

SPOTSYLVANIA COUNTY, VA TECHNICAL REVIEW

Addendum #1

NEW 150-ft MONOPOLE TOWER

Tower Owner: Milestone Communications

Carrier: T-Mobile

Property Owner: Dominion Virginia Power

Site: DVP Chancellor Substation 11100 Gordon Road Fredericksburg, VA 22407

Submitted by:

ATLANTIC TECHNOLOGY CONSULTANTS, INC. A Member of The Atlantic Group of Companies

ATC PROJECT #: 1047-20

September 13, 2017



THE ATLANTIC GROUP

EXECUTIVE SUMMARY

This Addendum #1 is a supplement to the original report dated March 1, 2017.

As background, the original application was requested by Milestone Communications (Milestone) the tower developer/owner, with T-Mobile Wireless (T-Mobile) as the FCC carrier, and Dominion Virginia Power (Dominion) as the property owner.

Milestone has made application to the County for the issuance of a Special Use Permit to construct a 150-ft monopole tower (with a 6-ft lightning rod) for a total of 156-ft AGL on property owned by Dominion Virginia Power at the Chancellorsville Substation located at 11100 Gordon Road, Fredericksburg, VA 22407.

Milestone is proposing to construct <u>outside of the sub-station compound</u> a 150-ft steel monopole type tower to enhance service delivery in the surrounding area.

Milestone Communications the tower owner/developer was requested by the Ni River Landing Home Owners Association after public discussion to seek a potential solution as a "stealth" structure.

Milestone produced a set of <u>preliminary drawings</u> having the tower camouflaged as a mono-pine stealth structure.

Because of technical issues in relationship to the power line static energy field and the manufacturing and construction of this type of mono-pine vertical tower, the consultant recommended to the County and Applicant (with Dominion Virginia Power agreement) that the mono-pine stealth solution would potentially create an Occupational Safety Hazard for any construction or maintenance personnel attending to this structure.

Therefore, the applicant (Milestone) has resubmitted drawings similar to the original set with revisions (8-15-2017).

If a "stealth" solution is an <u>absolute</u> requirement, the Applicant will be forced to move to another property and begin the Planning process again.

This Consultant recommends that the request for issuance of a Special Use Permit to allow construction as proposed be approved.

Leon My Landy to X

George N. Condyles, IV CPM President and COO Atlantic Technology Consultants, Inc.

1.0 TECHNICAL

1.1 Siting

The proposed tower site (approximately 35' x74') is within the existing property boundary of the substation compound footprint. The property is zoned RU (Rural) and located on Tax Map 21-A-93A on a 13.6244 acre tract. The proposed site can be accessed from Gordon Road and is physically located at 38° 15' 40.6" N and 77° 35' 20.38" W with a ground elevation of 312' ±.

Dominion maintains a 50' wide ingress/egress easement with a 12' wide gravel access road. The proposed easement will run approximately 2,000 feet to Gordon Road. (See Below)



Atlantic Technology Consultants, Inc. Mechanicsville, Virginia

Site Plan

The Applicant proposes the tower on the north property footprint to provide five (5) slots for Wireless carriers to co-locate and provide wireless broadband services to the local area. This is shown by the number of equipment pads and tower schematic drawings.



The Applicant (or any other wireless carrier) cannot use the existing Dominion tower because the existing tower is located inside the electric substation and, therefore, not accessible on a day to day basis due to the inherent danger of the sub-station.

Tower Purpose

As stated in the Application:

The Applicant's Telecommunication Tower will improve the existing quality of wireless communication services surrounding the area and will provide for enhanced wireless communication and data services to Applicant's customers in Spotsylvania County. The Telecommunication Tower will not adversely impact water, sewer, transportation, or other Spotsylvania County public facilities and services, while improving wireless communication services with minimal impact on adjacent properties.

Use of County Owned Properties

Not Applicable- None positioned in search area.

1.2 Setbacks

Spotsylvania County's Zoning Ordinance, Chapter 23 Zoning, Article 7A Division 1-PURPOSE, Section 23-7A.1.2.6 Wireless Communication Facilities goals states the following:

The goals of this section are:

- 6. (a) Promote the public health, safety and general welfare of the community. To avoid potential damage to adjacent properties from tower failure and falling objects through engineering structural standards and setback requirements. Sec.23-7A.4.1.2.
- 2. The following setback requirements shall apply:
- (a) All antenna support structures must maintain a minimum setback of one hundred and ten percent (110%) of the ANSI collapse zone standard from the nearest legally occupied structure and from all adjoining property lines. In the event that the same person(s) own several parcels, the setback shall be to the peripheral property lines created by the aggregate of the parcels.



Atlantic Technology Consultants, Inc. Mechanicsville, Virginia The centerline of the proposed monopole tower will be approximately 88' from the base of the tower.

To minimize the visual impact of the Telecommunication Tower to neighboring parcels;

- a. The Telecommunication Tower is located 159' feet from the western Property line, 706' feet from the northern Property line, 244' feet from the eastern Property line and 14' feet from the southern Property line owned by Salem Fields Community Church.
- b. The Telecommunication Tower is located more than 664' feet from any primary residence.
- c. The Telecommunication Tower is buffered by the existing trees.
- d. A eight foot (8') foot high chain link fence shall be installed around the perimeter of the Telecommunication Tower.

The proposed Telecommunication Tower will be located on property that also includes a Dominion Virginia Power Substation, which includes an existing telecom structure as described in more detail above.

1.3 <u>Co-location</u>

Co-location on any existing tower would not work for this project.

The scope which was discussed in the **Tower Purpose** above discusses the importance and mission of this tower.

Milestone states:

Encourage co-location of antennae on towers and/or alternative support structures,

The Telecommunication Tower monopole is one hundred fifty feet (150') in height to accommodate T-Mobile and four (4) additional carriers and to provide adequate coverage for topography of the immediate vicinity.

Dominion Virginia Power also has stated that they do not allow non power company personnel into the substations as company policy stated in the letter below:



Dominion Technical Solutions, Inc. One James River Plaza, 701 East Cary Street, Richmond, VA 23219 Mailing Address: P.O. Box 26666 Richmond, VA 23261 Web Address: www.dom.com

STATEMENT OF SUPPORT

October 17, 2016

Spotsylvania County Planning Office Attn: Wanda Parrish, Director

Re: Spotsylvania County Zoning Application (Chancellor Substation) (VP3091)

Dear Ms. Parrish:

This letter serves as support on behalf of Milestone Communications' application for rezoning in order to construct a new telecommunications monopole on Dominion Virginia Power property, located at 11100 Gordon Road, Fredericksburg, Virginia 22401; also referred to as Dominion Virginia Power Chancellor Substation.

Per company policy, no outside carriers can be permitted to collocate on structures within Dominion Virginia Power Substations, due to both security and safety concerns. The existing telecom structure is located within a secured access area within the Dominion Virginia Power Substation compound. Allowing outside carriers to collocate on the structure would potentially expose untrained workers to a variety safety hazards, as well as, pose a threat to substation security.

In addition, the existing telecom structure was only designed to support Dominion Virginia Power internal communications equipment and is at full capacity with the existing and proposed future appurtenances.

Please address any questions relating to this project to Milestone Communications.

Thank You,

Bob McGuire, P.E. Dominion VA Power Director - Electric Transmission Project Development and Execution

In addition, there are no communication towers or elevated structures (such as the power lines) with which this tower would create duplicity and thus not be in alignment with the County's policy of utilization of existing structures.



The weight of the five (5) wireless carrier's antennas and cables would far exceed the design standards for the closest kVA power line structure and thus would not make it an alternative.

The Consultant concurs with the Milestones design and data concerning no other towers in the area would provide the coverage objectives that T-Mobile is seeking.

1.4 Landscape Buffer

The Substation lies in a natural valley in what is known topographically as a "saddle." It cannot be seen from Gordon Road. Dominion designed it this way purposely.



Photo of Sub-station in topographic "Saddle"



Reference Plan

The proposed site is surrounded by a buffer of 70-ft to 90-ft soft and hardwood trees on two sides. The buffer is approximately 100-ft from the fence of the proposed compound.

The Applicant has submitted photo simulations from various locations and directions. Upon review of these photos, the Consultant concurs with the "estimated" view.



Location Map of Directions of Photo simulations



DVP CHANCELLOR PROPOSED MONOPOLE



Atlantic Technology Consultants, Inc. Mechanicsville, Virginia





DVP CHANCELLOR PROPOSED MONOPOLE





DVP CHANCELLOR PROPOSED MONOPOLE



The proposed site will have limited view from any neighborhoods.

1.5 Structural

The proposed 150-ft monopole tower is designed with the ability to support equipment operated by multiple Land Mobile Radio carriers, microwave dishes, and antennas.

The supplied site plans are signed and sealed by John Caborgoudy, PE, and a professional engineer licensed in the Commonwealth of Virginia.

A structural analysis was included in the application sent to ATC. The manufacturer Sabre Industries, Inc. is an international tower manufacturer in communications towers. This tower was designed as a heavy load tower, thus able to meet the loading requirements.

This tower was designed by Mr. Robert E. Beacom, P.E. of Sabre Industries, Inc. on November 18, 2016.



Profile View of Proposed 150' Monopole Tower

A structural analysis takes into account the structural loading of the tower's own weight, that of the proposed appurtenances, and that of various iterations of wind, ice, and other environmental loading.

It is noteworthy that this model of tower is designed to support appurtenances for multiple microwave dishes and antennas and remain within EIA/TIA-222-G structural guidelines (the accepted industry standard) for structures, which

mandates the ability to withstand the structural loading of all appurtenances, plus additional wind and ice loading.

Furthermore, in conformance with County ordinances, work at this site will remain in compliance with ALL federal, state, and local building codes and regulations if work proceeds as outlined in the application.

1.6 <u>RF Exposure</u>

FCC bulletin OET-65 provides guidance for a licensee proposing to construct a telecommunications support structure in calculation of RF exposure limitations, including analysis of the cumulative effect of all transmitters on the structure.

Documentation of a Radio Frequency exposure study was included with this application. It was performed by Mr. Klaus Bender, PE, of Site Safe, Inc.

Mr. Bender has evaluated the Radio Frequency plan and has rated it: **Compliant** for T-Mobile.

Appropriate steps, including warning signage at the site, must be taken to protect both the general public and site workers from unsafe RF exposure in accordance with federal guidelines.

RF site exposure warning signage shall be appropriately placed at this site, in conformance with FCC regulations and industry standards.

The Consultant concurs with this assessment.

(See full Letter Below)



1.7 Grounding

Grounding of all structures and equipment at an RF site is critically important to the safety of both personnel and equipment at the site Even a single component not meeting this standard places all other site components at risk for substantial damage. All structures and equipment at the site should maintain a ground potential difference of less than 5 ohms. (Industry Standard.)

The Applicant, Milestone upon the Ni River Landing Home Owners Association public request provided a camouflage solution by using "stealth" technology similar to the WCF currently located a Salem Church as a Site Plan Revision. The Applicant complied with this request with a revision to the Site Plan drawings.



Salem Church Mono-pine with spare branched for future co-locations.

Technical Issues

The consultant has worked on previous projects with the US Department of Energy (Western Power Administration-WAPA) designing and building microwave towers in massive power substations in Arizona and throughout the southwest.

Because of our experience in this field, it is our opinion for this site (Chancellor Substation) is at risk for static electricity induction or what is known as un-equal Ground Rise Potential and would place construction workers and maintenance workers with a greater Occupational Safety exposure if the mono-pine design is constructed.

The branches of the mono-pine tree and fiber glass type of materials wrapped with metal wire that is placed on metal poles then fitted to the vertical metal base. (Very similar to a residential Christmas tree.)

When the static electricity is emanated from the overhead High Capacity kVA lines located in the vicinity, the lines emit this static electricity. The metal/steel branches will absorb this energy and seek ground.



Proposed Tower would act as fault.

In summary, the "tree pole" will become "hot" or a "conductor" of energy seeking ground through the path of least resistance. (The human body.)

The consultant spoke with Dominion Virginia Power's Project Engineer Mr. Robert Capehart and both parties concurred that the "stealth application" would potentially create a safety issue.

<u>Therefore, the consultant recommends that the "stealth" requirement be abandoned</u> for this site on this property.

The tower as proposed would not be a hazard to Occupational Safety if grounded properly.

The location of the proposed monopole is adjacent to a massive power substation and because of the strategic geographic placement of the substation and proposed tower, the base would not be visible from any direction and only the top 75 to 100' would be blended into the massive kVA structures and lines. If "stealth" is an absolute requirement, the Applicant would have to move this proposed tower to another property and begin again the planning and zoning process.

Dominion Energy Virginia 701 East Cary Street, Richmond, VA 23219 Mailing Address: P.O. Box 26666, Richmond, VA 23261 DominionEnergy.com



August 15, 2017

Milestone Communications 12110 Sunset Hills Rd, Suite 100 Reston, VA 20190

RE: VP3091 Chancellor Substation

To Whom It May Concern:

This letter is in regards to the proposed telecommunication's pole that Milestone Communications has proposed to install at Dominion Energy's Chancellor Substation, located at 11100 Gordon Rd, Fredericksburg, VA 22401.

After reviewing information provided to Dominion Energy by George N. Condyles with the Atlantic Group, Dominion can no longer endorse the installation of what is referred to as a "tree pole" at this location. This is based on the method in which the branches of the "tree pole" are manufactured, which could possibly create an unsafe working condition due to ground rise potential. The location of the pole meets the Minimum Approach Distances required by Dominion Energy, so a standard monopole in the same location would be acceptable.

If you have any questions, please feel free to call me at (804) 771-3295.

256

Robert Capehart Dominion Energy Project Manager

Dominion Virginia Power letter concurring with not using "Stealth" technology.

1.8 General Safety

The consultant concurs with the Applicant's proposed site security and safety plans. They are:

- 1. This site compound will be surrounded by the designed eight (8) foot tall security fence with three strands of barbed wire on top to prevent unauthorized access to the tower site.
- 2. Safety measures to be placed at this site include RF exposure warning signage, site identification information, and routine and emergency contact information.
- 3. Include the installation of an OSHA-approved style of fall prevention cable.
- 4. Enhanced Grounding addressing Ground Rise Potential.

1.9 Interference

The Consultant sees no evidence of interference. T-Mobile will comply to all FCC requirements. The Applicant (Milestone) shall work in good faith to resolve any potential issues if this occurs in the future.

2.0 PROCEDUREAL

2.1 FAA Study: 2016-AEA-8927-OE

The approved Federal Aviation Administration study and report was performed on October 20, 2016.

The findings are: "This aeronautical study revealed that the structure does not exceed obstruction standards and would <u>not be a hazard to air navigation</u>".

The tower, if approved, does not require lighting.



Mail Processing Center Federal Aviation Administration Southwest Regional Office Obstruction Evaluation Group 10101 Hillwood Parkway Fort Worth, TX 76177 Aeronautical Study No. 2016-AEA-8927-OE

Issued Date: 10/20/2016

COLLEEN KHAN ENTREX 6600 ROCKLEDGE DR STE 550 BETHESDA, MD 20817

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure: Location: Latitude: Longitude: Heights: Monopole MILESTONE AT DVP CHANCELLOR SUBSTATION FREDERICKSBURG, VA 38-15-41.10N NAD 83 77-35-20.20W 322 feet site elevation (SE) 156 feet above ground level (AGL) 478 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

At least 10 days prior to start of construction (7460-2, Part 1) X Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed and maintained in accordance with FAA Advisory circular 70/7460-1 L Change 1.

This determination expires on 04/20/2018 unless:

- (a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
- (b) extended, revised, or terminated by the issuing office.
- (c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

2.2 FCC Antenna Site Registration

This site is **not** required to have an antenna site registration number.



2.3 Environmental Impacts

The National Environmental Policy Act of 1969 (NEPA), delineated in Title 47 of the Code of Federal Regulations, Part 1, Subpart I, sections 1.1301-1.1319, requires federal agencies to incorporate environmental considerations into their decision-making process when evaluating new construction proposals.

As a licensing agency, the Federal Communication Commission (FCC) requires all licensees to consider the potential environmental effects from their construction of antenna support structures, and to disclose those effects in an Environmental Assessment (EA) that must be filed with the FCC for review.

A Phase I NEPA report was submitted with this Application.

Typically, a NEPA Phase I Report should include the following items:

- NEPA Checklist
- NEPA Summary Report
- Associated documentation
 - Figures, Drawings, Maps
 - Tribal Correspondence
 - Land Resources Map and FEMA Floodplain Map
 - SHPO Correspondence (See next Section 2.4 "Historic Impacts)
 - Department of Game and Inland Fisheries Response
 - Department of Conservation and Recreation Response

The NEPA Phase I Assessment is a report that is submitted to the FCC only if requested by the FCC.

The NEPA Study was conducted by Milestone's consultant, Aarcher Inc. Their November 9, 2016 report states "**No Impact**" to any category of the NEPA and Section 106 criteria.

(See Conclusions below)

2.4 Historic Impacts

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires that State Historic Preservation Offices (SHPO) and the President's Advisory Council on Historic Preservation be given a reasonable opportunity to comment on all undertakings with the potential to affect historic properties.

The NEPA Study was conducted by Milestone's consultant, Aarcher, Inc. Their November 9, 2016 report states (in Section 3.0 Conclusion) "**No Impact**" to any category of the NEPA and Section 106 criteria.

2.5 Results of NEPA Phase 1 and SHPO

As mentioned above, the Environmental and Historic Consultant (Aarcher, Inc.) sees "**No Impact**" to the area if this Application is approved.

Note: The original Environmental Study for the placement of the Substation was the same criteria as the NEPA and Section 106 for the requested communications tower, thus it has been completed for this parcel of land.

The consultant concurs with these findings and position of Milestone.

Phase I Environmental Site Assessment Chancellor Substation



1.0 EXECUTIVE SUMMARY

On May 14, 2016, AARCHER, Inc. (AARCHER) was contracted by Entrex, on behalf of Milestone Communications, to conduct a Phase I Environmental Site Assessment (assessment) of a proposed tower leasehold area (the Subject Property) located at 11100 Gordon Road, Fredericksburg, Spotsylvania County, Virginia. Milestone Communications is the potential lessee of ground and access/utility ground space on the parent tract. T-Mobile proposes to place antennae on the proposed 150-foot monopole tower and install prefabricated equipment cabinets within a proposed 74-foot by 35-foot fenced compound. T-Mobile will utilize the proposed approximate 565-foot long road which will lead southward from a private gravel drive, to the Subject Property. The overall areal extent of the project will be less than one acre. The ground space and access/utility areas will be part of the proposed leasehold. Milestone Communications designated the Subject Property as site "Chancellor Substation".

The purpose of the assessment documented in this Report is to permit Milestone Communications to satisfy one of the requirements to qualify for the innocent landowner defense to CERCLA liability: "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined in 42 USC Section 9601(35)(B).

The scope of the assessment is generally guided by ASTM Practice E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM Practice E1527-13). Any exceptions to, or deletions from, this practice are described in Section 2.2 and 2.3 of this Report.

This assessment revealed no evidence of Recognized Environment Conditions (RECs) as defined by ASTM Practice E1527-13, in connection with the Subject Property.

This assessment revealed no evidence of Historical Recognized Environment Conditions (HRECs) as defined by ASTM Practice E1527-13, in connection with the Subject Property.

This assessment revealed no evidence of Controlled Recognized Environment Conditions (CRECs) as defined by ASTM Practice E1527-13, in connection with the Subject Property.

2.0 INTRODUCTION

2.1 Reference to Detailed Scope-of-Work and ASTM Standard Practice E1527-13

The scope of the assessment is generally guided by ASTM Practice E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM Practice E1527-13). Any exceptions to, or deletions from, this practice are described in Section 2.2 and 2.3 of this Report.

The purpose of the assessment documented in this Report is to permit Milestone Communications to satisfy one of the requirements to qualify for the innocent landowner defense to CERCLA liability: "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined in 42 USC Section 9601(35)(B).

This assessment is not intended to include *de minimis* conditions that generally do not present a material risk of harm to the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

ENVIRONMENTAL SITE ASSESSMENT REPORT - PRIVILEGED DOCUMENT AARCHER, Inc.

2.6 T-Mobile Network

T-Mobile is the co-applicant searching for vertical structures to attach their antennas and electronics. This area is a growing area demographically, and with new retail, residential housing, commercial real estate, this area has become a busy location.

T-Mobile desires to expand their LTE service in this area. To do so, they must deploy this site to "fill in" the data/broadband services.

Page 1

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T-Mobile Confidential

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Atlantic Technology Consultants, Inc. Mechanicsville, Virginia



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Atlantic Technology Consultants, Inc. Mechanicsville, Virginia

3.0 RECOMMENDATIONS

This request for approval to construct a 150-ft monopole tower (with a 6-ft. lightning rod) as proposed represents an appreciable intent on the part of the Applicant to conform to all applicable federal, state, and local regulations, accepted industry practices, and specific County ordinances regarding telecommunications towers.

It is therefore the recommendation of this Consultant that the request for issuance of a Special Use Permit be approved.

In closing, this consultant remains available to address any comments or questions which may arise following review of this report. Any interested party with such comments or questions may feel free to contact this firm, which remains committed to delivering independent, objective, unbiased, and thorough consulting services.

Respectfully submitted,

Georg M. Lamby to A

George N. Condyles, IV, CPM President & COO



Entrance Gate from Gordon Road



Safety Signage required by OSHA



Chancellorsville Substation with Dominion MW Tower



Power Line Structures-South



Power Line Structures-North



Approximate location of Tower compound