

St. Mary’s County – Conditional Uses

25.6. Standards.

No conditional use shall be approved by the Board of Appeals unless the Board finds that:

1. The conditional use complies with the standards of the district in which it is to be located and standards applicable to that use; and

The subject property is located in the Rural Preservation District (RPD). The proposed telecommunication tower and equipment are allowed by Conditional Use, pursuant to Article V, Section 51.3(90). The proposed tower and equipment compound comply with the setback and design standards for that district. Additionally, the proposed improvements comply with the Special Design Standards for Commercial Telecommunication Towers, as outlined in Article 5 – Section 90 and 91 (see attached justification statement addressing those standards).

2. The establishment, maintenance, and operation of the conditional use will not be detrimental to or endanger the public health, safety, convenience, morals, order, or general welfare; and

The proposed telecommunication tower facility is proposed at this location in order to provide wireless service in this area of St. Mary’s County, including the ability for the County to utilize the tower for their public safety communication system. The facility is unmanned and will only generate an average of 1 vehicle trip per month for maintenance checks, and does not require utilization of public water or sewerage facilities. The telecommunication antennas that will be installed on the tower by Verizon, and by any future carriers, transmit radio frequency emissions; however, all such emissions are within the limits established by the FCC in order to protect the safety and health of the general public. The antennas will not be accessible to the general public, and the professional personnel who would need to access the antennas for repairs or maintenance are trained in RF emission safety and conduct for when they are at/on a telecommunication facility.

Therefore, the proposed conditional use will not be detrimental to or endanger the public health, safety, convenience, morals, order, or general welfare to residents or visitors to this property or area.

3. The conditional use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted, and will not substantially diminish or impair property values within the neighborhood; and

The proposed telecommunication tower facility is setback at least 273’ from all property line boundaries. It will be surrounded by mature forest areas around 90% of the compound in which the tower and equipment shelters/cabinets will be located, thereby buffering the visibility of the facility from adjacent properties to the greatest extent possible. As such, the proposed conditional use will not be injurious to the use and enjoyment of other properties in the vicinity, nor should there be any substantial diminishment in property values within the neighborhood.

4. The proposed use at the proposed location will not have adverse effects above and beyond those inherently associated with the proposed use irrespective of its location within the zoning district; and

The subject property is very large; approximately 25 acres in size, with about 2/3 of the acreage being mature forest area, and may be expected to have less impact at this location than on other properties within the zoning district. The proposed telecommunication tower facility was selected to be located in such a manner as to have forest area around as much of the perimeter of the compound as possible in order

to provide more visual buffering for adjacent property owners than if the proposed facility were located on a property that did not have the forest buffer that this property provides.

5. Adequate utilities, access roads, drainage, and/or necessary facilities have been or are being provided; and

The proposed conditional use only requires electricity service. No water or sewer services is needed since the use is unmanned. The proposed facility will be accessed from the existing Sotterley Road, and by an extension of the existing driveway that comes off of that road, as shown on the proposed plans.

The Concept Plan for this proposed project has gone through T.E.C. review and acceptance. A final site plan addressing all stormwater management, drainage, and sediment erosion control requirements will need to be reviewed and approved by the applicable agencies in St. Mary’s County, after approval of this conditional use application, and prior to issuance of any permits to construct the tower.

6. Adequate measures have been or will be taken to provide ingress and egress following a design that minimizes traffic congestion in the public streets; and

Since the proposed use is unmanned, and does not generate any daily vehicle trips, the use will not cause any traffic congestion or concerns on Sotterley Road or any other roadways in the County.

7. The proposed conditional use is not contrary to the goals, objectives, and policies of the Comprehensive Plan; and

Chapter 5 of the Comprehensive Plan addresses Sensitive Areas protection. The proposed telecommunication tower facility does not disturb or negatively impact any streams, floodplains, wetlands, endangered species habitat, steep slopes, riparian buffers, or Chesapeake Bay Critical Areas.

Chapter 9 of the Plan addresses Economic Development. Although this chapter does not specifically mention or address telecommunication/WiFi networks, such service is an integral part of economic growth for large or small businesses, as well as the growing segment of home-based businesses.

Chapter 10 of the Plan addresses Community & Public Facilities. Wireless infrastructure is a necessary service for educational facilities at all levels, as well as for emergency services. St. Mary’s County is proposing to utilize this tower for installation of whip antennas and a satellite dish antenna, as part of their emergency communication service network.

Therefore, Verizon Wireless believes that the proposed use is not contrary to the goals and objectives on the Comprehensive Plan.

8. The conditional use shall, in all other respects, conform to the applicable regulations of the district in which it is located or to the special requirements established for the specific conditional use in Chapter 51.

The proposed conditional use will conform to all other applicable regulations for the RPD zone and also the design standards outlined in Chapter 51 for commercial communication towers.

**St. Mary’s County
Article 5, Section 91 - Communication Tower, Commercial.**

a. General Standards:

(1) Site plan approval shall be required.

Verizon Wireless has gone through Concept Plan approval with the T.E.C. already. If this conditional use application is approved, Verizon would then proceed with submission of the Final Site Plan, including all applicable stormwater management and sediment erosion control review.

(2) Commercial communication towers shall meet the general standards and purpose for public safety communications towers [in Section 90].

90. Communication Tower, Public Safety or Other Non-Commercial.

a. General Standards:

(1) Site plan approval shall be required.

Acknowledged.

(2) Purpose. In balancing the interests of County residents, tower contractors, telecommunications providers and telecommunications customers, and for the general health, safety, and welfare of the public, these regulations are intended to:

(a) Provide for the appropriate location and development of communication towers by maximizing the use of any new and existing towers, minimizing the need for new towers, encouraging the use of alternative tower structures or tower sites, and minimizing the number of towers in the County. (Note: The term “existing towers” includes towers already constructed and in use, as well as towers submitted to the St. Mary’s County Department of Land Use and Growth Management for review and approval.) The Department of Land Use and Growth Management will continuously maintain a list of existing towers, including owner points of contact, and shall make this list available to all new tower applicants; and

Verizon Wireless performed a search for existing structures or towers in the vicinity of the subject property, in the area where wireless coverage is desired, and did not find any such structures on which collocation would be feasible. There is an existing TMobile tower located at the Hollywood VFD property on Three Notch Road; however, that tower will not achieve the system coverage desired.

(b) Avoid potential damage to adjacent properties from tower or antennae failure through engineering and careful siting of tower structures and antennae; and

The proposed telecommunication tower is located more than its own height from any adjoining property line. Even if the tower were to topple over endwise, it would not impact or encroach onto any adjacent property. It should be noted that monopoles are engineered to have a “fall zone” significantly less than their overall height. The plans indicate an approximate fall zone radius of 75’ because the tower has not been engineered at this time. Verizon can provide a more exact fall zone delineation on the construction drawings, at the permit stage.

(c) Minimize the adverse visual impacts of communication towers through careful siting, design, screening, and camouflage; and

Verizon Wireless feels that the subject property offers an ideal siting layout. The property is heavily forested, with interspersed, natural, clear areas. Verizon is able to situate the

tower facility in one of the clear areas, without having to remove any forest area, and the maintained forest around the entire compound provides excellent visual buffering from all directions. The only portion of the facility that will be visible will be the upper portion of the tower itself, estimated to be the upper half.

(d) Ensure that proposed siting and development of communication towers is done in a reasonable manner, that is, not to the detriment of the zone in which it is located and not contrary to the intent of the Comprehensive Plan. The preference of the Board of County Commissioner’s is for communication towers to be sited on County or other publicly owned property. If this is not technically practical or feasible, then the preference is for siting communication towers on properties zoned for commercial and industrial purposes. If the facility is proposed on property zoned residential or Rural Preservation District, the design and siting shall include measures to preserve the rural and/or residential character of the area; and

The subject property is zoned RPD. Although this is lower on the County’s siting preference hierarchy, Verizon believes that the characteristics of this parcel make it an ideal candidate. The only nearby non-residentially zoned properties are either small in size, which makes setback compliance difficult, or there is little to no visual buffer (ie: forest area) available. The layout and location of the tower facility on the subject property maintains the rural and residential characteristics of the property.

(e) To encourage private/public partnerships for communications facilities, where appropriate, that promote the communications needs of the County.

Originally, the proposed tower was to be 150’ tall. The County Emergency Management Services office contacted Verizon Wireless regarding this proposed tower and expressing their desire to place equipment on it. Verizon Wireless consequently worked out a revised design with the property owner and the EMS office, to raise the tower height to 190’ to allow the County antennas to be placed at the 170’ height level, and keeping Verizon’s antennas at a rad center height of 150’.

(3) All communication towers, structures and equipment shall meet or exceed current standards and regulations of the FAA and the FCC. Pursuant to Federal Communications Commission Regulations 1.1301-1.1319, as amended from time to time, communication towers shall be subject to the provisions of the National Environmental Policy Act (NEPA).

Verizon Wireless has filed for, and obtained, and FAA determination for the proposed tower height (see enclosure). No lighting is currently required for this tower. Verizon has also performed a NEPA/SHPO evaluation, which concluded that the proposed facility will not have an adverse impact on any historic structures or properties.

(4) Approval of proposals for tower construction shall be subject to satisfactory completion of an aeronautical study. The resulting FAA aeronautical study shall address the following:

(a) What impact the construction of the tower will have on the Airport’s current approach minimums based on a minimum descent altitude and visibility;

A copy of the FAA determination for this proposed tower is enclosed for the Board’s review. The approved height takes into account the flight patterns for any vicinal airports.

(b) What potential impact on the planned improvements will be realized in accordance with the Airport Master Plan; and

The proposed tower is approximately 2.5 miles from the St. Mary’s County Regional Airport. The FAA determination indicates that the proposed tower height (190’) would not be a hazard to air navigation.

(c) Assurance that the FAA Flight Procedures Branch has also made a determination of whether there is an incompatibility with the published instrument approach procedures.

The FAA issued a determination for the proposed height of the tower, and there were no comments requiring the tower to be lowered.

(5) Applicants shall file a Notice of Proposed Construction or Alteration, FAA Form #7460-1 (as amended from time to time) with the Federal Aviation Administration as required by the FAA or applicable Federal law, and forward copies of the form and any FAA response received, via first-class mail, postage pre-paid to:

(a) St. Mary’s County Department of Land Use and Growth Management, P.O. Box 653, Leonardtown, MD 20650;

(b) St. Mary’s County Regional Airport at St. Mary’s (attn: Airport Manager) 44200 Airport Road, California, MD, 20619; and

(c) Department of the Navy, Commanding Officer, Naval Air Station, 22268 Cedar Point Road, Unit NASAD, Patuxent River, MD 20670-1154.

A copy of the FAA determination has been sent to the above listed agencies and also included with this conditional use application.

(6) To the extent permitted by law, no tower or equipment or antennae attached thereto shall cause localized interference with reception of television and radio broadcasts, nor shall any tower or equipment or antennae attached thereto interfere with existing lines of communication used for public safety purposes.

Verizon Wireless has included a NonInterference Certification Letter with this conditional use application.

(7) Minimum site size, setbacks, and buffers shall be identical to those required for commercial communication towers.

Acknowledged.

(8) The normal lot setbacks for each district shall apply and may be reduced pursuant to Section 61.7, where applicable.

Verizon Wireless is not requesting any setback reductions in relation to the proposed telecommunication tower facility.

b. Conditional Standards:

(1) The application submitted by the applicant to the Board of Appeals for a commercial communication tower, shall satisfactorily address the requirements for conditional use applications as defined by the zoning ordinance for any conditional use whatsoever, as amended from time to time, and shall in addition include the following:

(a) A system design plan that shall include, at a minimum, radio frequency parameters, tower height; number and location of antennae on the tower, all existing or proposed buildings within the “fall zone”; radio frequency output; effective radiated power; and azimuth antenna type.

The enclosed plans and antenna specification sheets provide all information specified above. In addition, a letter from Millennium Engineering, dated April 25, 2014, provides information concerning the facility design, antenna models, and transmission frequencies.

(b) A signal coverage/propagation map of the area to be served by the proposed tower. The propagation map shall show signal intensity in dBm (for at least three signal intensities). The propagation map shall also show major roads and major developments, towns, villages, etc. The County reserves the right to request propagation maps for other sites or height alternatives.

Propagation maps are enclosed with this application, showing the existing and proposed coverage projections for this area, at the antenna height of 150'. An additional propagation map at 120' height level has been provided to demonstrate the need for the proposed Verizon antenna height level.

(c) The signal coverage/propagation map shall show coverage area available under existing towers with co-location opportunities, approved towers and antennae/equipment installed on other structures (water towers, buildings, etc.).

See (b) above.

(d) Evaluation of the tower's relationship to other antenna sites, existing off-site structures taller than 50 feet, communication towers, and water tanks within a two mile radius of the proposed tower. Verifiable evidence must be provided of the lack of space or unsuitability of any existing tower or structure within that search radius.

Although there are a handful of other FCC registered structures within a 2 mile radius of Verizon's proposed site (see enclosed ASR report and accompanying map), they have been evaluated by the Verizon RF engineers and ruled out as either being too short or outside of the targeted coverage area – which is the east side of Route 235 (Three Notch Road).

(e) A detailed engineering analysis of the proposed new tower, including a summary of the proposed tower's capacity to provide space for future co-location by others.

Telecommunications typically do not have the actual tower design from the manufacturer until after the use has been granted zoning approval for a conditional use, and the information is submitted with the building permit application. Verizon Wireless stipulates that the monopole will be designed for collocation, as depicted on the plans, and will submit the technical design specifications with the permit applications.

(f) Federal Communications Commission review, evaluation and approval under the National Environmental Policy Act of 1969, and applicable Federal Communication Commission regulations and standards through the Office of Engineering and Technology as required by federal law.

A NEPA/SHPO evaluation for the proposed telecommunication tower facility was performed and the conclusion was no negative impact.

(g) The specific type of tower to be constructed and the proposed materials to be used in the construction of the tower.

The proposed tower is a monopole. It will be constructed of aluminum/steel alloy, and will be a standard light gray color, as will be the antennas.

(h) The design of the proposed tower shall be sealed by a licensed engineer licensed to practice in the State of Maryland.

The tower and foundation design plans will be sealed and signed by a license professional engineer. Verizon Wireless will submit this information with the future building permit application.

(i) Identification of all noise, odor and other potential nuisance producing facilities, appurtenances and/or outbuildings, or the like, that are associated with the proposed use.

A back-up generator is proposed to be installed, on a concrete pad, within the fenced-in compound, as shown on the plans submitted with this conditional use application. The generator will cycle on roughly once a week, for about ½ half an hour, during non-emergency periods. Given the significant distance from all property lines, and the fact that the surrounding forest areas will provide an acoustical buffer, Verizon does not believe that the generator will create a nuisance with respect to noise or odor.

(j) Identification of the maximum number of antennae and co-location spaces that can safely be placed on the tower. An engineering statement must be submitted certifying that the proposed tower can accommodate a minimum of three users, however, a minimum of five is preferred. If this is not possible, a justification statement must be provided that is based on structural, height, radio frequency or engineering limitations.

The proposer tower will be designed to hold a minimum of three carriers. The exact number of antennas that could be accommodated on the tower can not be determined at this time. The size and weight of each individual antenna has to be known in order for such a determination to be made. Verizon Wireless requests that approval of this application be conditioned on providing the structural design details for the tower with the future building permit application.

(k) An elevation drawing, depicting the tower at its proposed height, with all planned antennae/equipment shown.

The enclosed plans show the tower elevation and permissible installation heights for Verizon Wireless, the County's equipment, and two collocators.

(l) A visual impact study, including photo-simulations, demonstrating that a proposed tower shall not unreasonably interfere with the view of, or from sites of significant public interest such as a public park, a state or county designated scenic road or river, or a structure on the historic sites survey or in a historic district, located within two miles of the proposed tower site. The Department of Land Use and Growth Management staff may request, and the Board of Appeals may require the applicant to conduct a balloon or crane test and to submit additional photo-simulations or a line-of-sight analysis documenting the visual impact the proposed tower may have on surrounding sites. The applicant shall provide the County and adjacent property owners with at least a 48-hour notice of the test. If the applicant's visual impact analysis relies upon an existing tree buffer on the subject property (but outside the lease area), the applicant, as a condition of approval, shall secure an easement to preserve/protect that buffer for the duration of the conditional use.

Verizon Wireless has included photosimulations of the proposed 190' tall tower with this application. The simulations were taken from various locations in the vicinity of the subject property, as shown on the location map included with the simulations. There are no significant historic properties or sites, or public parks, in the vicinity that would be negatively impacted by the installation of the proposed tower on the subject property.

(m) An engineering statement prepared by a licensed professional engineer certifying that the proposed facility will meet or exceed all regulatory emissions standards established by the FCC. This statement shall identify the predicted exposures for the specific equipment proposed along with the allowable federal limit of exposure. If future co-location occurs on the tower, then emissions statements shall be provided for each co-locator.

Enclosed with this conditional use application is a certification from the professional Radio Frequency company indicating that the proposed facility will operate within the limits of FCC emission standards. Future collocators can address the impact of their equipment on the cumulative emission levels for this site.

(n) An engineering statement prepared by a licensed professional engineer describing the contained fall design for the tower in the event of a structural failure.

The fall design information will be available once the tower has been ordered by Verizon Wireless, from the manufacturer, typically much closer to the permit stage.

(o) Evidence that at least one telecommunications carrier has agreed to locate antennae on the tower.

Verizon Wireless is a licensed telecommunication carrier and is the applicant for this tower, and will be placing there antenna equipment on it.

(p) A plan that describes company plans for new towers or antenna placements within the entire County during the next two years. The plan shall include propagation maps (showing at least three different signal intensities in dBm) that depict existing and proposed sites and describe the anticipated timing for proposed sites. Thereafter, each company that owns the tower, or places telecommunications equipment on the tower, must submit an annual plan that describes the company’s plans for new towers or antenna placements within the County in the next two years. For each tower owner, this document will also identify what equipment is placed on each tower, the height at which the equipment is placed, and the owner of the equipment. The plan described in this section need only be prepared one time during the year and does not need to be revised with each application submitted during the period of coverage.

A general location map of existing and proposed/future sites within St. Mary’s County is enclosed for the Board’s review and consideration.

(q) All fees for the costs of any technical review of the application by an independent consultant hired by the County.

Verizon Wireless feels that this proposed telecommunication facility should not need to be referred to an independent consultant. However, if the County does request an independent review, Verizon Wireless is amenable to paying for reasonable costs associated with such a review.

(2) The applicant for a new commercial communications tower shall demonstrate to the Board of Appeals that collocation on existing commercial towers, public safety towers, or other appropriate structures is not feasible. Feasibility shall be demonstrated by an analysis and explanation prepared by a licensed professional engineer that identifies why other existing or proposed towers within a two-mile radius cannot be used. The analysis must evaluate any reasonable, technically feasible alternative locations and/or facilities that would provide the proposed communication service and provide a structural analysis indicating that no existing or proposed tower can be structurally modified to meet the applicant’s needs. Replacement of an existing approved tower with a new tower on the same site shall be an alternative addressed in the analysis. The intention of analyzing the alternatives analysis is to present alternative strategies that would minimize the number, size, and adverse visual, environmental, and public safety impacts of facilities necessary to provide the needed services to the County. The analysis shall address the potential for collocation at an existing or new site and the potential for locating facilities as close as possible to the intended service area. It shall also explain the rationale for selection of the proposed site in view of the relative merits of any of the feasible alternatives. Physical constraints may be considered but will not be determinative. Approval of the project is subject to the Board of Appeals making a finding that the proposed site results in fewer or less severe impacts than any feasible alternative site.

In essence, it is Verizon’s assertion that there are no existing towers or structures on which to collocate that are tall enough or in the correct location to provide the desired wireless coverage for Verizon’s network. Enclosed is a map showing all registered FCC structures within a 2 mile radius of the proposed facility, along with a structures list that indicates the height and current status of the structures. Several of the structures are cancelled/terminated (item #2 and item #3 on the list). Item #1 and item #6 are too short; 13.7 meters and 31.0 meters tall respectively. Item #5 is out of Verizon’s target area. Item #7 is not built and is apparently not going to be built, which is part of the reason why the County has requested to collocate on this proposed Verizon tower. Item #4 is the existing tower at the Hollywood VFD property. This structure is approximately the same height as Verizon’s proposed tower, but it is a little too north and west of Verizon’s target area and would create too much overlap of coverage with the next closest Verizon facilities to the north and west. A radio frequency engineer will attend the BOA hearing to provide additional testimony on this and to answer any questions the Board may have.

(3) Co-location is not deemed possible if the Board of Appeals finds that:

(a) Planned equipment would exceed the structural capacity of existing and approved towers or towers proposed to be constructed, considering existing and planned use of those towers, and such towers cannot be feasibly structurally modified or reinforced to accommodate planned or equivalent equipment. In the case of existing towers owned by the applicant, the applicant shall have demonstrated to the Board of Zoning Appeals that a new (replacement) tower cannot be constructed on the existing approved site to satisfy its new requirements.

N/A

(b) Planned equipment will cause interference with other existing or planned equipment for the tower, and the interference cannot be prevented.

N/A

(c) Existing, approved towers, or towers proposed to be constructed do not have space on which to place planned equipment so it can function effectively; or

N/A

(d) Existing, approved towers, or towers proposed to be constructed, will not provide reasonable signal coverage that is appropriate for St. Mary’s County (-.89 dbm) (demonstrated through propagation maps showing signal coverage).

Verizon believes that this category is the one that corresponds with the justification for the proposed facility.

(4) The tower shall be constructed so as to provide adequate capacity for future co-location of other commercial and/or government-operated antennae, unless the applicant demonstrates why such design is not physically feasible. The system design plan shall delineate areas near the base of the tower to be used for the placement of additional equipment buildings for other users.

The proposed tower is being designed to accommodate County equipment, as shown on the plans, as well for two additional collocators.

(5) No signals, lights or illumination shall be permitted on the tower unless required by the Federal Communications Commission, the Federal Aviation Administration, or the County.

The proposed tower is not required by the FAA to be lighted. No signage, other than required FCC safety signs, will be placed on the tower or equipment compound fence, or on any equipment shelters/cabinets.

(6) No commercial advertising or other signage shall be permitted on the tower.

No commercial advertising is proposed.

(7) All obsolete or unused facilities, including buildings, towers, and all other improvements associated with the tower, shall automatically be deemed abandoned upon 24 months of continuous cessation of operations and shall be removed at such time without cost to the County. The applicant shall provide a bond, letter of credit, or other appropriate surety at time of approval as approved by the County to cover the cost for demolition of the facility and site restoration.

Verizon Wireless will remove any tower, building, or equipment at this location, if it should cease to be used or operated for more than 24 continuous months. Verizon Wireless requests that a removal bond or surety not be required as it is highly unlikely that the facility will cease to be used by Verizon Wireless and to have to maintain a surety forever is an onerous requirement. No other conditional uses within St. Mary’s County are required to do so.

(8) Towers shall be constructed at the minimum height required to obtain reasonable signal coverage that is appropriate for St. Mary’s County (-89 db). Towers exceeding a height of 199 feet above existing grade shall require detailed

engineering justification, documenting the basis for determining that a taller structure is required. Towers exceeding 199 feet above existing grade may also be justified by demonstrating that the existence of previously approved tower(s) in the vicinity of the proposed site serves to mitigate visual impacts, or that a single (taller) tower will reduce adverse visual impact by replacing multiple existing towers.

The proposed tower does not exceed 199' in height.

(9) The site shall be large enough to accommodate the tower and all related structures, equipment and appurtenances (whether above or below ground), and of a size sufficient to meet Health Department standards if water and sanitary facilities are provided. The site plan shall depict the tower site, the location of all structures, equipment and appurtenances to be installed with the tower (whether located above or below ground), all existing tree buffers on the subject property, all adjoining properties; means of ingress/egress; and all required setback lines.

The proposed plans show the location of all existing improvements on the property, all proposed structures related to the telecommunication facility, all tree buffers, setback lines, access drives, and all other information required herein. The telecommunication facility does not require connection to water or sewer services of any kind.

(10) In addition to any setbacks otherwise required by the Zoning Ordinance, towers shall require a setback distance of 100 percent of the height of the tower from any residence, historic site, building or other structure not associated with the tower site. If the setback is to be on an adjoining property, a notarized statement of agreement or an easement must be obtained from the adjoining property owner. If the communications tower is proposed along a state or County scenic roadway, then a setback from the road of 300 percent of the height of the tower and additional landscaping, or additional screening may be required by the Board of Appeals.

The proposed plans delineate the 1:1 setback line. The proposed telecommunication tower meets the setback requirement entirely within the boundaries of the subject property.

(11) The tower enclosure shall be buffered from adjoining properties with at least two rows of fast growing evergreen species such as red cedar or Leyland cypress. The County reserves the right to require a different vegetated buffer as part of the conditional use approval.

Verizon Wireless is requesting approval for retention of existing forest areas around the compound, as shown on the plans, as fulfilling the requirement for a vegetated buffer.

(12) No commercial communication tower shall be constructed within the Critical Areas as shown on the Official Zoning Maps.

The proposed telecommunication tower is not located within the Critical Area.

(13) The County shall have the right of first refusal to any available collocation space on a tower at no cost to the County; provided, however, that the County shall be responsible for maintaining its own equipment.

The County has requested permission to utilize space on the tower for several whip antennas and a satellite dish antenna. The requested equipment is shown on the plans.

(14) Contact information shall be prominently displayed on the fence enclosing each facility. This information shall be current and shall identify the company name, responsible individual, and phone number for the contact person.

A sign providing Verizon's name, address, and emergency contact information will be placed on the compound fence, adjacent to the main access gate.



Verizon Wireless
9000 Junction Drive
Annapolis Junction, MD 20701

April 23, 2014

Department of Land Use and Growth Management
St. Mary's County Maryland

RE: RF Non-Interference Letter
Verizon Wireless – "Sotterly"
24844 Sotterly Road, Hollywood, MD 20636

This is in response to your request to Verizon Wireless concerning interference to your existing telecommunication devices and services related to our proposed facility. Verizon Wireless provides Commercial Mobile Radio Services ("CMRS") under licenses granted by the Federal Communication Commission ("FCC"). Pursuant to these licenses, Verizon Wireless is authorized to provide CMRS and operate a CMRS network in many geographic areas throughout the nation, including St. Mary's County, Maryland.

The FCC exclusively regulates all technical aspects of the Verizon Wireless' operations and network and preempts all state and local regulations of radio frequency transmissions. The FCC rules protect co-channel and adjacent licenses against harmful interference.

The proposed Verizon Wireless facility is in compliance with all applicable FCC requirements. The following points cover Verizon Wireless' practices pertinent to complying with the FCC requirements.

1. Verizon Wireless locates its transmitting antennas in order to maximize the vertical and horizontal separation from the other operator's systems to minimize interference potential.
2. All operating hardware at the site is type accepted by the FCC as far as emission levels within our licensed frequency bands in addition to spurious emissions outside of our frequency bands.

The frequencies in which Verizon Wireless operates in St. Mary's County, Maryland, will not degrade or interfere with the County's public safety communications E-911 system and will comply with FCC standards.

Sincerely,

A handwritten signature in black ink, appearing to read "Luke Neiswander", written over a horizontal line.

Luke Neiswander
RF Engineer for Verizon Wireless

MILLENNIUM ENGINEERING, P.C.
508 Ferncastle Drive
Downingtown, Pennsylvania 19335

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April 25, 2014

Attn: Luke Neiswander, RF Design Engineer
Verizon Wireless
9000 Junction Drive
Annapolis Junction, MD 20701

Re: RF Safety FCC Compliance of Proposed Communications Facility
Site Name: Sotterley, Proposed 150' Monopole
24840 Sotterley Road, Hollywood, MD 20636 (St. Mary's County)

Dear Mr. Neiswander,

I have performed a complete analysis to provide an independent determination and certification that the proposed Verizon Wireless communications facility at the above referenced property will comply with Federal Communications Commission (FCC) exposure limits and guidelines for human exposure to radiofrequency electromagnetic fields (Code of Federal Regulation 47 CFR 1.1307 and 1.1310). As a registered professional engineer I am under the jurisdiction of the State Registration Boards in which I am licensed to hold paramount the safety, health, and welfare of the public and to issue all public statements in an objective and truthful manner.

The proposed communications facility consists of a proposed 150' monopole. The proposed Verizon Wireless antenna configuration from the information furnished to me consists of (1) 700 MHz (LTE) antenna (CSS X7C-865-V-00 or equivalent), (1) 850 MHz (CDMA) antenna (CSS X7C-865-V-00 or equivalent), (1) 1900 MHz (CDMA) antenna (Antel W85-13-x010-T0 or equivalent) and (1) 2100 MHz (LTE) antenna (Antel W85-13-x010-T0 or equivalent) on each of three faces (total of 12 antennas) spaced 120 degrees apart (AZ 30/150/270) on the horizontal plane with a centerline of 150' above ground level. Transmitting from these antennas will be (1) 700 MHz LTE wideband channel, up to (8) 850 MHz CDMA channels, up to (10) 1900 MHz CDMA channels and (1) 2100 MHz LTE wideband channel per face.

The following assumptions are made for reasonable upper limit radiofrequency operating parameters for the proposed facility due to Verizon Wireless antennas alone to accommodate all licensed frequency bands:

- (1) 700 MHz (LTE) transmit antenna per face at 0-10 degrees mechanical downtilt
- (1) 850 MHz (CDMA) transmit antenna per face at 0-10 degrees mechanical downtilt
- (1) 1900 MHz (CDMA) transmit antenna per face at 0-10 degrees mechanical downtilt
- (1) 2100 MHz (LTE) transmit antenna per face at 0-10 degrees mechanical downtilt
- (1) 700 MHz LTE wideband channel/face at 2x40W max power/channel before cable loss/antenna gain
- (8) 850 MHz CDMA channels/face at 20W max power/channel before cable loss/antenna gain
- (10) 1900 MHz CDMA channels/face at 16W max power/channel before cable loss/antenna gain
- (1) 2100 MHz LTE wideband channel/face at 2x60W max power/channel before cable loss/antenna gain
- The facility would be at or near full capacity during busy hour

Using the far-field power density equations from FCC Bulletin OET 65, the power density at any given distance from the antennas is equal to $0.360(ERP)/R^2$ where R is the distance to the point at which the exposure is being calculated. The given equation is a conversion of the OET 65 power density equation for calculating power density given the distance in feet and the result in metric units (mW/cm^2). This calculated power density assumes the location is in the main beam of the vertical pattern of the antenna. After making an adjustment for the reduction in power density due to the vertical pattern of the transmit antenna, the calculated ground level power density is below $1 \mu W/cm^2$ at any distance from the antenna system of Verizon Wireless. This calculation uses parameters greater than what they have defined as their typical operating parameters for this facility.

The "A Block" and "Upper C Block" 700 MHz transmit frequencies (728-734, 746-757 MHz), which Verizon Wireless is licensed by the FCC to operate, have an uncontrolled/general population maximum permissible exposure (MPE) FCC limit of $485 \mu W/cm^2$. The "B Band" 850 MHz (cellular) transmit frequencies (880-894 MHz), which Verizon Wireless is also licensed by the FCC to operate, have an uncontrolled/general population MPE FCC limit of $587 \mu W/cm^2$. The "C3/C4 Block" and "D Block" 1900 MHz (PCS) transmit frequencies (1975-1985, 1945-1950 MHz), which Verizon Wireless is also licensed by the FCC to operate, have an uncontrolled/general population MPE FCC limit of $1000 \mu W/cm^2$ or $1 mW/cm^2$. The "B Block" and "F Block" 2100 MHz (AWS) transmit frequencies (2120-2130, 2145-2155 MHz), which Verizon Wireless is also licensed by the FCC to operate, have an uncontrolled/general population MPE FCC limit of $1000 \mu W/cm^2$ or $1 mW/cm^2$. Therefore, the exposure at ground level at any distance from the structure would be substantially below 1 % of the FCC exposure limits due to Verizon Wireless antennas alone. The extremely low ground exposure levels are due to the elevated positions of the antennas on the structure and the low power which these systems operate. See Figures 1 and 2 in back of this report which discuss the relationship between height, proximity or distance, and orientation to level of electromagnetic field exposure.

We have considered the impact of future collocation on the proposed structure taking into account structural capacity and the number of licensees offering similar services that may seek collocation on this structure. Although speculative, the number of licensees that could seek collocation on this structure considering the number of carriers (following consolidation within the industry) is a total of four.

It is reasonable to expect that four licensees could collocate. However, I will add that if all licensees were to collocate with 10' of vertical separation between each carrier and ignoring structural capacity (150', 140', 130' & 120'), all licensees would be above the midpoint of the antenna support structure, and the upper limit ground level exposure using reasonable and customary design parameters for each licensee would result in exposure still far below 1 % under any circumstances due to the elevated heights of all antennas and the low power which these systems operate.

From the standpoint of RF exposure, the presence of Verizon Wireless would not preclude the future addition of other tenants or licensees including emergency or other municipal services which benefit the public from collocation on this structure. There is a substantial margin of safety to allow for the addition of transmit antennas of other communications services. Keep in mind that continuous exposure at 100 % of standard is considered by the scientific community as just as safe as 1 % of standard since the exposure limits themselves contain a large margin of safety.

The International Commission on Non-Ionizing Radiation Protection (ICNIRP), which is an association under the International Radiation Protection Association (IRPA), established exposure limits or guidelines in 1998 similar to the FCC limits. The ICNIRP is a formally recognized non-government organization in non-ionizing radiation for the World Health Organization and the International Labour Office. While the ICNIRP has no jurisdiction over FCC licensees, the composite ground level exposure of the proposed facility will be below 1 % of the ICNIRP exposure limits.

In summary, the proposed communications facility will comply with all applicable exposure limits and guidelines adopted by the FCC governing human exposure to radiofrequency electromagnetic fields (FCC Bulletin OET 65). Federal law (FCC Rule Title 47 CFR 1.1307 and 1.1310) sets the national standard for compliance with electromagnetic field safety. The FCC exposure limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI). Thus, there is full compliance with the standards of the IRPA, FCC, IEEE, ANSI, and NCRP.

General Information on Electromagnetic Field Safety

Verizon Wireless facilities transmit and receive low power electromagnetic fields (EMF) between base station antennas and handheld portable cell phones. The radiofrequency energy from these facilities and devices is non-ionizing electromagnetic energy. Non-ionizing, unlike X-Rays or other forms of potentially harmful energy in the microwave region, is not cumulative over time nor can the energy change the chemical makeup of atoms (e.g. strip electrons from ions). "Non-ionizing" simply means that the energy is not strong enough to break ionic bonds.

Safe levels of electromagnetic fields were determined by numerous worldwide organizations, such the International Committee for Non-Ionizing Radiation Protection, a worldwide multi-disciplinary team of researchers and scientists studying the effects of non-ionizing radiofrequency energy such as that emitted by base stations or cell phones. The FCC did not arbitrarily establish their own standards, but adopted the recommendations of all leading organizations that set standards and research the subject such as the Institute of Electrical and Electronics Engineers (IEEE), American National Standards Institute (ANSI), and National Council on Radiation Protection and Measurements (NCRP).

When Verizon Wireless is located on an antenna structure such as a self-supporting lattice type tower, monopole, guyed tower, watertank, etc. the antennas are typically 10 meters or more above ground level (10 meters = 32.81 feet). With the relatively low power and elevated positions of the antennas on the structure with respect to ground level, the maximum ground level exposure can rarely approach 1 % of the applicable FCC exposure limit regardless of how many sets of antennas are collocated on the structure. For this reason, the FCC considers the facilities "categorically excluded" from routine evaluation at antenna heights above 10 meters (or above 32.81 feet). Categorical exclusion exempts a site from routine on-site evaluation. However, the facility is not excluded from compliance with the federal exposure limits and guidelines. The types of facilities used by Verizon Wireless typically elevated on antenna structures (away from access to close proximity, i.e. greater than 10 meters or 32.81 feet) simply cannot generate ground level exposure levels that approach the limits under any circumstances.

From a regulatory perspective, the FCC has sole jurisdiction over the regulation of electromagnetic fields from all facilities and devices. The FCC has established guidelines and limits over emissions and exposure to protect the general public. The FCC also has certain criteria that trigger when an environmental evaluation must be performed. The criteria are based on distance from the antennas (accessibility) and transmit power levels.

CONCLUSIONS:

1) The proposed communications facility will comply with electromagnetic field safety standards by a substantial margin (well below 1 %) in all publicly accessible areas. This includes the base of the proposed structure and any areas in proximity to the proposed structure.

2) Verizon Wireless takes appropriate measures to ensure that all telecommunications facilities (including this proposed facility) comply with applicable exposure limits and guidelines adopted by the FCC governing human exposure to radiofrequency electromagnetic fields (FCC Bulletin OET 65).

3) In cases where such compliance exists, the subject of electromagnetic field safety is preempted. The Telecommunications Act of 1996 states that: "No state or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the [FCC's] regulations concerning such emissions." Telecommunications Act of 1996, § 332[c][7][B][iv].

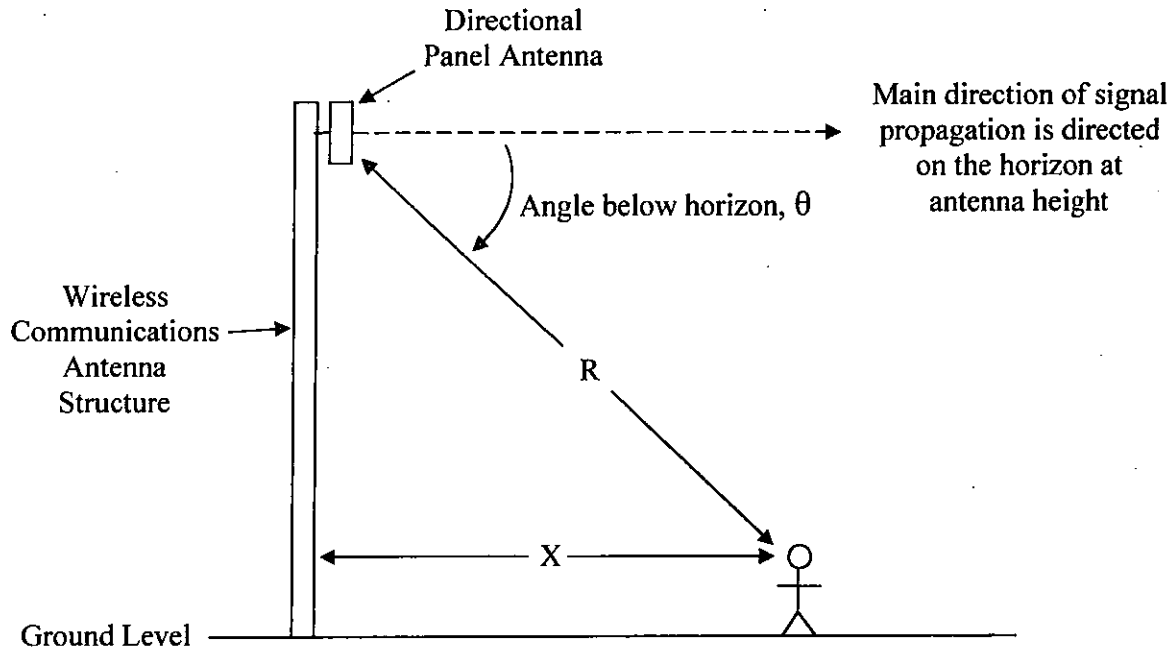
Respectfully,



Paul Dugan, P.E.
Registered Professional Engineer
Maryland License Number 24211

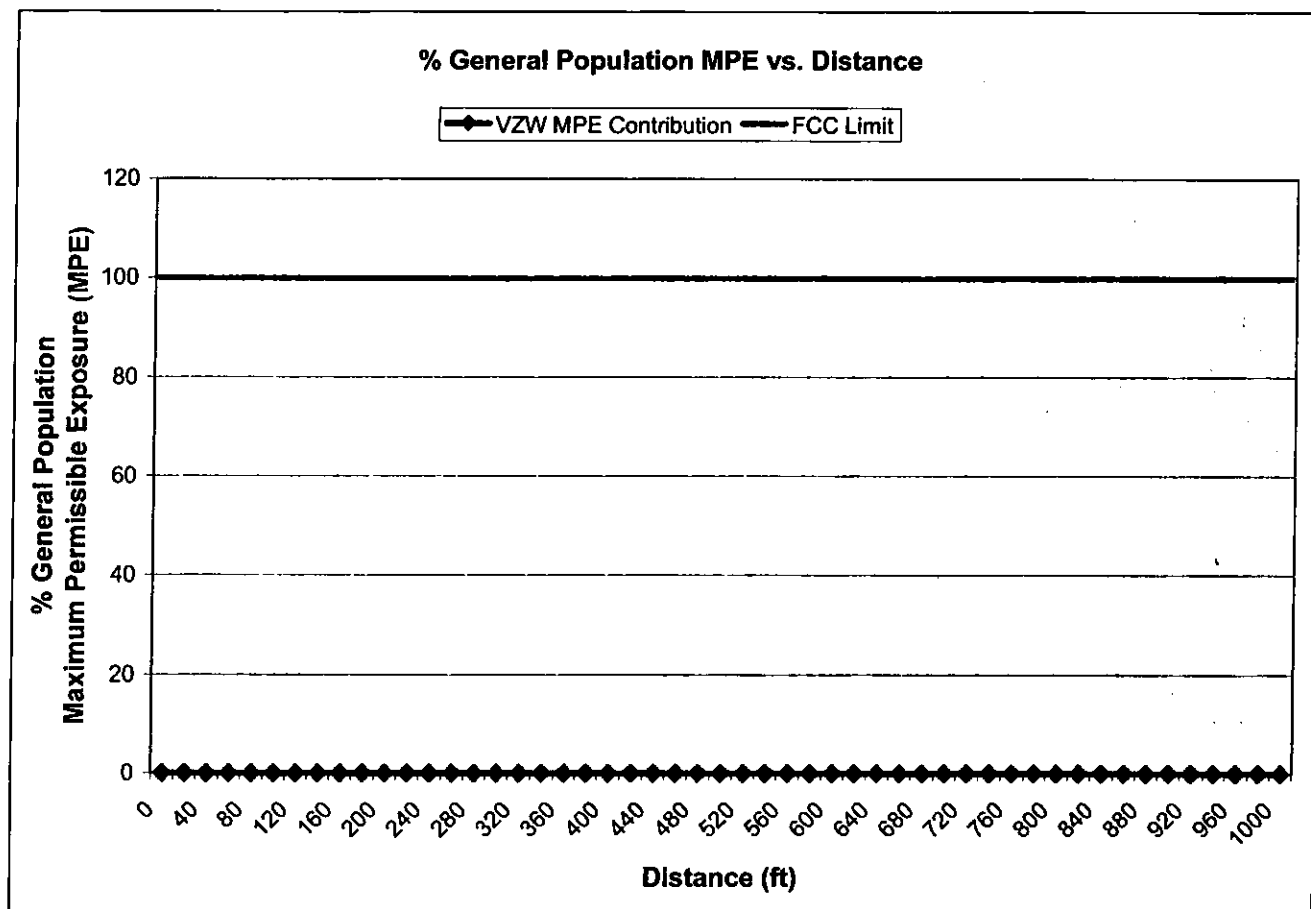


FIGURE 1: Diagram of Electromagnetic Field Strength as a Function of Distance and Antenna Orientation



The above diagram illustrates the conceptual relationship of distance and orientation to directional panel antennas used in wireless communications. At the base of the structure ($x = 0$), the distance R is a minimum when the angle of the direction of propagation θ is a maximum. As one moves away from the antenna structure, the horizontal distance X increases as well as the distance R to the antennas while the angle below the horizon decreases. For this reason, electromagnetic fields from these facilities remain fairly uniform up to a few hundred feet and continue to taper off with distance. As noted in the report, the electromagnetic fields from these types of facilities are hundreds of times below safety standards at any distance from the antenna structure, making them essentially indistinguishable relative to other sources of electromagnetic fields in the environment due to the elevated heights of the antennas and the relatively low power at which these systems operate.

FIGURE 2: Graph of MPE Contribution vs. Distance



The above graph represents the contribution of Verizon Wireless to the composite electromagnetic field exposure level at any distance from the base of the structure. The contribution of Verizon Wireless will remain well under 1% of the FCC general population maximum permissible exposure (MPE) at any distance as shown.

DECLARATION OF ENGINEER

Paul Dugan, P.E., declares and states that he is a graduate telecommunications consulting engineer (BSE/ME Widener University 1984/1988), whose qualifications are a matter of record with the Federal Communications Commission (FCC). His firm, Millennium Engineering, P.C., has been retained by Verizon Wireless to perform power density measurements or calculations for an existing or proposed communications facility and analyze the data for compliance with FCC exposure limits and guidelines for human exposure to radiofrequency electromagnetic fields.

Mr. Dugan also states that the calculations or measurements made in the evaluation were made by himself or his technical associates under his direct supervision, and the summary letter certification of FCC compliance associated with the foregoing document was made or prepared by him personally. Mr. Dugan is a registered professional engineer in the Jurisdictions of Pennsylvania, New Jersey, Delaware, Maryland, Virginia, New York, Connecticut, District of Columbia, West Virginia and Puerto Rico with 29 years of engineering experience. Mr. Dugan is also an active member of the Association of Federal Communications Consulting Engineers, the National Council of Examiners for Engineering, the National Society of Professionals Engineers, the Pennsylvania Society of Professional Engineers, and the Radio Club of America. Mr. Dugan further states that all facts and statements contained herein are true and accurate to the best of his own knowledge, except where stated to be *in information or belief*, and, as to those facts, he believes them to be true. He believes under penalty of perjury the foregoing is true and correct.



Paul Dugan, P.E.

Executed this the 25th day of April, 2014.

PAUL ALLEN DUGAN, P.E.
508 Ferncastle Drive
Downingtown, Pennsylvania 19335

Cell: 610-220-3820

Fax: 610-458-8612

Email: pauldugan@comcast.net

Web Page: www.millenniumengineering.net

EDUCATION: Widener University, Chester, Pennsylvania
Master of Business Administration, July 1991
Master of Science, Electrical Engineering, December 1988
Bachelor of Science, Electrical Engineering, May 1984

PROFESSIONAL ASSOCIATIONS: **Registered Professional Engineer** in the following jurisdictions:

Pennsylvania, License Number PE-045711-E
New Jersey, License Number GE41731
Maryland, License Number 24211
Delaware, License Number 11797
Virginia, License Number 36239
Connecticut, License Number 22566
New York, License Number 079144
District of Columbia, License Number PE-900355
West Virginia, License Number 20258
Puerto Rico, License Number 18946

Full member of **The Association of Federal Communications Consulting Engineers**
(www.afcce.org) January 1999 to Present
Elected to serve on the Board of Directors for 2006-2007

Full member of **The National Society of Professional Engineers** (www.nspe.org) and the
Pennsylvania Society of Professional Engineers (www.pspe.org) June 2003 to Present
Currently serving as State Director on the Board of Directors of the Valley Forge Chapter and the South
East Region Vice-Chair for the "Professional Engineers in Private Practice" Executive Committee

Actively participate in **Chester County ARES/RACES** (CCAR www.w3eoc.org) which prepares and
provides emergency backup communications for Chester County Department of Emergency Services,
March 2005 to Present

Full member of **The National Council of Examiners for Engineering**
(www.ncees.org) May 2001 to Present

Full Member of **The Radio Club of America**
(www.radio-club-of-america.org) December 2003 to present

PROFESSIONAL EXPERIENCE: Millennium Engineering, P.C., Downingtown, Pennsylvania
Position: **President**, August 1999 to Present (www.millenniumengineering.net)

Verizon Wireless, Plymouth Meeting, Pennsylvania
Position: **Cellular RF System Design/Performance Engineer**, April 1990 to August 1999

Communications Test Design, Inc., West Chester, Pennsylvania
Position: **Electrical Engineer**, May 1984 to April 1990

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
2601 Meacham Boulevard
Fort Worth, TX 76193

Aeronautical Study No.
2014-AEA-2395-OE
Prior Study No.
2013-AEA-3712-OE

Issued Date: 05/23/2014

Mikhail Raznobriadsev
Cellco Partnership
1120 Sanctuary Prkwy
Suite 150 GASA5REG
Alpharetta, GA 30004

**** 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:	Monopole Sotterley
Location:	Hollywood, MD
Latitude:	38-20-57.40N NAD 83
Longitude:	76-33-27.01W
Heights:	115 feet site elevation (SE) 190 feet above ground level (AGL) 305 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)
 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 K Change 2.

This determination expires on 11/23/2015 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.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates , heights, frequency(ies) and power . Any changes in coordinates , heights, and frequencies or use of greater power will void this determination. Any future construction or alteration , including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

A copy of this determination will be forwarded to the Federal Communications Commission (FCC) because the structure is subject to their licensing authority.

This determination cancels and supersedes prior determinations issued for this structure.

If we can be of further assistance, please contact our office at (404) 305-7082. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2014-AEA-2395-OE.

Signature Control No: 213177350-218869797

(DNE)

Earl Newalu
Specialist

Attachment(s)
Frequency Data

cc: FCC

Frequency Data for ASN 2014-AEA-2395-OE

LOW FREQUENCY	HIGH FREQUENCY	FREQUENCY UNIT	ERP	ERP UNIT
698	806	MHz	1000	W
806	824	MHz	500	W
824	849	MHz	500	W
851	866	MHz	500	W
869	894	MHz	500	W
896	901	MHz	500	W
901	902	MHz	7	W
930	931	MHz	3500	W
931	932	MHz	3500	W
932	932.5	MHz	17	dBW
935	940	MHz	1000	W
940	941	MHz	3500	W
1850	1910	MHz	1640	W
1930	1990	MHz	1640	W
2305	2310	MHz	2000	W
2345	2360	MHz	2000	W

ASR Registration Search

Registration Search Results

Displayed Results

PA = Pending Application(s)

Specified Search

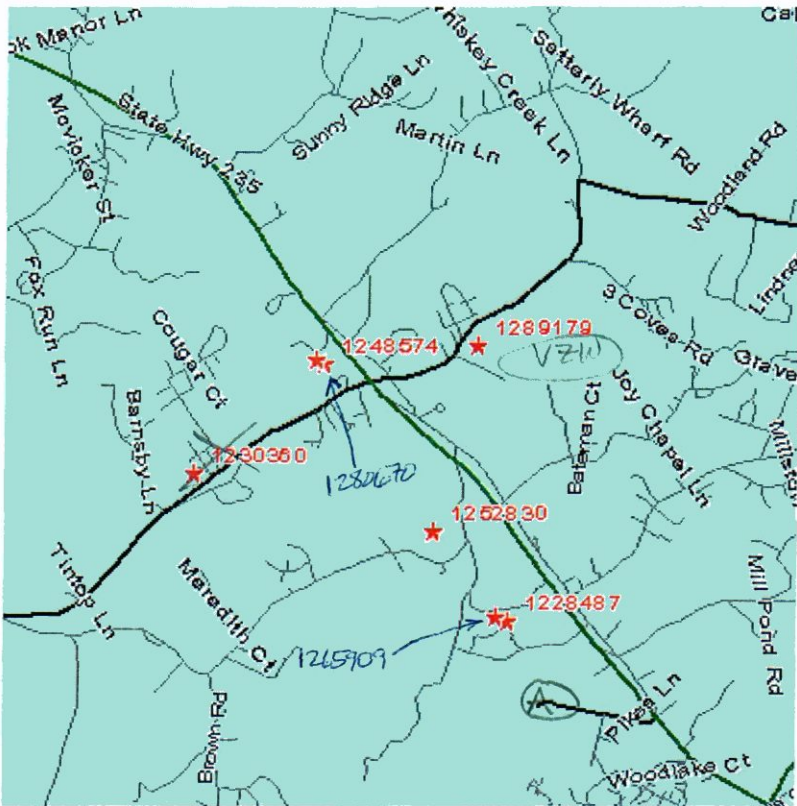
Latitude='38-20-57.4 N', Longitude='76-33-27.0 W', Radius=3.2 Kilometers

Registration Number	Status	File Number	Owner Name	Latitude/Longitude	Structure City/State	Overall Height Above Ground (AGL)
1 1228487	Granted	A0208241	Saint Mary's County Metropolitan Commission	38-19-18.5N 076-33-11.8W	Hollywood, MD	13.7 <i>Too short</i>
2 1230360	<u>Cancelled</u>	A0283923	APC Realty and Equipment Co	38-20-11.4N 076-35-38.3W	Leonardtown, MD	48.2
3 1241204	<u>Terminated</u>	A0670158	NEW CINGULAR WIRELESS PCS, LLC	38-20-11.4N 076-35-38.3W	Leonardtown, MD	45.7
4 1248574	Constructed	A0824986	T-Mobile USA Tower LLC	38-20-51.4N 076-34-37.7W	Hollywood, MD	48.2 <i>1 mile away; too far north and west. VFD</i>
5 1252830	Constructed	A0811539	BAC Infratrust Acht GmbH & Co. KG	38-19-50.6N 076-33-46.9W	Hollywood, MD	54.8 <i>Out of target area.</i>
6 1265909	Constructed	A0658208	St. Mary's County Metropolitan Commission	38-19-20.0N 076-33-17.6W	Hollywood, MD	31.0 <i>Too short</i>
7 1280670	Granted	A0755622	St. Mary's, County of	38-20-52.2N 076-34-40.8W	<i>VFD</i> Hollywood, MD	97.5 <i>Not built.</i>
8 1289179	Granted	A0843129	Celco <i>VZW</i> Partnership	38-20-57.4N 076-33-27.0W	Hollywood, MD	47.2

CLOSE WINDOW

Even though the top of tower increased, our rad center did not change.

ATTACHMENT 6



(A) = Airport

Site Information	
Switch	Woodlawn
Cell Name	Sotterly
Location Name	Sotterly - Conner Property
Address	24840 Sotterley Road Hollywood, 20636

Candidate Coordinates
38.349167, -76.557500

The Base Station Equipment will be: 40 Watt TRDU for 700 MHz and 120 Watt TRDU for AWS.

RET ANTENNAS WERE USED IN THIS DESIGN

700 MHz Antenna Design				
Sector	Quantity	Upper 700 MHz Antenna Model	Upper 700 MHz Max Gain Azimuth (deg)	Upper 700 MHz Antenna Center Line (feet)
D1	1	X7C-865-V-00	30.0	150.0
D2	1	X7C-865-V-00	150.0	150.0
D3	1	X7C-865-V-00	270.0	150.0
800 MHz Antenna Design				
Sector	Quantity	850 MHz Antenna Model	850 MHz Max Gain Azimuth (deg)	850 MHz Antenna Center Line (feet)
D1	1	X7C-865-V-00	30.0	150.0
D2	1	X7C-865-V-00	150.0	150.0
D3	1	X7C-865-V-00	270.0	150.0
1900 MHz Antenna Design				
Sector	Quantity	1900 MHz Antenna Model	1900 MHz Max Gain Azimuth (deg)	1900 MHz Antenna Center Line (feet)
D1	1	W85-13-X010-T0-1920	30.0	150.0
D2	1	W85-13-X010-T0-1920	150.0	150.0
D3	1	W85-13-X010-T0-1920	270.0	150.0
2100 MHz Antenna Design				
Sector	Quantity	2100 MHz Antenna Model	2100 MHz Max Gain Azimuth (deg)	2100 MHz Antenna Center Line (feet)
D1	1	W85-13-X010-T0-2035	30.0	150.0
D2	1	W85-13-X010-T0-2035	150.0	150.0
D3	1	W85-13-X010-T0-2035	270.0	150.0

TMA'S, RRH'S, and Coax								
Sector	Quantity	700 MHz RRH	Quantity	1900 MHz TMA	Quantity	2100 MHz TMA	Coax Quantity	Coax Type
D1			1	TBD	1	Commscope ETW200V512UB	8	1-5/8" AVA
D2			1	TBD	1	Commscope ETW200V512UB	8	1-5/8" AVA
D3			1	TBD	1	Commscope ETW200V512UB	8	1-5/8" AVA

Diplexers, TMA'S					
Sector	Quantity	Diplexer Type	Quantity	700 MHz TMA	
D1	0	850/1900			
D2	0	850/1900			
D3	0	850/1900			



X7C-865

Xpol, 65° H-Beam

698-896 MHz

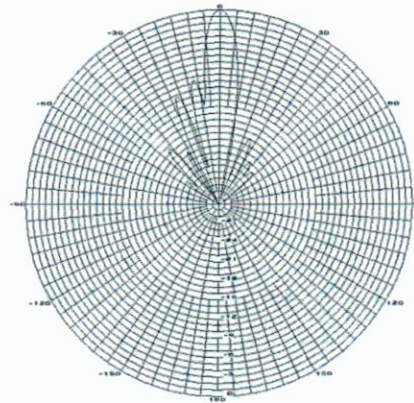
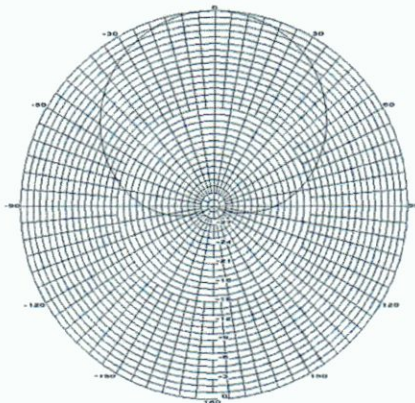
[Link to Mechanical Drawing](#)

Electrical Specifications

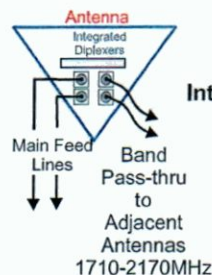
Frequency	698-896 MHz
Polarization	Slant +/- 45
Gain @ 698 MHz	16.4 dBi
Gain @ 752 MHz	16.8 dBi
Gain @ 782 MHz	16.9 dBi
Gain @ 896 MHz	17.5 dBi
Horizontal Beam (3dB Points)	65°
Vertical Beam (3dB Points)	7.5°
Elect. Downtilt Range, 2° Increments	0-10°
VSWR / Return Loss	<1.45:1 / 14.7 dB
VSWR / Return Loss w/tp	<1.50:1 / 14.0 dB
Front-to-Back at Horizon	>30 dB
Upper Side Lobe Suppression	<-18 dB
Impedance	50 Ohms
Power Input Per Connector	500 CW at 800 MHz
Isolation	< -26 dB
Intermodulation (2x20W)	<-150 dBc

Mechanical Specifications

Input Connector (female)	Back 7/16 DIN or w/bot. opt.
Antenna Dimensions (LxWxD)	96.0 x 12.5 x 7.1 in. (2438 x 318 x 180mm)
*Antenna Weight	36.6 lbs
Bracket Weight	18.2 lbs
RF Distribution	Printed Microstrip Substrate
Radome	Ultra High-Strength Luran
Weatherability	UV Stabilized, ASTM D1925
Radome Water Absorption	ASTM D570, 0.45%
Environmental	MIL-STD-810E
Wind Survival	150 mph
Front Wind Load @100mph	236.5 lbf
Equivalent Flat Plate @100mph	4.81 sq-ft. (c=2)
Mounting Brackets	Fits 3.5 Inch Max. O.D. Pipe
Mechanical Downtilt Range	0-6°
Clamps/Bolts	Galvanized Steel/Stainless Steel



Available with
Integrated Pass-Thru Diplexers
to reduce mainline cables
and eliminate separate
external devices



Integrated Pass-Thru Diplexers will work with TMA's

Recommended Connector Coupling Torque
7/16 DIN: 220-265 lbf-in (25-30 N-m)

Return Loss at pass-thru port
into 50Ω load ≥17.7 dB

1710-2170MHz

Ordering Information & Options

X7C-865-x	"-x" is a placeholder for the built-in fixed electrical downtilt in degrees, set to 0, 2, 4, 6, 8 or 10
X7C-865-xip	"ip" option includes pass-thru integrated diplexer(s) which pass DC to the diplexer port(s)
X7C-865-xip-bot	for bottom mounted connectors, add "-bot" (otherwise antenna comes standard with back mounted connectors)

*Antenna Weight may vary slightly with options.

W85-13-x010

X-Pol | VET Panel | 85° | 17.0 dBi

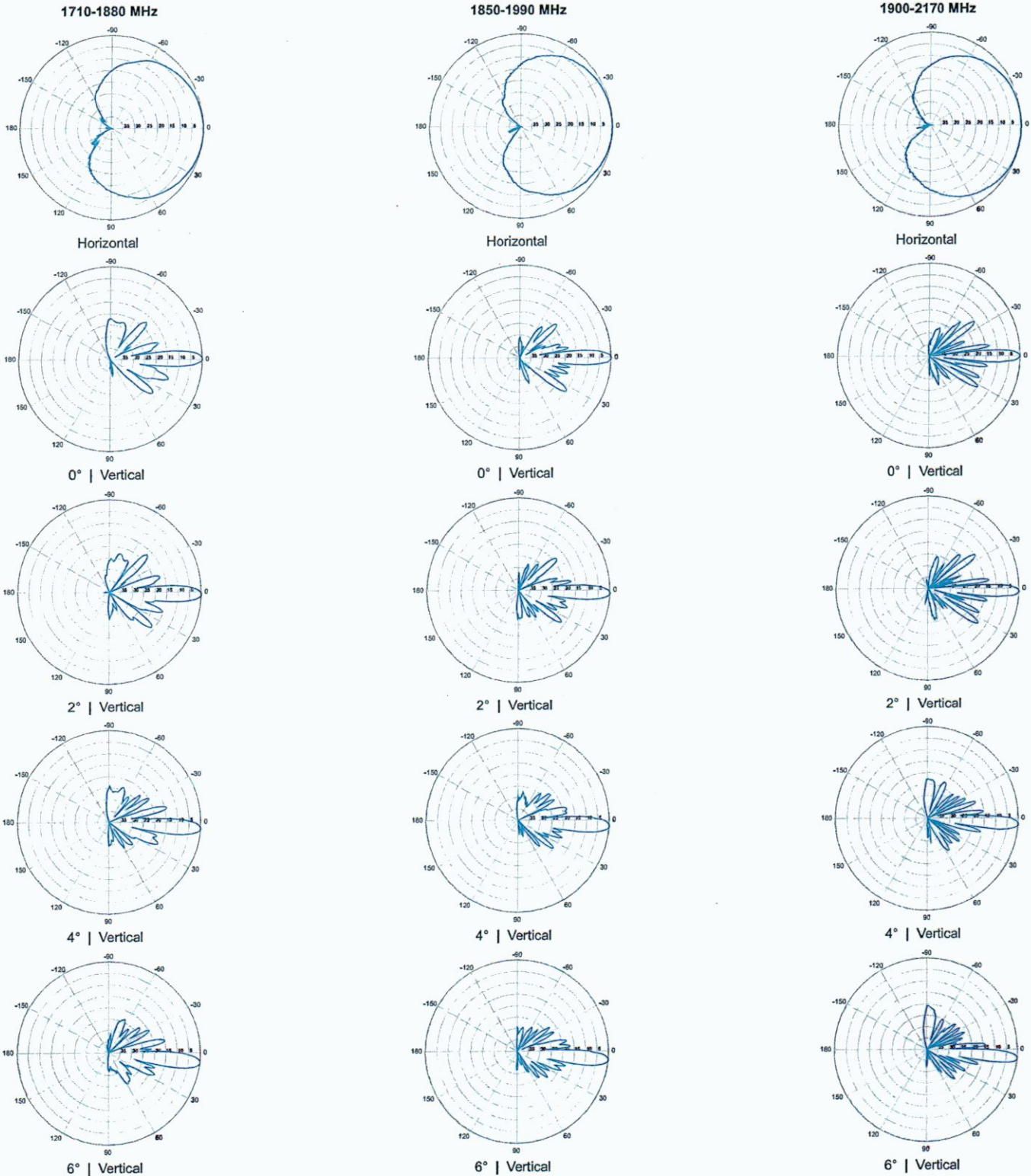
Ordering Options				
When ordering...	Replace the "x" in the model number with "A" for Manual Electrical Tilt or "R" for Remote Electrical Tilt and select the AISG version required. See options below.			
Manual Electrical Tilt Antenna	----	W85-13-A010		
Remote Electrical Tilt Antenna	AISG v1.1	W85-13-R010		
	AISG v2.0 / 3GPP	W85-13-R010G		
Electrical Characteristics				
	1710-2170 MHz			
Frequency bands	1710-1880 MHz	1850-1990 MHz	1900-2170 MHz	
Polarization	±45°	±45°	±45°	
Horizontal beamwidth	85°	85°	85°	
Vertical beamwidth	7.3°	6.8°	6.3°	
Gain	14.1 dBd / 16.2 dBi	14.5 dBd / 16.6 dBi	15.9 dBd / 17.0 dBi	
Electrical downtilt	0-10° Variable Electrical Tilt			
Impedance	50Ω			
VSWR	< 1.4:1			
Upper sidelobe suppression	< -16 dB			
Front-to-back ratio	> 25 dB			
Inter-port isolation	> 28 dB			
IM3 (2x20W carrier)	< -153 dBc			
Input power	2 x 200W			
Connector(s)	2 Ports / 7/16 DIN / Female / Bottom			
Operating temperature	-40° to +60° C		-40° to +140° F	
Mechanical Characteristics				
Dimensions Length x Width x Depth	1385 x 170 x 100 mm		54.5 x 6.7 x 3.9 in	
Weight without mounting brackets	7.0 kg		15.4 lbs	
Survival wind speed	> 241 km/hr		> 150 mph	
Wind load @ 161 km/hr (100 mph)	Front: 288 N	Side: 167 N	Front: 65 lbf Side: 38 lbf	
RET Control Unit (1 unit required)	AISG v1.1	External Unit: RETU-EB01		
	AISG v2.0 / 3GPP	External Unit: RETU-EG01		
Mounting Options				
	Part Number	Fits Pipe Diameter		Weight
Pole mounting bracket kit	MKS02P01	40-115 mm	1.6-4.5 in	2.9 kg 6.5 lbs
Scissor tilt bracket kit	MKS02T06	40-115 mm	1.6-4.5 in	3.8 kg 8.3 lbs
Bar tilt bracket kit	MKS02T07	40-115 mm	1.6-4.5 in	3.9 kg 8.7 lbs
Concealment Options				
UNICELL module	UNX14-14 UNX14-19	UNX20-14 UNX20-19		
Azimuth swivel	±25°	±30°		
Elevation tilt	Fixed	Fixed		
Required mounting kit	Included	UNX20-AZ		



Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

W85-13-x010

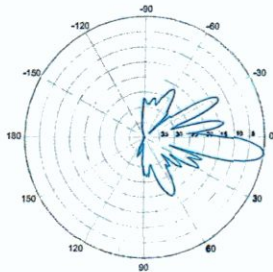
X-Pol | VET Panel | 85° | 17.0 dBi



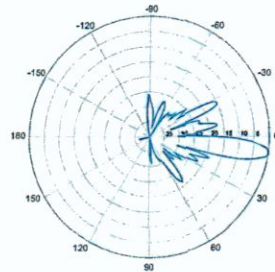
Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

W85-13-x010

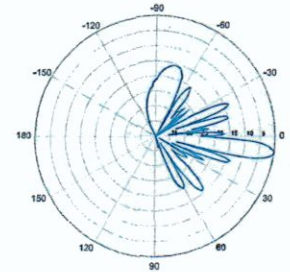
X-Pol | VET Panel | 85° | 17.0 dBi



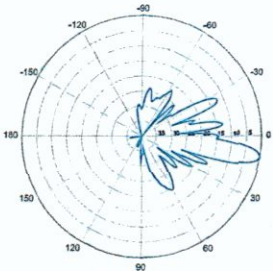
8° | Vertical



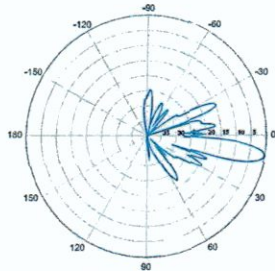
8° | Vertical



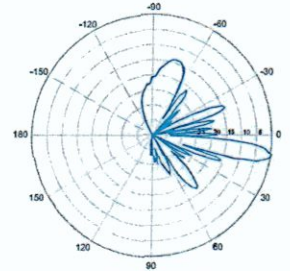
8° | Vertical



10° | Vertical



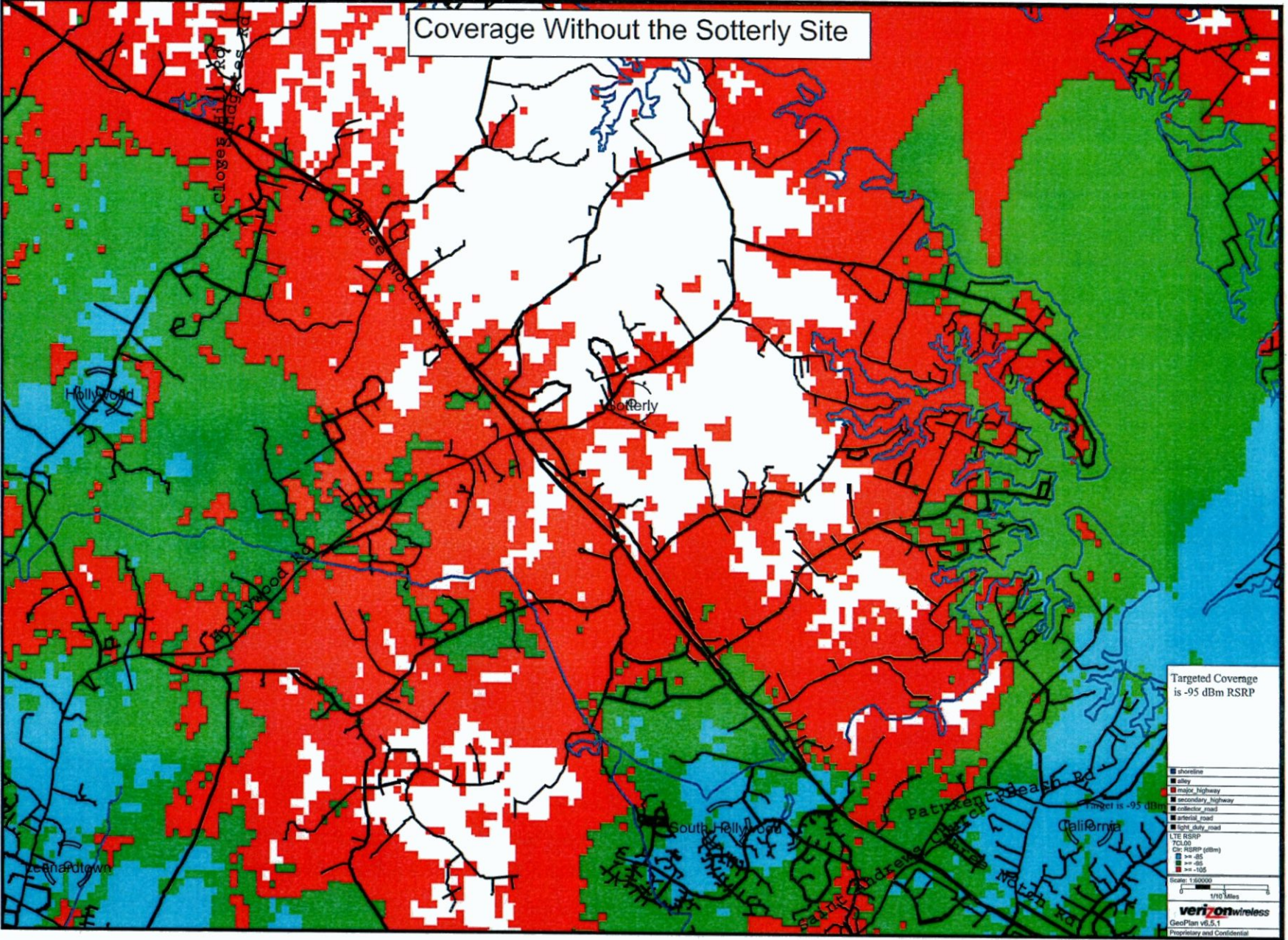
10° | Vertical



10° | Vertical

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

Coverage Without the Sotterly Site



Targeted Coverage is -95 dBm RSRP

Legend:

- shoreline
- alley
- major_highway
- secondary_highway
- collector_road
- arterial_road
- light_duty_road

Target is -95 dBm

LTE RSRP (dBm)

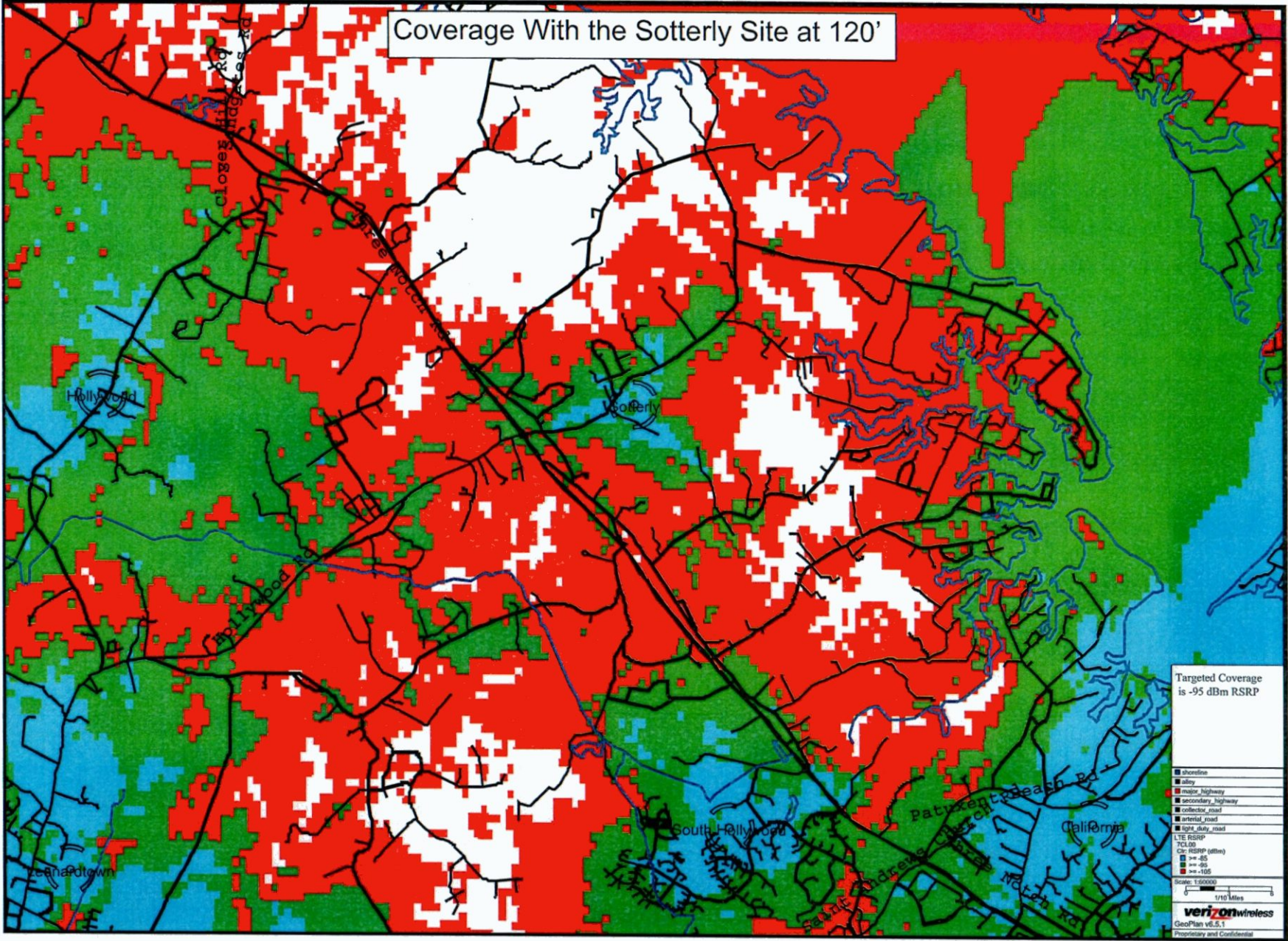
- >= -95
- >= -95 & <= -105
- <= -105

Scale: 1:600000

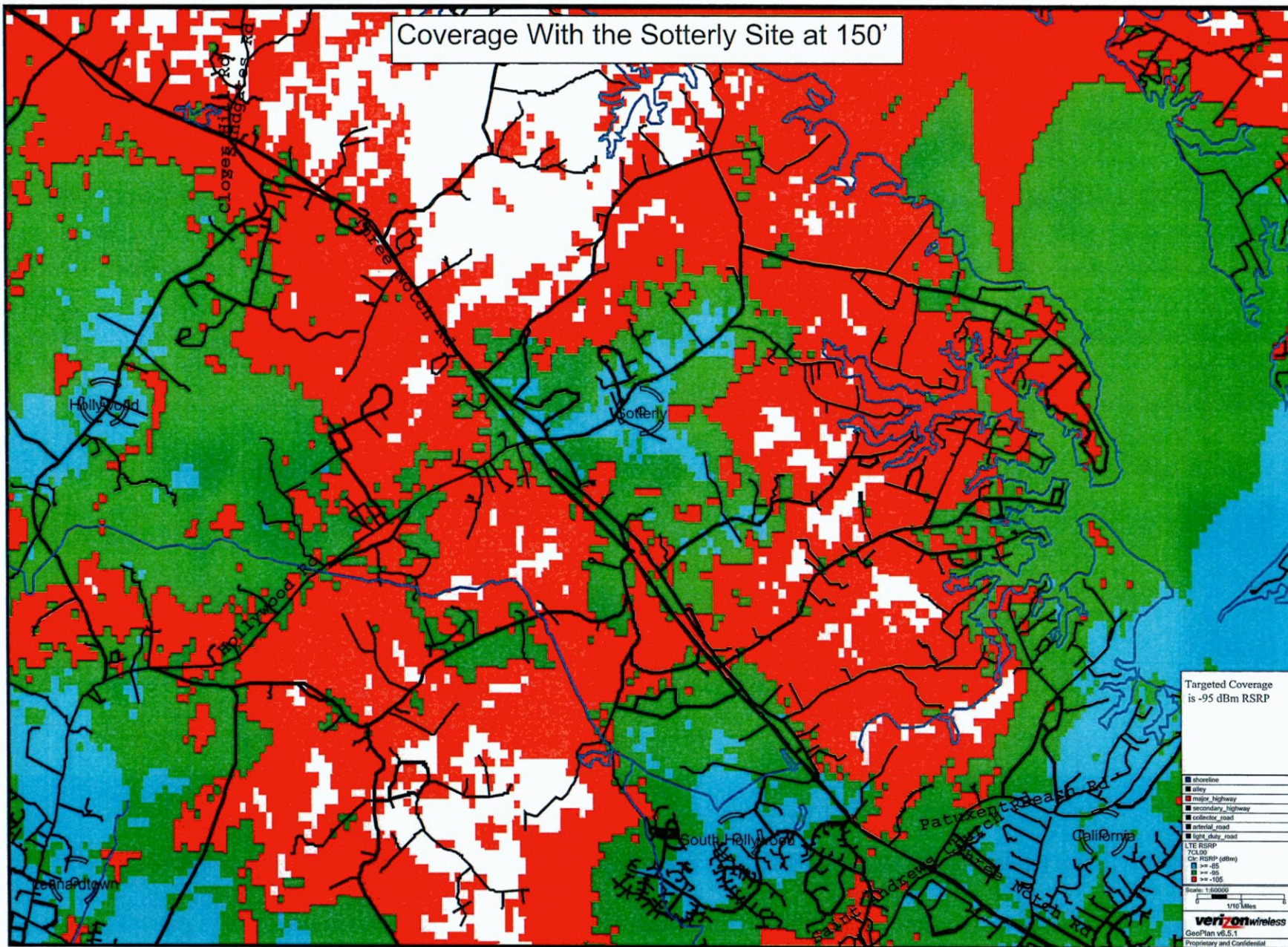
0 1/10 Miles

verizonwireless
GeoPlan v6.5.1
Proprietary and Confidential

Coverage With the Sotterly Site at 120'

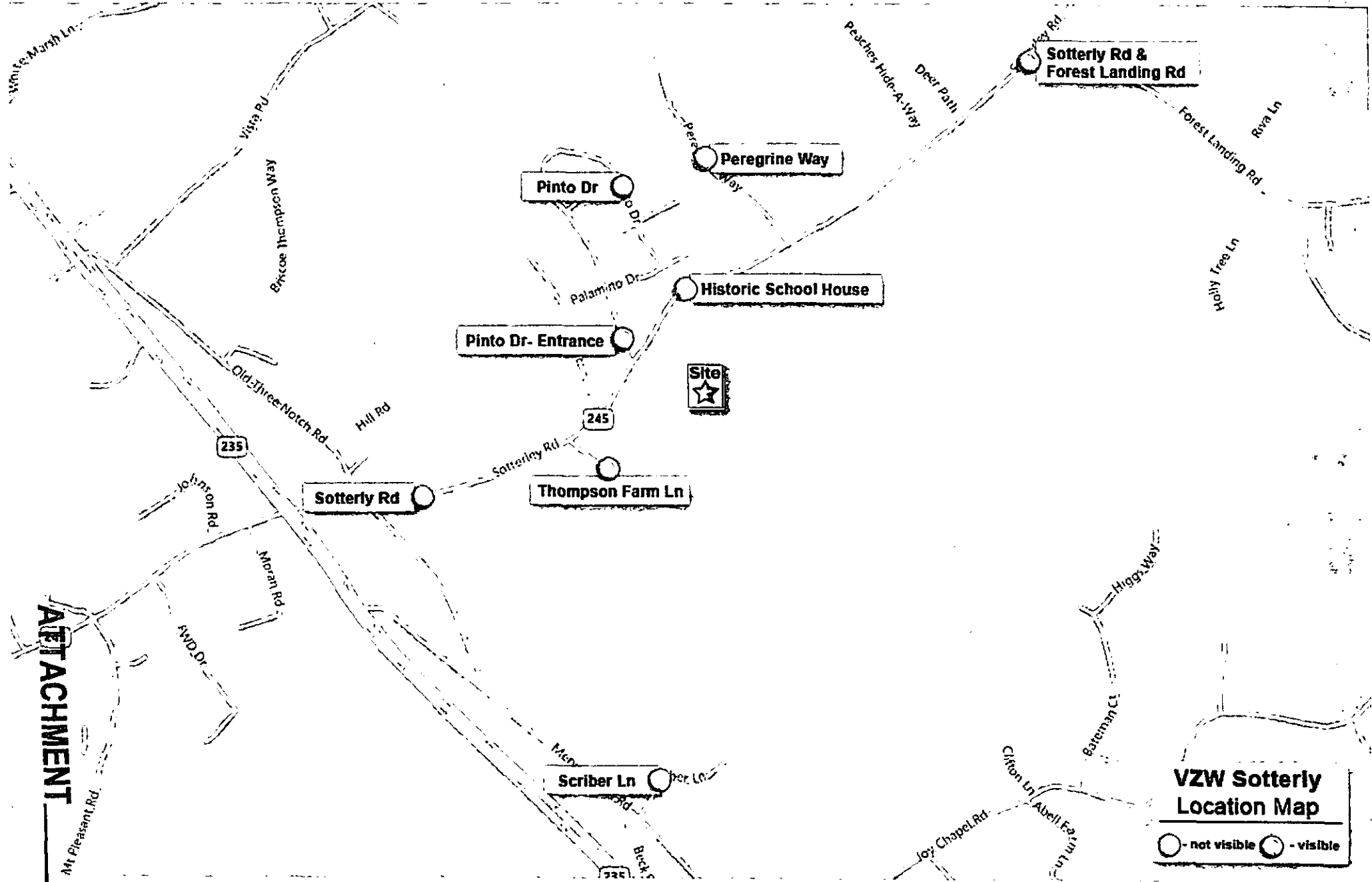


Coverage With the Sotterly Site at 150'



Targeted Coverage
is -95 dBm RSRP

■	shoreline
■	alley
■	major_highway
■	secondary_highway
■	collector_road
■	arterial_road
■	light_duty_road
LTE RSRP	
■	73-90
■	>= -85
■	= -95
■	>= -105
Scale: 1:60000	
0 1/10 Miles	
verizon wireless	
GeoPlan v6.5.1	
Proprietary and Confidential	



**VZW Sotterly
Location Map**

○ - not visible ● - visible

ATTACHMENT
9



Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Historic School House
Not Visible

NB+C[™]
TOTALLY COMMITTED.



Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Peregrine Way
Not Visible

NB+C
TOTALLY COMMITTED.



Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Pinto Drive Entrance
Showing the Existing Site

NB-CTM
TOTALLY COMMITTED.



Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Pinto Drive Entrance
Showing the Proposed Site





Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Pinto Drive
Showing the Existing Site

NB+C
TOTALLY COMMITTED.



Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Pinto Drive
Showing the Proposed Site

NBIC
TOTALLY COMMITTED.



Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Scriber Lane
Not Visible

NB-C
TOTALLY COMMITTED.



Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Sotterly & Forest
Landing Road
Showing the Existing Site

NBIC
TOTALLY COMMITTED.



Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Sotterly & Forest
Landing Road
Showing the Proposed Site

NBIC
TOTALLY COMMITTED.



Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Sotterly Road
Showing the Existing Site

NBIC
TOTALLY COMMITTED.



Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Sotterly Road
Showing the Proposed Site

NBIC
TOTALLY COMMITTED.



Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Thompson Farm Lane
Showing the Existing Site

NBC
TOTALLY COMMITTED.



Site Name: Sotterly
Wireless Communication Facility
24844 Sotterley Road
Hollywood, MD 20636

Photograph Information:
Photo Location
View from Thompson Farm Lane
Showing the Proposed Site

NBIC
TOTALLY COMMITTED.



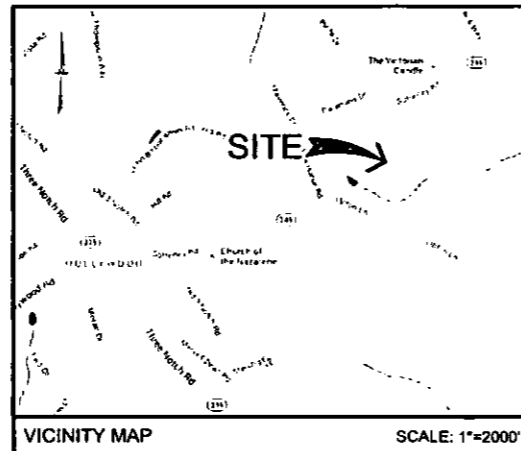
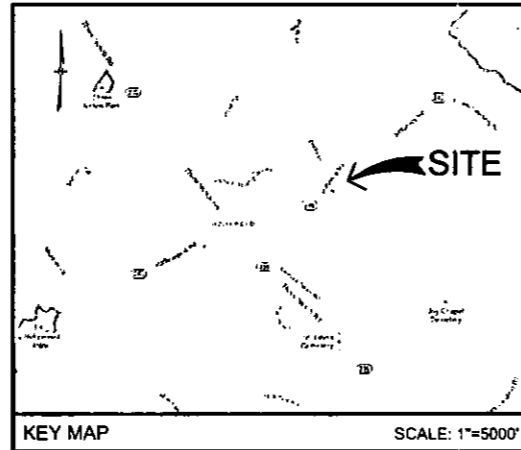
**SOTTERLEY
RAW LAND
24844 SOTTERLEY ROAD
HOLLYWOOD, MD. 20636**

CONSULTANT'S CERTIFICATION

I CERTIFY THAT THIS CONCEPT EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT PLAN REPRESENTS ALL SIGNIFICANT NATURAL RESOURCES BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE REVIEW AGENCIES. I HAVE REVIEWED THIS CONCEPT PLAN WITH THE OWNER/DEVELOPER.

SIGNATURE: _____ MD LICENSE #: 33772
 PRINTED NAME: NICHOLAS A. BARRICK, P.E. DATE: _____

SITE INFORMATION	
SITE NAME:	SOTTERLEY
TOWER ADDRESS:	24844 SOTTERLEY ROAD HOLLYWOOD, MD 20636
PREMISE ADDRESS:	24840 SOTTERLEY ROAD
JURISDICTION:	SAINT MARY'S COUNTY
COUNTY:	SAINT MARY'S COUNTY
ZONING:	RPD
ACCOUNT No.:	006744
TAX MAP/GRID:	27 / 07
PARCEL:	0295
DISTRICT:	06
LIBER/FOLIO:	35-49 / 355
ACREAGE:	25.0
PROPERTY OWNER:	CONNER, STEPHEN R 20380 POPLAR RIDGE RD. LEXINGTON PARK, MD 20653
APPLICANT:	VERIZON WIRELESS 9000 JUNCTION DR. ANNAPOLIS JUNCTION, MD 20701 CONTACT: BRIAN STOVER (301) 512-2459
PHONE:	
LATITUDE:	38°20'57.40"
LONGITUDE:	76°33'27.01"
ELEVATION:	115 AMSL
OCCUPANCY:	UNMANNED
PROJECT SCOPE OF WORK:	
THIS PROJECT CONSISTS OF THE CONSTRUCTION OF A NEW 190' FOOT MONOPOLE WITHIN A 50'x50' GRAVEL COMPOUND CONTAINING A SHELTER AND DIESEL GENERATOR. A 12 FOOT WIDE GRAVEL ACCESS ROAD WILL BE CONSTRUCTED FROM SOTTERLEY ROAD TO THE COMPOUND WITH ONE PARKING SPACE.	
DIRECTIONS:	
BEGINNING AT VERIZON'S OFFICE LOCATED IN ANNAPOLIS JUNCTION, MARYLAND ON JUNCTION DR. (EAST). BEAR LEFT (NORTH) ONTO DORSEY RUN ROAD. TAKE RAMP ONTO MD-32 EAST. TAKE EXIT 10C FOR BALTIMORE-WASHINGTON PARKWAY SOUTH TOWARD WASHINGTON. MERGE ONTO MD-295 SOUTH. TAKE THE EXIST ONTO I-495 SOUTH / I-95 SOUTH TOWARD RICHMOND VA / ANDREWS AFB. TAKE EXIT 7A-7B FOR MD-5 / BRANCH AVENUE TOWARD SILVER HILL / WALDORF. TAKE EXIT 7A ON THE LEFT TO MERGE ONTO MD-5 SOUTH / BRANCH AVENUE TOWARD WALDORF. TURN LEFT ONTO MD-5 / WATTANOMAN BEANTOWN ROAD. TURN LEFT ONTO MD-5 / LEONARDTOWN ROAD. CONTINUE ONTO MD-235 SOUTH / THREE NOTCH ROAD. TURN LEFT ONTO SOTTERLEY GATE ROAD. DESTINATION WILL BE ON THE RIGHT.	
THE CONTRACTOR MUST VERIFY ALL FIELD MEASUREMENTS AND CONDITIONS PRIOR TO BID AND TO COMMENCEMENT OF CONSTRUCTION.	



SHEET INDEX	
SHEET NO.	SHEET DESCRIPTION
T-1	TITLE SHEET
C-1	SITE PLAN
C-2	CONCEPT SWM & ESC PLAN
C-3	COMPOUND PLAN & TOWER ELEVATION
C-4	SHELTER DETAILS
C-5	FENCE DETAILS

VERIZON WIRELESS DEPARTMENTAL APPROVALS		
SIGNED: _____	RF ENGINEER	DATE: _____
SIGNED: _____	OPERATIONS MANAGER	DATE: _____
SIGNED: _____	CONSTRUCTION ENGINEER	DATE: _____
SIGNED: _____	CONSTRUCTION MANAGER	DATE: _____
SIGNED: _____	REAL ESTATE MANAGER	DATE: _____

APPLICABLE CODES
<ul style="list-style-type: none"> THE INTERNATIONAL BUILDING CODE (IBC 2003) NATIONAL ELECTRIC CODE 2008 ANSI/NFPA 70 NFPA 101 LIFE SAFETY CODE 2009 NATIONAL STANDARD PLUMBING CODE 2003 WITH 2004 SUPPLEMENTS MARYLAND ACCESSIBILITY CODE

LAND USE AND GROWTH MANAGEMENT CONTROL NUMBER 13-135-001



NO.	DATE	DESCRIPTION
0	08/23/13	DESIGNED FOR REVIEW
1	07/29/14	REVISED FOR COMMENTS
2	07/29/14	REVISED FOR COUNTY COMMENTS
3	07/29/14	REVISED FOR COUNTY COMMENTS
4	07/29/14	REVISED FOR COUNTY COMMENTS
5		
6		

KCI
TECNOLOGIES
KCI TECHNOLOGIES, INC.
82 Market Street, Suite #1
Hanover, MD 21076
Phone: 410.308.7802

SOTTERLEY
24844 SOTTERLEY ROAD
HOLLYWOOD, MD 20636

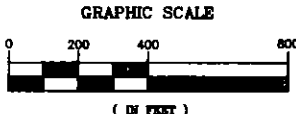
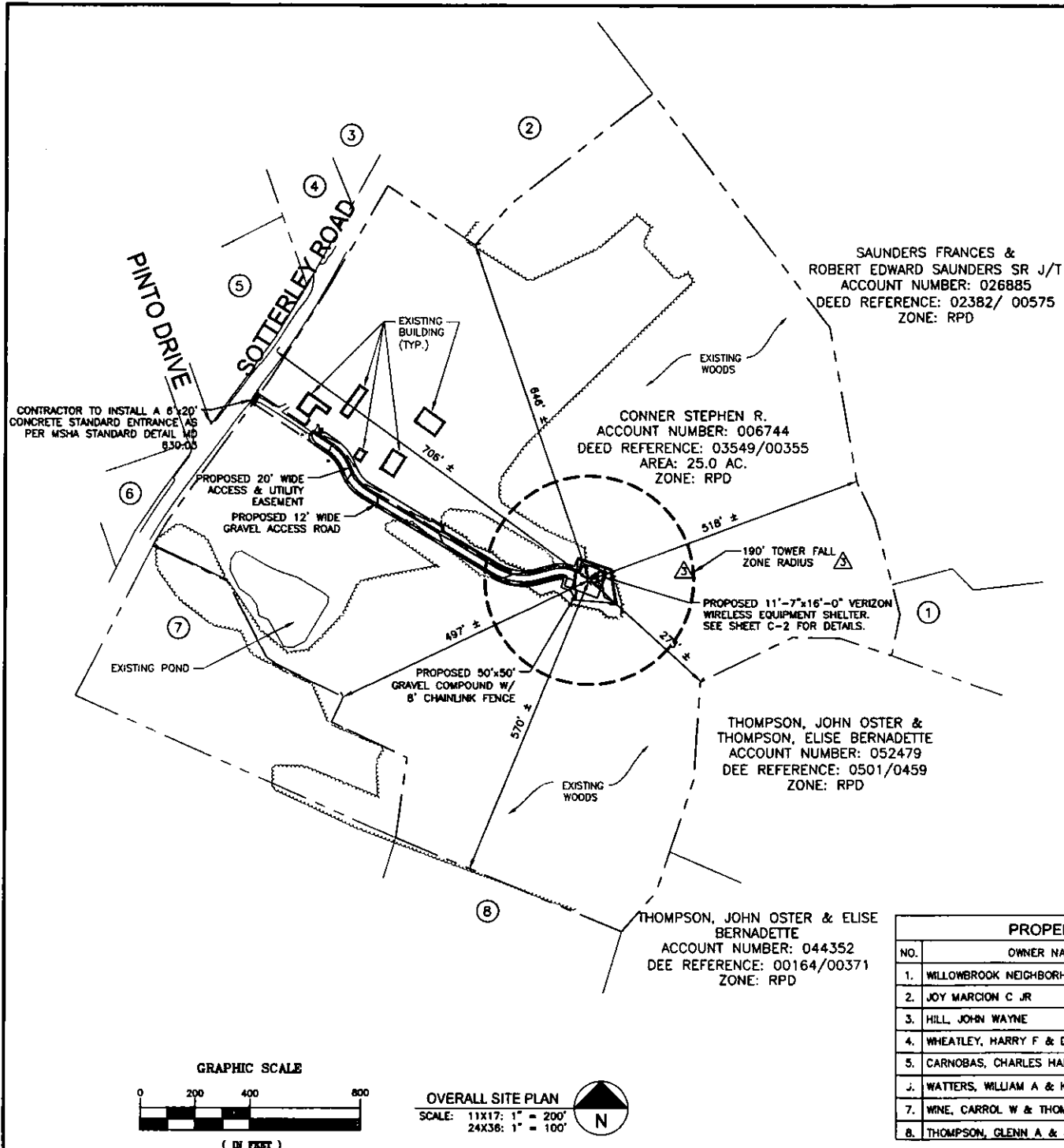
ENGINEER
ERIC S. KOHL, PE
MD LICENSE NO.: 26839

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SHEET NO. 16 OF 16
DATE: 08/23/2014
DC JOB NUMBER: 0213329-01

TITLE SHEET

PROJECT
T-1



OVERALL SITE PLAN
SCALE: 11X17: 1" = 200'
24X36: 1" = 100'

SITE NOTES:

- PROPERTY OWNER: CONNER, STEPHEN R
20360 POPLAR RIDGE RD.
LEXINGTON PARK, MD 20853
- APPLICANT: VERIZON WIRELESS
9000 JUNCTION DR.
ANNAPOLIS JUNCTION, MD 20701
- SITE DATA:
TOWER ADDRESS: 24844 SOTTERLEY ROAD
HOLLYWOOD, MD 20636
PREMISE ADDRESS: 24840 SOTTERLEY ROAD
ZONING: RPD
ACCOUNT No.: 006744
TAX MAP/GRID: 27 / 07
ZONING: 0295
DISTRICT: 06
LIBER/FOLIO: 3549 / 355
ACREAGE: 25.0
- EXISTING SITE INFORMATION WAS OBTAINED FROM THE FOLLOWING SOURCES: FIELD RUN SURVEY CONDUCTED BY KCI TECHNOLOGIES, INC. ON OR ABOUT JUNE 2013 AND FROM SAINT MARY'S COUNTY GIS ACCESSED 8/20/13.
- THE PROPOSED TELECOMMUNICATION EQUIPMENT SHELTER IS NO MORE THAN 12 FEET IN HEIGHT.
- PROPERTY SHOWN HERON LIES WITH ZONE X, AN AREA OF MINIMAL FLOODING, AS PER FEMA MSC PRODUCT MAP SEARCH COMMUNITY PANEL NO. 24037C0181E, EFFECTIVE DATE 10/18/2004.
- EXISTING COMPOUND CHAIN LINK FENCE HAS A HEIGHT OF 10' AND SCREENS TO 100% OPACITY.
- THE PROPOSED DEVELOPMENT IS GREATER THAN 5,000 SQUARE FEET. PER THE SAINT MARY'S COUNTY STORMWATER MANAGEMENT ORDINANCE, SWM QUALITY AND QUANTITY MANAGEMENT IS REQUIRED FOLLOWING THE MARYLAND DEPARTMENT OF THE ENVIRONMENT'S REGULATIONS FOR ENVIRONMENTAL SITE DESIGN (ESD). THE ACCESS ROAD TO THE PROPOSED COMPOUND WILL MEET THE ESD REQUIREMENT THROUGH A COMBINATION OF NON-ROOFTOP DISCONNECTION. THE COMPOUND ITSELF WILL MEET THE ESD REQUIREMENT THROUGH A COMBINATION OF NON-ROOFTOP DISCONNECTION AND A GRASS SWALE. THE ENTIRE REQUIRED ESD VOLUME WILL BE TREATED AND MANAGED ON SITE.
- THE SITE CONTAINS 200 CUB.FT CUT & 200 CU.FT FILL TO YIELD A NET CUT/FILL OF 0 CU.FT.

NOTE:

- WITHIN THE AREA OF THE TRACT HEREBY CREATED, NO STRUCTURE, ERECTION, OBJECT, GROWTH OF TREES, OR VEGETATION WITHIN THE BOUNDARIES OF THE TRACT HEREIN DESCRIBED, NOR ANY OTHER OBJECTS PLACED WITHIN SAID TRACT, SHALL PENETRATE THE AE OVERLAY SUB-DISTRICT SURFACES OF AN AIRPORT OR HELIPORT. OWNER, HEIRS, SUCCESSORS AND ASSIGNS SHALL BE RESPONSIBLE FOR MAINTAINING AND PRUNING TREES AND VEGETATION SO THIS HEIGHT RESTRICTION IS NOT EXCEEDED.
- THE LAND-OWNER EXPRESSLY RESERVES FOR THE USE AND BENEFIT OF ITSELF AND THE PUBLIC A RIGHT OF FLIGHT FOR THE PASSAGE OF AIRCRAFT IN THE AIRSPACE ABOVE THE LANDS IDENTIFIED HEREIN, TOGETHER WITH THE RIGHT TO CAUSE ABOVE SUCH TRACT ALL SUCH NOISE, FUMES, DUST, VIBRATION AND FUEL PARTICLES AS MAY BE INHERENT IN THE OPERATION OF AIRCRAFT USING SAID AIRSPACE FOR LANDING AND TAKING OFF FROM THE ST. MARY'S COUNTY REGIONAL AIRPORT AND OTHER REGULATED PUBLIC LANDING STRIPS.

PROPERTY OWNERS TABLE				
NO.	OWNER NAME	ACT. NO.	DEED REFERENCE	ZONE
1.	WILLOWBROOK NEIGHBORHOOD INC.	008275	02784/0195	RPD
2.	JOY MARCION C JR	009751	00642/00131	RPD
3.	HILL, JOHN WAYNE	016405	00403/00054	RNC
4.	WHEATLEY, HARRY F & DONNA E	007538	03075/00340	RNC
5.	CARNOBAS, CHARLES HARRISON JR	032419	01806/00184	RNC
J.	WATTERS, WILLIAM A & KATHRYNE J T/E	039472	02992/00455	RNC
7.	WINE, CARROL W & THOMAS-WINE, ANGELA	017614	03598/00750	RPD
8.	THOMPSON, GLENN A & JENNIFER W T/E	038352	02018/00495	RL

LAND USE AND GROWTH MANAGEMENT CONTROL NUMBER 13-135-001



DATE	DESCRIPTION
07/23/13	ISSUED FOR REVIEW
07/29/14	REVISED FOR COMMENTS
07/29/14	REVISED FOR COUNTY COMMENTS
07/16/14	REVISED FOR COUNTY COMMENTS

KCI TECHNOLOGIES
KCI TECHNOLOGIES, INC.
921 Marlinton Rd, Suite 111
Hollywood, MD 20636
Phone: 410.368.7802

verizon wireless
SOTTERLEY
24844 SOTTERLEY ROAD
HOLLYWOOD, MD 20636

ENGINEER:
ERIC S. KOHL, PE
MD LICENSE NO: 26838

THIS DOCUMENT IS THE ORIGINAL DESIGN, PROPERTY AND CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CLIENT. KCI TECHNOLOGIES, INC. IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS.

SCALE: AS SHOWN
DATE: 06/23/2014
KCI JOB NUMBER: 021332546

WETZEL
SITE PLAN
C-1

CONSULTANT'S CERTIFICATION

I CERTIFY THAT THIS CONCEPT EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT PLAN REPRESENTS ALL SIGNIFICANT NATURAL RESOURCES BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE REVIEW AGENCIES. I HAVE REVIEWED THIS CONCEPT PLAN WITH THE OWNER/DEVELOPER.

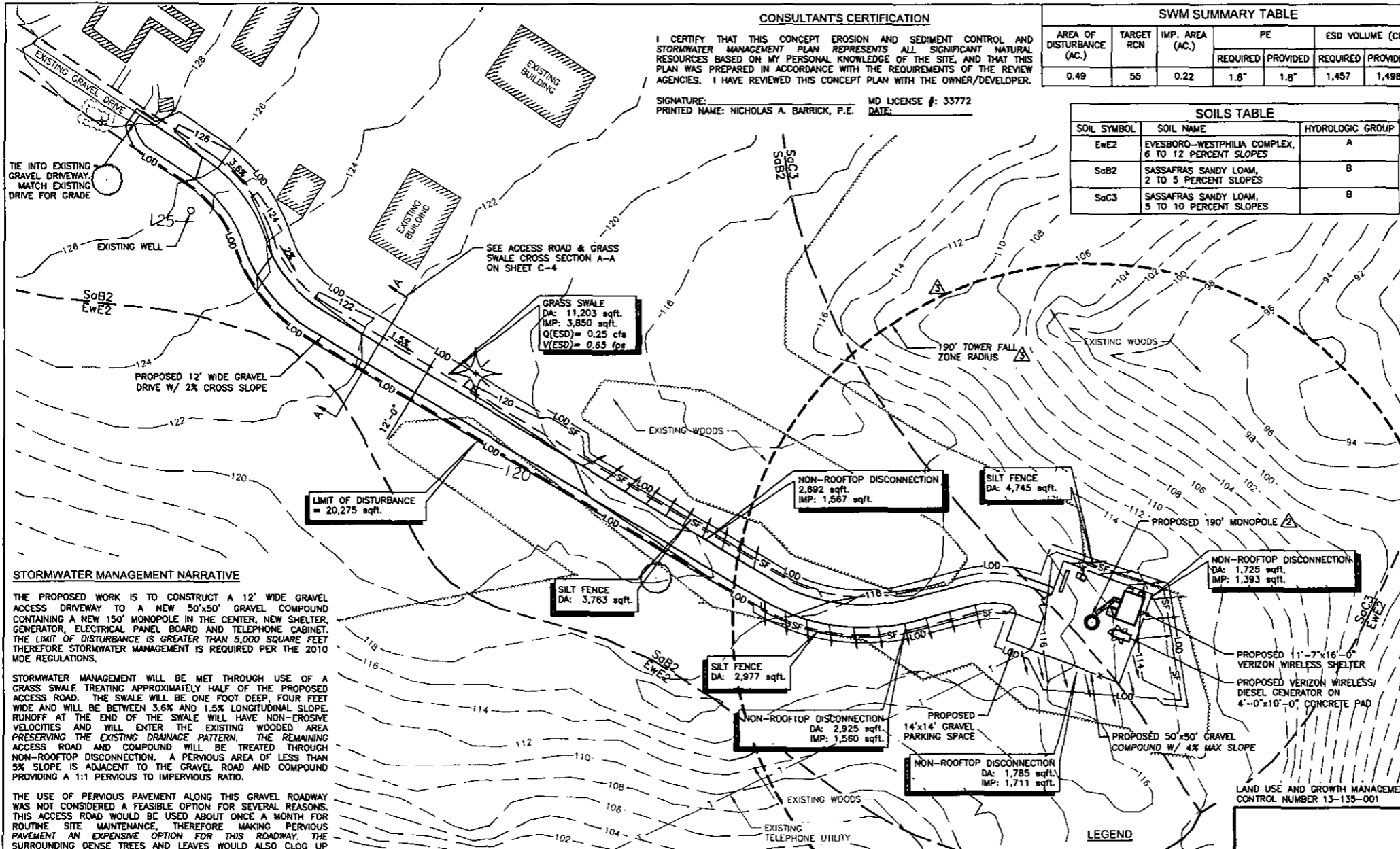
SIGNATURE: _____ MD LICENSE #: 33772
 PRINTED NAME: NICHOLAS A. BARRICK, P.E. DATE: _____

SWM SUMMARY TABLE

AREA OF DISTURBANCE (AC.)	TARGET RCN	IMP. AREA (AC.)	PE		ESD VOLUME (CF)	
			REQUIRED	PROVIDED	REQUIRED	PROVIDED
0.49	55	0.22	1.8"	1.8"	1,457	1,498

SOILS TABLE

SOIL SYMBOL	SOIL NAME	HYDROLOGIC GROUP
EwE2	EVEESBORO-WESTPHILIA COMPLEX, 6 TO 12 PERCENT SLOPES	A
SaB2	SASSAFRAS SANDY LOAM, 2 TO 5 PERCENT SLOPES	B
SaC3	SASSAFRAS SANDY LOAM, 5 TO 10 PERCENT SLOPES	B



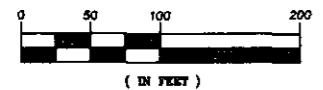
STORMWATER MANAGEMENT NARRATIVE

THE PROPOSED WORK IS TO CONSTRUCT A 12' WIDE GRAVEL ACCESS DRIVEWAY TO A NEW 50'x50' GRAVEL COMPOUND CONTAINING A NEW 150' MONOPOLE IN THE CENTER, NEW SHELTER, GENERATOR, ELECTRICAL PANEL BOARD AND TELEPHONE CABINET. THE LIMIT OF DISTURBANCE IS GREATER THAN 5,000 SQUARE FEET THEREFORE STORMWATER MANAGEMENT IS REQUIRED PER THE 2010 MDE REGULATIONS.

STORMWATER MANAGEMENT WILL BE MET THROUGH USE OF A GRASS SWALE TREATING APPROXIMATELY HALF OF THE PROPOSED ACCESS ROAD. THE SWALE WILL BE ONE FOOT DEEP, FOUR FEET WIDE AND WILL BE BETWEEN 3.6% AND 1.5% LONGITUDINAL SLOPE. RUNOFF AT THE END OF THE SWALE WILL HAVE NON-EROSIVE VELOCITIES AND WILL ENTER THE EXISTING WOODED AREA PRESERVING THE EXISTING DRAINAGE PATTERN. THE REMAINING ACCESS ROAD AND COMPOUND WILL BE TREATED THROUGH NON-ROOFTOP DISCONNECTION. A PERVIOUS AREA OF LESS THAN 5% SLOPE IS ADJACENT TO THE GRAVEL ROAD AND COMPOUND PROVIDING A 1:1 PERVIOUS TO IMPERVIOUS RATIO.

THE USE OF PERVIOUS PAVEMENT ALONG THIS GRAVEL ROADWAY WAS NOT CONSIDERED A FEASIBLE OPTION FOR SEVERAL REASONS. THIS ACCESS ROAD WOULD BE USED ABOUT ONCE A MONTH FOR ROUTINE SITE MAINTENANCE, THEREFORE MAKING PERVIOUS PAVEMENT AN EXPENSIVE OPTION FOR THIS ROADWAY. THE SURROUNDING DENSE TREES AND LEAVES WOULD ALSO CLOG UP THE POROUS PAVEMENT AND WOULD LEAD TO ISSUES WITH MAINTENANCE AND EFFECTIVENESS. CAREFUL ANALYSIS SHOWED THAT POROUS PAVEMENT AS AN ALTERNATIVE SURFACE WAS NOT CONSIDERED TO BE A VIABLE BETTER SITE DESIGN TECHNIQUE.

GRAPHIC SCALE



CONCEPT SWM & ESC PLAN

SCALE: 11X17: 1" = 50'
 24X36: 1" = 25'



LEGEND

- FLOW DIRECTION
- SOILS LINE
- SF — SILT FENCE
- LOD — LIMIT OF DISTURBANCE
- T — EX. TELEPHONE UTILITY
- EX. TREELINE
- EX. CONTOUR
- PROP. GRAVEL ROAD
- X — PROP. FENCE

DATE	DESCRIPTION
08/25/13	DESIGNED FOR REVIEW
08/25/14	REVISED PER COMMENTS
08/25/14	REVISED PER COUNTY COMMENTS
08/19/14	REVISED PER COUNTY COMMENTS

KCI TECHNOLOGIES
 KCI TECHNOLOGIES, INC.
 921 Macmillan Drive, Suite H
 Hollywood, MD 20636
 Phone: 410.305.7802

verizon wireless
SOTTERLEY
 2444 SOTTERLEY ROAD
 HOLLYWOOD, MD 20636

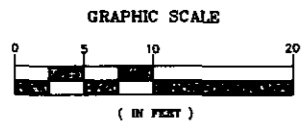
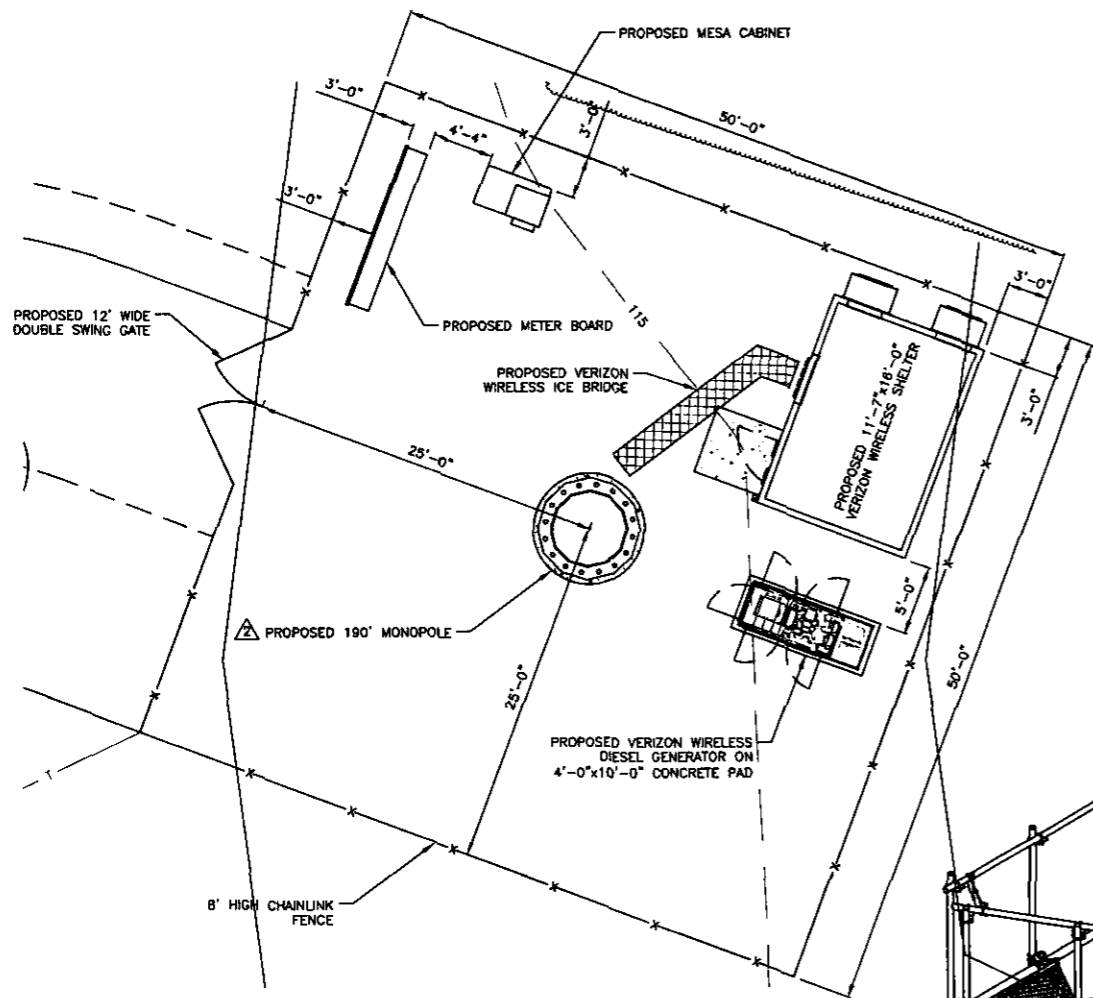
ENGINEER:
 ERIC S KOHL PE
 MD LICENSE NO: 28838

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SCALE: AS SHOWN
 DATE: 08/21/2014
 021332541

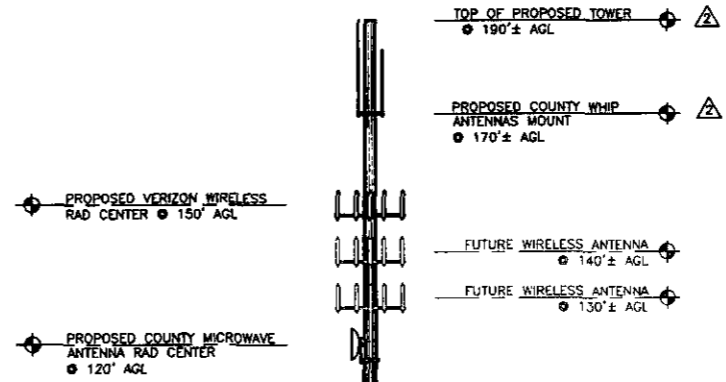
CONCEPT SWM & ESC PLAN

SHEET: **C-2**



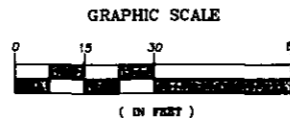
COMPOUND PLAN
SCALE: 1/16" = 1' = 30"
24x36 1" = 5'

LOW PROFILE PLATFORM WITH HANDRAIL DETAIL
SCALE: NOT TO SCALE



TOWER ELEVATION

SCALE: 1/16" = 1' = 30"
24x36 1" = 15'



LAND USE AND GROWTH MANAGEMENT
CONTROL NUMBER 13-135-001

NO.	DATE	DESCRIPTION
0	09/23/73	ISSUED FOR REVIEW
1	07/26/74	REVISED PER COMMENTS
2	03/25/74	REVISED PER COUNTY COMMENTS
3	09/19/74	REVISED PER COUNTY COMMENTS

DRAWN BY: J.C.
CHECKED BY: ESK
APPROVED BY: ESK

KCI
TECHNOLOGIES
KCI TECHNOLOGIES, INC.
921 Mercantile Drive Suite H
Hanover, MD 21076
Phone: 410.308.1702

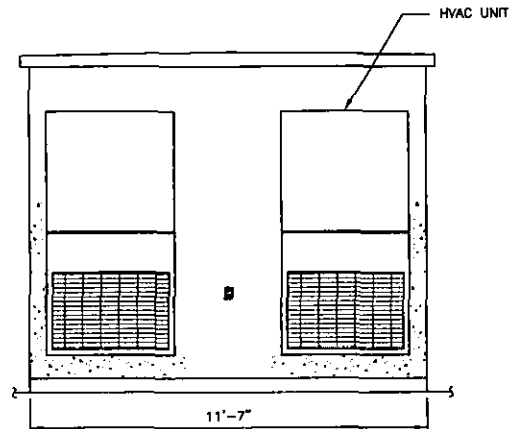
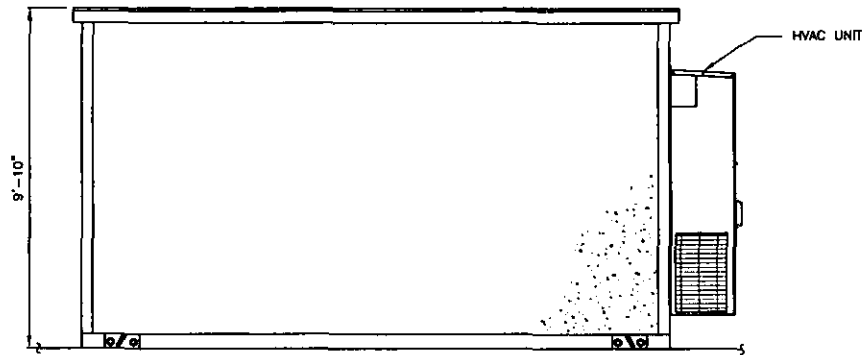
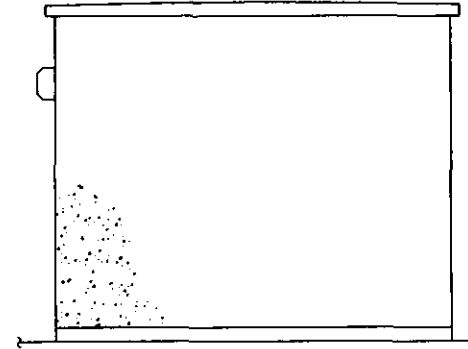
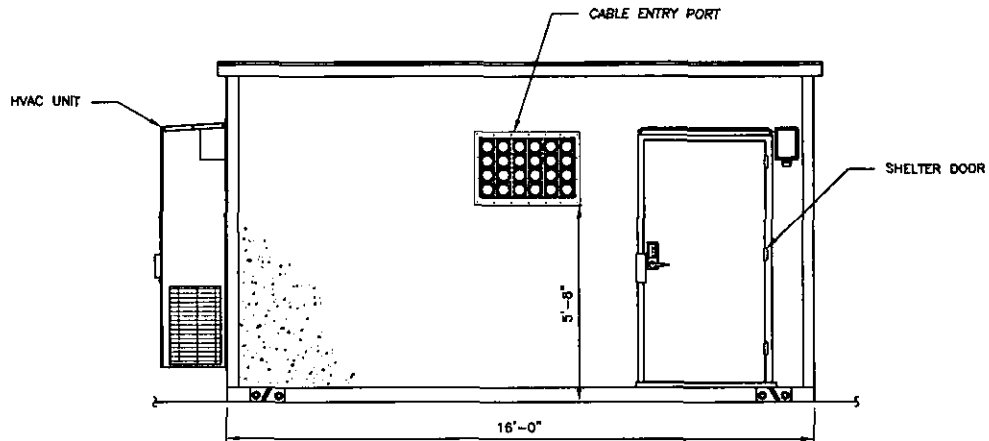
verizon wireless
SOTTERLEY
24844 SOTTERLEY ROAD
HOLLAND, MD 21638

ENGINEER:
ERIC S KOHL, PE
MD LICENSE NO: 26838

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SCALE: AS NOTED
DATE: 09/12/2004
KCI JOB NUMBER: 02133254L

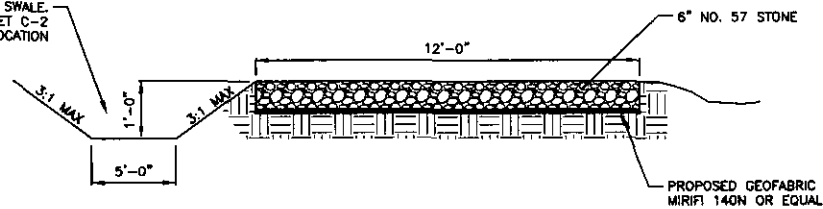
PROJECT TITLE
COMPOUND PLAN &
TOWER ELEVATION



VERIZON WIRELESS SHELTER ELEVATIONS

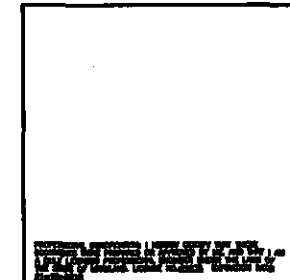
SCALE: 1/16" = 1' - 0"
 24X36: 1" = 2'

PROPOSED GRASS SWALE.
 SEE PLAN ON SHEET C-2
 FOR LOCATION



GRAVEL ROAD & GRASS SWALE TYPICAL SECTION A-A
 NOT TO SCALE

LAND USE AND GROWTH MANAGEMENT
 CONTROL NUMBER 13-135-001



NO.	DATE	DESCRIPTION
0	08/23/13	ISSUED FOR REVIEW
1	07/24/14	REVISION PER COMMENTS
2	07/25/14	REVISION PER COUNTY COMMENTS
3	08/19/14	REVISION PER COUNTY COMMENTS

DRAWN BY: JLC
 CHECKED BY: JLC
 APPROVED BY: ESK

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 HOLLAND, MD 20638

ENGINEER:
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SCALE: AS NOTED
 DATE: 08/12/2014
 JOB AND DRAWING NO.: 02133254L

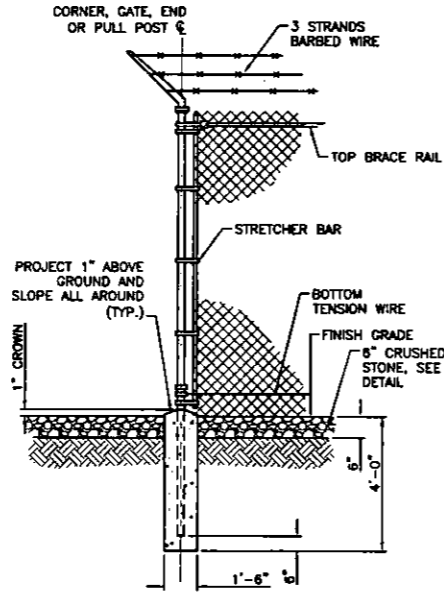
PROJECT:
 SHELTER
 DETAILS

SHEET:
 C-4

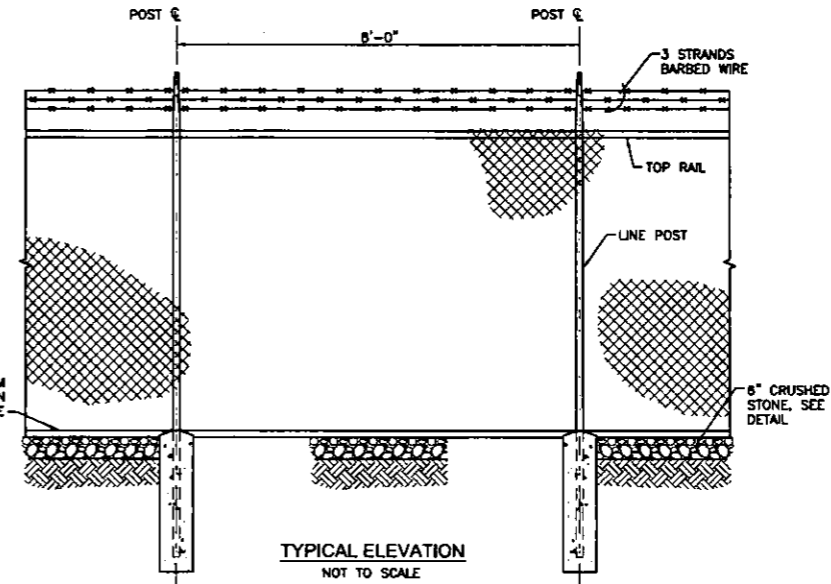
NOTES:

(INSTALL FENCING PER ASTM F-567, SWING GATES PER ASTM F- 900).

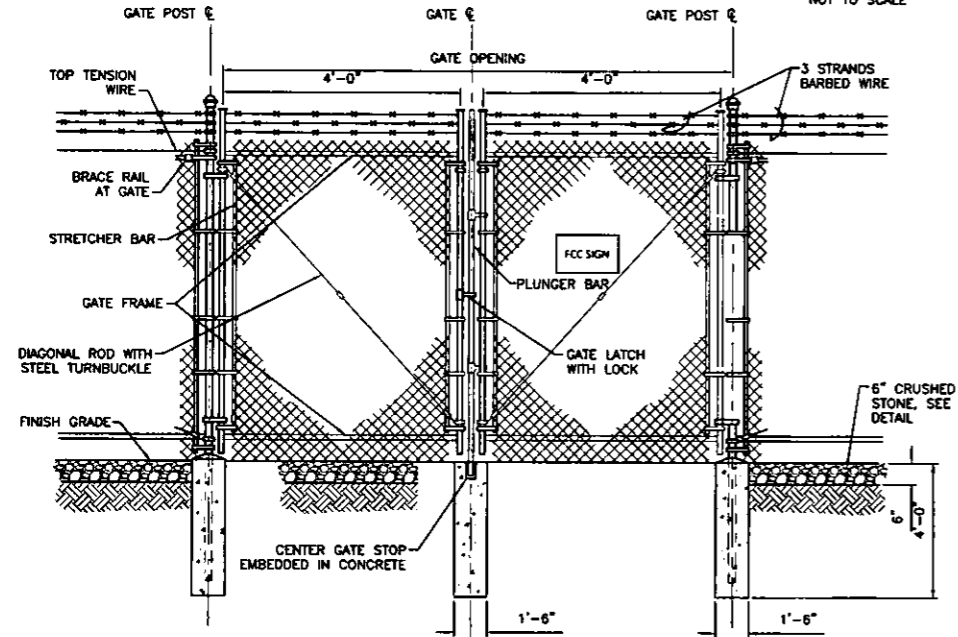
1. GATE POST: 3/4" DIA. SCHEDULE 40 PER ASTM-F 1083.
2. CORNER AND TERMINAL OR PULL POST: 3" DIA. SCHEDULE 40 PER ASTM-F 1083.
3. LINE POST: 2" DIA. SCHEDULE 40 PIPE PER ASTM-F 1083.
4. GATE FRAME: 1 1/2" DIA. SCHEDULE 40 PIPE PER ASTM-F 1083.
5. TOP RAIL AND BRACE RAIL: 1 1/2" DIA. SCHEDULE 40 PIPE PER ASTM-F 1083.
6. FABRIC: 9 GA. CORE WIRE SIZE 2" MESH, CONFORMING TO ASTM-A392.
7. TIE WIRE: MINIMUM 9 GA. GALVANIZED STEEL AT POSTS AND RAILS A SINGLE WRAP OF FABRIC TIE AND AT TENSION WIRE BY HOG RINGS SPACED MAXIMUM 24" INTERVALS.
8. TENSION WIRE: 6 GA. GALVANIZED STEEL.
9. BARBED WIRE DOUBLE STRAND 12-1/2" GA. TWISTED WIRE TO MATCH WITH FABRIC 14 GA., 4 FT. BARBS SPACED ON APPROXIMATELY 5" CENTERS.
10. GATE LATCH: 1-1/8" O.D. PLUNGER ROD WITH MUSHROOM TYPE CATCH AND LOCK, KEYPED ALIKE FOR ALL SITES IN A GIVEN MTA.
11. COMPLY WITH ANY LOCAL ORDINANCES REQUIRING PERMITS FOR PLACEMENT OF BARBED WIRE.
12. HEIGHT = 8' VERTICAL AND 1' BARBED WIRE VERTICAL DIMENSION.
13. WARNING SIGNS USING THE INTERNATIONAL SYMBOL OF ELECTRICAL SHOCK HAZARD SHALL BE FURNISHED AND INSTALLED ON THE EXTERIOR OF ALL SIDES OF THE MAIN PERIMETER FENCE AND THE GATE. ADDITIONALLY, SIGNS SHALL BE FURNISHED AND INSTALLED THAT STATE "NO TRESPASSING" IN ENGLISH. THE SIGNS SHALL BE IMPERVIOUS TO WEATHERING AND BE MOUNTED TO AVOID EASE OF REMOVAL BY VANDALS.



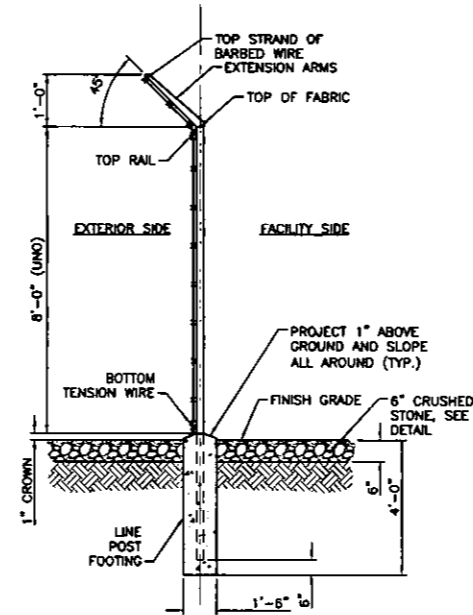
WOVEN WIRE CORNER, GATE, END OR PULL POST DETAIL
NOT TO SCALE



TYPICAL ELEVATION
NOT TO SCALE



DOUBLE SWING GATE DETAIL
NOT TO SCALE



WOVEN WIRE FENCE DETAIL TYPICAL SECTION
NOT TO SCALE

LAND USE AND GROWTH MANAGEMENT
CONTROL NUMBER 13-135-001

DATE	DESCRIPTION
09/23/13	ISSUED FOR REVIEW
09/23/13	REVISED PER COMMENTS
09/23/13	REVISED PER COMMENTS
09/23/13	REVISED PER COMMENTS

DRAWN BY: J.C.
CHECKED BY: J.C.
APPROVED BY: ESK

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verizon wireless
SOTTERLEY
Aerial Infrastructure Group
FENCE DETAILS

ENGINEER:
ERIC S. KOHL, PE
MD LICENSE NO.: 26838

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SCALE: AS SHOWN
DATE: 09/23/2014
MD JOB NUMBER: 0213225-01

FENCE DETAILS

REVISION: C-5