

IN THE MATTER OF  
THE APPLICATION OF  
CELICO PARTNERSHIP  
d/b/a VERIZON WIRELESS

BEFORE THE CECIL COUNTY  
BOARD OF APPEALS  
CASE NO.: 3582

(Special Exception - SAR)

OPINION

Application of Celico Partnership, d/b/a Verizon Wireless (“Celico” or the “Applicant”), for a special exception to construct a cellular communications monopole at property located at 3272/3280 Augustine Herman Highway, Chesapeake City, Maryland 21915, which is designated as Parcel 88 on Tax Map 48, in the Second Election District of Cecil County (the “Property”), in an area presently zoned Southern Agricultural Residential (“SAR”). The property is owned by the Cecil County Society for the Prevention of Cruelty to Animals (the “SPCA”).

This application is brought under the provisions of Article V, Part VIII, Section 115 and Section 54.4 Table of Permissible Uses 8.04.000 of the Ordinance, which permits a communication tower to be constructed as a Special Exception in the SAR zone provided that:

1. Except in the NAR & SAR zones, the proposed tower shall have a setback of one foot from all property lines for every foot of height of the tower and associated antennae. Upon a showing by the applicant that the proposed tower is structurally engineered in such a manner that a reduced fall zone is adequate, the Board of Appeals may reduce the setback to no less than one half (1/2) the height of the proposed tower. Such a showing must be based on the written testimony of a structural engineer or other qualified professional. In the NAR & SAR zones, the proposed tower shall have a setback of three times the height of the tower from the nearest principal roadway and a

setback of one foot from all other property lines for every foot of height of the tower. New towers shall be built at the lowest height possible that will still allow for co-location and will not necessitate the construction of additional towers to achieve the same service coverage objectives.

2. The applicant shall demonstrate that a diligent effort has been made to locate the proposed communication facility on an existing structure or in a non-residential zoning district, and that due to valid considerations, including physical constraints and economic or technical feasibility, no other appropriate location is available. An alternatives analysis prepared by the applicant shall address the following:

- a. All reasonably feasible alternative locations or facilities that would provide the proposed communication service;
- b. An analysis indicating whether an existing facility can be structurally modified to accommodate the applicant's proposed use and coverage;
- c. The potential for co-location at an existing or a new site and the potential to locate facilities as close as possible to the intended service area;
- d. The rationale for the selection of the proposed site in view of relative merits of any feasible alternatives;
- e. A system design plan that shall include:
  - i. Radio frequency parameters;
  - ii. Tower height;
  - iii. Number of antennas that the proposed tower can accommodate at capacity;
  - iv. Radio frequency output; and

v. Effective radiated power and azimuth antenna type.

f. Demonstration of a good faith effort to co-locate with other carriers including a survey of all existing structures that may be reasonable for co-location and contacts with other service providers in the County.

The information submitted by the applicant shall include a map of the area to be served by the tower, its relationship to other antenna sites in the applicant's network, an evaluation of existing structures taller than 50 feet, and communication towers, electrical transmission towers, and water towers within a one-half mile radius of the proposed tower, aerial and ground photographs of the site and surrounding areas, elevation drawings of all equipment and storage buildings on the property, and the color and building materials to be used on the proposed telecommunication facility.

3. New communication towers shall be designed to accommodate antennas for more than one user, unless the applicant demonstrates why such design is not feasible for economic, technical, or physical reasons. Unless co-location has been determined to be infeasible, the Plan shall delineate an area near the base of the tower to be used for the placement of additional equipment buildings for other users.

4. Where feasible, the tower shall be situated within or adjacent to mature tree growth and understory vegetation that provides an effective year round visual buffer and should only be considered elsewhere on the property when technical or aesthetic reasons indicate there are no other preferable locations. Ground level equipment and buildings and the tower base shall be screened from public streets and residentially zoned properties. Ground level equipment buildings shall be constructed of either masonry or wood with either wood, vinyl, reinforced concrete, or other good quality siding material.

5. Communication Towers shall be gray or a similar color that minimizes visibility, unless a different color is required by the Federal Communications Commission or the Federal Aviation Administration.

6. No signals or lights shall be permitted on a tower unless required by the Federal Communications Commission or the Federal Aviation Administration.

7. A Communication Tower that is no longer in use shall be removed from the site within six (6) months of the date that the uses cease.

In addition to the requirements of Section 115, Article XVII, Part II, Section 311 of the Ordinance specifies that no special exception shall be approved by the Board of Appeals after considering all facts in the case unless the following findings are made:

1. Such use or any operations thereto will not be detrimental to or endanger the public health, safety, or general welfare.

2. The use will not be unduly injurious to the peaceful use and enjoyment of other property in the neighborhood, nor substantially diminish or impair property values in the neighborhood.

3. The establishment of the use will not impede the normal and orderly development and improvement of the surrounding property for uses permitted in the zone.

4. The use will not, with respect to existing development in the area and development permitted under existing zoning, overburden existing public facilities, including schools, police and fire protection, water and sewer, public road, storm drainage, and other public improvements.

5. The use shall not adversely affect critical natural areas or areas of ecological importance.

6. The use shall, in all other respects, conform to the applicable regulations of the zone in which it is located.

7. That the particular use proposed at the particular location proposed, would not have any adverse effect above and beyond those inherently associated with such special exception use irrespective of its location in the zone. (*Schultz v. Pritts*, 291 MD. 1)

8. That adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion in the public streets.

9. That the proposed special exception is not contrary to the objectives of the current Comprehensive Plan for the County.

Applicant requests a special exception on the Property in order to construct a 150' monopole. The Applicant presented credible evidence and testimony in support of the Application, and the Board makes the following findings of fact from the evidence and testimony presented:

1. The proposed tower will have a setback of three times the height of the tower from the nearest principal roadway and a setback of one foot from all other property lines for every foot of height of the tower. The Property contains 12 acres of land, and the proposed monopole is at least 160 feet from the closest neighboring property, and at least 465 feet from the nearest principal roadway. The Board further finds that the proposed new tower will be built at the lowest height possible that will still allow for co-location and will not necessitate the construction of additional towers to

achieve the same service coverage objectives. More specifically, correspondence to the Board by Andrew M. Petersohn, P.E., the Applicant's Registered Professional Engineer ("Petersohn"), dated January 4, 2012, demonstrates that the area of unreliable coverage is significant, and spans sections of heavily traveled roads as well as adjoining areas. According to Petersohn, in order to provide reliable coverage, the proposed monopole must be well placed in order to fit into the coverage provided by the existing and proposed base sections of the surrounding area. For this reason, the target area for a new facility is very small. There are not any existing structures available to co-location in the target area for a new facility that could fulfill the objectives of this proposed monopole. To deviate from the target area would advance the proliferation of additional facilities as opposed to using the least number of facilities and utilizing existing structures. The prerequisite to reliable service is sufficient signal strength in the area being served by the base station. The base station must be able to provide sufficient signal to the handheld mobile unit, and the handheld mobile unit must not be out of range of the base station.

The Board credits Petersohn's opinion, and finds as fact, that the proposed monopole is necessary for Verizon Wireless to fulfill the objectives of providing continuous reliable coverage to this section of Cecil County and, further, his opinion that the proposed antenna height of 150' is the minimum height required to provide the necessary reliable service needed in this area for Verizon Wireless, taking many factors into account, including the location and the relative ground elevation. The Board further finds as fact that, any reduction in height would sacrifice the objectives of the proposed monopole and serve to require additional facilities within Cecil County.

2. The applicant has demonstrated that a diligent effort has been made to locate the proposed communication facility on an existing structure or in a non-residential zoning district, and that due to valid considerations, including physical constraints and economic or technical feasibility, no other appropriate location is available. In making this finding, the Board adopts the findings set forth in section 1 above. In addition, the Board adopts the December 15, 2011 and January 4, 2012 and alternatives analysis prepared for the Applicant by Petersohn, copies of which are attached hereto as Exhibit #1 and Exhibit #2, respectively, which address the following:

- a. All reasonably feasible alternative locations or facilities that would provide the proposed communication service. The Board finds that
- b. An analysis indicating whether an existing facility can be structurally modified to accommodate the applicant's proposed use and coverage;
- c. The potential for co-location at an existing or a new site and the potential to locate facilities as close as possible to the intended service area;
- d. The rationale for the selection of the proposed site in view of relative merits of any feasible alternatives;
- e. A system design plan that includes:
  - i. Radio frequency parameters;
  - ii. Tower height;
  - iii. Number of antennas that the proposed tower can accommodate at capacity;
  - iv. Radio frequency output; and
  - v. Effective radiated power and azimuth antenna type.

f. Demonstration of a good faith effort to co-locate with other carriers including a survey of all existing structures that may be reasonable for co-location and contacts with other service providers in the County. As stated above, Petersohn's letter of January 4, 2012 states, and the Board finds, that there are not any existing structures available for co-location in the target area that could fulfill the objectives of this proposed monopole. To deviate from the target area would advance the proliferation of additional facilities as opposed to using the least number of facilities and utilizing existing structures.

The information submitted by the Applicant, specifically, Exhibits A and B to Petersohn's letter to the Board dated January 4, 2012, include a map of the area to be served by the tower, its relationship to other antenna sites in the applicant's network, an evaluation of existing structures taller than 50 feet, and communication towers, electrical transmission towers, and water towers within a one-half mile radius of the proposed tower. The Applicant also submitted elevation drawings of the Property with its Application, which the Board accepts as credible evidence of same, and during its presentation before the Board, the Applicant showed aerial and ground photographs of the site and surrounding areas. The structure will be a gray, free standing or Guyed Structure with panel style antennas arranged in three sectors with azimuths evenly paced in the horizontal plane. .

3. The Board finds that the proposed monopole is designed to accommodate antennas for more than one user. More specifically, although Verizon is currently the only commercial service provider proposing installation on the monopole, the monopole



insures adequate vertical separation (roughly 10 feet) which would allow service providers to co-locate on the structure.

4. The January 4, 2012 correspondence from Petersohn states that there is a tree line surrounding the proposed site, and the Board finds that the tree line provides an effective visual buffer that screens ground level equipment and buildings, as well as the tower base, from public streets and residentially zoned properties.

5. The proposed monopole will be gray or a similar color; the record does not indicate that a different color is required by the Federal Communications Commission or the Federal Aviation Administration.

6. No signals or lights are planned for the monopole, and the Board finds that the Federal Aviation Administration does not require lighting of the facility.

No one spoke either in favor or against the application.

Clifford Houston, Cecil County Department of Planning and Zoning, testified that the Planning Commission recommended approval of the application.

From the evidence, the Board makes the following findings of facts pursuant to the requirements of Section 311:

1. That the special exception will not be detrimental to or endanger the public health, safety, or general welfare. The Board finds that the area of unreliable coverage provided by the existing base stations in the surrounding area is significant and spans sections of heavily traveled roads and adjoining areas. Reliable coverage, which will be provided by the proposed facility, is beneficial to the public health, safety and general welfare in that the concept of reliable coverage extends beyond voice communication, and includes the transmission and reception of data services over the

handheld unit, including services that impact public safety, such as e-mail, text messages, medical information, or law enforcement inquiries. The maximum exposure to radio-frequency emissions from the proposed monopole will be far below Federal Communication Commission exposure limits; more specifically, based on upper limit assumptions for the equipment configuration, the cumulative radio-frequency exposure levels would be at least 520-times less than the FCC limits at all locations of public access.

2. That there was no evidence indicating that the use will be unduly injurious to the peaceful use and enjoyment of other property in the neighborhood, nor was there any evidence to demonstrate that such use will substantially diminish or impair property values in the neighborhood. As stated above, the proposed monopole would be in full compliance with the FCC's emission standards, and the Property contains 12 acres of land, with the proposed monopole to be located at least 160 feet from the closest neighboring property, and at least 465 feet from the nearest principal roadway. The proposed new tower will be built at the lowest height possible that will still allow for co-location and will not necessitate the construction of additional towers to achieve the same service coverage objectives. Finally, there is a tree line surrounding the proposed site, and as stated above, the Board finds that the tree line provides an effective visual buffer that screens ground level equipment and buildings, as well as the tower base, from public streets and residentially zoned properties.

3. That there was no evidence indicating that normal and orderly development and improvement of the surrounding properties will be impeded by the proposed use. Rather, the proposed monopole allows for co-location of other wireless

providers, which reduces the potential proliferation of additional facilities in the target area.

4. That there was no evidence indicating that the use will, with respect to existing development in the area and development permitted under existing zoning, overburden existing public facilities, including schools, police and fire protection, water and sewer, public road, storm drainage, and other public improvements. The Property provides a suitable means of ingress and egress to the proposed monopole, which will occur one time per month. There will be no other traffic associated with the proposed facility, and the Board finds that the proposed monopole will not increase traffic, require additional water, sewer or septic, or increase the need for police or fire protection.

5. That there is no evidence that the proposed use will adversely affect critical natural areas or areas of ecological importance. The Property is not in the critical area, or critical area buffer.

6. As set forth above, proposed use will, in all other respects, conform to the applicable regulations of the zone in which it is located.

7. That there is no evidence that the particular use proposed at the particular location proposed, will have any adverse effect above and beyond those inherently associated with such special exception use irrespective of its location in the zone. (*Schultz v. Pritts*, 291 MD. 1). The proposed facility would fulfill the Applicant's needs in the least intrusive means possible for this area, and the radio equipment, antenna configuration, and technologies used by the Applicant would provide for reliable wireless service in the most efficient means possible for this area. The proposed location is in a rural area of the County, and is presently used by the SPCA for its commercial

operations. There is also some residential housing in the general area.. The proposed monopole is well suited, in terms of location and minimum height, to provide reliable service to subscribers in a section of Cecil County which currently suffers from a significant gap in reliable wireless service. The Applicant opines, and the Board finds, that there are no other more feasible alternatives for providing enhanced coverage to this section of Cecil County, that the proposed facility in this location is necessary for the efficient operation and provision of wireless services to the area for which it is proposed, and that the impact here is similar to that which would be inherently associated with the installation of a monopole irrespective of its location in the SAR zone.

8. That adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion in the public streets. As stated above, there will be no traffic associated with the proposed monopole, and there is sufficient ingress and egress for service to the facility, which will occur one time per month.

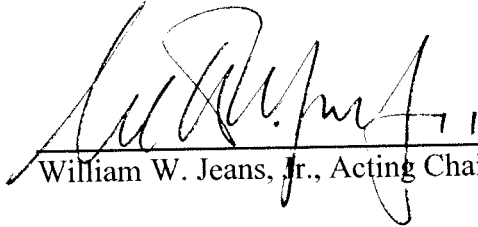
9. That the special exception is consistent with the objectives of the current Comprehensive Plan for the County. The proposed use is permitted as a special exception, with conditions, in the SAR zone, and the Applicant meets all supplemental requirements under Section 115 of the Ordinance. Further, the community's interests are best served by locating the proposed facility centrally to the area that lacks reliable coverage; failure to do so potentially sacrifices reliable communications for the community, including those that impact public safety. According to the Cecil County Comprehensive Plan, the Maryland Eastern Shore Broadband Strategic Plan, conducted in conjunction with DBED, Maryland's Technology development Corporation, the Tri-

County Council for the Lower Eastern Shore and the Mid-Shore Regional Council, concluded that the Eastern Shore suffers limited access to competitively priced high-speed communication technologies that are widely available in urban areas. As of 2010, not all of the County's existing and proposed employment areas have broadband service, and rural areas also lack access to high-speed internet service. Working in partnership with service providers can help to fill this gap. The Applicant's existing EVDO network and the under construction LTE network will provide expanded mobile broadband internet service to many areas that are currently underserved or not served at all by broadband providers, wireless or wire-line, in harmony with the intentions of the Comprehensive Plan.

For the reasons stated, by unanimous vote, the Board is satisfied that the requirements of Sections 115, 54.4 sub-part 8.04.000, and 311, along with *Schultz v. Pritts*, 291 Md. 1 (1981) have been met, and the application is **APPROVED**.

Date

3/27/12

  
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William W. Jeans, Jr., Acting Chairperson

PO Box 165  
Fairview Village, PA 19409  
Phone: 610.304.2024  
Fax: 610.584.5387  
[info@dBmEng.com](mailto:info@dBmEng.com)



December 15, 2011  
Sue Manchel  
Site Acquisition  
Verizon Wireless  
5175 Campus Drive  
Plymouth Meeting, PA 19462

**Subject: Interference Analysis for Proposed Telecommunication Facility  
"WIL - MARR"**  
3280 Augustine Herman Highway  
(MD Route 213)  
Chesapeake City, MD 21915  
Latitude: N 39° 29' 32.00" (NAD 83)  
Longitude: W 75° 50' 29.34" (NAD 83)  
80' AMSL

Ms. Manchel,

I have received and executed the request that I perform an independent evaluation of the potential for harmful interference generated by the proposed Verizon Wireless telecommunications facility at the location referenced above. The intention of this study is to determine if the manifestation of harmful interference is a viable concern through the close examination of the radio frequency (hereafter RF) parameters of the installation. As a registered professional engineer, I am bound by a code of ethics to hold paramount the safety, health, and welfare of the public. Ergo, all statements and calculations offered herein are made in an objective and truthful manner pursuant to that code.

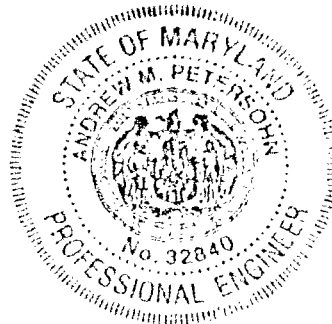
**Summary of Findings**

After close examination of the details of this proposal, it is my professional opinion that **no potential exists for the manifestation of harmful interference** as a result of the proposed Verizon Wireless telecommunications facility. My findings indicate that Verizon Wireless will be operating in full compliance with all applicable standards as outlined in their Federal Communications Commission licensure.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew M. Petersohn", written over a horizontal line.

Andrew M. Petersohn, P.E.  
Registered Professional Engineer  
Maryland License Number 32840



## Licensure Discussion

Verizon Wireless is bound by its Federal Communications Commission (hereafter FCC) licensure to transmit only the specific frequencies and power levels for which they are licensed. In Cecil County, Maryland these licenses include the 'B' Cellular Band, the 'F' and 'E' PCS bands and the recently auctioned 'F' AWS band and 'A' and 'C' 700 MHz bands. Other communication facilities and services such as emergency responders, television broadcasting, AM/FM broadcasting, mobile to mobile radios, and home electronics operate at different frequencies, once again, allocated by the FCC. For this reason, the manifestation of **direct**, harmful interference is precluded by virtue of Verizon Wireless being the only entity licensed to utilize these specifically defined portions of the RF spectrum. As such, there will be no direct, significant radio frequency emissions that fall into any band other than that for which Verizon Wireless is licensed. However, when non-linear elements (such as amplifiers) are introduced in the RF path the possibility exists for **indirect** interference caused by harmonic and inter-modulated frequency emissions that may fall outside the licensed spectrum. Due to the fact that the harmonic and inter-modulated output of Cellular and PCS transmitters is extremely low (as required by FCC type approval), this only becomes a concern when there are multiple telecommunication installations in close proximity to one another. This problem is easily avoided by insuring adequate vertical separation (roughly 10') when service providers co-locate on a structure. In this specific installation, Verizon is the only commercial service provider proposing installation on the monopole so the point is moot. **In the unlikely event that future radio frequency interference is reported, it is Verizon Wireless policy to identify and mitigate any interference issues as quickly as possible.**

## Facility Discussion

According to the information supplied by representatives of Verizon Wireless the proposed design for this facility includes a total of not more than twelve (12) panel style antennas arranged in three sectors at azimuths evenly spaced in the horizontal plane with respect to true north. The antenna centerline height above ground level is planned at 150'. Transmitting through these antennas will be up to eight (8) CDMA radios in the 850 MHz band (per sector) at a maximum of 100 watts ERP (effective radiated power) per radio, up to eight (8) CDMA radios in the 1900 MHz band (per sector) at a maximum of 100 watts ERP (effective radiated power) per radio, and one (1) LTE radio in the 700 MHz band (per sector) at a maximum of 100 watts ERP (effective radiated power) per radio

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PO Box 165  
Fairview Village, PA 19409  
Phone: 610.304.2024  
Fax: 610.584.5387  
[info@dBmEng.com](mailto:info@dBmEng.com)



### **Additional Remarks**

The radio frequency emission levels from Verizon Wireless and other PCS and Cellular communications base stations are similar to that of other two-way communications systems such as those used by police, fire and ambulance personnel. In contrast, commercial broadcast systems such as television and radio often transmit at power levels ten times greater or more than the systems discussed above. Due to the relatively low power output, the potential for harmful interference is greatly reduced as the harmonic and inter-modulated emissions are typically in the noise floor of most receivers when only a few hundred feet away.

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PO Box 165  
Fairview Village, PA 19409  
Phone: 610.304.2024  
Fax: 610.584.5387  
[info@dBmEng.com](mailto:info@dBmEng.com)





## DECLARATION OF ENGINEER

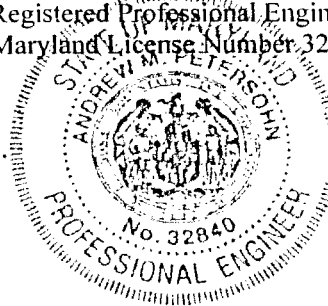
Andrew M. Petersohn, P.E., hereby states that he is a graduate telecommunications consulting engineer possessing Master and Bachelor Degrees in Electrical Engineering from Lehigh University (2005 and 1999, respectively). His corporation, dBm Engineering, P.C., has been retained by representatives of Verizon Wireless to perform an interference analysis for a proposed telecommunications facility.

Mr. Petersohn also asserts that the calculations and/or measurements described in this report were made personally and in a truthful and objective manner. Mr. Petersohn is a Registered Professional Engineer in Pennsylvania, Maryland, Delaware, Florida, New York, New Jersey and Virginia. He has over a decade of engineering experience in the field of wireless communications. Mr. Petersohn is an active member of the National Society of Professional Engineers (NSPE) and the Institute of Electronic and Electrical Engineers (IEEE). Mr. Petersohn further states that all facts and statements contained in the foregoing document are true and accurate to the best of his knowledge. He believes, under penalty of perjury, the foregoing to be correct.



Andrew M. Petersohn, P.E.  
Registered Professional Engineer  
Maryland License Number 32840

Executed this the 15<sup>th</sup> day of December, 2011.



PO Box 165  
Fairview Village, PA 19409  
Phone: 610.304.2024  
Fax: 610.584.5387  
[info@dBmEng.com](mailto:info@dBmEng.com)

The logo for dBm Engineering, P.C. features a stylized graphic of a signal or wave on the left, followed by the text "dBm" in a large, bold, sans-serif font, and "ENGINEERING, P.C." in a smaller, bold, sans-serif font below it.

PO Box 165  
Fairview Village, PA 19409  
Phone: 610.304.2024  
Fax: 610.584.5387  
[info@dBmEng.com](mailto:info@dBmEng.com)



January 4, 2012

Board of Appeals  
Cecil County, Maryland  
Department of Planning  
Cecil County Administration Building  
200 Chesapeake Boulevard  
Elkton, MD 21921

Re: Cellco Partnership d/b/a Verizon Wireless  
"WIL-MARR"  
Proposed 150' Monopole  
3280 Augustine Herman Highway  
(MD Route 213)  
Chesapeake City, MD 21915  
Latitude: N 39° 29' 32.00" (NAD 83)  
Longitude: W 75° 50' 29.34" (NAD 83)  
80' AMSL

To Whom It May Concern:

I am writing to you to document the need for Cellco Partnership d/b/a Verizon Wireless (hereinafter referred to as "Verizon Wireless") to install its antennas at a height of 150' on the tower proposed for the above-referenced property from a radio frequency perspective in accordance with the requirements of Section 115.2 of the Cecil County Zoning Ordinance (hereafter referred to as the "Ordinance").

My company provides independent consulting engineering services to the wireless telecommunications industry. As a Professional Engineer, with a specialty in radio frequency, I am familiar with all aspects of RF design of a wireless telecommunications system, including search area design to meet the demand for wireless service, field testing for site suitability and performance optimization, and technology planning for the rollout of digital technologies to meet the needs of customers who desire reliable wireless communications services. I have been retained by Verizon Wireless to consult on the design of sites to provide wireless service throughout Maryland, including Cecil County.

Verizon Wireless is currently licensed by the Federal Communications Commission (FCC) to provide wireless services to Cecil County and the surrounding areas. The license specifies the frequency band and power levels at which Verizon Wireless is authorized to operate their system. Typically, Verizon Wireless' facilities

transmit with only a fraction of its licensed power output to promote channel re-use and thereby optimize service.

The objective of the proposed telecommunications facility is to provide continuous reliable coverage to the areas surrounding Augustine Herman Highway (Route 213) between Chesapeake City and Cecilton. This includes Cayots, St. Augustine, Town Point, and Hack Point. The proposed facility will fill a significant gap in coverage that currently exists. This gap results in the inability to make or receive calls, the loss of calls experienced by customers as they enter the significant gap in coverage, a lack of reliable data functionality and other service problems to customers in this area.

The existing base stations currently serving the periphery of this area are located as follows:

- 2470 Denny Road, Bear, DE - 157 ft Antenna Centerline
- 109 Boat Yard Road, Chesapeake City, MD - 198 ft Antenna Centerline
- 2470 South DuPont Parkway, St. Georges Hundred, DE - 120 ft Antenna Centerline
- 600 Industrial Drive, Middletown Boro, DE - 138 ft Antenna Centerline
- 364 Cecilton-Warwick Rd (Rt282), Cecilton, MD - 178 ft Antenna Centerline
- 169 Shamrock Lane, Elkton, MD - 150 ft Antenna Centerline
- 1301 Lorewood Grove Road, Middletown, DE - 177 ft Antenna Centerline

The coverage generated by these existing sites excludes a significant gap in reliable coverage for the communities of Cayots, St. Augustine, Town Point, and Hack Point as well as the traveling public.

I use the term "reliable" coverage to describe the standard level of service that each wireless licensee is expected to achieve by the FCC. "Reliable coverage" is defined as the ability of a remote user of wireless services to connect with the land-based national telephone network and to maintain a connection capable of supporting a reasonably uninterrupted communication. The concept of reliable coverage extends beyond just voice communication to include the transmission and reception of data services over the handheld unit, including services that impact public safety, such as e-mails, text messages, medical information, or law enforcement inquiries.

It is my opinion that the area of unreliable coverage is significant, in that it spans sections of heavily traveled roads as well as adjoining areas.

In order to provide reliable coverage, the proposed facility must be well placed in order to properly fit into the coverage provided by the existing and proposed base stations in the surrounding area. For this reason, the target area for a new facility is

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PO Box 165  
Fairview Village, PA 19409  
Phone: 610.304.2024  
Fax: 610.584.5387  
[info@dBmEng.com](mailto:info@dBmEng.com)



very small. There are no any existing structures available for co-location in the target area for a new facility that could fulfill the objectives of this proposed facility. To deviate from the target area would advance the proliferation of additional facilities as opposed to using the least number of facilities and utilizing existing structures.

The prerequisite to reliable service is sufficient signal strength in the area being served by the base station. The base station must be able to provide sufficient signal to the handheld mobile unit, and the handheld mobile unit must not be out of range of the base station. The effect of having lack of coverage (weak signal strength) is denial of wireless services, lost calls, or poor quality service to customers in these areas.

It is necessary to locate the tower where proposed given the topography of the land throughout the intended coverage area, the proximity to roads of various classification, the proximity of areas of the community in which mobile users are located, the relative ground elevation of the site, the height of the tree line surrounding the site, the absence of other existing tall structures which may serve as candidates, the equipment Verizon Wireless plans to utilize in the facility, and the traffic distribution of the facility. As evidenced by the base stations surrounding this site, Verizon Wireless supports collocation efforts to minimize the proliferation of new towers whenever possible to serve the wireless needs of a community; however, there are none available for this site.

I have evaluated the subject site candidate to meet the target objectives taking into account that there are no existing tall structures either inside or within one half (1/2) mile outside of the service area that can effectively be used in the wireless network. The community's interests are best served by locating the new facility centrally to the area that lacks reliable coverage. Failure to do so potentially sacrifices reliable communications for the community, including those that impact public safety. According to the Cecil County Comprehensive plan: ...the Maryland Eastern Shore Broadband Strategic Plan, conducted in conjunction with DBED, Maryland's Technology development Corporation, the Tri-County Council for the Lower Eastern Shore and the Mid-Shore Regional Council, concluded that the Eastern Shore suffers limited access to competitively priced high-speed communication technologies that are widely available in urban areas. As of 2010, not all of the County's existing and proposed employment areas have broadband service, and rural areas also lack access to high-speed Internet service. Working in partnership with service providers can help to fill this gap. Verizon's existing EVDO network and the under construction LTE network will provide expanded mobile broadband internet service to many areas that are currently underserved or not served at all by broadband providers, wireless or wire-line, in harmony with the intentions of the Comprehensive Plan.

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[info@dBmEng.com](mailto:info@dBmEng.com)



It is my opinion that the proposed facility is necessary for Verizon Wireless to fulfill the objectives of providing continuous reliable coverage to this section of Cecil County. The proposed antenna height of 150' is the minimum height required to provide the necessary reliable service needed in this area for Verizon Wireless, taking many factors into account, including the location and the relative ground elevation. Any reduction in height would sacrifice the objectives of the proposed facility and serve to require additional facilities within Cecil County.

In support of my opinion, attached hereto and incorporated herein as Exhibits "A" and "B" are colored propagation studies showing the existing significant gap in coverage and the reliable coverage that will be provided by this site as proposed. These Exhibits were prepared utilizing an industry standard, predictive, computer propagation tool. This program utilizes data regarding topography, environmental clutter, existing coverage and the characteristics of Verizon Wireless' radio frequency signal. The colors depicted in the Exhibits correspond to the levels of coverage as follows: any colored area represents signal strength adequate for reliable in-car coverage; and any non-colored (white) areas represent inadequate signal strength for reliable in-car coverage. Exhibit A depicts a significant gap in coverage identified by the color white. Exhibit B shows reliable coverage provided by the site to the above described areas as depicted by red. A 150' tower represents the least intrusive means of providing reliable coverage in this area. Specifically for this installation, Verizon Wireless plans to install up to twelve (12) panel style antennas arranged in three sectors with azimuths evenly spaced in the horizontal plane. The antenna centerline height above ground level is planned at 150'. Transmitting through these antennas will be up to eight (8) CDMA radios in the 850 MHz band (per sector) at a maximum of 100 watts ERP (effective radiated power) per radio, up to eight (8) CDMA radios in the 1900 MHz band (per sector) at a maximum of 100 watts ERP (effective radiated power) per radio and one (1) LTE radio in the 700 MHz band (per sector) at a maximum of 100 watts ERP (effective radiated power) per radio.

It is my opinion that the proposed facility would fulfill Verizon Wireless' needs in the least intrusive means possible for this area. I am not aware of any more feasible alternatives of providing the reliable service Verizon Wireless is required to provide by alternative means such as with modifications to existing base stations, antenna enhancements, repeaters, re-radiators, microcells, etc. It is my opinion that the radio equipment, antenna configuration, and technologies used by Verizon Wireless provide for reliable wireless services in the most efficient means possible for this area.

In summary, upon consideration of the many factors discussed herein, it is my opinion that the proposed communications facility is well suited (in terms of location and minimum height) to provide reliable service to Verizon Wireless' subscribers in a section of Cecil County which currently suffers from a significant gap in reliable wireless service. I am not aware of any other more feasible alternatives for providing enhanced

PO Box 165  
Fairview Village, PA 19409  
Phone: 610.304.2024  
Fax: 610.584.5387  
[info@dBmEng.com](mailto:info@dBmEng.com)

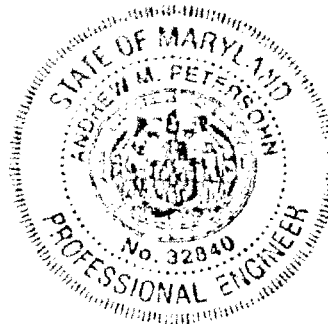


coverage to this section of Cecil County. The proposed communications facility in this location is necessary for the efficient operation and provision of wireless services to the area for which it is proposed.

Sincerely,



Andrew M. Petersohn, P.E.  
Registered Professional Engineer  
Maryland license number 32840



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## DECLARATION OF ENGINEER

Andrew M. Petersohn, P.E., hereby states that he is a graduate telecommunications consulting engineer possessing Master and Bachelor Degrees in Electrical Engineering from Lehigh University (2005 and 1999, respectively). His corporation, dBm Engineering, P.C., has been retained by representatives of Verizon Wireless to perform an electromagnetic emissions analysis for a proposed telecommunications facility.

Mr. Petersohn also asserts that the calculations and/or measurements described in this report were made personally and in a truthful and objective manner. Mr. Petersohn is a Registered Professional Engineer licensed in Pennsylvania, Delaware, Maryland, Virginia, New York, New Jersey and Florida. He has over a decade of engineering experience in the field of wireless communications. Mr. Petersohn is an active member of the National Society of Professional Engineers (NSPE) and the Institute of Electronic and Electrical Engineers (IEEE). Mr. Petersohn further states that all facts and statements contained in the foregoing document are true and accurate to the best of his knowledge. He believes, under penalty of perjury, the foregoing to be correct.



Andrew M. Petersohn, P.E.  
Registered Professional Engineer  
Maryland license number 32840

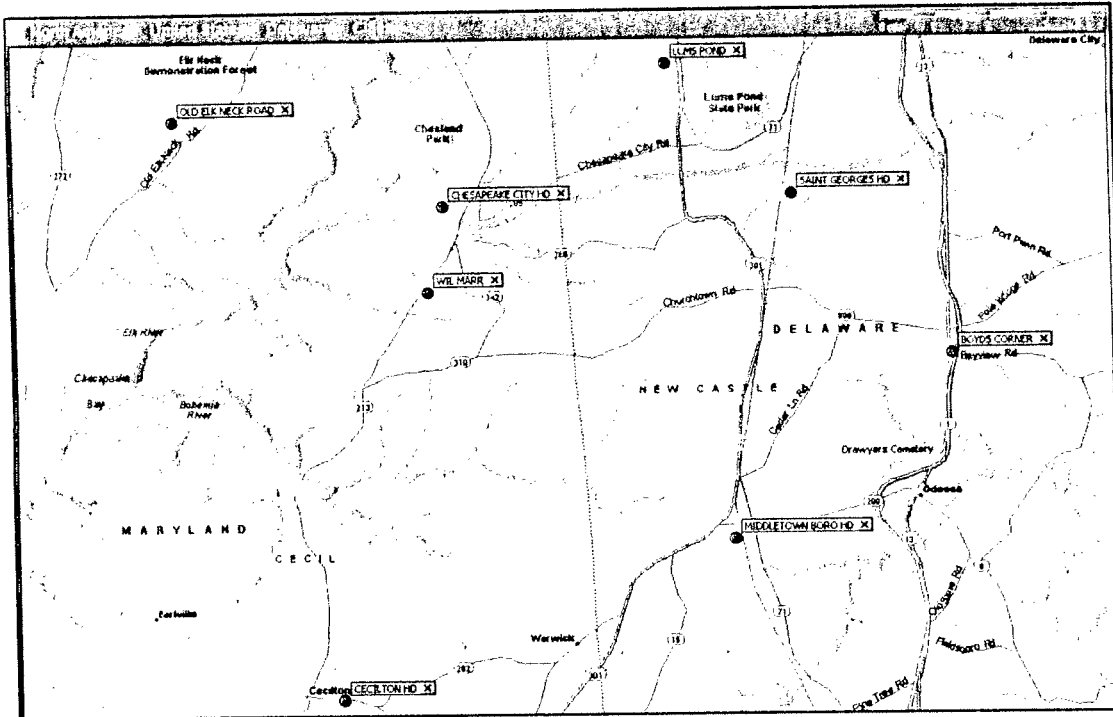
Executed this the 4<sup>th</sup> day of January, 2012.



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The logo for dBm Engineering, P.C. It features a stylized graphic of a signal or wave on the left, followed by the text "dBm" in a large, bold, sans-serif font, and "ENGINEERING, P.C." in a smaller, bold, sans-serif font below it.

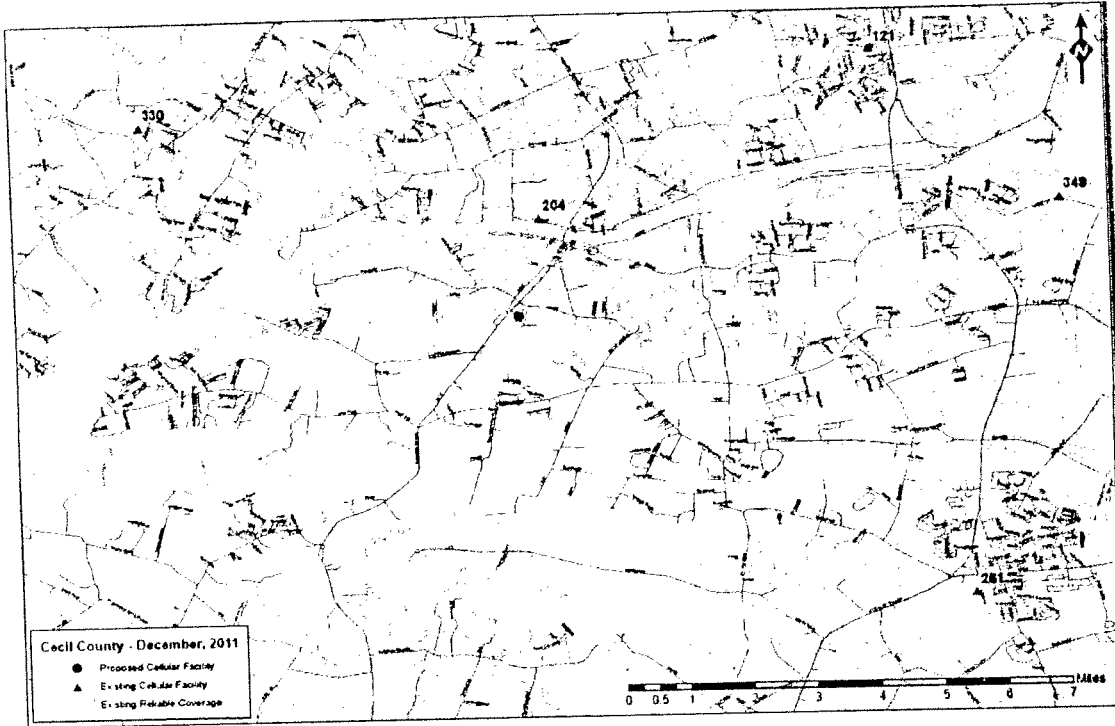


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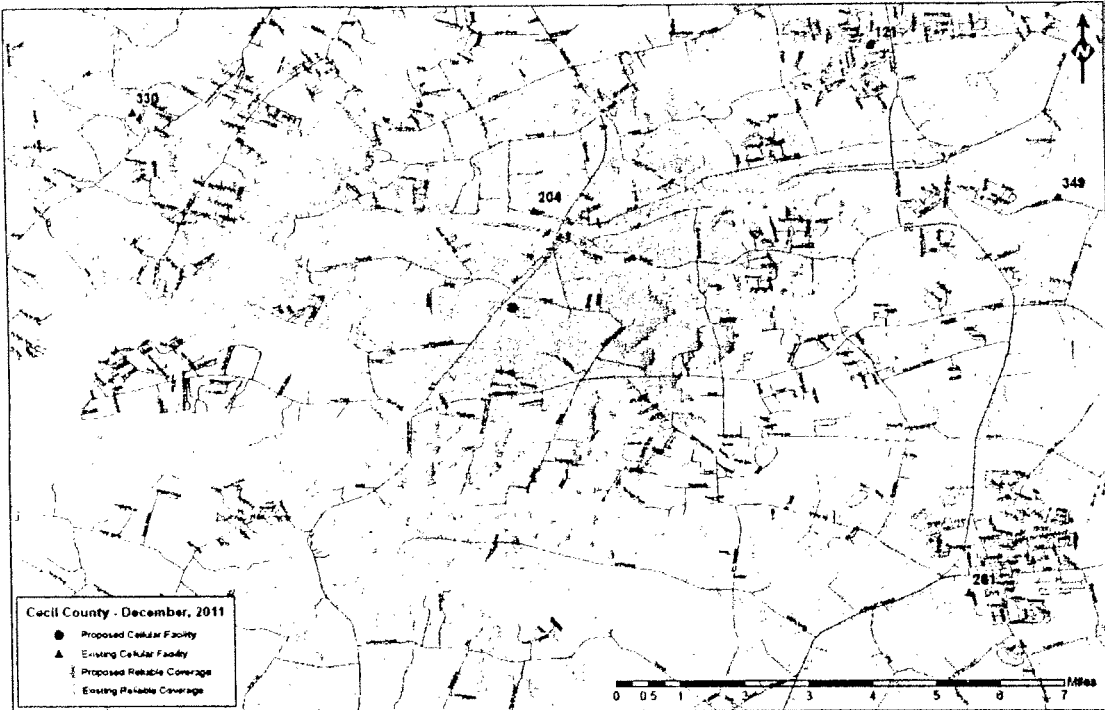
Existing Coverage – Exhibit A



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Proposed Coverage – Exhibit B



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**BOARD OF APPEALS APPLICATION**  
**CECIL COUNTY, MARYLAND**

MEET. MONTH: Feb. 2012  
 FILE NO. 3582

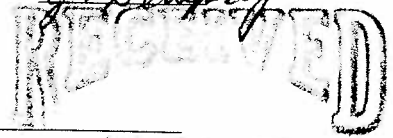
**THIS REQUEST IS FOR:**

- SPECIAL EXCEPTION RENEWAL ( ) CK#139821  
 SPECIAL EXCEPTION (x)  
 VARIANCE ( )  
 APPEAL ( )

DATE FILED: 1-12-12  
 AMOUNT PAID: 250.00  
 ACCEPTED BY: G. Dempsey

**A. APPLICANT INFORMATION**

*send TO* → Cellco Partnership d/b/a Verizon Wireless  
 APPLICANT NAME - PLEASE PRINT CLEARLY  
c/o John Tracey, Esq. P.O. Box 391 Wilmington DE 19899  
 ADDRESS CITY STATE ZIP CODE  
[Signature] 302-571-6700  
 APPLICANT SIGNATURE PHONE NUMBER



**B. PROPERTY OWNER INFORMATION**

*send TO* → Cecil County Society for the Prevention of Cruelty to Animals  
 PROPERTY OWNER NAME - PLEASE PRINT CLEARLY  
P.O. Box 665 Chesapeake City MD 21915  
 ADDRESS CITY STATE ZIP CODE  
[Signature] Asst. Director 410-398-9555  
 PROPERTY OWNER SIGNATURE PHONE NUMBER  
Martin Poe

**C. PROPERTY INFORMATION**

3272/3280 Augustine Herman Highway 02 022486  
 PROPERTY ADDRESS SELECTION DIST. ACCT. NUMBER  
48 0013 P88 N/A 12.28 SAR  
 TAX MAP # BLOCK PARCEL LOT # #ACRES ZONE

**D. PURPOSE OF APPLICATION** - Indicate reasons why this application should be granted. (attach separate sheet if necessary)

SEE ATTACHED COVER LETTER AND SUPPORTING DOCUMENTS  
to construct a Cellular Communications Monopole, 150ft in height.

**E. On an attached sheet, PLEASE submit a sketch of the property indicating the proposed project. Show distances from the front, side and rear property lines and the dimensions of the project.**

**F. LAND USE DESIGNATION**

- Is property in the Critical Area? \_\_\_\_\_ YES \_\_\_\_\_ YES ✓ NO  
 If yes, Pertinent provision of the Chesapeake Bay Critical Area Program: \_\_\_\_\_  
 Is property in the 100 year Floodplain? \_\_\_\_\_ YES ✓ NO  
 Is property an Agricultural Preservation District? \_\_\_\_\_ YES ✓ NO

If property is located in the Critical Area, all provisions and requirements must be met as outlined in Article XVII, Part I, II & III of the Zoning Ordinance.

**G. PROVISION OF ZONING ORDINANCE:** Article II, Part III, S115

**H. SPECIAL EXCEPTION RENEWAL** - PREVIOUS FILE NO. & CONDITIONS FOR APPROVAL: N/A

**I. SPECIAL EXCEPTION FOR A MANUFACTURED HOME** - Please fill out the following information:

- Will unit be visible from the road? \_\_\_\_\_ If yes, distance: \_\_\_\_\_  
 Will unit be visible from adjoining properties? \_\_\_\_\_ If yes, distance: \_\_\_\_\_  
 Distance to nearest manufactured home: \_\_\_\_\_ Size/Model/Year of Unit: \_\_\_\_\_  
 Number of units on property at present time: \_\_\_\_\_

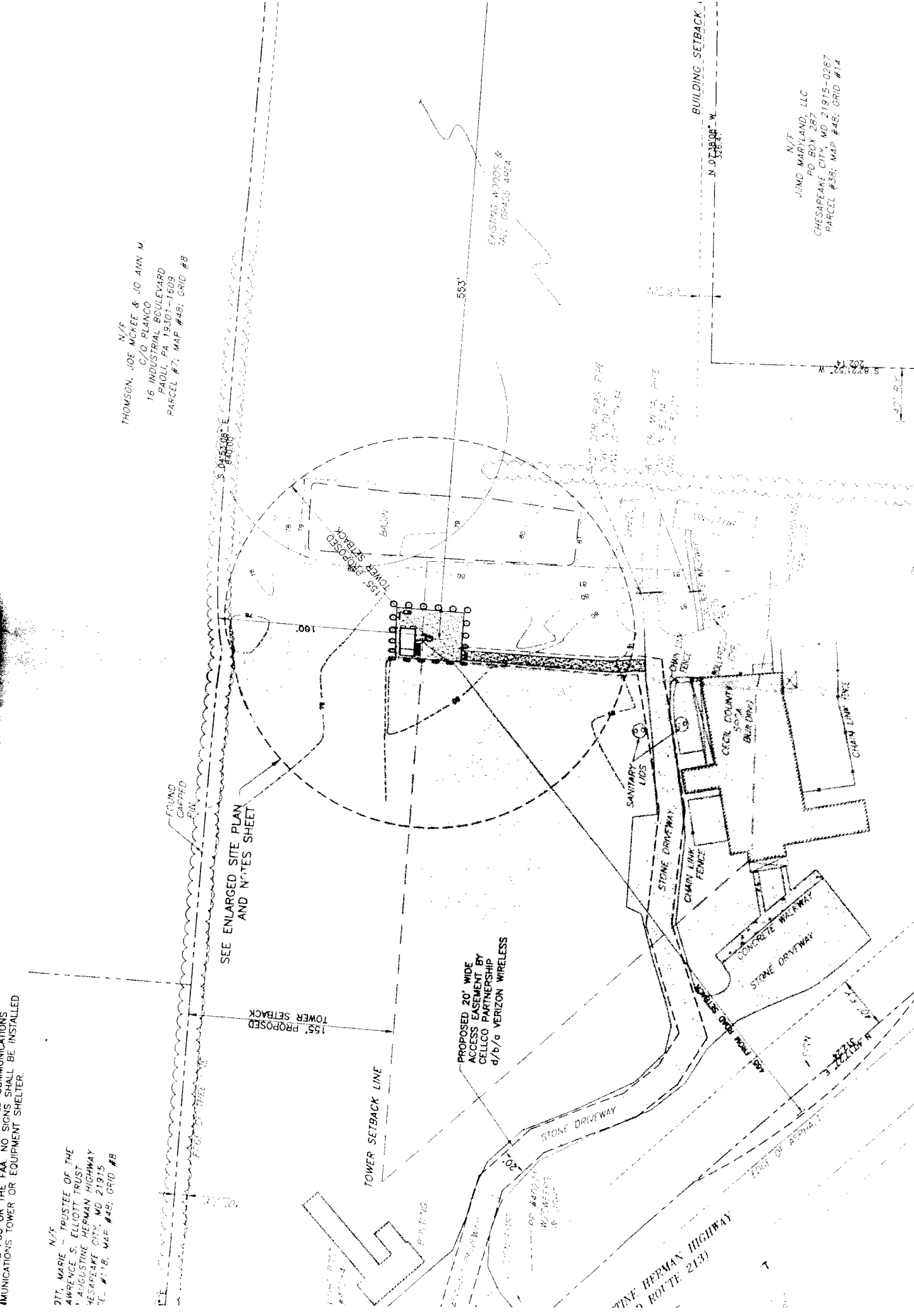
IF THE FCC OR THE FAA, NO SIGNS SHALL BE INSTALLED  
COMMUNICATIONS TOWER OR EQUIPMENT SHELTER.

N/F  
MRS. MARIE - TRUSTEE OF THE  
LAWRENCE S. ELLIOTT TRUST  
1 AUGUSTINE HERMAN HIGHWAY  
CHESAPEAKE CITY, MD 21915  
T.L. #118, MAP #48, GRID #8

N/F  
THOMSON, JOE MCKEE & JO ANN M.  
C/O PLANCO  
16 INDUSTRIAL BOULEVARD  
PAOLI, PA 19307-1609  
PARCEL #7; MAP #48; GRID #8

N/F  
JIMD MARYLAND, LLC  
PO BOX 287  
CHESAPEAKE CITY, MD 21915-0287  
PARCEL #38; MAP #48; GRID #14

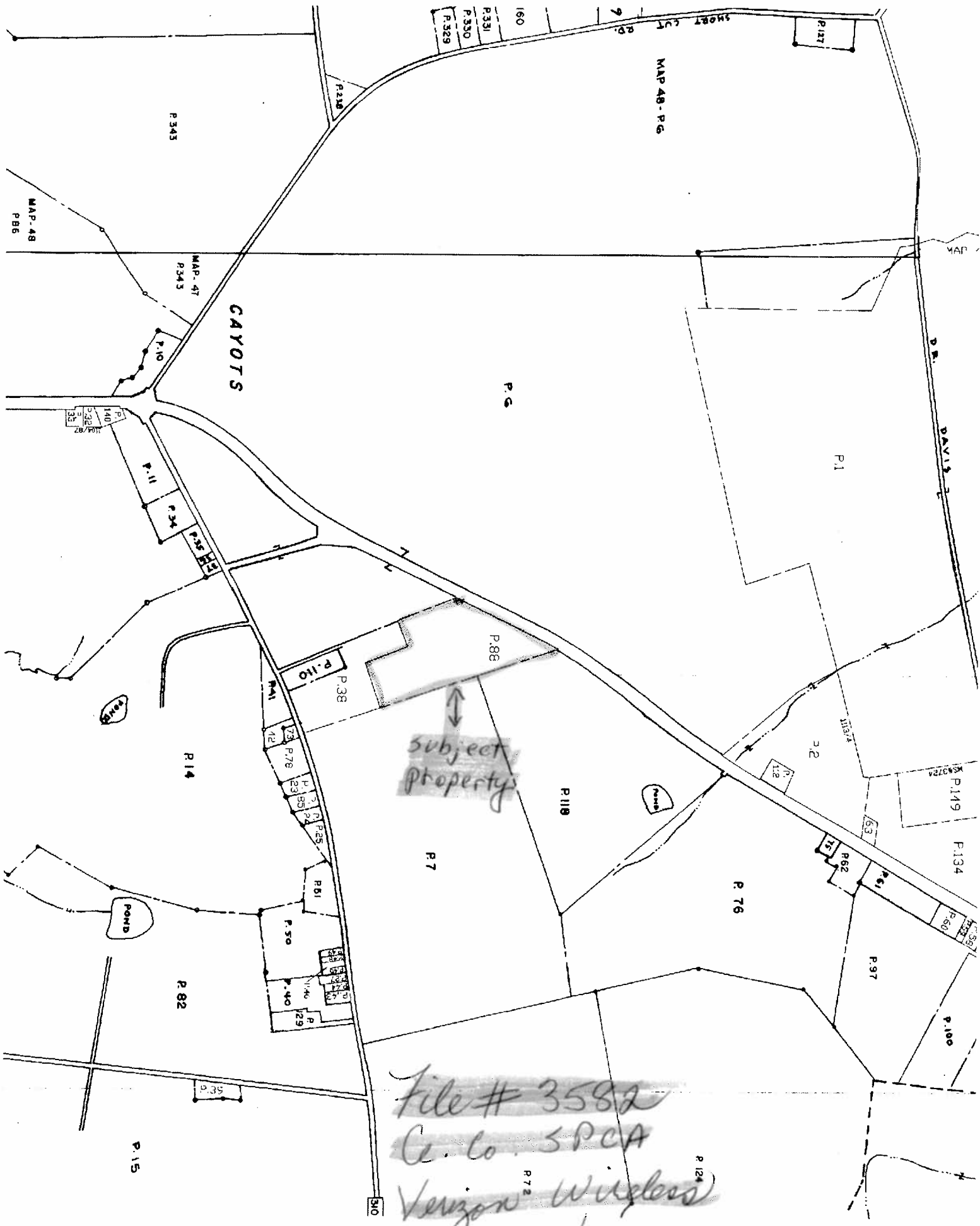
File # 3587



SEE ENLARGED SITE PLAN  
AND NOTES SHEET

PROPOSED 20' WIDE  
ACCESS EASEMENT BY  
CELCO PARTNERSHIP  
d/b/a VERIZON WIRELESS

FINE HERMAN HIGHWAY  
ROUTE 213



subject property

File # 3582  
 Co. Co. SPCA  
 Verizon Wireless  
 map 48 / parcel 88