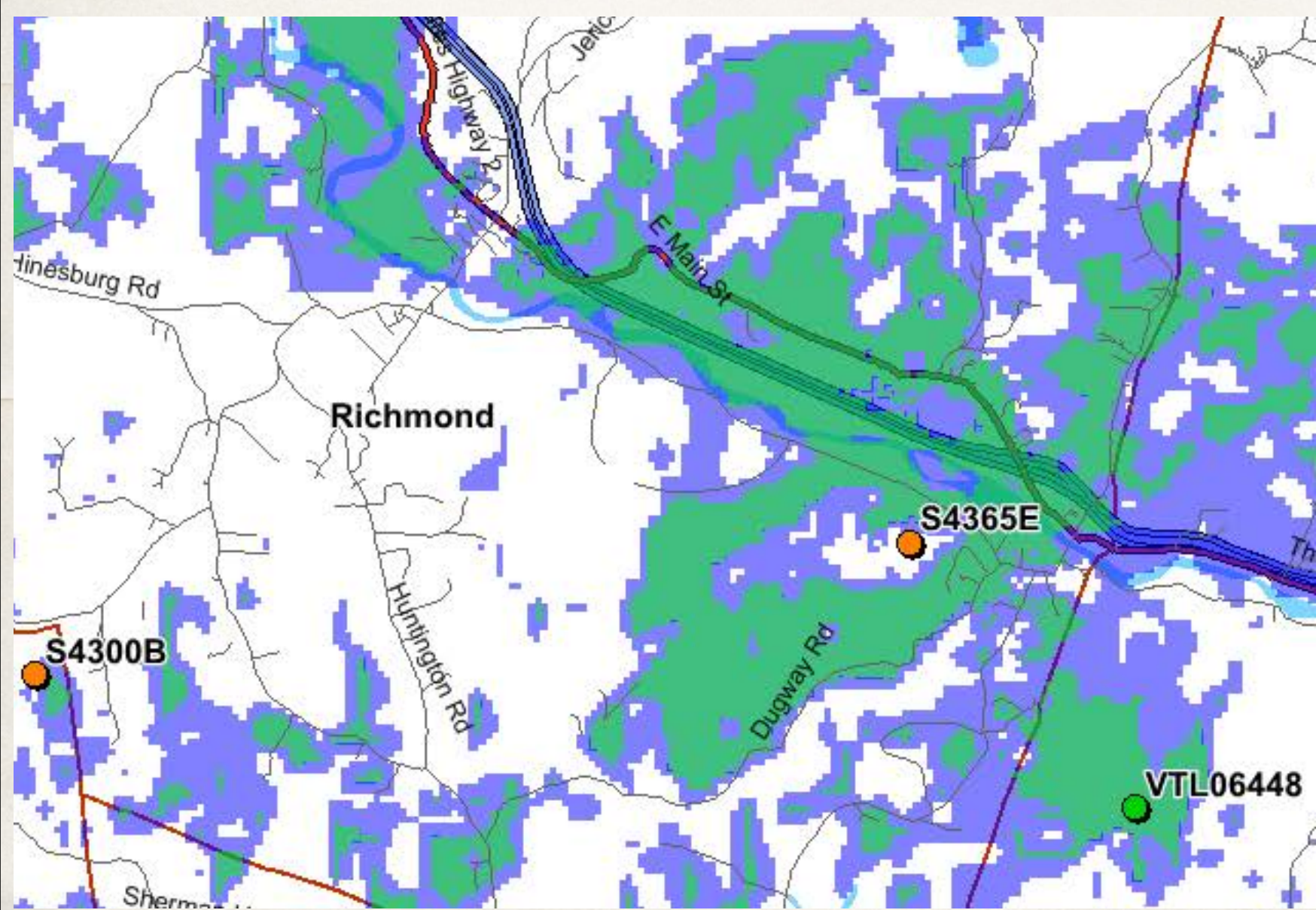




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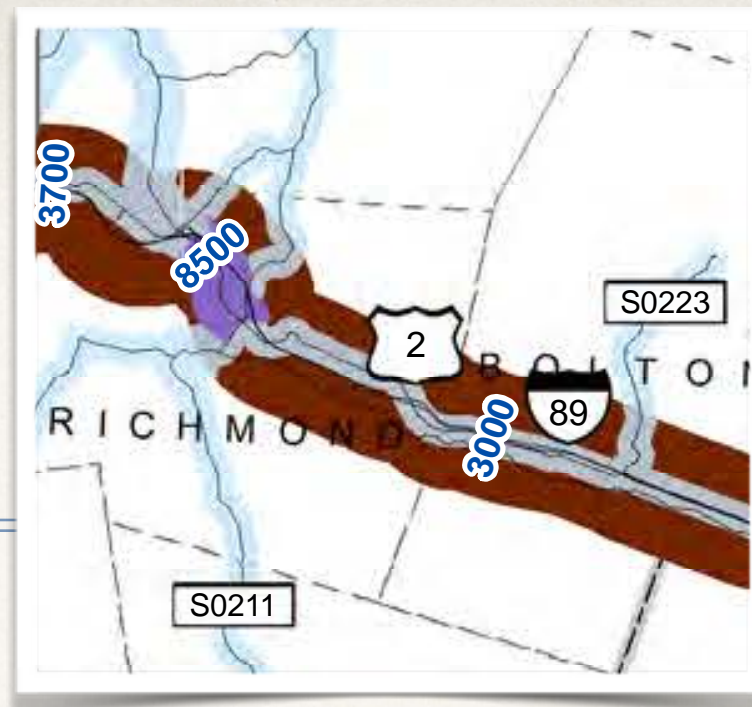


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- ❖ VTrans Traffic Flow Map (2010) shows Annual Average Daily Traffic of between 20,001 and 60,000 through Richmond.

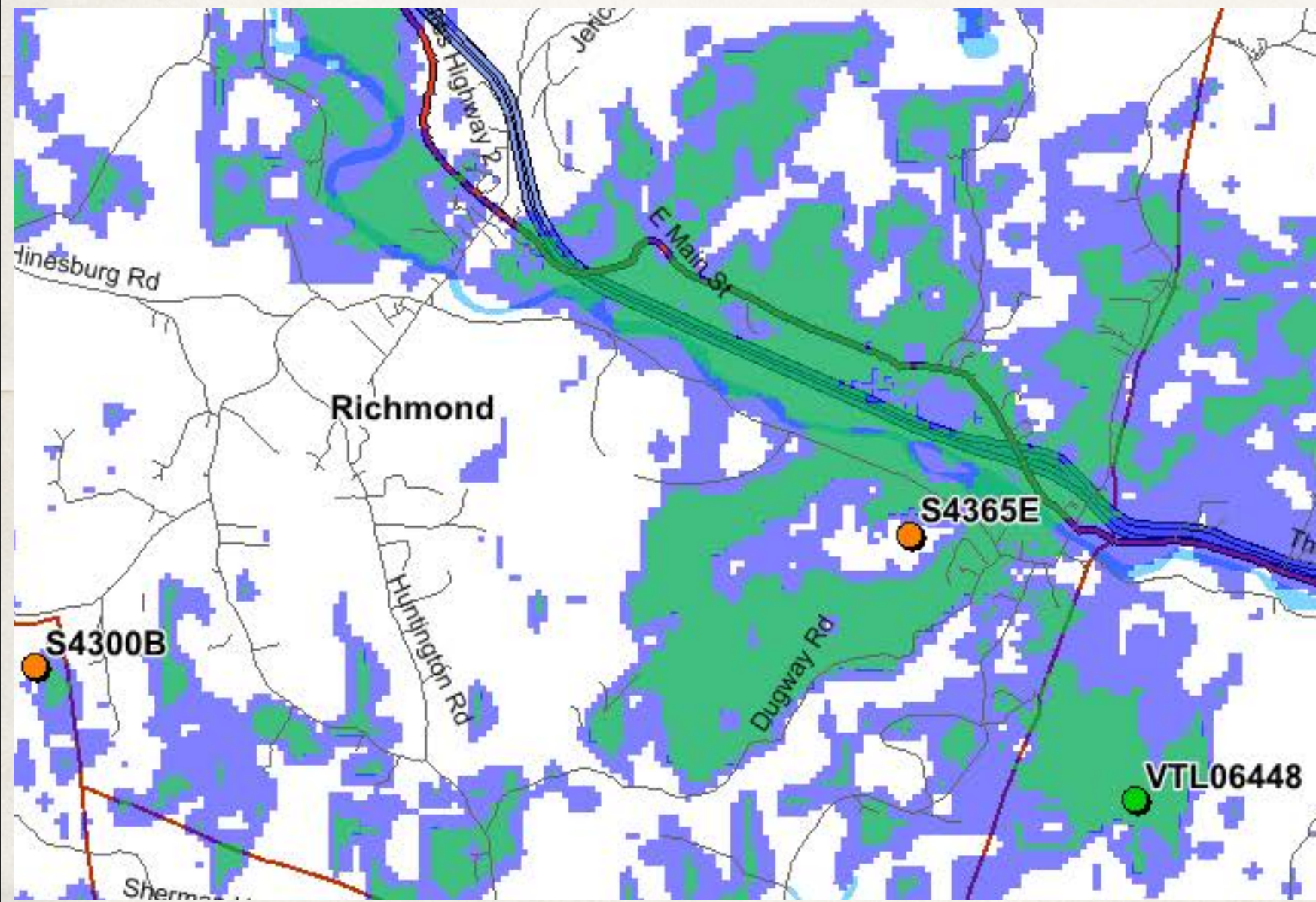




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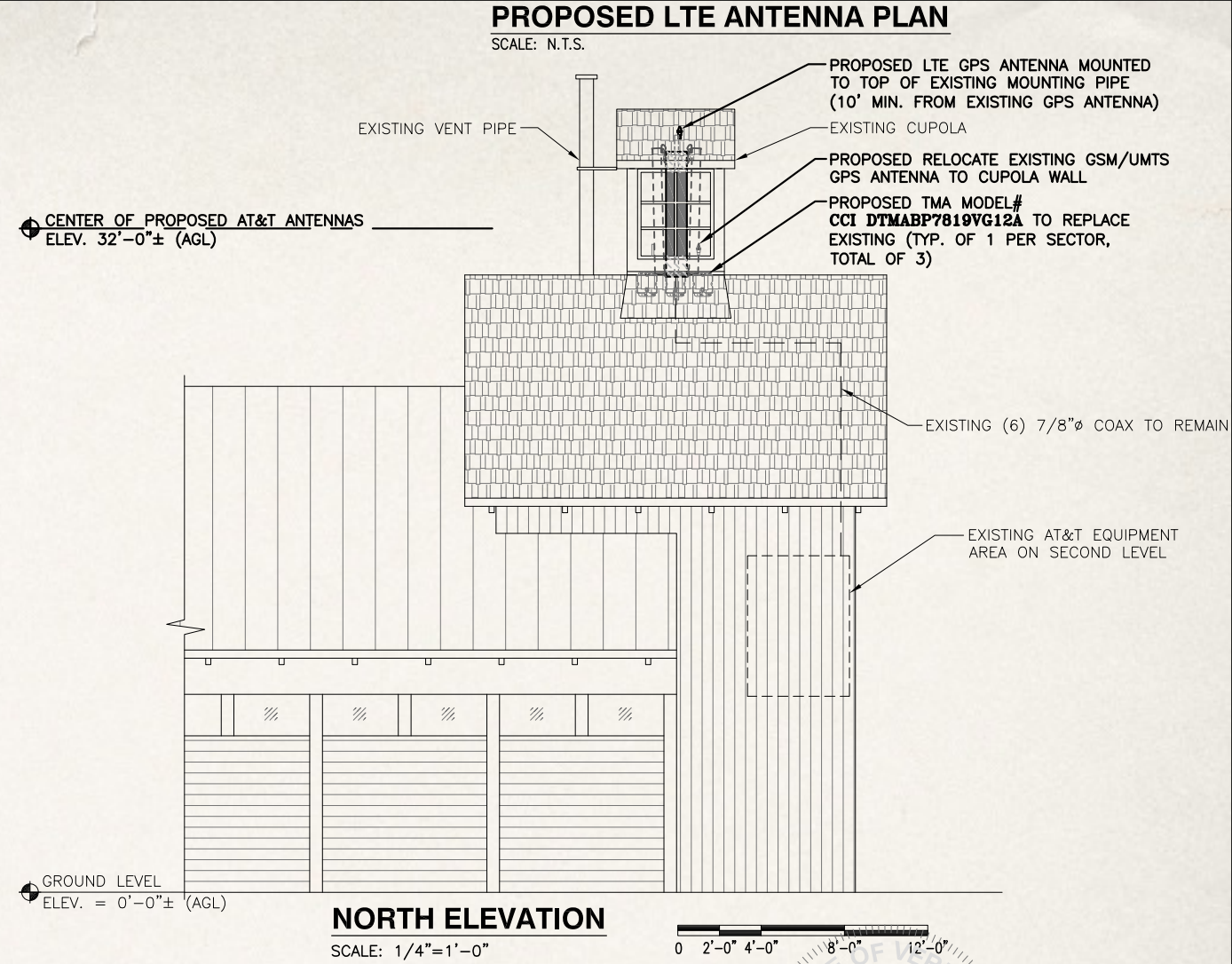
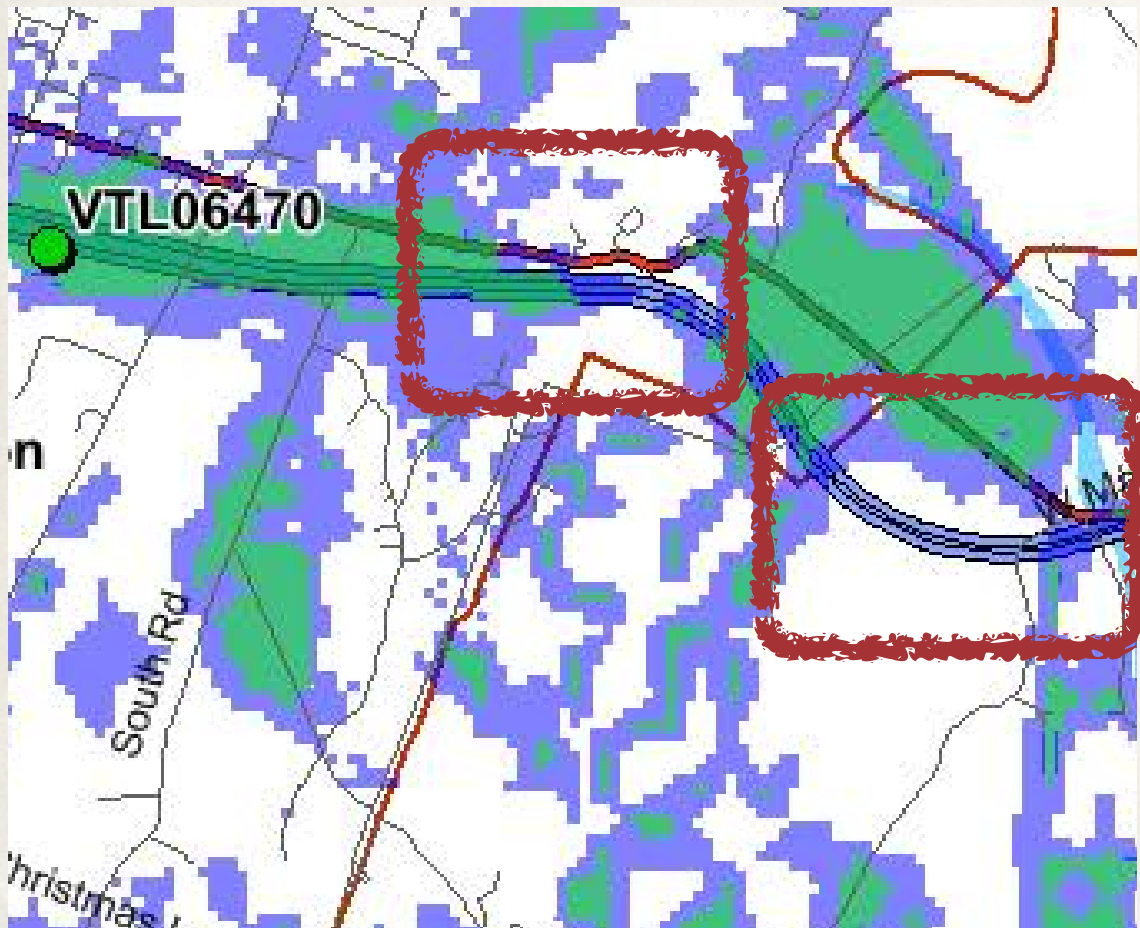


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- ❖ Reported problems include blocked and dropped calls, slow data, no connection, poor voice quality.
- ❖ VTrans Traffic Flow Map (2010) shows Annual Average Daily Traffic of between 20,001 and 60,000 through Richmond.
- ❖ Data traffic only expected to increase over time due to new applications for network.





# Existing Coverage: I-89 Williston Rest Area



- ❖ Constructed in 2006: cupola design to cover portion of I-89 from Williston into Richmond.
- ❖ AT&T antennas at 32' AGL — no additional room for improvements; barely enough space for LTE equipment.
- ❖ Gaps not solved on I-89 or in village.



# Existing Coverage: Mt. Pritchard (St. George, VT)

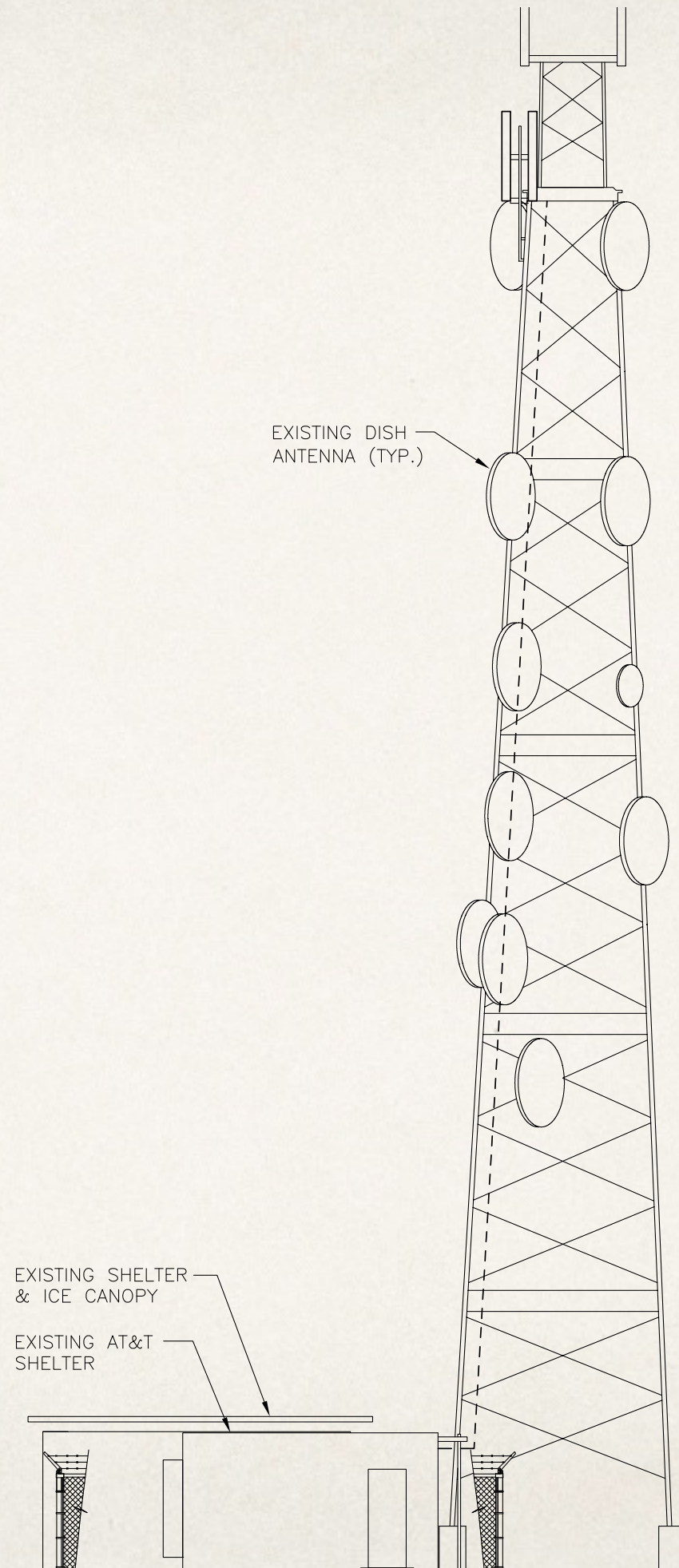
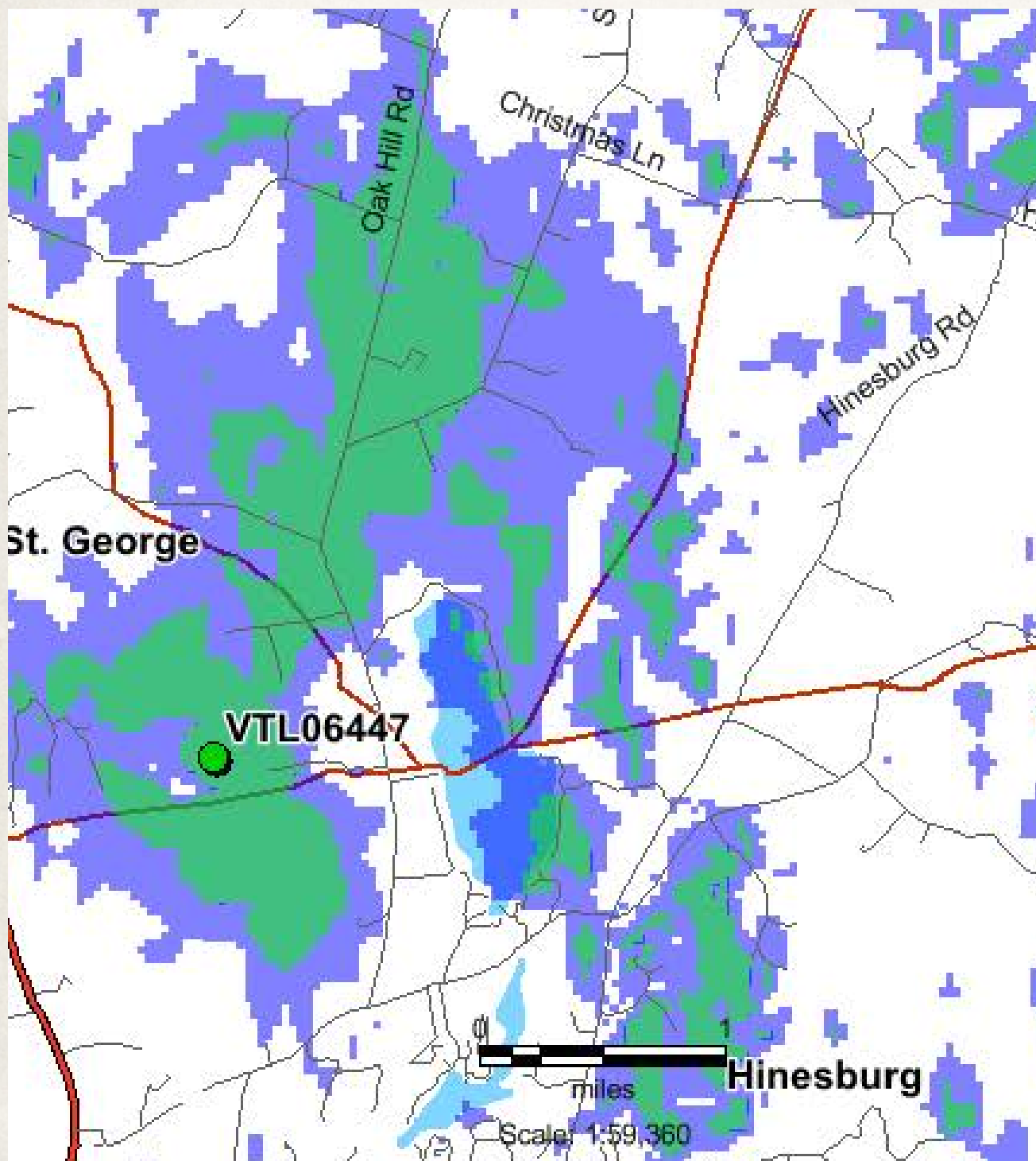


REPLACE EXISTING (4) ANTENNAS  
WITH (6) NEW ANTENNAS

- ❖ Secondary source of LTE coverage in Hinesburg, residual Richmond coverage.
- ❖ AT&T antennas at 120' AGL — tower is maxed out, too far to enhance signal strength along Hinesburg / Richmond Rd.



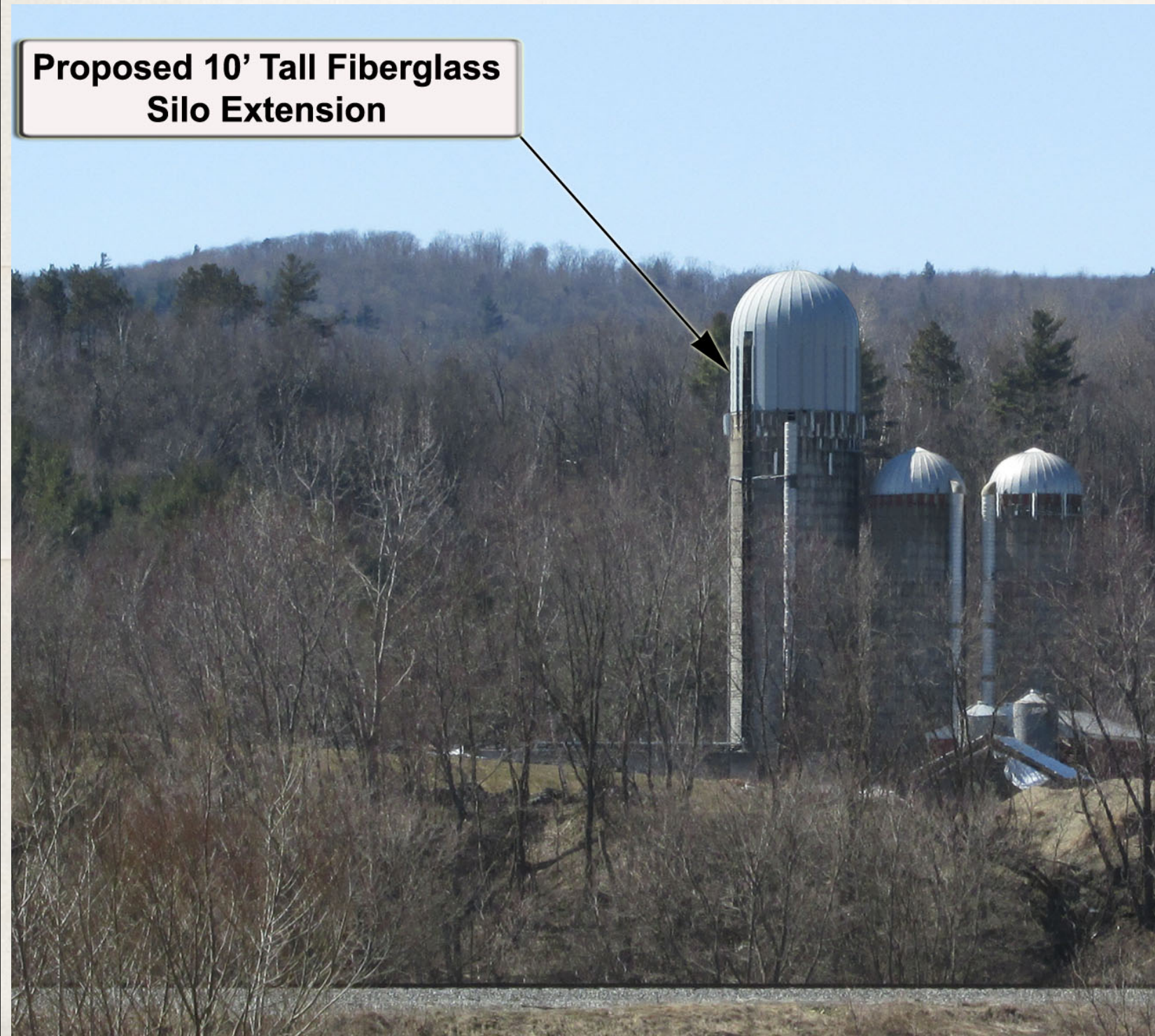
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# New Coverage in Richmond: Verburg Silo

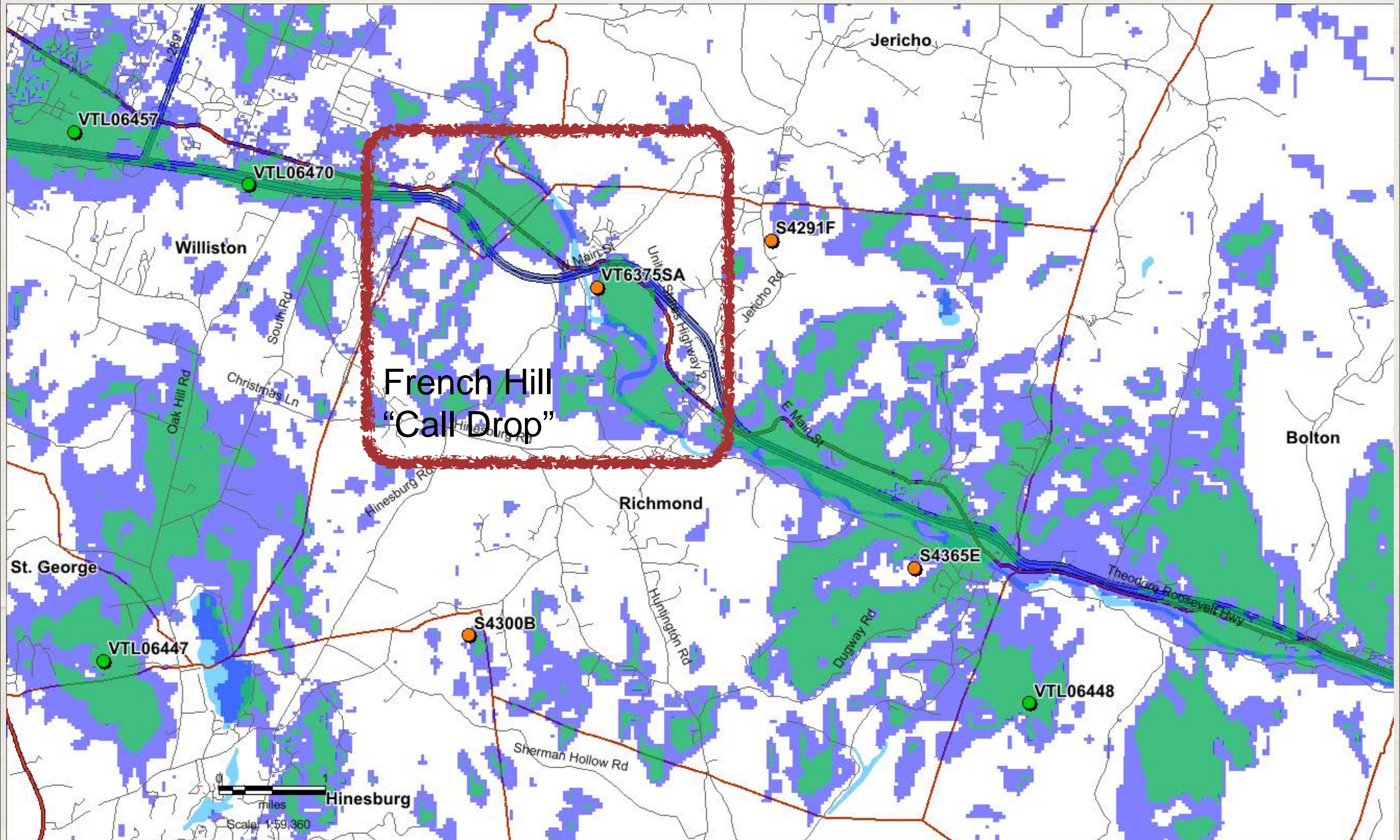
**Proposed 10' Tall Fiberglass  
Silo Extension**







- ❖ Originally permitted for antennas below dome.
- ❖ Dome of silo was later replaced with new fiberglass radiofrequency-transparent dome for antennas.
- ❖ AT&T received approval in September 2013 for additional 10 foot extension for separate stealth antenna array.
- ❖ Construction planned for 2Q of 2014.



# New Coverage in Richmond: Verburg Silo

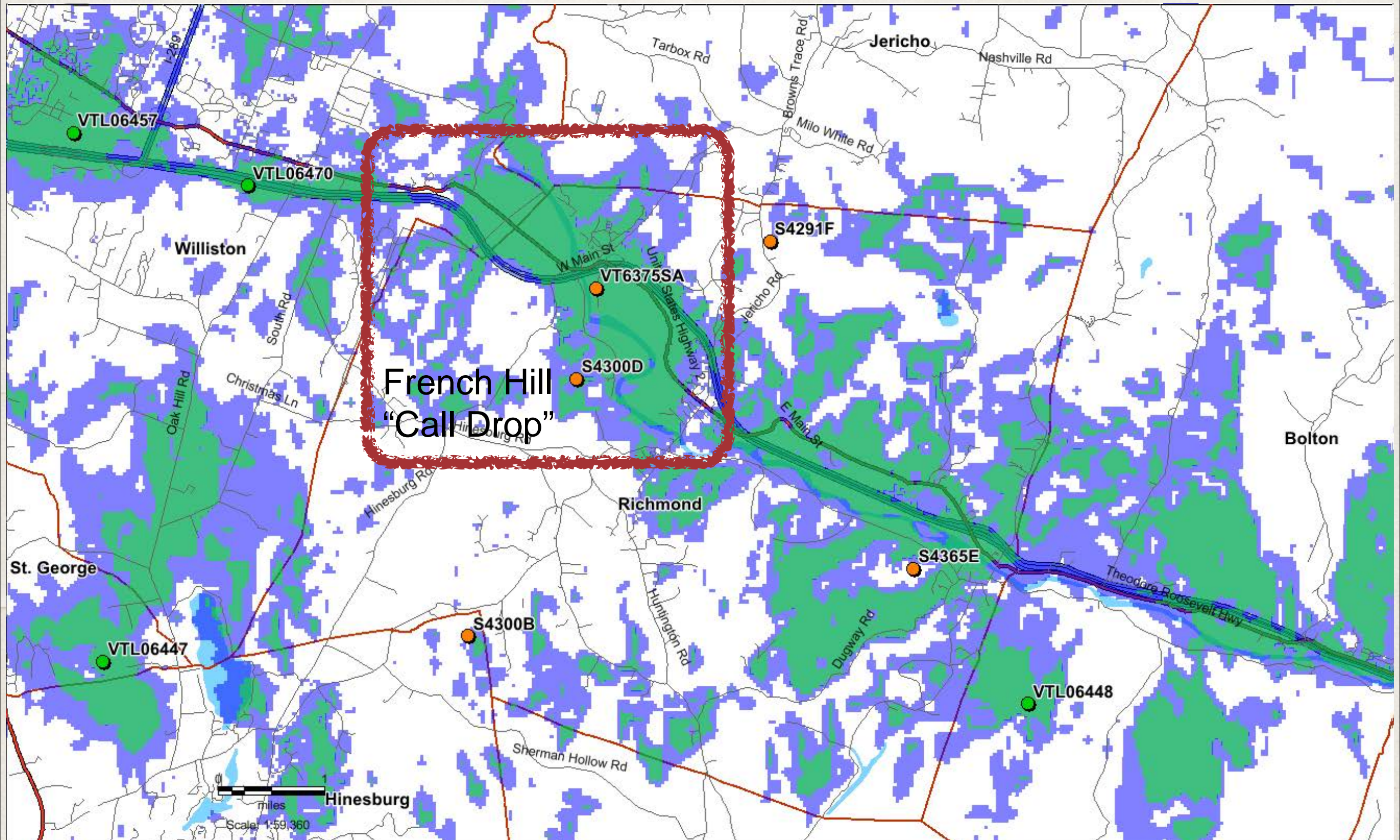






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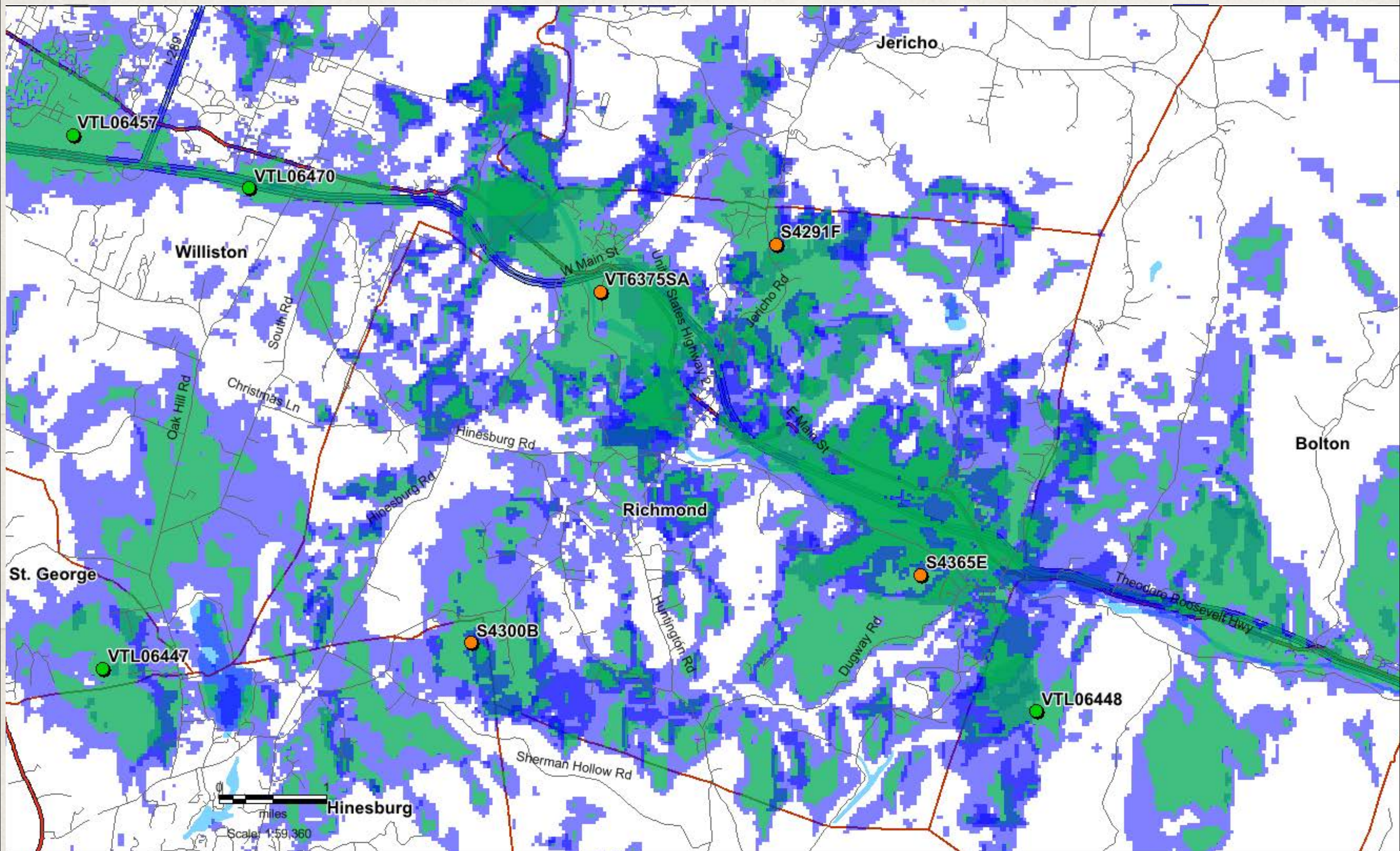
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# Immediate Goal for Richmond: Better LTE Capacity / Coverage

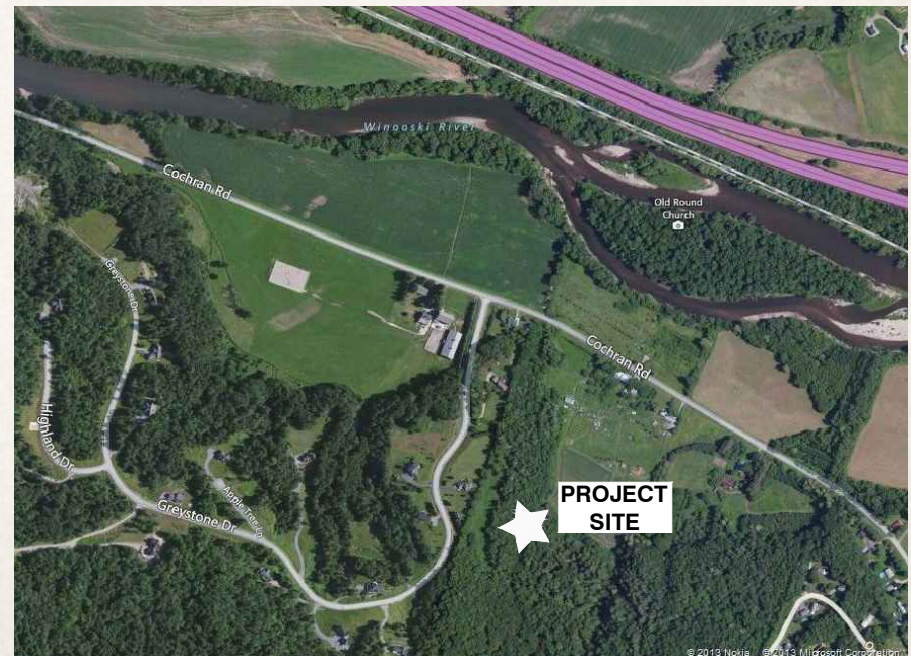


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# III. Common Components of Richmond Wireless Projects

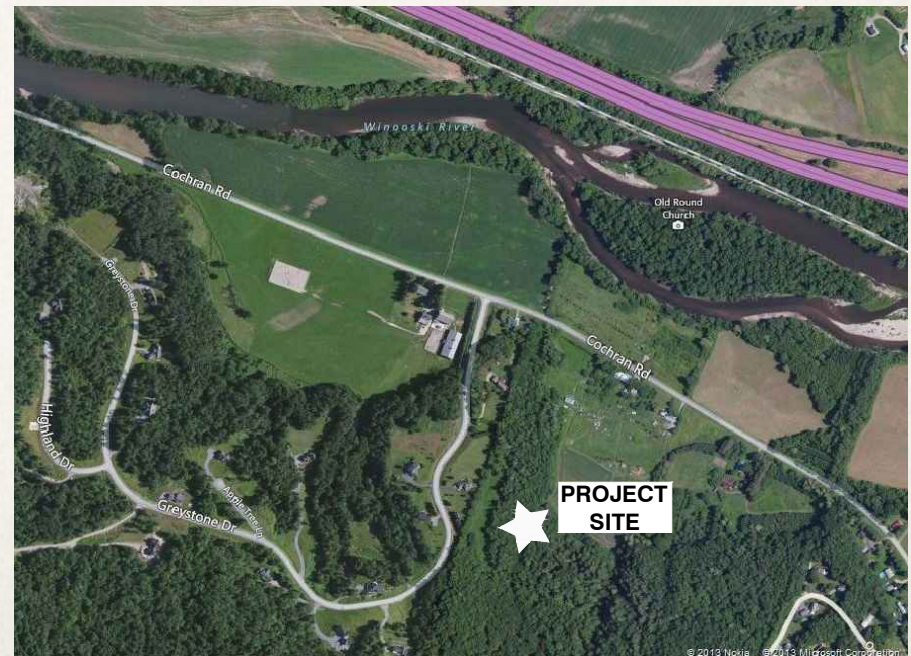
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# III. Common Components of Richmond Wireless Projects

## ❖ 1. Lighting





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- ❖ 1. Lighting
- ❖ 2. Structural Support





# III. Common Components of Richmond Wireless Projects

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- ❖ 1. Lighting
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- ❖ 3. Utility Lines
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- ❖ 5. Radiofrequency Emissions





# III. Common Components of Richmond Wireless Projects

- ❖ 1. Lighting
- ❖ 2. Structural Support
- ❖ 3. Utility Lines
- ❖ 4. Generator Support / Noise
- ❖ 5. Radiofrequency Emissions
- ❖ 6. Tapered Monopine Design





# 1. Lighting (Regs. 6.12.12)

## DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

### Your Specifications

#### NAD83 Coordinates

Latitude 44-22-57.8 north  
Longitude 072-57-09.5 west

#### Measurements (Meters)

Overall Structure Height (AGL) 45.7  
Support Structure Height (AGL) 45.7  
Site Elevation (AMSL) 114.3

#### Structure Type

MTOWER - Monopole

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Overall Structure Height (AGL) 33.5  
Support Structure Height (AGL) 33.5  
Site Elevation (AMSL) 254.2

#### Structure Type

POLE - Any type of Pole



# 1. Lighting (Regs. 6.12.12)

- ❖ Hazard beacons only required for towers over 200' or within 5 mile of municipal airport.
- ❖ AT&T uses FAA website to determine necessity of tower lighting / marking.
- ❖ TOWAIR reports shows no interference with approach to BIA requiring lighting.
- ❖ Only lighting will be on equipment shelter.

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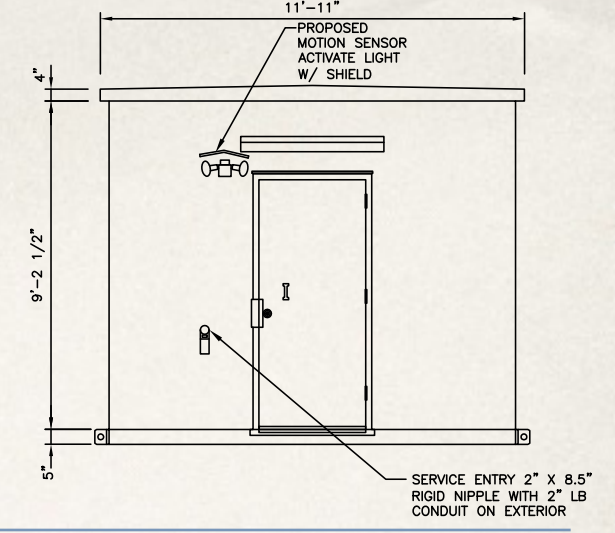
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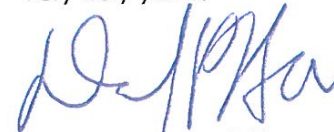
# 2. Structural Integrity

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6. The complete toppling of a monopine, like a tree, in a high-speed wind condition is prevented by the base foundation. The detailed foundation design for the monopine will be determined from geotechnical soil data obtained from field investigations and submitted under the Vermont State Building Code at the time of a building permit application. By code requirements, the foundation is designed to resist overturning or toppling of the monopine with a safety factor of two (2). This means that the monopine foundation can resist two (2) times the maximum stresses generated by the full high speed wind loading before overturning would occur. Since design codes require the monopine foundation to resist 2.0 times the failure load, then the steel monopine structure will fail before the foundation. This design approach insures that the monopine "fall zone" is limited to a distance less than the monopine height.

7. Although the installation of equipment for other carriers in the future will require a separate structural analysis, the tower and foundation will be designed to accommodate the future co-location of (3) additional carriers using similar equipment to AT&T's proposed loading, for a total design of up to (4) carrier antennas.

Very truly yours,

  
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Hudson Design Group LLC





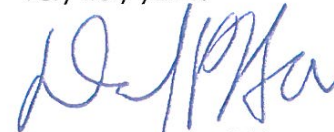
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- ❖ Monopines are designed for 90 mph winds with no ice, and 40 mph with 3/4" ice under ANSI/TIA Rev G Standard.
- ❖ Geotechnical work is completed / verified prior to designing a tower foundation.
- ❖ New towers constructed under the new Rev G. have proven to be resilient in very damaging weather conditions such as hurricanes and tornadoes.
- ❖ Can be "overdesigned" to create breakpoints in specific places as additional safety measure.

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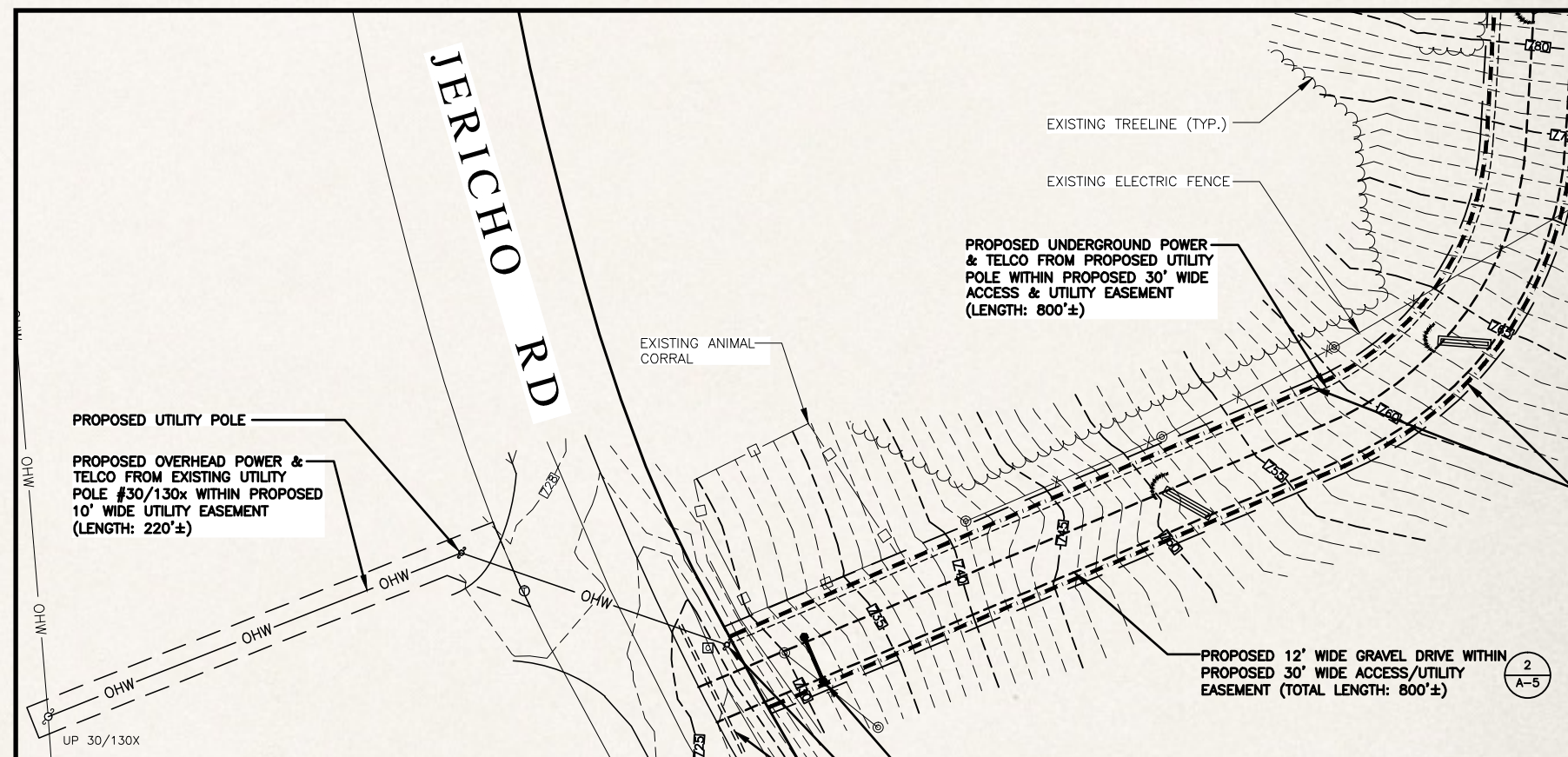
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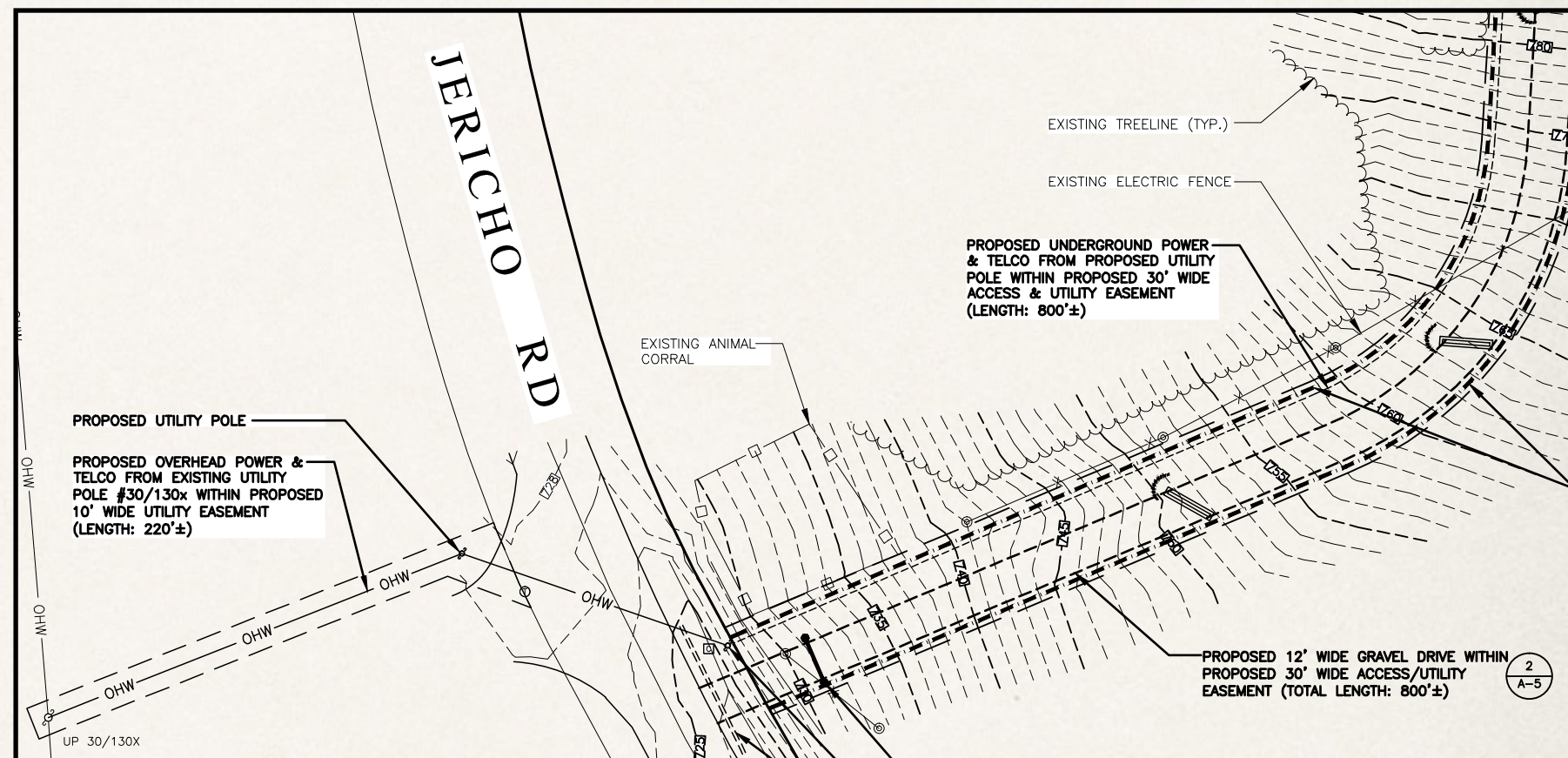
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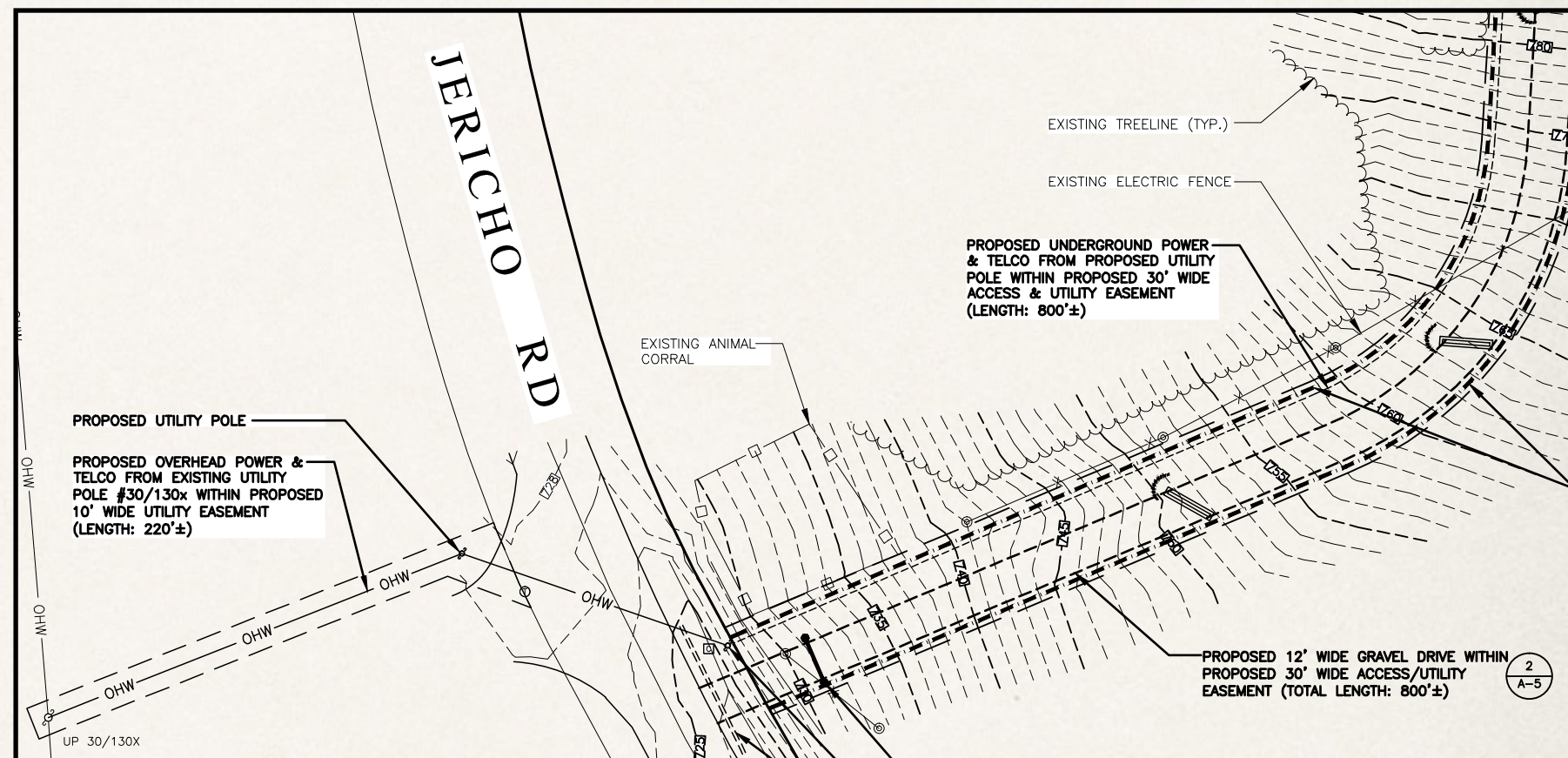
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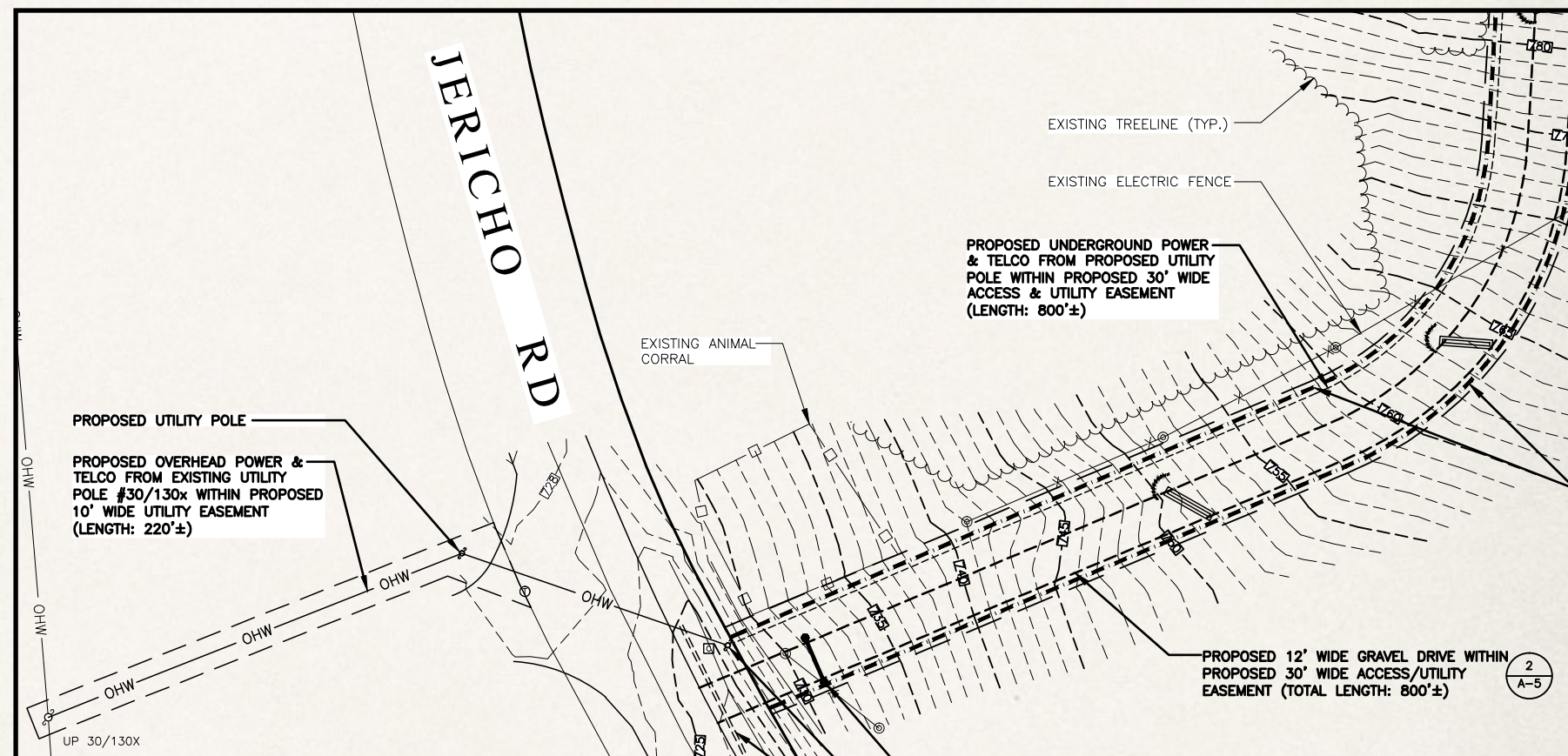
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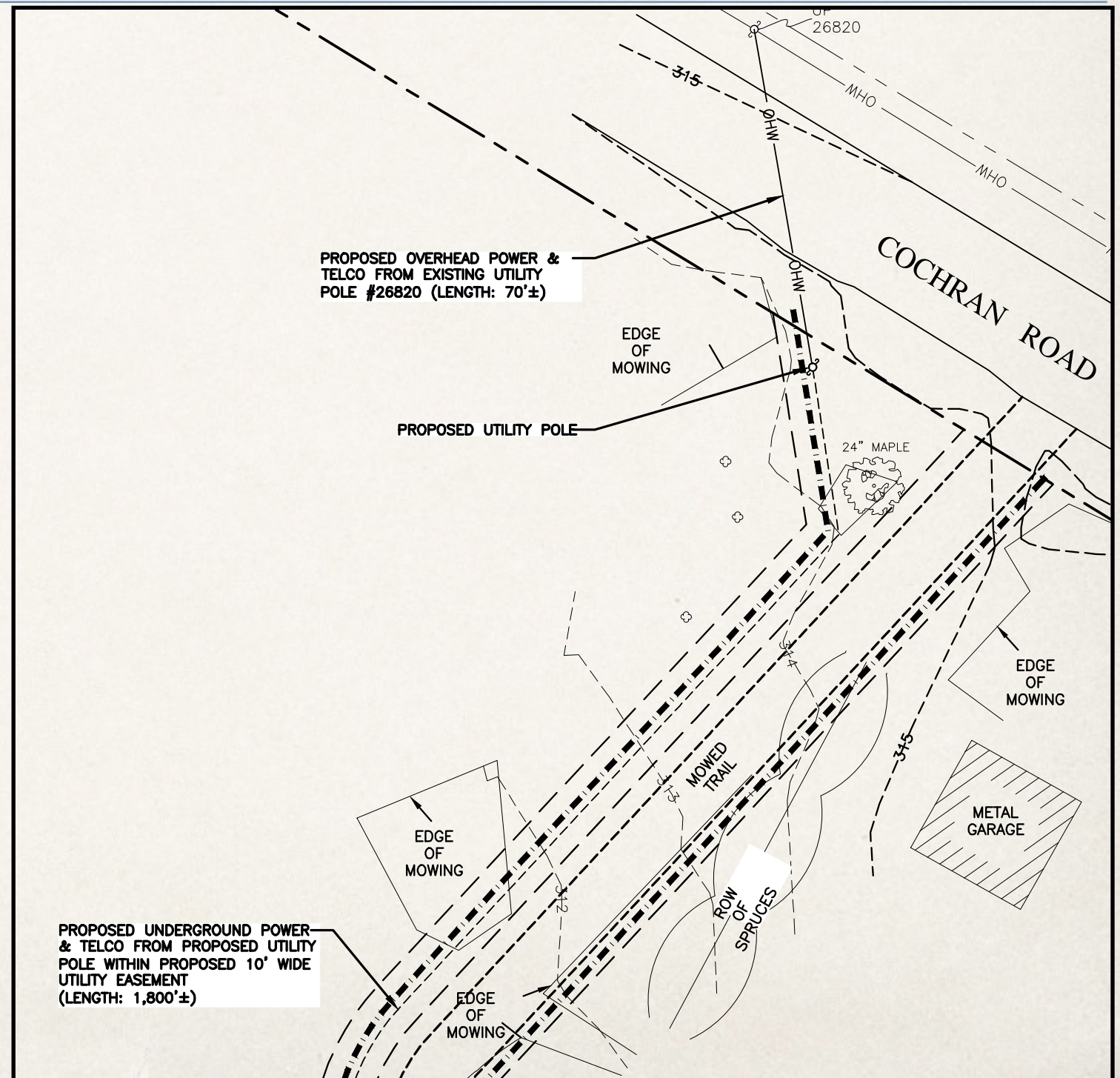
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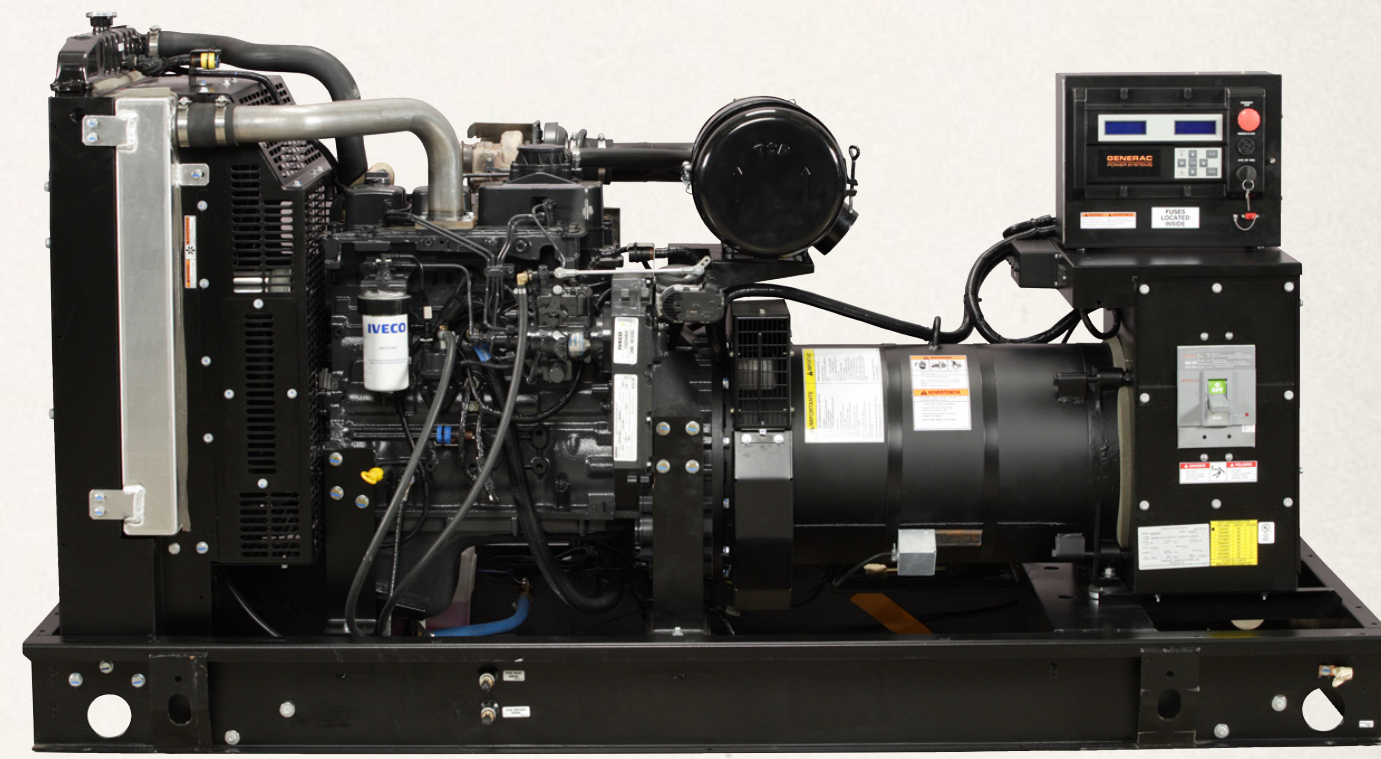
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- ❖ From new poles, power and telco will be run underground to the compounds: no corridor clearing for new overhead poles.





# 4. Generator / Fuel Containment

- ❖ Generac fuel system located directly under the generator.
- ❖ Uses 2 gallon overflow containment system with an alarm to contact AT&T.
- ❖ Total fuel capacity = approximately 210 gallons. Overflow capacity = 110%
- ❖ Eight hour battery backup before generator operates.
- ❖ Normally runs for 30 minutes per week (“kick test”).



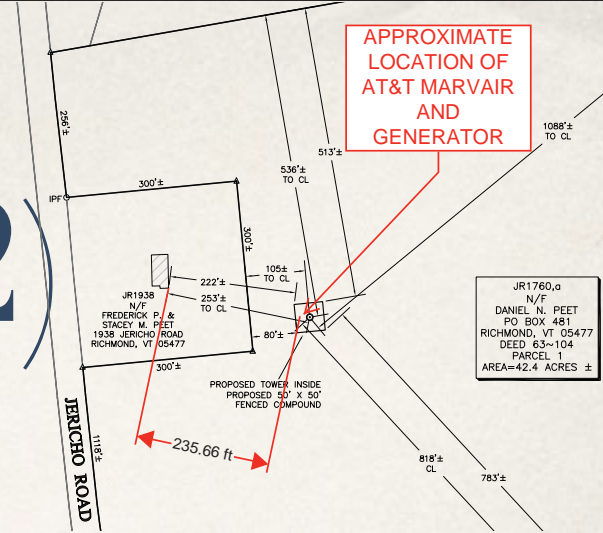
Fuel Consumption Rates

STANDBY

Percent Load	gph	lph
25%	1.52	5.75
50%	2.33	8.82
75%	3.08	11.65
100%	4.15	15.71



# 4. Noise Effects (Regs. 6.12.12)



- ❖ WHO Guidelines used instead of more permissive Town-based noise ordinance: 50 dB(a) daytime at property boundary, 45 dB(a) for nighttime.
- ❖ Only two sources are generator with attenuator, and AC unit
- ❖ HDG confirmed for Jericho Road that generator plus AC at property line will be at 45 dB(a).
- ❖ Generator run for kick test at 30 minutes per week, 9am.

**Table 1: Sound Pressure Level**

Equipment	Distance (ft.)	Sound Pressure Level (dB(A))
Generac Generator with Level II Enclosure	23	70.2
Marvair AC Unit	5	70

All other proposed equipment does not produce noise during operation.

## CUMULATIVE NOISE RESULTS

Utilizing the free field formula ( $20 \log R$ ) for further attenuation for spherical spreading we show the calculated noise levels in Table 2.

**Table 2: Calculated Sound Pressure Levels**

Sound Pressure Level	SPL (dB(A))
Generator operating outside the dwelling at 1938 Jericho Road	50
Marvair operating outside the dwelling at 1938 Jericho Road	37
Generator & Marvair operating simultaneously, calculated at the property line	<b>50</b>

## RECOMMENDATION

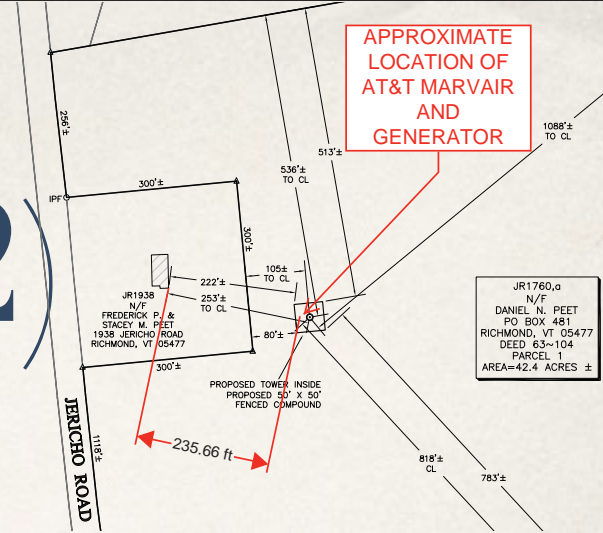
In order to achieve the stated noise requirements at the closest residential dwelling, HDG proposes that a noise barrier be installed as a noise control technique. The noise barrier should be comprised of 1" thick solid wood and/or masonry, and 8 ft. overall in height from the generator base to the top of the wall. The noise barrier can be utilized as the security fence provided there are no gaps in the wall facing west.

**Table 3: Calculated Sound Pressure Levels with Noise Barrier**

Equipment & Location	SPL (dB(A))
Generator calculated at the closest residential dwelling to the west with Noise Barrier in place	43



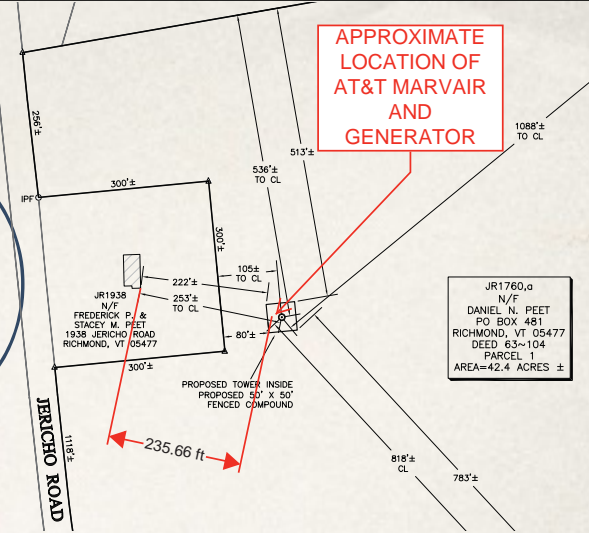
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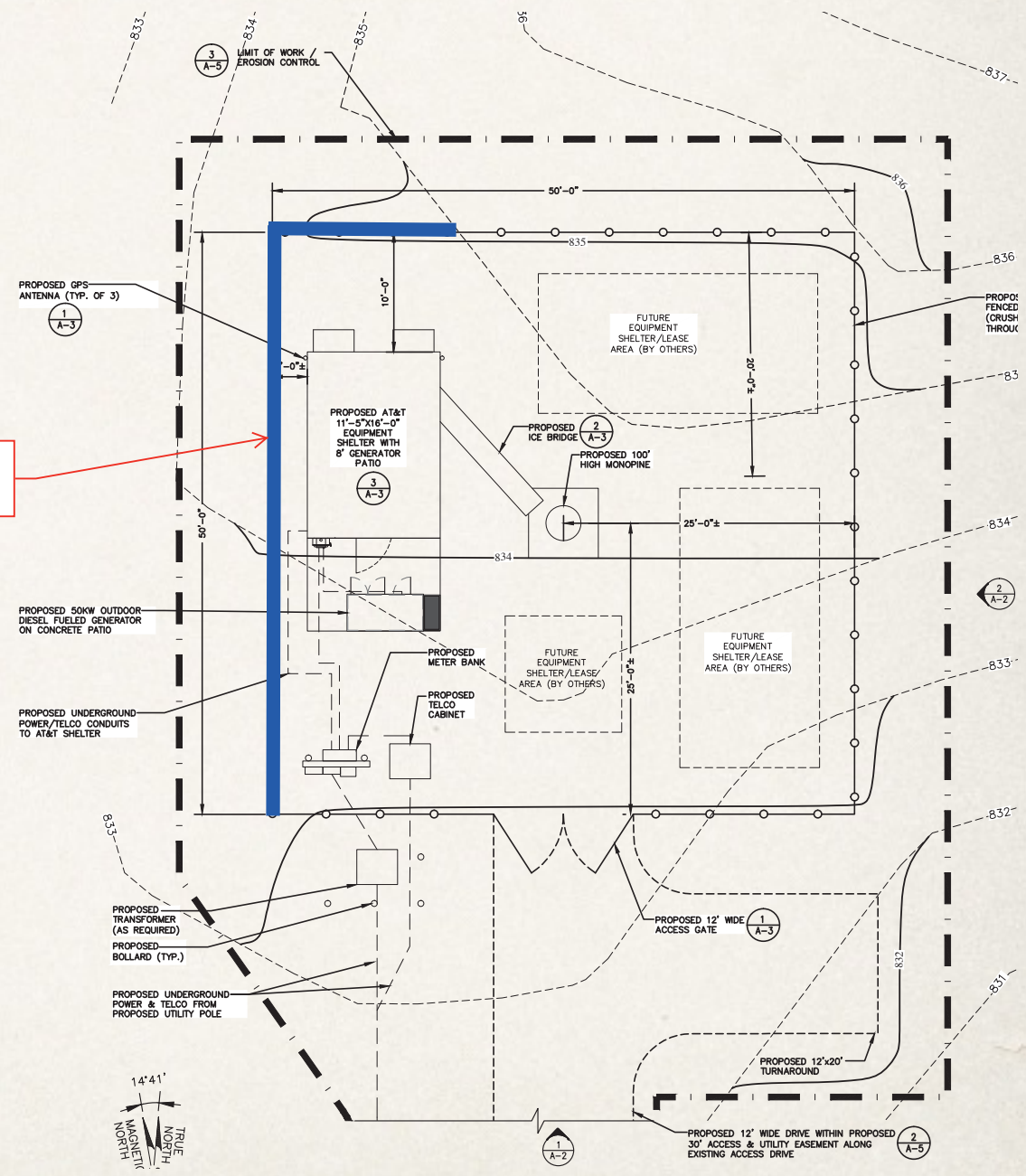
**NOTE:**  
ANTENNA MOUNTS AND COMPONENTS SHALL CONFORM TO NEW STRUCTURAL CALCULATIONS AND MANUFACTURER'S RECOMMENDATIONS. (PERFORMED BY OTHERS PRIOR TO CONSTRUCTION)

- Only two sources are generator with attenuator, and AC unit

- HDG confirmed for Jericho Road that generator plus AC at property line will be at 45 dB(a).

- Generator run for kick test at 30 minutes per week, 9am.

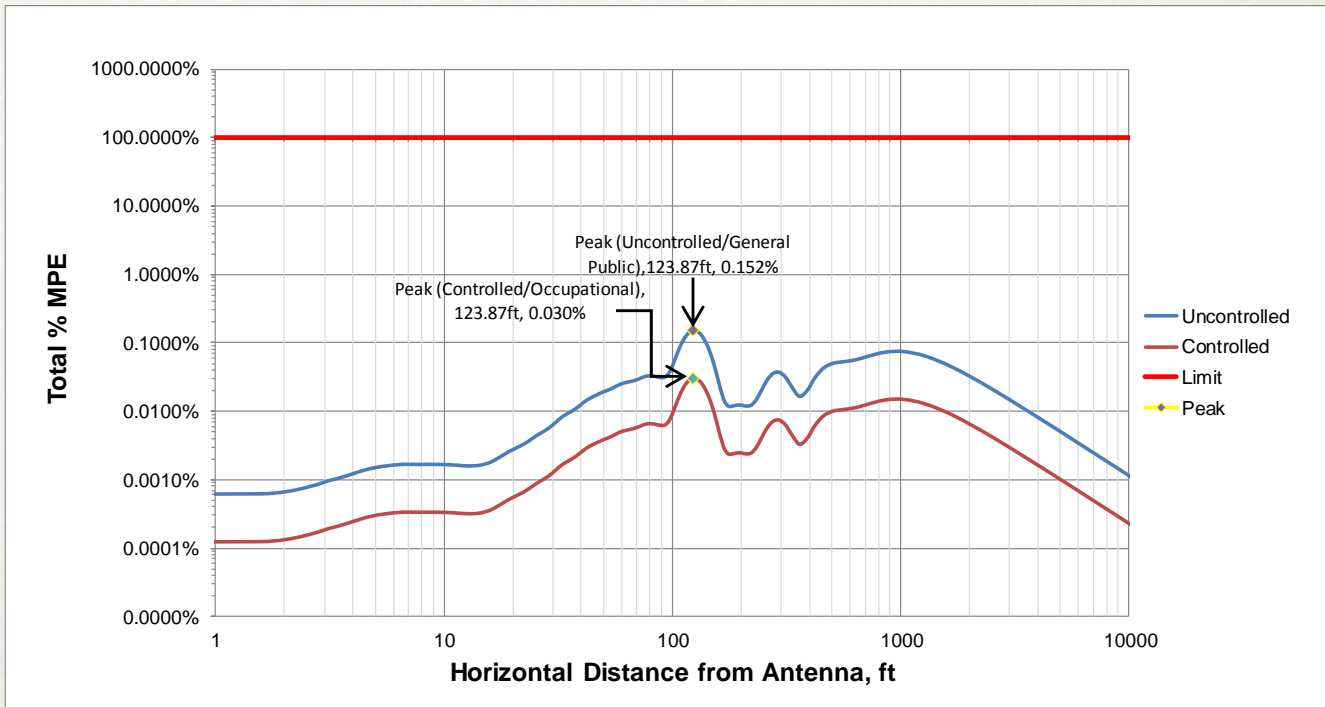
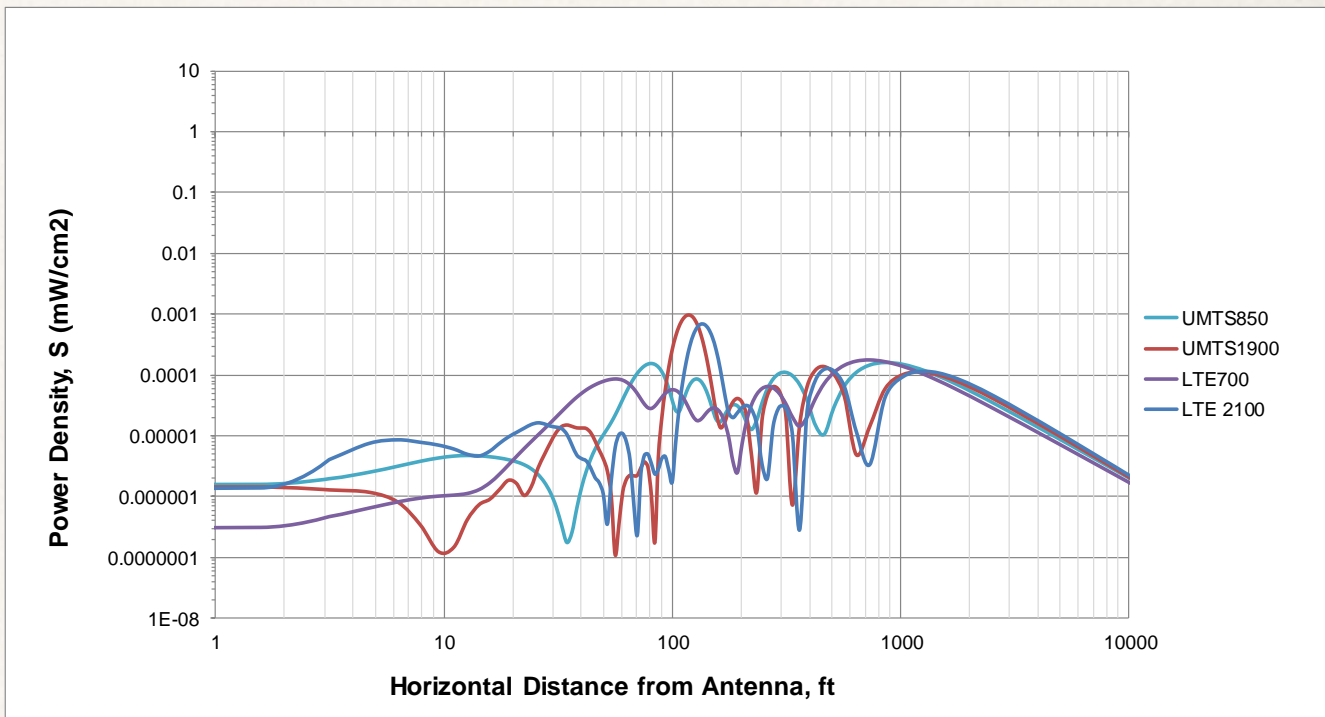
**PROPOSED 8' TALL SOLID NOISE BARRIER**





# 5. Radiofrequency Emissions (Regulations 6.12.6(f))

Power Density and %MPE

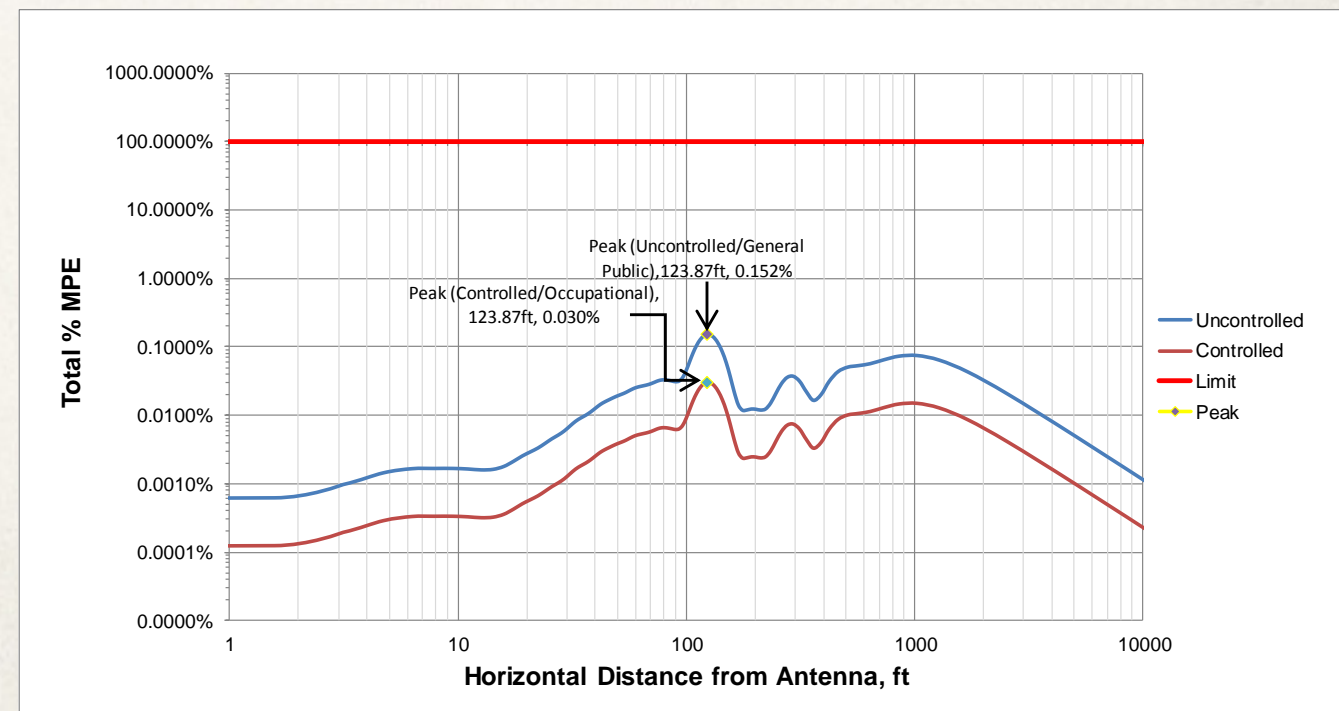
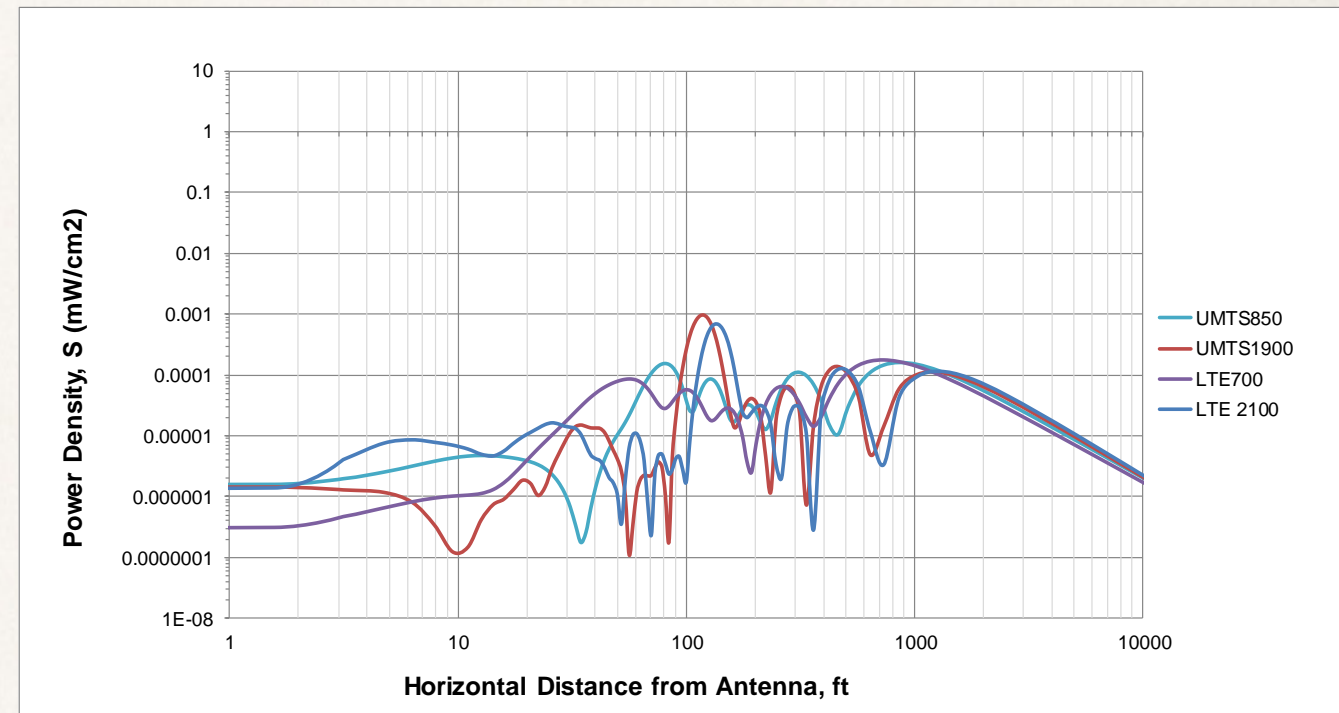




# 5. Radiofrequency Emissions (Regulations 6.12.6(f))

- ❖ Maximum Permissible Exposure (MPE) is federal safety threshold based on research by FCC, Dept. of Agriculture, Dept. of Health, Dept. of Energy, and others.
- ❖ Power Density Study assumes worst case scenario for exposure, based on milliwatts per square centimeter depending on frequencies per FCC rules.
- ❖ Peak emissions from Jericho site for general public is less than 0.15% of the MPE (.001 mW/cm<sup>2</sup>).

Power Density and %MPE





# 6. Richmond Regulations: Tower Design Criteria in 6.12

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# 6. Richmond Regulations: Tower Design Criteria in 6.12

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- \* 6.12.4 A Stealth Facility may obtain a Zoning Permit as a conditional use in all zoning districts.



# 6. Richmond Regulations: Tower Design Criteria in 6.12

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  - ❖ Stealth Facility: "... designed to blend into the surrounding environment to the extent that it becomes invisible to the naked eye at or beyond the property line."



# 6. Richmond Regulations: Tower Design Criteria in 6.12

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  - ❖ Alternative Design Tower Structure: "Artificial trees ... and similar alternative-design mounting structures that camouflage or conceal the presence of antennas or towers."



# 6. Richmond Regulations: Tower Design Criteria in 6.12

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- ❖ 6.12.10 ... towers, antennas and tower related fixtures shall be not more than 20 feet above the average height of the tree line measured within 200 feet. Height may be approved for Adequate Coverage or to accomplish collocation, if additional height does not have undue adverse visual impact on scenic character.



# 6. Richmond Regulations: Tower Design Criteria in 6.12

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  - ❖ Adequate Coverage = -90dB for cellular, no call drops.



# 6. Richmond Regulations: Tower Design Criteria in 6.12

---

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  - ❖ Adequate Coverage = -90dB for cellular, no call drops.
  - ❖ Collocation = >1 provider at single Site.



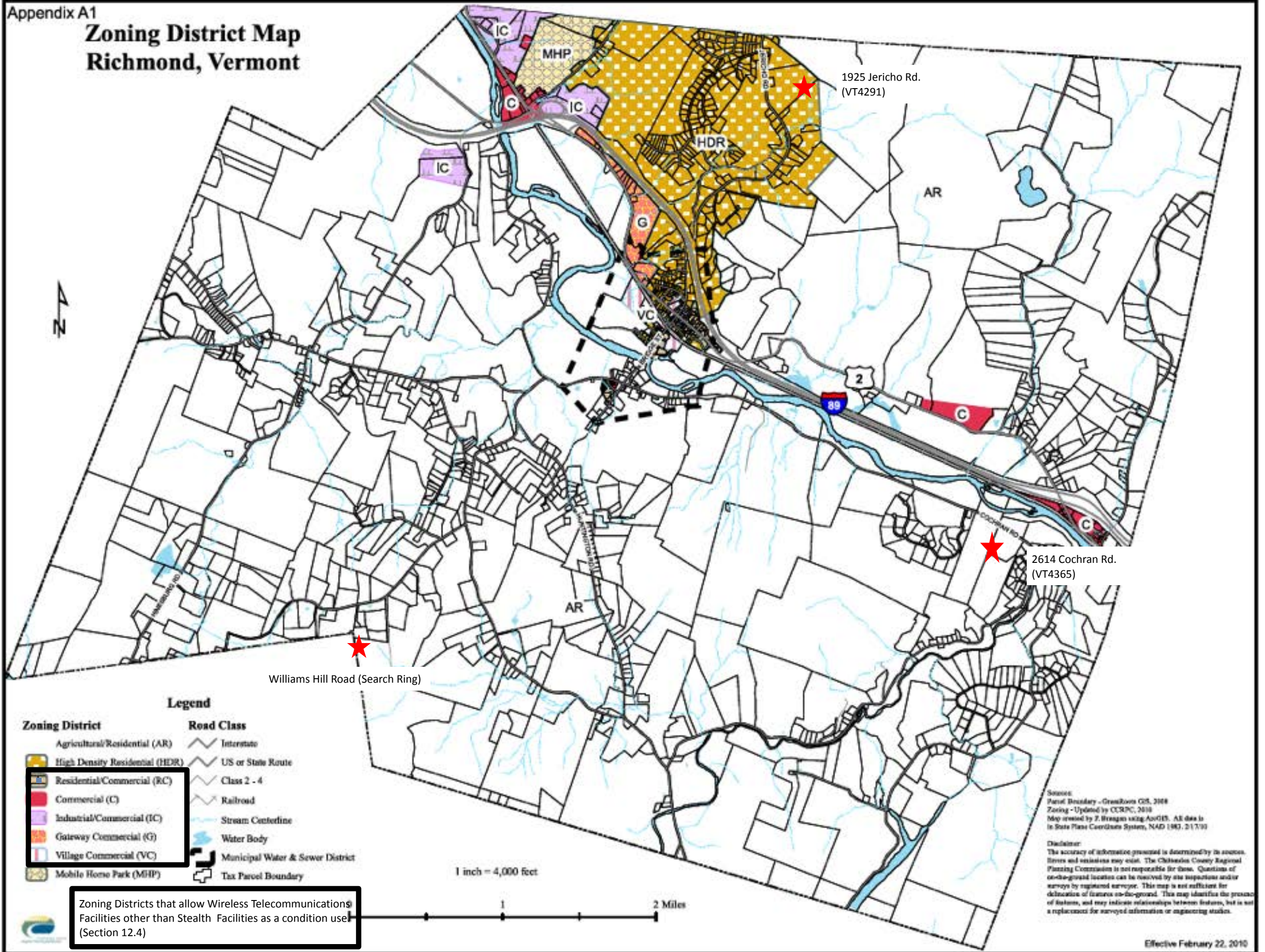
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  - ❖ Adequate Coverage = -90dB for cellular, no call drops.
  - ❖ Collocation = >1 provider at single Site.
  - ❖ Adequate Capacity = grade of service of 98% (2% dropped calls)



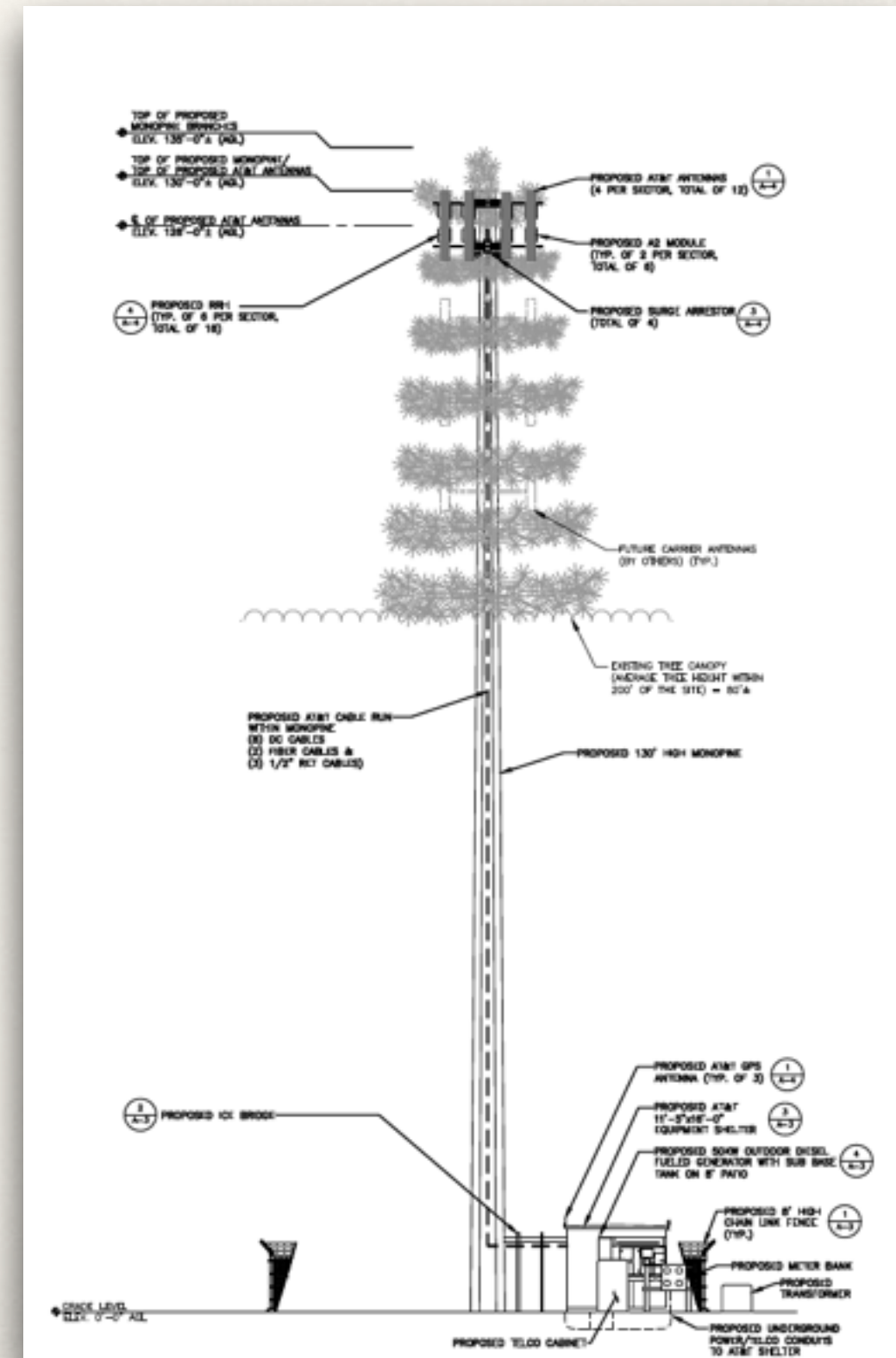
# Zoning District Map Richmond, Vermont



Zoning Districts that allow Wireless Telecommunications Facilities other than Stealth Facilities as a condition use (Section 12.4)



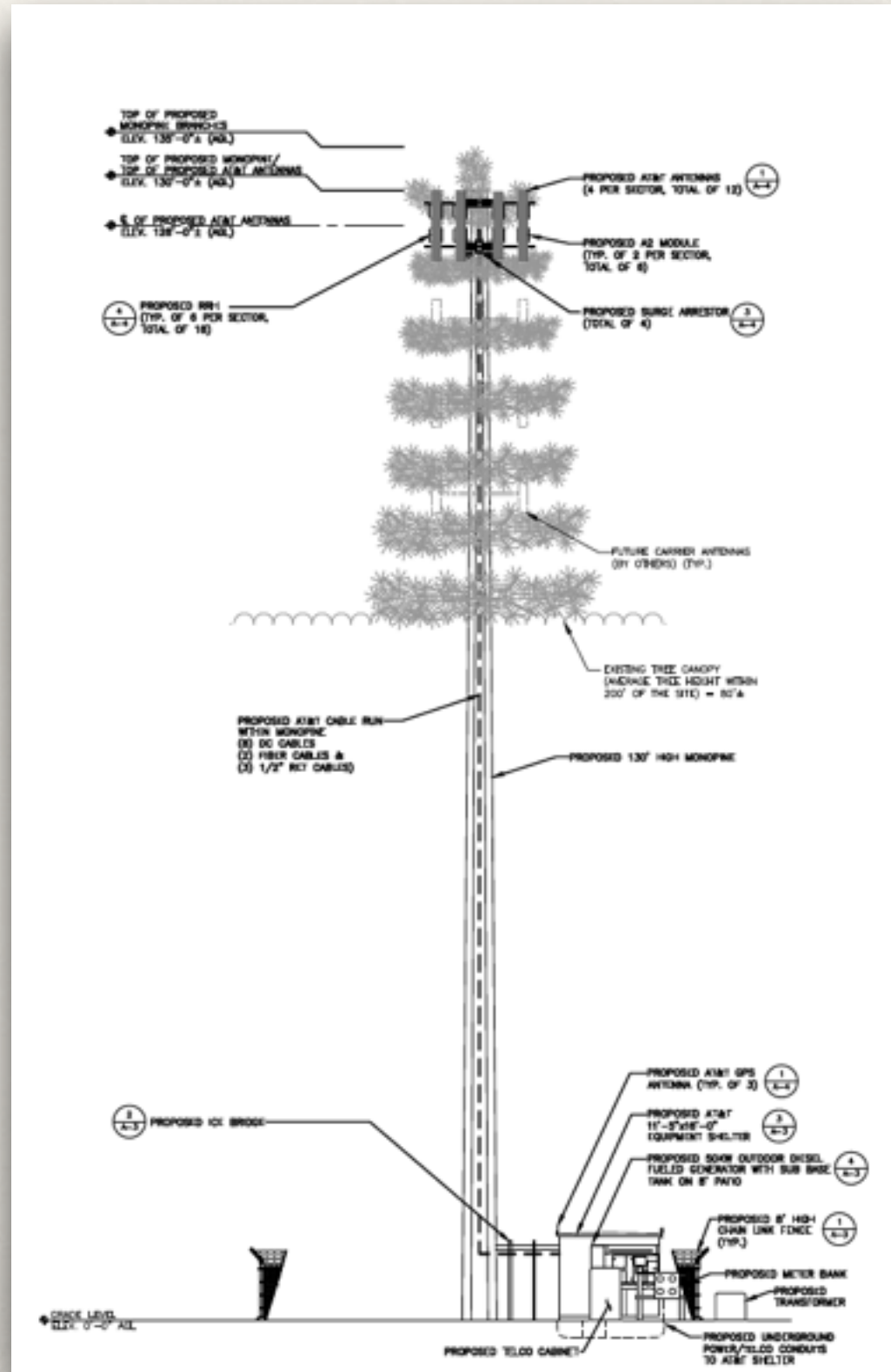
# 6. Monopine Designs





# 6. Monopine Designs

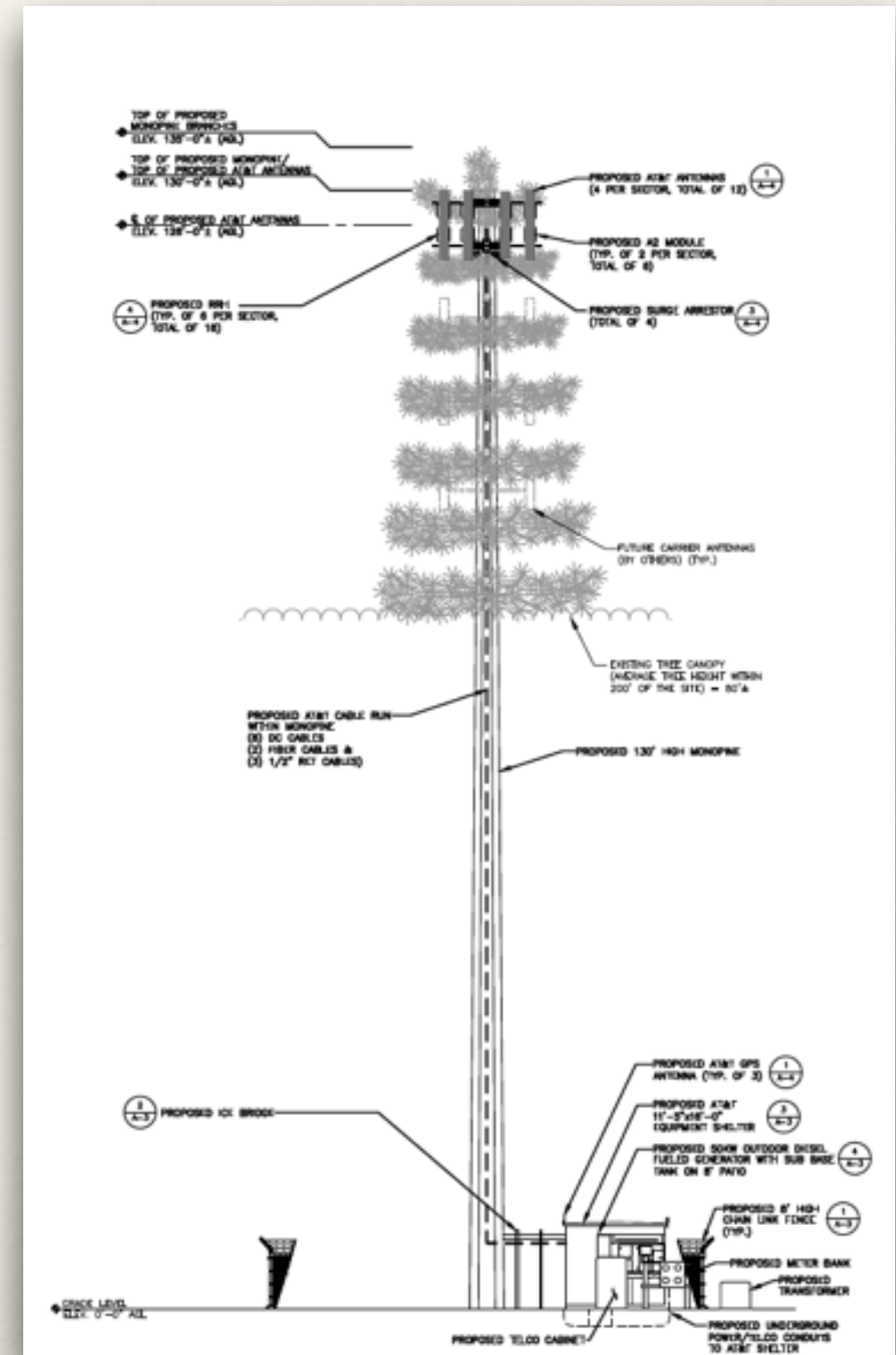
- ✦ Used at locations where backdrop allows for blending.





# 6. Monopine Designs

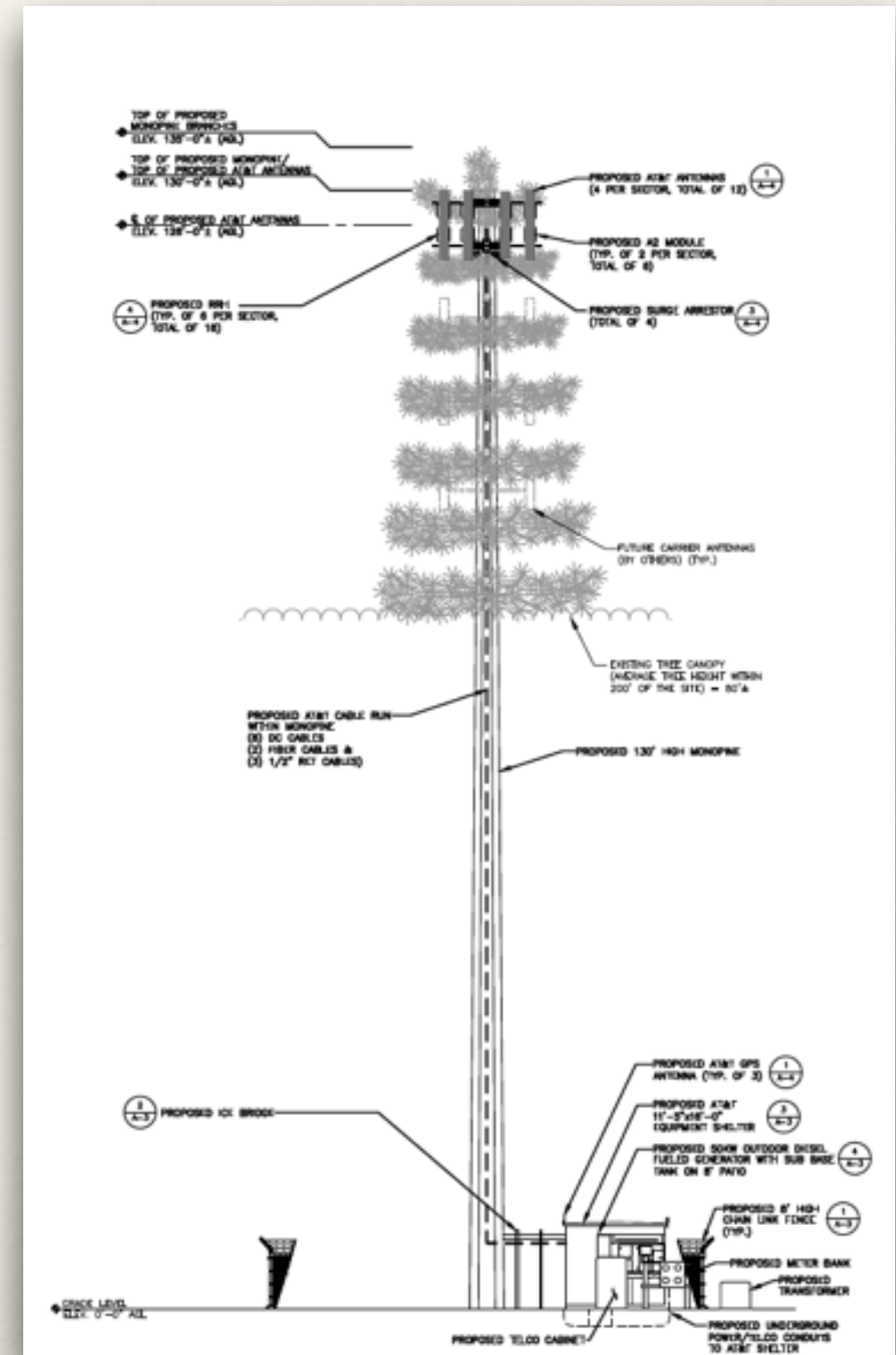
- ❖ Used at locations where backdrop allows for blending.
- ❖ Often works well with existing hill sites; does not work well when site is out in the open.





# 6. Monopine Designs

- ❖ Used at locations where backdrop allows for blending.
- ❖ Often works well with existing hill sites; does not work well when site is out in the open.
- ❖ Used at or proposed for Weston, Putney, Hartford, Jamaica, Rockingham.

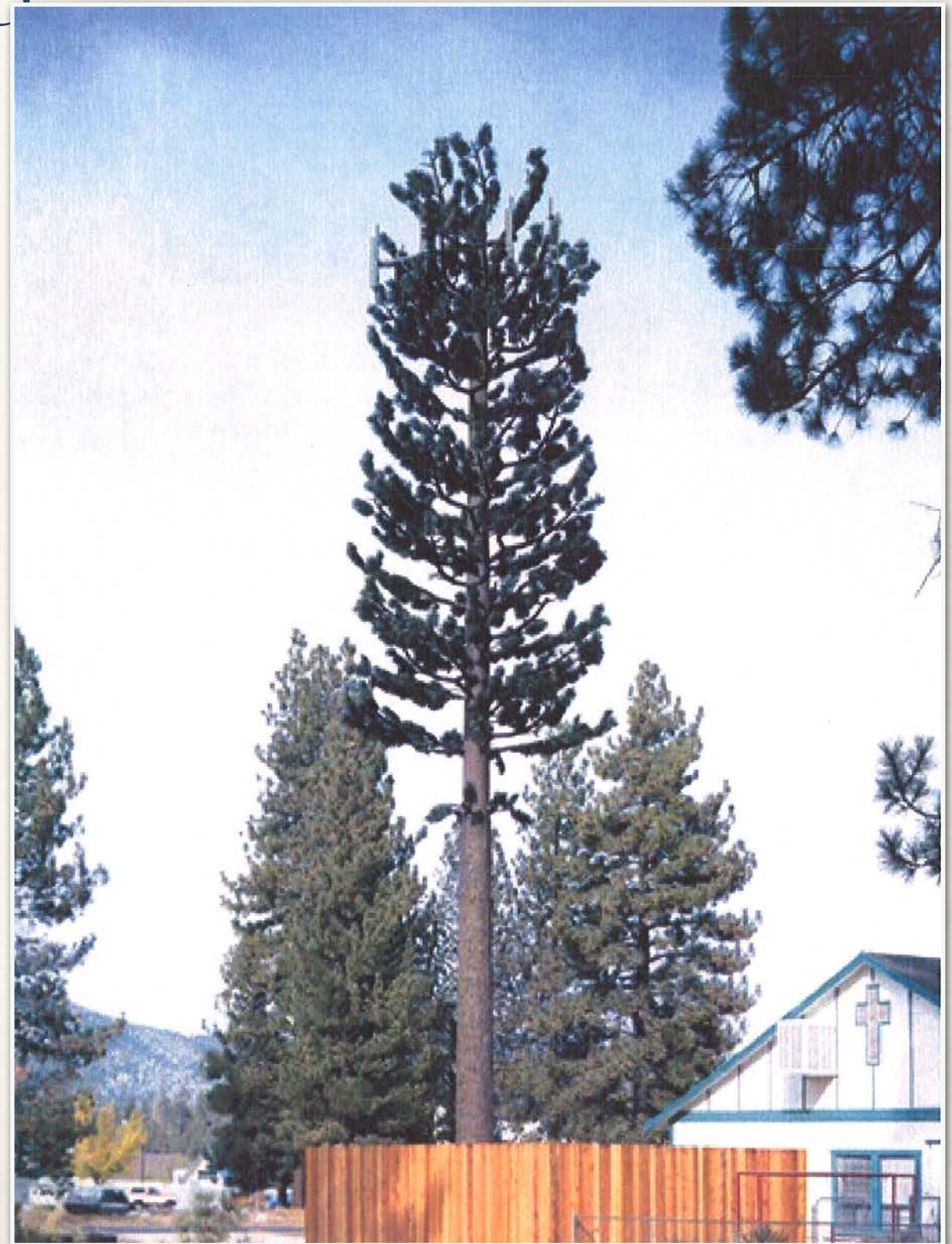




# 6. Monopine Designs

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For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

**Rockingham Water Dept. ~ VT2641**  
Photo Location A ~ 35mm ~ 189'+/- (0.04mi) Away ~ 11/14/2013 7:48

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 [info@cad sims.com](mailto:info@cad sims.com)



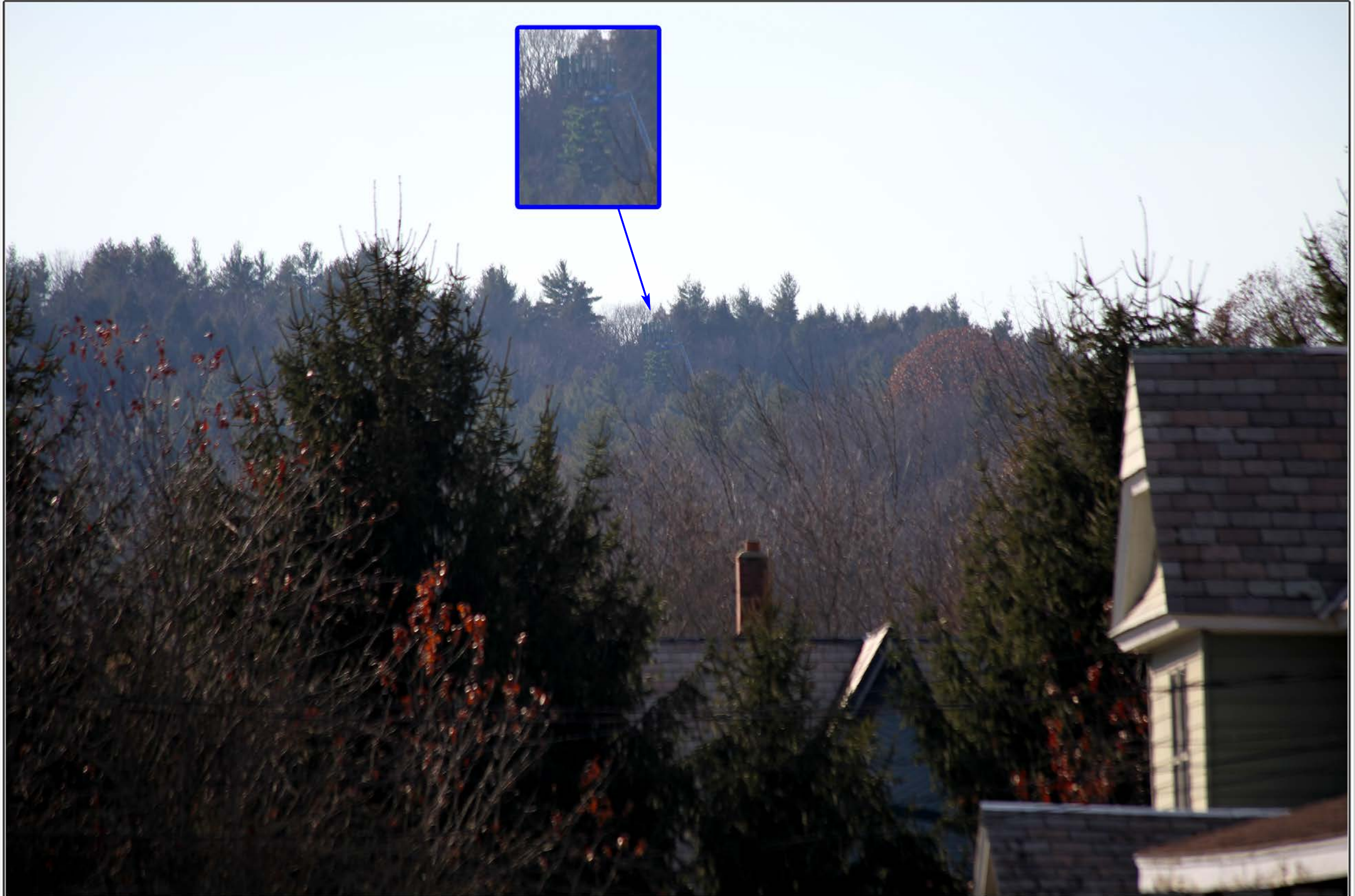


For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

**Rockingham Water Dept. ~ VT2641**  
Photo Location C ~ 105mm ~ 2547'+/- (0.48mi) Away ~ 11/14/2013 8:14

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 [info@cadsim.com](mailto:info@cadsim.com)





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

## West Lebanon ~ VT2979

Photo Location B ~ 300mm ~ 4732' +/- (0.90mi) Away ~ 11/14/2013 13:19

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 [info@cadsim.com](mailto:info@cadsim.com)





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

**West Lebanon ~ VT2979**  
Photo Location D ~ 105mm ~ 6666' +/- (1.26mi) Away ~ 11/14/2013 13:48

Created By: Benjamin E. Caron  
 Caron & Associates Design  
(978) 360-3671 [info@cadsim.com](mailto:info@cadsim.com)





## AT&T WIRELESS FACILITY

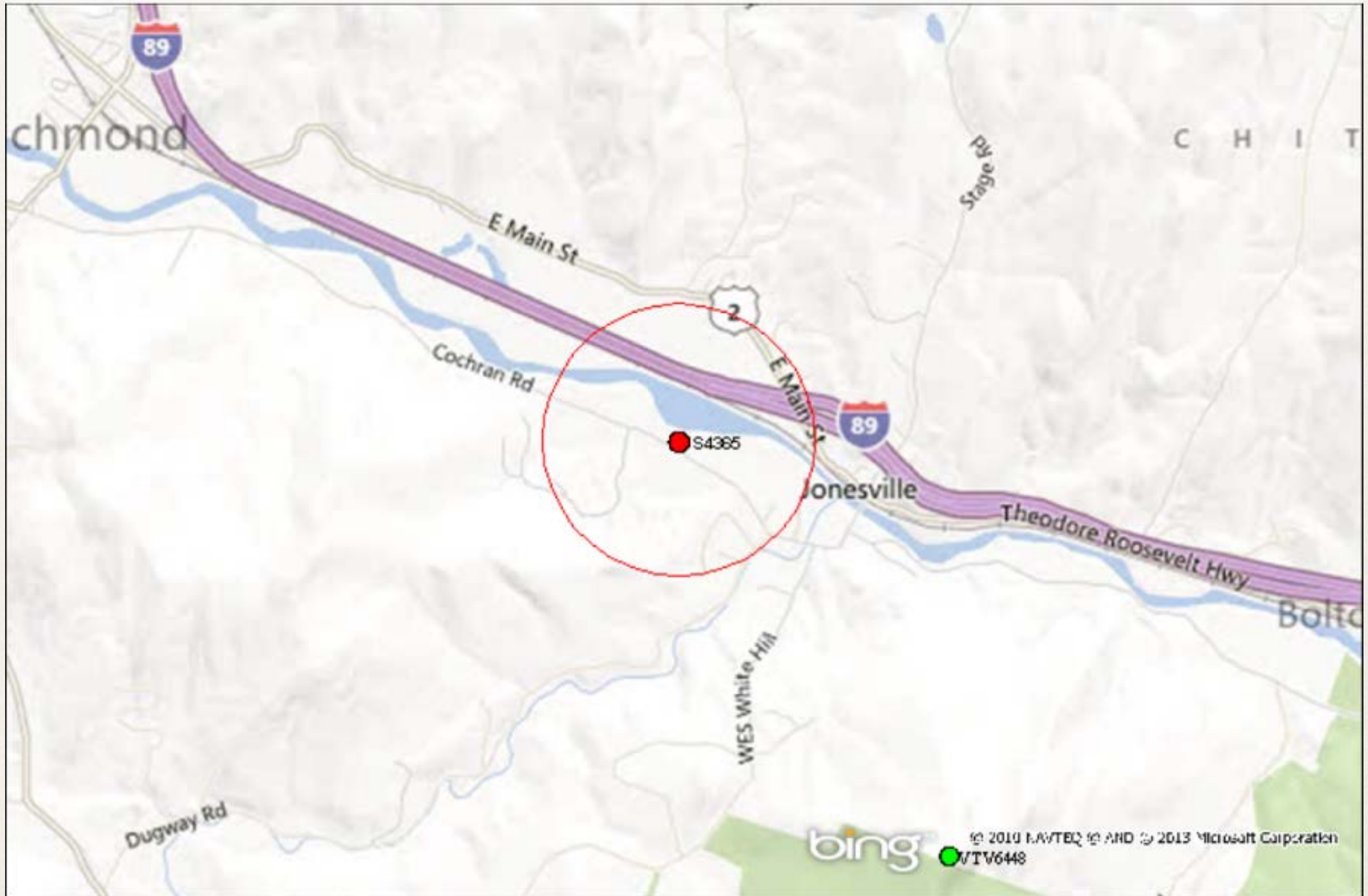
2614 Cochran Road, Richmond

Parcel ID: CO2614

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## 2614 Cochran Road – Search Ring





## 2614 Cochran Road Review of Alternate Sites Considered

Candidate	Lat(Dec)	Long(Dec)	Address	SA Comments	Comments
S4365A	44.38793	-72.944193	3216 E. Main St.	5 Acre Commercial Property	Lack of Landowner Interest
S4365B	44.38615	-72.938804	3295 E. Main St.	7.7 Acres, Vacant Commercial	Lack of Landowner Interest
S4365C	44.38621	-72.966778	667 Greyhound Dr.	225 Acres, (3) Parcels, Vacant Residential Lot	REJECTED - Too high up
S4365D	44.38305	-72.951944	2614 Cochran Rd.	75 Acres, Farm Land	Primary





# Status of Efforts to Work with Greystone Drive Neighbors

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# Status of Efforts to Work with Greystone Drive Neighbors

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10/15/13 – 45-Day Notice at Location A





# Status of Efforts to Work with Greystone Drive Neighbors

---

10/15/13 – 45-Day Notice at Location A

11/16/13 – Balloon Test at Location A





# Status of Efforts to Work with Greystone Drive Neighbors

---

10/15/13 – 45-Day Notice at Location A

11/16/13 – Balloon Test at Location A

12/11/13 – Meet with Neighbors to Review Their Concerns.





# Status of Efforts to Work with Greystone Drive Neighbors

---

10/15/13 – 45-Day Notice at Location A

11/16/13 – Balloon Test at Location A

12/11/13 – Meet with Neighbors to Review Their Concerns.

1/14/14 – Balloon Test at Location B





# Status of Efforts to Work with Greystone Drive Neighbors

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10/15/13 – 45-Day Notice at Location A

11/16/13 – Balloon Test at Location A

12/11/13 – Meet with Neighbors to Review Their Concerns.

1/14/14 – Balloon Test at Location B

2/17/14 – Supplemental 45-Day Notice for Location B





# Status of Efforts to Work with Greystone Drive Neighbors

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10/15/13 – 45-Day Notice at Location A

11/16/13 – Balloon Test at Location A

12/11/13 – Meet with Neighbors to Review Their Concerns.

1/14/14 – Balloon Test at Location B

2/17/14 – Supplemental 45-Day Notice for Location B

3/11/14 – Neighbors Communicate That Their Proposal was Location C





# Status of Efforts to Work with Greystone Drive Neighbors

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10/15/13 – 45-Day Notice at Location A

11/16/13 – Balloon Test at Location A

12/11/13 – Meet with Neighbors to Review Their Concerns.

1/14/14 – Balloon Test at Location B

2/17/14 – Supplemental 45-Day Notice for Location B

3/11/14 – Neighbors Communicate That Their Proposal was Location C

3/20/14 – Meet with Neighbors to Discuss Alternate Location C





# Status of Efforts to Work with Greystone Drive Neighbors

10/15/13 – 45-Day Notice at Location A

11/16/13 – Balloon Test at Location A

12/11/13 – Meet with Neighbors to Review Their Concerns.

1/14/14 – Balloon Test at Location B

2/17/14 – Supplemental 45-Day Notice for Location B

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3/20/14 – Meet with Neighbors to Discuss Alternate Location C

TBD – Balloon Test at Location C





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TBD – Balloon Test at Location C

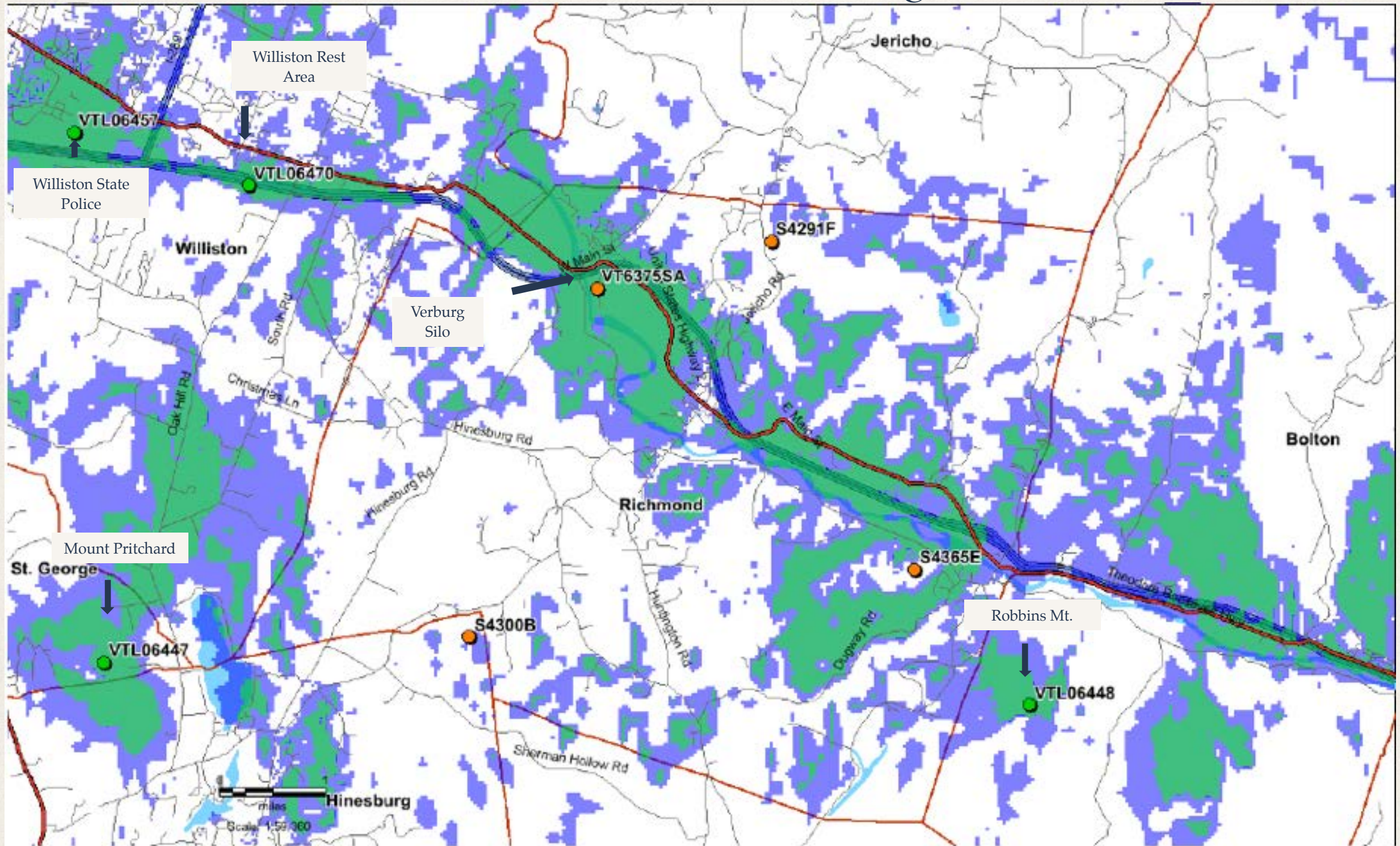






# 2614 Cochran Road – Coverage Analysis

## Current Coverage

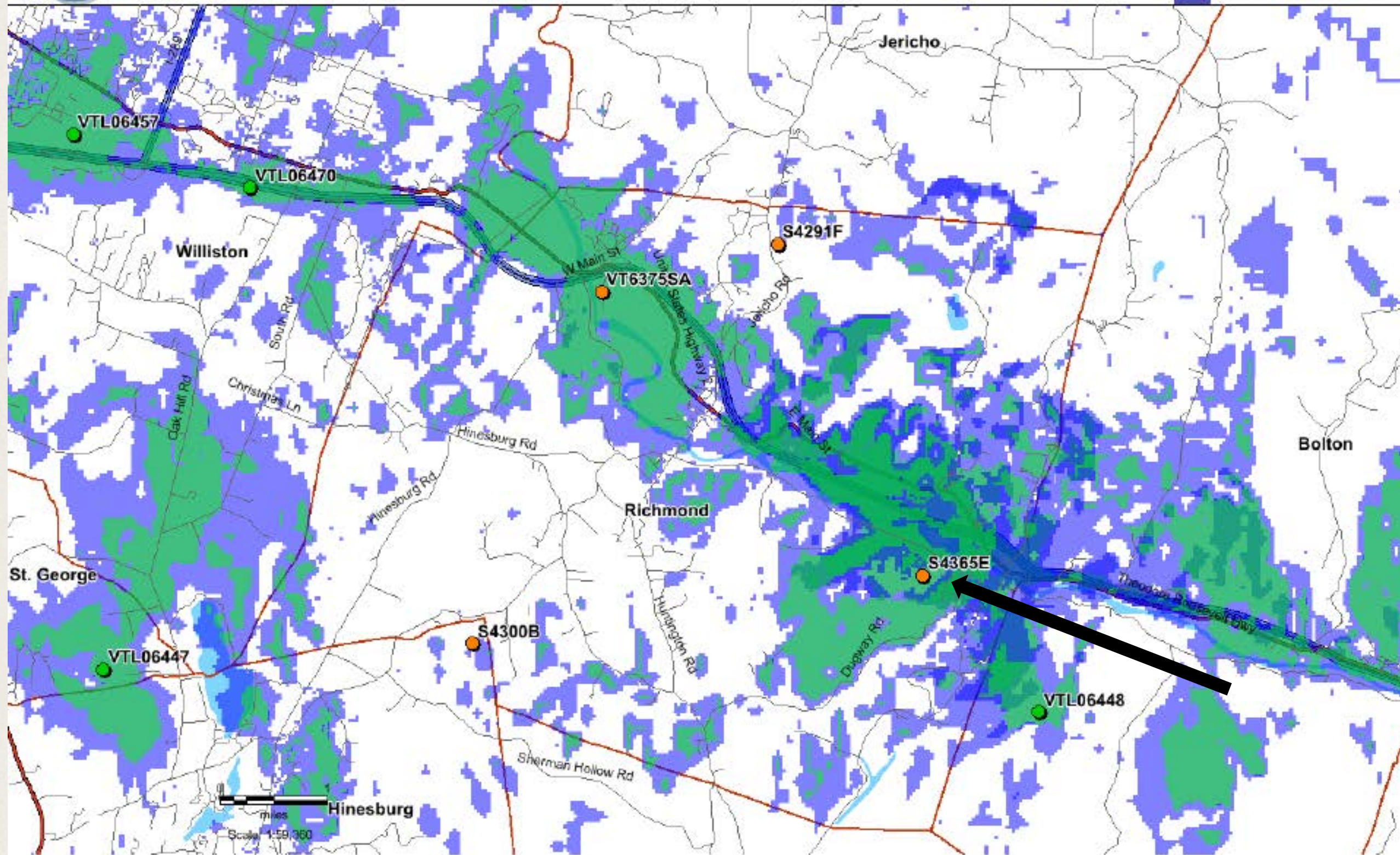






# Proposed site S4365E New Location in Richmond VT

- On Air sites
- Proposed sites
- -98dBm Enhanced Data Rate
- -108dBm Reliable Coverage

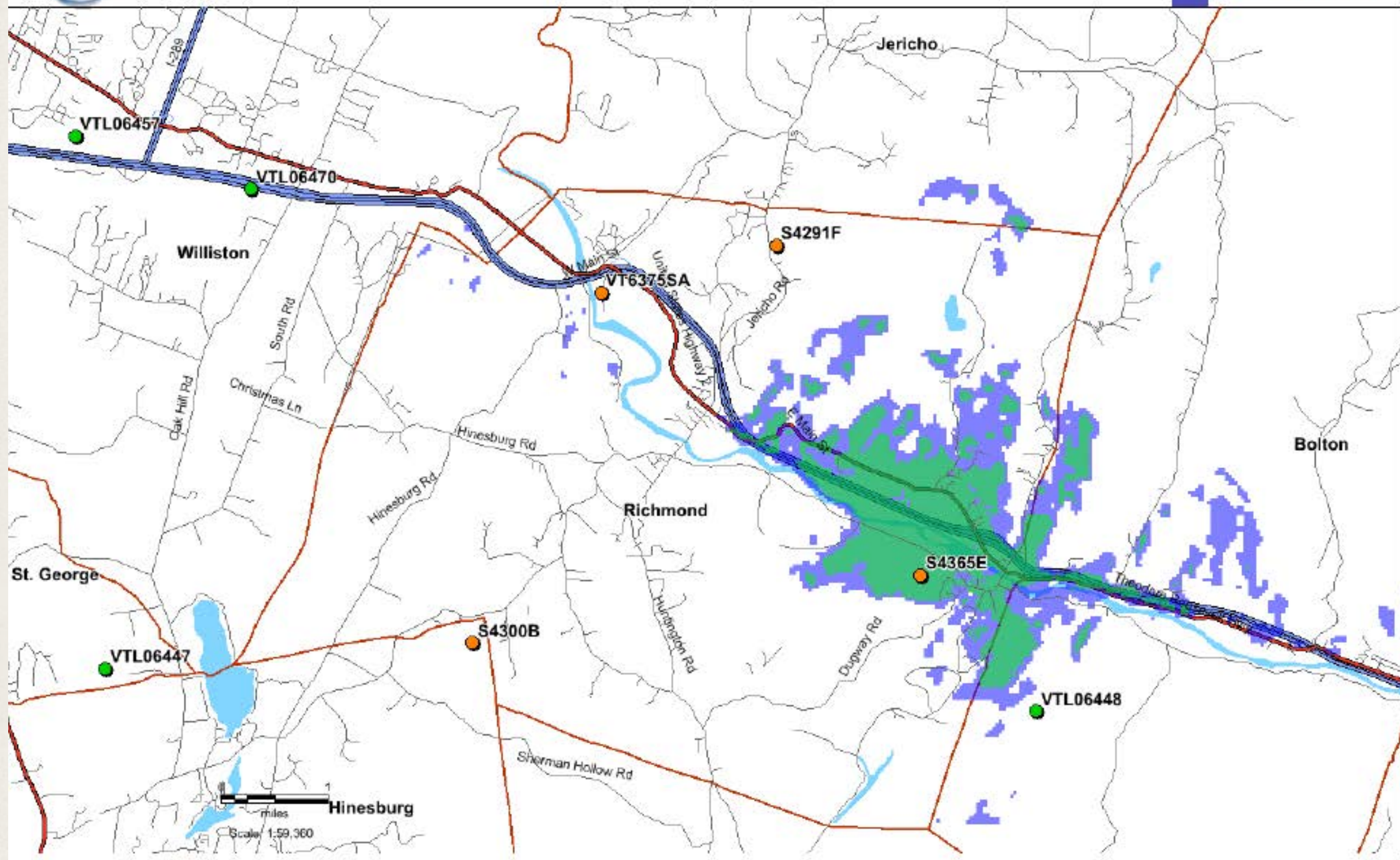






# Proposed site S4365E New Location in Richmond VT

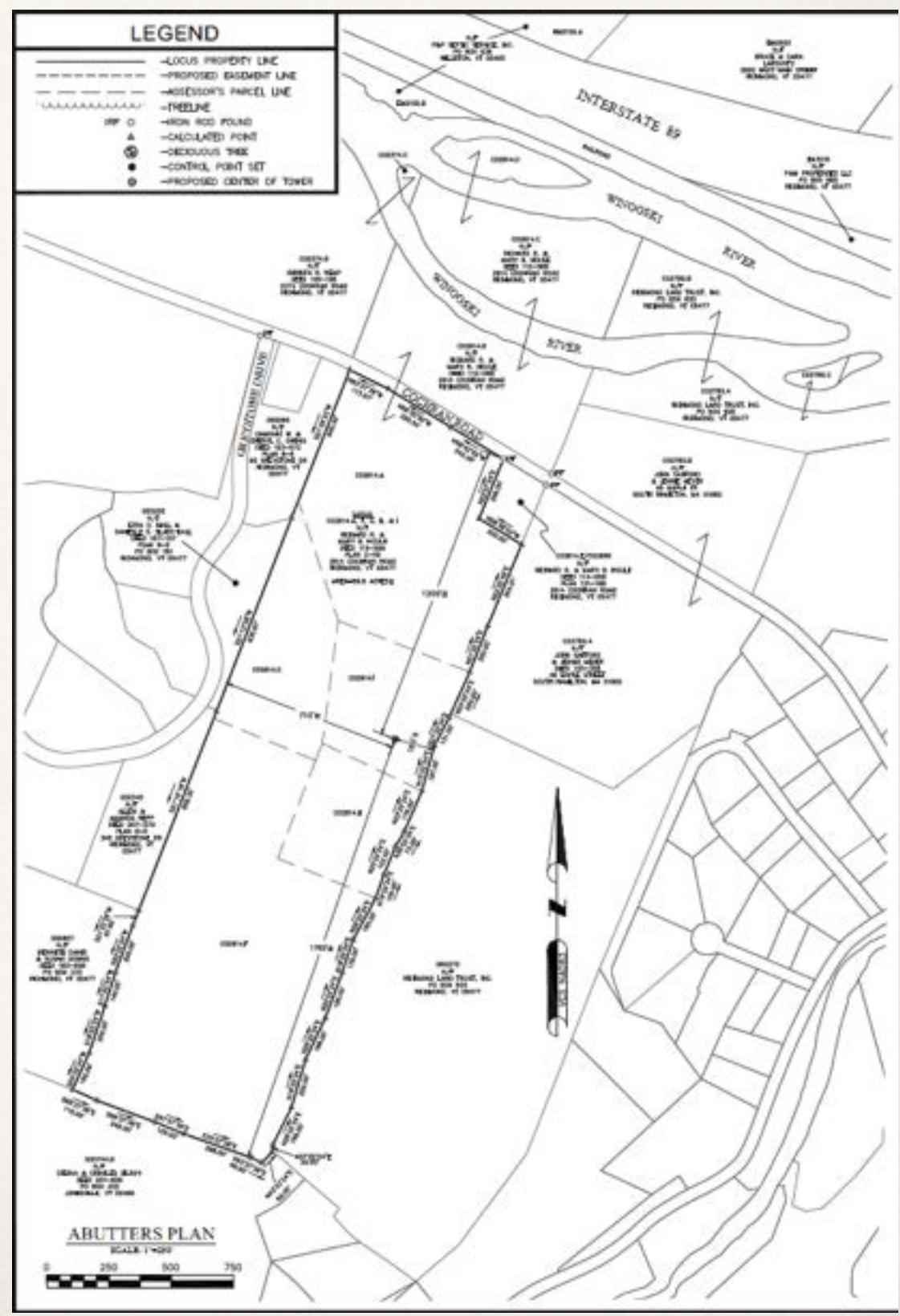
- On Air sites
- Proposed sites
- -98dBm Enhanced Data Rate
- -108dBm Reliable Coverage





# 2614 Cochran Road – Characteristics of the Area (Loc. B)

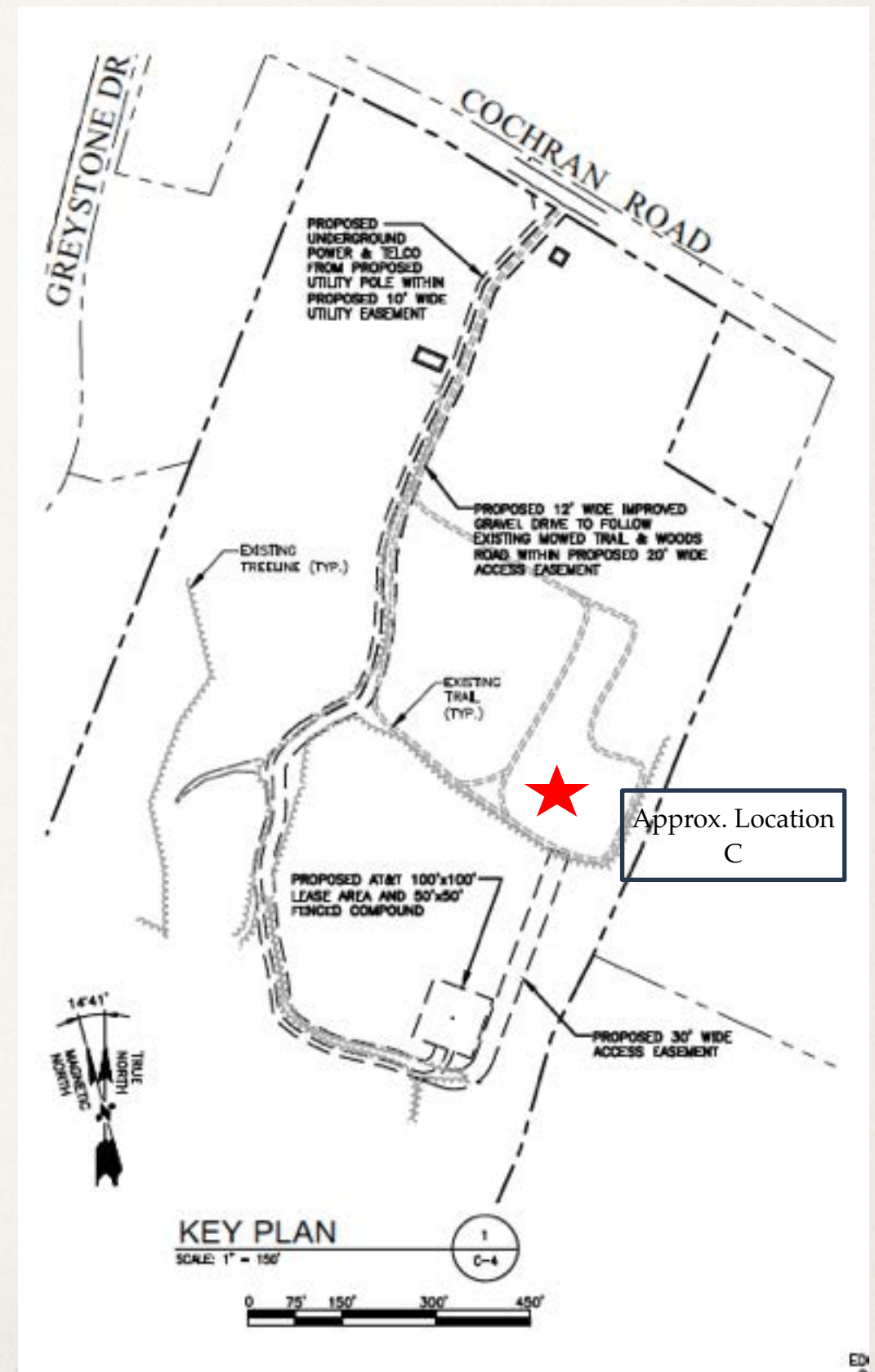
- Houle Property approximately 75 acres with working farm and forested areas
- Greystone Drive to the west
- Land Trust Parcel immediately east, then residential streets off Dugway Road
- Average Tree height approx. 50'
- ANR Mapped Deer Wintering Areas





# 2614 Cochran Road - Site Specific Details

- Basic Site Plan for Location B
- 30' wide access and utility easement
  - 1,800' long x 12' wide gravel access
- 50' x 50' Fenced Compound
  - Shelter & Backup Generator
  - 140' Monopine
- Evaluating Location C – Site Design May Change Slightly

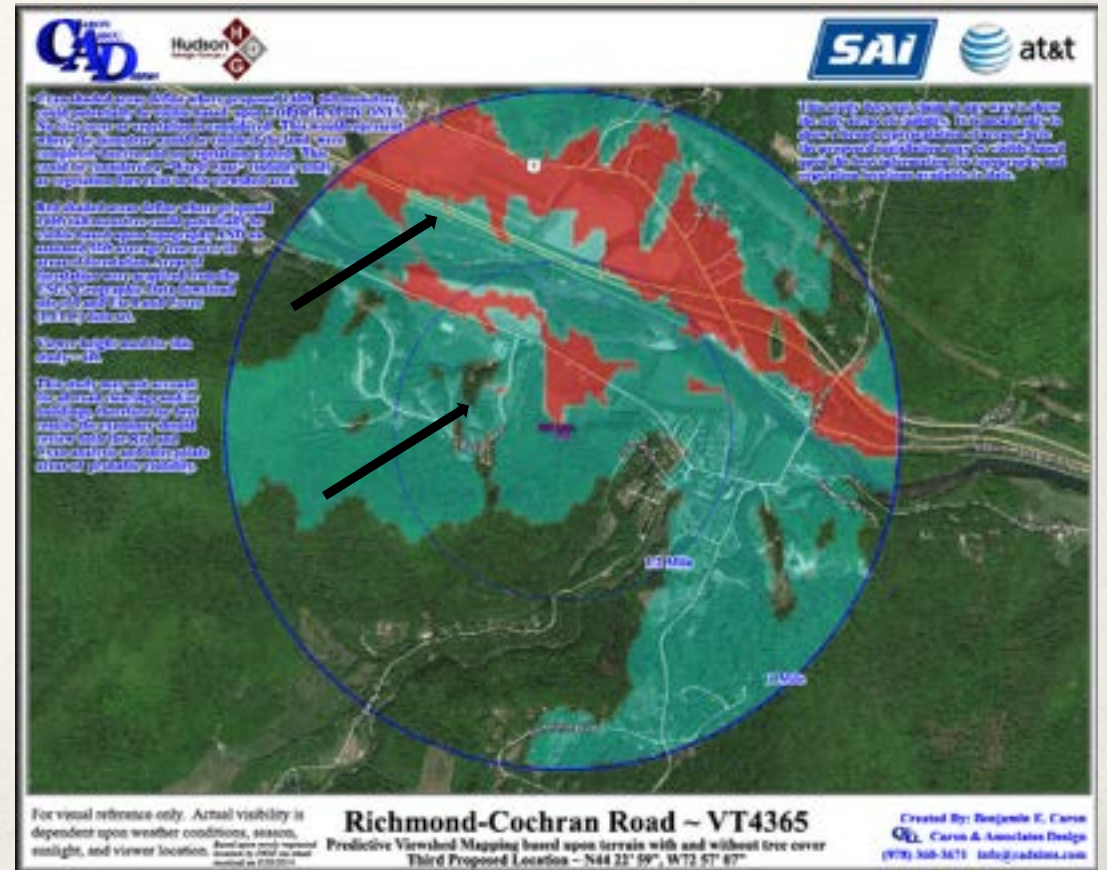
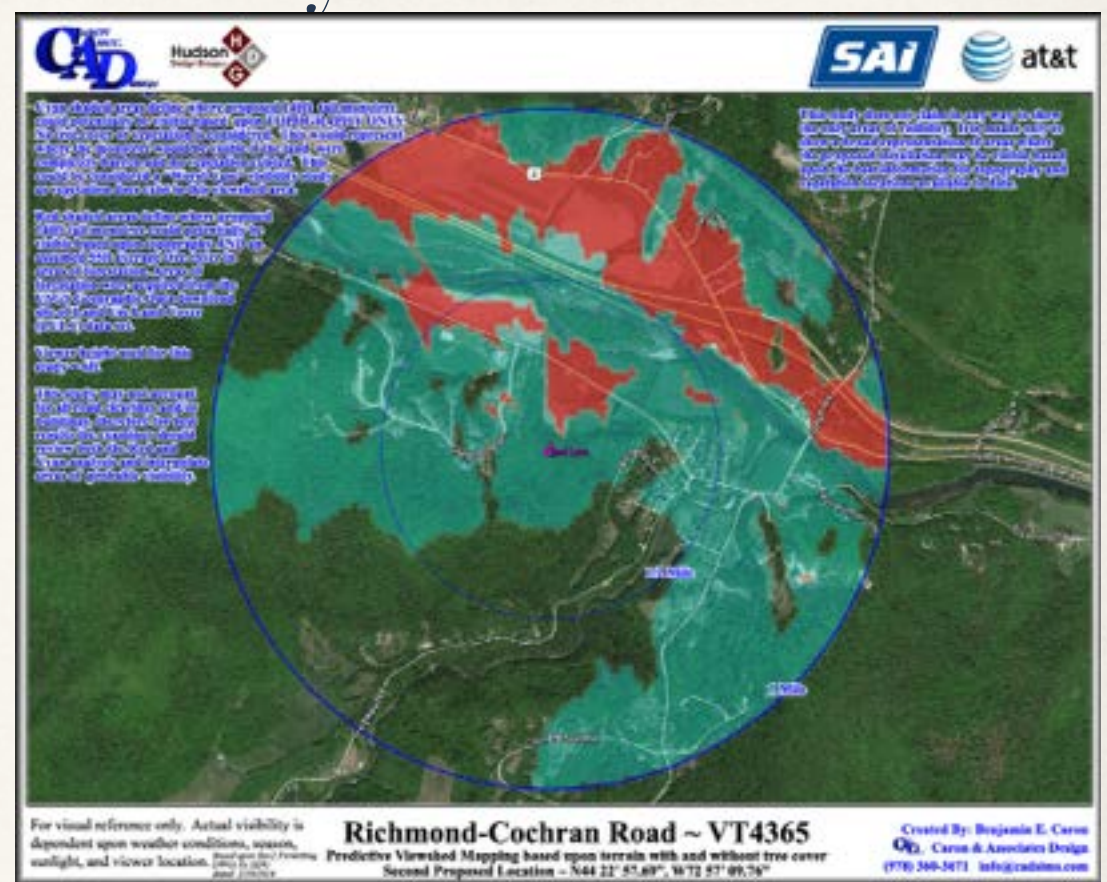




# 2614 Cochran Road – Visual Impact Analysis

## Predictive Viewshed Comparison of Location B & Location C

- Prediction of visibility (follow with balloon test)
  - Blue is based topography only
  - Red is based on topography and 50' trees
  - Viewer height is 6'
- Study predicts that Location C will be slightly less visible from Greystone Drive and points along I-89 northwest of the of the site.
- Expect the visual impact of Location C will be less than presented in the Photographic Simulations based on Location B. Third balloon test will be conducted to confirm this finding.







For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

*Based upon Rev2 Permitting  
DWGs by HDG  
dated: 2/10/2014*

## Richmond-Cochran Road ~ VT4365

Photo Location A ~ 50mm ~ 1204'+/- (0.23mi) Away ~ 02/12/2014  
From near 2614 Cochran Road

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cadsim.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location. Based upon Rev2 Permitting DWGs by HDG dated: 2/10/2014

## Richmond-Cochran Road ~ VT4365

Photo Location B ~ 65mm ~ 4213'+/- (0.80mi) Away ~ 02/12/2014  
 From near Intersection of US 2, Cochran Road, and Stage Road

Created By: Benjamin E. Caron  
 Caron & Associates Design  
 (978) 360-3671 info@cadsim.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev 2 Permitting  
DWGs by HDG  
dated: 2/10/2014

## Richmond-Cochran Road ~ VT4365

Photo Location C ~ 65mm ~ 4089' +/- (0.77mi) Away ~ 02/12/2014  
From near Murray Drive

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cadsim.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.  
Based upon Rev2 Permitting  
DWGs by HDG  
dated: 2/18/2014

## **Richmond-Cochran Road ~ VT4365**

**Photo Location D ~ 65mm ~ 4875'+/- (0.92mi) Away ~ 02/12/2014  
From near VYCC Farmstand and VT Historic Marker**

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cadsims.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.  
Based upon Rev2 Permitting  
DWGs by HDG  
dated: 2/10/2014

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(978) 360-3671 info@cad sims.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev2 Permitting  
DWGs by HDG  
dated: 2/10/2014

## Richmond-Cochran Road ~ VT4365

Photo Location E ~ 105mm ~ 10,015'+/- (1.90mi) Away ~ 02/12/2014  
From near US 2 West of Site

Created By: Benjamin E. Caron  
 Caron & Associates Design  
(978) 360-3671 info@cadsims.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.  
Based upon Rev2 Permitting DWGs by HDG dated: 2/10/2014

**Richmond-Cochran Road ~ VT4365**  
Photo Location F ~ 65mm ~ 4272'+/- (0.81mi) Away ~ 02/12/2014  
From Interstate 89 South near Mile Marker 74.8

Created By: Benjamin E. Caron  
CAD Caron & Associates Design  
(978) 360-3671 info@cadsim.com





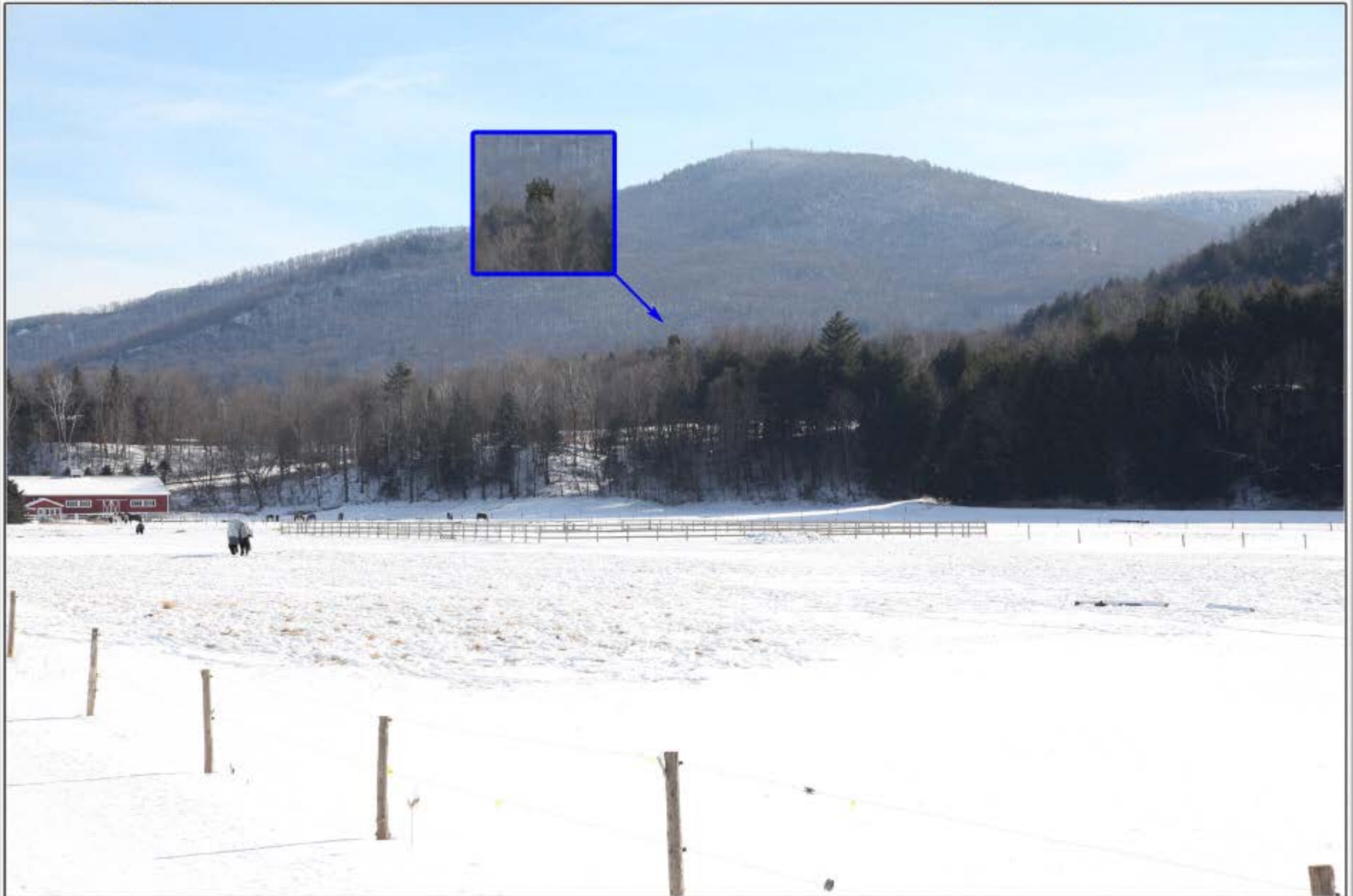
For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location. Based upon Rev 2 Permitting DWGs by HDG dswd: 2/10/2014

### Richmond-Cochran Road ~ VT4365

Photo Location G ~ 105mm ~ 11,402' +/- (2.16mi) Away ~ 02/12/2014  
From Interstate 89 North near Mile Marker 72.2

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cad sims.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.  
Based upon Rev2 Permitting DWGs by HDG dated: 2/10/2014

## Richmond-Cochran Road ~ VT4365

Photo Location H ~ 65mm ~ 3061'+/- (0.58mi) Away ~ 02/12/2014  
From near End of Horse Field on Cochran Road

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cadsim.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.  
Based upon Rev2 Permitting  
DWGs by HDG  
dated: 2/10/2014

**Richmond-Cochran Road ~ VT4365**  
Photo Location I ~ 50mm ~ 974' +/- (0.18mi) Away ~ 02/12/2014  
From near 205 Greystone Drive

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cadsim.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.  
Based upon Rev2 Permitting  
DWGs by HDG  
dated: 2/10/2014

## **Richmond-Cochran Road ~ VT4365**

**Photo Location J ~ 50mm ~ 2249' +/- (0.43mi) Away ~ 02/12/2014  
From near 63 Greystone Drive**

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cadsim.com





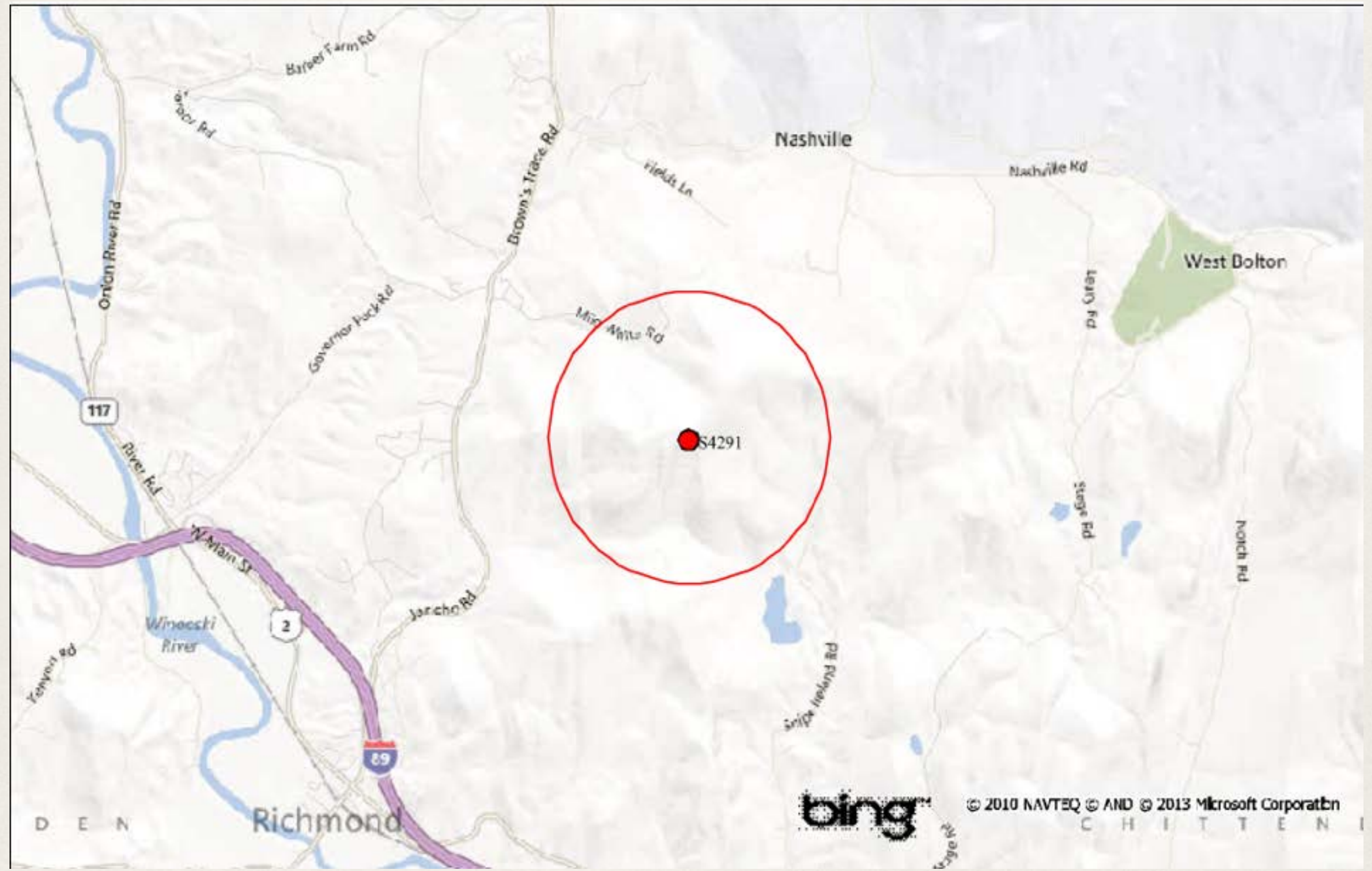
# AT&T WIRELESS FACILITY

1760 Jericho Road, Richmond

Parcel ID: JR1760



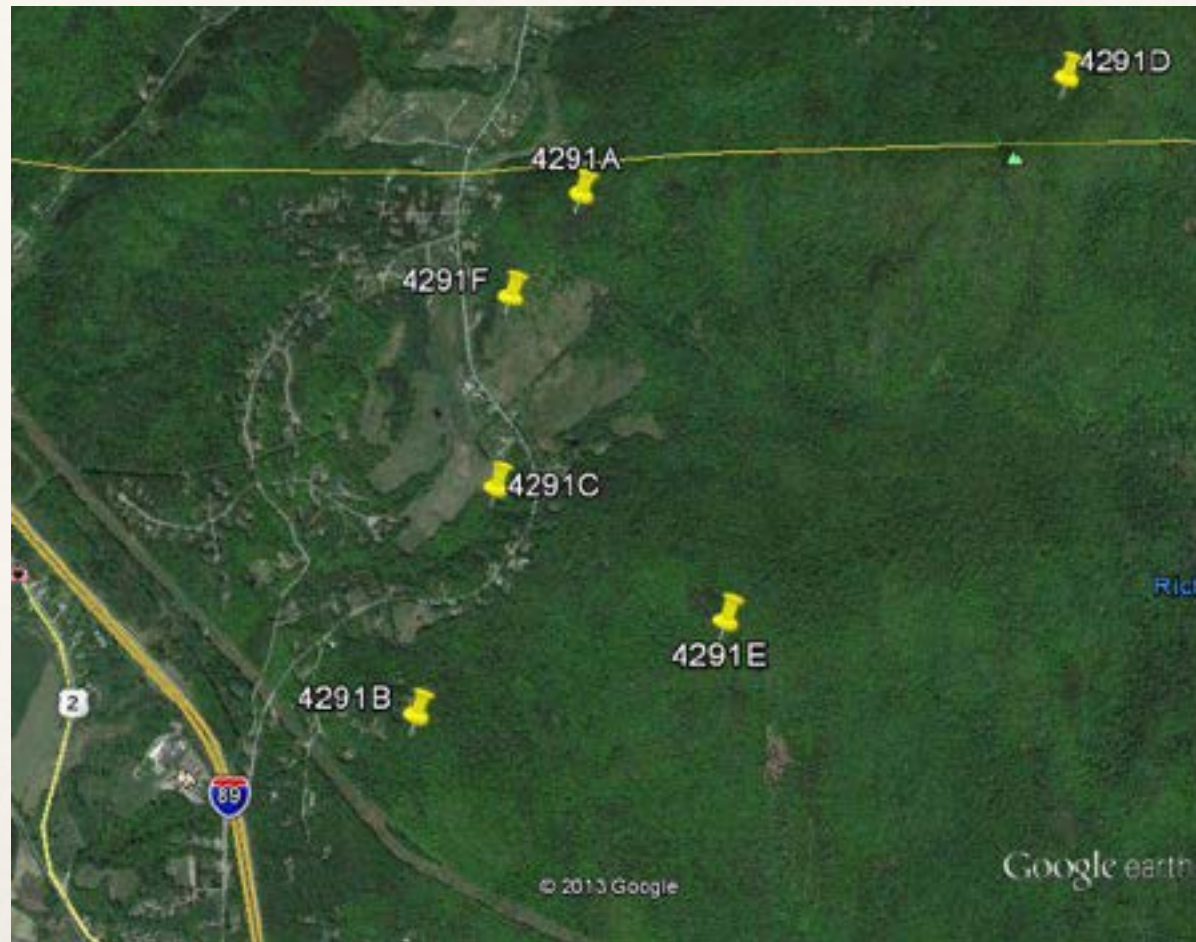
# Search Ring for Jericho Road Area





# 1925 Jericho Road – Review of Alternate Sites Considered

Candidat	Lat(Dec)	Long(Dec)	Struct	Address	Height	Elevation	SA Comments	RF Comments
S4291A	44.43051	-72.976486	RL	Brown's Trace / Jericho Road	120	1046	Rural Area	REJECTED - due to lack of LL interest. Initially chosen as Primary
S4291B	44.41397	-72.98375	RL	Valley View Road	120	793	Rural Area	REJECTED - Too far South of the ring and does not propagate well
S4291C	44.42104	-72.980447	RL	Jericho Road	120	629	Rural Area	REJECTED - Too far South of the ring and does not propagate well
S4291D	44.43368	-72.954645	RL	Milo White Road	140		Neill Property; proposed location is relatively flat. Some areas of the proposed access drive are very steep.	New candidate. Mostly blocked by terrain. (Rejected)
S4291E	44.41664	-72.970588	RL	Jericho Road	140		Rural Area Gifford's property	Does not meet the design objective. It is about a mile South of Candidate A and provides overlapping coverage with another site VT6375 (Rejected)
S4291F	44.42725	72.979752	RL	Jericho Road	100	837	Rural Area/ Peet Property	Primary at 100ft

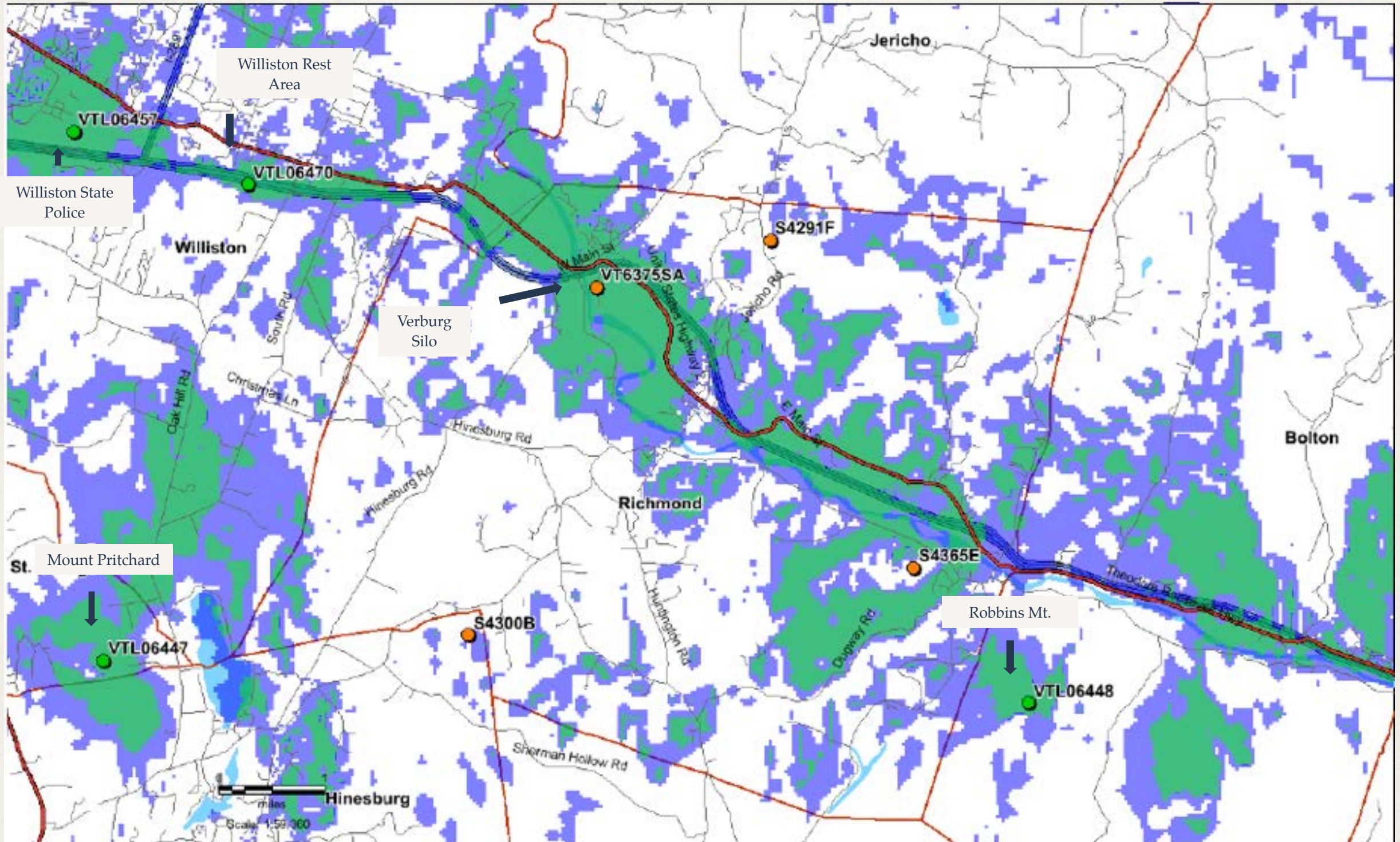






# 1925 Jericho Road – Coverage Analysis

## Current Coverage

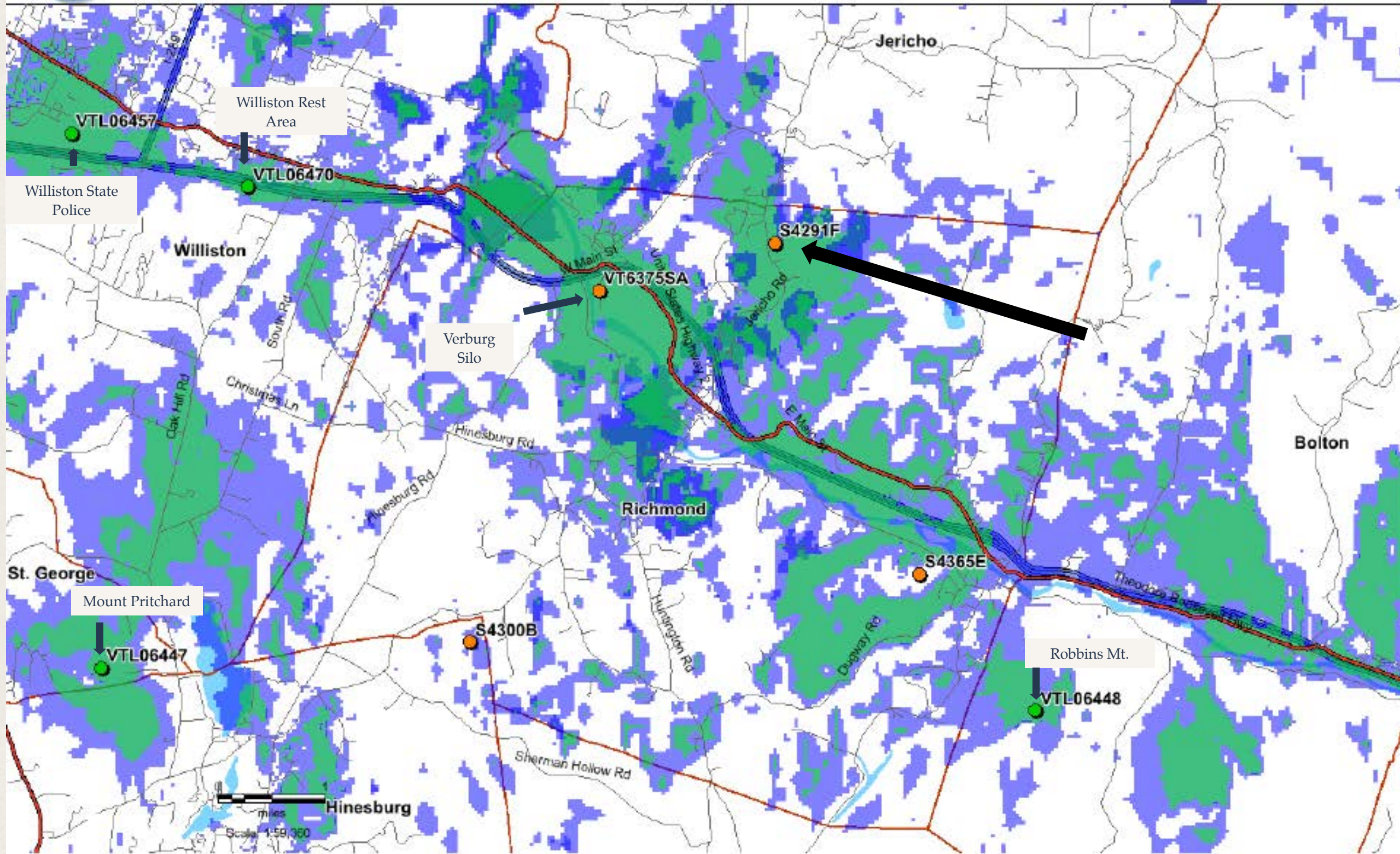






# Proposed site S4291F in Richmond VT

- On Air sites
- Proposed sites
- -98dBm Enhanced Data Rate
- -108dBm Reliable Coverage

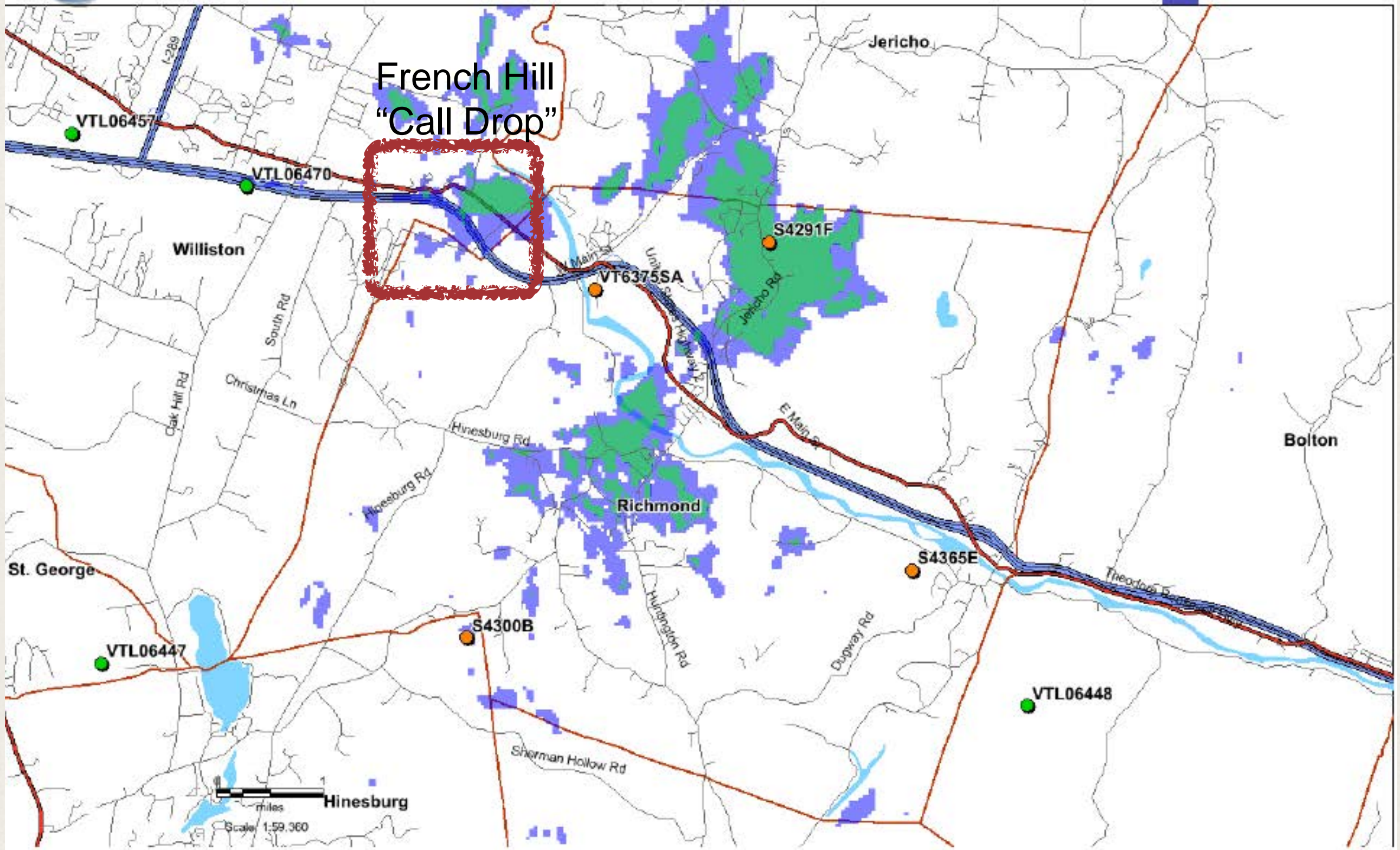






# Proposed site S4291F @ 100ft in Richmond VT

- On Air sites
- Proposed sites
- -98dBm Enhanced Data Rate
- -108dBm Reliable Coverage

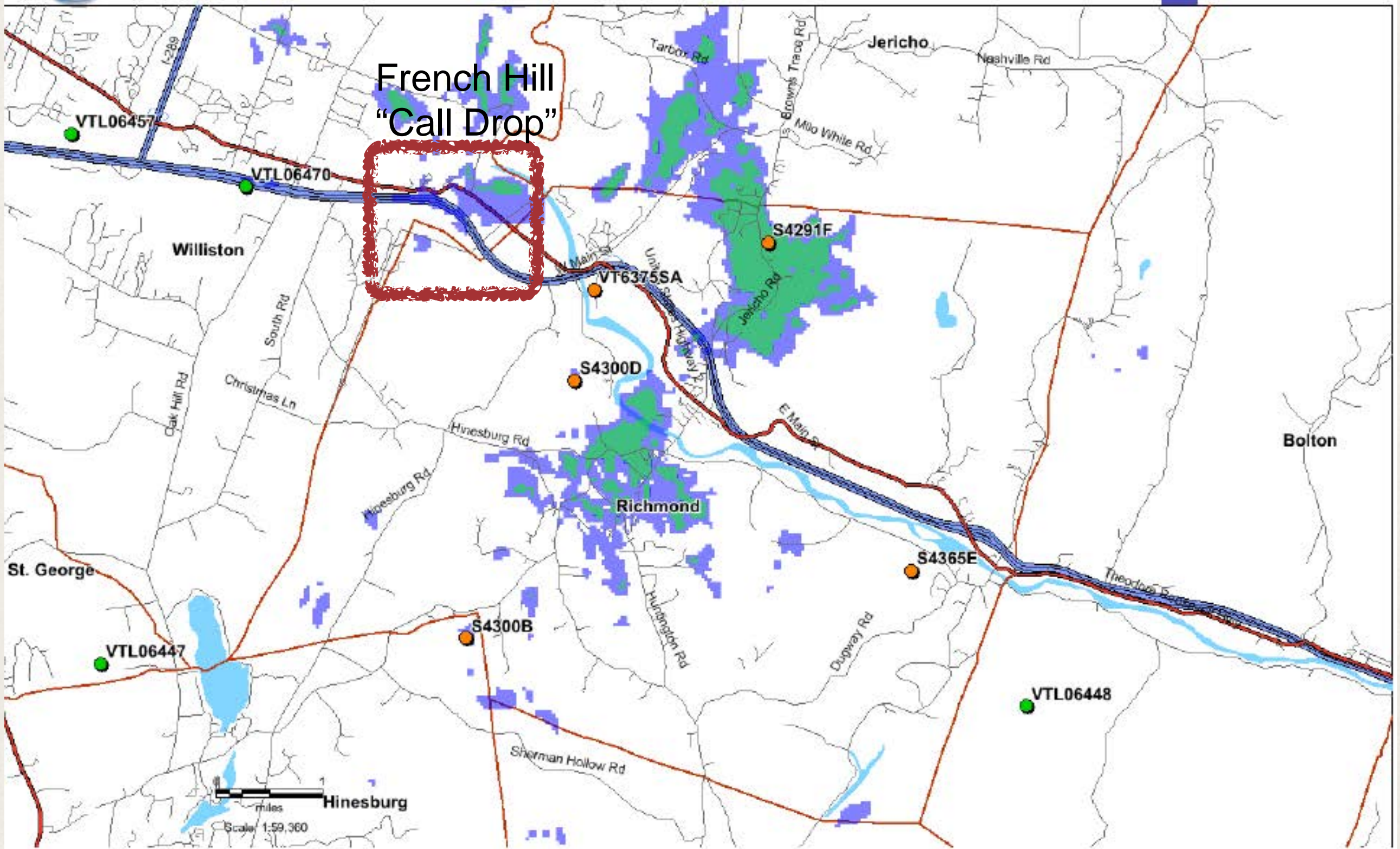






# Proposed site S4291F @ 70ft in Richmond VT

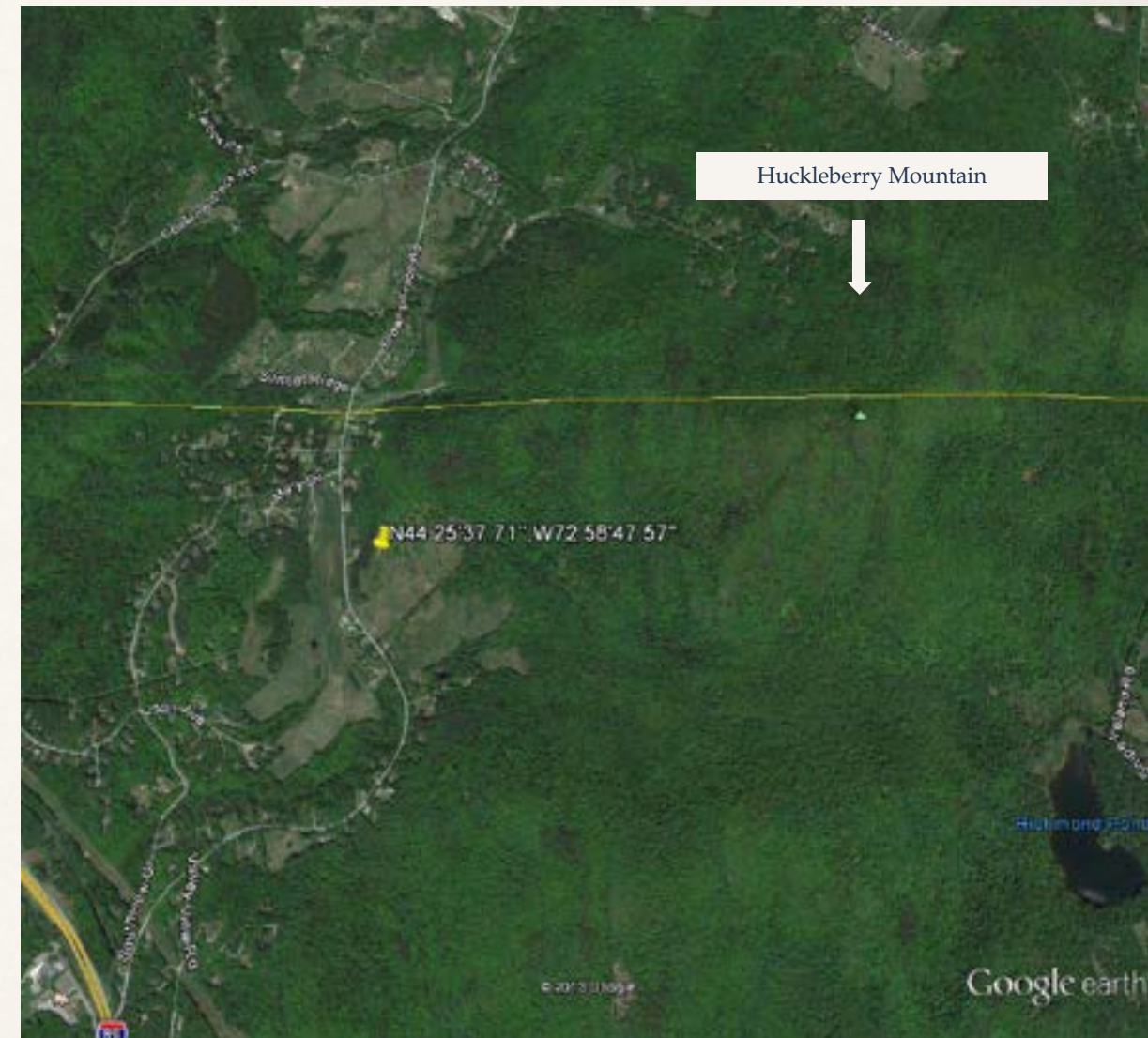
- On Air sites
- Proposed sites
- -98dBm Enhanced Data Rate
- -108dBm Reliable Coverage





# 1760 Jericho Road – Characteristics of the Area

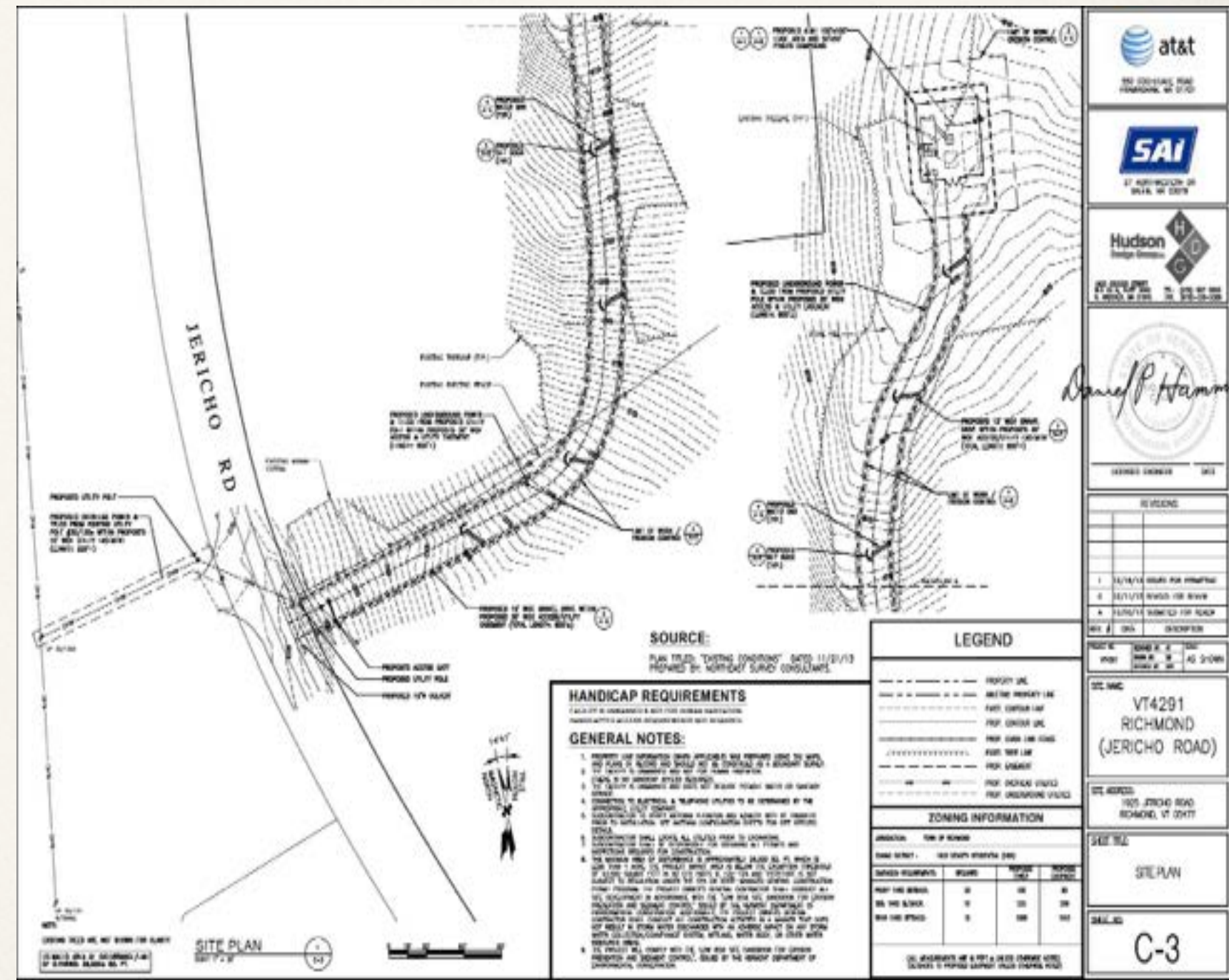
- Daniel Peet Property approx. 42-acre lot, on the north side of Jericho Road.
- Undeveloped with a combination of woodlands and open pasture.
- Subdivided when Sadlar Meadow Project was approved.
- Will be modifying soils mitigation plan associated with Sadlar Meadow Project.
- Ground elevation at proposed site location is 834'.
- Top of Huckleberry Mountain (elev. 1650') is over a mile to the northeast of the site
- Average Tree height approx. 50'
- No impact to wetlands, critical wildlife habitat or other sensitive areas identified. Will be confirmed in final NEPA report.





# 1760 Jericho Road - Site Specific Details

- 30' wide access and utility easement
  - 800' long x 12' wide gravel access
  - Access gate at entrance off Jericho Road, new 12" culvert
- 50' x 50' Compound Design
- 100' Monopine





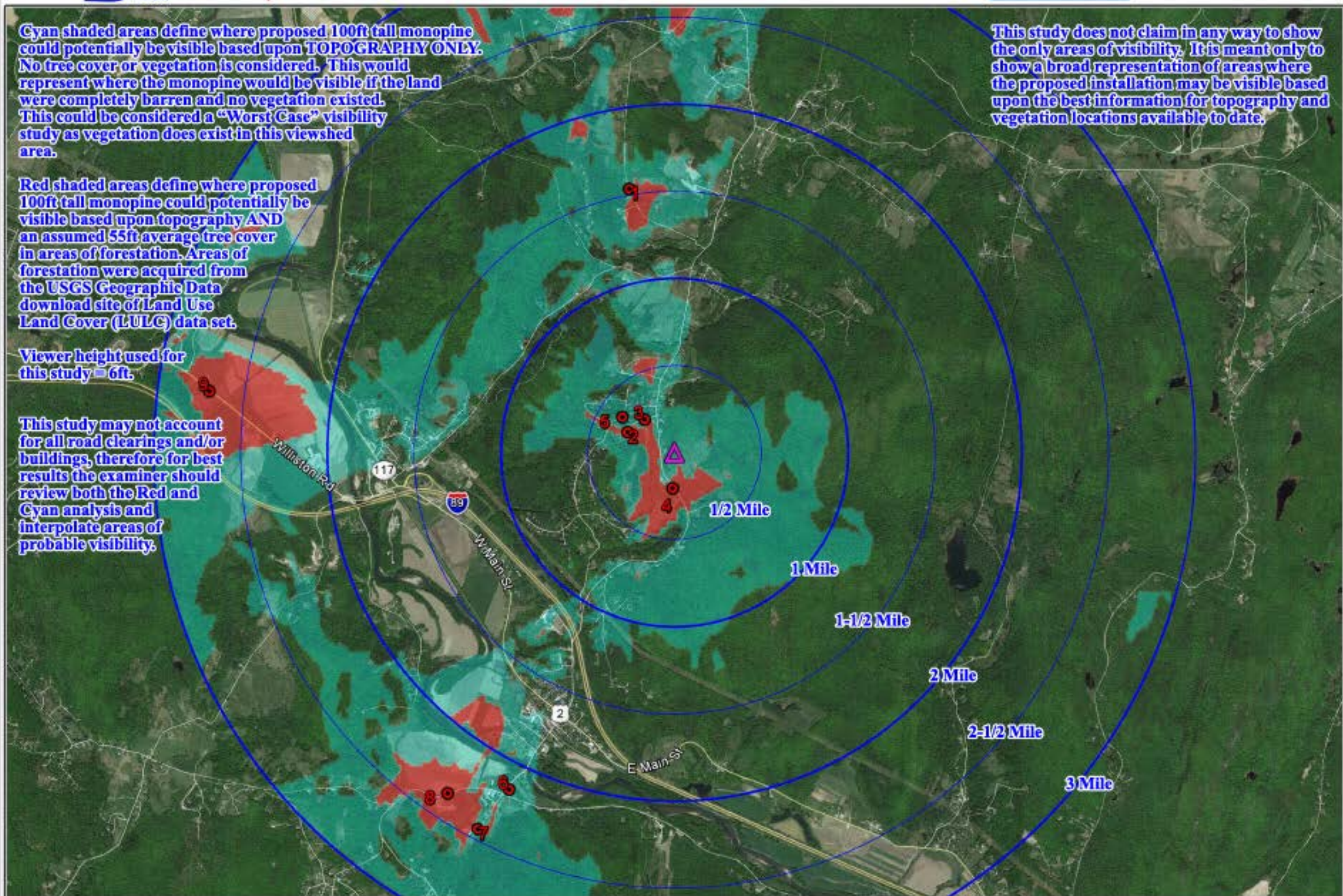
Cyan shaded areas define where proposed 100ft tall monopine could potentially be visible based upon TOPOGRAPHY ONLY. No tree cover or vegetation is considered. This would represent where the monopine would be visible if the land were completely barren and no vegetation existed. This could be considered a "Worst Case" visibility study as vegetation does exist in this viewed area.

Red shaded areas define where proposed 100ft tall monopine could potentially be visible based upon topography AND an assumed 55ft average tree cover in areas of forestation. Areas of forestation were acquired from the USGS Geographic Data download site of Land Use Land Cover (LULC) data set.

Viewer height used for this study = 6ft.

This study may not account for all road clearings and/or buildings, therefore for best results the examiner should review both the Red and Cyan analysis and interpolate areas of probable visibility.

This study does not claim in any way to show the only areas of visibility. It is meant only to show a broad representation of areas where the proposed installation may be visible based upon the best information for topography and vegetation locations available to date.



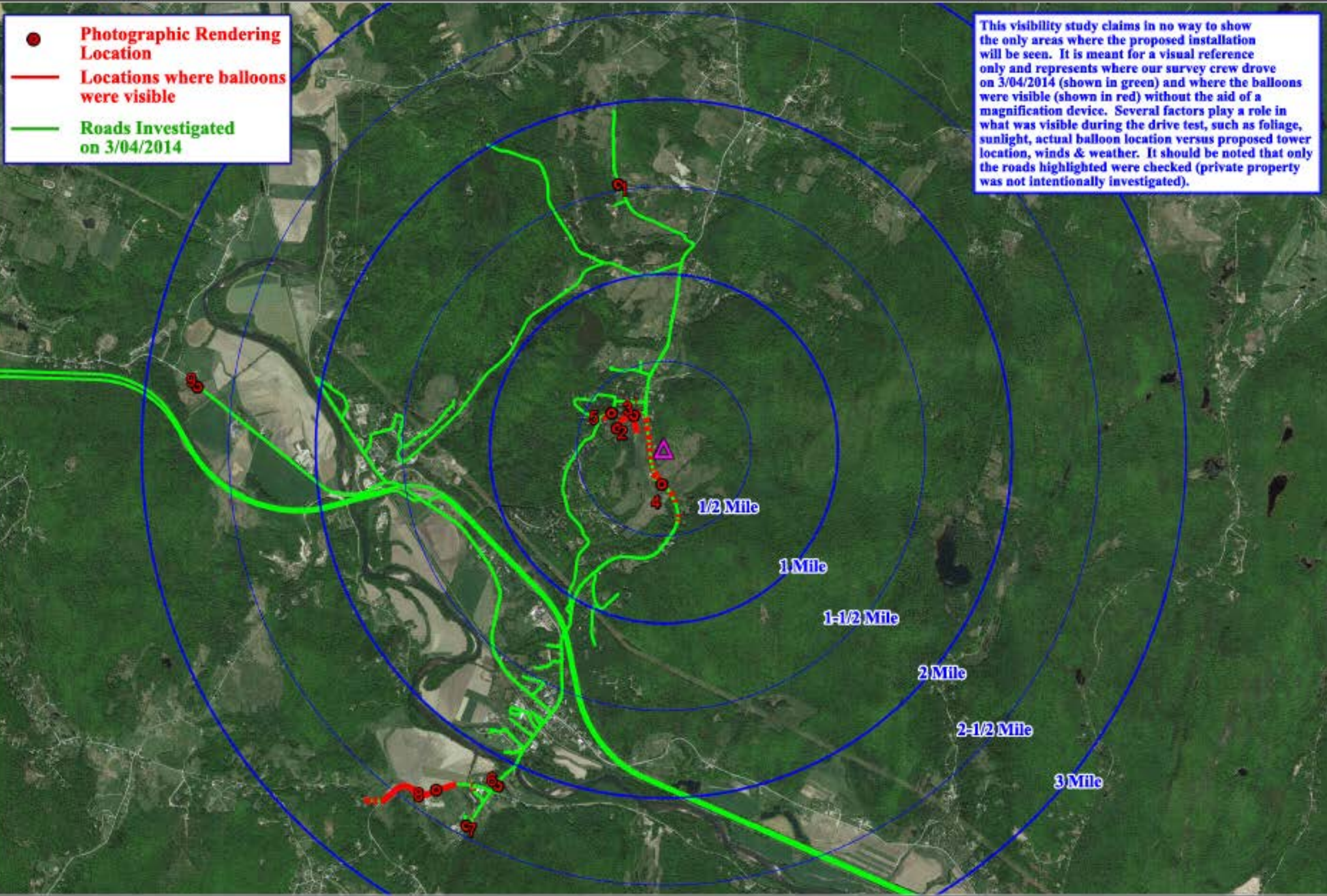
For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev. 1 Permitting  
Drawn by HDG dated: 12/16/13

**Richmond (Jericho Road) ~ (3/10/2014)**  
Predictive Viewshed Mapping based upon terrain with and without tree cover  
2 1/2 Mile Radius

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cad sims.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev.1 Permitting  
Drawings by HDG dated: 12/16/13.

## Richmond (Jericho Road) ~ (3/10/2014)

Driven/Verified Visibility Map  
2 1/2 Mile Radius

Created By: Benjamin E. Caron  
 Caron & Associates Design  
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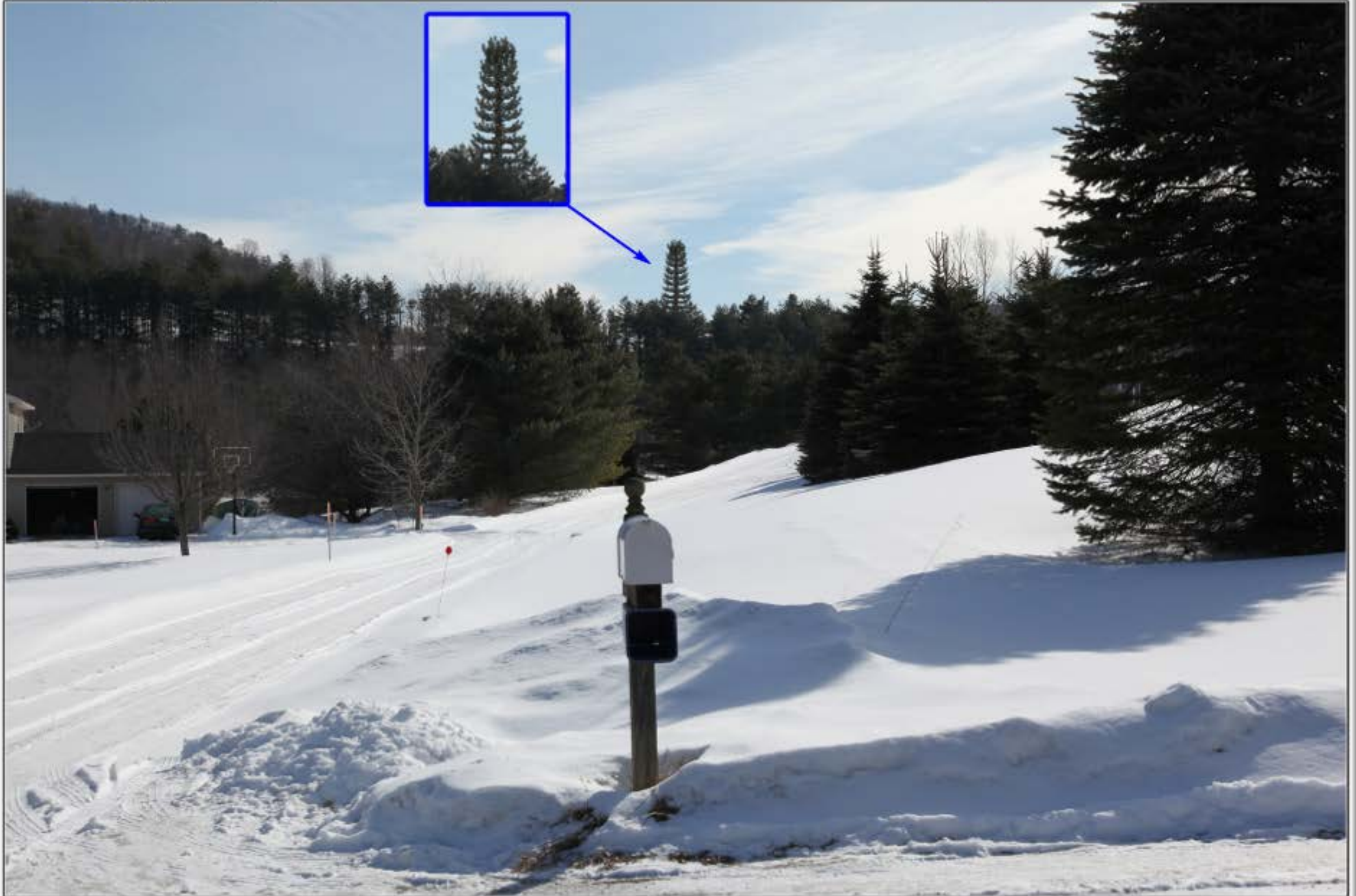
For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev. 1 Permitting  
Dwgs by HDG dated: 12/16/13.

**Richmond (Jericho Road) ~ (3/10/2014)**  
Photo Location 1 ~ 105mm ~ 8129'+/- (1.54mi) Away  
From near 117 Fitzsimonds Road

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cad sims.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev 1 Permitting  
Drawn by HDG dated: 12/16/13.

### Richmond (Jericho Road) ~ (3/10/2014)

Photo Location 2 ~ 50mm ~ 1544' +/- (0.29mi) Away

From near 189 Mary Drive

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cadsim.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location. Based upon Rev. 1 Permitting Drawn by HDG dated: 12/16/13.

**Richmond (Jericho Road) ~ (3/10/2014)**  
 Photo Location 3 ~ 50mm ~ 1354' +/- (0.26mi) Away  
 From near intersection of Mary Drive and Pinnacle View

Created By: Benjamin E. Caron  
 CAD Caron & Associates Design  
 (978) 360-3671 info@cadsim.com





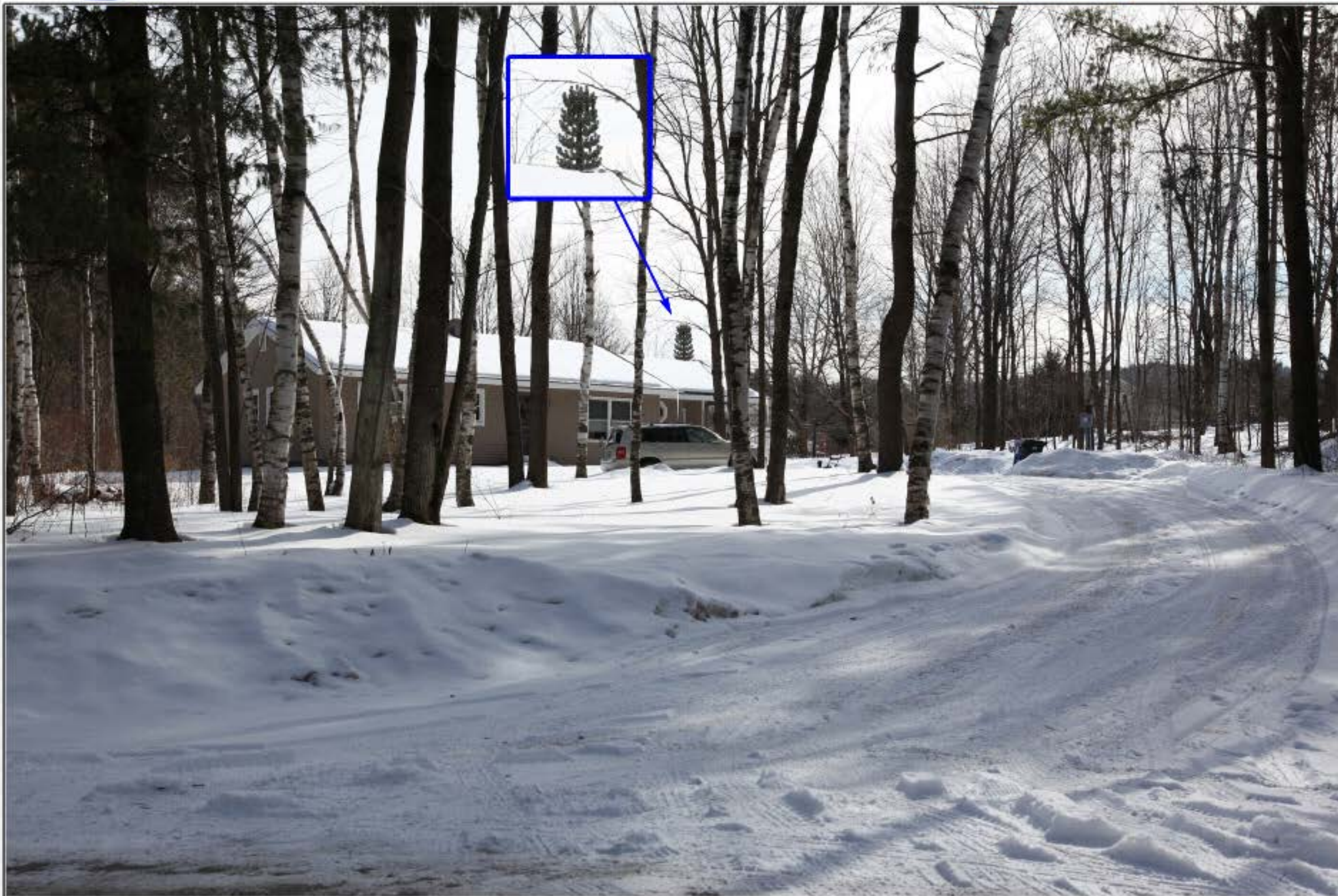
For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location. Based upon Rev. 1 Permitting Dwg. by HDG dated: 12/16/13.

### Richmond (Jericho Road) ~ (3/10/2014)

Photo Location 4 ~ 50mm ~ 1058' +/- (0.20mi) Away  
From near 174 Jericho Road

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cadsim.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev. 1 Permitting  
Dwgs by HDG dated: 12/16/13.

### Richmond (Jericho Road) ~ (3/10/2014)

Photo Location 5 ~ 50mm ~ 1910'+/- (0.36mi) Away  
From near 556 Hidden Pines Circle

Created By: Benjamin E. Caron  
Caron & Associates Design  
(978) 360-3671 info@cadsim.com





# Existing/Proposed Conditions



The balloons were not visible from this photo location.

For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev 1 Permitting  
Drawn by HDG dated: 12/16/13.

**Richmond (Jericho Road) ~ (3/10/2014)**  
Photo Location 6 ~ 50mm ~ 11,351'+/- (2.15mi) Away  
From near the Round Church

Created By: Benjamin E. Caron  
 Caron & Associates Design  
(978) 360-3671 info@cadsim.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

*Based upon Rev. 1 Permitting  
Dwgs by HDG dated: 12/16/13.*

### **Richmond (Jericho Road) ~ (3/10/2014)**

**Photo Location 7 ~ 105mm ~ 12,850'+/- (2.43mi) Away  
From Thompson Road near senior housing**

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cadsim.com





For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

Based upon Rev.1 Permitting  
Draws by HDG dated: 12/16/13.

**Richmond (Jericho Road) ~ (3/10/2014)**  
Photo Location 8 ~ 105mm ~ 12,386' +/- (2.35mi) Away  
From near Farr Family Machine Repair

Created By: Benjamin E. Caron  
**CAD** Caron & Associates Design  
(978) 360-3671 info@cadsim.com





Proposed installation is almost completely obscured by the vegetation on the ridge line.

For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location. Based upon Rev 1 Permitting Dwg's by HDG dated: 12/16/13.

**Richmond (Jericho Road) ~ (3/10/2014)**  
Photo Location 9 ~ 105mm ~ 14,251' +/- (2.70mi) Away  
From near 9909 Williston Road

Created By: Benjamin E. Caron  
Caron & Associates Design  
(978) 360-3671 info@cadsim.com



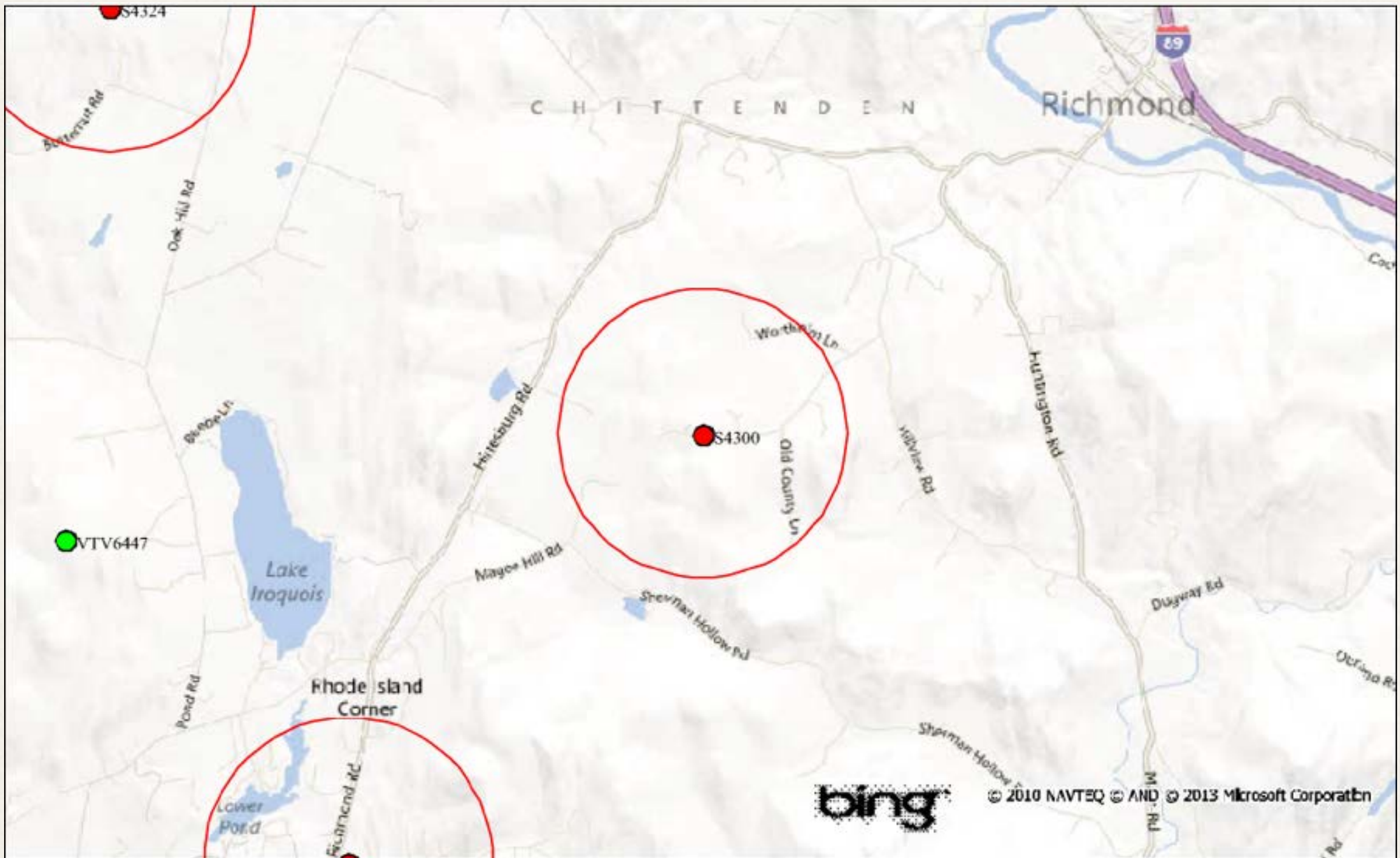


# AT&T WIRELESS FACILITY

Williams Hill Road Search Ring



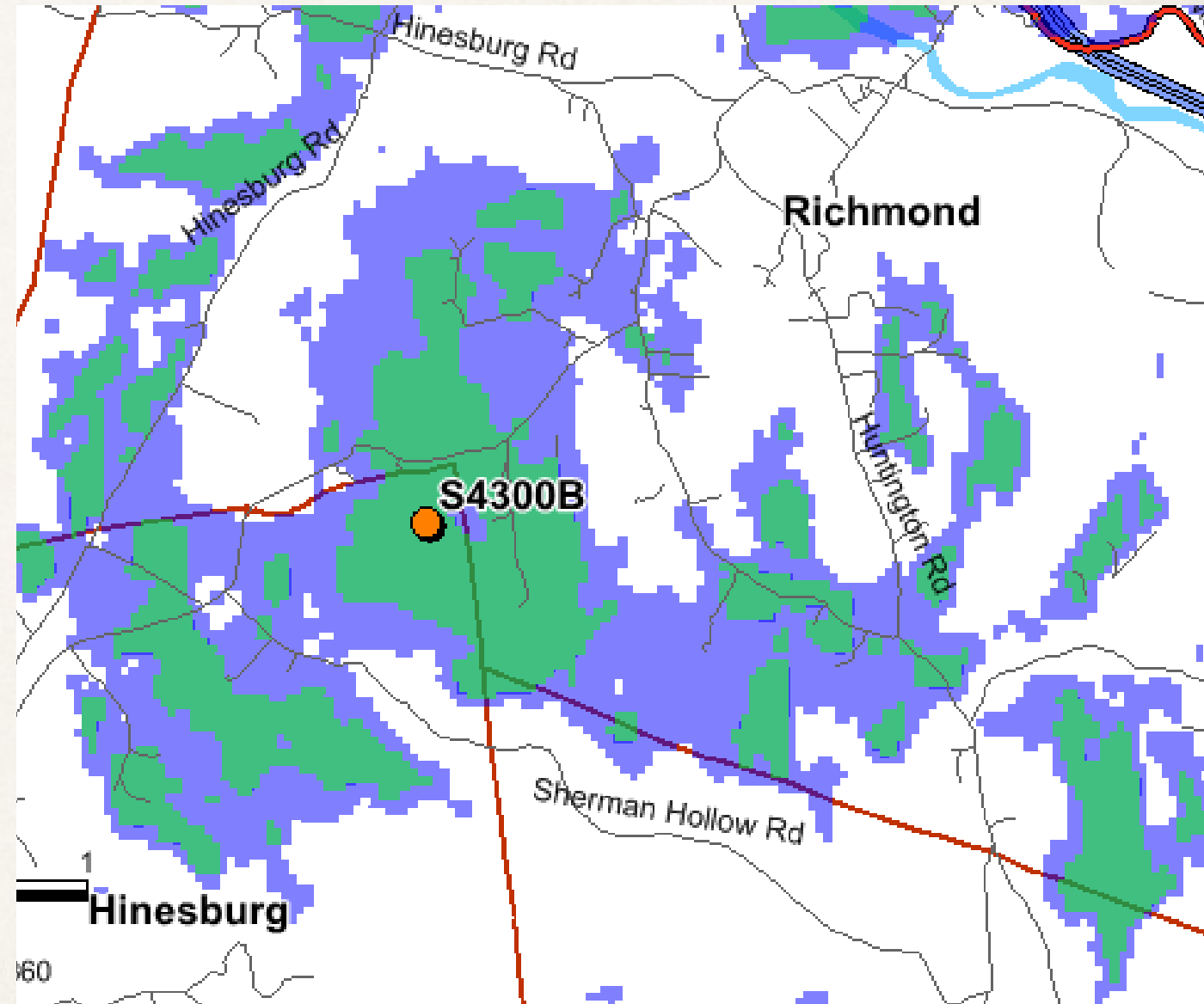
# Search Ring for Williams Hill Road Area





# Williams Hill Road Search Ring

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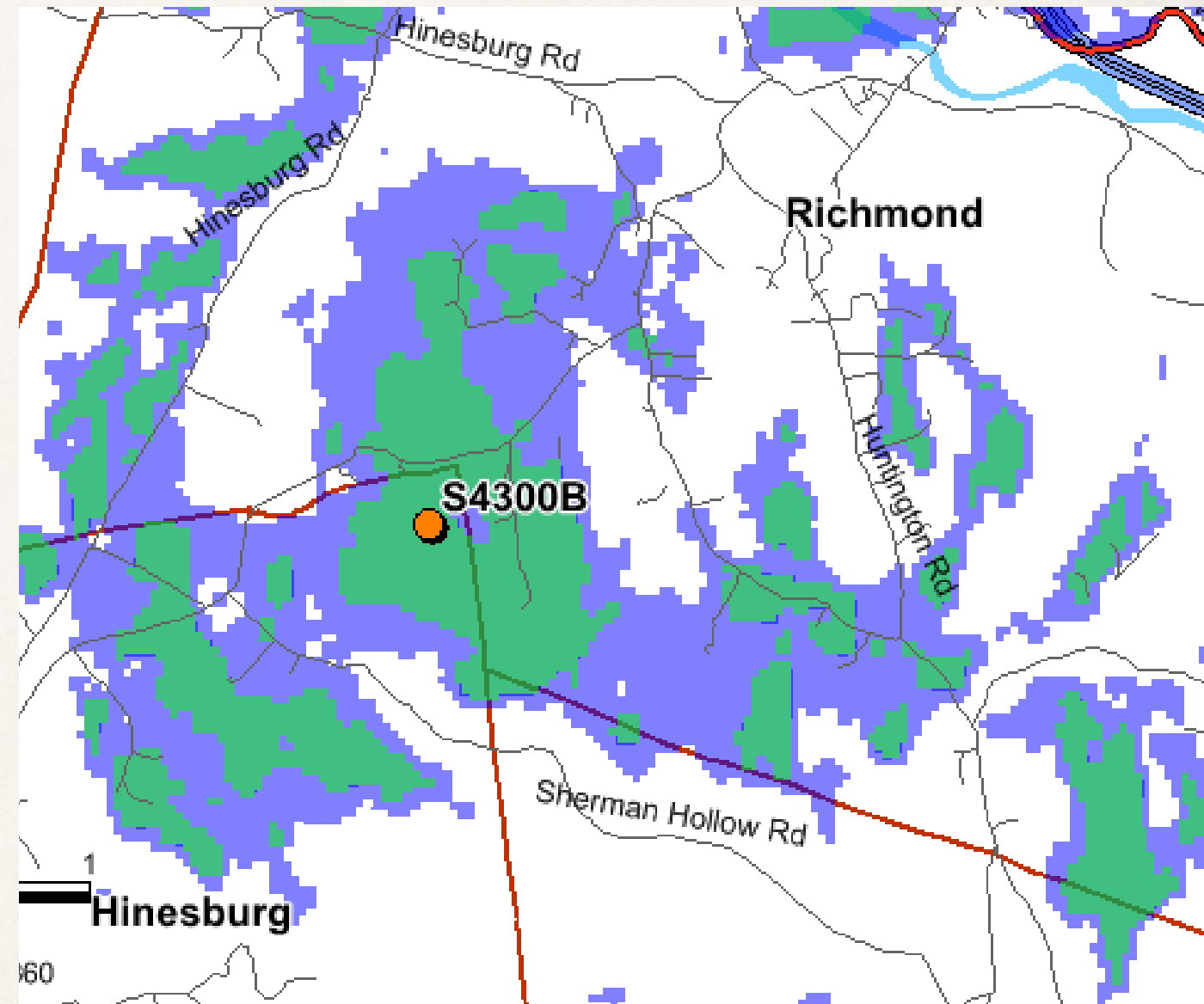




# Williams Hill Road Search Ring

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- ❖ Intended to service growing residential areas in Richmond / Hinesburg near Williams Hill, including Hillview, Cemetery, Mountain View, Wortheim, Swamp, Palmer, Sherman Hollow.

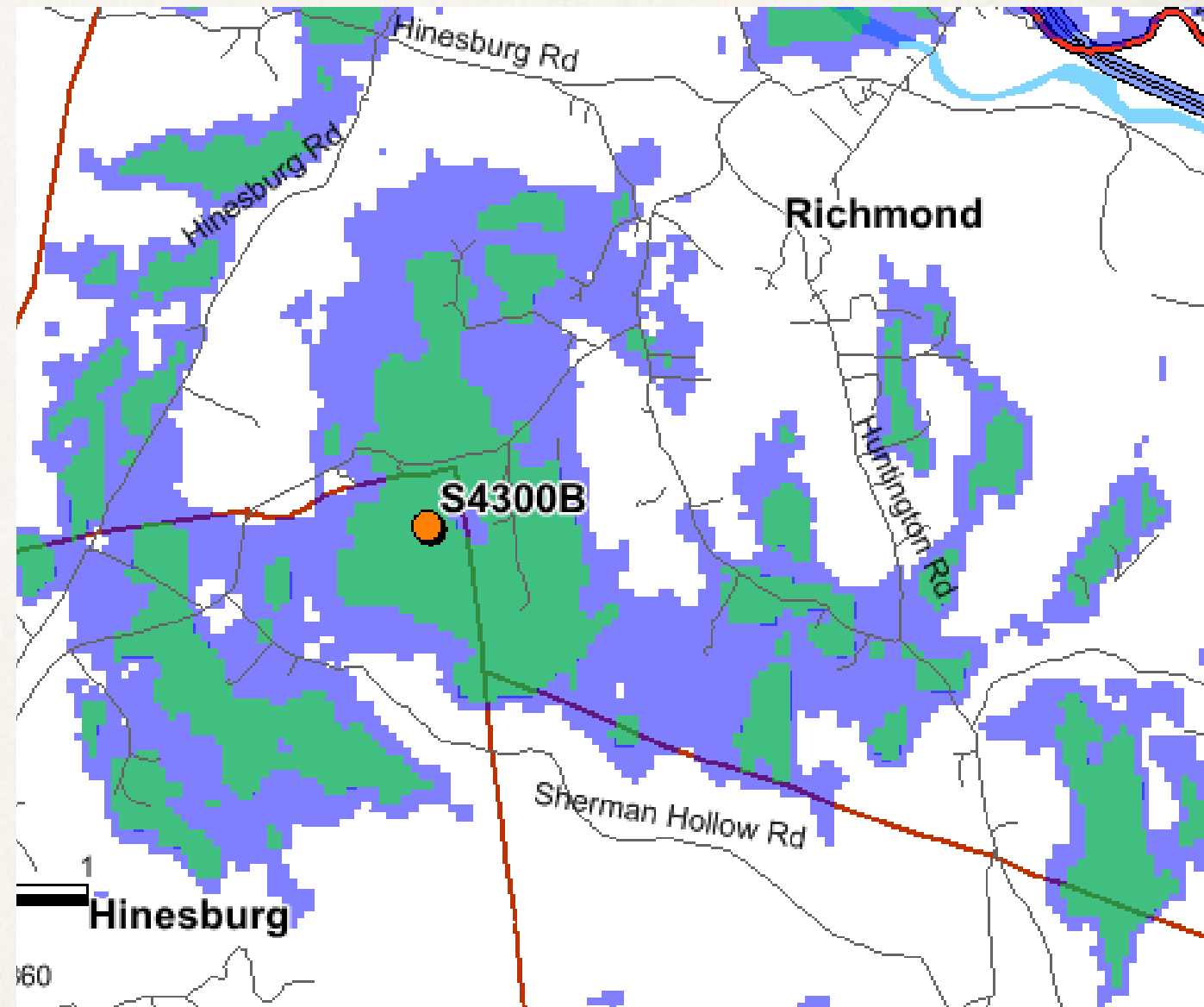




# Williams Hill Road Search Ring

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- ❖ Intended to service growing residential areas in Richmond / Hinesburg near Williams Hill, including Hillview, Cemetery, Mountain View, Wortheim, Swamp, Palmer, Sherman Hollow.
- ❖ Aesthetic impact of site at Linn property off of Williams Hill much greater than anticipated, with no clear way to mitigate.

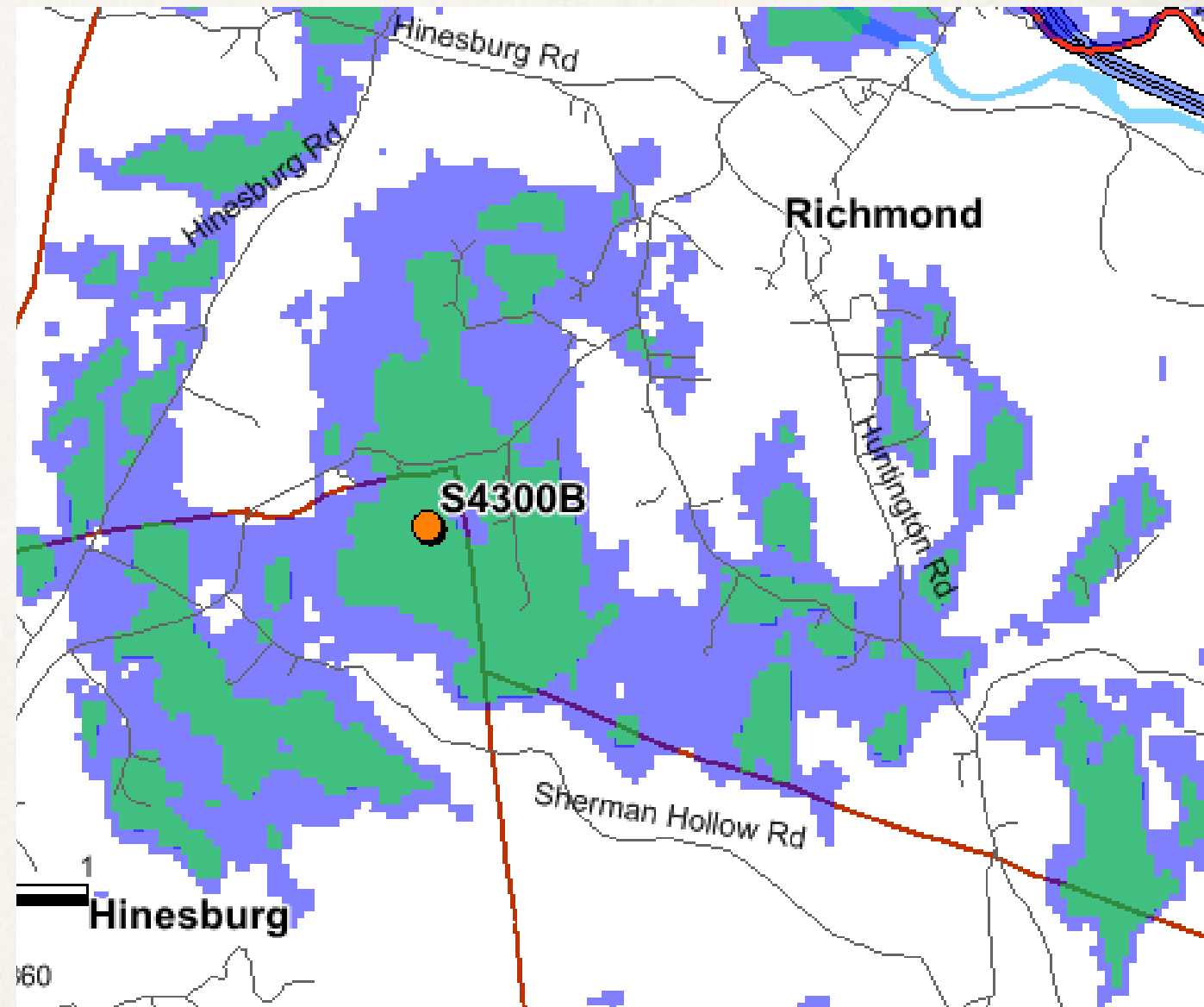




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- ❖ Site also located in a significant natural resources area, and revealed several construction challenges (e.g., steep slopes, storm water runoff, wetlands, wells)

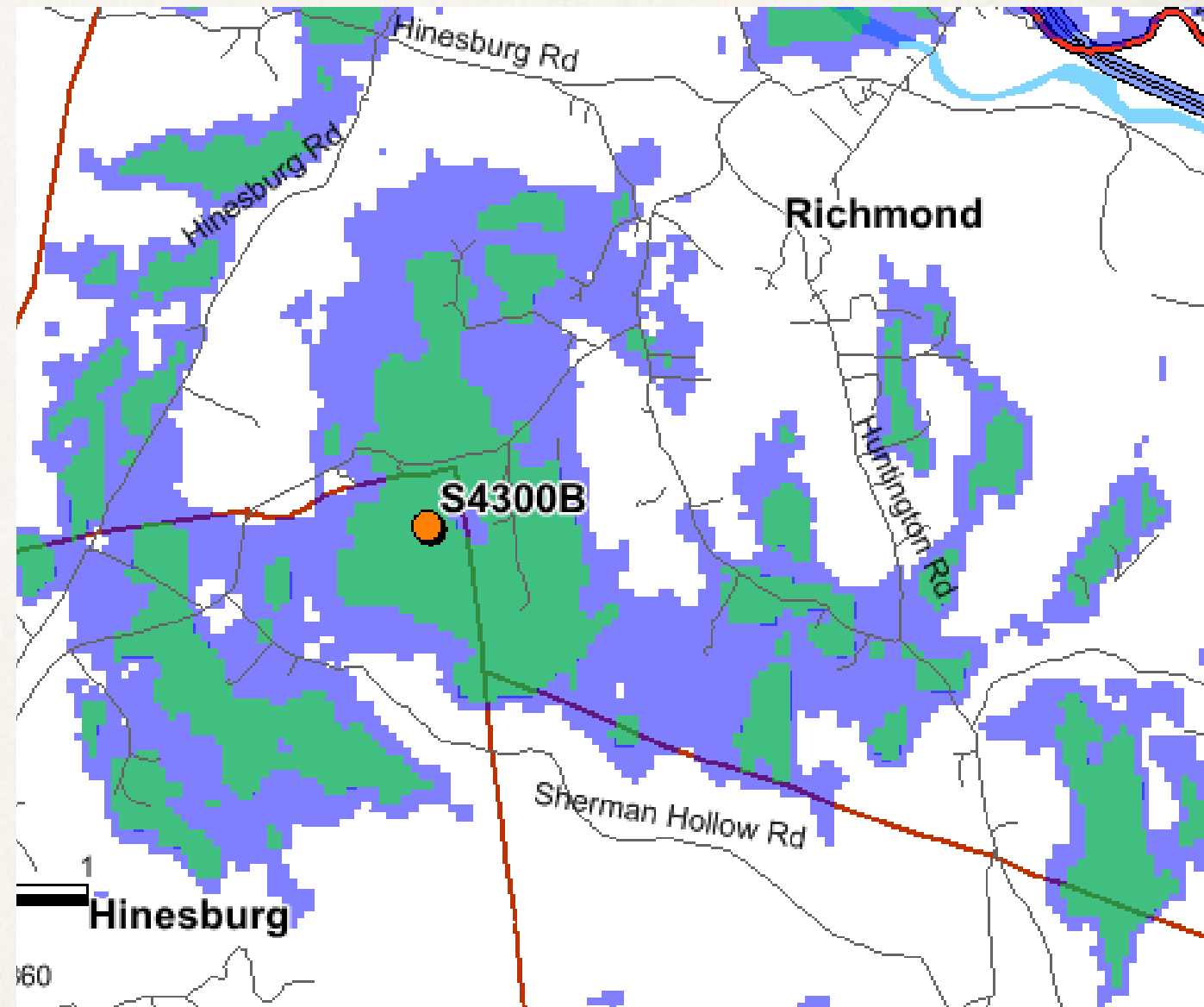




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- \* AT&T is withdrawing 45-day notice effective today in order to more closely review contours of Williams Hill search ring in order to potentially redefine primary coverage areas.

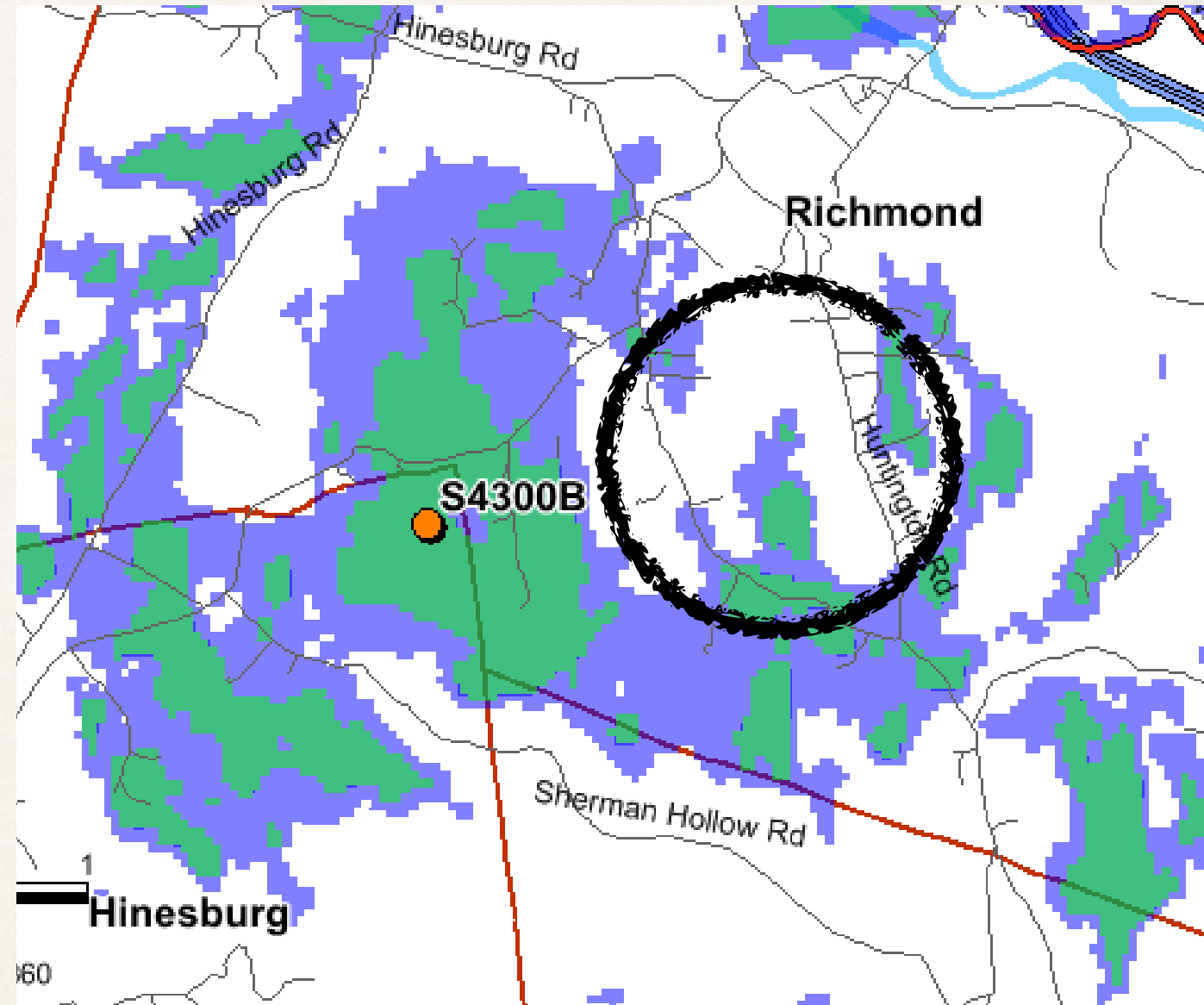




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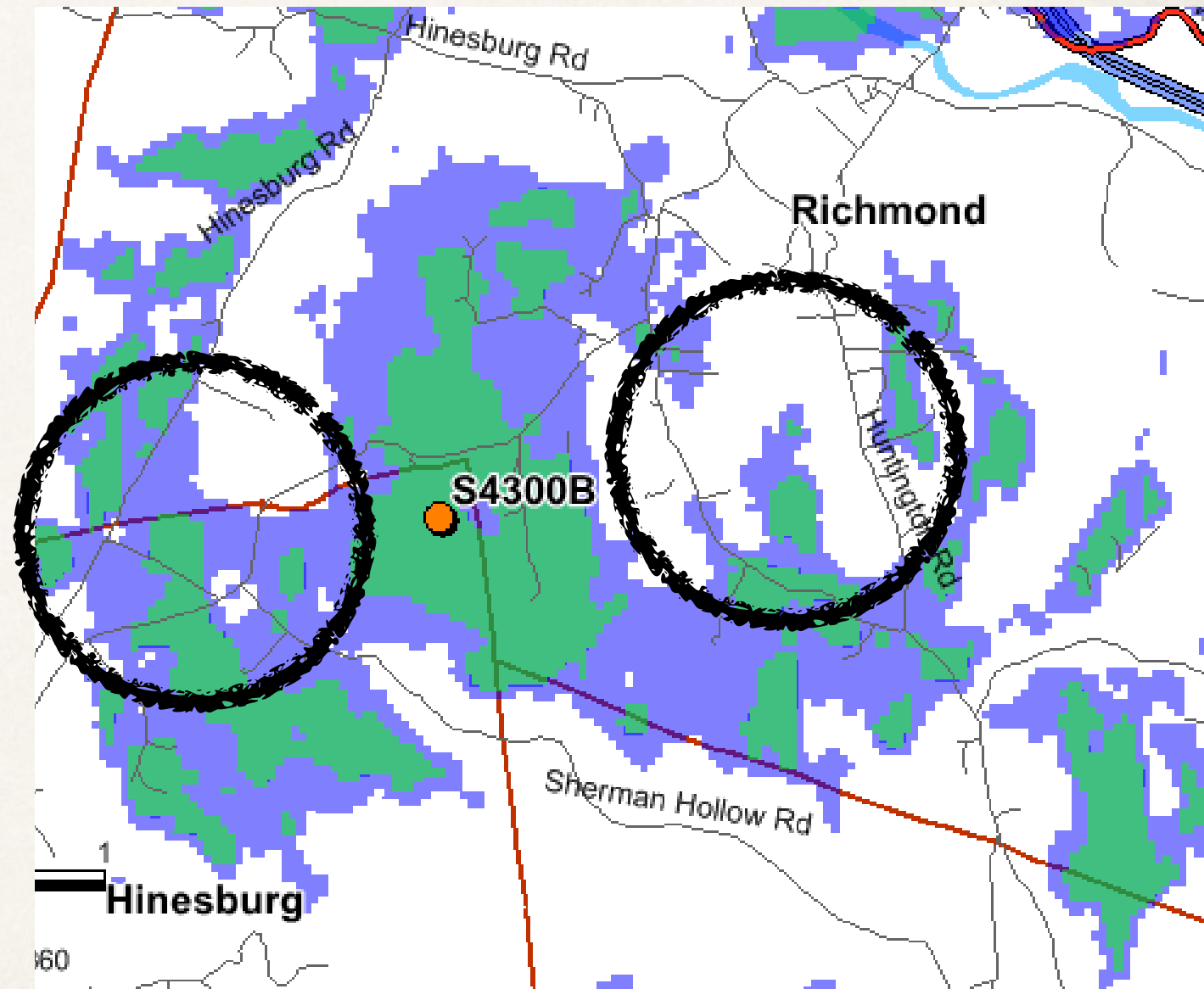




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# V. 30 V.S.A. 248a

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# V. 30 V.S.A. 248a

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- ❖ Law designed as part of Vermont Economic Stimulus to increase speed of broadband / mobile wireless deployment.





# V. 30 V.S.A. 248a

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- ❖ Law designed as part of Vermont Economic Stimulus to increase speed of broadband / mobile wireless deployment.
- ❖ Projects are first reviewed by municipalities, then by Dept. of Public Service, ANR, Public Service Board, Division of Historic Preservation.





# V. 30 V.S.A. 248a

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- ❖ Recommendations of Selectboards, Planning Commissions afforded substantial deference unless good cause shown.





# V. 30 V.S.A. 248a

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- ❖ Projects are first reviewed by municipalities, then by Dept. of Public Service, ANR, Public Service Board, Division of Historic Preservation.
- ❖ Recommendations of Selectboards, Planning Commissions afforded substantial deference unless good cause shown.
- ❖ Recommendation can be based on Town Plan / Wireless Provisions in Zoning Regulations





# V. Next Steps

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# V. Next Steps

- \* AT&T has withdrawn the 45-day notice for Williams Hill Road as of March 24, 2014:  
plan to refocus on coverage objective.



# V. Next Steps

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- ❖ In each case, there will be an opportunity for parties to comment during the 21-day notice period.



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- ❖ In each case, there will be an opportunity for parties to comment during the 21-day notice period.
- ❖ PSB will typically issue an order between 30 and 45 days from filing date, unless it finds a significant issue.
- ❖ AT&T may work with tower company to complete construction, manage and market the tower upon completion.





# AT&T: RICHMOND WIRELESS FACILITIES

Town of Richmond Selectboard, March 24, 2014

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*Presented By Andrew Kingman (AT & T), William J. Dodge (D R M), & Elizabeth L. Kohler (D R M)*

