**File Number:** 2009-0679

**Location:** 1399 Hollenbeck Ave. (near Cascade Dr.) (APN: 323-06-005)

**Applicant/Owner:** Clearwire LLC / Roman Catholic Welfare Corp Of San Jose Church of the Resurrection

**Staff Contact:** Ryan Kuchenig, Associate Planner, (408) 730-7431

**Project Proposal:**

Use Permit to allow the collocation of three antennas and one microwave dish on an existing 65’ monopine with associated ground equipment (Resurrection Parish Church).

**Issues:** Aesthetics

**Recommendation:** Approve with Conditions
PROJECT AND SITE DESCRIPTION

General Plan and Zoning District: The project site lies at the corner of Hollenbeck Avenue and Cascade Drive. The subject property has a General Plan designation of SCH (Schools) and is within the PF (Public Facility) Zoning District.

Site Area: The site consists of the Resurrection Parish Church which in addition to the church building also includes a parish center, athletic fields, classroom buildings, and a parking lot located along Hollenbeck Avenue. The existing monopine is located behind the church building and parish center.

Description of Project: The proposed Use Permit is to allow the collocation of a telecommunications facility (Clearwire) on an existing monopole. The telecommunication facility consists of three antennas and one microwave dish antenna. The antennas would be situated at approximately 45 feet up the pole which extends up to 65 feet. The existing AT&T antennas, which also include panel and dish antennas, are positioned above the proposed Clearwire facility. Associated ground equipment is planned within the enclosure that was constructed as part of the previous AT&T project at the site. The equipment cabinet would take up approximately 16 square feet. An additional utility rack and meter is positioned adjacent to the cabinet but within the existing enclosure. The equipment is completely screened by the fence which was constructed with a vinyl slats. Part of the fence would be modified to a gate in order to allow direct access to the new equipment cabinet.

Project Design: The facility antennas are planned to be screened by the faux branches of the existing monopine. Photosimulations are included in Attachment D. Since the construction of the monopine, staff has been concerned that the current monopine was not constructed as originally designed and could be significantly improved to blend in more appropriately to the neighborhood. Staff has explored opportunities to improve the design of the monopine with the applicant and has recommended changes that include modifying the current branch structure to incorporate varying length and placement as needed to provide for a more natural looking tree structure. The antenna arms shall also be painted to match branches while antennas should be painted to blend in with leaves to better camouflage the facility. Based on the discussion, Condition of Approval #8 includes enhancements that are intended to improve the overall design of the structure. Staff has also included Condition of Approval #8d to require that modifications are made prior to a Building permit for the installation of the new antennas.
Deviations from Development Standards: There are no proposed deviations from Code standards.

Radio Frequency (RF) Emissions Exposure: The FCC is the final authority on safety of telecommunications facilities. If the FCC has determined the facility to be in compliance with federal standards, the City is not permitted to make additional judgments on health and safety issues. The application can be reviewed by the City for compliance with design and location criteria only. The attached RF Emissions report (Attachment E), prepared by Hammett & Edison, Inc., provides information about the proposed RF emissions of the facility. These results indicate the RF emissions are considered safe for inhabited areas.

ANALYSIS OF PROJECT DESIGN

The project is subject to the telecommunications design requirements in SMC Chapter 19.54. The following key policies apply to the project:

SMC 19.54.040(b). All facilities shall be designed to minimize the visual impact to the greatest extent feasible, considering technological requirements, by means of placement, screening, and camouflage, to be compatible with existing architectural elements and building materials, and other site characteristics. The applicant shall use the smallest and least visible antennas possible to accomplish the owner/operator’s coverage objectives.

SMC 19.54.040(i). Where appropriate, facilities shall be installed so as to maintain and enhance existing landscaping on the site, including trees, foliage and shrubs, whether or not utilized for screening. . .

SMC 19.54.040(j). All monopoles and lattice towers shall be designed to be the minimum functional height and width required to support the proposed antenna installation.

SMC 19.54.140(a). Whenever technically feasible, wireless telecommunication service providers are encouraged to co-locate telecommunication facilities in order to reduce adverse visual impacts; however, the city discourages the development of antenna farms or the clustering of multiple antennas on a single monopole, tower or other elevation, unless the site is determined to be suitable based on the following factors:

1. Compliance with all FCC RF emission standards;
2. Visibility from residentially zoned property;
3. Visibility from El Camino Real or other major arterial street;
4. Visibility from the downtown specific plan area or other area declared by the director of community development to be visually sensitive; and
5. Lack of aesthetically preferable feasible alternatives.
SMC 19.54.140(d). When determined to be technically feasible and appropriate, unutilized space should be made available for co-location of other wireless telecommunication facilities, including space for entities providing similar, competing services. . .

Discussion: Based on the criteria in SMC 19.54, staff has determined this is an appropriate site for a collocation facility with antennas for multiple wireless telecommunications providers. As conditioned, the additional facility would improve the overall appearance of the structure. These conditions include modifying the branch lengths and placement, as well as disguising the existing antennas to a greater degree. More detail is requested prior to installation as to the placement of the antennas, through the conditions of approval, to ensure more effective camouflage. The T-arms are required to be painted to match the branches and the antennas shall match the color of the leaves. The additional antennas would not result in extending the height of the pole or make the facility more visually obtrusive to the neighborhood. To ensure the actual installation matches the photosimulations and plans, staff is recommending Condition of Approval #1 requiring conformance (Attachment B).

EXPECTED IMPACT ON SURROUNDINGS

Mechanical Equipment/Noise: The project proposes ancillary ground equipment to be located within the new enclosure. The City’s existing Municipal Code noise regulations and the project location will ensure the use of equipment does not result in significant noise impacts on the surrounding area. City requirements are summarized in Standard Development Requirement #21 (Attachment B).

PUBLIC CONTACT

Previous Planning Actions related to proposed project: As referenced in the staff report, the most recent application that was considered at the project site was to allow the construction of the 65-foot “monopine” and associated telecommunication facility for AT&T Wireless. This facility was approved and built in 2009. Previous Use Permit approvals include the telecommunication facility that was approved within the existing cross that is situated on top of the church in 2004. A similar facility within a cross on top of the school building a church was approved in 2000.

Public Contact: 121 notices were sent to surrounding property owners and residents adjacent to subject site in addition to standard noticing practice. Staff has received two letters of objection from a nearby resident which are included in Attachment H. The neighbor states that the facility could impair the health, safety and the ability to enjoy their property. As noted, in the
report, the FCC makes the determination of such proposals related to health and safety standards.

**Neighborhood Meeting:** The project applicant held a neighborhood outreach meeting on May 26th, 2010 at the Sunnyvale Community Center. Notices were sent to the same surrounding property owners as was sent for the Planning Commission hearing. No member of the public attended.

**ECONOMIC DEVELOPMENT AND FISCAL IMPACT**

No fiscal impacts other than normal fees and taxes are expected. The project is not subject to any mitigation fee requirements as it is not expected to impact the need for transportation systems, housing, or parks.

**ENVIRONMENTAL DETERMINATION**

A Class 1 Categorical Exemption relieves this project from California Environmental Quality Act provisions and City Guidelines. Class 1 Categorical Exemptions include minor additions to existing facilities.

**ALTERNATIVES:**

1. Approve the Use Permit with the Conditions of Approval located in Attachment A.

2. Approve the Use Permit with modified Conditions of Approval located in Attachment A.

3. Deny the Use Permit.
RECOMMENDATION

Alternative 1. Approve the Use Permit with the Conditions of Approval located in Attachment A Staff was able to make the required Findings as located in Attachment A.

Reviewed by:

Steve Lynch
Senior Planner

Prepared By: Ryan Kuchenig, Associate Planner

Attachments:

A. Findings
B. Standard Requirements and Recommended Conditions of Approval
C. Site and Architectural Plans
D. Photosimulations
E. Radio Frequency Emissions Analysis
F. Project Description Provided by the Applicant
G. Site Photos
H. Letters from Interested Parties
FINDINGS

In order to approve the Use Permit, the proposed project must meet the following finding.

1. The proposed use attains the objectives and purposes of the General Plan of the City of Sunnyvale.

   Land Use and Transportation Element, Policy N1.3 – Support a full spectrum of conveniently located commercial, public and quasi public uses that add to the positive image of the City.

The proposed project will allow for a collocation of an existing approved facility and enables improved telecommunication coverage for the surrounding residential area. In addition, the City Council’s Telecommunications Policy promotes retention of local zoning authority when reviewing telecommunications facilities. The Zoning Code requires that the location of telecommunications facilities be designed with sensitivity to surrounding areas. The proposed facility is compliant with all wireless telecommunication development standards:

- The project meets all FCC RF emissions standards;
- The facility is designed to utilize an existing monopole (with camouflage antennas as part of the existing “monopine” design);
- As proposed, the collocation does not negatively impact the appearance of the existing structure. Conditions of Approval will result in an improved design for the facility and help make the monopine better blend in with the surrounding area and neighborhood, to the extent possible.

Staff was able to make the findings as the design meets the guidelines described above and the design policies described in the report.

In order to approve the Use Permit, the following finding may also be made.

2. The proposed use ensures that the general appearance of proposed structures, or the uses to be made of the property to which the application refers, will not impair the orderly development of, or the existing uses being made of, adjacent properties.

The proposed additional antennas will be disguised within the existing monopine and match the design of existing antennas. Conditions of Approval also ensure that improvements are made to the existing facility to improve the overall appearance of the site. Ancillary ground equipment will also be screened. The existing and proposed equipment cabinets are subject to the requirements of the City’s noise ordinance to ensure the
facility will not impact adjacent properties. As stated previously, the project is required to meet federal requirements for RF emissions.

Staff was able to make the finding above as the project is not expected to have negative impacts on the subject site or surrounding properties.
Planning Application 2009-0679 1399 Hollenbeck Avenue
Use Permit to allow the collocation of three antennas and one microwave dish on an existing 65’ monopine with associated ground equipment (Resurrection Parish Church).

The following Conditions of Approval [COA] and Standard Development Requirements [SDR] apply to the project referenced above. The COAs are specific conditions applicable to the proposed project. The SDRs are items which are codified or adopted by resolution and have been included for ease of reference, they may not be appealed or changed. The COAs and SDRs are grouped under specific headings that relate to the timing of required compliance. Additional language within a condition may further define the timing of required compliance. Applicable mitigation measures are noted with “Mitigation Measure” and placed in the applicable phase of the project.

In addition to complying with all applicable City, County, State and Federal Statutes, Codes, Ordinances, Resolutions and Regulations, Permittee expressly accepts and agrees to comply with the following Conditions of Approval and Standard Development Requirements of this Permit:

THE FOLLOWING GENERAL CONDITIONS SHALL APPLY TO THE APPROVED PROJECT.

1. CONFORMANCE WITH APPROVED PLANNING APPLICATION - All building permit drawings and subsequent construction and operation shall substantially conform with the approved planning application, including: drawings/plans, photosimulations, materials samples, colors, and other items submitted as part of the approved application. Any proposed amendments to the approved plans or Conditions of Approval are subject to review and approval by the City. The Director of Community Development shall determine whether revisions are considered major or minor. Minor changes are subject to review and approval by the Director of Community Development. Major changes are subject to review at a public hearing. [COA] [PLANNING]

2. COMPLY WITH APPLICABLE REGULATIONS - The facility must comply with any and all applicable regulations and standards promulgated or imposed by any state or federal agency, including but not limited to the Federal Communications Commission and Federal Aviation Agency. [SDR] [PLANNING]

3. PERMIT EXPIRATION (Ordinance 2895-09): The Use Permit shall be valid for three (3) years from the date of approval by the final review authority (as
 adopted by City Council on April 21, 2009, RTC 09-094). Extensions of time may be considered, for a maximum of two one year extensions, if applied for and approved prior to the expiration of the permit approval. If the approval is not exercised within this time frame, the permit is null and void. [SDR] [PLANNING]

4. HOLD HARMLESS - The wireless telecommunication facility provider shall defend, indemnify, and hold harmless the city or any of its boards, commissions, agents, officers, and employees from any claim, action or proceeding against the city, its boards, commission, agents, officers, or employees to attack, set aside, void, or annul, the approval of the project when such claim or action is brought within the time period provided for in applicable state and/or local statutes. The city shall promptly notify the provider(s) of any such claim, action or proceeding. The city shall have the option of coordinating in the defense. Nothing contained in this stipulation shall prohibit the city from participating in a defense of any claim, action, or proceeding if the city bears its own attorney's fees and costs, and the city defends the action in good faith. [SDR] [PLANNING]

5. LIABILITY - Facility lessors shall be strictly liable for any and all sudden and accidental pollution and gradual pollution resulting from their use within the city. This liability shall include cleanup, intentional injury or damage to persons or property. Additionally, lessors shall be responsible for any sanctions, fines, or other monetary costs imposed as a result of the release of pollutants from their operations. Pollutants include any solid, liquid, gaseous or thermal irritant or contaminant, including smoke, vapor, soot, fumes, acids, alkalis, chemicals, and waste. Waste includes materials to be recycled, reconditioned or reclaimed. [SDR] [PLANNING]

6. NO THREAT TO PUBLIC HEALTH - The facility shall not be sited or operated in such a manner that is poses, either by itself or in combination with other such facilities, a potential threat to public health. To that end, the subject facility and the combination of on-site facilities shall not produce at any time power densities in any inhabited area that exceed the FCC’s Maximum Permissible Exposure (MPE) limits for electric and magnetic field strength and power density for transmitters or any more restrictive standard subsequently adopted or promulgated by the federal government. [SDR] [PLANNING]

THE FOLLOWING CONDITIONS SHALL BE MET PRIOR TO SUBMITTAL OF BUILDING PERMIT, AND/OR GRADING PERMIT.

7. PROJECT DESIGN – The project plans shall demonstrate compliance with the following design elements:
a) The existing design of the structure shall be modified such that artificial branches at each elevation shall be varied in length and placement as shown in the approved photosimulations to achieve a natural tree appearance;

b) The full depth of existing and proposed antennas, not just T-arms, shall be located within the monopine’s artificial branches. No portion of the telecommunications equipment shall extend beyond the length of the branches. Antennas shall be located as close to the pole as possible to provide the maximum possible branch length beyond the antennas.

c) The existing and proposed T-arms shall be painted brown to match the color of the artificial branches and bark while antennas shall be painted dark green to match the color of the artificial leaves. Needles shall not be attached to the antennas nor shall antenna socks be used at any time.

d) Modifications, as stated in the above conditions, to improve the overall design of the existing monopine shall occur prior to approval of a Building Permit for the proposed collocation.

e) The final design, color, and materials shall be submitted to the Director of Community Development for review and approval prior to building permit issuance. [COA] [PLANNING]

8. EXTERIOR MATERIALS REVIEW - Final exterior building materials and color scheme are subject to review and approval by the Planning Commission/Director of Community Development prior to submittal of a building permit. [COA] [PLANNING]

9. CONDITIONS OF APPROVAL – Final plans shall include all Conditions of Approval included as part of the approved application starting on sheet 2 of the plans. [COA] [PLANNING]

10. RESPONSE TO CONDITIONS OF APPROVAL – A written response indicating how each condition has or will be addressed shall accompany the building permit set of plans. [COA] [PLANNING]

11. NOTICE OF PROJECT RESTRICTIONS – A Notice of Project Restrictions shall be filed in the official records of the County of Santa Clara and provide proof of such recordation to the City prior to issuance of any City permit, allowed use of the property, or Final Map, as applicable. The Notice of Project Restrictions shall be prepared by the Planning Division and shall include a description of the subject property, the Planning Application number, attached conditions of approval and any accompanying subdivision or parcel map, including book and
For purposes of determining the record owner of the property, the applicant shall provide the City with evidence in the form of a report from a title insurance company indicating that the record owner(s) are the person(s) who have signed the Notice of Project Restrictions. [COA] [PLANNING]

12. BLUEPRINT FOR A CLEAN BAY – The building permit plans shall include a “Blueprint for a Clean Bay” on one full sized sheet of the plans. [SDR] [PLANNING]

13. LANDSCAPING AND IRRIGATION – All landscaping and irrigation as contained in the approved building permit plan shall be installed prior to occupancy. [COA] [PLANNING]

14. BLUEPRINT FOR A CLEAN BAY – The project shall be in compliance with stormwater best management practices for general construction activity until the project is completed and either final occupancy has been granted. [SDR] [PLANNING]

15. CERTIFICATION - Before January 31 of each even numbered year following the issuance of any authorizing establishment of a wireless telecommunication facility, an authorized representative for each wireless carrier providing service in the City of Sunnyvale shall provide written certification to the City executed under penalty of perjury that (i) each facility is being operated in accordance with the approved local and federal permits and includes test results that confirm the facility meets city noise requirements and federal RF emissions standards; (ii) each facility complies with the then-current general and design standards and is in compliance with the approved plans; (iii) whether the facility is currently being used by the owner or operator; and (iv) the basic contact and site information supplied by the owner or operator is current. [SDR] [PLANNING]

16. 10 YEAR RENEWAL - Every owner or operator of a wireless telecommunication facility shall renew the facility permit at least every ten (10) years from the date of initial approval. If a permit or other entitlement for use is not renewed, it shall automatically become null and void without notice or hearing ten (10) years after it is issued, or upon cessation of use for more than a year and a day, whichever comes first. Unless a new use permit or entitlement of use is issued, within one hundred twenty (120) days after a permit becomes null and void all improvements, including foundations and appurtenant ground wires, shall be removed from the property and the site restored to its original pre-installation condition within one hundred eighty (180) days of nonrenewal or abandonment. [SDR] [PLANNING]
17. **MINIMIZE NOISE** - The facility shall be operated in such a manner so as to minimize any possible disruption caused by noise. Backup generators shall only be operated during periods of power outages, and shall not be tested on weekends or holidays, or between the hours of 10:00 p.m. and 7:00 a.m. on weekday nights. At no time shall equipment noise from any source exceed an exterior noise level of 60 dB at the property line. [SDR] [PLANNING]

18. **RF EMISSIONS** - Certification must be provided that the proposed facility will at all times comply with all applicable health requirements and standards pertaining to RF emissions. [SDR] [PLANNING]

19. **MAINTAIN CURRENT INFORMATION** - The owner or operator shall maintain, at all times, a sign mounted on the outside fence showing the operator name, site number and emergency contact telephone number. The owner or operator of the facility shall also submit and maintain current at all times basic contact and site information on a form to be supplied by the city. The applicant shall notify city of any changes to the information submitted within thirty (30) days of any change, including change of the name or legal status of the owner or operator. This information shall include, but is not limited to the following:

   a) Identity, including name, address and telephone number, and legal status of the owner of the facility including official identification numbers and FCC certification, and if different from the owner, the identity and legal status of the person or entity responsible for operating the facility.

   b) Name, address and telephone number of a local contact person for emergencies.

   c) Type of service provided. [SDR] [PLANNING]

20. **GOOD REPAIR** - All facilities and related equipment, including lighting, fences, shields, cabinets, and poles, shall be maintained in good repair, free from trash, debris, litter and graffiti and other forms of vandalism, and any damage from any cause shall be repaired as soon as reasonably possible so as to minimize occurrences of dangerous conditions or visual blight. Graffiti shall be removed from any facility or equipment as soon as practicable, and in no instance more than forty-eight (48) hours from the time of notification by the city. [SDR] [PLANNING]

21. **RESPONSIBILITY TO MAINTAIN** - The owner or operator of the facility shall routinely and regularly inspect each site to ensure compliance with the standards set forth in the Telecommunications Ordinance. [SDR] [PLANNING]

22. **ANNUAL DESIGN INSPECTION** – The owner or operator of the facility shall inspect the monopine annually to ensure the monopine retains approximately the same shape and color as the approved original installation. Any repair or replacement needed to return the monopine to its original approved condition shall be performed by the owner or operator as soon as reasonably possible. [COA] [PLANNING]
23. NO INTERFERENCE WITH CITY COMMUNICATION SYSTEMS - The facility operator shall be strictly liable for interference caused by the facility with city communication systems. The operator shall be responsible for all labor and equipment costs for determining the source of the interference, all costs associated with eliminating the interference, (including but not limited to filtering, installing cavities, installing directional antennas, powering down systems, and engineering analysis), and all costs arising from third party claims against the city attributable to the interference. [SDR] [PLANNING]
SITE NAME: AT&T - RESURRECTION PARISH CHURCH
1399 HOLLENBECK AVENUE SUNNYVALE, CA 94087

NEW EQUIPMENT AND NEW ANTENNAS ON AN EXISTING MONOPINE

SITE NUMBER: CA-SJC0101 A (AT&T # CN3538-B)

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREAFTER. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY REQUIRE CHANGES OR MODIFICATIONS.

CLEARWIRE SITE ACQ. MGR:

CLEARWIRE ZONING MGR:

CLEARWIRE RP:

CLEARWIRE BACKHAUL:

CLEARWIRE CONST:

APPROVALS

CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREBY. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY REQUIRE CHANGES OR MODIFICATIONS.

CLEARWIRE SITE ACQ. MGR:

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CLEARWIRE SITE ACQ. MGR:

CLEARWIRE ZONING MGR:

CLEARWIRE RP:

CLEARWIRE BACKHAUL:

CLEARWIRE CONST:

APPROVALS
Photosimulation of the proposed antenna and equipment installation as seen looking southeast toward Fremont Avenue.

This photo was taken prior to the installation of the monopine. For recent photos, reference Attachment G.
Photosimulation of the proposed antenna and equipment installation as seen looking northwest toward Cascade Dr and Hollenbeck Ave.
Clearwire, LLC • Proposed Base Station (Site No. CA-SJ)
1399 Hollenbeck Avenue • Sunnyvale, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Clearwire, LLC, a personal wireless service provider, to evaluate the base station (Site No. CA-SJC0101) proposed to be located at 1399 Hollenbeck Avenue in Sunnyvale, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Prevailing Exposure Standards

The U.S. Congress requires that the Federal Communications Commission ("FCC") evaluate its actions for possible significant impact on the environment. In Docket 93-62, effective October 15, 1997, the FCC adopted the human exposure limits for field strength and power density recommended in Report No. 86, "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements ("NCRP"). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent standard, developed by the Institute of Electrical and Electronics Engineers and approved as American National Standard ANSI/IEEE C95.1-2006, "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," includes similar exposure limits. A summary of the FCC's exposure limits is shown in Figure 1. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

The most restrictive FCC limit for exposures of unlimited duration to radio frequency energy for several personal wireless services are as follows:

<table>
<thead>
<tr>
<th>Personal Wireless Service</th>
<th>Approx. Frequency</th>
<th>Occupational Limit</th>
<th>Public Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadband Radio (&quot;BRS&quot;)</td>
<td>2,600 MHz</td>
<td>5.00 mW/cm²</td>
<td>1.00 mW/cm²</td>
</tr>
<tr>
<td>Advanced Wireless (&quot;AWS&quot;)</td>
<td>2,100</td>
<td>5.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Personal Communication (&quot;PCS&quot;)</td>
<td>1,950</td>
<td>5.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Cellular Telephone</td>
<td>870</td>
<td>2.90</td>
<td>0.58</td>
</tr>
<tr>
<td>Specialized Mobile Radio (&quot;SMR&quot;)</td>
<td>855</td>
<td>2.85</td>
<td>0.57</td>
</tr>
<tr>
<td>Long Term Evolution (&quot;LTE&quot;)</td>
<td>700</td>
<td>2.33</td>
<td>0.47</td>
</tr>
<tr>
<td>[most restrictive frequency range]</td>
<td>30–300</td>
<td>1.00</td>
<td>0.20</td>
</tr>
</tbody>
</table>

General Facility Requirements

Base stations typically consist of two distinct parts: the electronic transceivers (also called "radios" or "channels") that are connected to the traditional wired telephone lines, and the passive antennas that send the wireless signals created by the radios out to be received by individual subscriber units. The transceivers are often located at ground level and are connected to the antennas by coaxial cables.
about 1 inch thick. Because of the short wavelength of the frequencies assigned by the FCC for wireless services, the antennas require line-of-sight paths for their signals to propagate well and so are installed at some height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. Along with the low power of such facilities, this means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

**Computer Modeling Method**

The FCC provides direction for determining compliance in its Office of Engineering and Technology Bulletin No. 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation," dated August 1997. Figure 2 attached describes the calculation methodologies, reflecting the facts that a directional antenna’s radiation pattern is not fully formed at locations very close by (the "near-field" effect) and that at greater distances the power level from an energy source decreases with the square of the distance from it (the "inverse square law"). The conservative nature of this method for evaluating exposure conditions has been verified by numerous field tests.

**Site and Facility Description**

Based upon information provided by Clearwire, including drawings by Dyna Limited, dated July 23, 2009, it is proposed to mount three Argus Model LLPX310R directional panel antennas within an enclosure mounted on a 65-foot pole, configured to resemble a pine tree, to be sited near the church located at 1399 Hollenbeck Avenue in Sunnyvale. The antennas would be mounted with a 2° downtilt at an effective height of about 45 feet above ground and would be oriented at about 120° spacing, to provide service in all directions. The maximum effective radiated power in any direction would be 970 watts. Also proposed to be located with the antennas are three microwave "dish" antennas, for interconnection of this site with others in the Clearwire network.

Recently approved to be installed on the same pole are similar antennas for use by AT&T Mobility, and presently installed in the cross of the church building are similar antennas for use by T-Mobile. For the limited purposes of this study, it is assumed that the transmitting facilities of those carriers are as follows:

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Service</th>
<th>Maximum ERP</th>
<th>Antenna Model</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT&amp;T</td>
<td>PCS</td>
<td>1,500 watts</td>
<td>Kathrein 742-265</td>
<td>58 ft</td>
</tr>
<tr>
<td></td>
<td>Cellular</td>
<td>1,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-Mobile</td>
<td>PCS</td>
<td>2,000</td>
<td>Andrew CSHXX-6516-R2-TAD</td>
<td>63 1/2</td>
</tr>
<tr>
<td></td>
<td>AWS</td>
<td>1,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Also reported to be located on a school building approximately 475 feet away are similar antennas for use by Sprint Nextel.

**Study Results**

For a person anywhere at ground, the maximum ambient RF exposure level due to the proposed Clearwire operation by itself is calculated to be 0.0012 mW/cm², which is 0.12% of the applicable public limit. The maximum calculated cumulative level at ground, for the simultaneous operation of Clearwire, AT&T, and T-Mobile, is 1.5% of the applicable public limit; the maximum calculated cumulative level at the second-floor elevation of any nearby building is 2.4% of the applicable public limit. It should be noted that these results include several “worst-case” assumptions and therefore are expected to overstate actual power density levels. The microwave antennas would be in point-to-point service and are so directional that they make no significant contribution to RF exposure conditions at ground level. Due to the physical separation of the Sprint Nextel antennas from those of the other carriers, the additive effect of the Sprint Nextel operation on those of Clearwire and the other carriers, and vice versa, is negligible in terms of compliance with the exposure standards.

**Recommended Mitigation Measures**

Due to their mounting locations, the Clearwire antennas would not be accessible to the general public, and so no mitigation measures are necessary to comply with the FCC public exposure guidelines. It is assumed that Clearwire and AT&T will, as FCC licensees, take adequate steps to ensure that their employees or contractors comply with FCC occupational exposure guidelines whenever work is required near the antennas themselves.

**Conclusion**

Based on the information and analysis above, it is the undersigned’s professional opinion that the base station proposed by Clearwire, LLC at 1399 Hollenbeck Avenue in Sunnyvale, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating base stations.

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* Located at least 40 feet away, based the drawings.
Clearwire, LLC • Proposed Base Station (Site No. CA-SLC0101)
1399 Hollenbeck Avenue • Sunnyvale, California

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration Nos. E-13026 and M-20676, which expire on June 30, 2011. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

August 25, 2009

William F. Hammett, P.E.
The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission ("FCC") to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The FCC adopted the limits from Report No. 86, "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements ("NCRP"). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent standard, developed by the Institute of Electrical and Electronics Engineers and approved as American National Standard ANSI/IEEE C95.1-2006, "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," includes similar limits. These limits apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

As shown in the table and chart below, separate limits apply for occupational and public exposure conditions, with the latter limits (in italics and/or dashed) up to five times more restrictive:

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Electric Field Strength (V/m)</th>
<th>Magnetic Field Strength (A/m)</th>
<th>Equivalent Far-Field Power Density (mW/cm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3 - 1.34</td>
<td>614</td>
<td>1.63</td>
<td>100</td>
</tr>
<tr>
<td>1.34 - 3.0</td>
<td>614</td>
<td>1.63</td>
<td>1.63</td>
</tr>
<tr>
<td>3.0 - 30</td>
<td>1842/f</td>
<td>2.19/f</td>
<td>100/ f</td>
</tr>
<tr>
<td>30 - 300</td>
<td>614</td>
<td>0.163</td>
<td>0.163</td>
</tr>
<tr>
<td>300 - 1,500</td>
<td>3.54√f</td>
<td>1.59√f</td>
<td>5300/ f/1500</td>
</tr>
<tr>
<td>1,500 - 100,000</td>
<td>137</td>
<td>0.364</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has built those formulas into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radio sources. The program allows for the description of buildings and uneven terrain, if required to obtain more accurate projections.
Assessment by Calculation of Compliance with FCC Exposure Guidelines

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission ("FCC") to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The maximum permissible exposure limits adopted by the FCC (see Figure 1) apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits.

Near Field.
Prediction methods have been developed for the near field zone of panel (directional) and whip (omnidirectional) antennas, typical at wireless telecommunications base stations, as well as dish (aperture) antennas, typically used for microwave links. The antenna patterns are not fully formed in the near field at these antennas, and the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) gives suitable formulas for calculating power density within such zones.

For a panel or whip antenna, power density $S = \frac{180}{\theta_{BW}} \times \frac{0.1 \times P_{net}}{\pi \times D \times h}$, in mW/cm$^2$,

and for an aperture antenna, maximum power density $S_{\text{max}} = \frac{0.1 \times 16 \times \eta \times P_{net}}{\pi \times h^2}$, in mW/cm$^2$,

where $\theta_{BW} = \text{half-power beamwidth of the antenna, in degrees, and}$
$P_{net} = \text{net power input to the antenna, in watts,}$
$D = \text{distance from antenna, in meters,}$
$h = \text{aperture height of the antenna, in meters, and}$
$\eta = \text{aperture efficiency (unitless, typically 0.5-0.8).}$

The factor of 0.1 in the numerators converts to the desired units of power density.

Far Field.
OET-65 gives this formula for calculating power density in the far field of an individual RF source:

$S = \frac{2.56 \times 1.64 \times 100 \times \text{RFF}^2 \times \text{ERP}}{4 \times \pi \times D^2}$, in mW/cm$^2$,

where $\text{ERP} = \text{total ERP (all polarizations), in kilowatts,}$
$\text{RFF} = \text{relative field factor at the direction to the actual point of calculation, and}$
$D = \text{distance from the center of radiation to the point of calculation, in meters.}$

The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 ($1.6 \times 1.6 = 2.56$). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units of power density. This formula has been built into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radiation sources. The program also allows for the description of uneven terrain in the vicinity, to obtain more accurate projections.
August 28, 2009

City of Sunnyvale
Planning Division
456 W. Olive Avenue
Sunnyvale, CA 94088

RE: ClearWire Site CA-SJC0101: Application for a Minor Use Permit for a Wireless Communications Facility at 1399 Hollenbeck Avenue, Sunnyvale, CA, 94087; APN 323-06-005

This letter is hereby submitted in conjunction with an application for a minor use permit for an unmanned wireless communications facility located on and under an existing (soon to be under construction) 65'-tall monopine at a property located at 1399 Hollenbeck Avenue in the City of Sunnyvale. The proposed facility is part of a wireless communications network for ClearWire Technologies.

I. Applicant Information

Lessee/Applicant
ClearWire Technologies
12657 Alcosta Blvd., Ste. 300
San Ramon, CA 94583
Attn: Gary Carpenter
Phone: (808) 741-7200

Agent for Applicant
Bell + Associates (Attn: Gordon Bell)
4020 Sierra Springs Drive
Pollock Pines, CA 95726
Phone: (530) 647-1932
Fax: (805) 456-3958
Email: gbell61639@aol.com

Property Owner
Roman Catholic Welfare Corp of San Jose Church of the Resurrection
725 Cascade Drive
Sunnyvale, CA 94087
Attn: Mr. Abell
Ph: 408.245.5554

II. Project Description

Project Location

The proposed project is located at 1399 Hollenbeck Avenue in the City of Sunnyvale. The proposed communications facility will be located on and under an existing (permitted but not yet constructed) 65'-tall monopine. The project site is located on Assessor’s Parcel 323-06-
Geographic coordinates (NAD 83) for the proposed facility are Latitude: 37°20’ 57.12”, Longitude: -122° 02’ 33.18”, at an elevation of approximately 185’ AMSL (above mean sea level). The aerial photo below shows project location and surrounding land uses.

Fig. 1. Aerial Photo Showing Project Location and Surrounding Land Uses

Project Components

The proposed project would consist of the installation of antennas and radio equipment on and under an existing 55’-tall monopine as shown on the attached plans. The proposed project components would consist of the following elements to be contained within a 16 (4’ x 4’) square foot lease area:

- Radio equipment cabinet (approx. 30” x 30” x 50”(H)) to be installed on a 3’ x 3’ concrete slab adjacent to the monopine within a fenced compound area (6’-tall chain link fence with vinyl slats)
- Three (3) panel antennas and three (2) microwave dishes to be installed at an antenna centerline of approximately 45’ AMSL
- One (1) GPS antenna to be mounted on the radio cabinet within the lease area
- Associated fiber/coax cable to be run from the radio cabinets on slab to the antennas on the monopine within the interior of the monopine. Power would be pulled from existing electrical service for AT&T.
- No generators are proposed as part of this project.

Access would be provided by an existing driveway from Cascade Drive.
Collocation/Alternatives Analysis

The existing (under construction) monopine already supports one existing communications facility and may be capable of handling additional antennas should other wireless communications companies be interested in collocation on the tower.

In terms of looking for alternatives, this search ring is located primarily in a residential neighborhood. Given that ATT has permitted a collocatable monopine at this location, it was the logical choice to utilize a permitted structure that had space on it as opposed to finding a different location within the residential neighborhood that would require a new structure. No other feasible candidates were located in this search ring.

Network Technology

Clearwire offers a robust suite of advanced voice, high-speed Internet services to consumers and businesses. The company is building the first Mobile WiMax 4G network in the San Francisco Bay area bringing together an unprecedented combination of speed and mobility. Clearwire is licensed by the FCC to operate the Mobile WiMax Network in the 2.5-2.7GHz frequency range in San Francisco market. Clearwire will be using microwave backhaul for the Mobile WiMax network.

The Clearwire network is designed upon utilization of microwave backhaul throughout the network of hundreds of sites in the Bay area. This is a 100 percent backhaul solution, with no hardline connections within the system. What this means is that the majority of the sites transport a signal to at least three other sites with "hubs" located at the center of some of the rings to transport an initial signal. Because sites are inextricably linked by these microwave connections, it is imperative that the MW dishes obtain maximum height over the surrounding clutter and topography to ensure a point-to-point connection with other sites in the system.

In terms of Clearwire's relationship to other carriers and their networks, it should be known that Clearwire is a subsidiary of Sprint/Nextel (Sprint owns 51%), but the systems are not integrated. Clearwire's network is an entirely new network. Eventually, Clearwire's subscribers may have roaming agreements with Sprint/Nextel where Clearwire is not present, but the systems are not integrated to support each other. Because of the ownership relationship, Clearwire's footprint is very similar to Sprint's in the Bay area because we know that it is possible to utilize Sprint/Nextel's shelters, mounting brackets, coax cable trays, etc. with the appropriate collocation agreement with Sprint/Nextel. Where possible it is Clearwire's first option to collocate with Sprint/Nextel.

Public Services

Public services such as fire and law enforcement are not required given that the facilities are designed to be vandalism resistant (fenced and located on the tower) and are uninhabitable. The
The site is an unmanned facility that will not generate any noise, dust, or odors. It is expected that a service technician may visit the site for routine maintenance once every month to two months if needed. Ample parking is available within the water company service area for this transient visit.

III. Land Use

Zoning

The project parcel is zoned PF, Public Facility. The project site is bounded on the west, south, and east by single-family residential uses and on the north by similar institutional uses.

Environmental Setting

The project is located on a relatively level, completely disturbed parcel that is used for Resurrection Parish Church and school facilities. These facilities include the church/sanctuary, school buildings, parking lots, and recreational fields. There is an existing telecom facility (permitted and under construction) located on the site which consists of a 65'-tall monopine and an equipment compound. There is ornamental landscaping throughout the site.

IV. Conclusion

In conclusion, the proposed project is a compatible use with the surrounding land uses as proven by the fact that an existing facility is located on and under an existing monopine and thus would be stealthed from surrounding viewsheds. The proposed project will provide valuable communications services to area residents and businesses. Should you have any questions regarding this application, please feel free to call me at (530) 647-1932.

Sincerely,

Bell + Associates
Gordon J. Bell
Gordon J. Bell
Principal

Encl.
May 13, 2010

Office of the City Manager
Gary Luebbers, City Manager
456 W. Olive Avenue
Sunnyvale, CA 94088

Re: Public Outreach Notice for Proposed Clearwire Wireless Internet Facility
Proposed Location: 1399 Hollenbeck Avenue, Sunnyvale, California 94087

Dear Sir:

We received a very inconspicuous card to “introduce us to Clear Wireless, a 4G WiMax wireless internet provider” with intentions to co-locate 3 panel antennas and 3 small microwave dishes and one equipment cabinet on the existing very ugly and obtrusive monopole located at the address listed above. No information can be found for Bell & Associates in Pollock Pines, CA.

This letter is to express our opposition to this co-location. This company, at the present time does not exist within our state, and certainly new to our area. We now have two antenna towers disguised as crosses (one on the roof of classrooms) and one very obtrusive 65 monopole on a property that is surrounded by residents and with a grammar school on the premises very few feet from the monopole.

March of last year, a hearing was held on my appeal regarding the above-mentioned monopole located at the Resurrection Church and within very few feet from the back fences of your residents. This hearing was a joke at the very best as it was clearly shown that AT&T coverage was sufficient and that AT&T used fraudulent marketing to sell their products to consumers and presented evidence to the contrary in order to site said tower. One neighbor, who is in the pocket of the church, was untruthful in their testimony as to unreliable coverage with their AT&T cell phones. Several residents in this court has AT&T service with no problem, but were unable to voice testimony to same in rebuttal. We certainly feel that the residents of this area were not heard or our opinion even considered.

FCC limits of RF emissions apply cumulatively to all sources affecting a given area and I quote “If 2 or more wireless operators have agreed to share the cost of building and maintaining a tower and to place their antennas on that joint structure, the total exposure from the 2 facilities taken together... “Applying basic principles discussed in the FCC guide should allow you to eliminate a large number of sites from further consideration with respect to health concerns” REF: Local Officials Guide to RF. FCC/LSGAC p.11.

We are asking you to represent your constituency and not approve this application. Since all of you have been placed in a position of trust you have the fiduciary duty to protect your citizens from anything that could impair our health, safety and the ability to enjoy our property without fear.
therefore we will be unable to attend. This letter is in lieu of our attendance with sincere hope that all of you will do the right thing, this time, and not approve this application.

Respectfully,

Sylvia and Al Anderson: 758 Lewiston Ct., Sunnyvale, California 94087

Copies by certified mail: Ryan Kuchenig
City Manager, Gary Luebbers
City Attorney, David Kahn
Executive Assistant to Mayor and Council
July 2, 2001

SYLVIA ANDERSON
AL ANDERSON
758 Lewiston Ct.
Sunnyvale, CA 94087

Executive Assistant to Mayor and Council
456 W. Olive Avenue
Sunnyvale, CA 94088

Re: Proposed Clearwire Wireless Internet Facility
Proposed Location: 1399 Hollenbeck Avenue, Sunnyvale, California 94087

Gentle persons:

This letter is to express our opposition to this co-location. As you know from past issues and concerns the above-suggested property already has two antenna towers disguised as crosses (one on the roof of classrooms and one on the church roof) and one very obtrusive and hard-to-look-at 65 foot monopole. This property is surrounded by residents with a grammar school on the premises very few feet from these antennas. Please see attached photo of said monopole over our back fence. Would you really like to look at this 24/7 and live in its shadow?

We are asking you to represent your constituency and not approve this application. Since all of you have been placed in a position of trust you have the fiduciary duty to protect your citizens from anything that could impair our health, safety and the ability to enjoy our property without fear.

I am deaf and my husband has been ill, so we will not be attending said hearing. Please do not approve the application for MORE antennae on this property. Please consider putting them on property owned by the City of Sunnyvale so that the proceeds can be used to help our city. Sunnyvale needs the money far more than the Church of the Resurrection and we need a choice in the matter.

Sylvia and Al Anderson: 758 Lewiston Ct., Sunnyvale, California 94087

Respectfully,

Copies by certified mail: Ryan Kuchenig
City Manager, Gary Luebbers