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SITING COUNCIL

STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

IN RE:

APPLICATION OF OPTASITE TOWERS LLC  
AND OMNIPOINT COMMUNICATIONS, INC.  
FOR A CERTIFICATE OF ENVIRONMENTAL  
COMPATIBILITY AND PUBLIC NEED FOR  
THE CONSTRUCTION, MAINTENANCE AND  
OPERATION OF A TELECOMMUNICATIONS  
FACILITY AT 52 STADLEY ROUGH ROAD,  
DANBURY, CONNECTICUT

DOCKET NO. 366

September 2, 2008

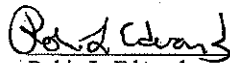
SUPPLEMENTAL WITNESS LIST

Party City of Danbury will also present the following additional witness at the public hearing to be held on September 9, 2008:

1. Michael McLachlan, Chief of Staff, City of Danbury
2. Ronald E. Graiff, P.E., B.S. Electrical Engineering (same pre-filed testimony containing an original signature and acknowledgement)
3. Daniel Baroody – Senior Inspector, Environmental Health Division, City of Danbury (same pre-filed testimony containing an original signature and acknowledgement)

Dated at Danbury, Connecticut, this 2<sup>nd</sup> day of September 2008.

City of Danbury



Robin L. Edwards  
Assistant Corporation Counsel  
City of Danbury  
155 Deer Hill Avenue  
Danbury, CT 06810  
(203) 797-4518

**CERTIFICATE OF SERVICE**

I hereby certify that the original copy of the foregoing was delivered to the Connecticut Siting Council in hand, with an electronic copy sent via email, and one (1) copy of the above was mailed to the Applicant's legal counsel via overnight mail, with a copy also electronically delivered, as follows:

Christopher Fisher, Esq.  
Lucia Chiochio, Esq.  
Cuddy & Feder LLP  
445 Hamilton Avenue, 14<sup>th</sup> Floor  
White Plains, NY 10601

Dated: September 2, 2008

City of Danbury



Robin L. Edwards  
Assistant Corporation Counsel  
City of Danbury  
155 Deer Hill Avenue  
Danbury, CT 06810  
(203) 797-4518

TESTIMONY OF RONALD E GRAIFF, P.E.  
IN DOCKET 366

My name is Ronald E. Graiff and I am an independent Radio Frequency Consulting Engineer. I have over 40 years of experience in radio frequency matters. I am a graduate electrical engineer from The Pennsylvania State University, and a licensed professional engineer. I have testified and provided guidance for hundreds of land use boards in New York, New Jersey, Pennsylvania, Vermont, Massachusetts as well as the Connecticut Siting Council ("CSC"). My CV is attached as **Exhibit 1** to this testimony for further review.

I have been asked by the City of Danbury to review and provide comment on the application of Optasite/T-Mobile to construct a 140 foot monopole at 52 Stadley Rough Road, Danbury, CT, Connecticut Siting Council ("CSC") Docket 366. This testimony is based on that review and analysis of the application as well as the applicants' responses to interrogatories of the CSC. The Findings of salient portions of application follow:

**FINDING 1: LACK OF VERIFICATION OF THE PROPAGATION MODEL**

The applicants have submitted numerous coverage maps depicting before and after coverage of the existing T-Mobile system as well as before and after coverage of some undetermined Sprint/Nextel System.<sup>1</sup> These coverage maps appear to have been prepared by a computer based propagation model. While such models are useful, there are so many variables that may be used in setting up the model, that a critical verification of the results presented is nearly impossible. The applicant may, for example, enter variables into the model that include tree leaf attenuation or do not consider it or include building clutter or not consider it. Such assumptions can have a dramatic affect on the coverage presentation. In addition there is no information presented on the accuracy of the terrain data base that is employed in the computer calculations. This accuracy is critical, especially when the applicant is asked, as the CSC did in its interrogatories, to provide coverage plots at a height above ground other than that applied for. The only method of critical analysis of need for a particular site and existing system conditions would be the drive test, recognized by most, if not all in the industry, as the "gold standard." Interestingly, when queried by the CSC in its interrogatories as to the level of signal strength existing in its no coverage areas the applicants responded with numerical values that were undoubtedly the result of drive test measurements. The applicants should be directed to provide drive test results of the existing and proposed facilities. These tests should also indicate at the time of year performed so as to determine the affects of leaf attenuation which is significant in the general area of coverage. Only then

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<sup>1</sup>Note that Sprint/Nextel operates two different systems, one at 700 MHz and one at 1950 MHz. The coverage maps do not indicate which system is depicted and make a complete analysis impossible.

will a critical evaluation and verification of the computer model be attainable to justify the need for the site.

#### **FINDING 2: FAILURE TO DEPICT COVERAGE OF ADJACENT SITES**

The coverage maps also suffer the flaw of not depicting coverage of all of the sites that are listed in the table "T-Mobile Surrounding Sites." Specifically, the following sites and their respective coverage are not shown on the propagation maps: CT-11924A, 78 Federal Road; CT-11196A, Carmen Hill; CT-11092J, 39 Sugar Hollow; CT-11197A, 18 Old Ridgebury Road and CT-11198A, 83 Wooster Heights Road. It appears in response to the CSC interrogatories that the applicant has now included the coverage of site CT-11924A. Particular attention must be paid to the lack of coverage depiction of Site CT-11196A, Carmen Hill. At that site T-Mobile has antennas at 298 feet above ground with a ground elevation of 686 feet AMSL. Attached to this testimony as Exhibit 2 is a terrain profile derived from USCGS 7.5 minute topographic maps that depicts the terrain between the Carmen Hill site and an area along Stadley Rough Road that the applicants maintain is an area in need of coverage. This profile is without the antennas at 298 feet above ground. Please note the direct line of site coverage. This site will undoubtedly provide some coverage to the area purported to need coverage. All sites that are noted in the application should have their coverage depicted on the maps.

#### **FINDING 3: NO EVIDENCE TO JUSTIFY MINIMUM HEIGHT REQUIRED**

In response to CSC interrogatories the applicant provided an additional computer model depiction of coverage at 127 feet AGL. A careful review of the two coverage plots indicates that in the purported area of need there is no difference in coverage provided by the reduced height. In fact the applicant states that 127 feet AGL is the minimum height needed to provide the relief it seeks. There has not, however, been a determination of the minimum height necessary. As noted above there is no information presented as to the accuracy of the underlying terrain data used for the calculations of coverage. Even with the very best 3 arc second terrain data, resolving a difference of 10 feet is un-reliable. It is generally recognized that in comparing height alternatives the minimum incremental height difference should be 20 feet. Notwithstanding that fact, if real world CW drive tests were to be conducted at the site with antennas placed at 90 feet 100 feet, 120 feet and 130 feet, it could truly be determined what the minimum height necessary to provide relief, to the existing measured system, might be. The applicant should be directed to perform CW drive tests at the site as noted above.

#### **FINDING 4: FAILURE TO IDENTIFY AND PROPAGATE ALTERNATE SITES**

The site search summary provided by the applicants is also flawed in its content and analysis. This summary notes 12 sites within 4 miles of the proposed installation. While, indeed, many of the sites noted will not provide any coverage relief, the applicant has incorrectly dismissed two of the sites noted and missed one other site that must be considered.

The applicants note that site 11 the water tank just 0.7 miles from the site has been determined by some unspecified radio frequency engineers not to provide coverage. There was not, however, a propagation map for this site included for review with the application. Attached to this testimony as Exhibit 3 is the terrain profile, generated in the same manner as Exhibit 1 indicating the terrain between the site proposed at 52 Stadley Rough Road in the application and the same area of applicant stated poor coverage as in Exhibit 1. Exhibit 4 is a terrain profile between the dismissed water tank location and the area of poor coverage. Note that these profiles, without the monopole or water tank depicted, still demonstrate, without question, the direct line of sight between the water tank site and the poor coverage area. It is incredible that the applicant could state that the site would not provide the coverage relief sought. The applicant should be directed to provide calculated coverage from the water tank site. This coverage map will be helpful in the critical review, once the model has been verified by drive testing.

The applicant notes that site 12 "Department of Public Works Garage" owned by the City of Danbury was analyzed by T-Mobile's Radio Frequency engineer and determined to be too far South to provide coverage to the target. This site is actually the State DOT garage on Rockwell Road. There was not, however, any calculated propagation map submitted to verify this claim, and no indication by the applicant as to how tall a structure was considered as there is a tower currently located there. The applicant should be directed to provide a coverage propagation map from this site at the maximum height that would not require FAA lighting. This coverage map will be helpful in the critical review, once the model has been verified by drive testing.

The site search summary, as noted, missed one possible site. There is an existing tower located either on or adjacent to the Federal Correction Institution on Padanaram Road in Danbury. Attached as Exhibit 5 is an aerial photograph of the tower at this site. The ground elevation at this site is 782 feet AMSL. Attached to this testimony as Exhibit 6 is a terrain profile as above between this site and the area of poor coverage. Please note the direct line of site path. In fact, this site was identified over 3 years ago during a Sprint application before the Danbury Planning Commission (pre CSC jurisdiction over PCS) to provide coverage to essentially the same area. At the hearing Sprint admitted that the site would serve its system to provide the coverage relief sought. The applicant should be directed to provide a coverage propagation map from this site at the minimum height necessary. This coverage map will be helpful in the critical review, once the model has been verified by drive testing.

#### **FINDING 5: NO EVIDENCE TO SUPPORT STRUCTURAL SPACING**

In CSC interrogatory Q 6 the applicant is asked what led to the change to a 140 foot tower from an original proposal for a 130 foot tower. The applicant replies that the change is a result of Sprint/Nextel's, an alleged co-locator, need for a centerline mounting height of 127 feet AGL. There is no evidence presented that 127 feet is the minimum height necessary for Sprint/Nextel. In addition there is no evidence presented that dictates that the antennas of T-Mobile and Sprint/Nextel be separated by 10 feet. The applicant must be directed to present evidence that Sprint/Nextel requires the 127 foot

height requested and compelling engineering reasons, in light of formally published papers by antenna manufacturers that such 10 foot spacing is not required and that antennas can be located as closely as 6 inches. A copy of the published paper is attached as Exhibit 7.

**FINDING 6: NO EVIDENCE TO SUPPORT CLAIM OF EXISTING COVERAGE**

In CSC interrogatory Q 16 the applicant is asked to specify the existing signal strength in the area T-Mobile would serve from the proposed site. T-Mobile replies that the existing signal strength is between -85 dBm and -110 dBm. There is no evidence presented by T-Mobile to support this claim. Drive tests of the system as it exists today must be presented to substantiate these signal levels.

**FINDING 7: FAILURE TO DEMONSTRATE MINIMUM HEIGHT REQUIRED**

In CSC interrogatory Q 20 the applicant is asked the minimum height at which T-Mobile could achieve its coverage objectives from the proposed site. T-Mobile responds that it needs 127 feet AGL to achieve the coverage objective from the proposed site. There is no evidence that this is the case. T-Mobile has presented in the application and in its response to the interrogatory a calculated coverage plot of the requested facility at 137 feet AGL that provides the relief it seeks along "2 miles along Stadley Rough Road," (response to CSC interrogatory Q 18). The CSC in interrogatory Q-21 goes on to request that the applicant provide a propagation map of the coverage at 10 feet below the antennas' proposed heights. T-Mobile responds with a propagation plot of the facility at 127 feet AGL that is essentially identical to the propagation plot at 137 feet especially in the claimed area of 2 miles along Stadley Rough Road. There is no propagation plot supplied at a height less than 127 feet that demonstrates that coverage in the area that the applicant seeks relief would suffer. The applicant must be required to present propagation maps at heights above ground of 120 feet AGL, 100 feet AGL and 90 feet AGL. These coverage maps will be helpful in the critical review, once the model has been verified by drive testing.

The deficiencies, lack of evidence and errors in the application noted in this testimony indicate without question that the application is not acceptable for a critical review and analysis and that the applicants' claims do not meet the standards of good engineering practice to justify a new telecommunications tower at the site requested. It must be dismissed.

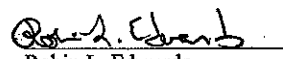
Ronald E. Graiff  
License # 050547

The statements above are true and complete to the best of my knowledge.

September 2, 2008

  
\_\_\_\_\_  
Ronald E. Graiff, P.E.

Subscribed and sworn to before me this 2<sup>nd</sup> day of September 2008.

  
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Robin L. Edwards  
Commissioner of the Superior Court



**CITY OF DANBURY**  
155 DEER HILL AVENUE  
DANBURY, CONNECTICUT 06810

ENVIRONMENTAL IMPACT COMMISSION  
(203) 797-4525  
(203) 797-4586 (FAX)

To: Les Pinter, Deputy Corporation Counsel

From: Daniel Baroody, Sr. Inspector, Danbury HH&W, Environmental Health Division

Date: August 22, 2008

Re: Proposed Wireless Telecommunications Tower Facility  
52 Stadley Rough Road  
Opstasite Towers LLC

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I have reviewed the above referenced application for the Danbury Environmental Impact Commission (EIC) submitted by Optasite Towers LLC and Omnipoint Communications, Inc. dated June 30, 2008. In order to evaluate the nature of the probable environmental impact of the facility on the natural environment, and water purity and public health and safety, the application was reviewed for compliance with The Inland Wetlands and Watercourses Regulations, City of Danbury and Connecticut Public Health Code.

1. The applicant should submit an application for regulated activity to the Environmental Impact Commission (EIC) in order for the EIC to make appropriate finding and recommendation. The proposed activity is with the regulated area as defined in The City of Danbury Inland Wetlands and Watercourses Regulations.

7.3. All applications shall include the following information in writing:

- (a) The applicant's name, home and business address and telephone numbers.
- (b) The owner's name, home and business address and telephone numbers and written consent to the proposed activity if the applicant is not the owner of the property involved in the applications. If the owner is a corporation or other non-individual entity the name, address, and phone number of a principal must be included.
- (c) Applicant's interest in the land.



(d) A sketch showing the geographical location of the land which is the subject of the proposed activity, and a description of the land in sufficient detail to allow identification of the inland wetlands and watercourses, the area(s) (in acres or square feet) of wetlands or watercourses to be disturbed, soil type(s), and wetland vegetation.

(e) The purpose and description of all proposed activities including computation of the area(s) in acres of wetlands or watercourses disturbance and the proposed amount of fill, and proposed erosion and sedimentation controls.

(f) A detailed narrative of the alternatives considered and subsequently rejected by the applicant and why the proposal to alter wetlands set forth in the application was chosen. The Commission may require the applicant to submit a site plan showing the alternatives.

(g) Two site plans with one showing the existing conditions, and one showing proposed conditions in relation to wetlands and watercourses, and identifying any further activities associated with or reasonably related to the proposed regulated activity which are made inevitable by the proposed regulated activity and which may have an impact on wetlands or watercourses.

(h) List of names and correct mailing addresses of all abutting property owners, and all owners of property across the street from the subject property. In the event that the Commission schedules a public hearing on the application, the applicant shall submit envelopes preaddressed to such owners no later than five (5) days following the date on which the Commission sets the matter down for a hearing. If land abutting or across the street from the subject property is a "common interest community" as defined in Chapter 828 of the Connecticut General Statutes, and a unit owners' association has been organized for such common interest community, the applicant need only submit the name of (and if applicable, an envelope preaddressed to) the unit owners' association.

(i) Certification that the applicant is familiar with these Regulations and all the information provided in the application and is aware of the penalties for obtaining a permit through deception or through inaccurate or misleading information.

(j) Authorization for the members and agents of the Commission and the City to inspect the property, at reasonable times: both before and after a final decision has been issued if a permit has been issued; while the regulated activities are being conducted; and at any time thereafter up to and including the period of time in which the applicant's bond or surety is in effect in order to ensure that the activities are being conducted in accordance with the permit.

(k) Whether the proposed regulated activity will require subdivision or re-subdivision approval, a zoning permit, special permit, special exception or exemption, or a variance, from the Zoning Commission, Planning Commission or Zoning Board of Appeals, as the case may be.

(l) Whether any of the following circumstances applies:

(i) Any portion of the property affected by the decision of the Commission is located within five hundred (500) feet of the boundary of an adjoining municipality;

(ii) A significant portion of the traffic to the completed project on the site will use streets within the adjoining municipality to enter or exit the site;

(iii) A significant portion of the sewer or water drainage from the project site will flow through and significantly impact the sewage or drainage system within the adjoining municipality; or,

(iv) Water run-off from the improved site will impact streets or other municipal or private property within the adjoining municipality.

(m) Any other information the applicant deems necessary to the understanding of what the applicant is proposing.

(n) Submission of the appropriate filing fee based on the fee schedule established in Section 12 of these Regulations.

(o) Any compensatory mitigation measures which the applicant wishes to propose to the Commission, in accordance with the criteria set forth in Section 9.2(d) of these Regulations. Notwithstanding any other provision of these Regulations, the applicant shall not be required to propose, either in the application or at the request of the Commission, any compensatory mitigation measure that would create or restore a wetland or watercourse that is larger than one and one half times the area of the wetland or watercourse that would be eliminated or degraded as a result of the proposed activity.

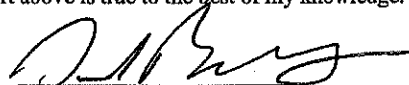
(p) A completed DEP reporting form; the Commission shall revise or correct the information provided by the applicant and submit the form to the Commissioner of Environmental Protection in accordance with Section 22a-39-14 of the Regulations of Connecticut State Agencies, as amended.

The Application for Certificate of Environmental Compatibility and Need submitted by Optasite Towers LLC and Omnipoint Communications, Inc. dated June 30, 2008, Introduction, Section VII. Consistency with Danbury Land Use Regulations, subsection D, page 17, paragraph one concludes that the activity "would have no significant impact". Under The Inland Wetlands and Watercourses Regulations, City of Danbury the Commission (EIC) will make finding and recommendations, after review of a properly submitted application.

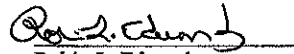
2. The applicant must determine the size, location and the proximity to the proposed activity of the existing septic system serving the subject property and septic systems on adjacent properties, to be in compliance with Connecticut Public Health Code section 19-13-B103.
3. To be in compliance with Connecticut Public Health Code section 19-13-B51, the applicant must locate the existing water supply well on the subject property and adjacent properties in proximity to the proposed activity.

The information contained in the staff report above is true to the best of my knowledge.

September 2, 2008

  
Daniel Baroody, Sr. Inspector

Subscribed and sworn to before me this 2<sup>nd</sup> day of September 2008.

  
Robin L. Edwards  
Commissioner of the Superior Court