Staff Report to the Zoning Administrator

Application Number: 08-0205

Applicant: AT& T C/O James Cosgrove
Owner: Philip & Jenine Huxtable
APN: 060-261-11

Agenda Date: January 16, 2009
Agenda Item #: 9.
Time: After 10:00 a.m.

Project Description: Proposal to mount three new panel antennas, replace three existing panel antennas on an existing 48-foot tall monopine, and install one outdoor equipment cabinet within an enclosed wireless communication facility. Requires an Amendment to Commercial Development Permits 97-0880, 01-0312 and 03-0056.

Location: Property located on the west side of El Rancho Drive, (200 El Rancho Drive), about 9 feet south from Carbonera Drive in Santa Cruz.

Supervisoral District: First District (District Supervisor: Janet Beautz)

Permits Required: Amendment to Commercial Development Permit 97-0880, 01-0312 and 03-0056
Technical Reviews: None

Staff Recommendation:

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- Approval of Application 08-0205, based on the attached findings and conditions.

Exhibits

A.	Project plans	I.	Elevations
B.	Findings	J.	Radiofrequency Report, by TRK Engineering, dated November 19, 2008
C.	Conditions	K.	Urban Designer Memo, dated 6/23/08
D.	Categorical Exemption (CEQA determination)	L.	Comments & Correspondence
E.	Assessor's parcel map		
F.	Zoning & Location map		
G.	General Plan map		
H.	Photosimulations		

Parcel Information

Parcel Size:	1.6 acres
Existing Land Use - Parcel:	Residential-Wireless Communication Facility
Existing Land Use - Surrounding:	Residential, Public Facility
Project Access:	El Rancho Drive
Planning Area:	Carbonera
Land Use Designation:	PF (Public Facility)
Zone District:	SU (Special Use)
Coastal Zone:	__ Inside X Outside
Appealable to Calif. Coastal Comm.	__ Yes X No

Environmental Information

Geologic Hazards:	Not mapped/no physical evidence on site
Soils:	177-Watsonville Loam, 2-15% slopes
Fire Hazard:	Not a mapped constraint
Slopes:	N/A
Env. Sen. Habitat:	Mapped biotic resource, however no proposed development outside of the existing facility
Grading:	No grading proposed
Tree Removal:	No trees proposed to be removed
Scenic:	Not visible from Highway 17
Drainage:	Existing drainage adequate
Archeology:	Mapped, however no proposed development outside of existing facility

Services Information

Urban/Rural Services Line:	X Inside __ Outside
Water Supply:	N/A
Sewage Disposal:	N/A
Fire District:	Scotts Valley Fire Protection District
Drainage District:	N/A

History

The property was originally granted Commercial Development Permit (CDP) 97-0880 to allow the construction of a wireless communications facility for Pacific Bell, consisting of a 40-foot high monopole and a 10 square foot concrete pad. On November 16, 2001, Commercial Development Permit 01-0312 was approved amending CDP 97-0880 to allow the construction of a new 48-foot tall monopole, and a 220 square foot equipment shed in addition to the existing 40 foot monopole. On March 18, 2004, CDP 03-0056 approved the transfer of ownership of the wireless facility associated with the 48-foot cell tower from Sprint to AT& T Wireless, and to delete the equipment storage building and replace it with a reduced equipment enclosure by constructing a concrete slab and 6-foot high fenced area to house three equipment cabinets.

Zoning & General Plan Consistency

The subject property is a 1.6square foot lot, located in the SU (Special Use) zone district, with a P (Public Facility) General Plan designation. This zone district is considered supportive of the Public Facility land use designation, which is intended to provide for present and future availability of land for both public and quasi-public facilities. General Plan 2.21.1(a) specifically provides for development or increases in intensity of use for private non-residential public facilities.

Project Setting

The project site is located on the west side of El Rancho Drive in the Carbonera Planning Area. The site is located between El Rancho Drive and Highway 17 and is developed with two existing wireless facilities and a single family dwelling. Highway 17 is located to the west, with residential development located to the north, east and south.

Project Scope

The project applicant, AT& T Wireless, is proposing to mount three new antennas and replace three existing antennas on an existing 48-foot high monopine and install a cabinet on an existing concrete slab within a fenced enclosure. The number of antennas will increase from three to six and the number of cabinets will not increase beyond the three cabinets previously approved under CDPs 97-0880, 01-0312 and 03-0056. The modification will allow the applicant to deploy new UMTS services in addition to the GSM services that are already offered through this wireless communication facility.

The existing antennas are located at a height of 43 feet above grade level and the replacement antennas will remain at the same height. The three additional antennas will be installed at 36.83 feet above grade level. The project has been conditioned to have the antennas painted green to blend with the monopine.

RadioFrequency (RF) Exposure

The applicant submitted RF reports by TRK Engineering which indicate that the maximum exposure near a facility is calculated at 2.53% of the public exposure limit; while the maximum exposure on nearby buildings at the second level is calculated at 3.78% of the public exposure limit set by the Federal Communications Commissions (FCC). Therefore, in conclusion the report states that under "worst case" conditions, the calculations predict that the maximum possible RF exposure is at 3.78% of the maximum permissible exposure limit and the proposed modifications to the AT &T wireless communication facility will comply with the FCC's general population/uncontrolled limit.

Visual Analysis

The project site is located adjacent to Highway 17, a designated scenic corridor per General Plan

policy 5.10.10. The existing antennas are painted to blend with the monopine foliage, the topography and existing trees provide screening from Highway 17. The monopine is slightly visible from the surrounding neighborhood, however, the existing antennas at 43 feet are minimally visible and the proposed replacement and three additional antennas at 36.83 feet will not increase the visual impact as they will be built flush to the pole and screened by monopine foilage. Staff has included a condition of approval that the antennas be painted green to blend with the monopine foliage. Therefore, as conditioned staff concludes that there will be no increase visual impact to scenic Highway 17 from the additional antennas.

The proposed AT & T antennas comply with all Federal Communications Commission (FCC) guidelines construction requirements, technical standards, interference protection and radio frequency regulations. In addition, the Urban Designer has found the proposal to be in compliance with the general development performance standards for wireless communication facilities (County Code 13.10.663) for visual character of the site, visual impacts to the neighboring parcels and visual impact mitigation.

Conclusion

As proposed and conditioned, the project is consistent with all applicable codes and policies of the Zoning Ordinance and General Plan/LCP. Please see Exhibit "B" ("Findings") for a complete listing of findings and evidence related to the above discussion.

Staff Recommendation

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- **APPROVAL** of Application Number **08-0205,** based on the attached findings and conditions.

Supplementary reports and information referred to in this report are on file and available for viewing at the Santa Cruz County Planning Department, and are hereby made a part of the administrative record for the proposed project.

The County Code and General Plan, as well as hearing agendas and additional information are available online at: www.co.santa-cruz.ca.us

Report Prepared By: Maria Perez
Santa Cruz County Planning Department
701 Ocean Street, 4th Floor
Santa Cruz CA 95060
Phone Number: (831) 454-5321
E-mail: maria.perez@co.santa-cruz.ca.us

Wireless Communication Facility Use Permit Findings

1. The development of the proposed wireless communications facility as conditioned will not significantly affect any designated visual resources, environmentally sensitive habitat resources (as defined in the Santa Cruz County General Plan/LCP Sections 5.1, 5.10, and 8.6.6.), and/or other significant County resources, including agricultural, open space, and community character resources; or there are no other environmentally equivalent and/or superior and technically feasible alternatives to the proposed wireless communications facility as conditioned (including alternative locations and/or designs) with less visual and/or other resource impacts and the proposed facility has been modified by condition and/or project design to minimize and mitigate its visual and other resource impacts.

This finding can be made, in that the proposed additional antennas and cabinet will not significantly affect scenic Highway 17 or the neighborhood. The monopine is slightly visible from points along the corridor, however the new antennas will be camouflaged to blend with the color of the foliage and the existing vegetation provides screening of the equipment and the majority of the monopine. The proposal has been conditioned to require that the antennas be painted to match the monopine foliage; in addition, the existing vegetation camouflages the monopine and equipment cabinets from scenic Highway 17. The proposal is also consistent with General Plan Policy 8.6.6 as the development does not disturb ridge tops or natural landforms.

2. The site is adequate for the development of the proposed wireless communications facility and, for sites located in one of the prohibited and/or restricted areas set forth in Sections 13.10.661(b) and 13.10.661 (c), that the applicant has demonstrated that there are not environmentally equivalent or superior and technically feasible: (1) alternative sites outside the prohibited and restricted areas; and/or (2) alternative designs for the proposed facility as conditioned.

This finding can be made, in that the existing site is currently developed with a wireless communication facility and the addition of antennas and an equipment cabinet, which was previously approved, will result in less of an impact than the construction of a new facility on a different parcel. In addition, the site is not located in a prohibited or restricted area.

3. The subject property upon which the wireless communications facility is to be built is in compliance with all rules and regulations pertaining to zoning uses, subdivisions and any other applicable provisions of this title (County Code 13.10.660) and that all zoning violation abatement costs, if any, have been paid.

This finding can be made, in that the existing wireless communication is in compliance with the requirements of the Special Use zone district and Public Facility General Plan designation, in which it is located.

No zoning violation abatement fees are applicable to the subject property.

4. The proposed wireless communication facility as conditioned will not create a hazard for aircraft in flight.

This finding can be made, in that the proposed wireless communications facility will be located on a wireless communications monopine, which will be approximately 48 feet in height, and this elevation is too low to interfere with an aircraft in flight.

5. The proposed wireless communication facility as conditioned is in compliance with all FCC and California PUC standards and requirements.

This finding can be made, in that the maximum ambient RF levels at ground level due to the existing wireless communications facilities and the proposed operation are calculated to be 3.78% percent of the most restrictive applicable limit. The applicant submitted RF reports by TRK Engineering which indicate that the maximum exposure near a facility is calculated at 2.53% of the public exposure limit; while the maximum exposure on nearby buildings at the second level is calculated at 3.78% of the public exposure limit set by the Federal Communications Commissions (FCC). Therefore, in conclusion the report states that under "worst case" conditions, the calculations predict that the maximum possible RF exposure is at 3.78% of the maximum permissible exposure limit and the proposed modifications to the AT &T wireless communication facility will comply with the FCC general population/uncontrolled limit.

Development Permit Findings

1. That the proposed location of the project and the conditions under which it would be operated or maintained will not be detrimental to the health, safety, or welfare of persons residing or working in the neighborhood or the general public, and will not result in inefficient or wasteful use of energy, and will not be materially injurious to properties or improvements in the vicinity.

This finding can be made, in that the maximum RF exposure level indicate that the maximum exposure near a facility is calculated at 2.53% of the public exposure limit; while the maximum exposure on nearby buildings at the second level is calculated at 3.78% of the public exposure limit set by the Federal Communications Commissions (FCC). The RF emissions of the proposed wireless communication facility comply with FCC standards.

The proposed project will not result in inefficient or wasteful use of energy, in that the most recent and efficient technology available to provide wireless communication services will be required as a condition of this permit. Upgrades to more efficient and effective technologies will be required to occur as new technologies are developed.

The project will not be materially injurious to properties or improvements in the vicinity in that the project is for three panel antennas to be installed on an existing wireless facility.

2. That the proposed location of the project and the conditions under which it would be operated or maintained will be consistent with all pertinent County ordinances and the purpose of the zone district in which the site is located.

This finding can be made, in that the proposed location of the new and replacement panel

antennas and equipment cabinet and the conditions under which it would be operated or maintained will be consistent with all pertinent County ordinances and the purpose of the SU zone district, which are established by the General Plan designation of P (Public Facilities).

The ordinance regulating the location of wireless communication facilities (13.10.659(f)(2) authorizes the construction of such devices within the SU zone districts with other than a residential General Plan designation.

3. That the proposed use is consistent with all elements of the County General Plan and with any specific plan which has been adopted for the area.

This finding can be made, in the subject parcel has a land use designation of P (Public Facilities) and the proposed private, non-residential public facility is consistent with all the elements of the General Plan. The use is permitted by the General Plan Policy 2.21.1(a), and the proposal is consistent with General Plan Policy 8.6.6, as the development does not disturb ridge tops or natural landforms.

The subject property is located within the Highway 17 scenic corridor. The proposal is consistent with General Plan policy 5.10.3 to protect public vistas in that the monopine is slightly visible from points along the corridor, however the new antennas will be camouflaged to blend with the color of the foliage and the existing vegetation provides screening of the equipment and the majority of the monopine.

A specific plan has not been adopted for this portion of the County.

4. That the proposed use will not overload utilities and will not generate more than the acceptable level of traffic on the streets in the vicinity.

This finding can be made, in that the use will not overload utilities and will not generate traffic on the streets in the vicinity in that the additional antennas and equipment cabinet are planned for an unattended/unhabitable operation.

5. That the proposed project will complement and harmonize with the existing and proposed land uses in the vicinity and will be compatible with the physical design aspects, land use intensities, and dwelling unit densities of the neighborhood.

This finding can be made, in that the proposed additional antennas will be placed on an existing monopine that is slightly visible from neighboring residences but is screened from scenic Highway 17 by the existing mature vegetation in the area. The proposal has been conditioned to include painting the antennas to blend with the monopine foliage.

6. The proposed development project is consistent with the Design Standards and Guidelines (sections 13.11.070 through 13.11.076), and any other applicable requirements of this chapter.

This finding can be made, in that the proposed additions to the wireless communication facility are consistant with Design Standards and Guidelines in that the proposal has been conditioned to

paint the antennas a color that will blend with the monopine foliage to reduce potential visual impacts to the surrounding neigbhorhood.

Conditions of Approval

Exhibit A: Project Plans entitled prepared by Jeffrey Rome & Associates, Inc., sixteen sheets, dated 09/03/08.

I. This permit amends Commercial Development Permits 97-0880, 01-0312 and 03-0056 to install three additional antennas and replace three antennas on an existing monopine, and install an equipment cabinet as depicted on the approved "Exhibit A" for this permit. This approval does not confer legal status on any existing structure(s) or existing use(s) on the subject property that are not specifically authorized by this permit. Prior to exercising any rights granted by this permit including, without limitation, any construction or site disturbance, the applicant/owner shall:

A. Sign, date, and return to the Planning Department one copy of the approval to indicate acceptance and agreement with the conditions thereof.

B. Obtain a Building Permit from the Santa Cruz County Building Official.

II. Prior to issuance of a Building Permit the applicant/owner shall:

A. Submit proof that these conditions have been recorded in the official records of the County of Santa Cruz (Office of the County Recorder).

B. Submit final architectural plans for review and approval by the Planning Department. The final plans shall be in substantial compliance with the plans marked Exhibit "A" on file with the Planning Department. Any changes from the approved Exhibit "A" for this development permit on the plans submitted for the Building Permit must be clearly called out and labeled by standard architectural methods to indicate such changes. Any changes that are not properly called out and labeled will not be authorized by any Building Permit that is issued for the proposed development. The final plans shall include the following additional information:

1. One elevation shall indicate materials and colors as they were approved by this Discretionary Application. If specific materials and colors have not been approved with this Discretionary Application, in addition to showing the materials and colors on the elevation, the applicant shall supply a color and material board in 8 ½" x 11" format for Planning Department review and approval

   a. The proposed antennas must be built flush to the monopine and painted a green color to minimize visibility from the surrounding residential properties and Highway 17.

2. A plan for safety/security considerations that is consistent with Section 13.10.664.

C. Submit four copies of the approved Discretionary Permit with the Conditions of Approval attached. The Conditions of Approval shall be recorded prior to submittal, if applicable.

EXHIBIT C

D. Meet all requirements and pay any applicable plan check fee of the Scotts Valley Fire Protection District.

III. All construction shall be performed according to the approved plans for the Building Permit. Prior to final building inspection, the applicant/owner must meet the following conditions:

A. All site improvements shown on the final approved Building Permit plans shall be installed.

B. All inspections required by the building permit shall be completed to the satisfaction of the County Building Official.

C. No ground disturbance shall occur as a part of this project.

IV. Operational Conditions

A. NIER Report: A report documenting Non-Ionizing Electromagnetic Radiation at the facility site shall be submitted within ninety (90) days after the commencement of normal operations, or within ninety (90) days after any major modification to power output of the facility.

B. Equipment Modifications: Any modification in the type of equipment shall be reviewed and acted on by the Planning Department staff. The County may deny or modify the conditions at this time, or the Planning Director may refer it for public hearing before the Zoning Administrator.

C. Warning Signs: Warning signs that comply with OET-65 color, symbol, and content recommendations shall be posted at roof access locations and at the transmitting antennas such that the signs are readily visible from any angle of approach to persons who might need to work within that distance. Signs shall include contact information to arrange for access to the restricted areas.

D. Access: No access for maintenance is permitted to within 6 feet of the antennas while the site is in operation unless other measures can be demonstrated to ensure that occupational protection requirements are met.

E. Camouflage: The camouflage materials shall be permanently maintained and replacement materials and/or paint shall be applied as necessary to maintain the camouflage of the facility.

F. Noise: All noise generated from the approved use shall comply with the requirements of the General Plan.

G. Lighting: All site, building, security and landscape lighting shall be directed away from the scenic corridor and adjacent properties. Light sources shall not be visible from adjacent properties. Light sources can be shielded by landscaping, structure, fixture design or other physical means. Building and security lighting shall be

integrated into the building design.

H. Future Technologies: If future technological advances would allow for reduced visual impacts resulting from the proposed telecommunication facility, the applicant agrees through accepting the terms of this permit to make those modifications which would allow for reduced visual impact of the proposed facility as part of the normal replacement schedule. If, in the future, the facility is no longer needed, the applicant agrees to abandon the facility and be responsible for the removal of all permanent structures and the restoration of the site as needed to re-establish the area consistent with the character of the surrounding vegetation.

I. Future Studies: If, as a result of future scientific studies and alterations of industry-wide standards resulting from those studies, substantial evidence is presented to Santa Cruz County that radio frequency transmissions may pose a hazard to human health and/or safety, the Santa Cruz County Planning Department shall set a public hearing and in its sole discretion, may revoke or modify the conditions of this permit.

J. Noncompliance: In the event that future County inspections of the subject property disclose noncompliance with any Conditions of this approval or any violation of the County Code, the owner shall pay to the County the full cost of such County inspections, including any follow-up inspections and/or necessary enforcement actions, up to and including permit revocation.

K. Transfer of Ownership: In the event that the original permittee sells its interest in the permitted wireless communications facility, the succeeding carrier shall assume all responsibilities concerning the project and shall be held responsible to the County for maintaining consistency with all project conditions of approval, including proof of liability insurance. Within 30-days of a transfer of ownership, the succeeding carrier shall provide a new contact name to the Planning Department.

V. As a condition of this development approval, the holder of this development approval ("Development Approval Holder"), is required to defend, indemnify, and hold harmless the COUNTY, its officers, employees, and agents, from and against any claim (including attorneys' fees), against the COUNTY, it officers, employees, and agents to attack, set aside, void, or annul this development approval of the COUNTY or any subsequent amendment of this development approval which is requested by the Development Approval Holder.

A. COUNTY shall promptly notify the Development Approval Holder of any claim, action, or proceeding against which the COUNTY seeks to be defended, indemnified, or held harmless. COUNTY shall cooperate fully in such defense. If COUNTY fails to notify the Development Approval Holder within sixty (60) days of any such claim, action, or proceeding, or fails to cooperate fully in the defense thereof, the Development Approval Holder shall not thereafter be responsible to defend, indemnify, or hold harmless the COUNTY if such failure to notify or cooperate was significantly prejudicial to the Development Approval Holder.

B. Nothing contained herein shall prohibit the COUNTY from participating in the defense of any claim, action, or proceeding if both of the following occur:

1. COUNTY bears its own attorney's fees and costs; and

2. COUNTY defends the action in good faith.

C. Settlement. The Development Approval Holder shall not be required to pay or perform any settlement unless such Development Approval Holder has approved the settlement. When representing the County, the Development Approval Holder shall not enter into any stipulation or settlement modifying or affecting the interpretation or validity of any of the terms or conditions of the development approval without the prior written consent of the County.

D. Successors Bound. "Development Approval Holder" shall include the applicant and the successor'(s) in interest, transferee(s), and assign(s) of the applicant.

Minor variations to this permit which do not affect the overall concept or density may be approved by the Planning Director at the request of the applicant or staff in accordance with Chapter 18.10 of the County Code.

Please note: This permit expires two years from the effective date listed below unless a building permit (or permits) is obtained for the primary structure described in the *development permit (does not include demolition,* temporary power pole or other site preparation permits, or accessory structures unless these are the primary subject of the development permit). Failure to exercise the building permit and to complete all of the construction under the building permit, resulting in the expiration of the building permit, will void the development permit, unless there are special circumstances as determined by the Planning Director.

Approval Date: _____

Effective Date: _____

Expiration Date: _____

Don Bussey	Maria Perez
Deputy Zoning Administrator	Project Planner

Appeals: Any property owner, or other person aggrieved, or any other person whose interests are adversely affected by any act or determination of the Zoning Administrator, may appeal the act or determination to the Planning Commission in accordance with chapter 18.10 of the Santa Cruz County Code.

CALIFORNIA ENVIRONMENTAL QUALITY ACT
NOTICE OF EXEMPTION

The Santa Cruz County Planning Department has reviewed the project described below and has determined that it is exempt from the provisions of CEQA as specified in Sections 15061 - 15332 of CEQA for the reason(s) which have been specified in this document.

Application Number: 08-0205
Assessor Parcel Number: 060-261-11
Project Location: 200 El Rancho Road

Project Description: Proposal to recognize slope stabilization improvments on site with an existing single family dwelling.

Person or Agency Proposing Project: AT& T C/O James Cosgrove

Contact Phone Number: 415-233-3838

A. _____ The proposed activity is not a project under CEQA Guidelines Section 15378.
B. _____ The proposed activity is not subject to CEQA as specified under CEQA Guidelines Section 15060 (c).
C. _____ **Ministerial Project** involving only the use of fixed standards or objective measurements without personal judgment.
D. _____ **Statutory Exemption** other than a Ministerial Project (CEQA Guidelines Section 15260 to 15285).

Specify type:

E. __X__ **Categorical Exemption**

Specify type: Class 1 - Existing Facilities (Section 15301)

F. **Reasons why the project is exempt:**

Proposal to construct improvements to protect an existing single family dwelling.

In addition, none of the conditions described in Section 15300.2 apply to this project.

_____ Date:_____
Maria Perez, Project Planner

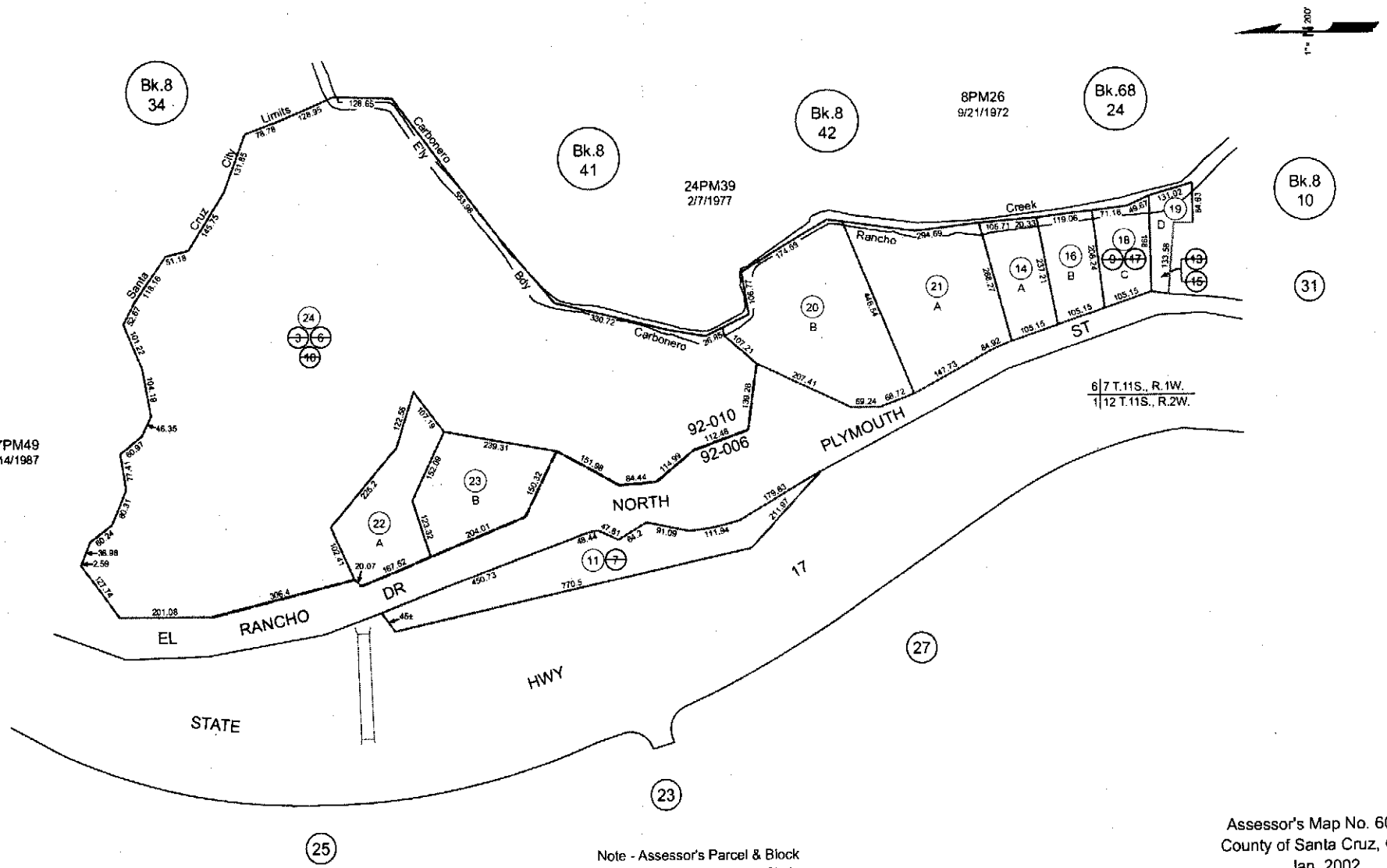
EXHIBIT D

FOR TAX PURPOSES ONLY

POR. CARBONERO RANCHO
SEC. 1 & 12, T.11S., R.2W., &
SECS. 6 & 7, T.11S., R.1W., M.D.B. & M.

Tax Area Code
92-006 92-010

60-26



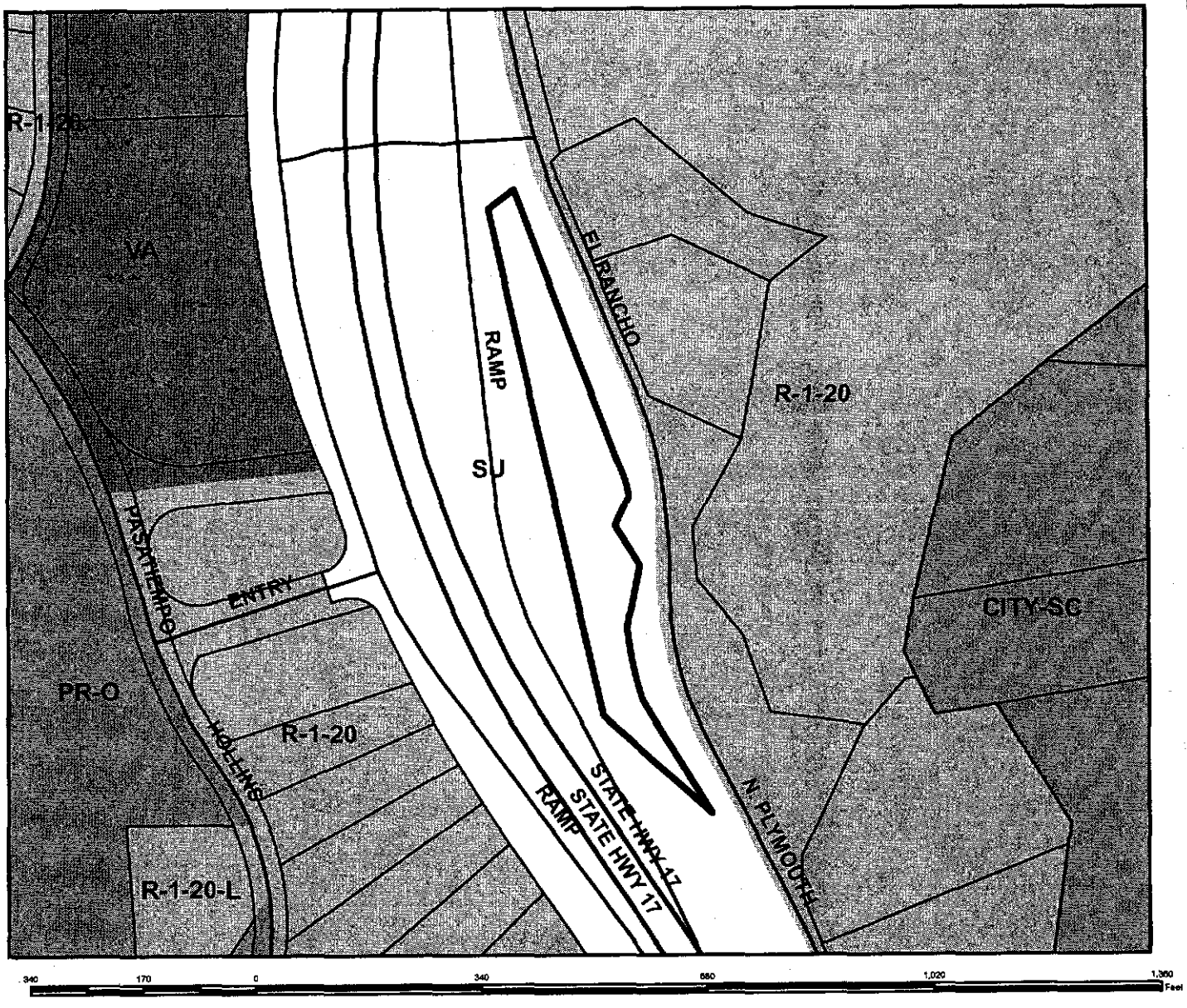
Assessor's Map No. 60-26
County of Santa Cruz, Calif.
Jan. 2002

Electronically repositioned 1/3/02 ksa
Rev. Santa Cruz City Realignment 1/3/02 KSA
Rev. 9/5/03 mc (added North Plymouth St)

- 14 -

EXHIBIT E

Zoning Map



LEGEND

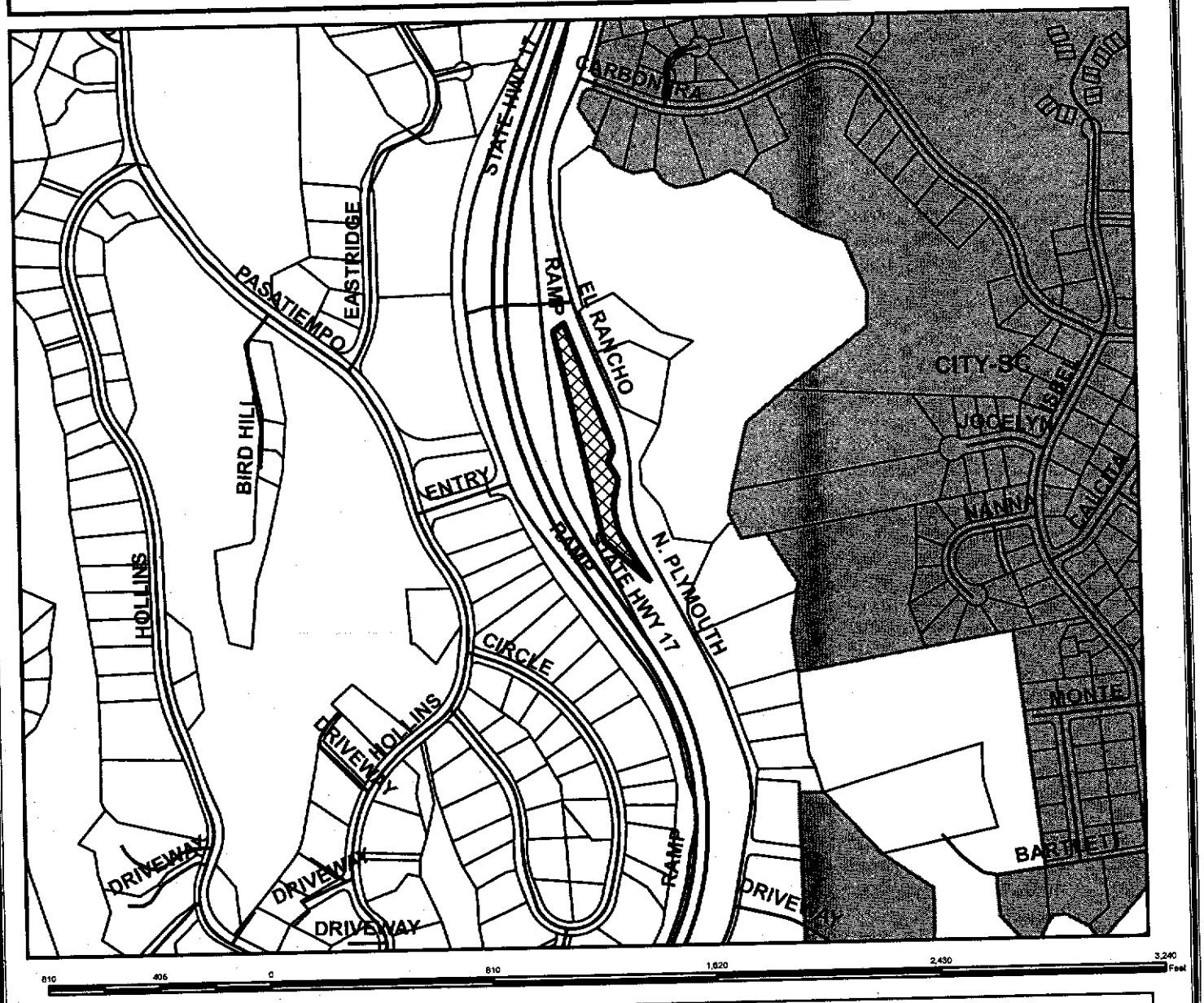
- APN: 060-261-11
- Assessors Parcels
- *Streets*
- State Highways
- SANTA CRUZ
- SPECIAL USE
- COMMERCIAL-VISITOR ACCOM.
- RESIDENTIAL-SINGLE FAMILY
- PARK

N
W E
S

Map Created by
County of Santa Cruz
Planning Department
December 2008

EXHIBIT F

Location Map



LEGEND

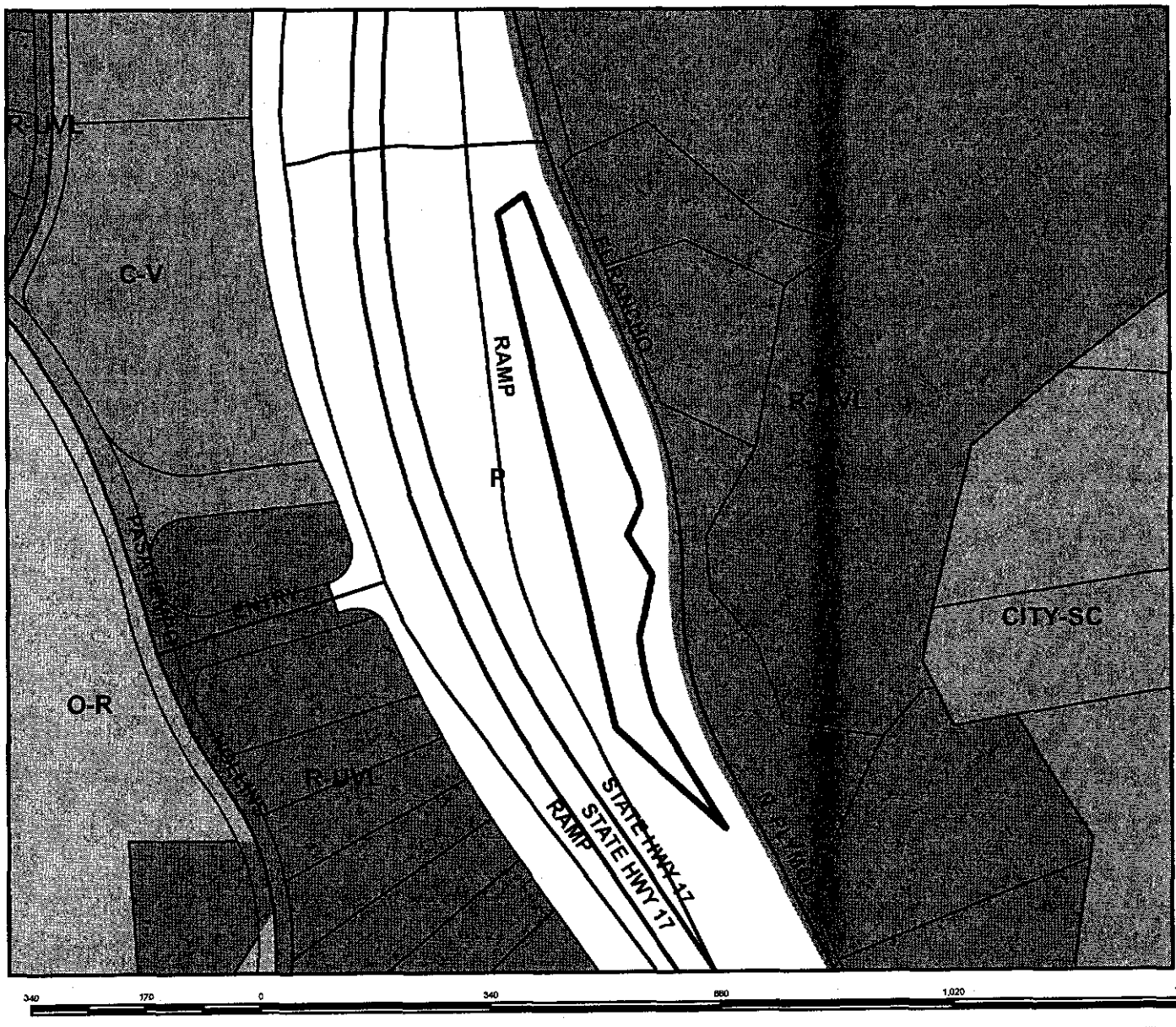
- APN: 060-261-11
- Assessors Parcels
- Streets
- State Highways
- SANTA CRUZ

N
W E
S

Map Created by
County of Santa Cruz
Planning Department
December 2008

EXHIBIT

General Plan Designation Map



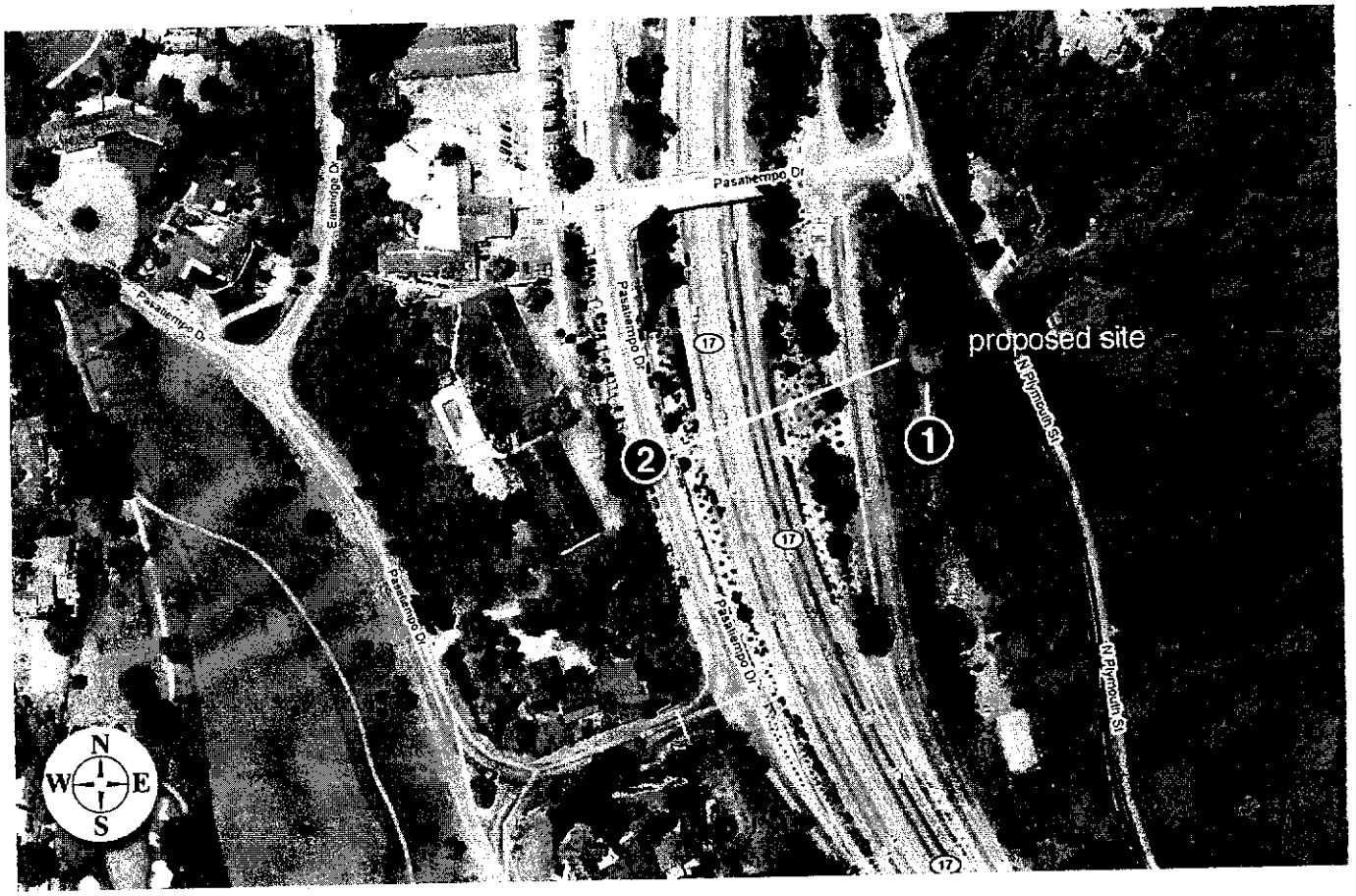
LEGEND

- APN: 060-261-11
- Assessors Parcels
- Streets
- State Highways
- SANTA CRUZ
- Public Facilites
- Residential - Urban Very Low Density
- Commercial-Visitor Accom.
- Parks and Recreation

N
W E
S

Map Created by
County of Santa Cruz
Planning Department
December 2008

EXHIBIT G



at&t

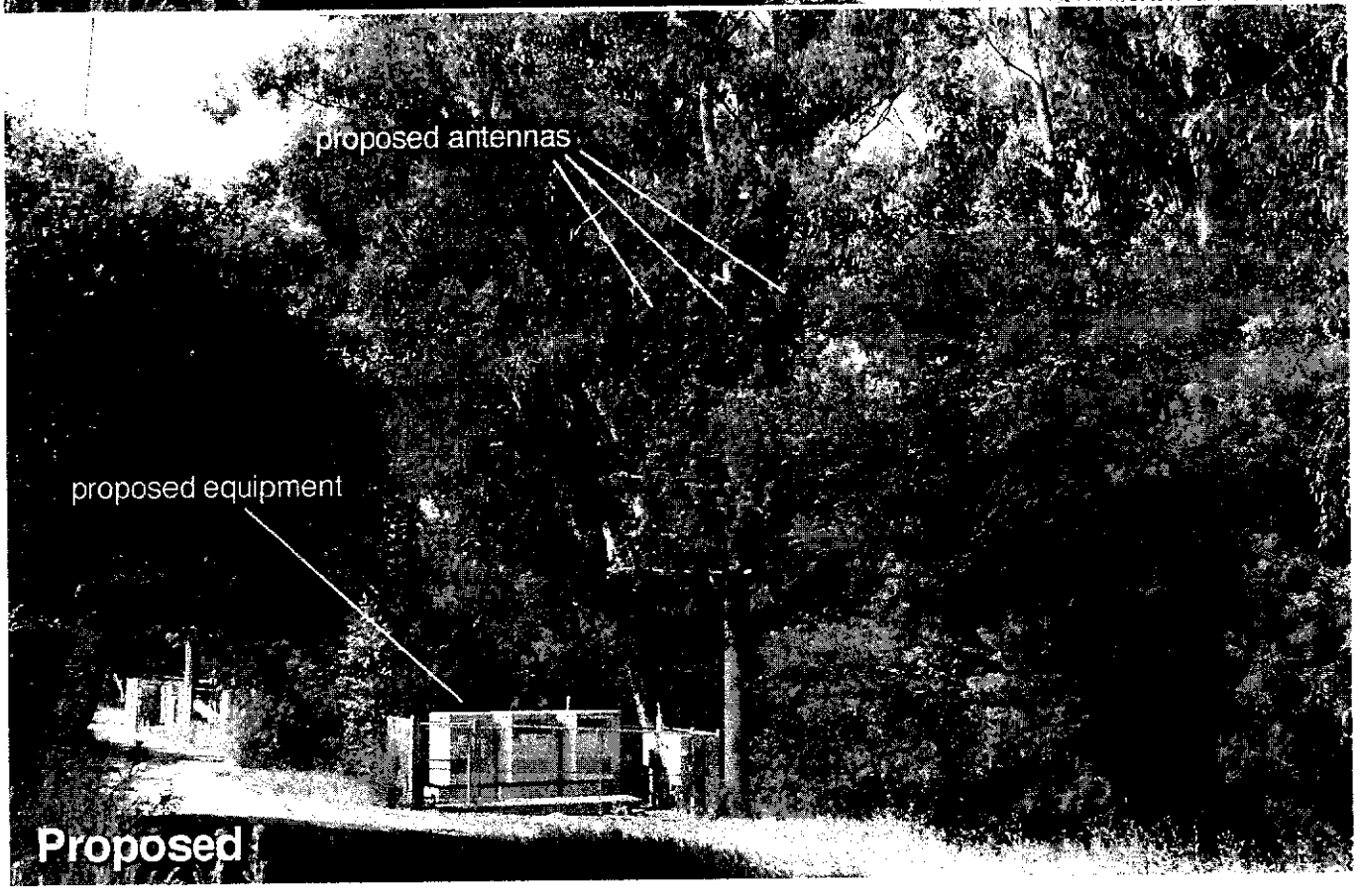
Hwy 17 / El Rancho **Site # CNU3495** **Aerial Map**

200 El Rancho Drive
Santa Cruz, CA 95060

5/14/08

Applied Imagination 510 914-0500

EXHIBIT H



at&t

Hwy 17 / El Rancho **Site # CNU3495** **Looking North from Site**

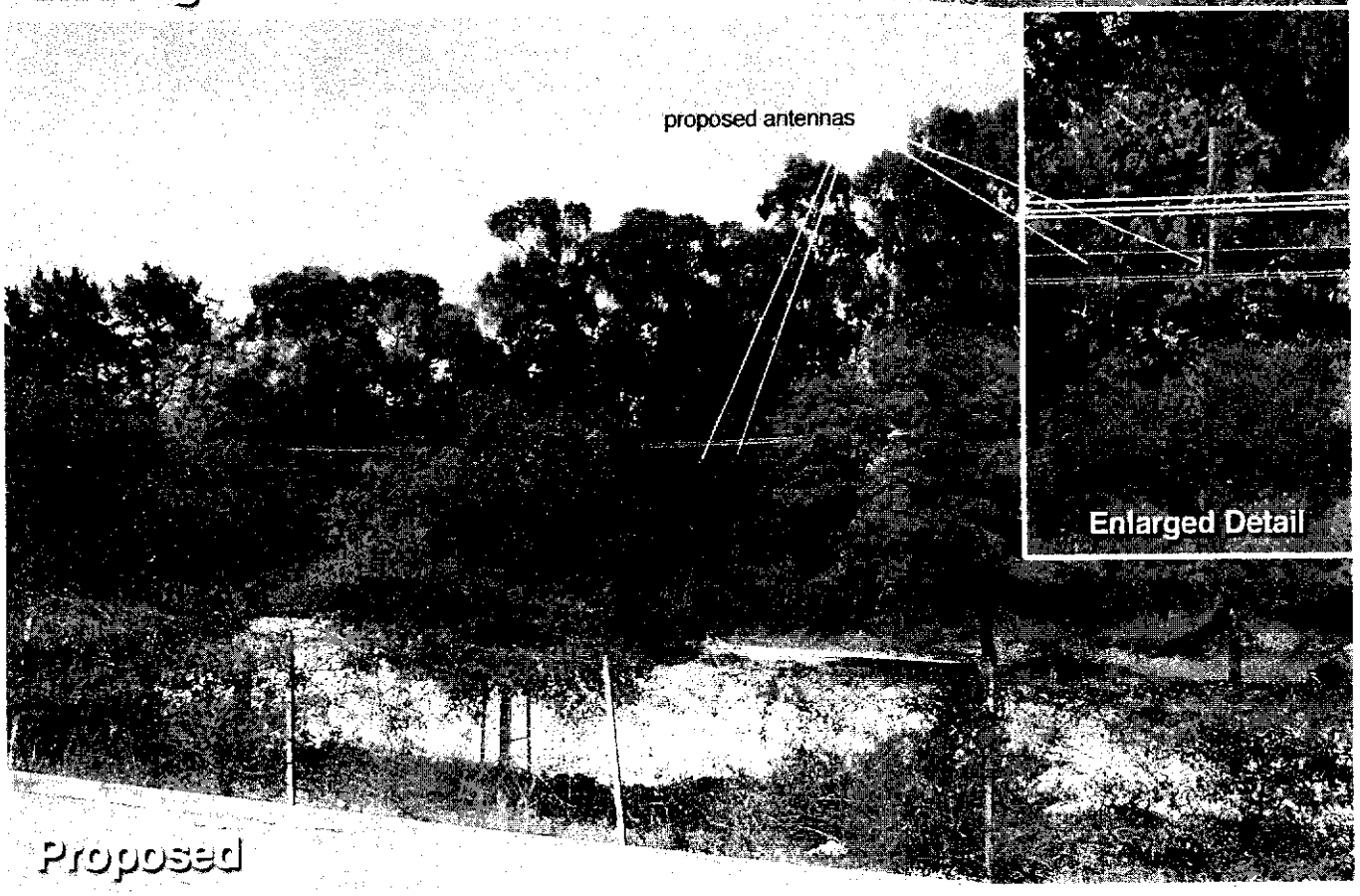
200 El Rancho Drive
Santa Cruz, CA 95060

5/14/08

Applied Imagination 510 914-0500

EXHIBIT H

Existing



Proposed

at&t | **Hwy 17 / El Rancho** | **Site # CNU3495** | **Looking East from Pasatiempo Drive**

200 El Rancho Drive
Santa Cruz, CA 95060

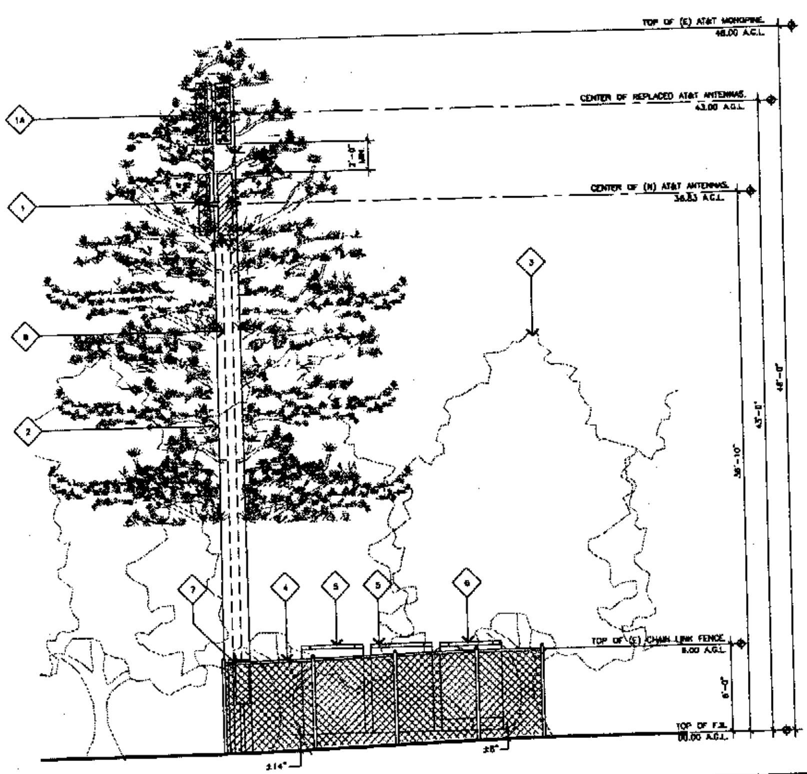
5/14/08

Applied Imagination 510 914-0500

EXHIBIT H

ELEVATION KEYNOTES

1. (N) (3) 51.8" X 10.3" X 5.5" AT&T ANTENNAS BELOW REPLACED AT&T ANTENNAS. INSTALL PINE NEEDLE SOCKS TO MATCH (E) MONOPINE. LOWER (N) ANTENNAS TO OBTAIN REQUIRED DISTANCE.
1A. (E) (3) AT&T ANTENNAS TO BE REPLACED WITH (N) (3) 51.8" X 10.3" X 5.5" ANTENNAS. INSTALL PINE NEEDLE SOCKS TO MATCH (E) MONOPINE.
2. (E) AT&T MONOPINE.
3. (E) TREES.
4. (E) AT&T 6'-0" HIGH CHAIN FENCE ENCLOSURE.
5. (E) AT&T OUTDOOR EQUIPMENT MOUNTED ON AN (E) STEEL PLATFORM WITHIN AN (E) CHAIN LINK FENCE ENCLOSURE.
6. (N) AT&T 3106 OUTDOOR EQUIPMENT MOUNTED ON AN (E) STEEL PLATFORM WITHIN AN (E) CHAIN LINK FENCE ENCLOSURE.
7. (E) AT&T TELCO PANEL AND METER/DISCONNECT MOUNTED ON AN (E) H-FRAME UTILITY RACK.
8. (E) AND (N) AT&T COAX WITH (N) RET CABLE INSIDE AN (E) MONOPINE.



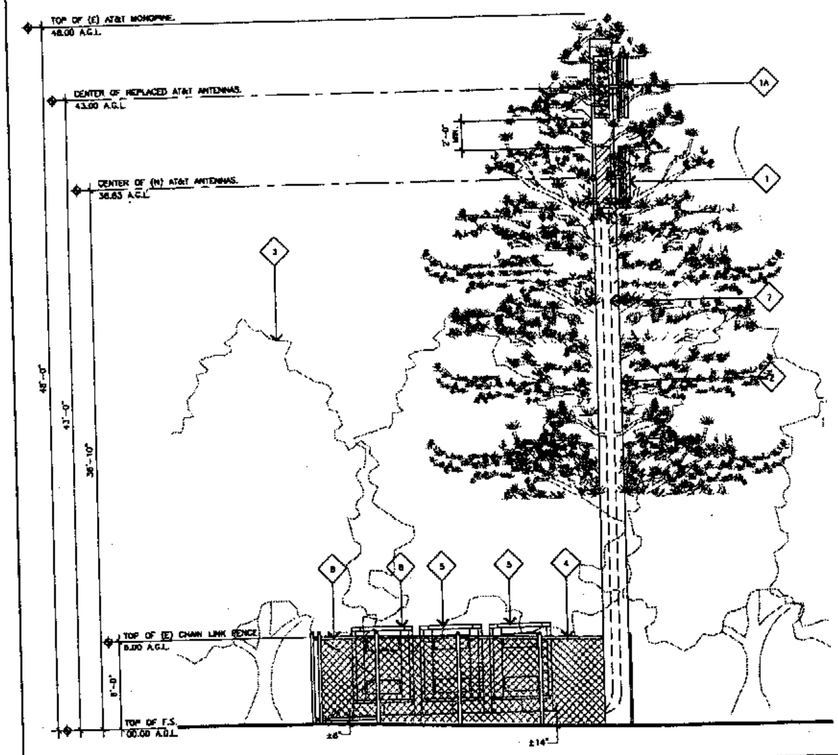
NORTH ELEVATION

SCALE: 1/4"=1'-0" 0 2' 4'

2

ELEVATION KEYNOTES

1. (N) (3) 51.8" X 10.3" X 5.5" AT&T ANTENNAS BELOW REPLACED AT&T ANTENNAS. INSTALL PINE NEEDLE SOCKS TO MATCH (E) MONOPINE. LOWER (N) ANTENNAS TO OBTAIN REQUIRED DISTANCE.
1A. (E) (3) AT&T ANTENNAS TO BE REPLACED WITH (N) (3) 51.6" X 10.3" X 5.5" ANTENNAS. INSTALL PINE NEEDLE SOCKS TO MATCH (E) MONOPINE.
2. (E) AT&T MONOPINE.
3. (E) TREES.
4. (E) AT&T 6'-0" HIGH CHAIN FENCE ENCLOSURE.
5. (E) AT&T OUTDOOR EQUIPMENT MOUNTED ON AN (E) STEEL PLATFORM WITHIN AN (E) CHAIN LINK FENCE ENCLOSURE.
6. (N) AT&T 3106 OUTDOOR EQUIPMENT MOUNTED ON AN (E) STEEL PLATFORM WITHIN AN (E) CHAIN LINK FENCE ENCLOSURE.
7. (E) AND (N) AT&T COAX WITH (N) RET CABLE INSIDE AN (E) MONOPINE.
8. (E) AT&T CHAIN LINK ACCESS GATE.



SOUTH ELEVATION

SCALE: 1/4"=1'-0" 0 2' 4'

1

JRA
Jeffrey Roma & Associates, Inc.
Arizona • California • Nevada
Arizona: (602) 266-8879
California: (949) 760-3929
Nevada: (702) 765-0888

PROPRIETARY INFORMATION
THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO AT&T MOBILITY IS STRICTLY PROHIBITED.

at&t
4430 Rosewood Drive
Pleasanton, California 94588

APPROVALS

R.F.	DATE
ZONING	DATE
CONSTRUCTION	DATE
SITE ACQUISITION	DATE
OWNER APPROVAL	DATE

PROJECT NAME
AT&T UMTS OVERLAY
SITE NAME
HIGHWAY 17 EL RANCHO
SITE NUMBER
CNU3495
200 EL RANCHO DRIVE
SANTA CRUZ, CALIFORNIA 95060

DRAWING DATES

04/10/08	90% CD REVIEW (P1-01)
05/08/08	100% CD REVIEW (P1-02)
07/24/08	AERIAL ADDITIONS (P1-03)
09/03/08	REVISED RFDS (P1-04)

A.P.N: 060-261-11

SHEET TITLE
NORTH AND SOUTH ELEVATIONS

A-2

JRA PROJECT NUMBER: 891830

EXHIBIT I

TRK ENGINEERING

FEDERAL COMMUNICATIONS COMMISSION (FCC) COMPLIANCE STUDY ON NON-IONISING ELECTROMAGNETIC RADIATION (NIER) EXPOSURE

Prepared for:

at&t

CNU3495
HIGHWAY 17 EL RANCHO
200 EL RANCHO DRIVE
SANTA CRUZ, CA
95060

NOVEMBER 19/08, REV. 2

EXHIBIT J

SITE DESCRIPTION:

Carrier:	AT&T
Address:	200 El Rancho Drive, Santa Cruz, CA 95060
Type of Service:	1. UMTS, 2. GSM (*1900 MHz and 850 MHz Broadband PCS*)
Sectors:	3 (70°, 350°, 180°)
Antenna Type:	Kathrein 742 264
Number of Antennas:	6 (1 per sector per level)
Maximum Power:	500 W *(Maximum ERP per technology per sector)*
Antenna Height:	36.83'±, 43'± *(Radiation center AGL)*

Table 1. AT&T RF summary

AT&T is proposing to deploy new UMTS services in addition to the existing GSM services at its wireless communications facility located east of Pasatiempo Golf Club at the above address (Figure 1). There are three existing antennas mounted on a 48' monopine, and will be replaced with three new Kathrein directional antennas. Three more antennas of the same type will be installed below the replaced antennas. One new outdoor equipment cabinet will be installed beside the existing two cabinets on the existing steel platform. The compound is enclosed with a 6' high chain link fence and gates. Access to the facility is restricted to authorized personnel.

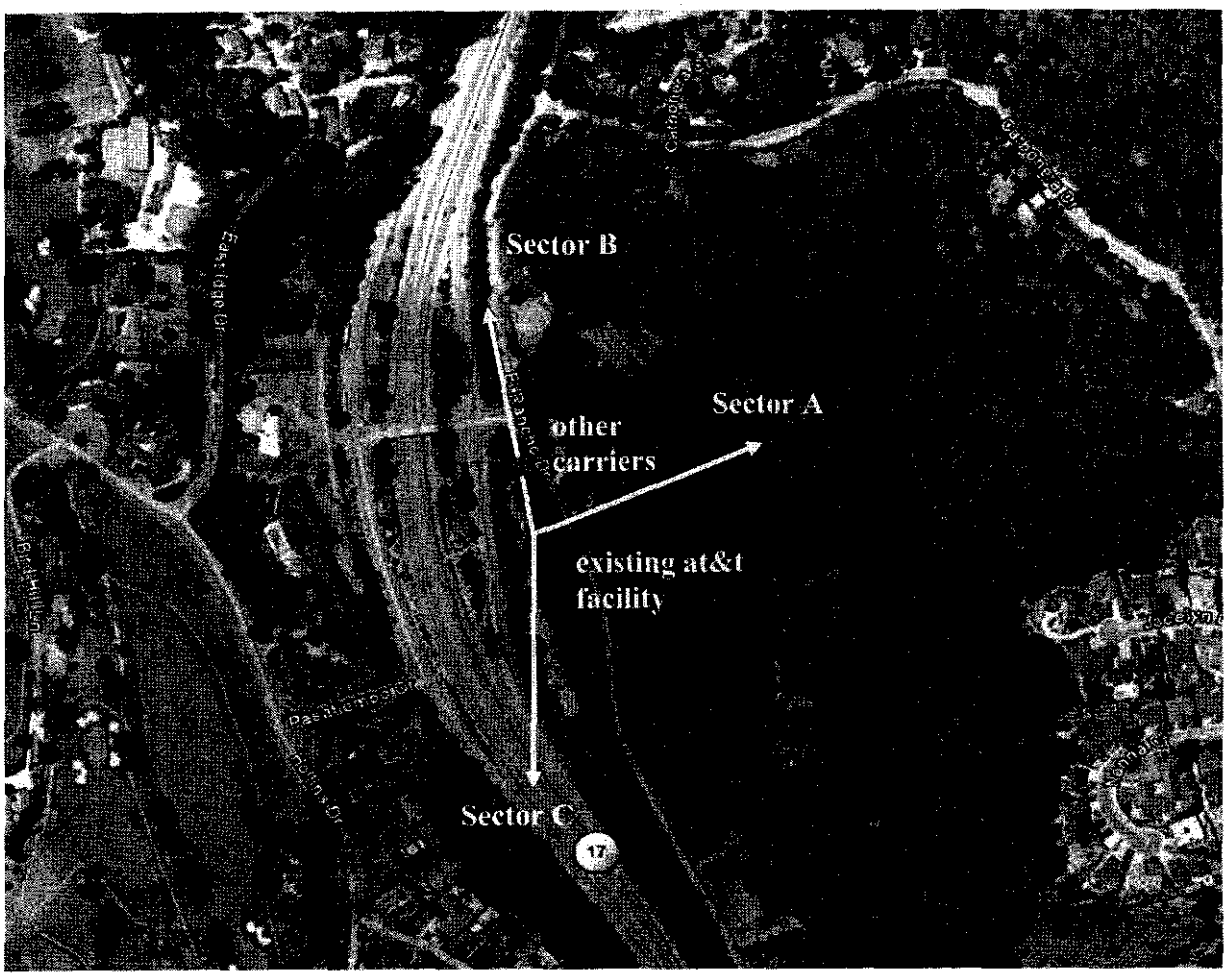


Figure 1. Area surrounding facility

EXHIBIT J

There are also two other wireless communication facilities (Metro PCS and T-Mobile) located approximately 96' north from the AT&T facility. Both carriers have directional antennas installed on a 55' monopine. The RF information of the two existing facilities is summarized in the following Tables.

Carrier:	Metro PCS
Type of Service:	1900 MHz CDMA
Antenna Type:	EMS RR65-18-00DPL2 (typical)
Number of Antennas:	3 (1 per sector)
Maximum Power:	500 W *(Maximum ERP per sector)*
Antenna Height:	43'-8"± *(Radiation center AGL)*

Table 2. Metro PCS RF summary

Carrier:	T-Mobile
Type of Service:	1900 MHz GSM *(Broadband PCS)*
Antenna Type:	Decibel TMBX-6516-R2M
Number of Antennas:	3 (1 per sector)
Maximum Power:	500 W *(Maximum ERP per technology per sector)*
Antenna Height:	52'-6"± *(Radiation center AGL)*

Table 3. T-Mobile RF summary

PROTOCOL:

This study, and the calculations performed therein, is based on OET Bulletin 65[1] which adopts ANSI C95.1-1992 and NCRP standards. In particular, equation 10 from section 2 of the guideline is used as a model (in conjunction with known antenna radiation patterns) for calculating the power density at different points of interest. This information will be used to judge the RF exposure level incident upon the general population, and any employee present in the area. It should be noted that ground reflection of RF waves has been taken into account.

FCC'S MAXIMUM PERMISSIBLE EXPOSURE (MPE) LIMIT:

In order to evaluate the RF exposure level, the power densities at different locations of interest have been examined. Equation 10 from Bulletin 65 is reproduced here as equation 1:

$$S = \frac{33.4F^2 ERP}{R^2} \qquad \textbf{(1)}$$

Where: S = *Power density [$\mu W/cm^2$]*
ERP = *Effective radiated power [W]*
R = *Distance [m]*
F = *Relative field factor (relative numeric gain)*

[1] Cleveland, Robert F, et al. Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields. OET Bulletin 65, Edition 97-01. August 1997.

Scenario 1: *Maximum Exposure near facilities*

The RF level of a six-foot tall person standing close to the facilities is evaluated. For the worst-case scenario, we assume that the antennas are transmitting the maximum number of channels at the same time, with each channel at its maximum power level. In addition, the azimuths of the antennas of all carriers are assumed to be in the direction of the studied location. Please refer to appendix A for the complete geometry. The highest exposure location is found to be between the two compounds. The calculations of power densities are shown in Table 4.

Service	Max. ERP	F^2	R (m)	S (μW/cm²) (from eq. 1)	MPE %
AT&T UMTS 850	500 W	-12 dB (0.063)	13.3	5.96331	1.0517
AT&T UMTS 1900	500 W	-15 dB (0.032)	13.3	2.98873	0.2989
AT&T GSM 850	500 W	-12 dB (0.063)	14.7	4.88733	0.8620
AT&T GSM 1900	500 W	-15 dB (0.032)	14.7	2.44947	0.2450
Metro PCS	500 W	-22 dB (0.006)	22.9	0.20007	0.0200
T-Mobile	500 W	-17 dB (0.020)	24.4	0.55930	0.0559
Total					2.5335

Table 4. Worst-case predicted power density values for scenario 1.

The Maximum Permissible Exposure (MPE) limit for 1900 MHz PCS facility for general population/uncontrolled exposure is 1000 μW/cm², and 567 μW/cm² for 850 MHz facility[2]. At this location, the cumulative power density from all the facilities is calculated to be 2.53% of the MPE limit.

Scenario 2: *Maximum Exposure on nearby buildings*

The facilities are situated in a wooded area. There are only a few buildings in the surrounding area. The RF exposure levels on these nearby buildings are evaluated. Please refer to scenario 2 in appendix A for the complete geometry and analysis. We assume again, all antennas are transmitting with maximum power level, and the azimuths of the antennas of the other carriers are assumed to be in the direction of the studied location. The maximum exposure location is found to be on the rooftop of the nearest building within Sector A. The maximum cumulative power density at this location from all antennas is calculated to be 3.78% of the MPE limit. The calculations for the maximum possible power density are shown in Table 5.

Service	Max. ERP	F^2	R (m)	S (μW/cm²) (from eq. 1)	MPE %
AT&T UMTS 850	500 W	-2 dB (0.063)	36.7	7.80870	1.3463
AT&T UMTS 1900	500 W	-3 dB (0.501)	36.7	6.20267	0.6203
AT&T GSM 850	500 W	-2 dB (0.631)	37.0	7.71742	1.3306
AT&T GSM 1900	500 W	-5 dB (0.316)	37.0	3.86787	0.3868
Metro PCS	500 W	-10 dB (0.100)	46.0	0.78758	0.0788
T-Mobile	500 W	-15 dB (0.032)	46.4	0.24487	0.0245
Total					3.7873

Table 5. Worst-case predicted power density values for scenario 2.

[2] Ibid., page 67.

EXHIBIT J

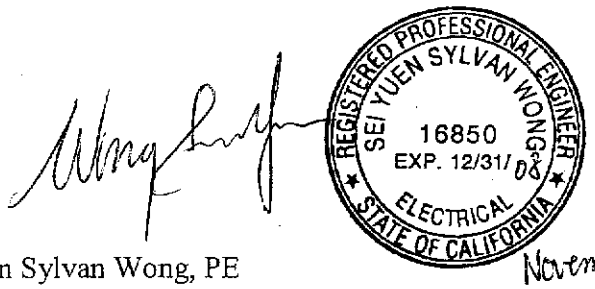
Conclusion:

There is a relatively low level of RF energy directed either above or below the horizontal plane of the antennas, and there are no locations in the surrounding areas near the compound that will have RF exposure levels close to the MPE limit. Under "worst-case" conditions, the calculations shown above predict that the maximum possible cumulative RF exposure is 3.78% of the MPE limit. There will be less RF exposure at other locations near or away from the compound. Therefore, the proposed modification to the AT&T wireless communications facility will comply with the general population/uncontrolled limit.

FCC COMPLIANCE:

Only trained persons will be permitted to access the facility and the antennas. They will be made fully aware of the potential for RF exposure and can choose to exercise control over their exposure that is within the occupational/controlled limits which is 5 times higher than the uncontrolled limits.

The general population/uncontrolled exposure near the facility, including persons on the ground level, in nearby open areas, the golf courses and inside or on existing nearby buildings will have RF exposure much lower than the "worst-case" scenario, which is only a small percentage of the MPE limit.



November, 19, 2008

Sei Yuen Sylvan Wong, PE
California PE Reg. No. E 16850

EXHIBIT J

APPENDIX A

FCC'S MAXIMUM PERMISSIBLE EXPOSURE (MPE) LIMIT:

Equation 10 from Bulletin 65 is reproduced here as equation 1:

$$S = \frac{33.4 F^2 ERP}{R^2}$$

Where:

S = Power density [$\mu W/cm^2$]
ERP = Effective radiated power [W]
R = Distance [m]
F = Relative field factor (relative numeric gain)

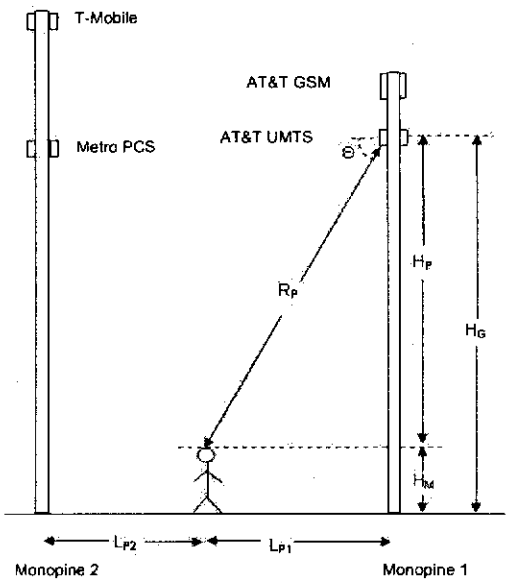
Scenario 1: Standing Near The Facility
The highest exposure location at ground from the antenna

$R_P = H_P \times \sin^{-1}(\Theta)$

$L_P = H_P \times \tan^{-1}(\Theta)$

Relative Field Factor at Θ

$F^2 = 10^{\frac{F^2}{10}}$ (in term of power density)



Person's height (H_M) = 6 ft
Distance between monopine 1 and monopine 2 = 96 ft
Location at ground from monopine 1, L_{P1} = 0 ft at Θ_1 = 90 °

From monopine 2, L_{P2} = 96 ft

Service Provider	Height H_G, ft	Height H_P, ft	Max. ERP	Angle Θ	F^2	R_P(m)	S (μW/cm2)	MPE%
AT&T UMTS 850	36.83	30.83	500.0	Θ_1 = 90 °	-30 dB (0.0010)	9.4	0.18902	0.03334
AT&T UMTS 1900	36.83	30.83	500.0	Θ_1 = 90 °	-22 dB (0.0063)	9.4	1.19266	0.11927
AT&T GSM 850	43.00	37.00	500.0	Θ_2 = 90 °	-30 dB (0.0010)	11.3	0.13124	0.02315
AT&T GSM 1900	43.00	37.00	500.0	Θ_2 = 90 °	-22 dB (0.0063)	11.3	0.82806	0.08281
Metro PCS	43.67	37.67	500.0	Θ_3 = 21 °	-18 dB (0.0158)	31.4	0.26775	0.02677
T-Mobile	52.50	46.50	500.0	Θ_4 = 26 °	-20 dB (0.0100)	32.5	0.15790	0.01579
						Total		0.30112

Location at ground from monopine 1, L_{P1} = 8 ft at Θ_1 = 75 °

From monopine 2, L_{P2} = 88 ft

Service Provider	Height H_G, ft	Height H_P, ft	Max. ERP	Angle Θ	F^2	R_P(m)	S (μW/cm2)	MPE%
AT&T UMTS 850	36.83	30.83	500.0	Θ_1 = 75 °	-22 dB (0.0063)	9.7	1.11277	0.19626
AT&T UMTS 1900	36.83	30.83	500.0	Θ_1 = 75 °	-15 dB (0.0316)	9.7	5.57705	0.55771
AT&T GSM 850	43.00	37.00	500.0	Θ_2 = 77 °	-22 dB (0.0063)	11.6	0.78874	0.13911
AT&T GSM 1900	43.00	37.00	500.0	Θ_2 = 77 °	-16 dB (0.0251)	11.6	3.14003	0.31400
Metro PCS	43.67	37.67	500.0	Θ_3 = 23 °	-22 dB (0.0063)	29.1	0.12434	0.01243
T-Mobile	52.50	46.50	500.0	Θ_4 = 28 °	-20 dB (0.0100)	30.3	0.18221	0.01822
						Total		1.23773

Location at ground from monopine 1, L_{P1} = 31 ft at Θ_1 = 45 °

From monopine 2, L_{P2} = 65 ft

Service Provider	Height H_G, ft	Height H_P, ft	Max. ERP	Angle Θ	F^2	R_P(m)	S (μW/cm2)	MPE%
AT&T UMTS 850	36.83	30.83	500.0	Θ_1 = 45 °	-12 dB (0.0631)	13.3	5.96331	1.05173
AT&T UMTS 1900	36.83	30.83	500.0	Θ_1 = 45 °	-15 dB (0.0316)	13.3	2.98873	0.29887
AT&T GSM 850	43.00	37.00	500.0	Θ_2 = 50 °	-12 dB (0.0631)	14.7	4.88733	0.86196
AT&T GSM 1900	43.00	37.00	500.0	Θ_2 = 50 °	-15 dB (0.0316)	14.7	2.44947	0.24495
Metro PCS	43.67	37.67	500.0	Θ_3 = 30 °	-22 dB (0.0063)	22.9	0.20007	0.02001
T-Mobile	52.50	46.50	500.0	Θ_4 = 36 °	-17 dB (0.0200)	24.4	0.55930	0.05593
						Total		2.53345

EXHIBIT J

Location at ground from monopine 1, L_{P1} = 53 ft at Θ_1= 30 °

From monopine 2, L_{P2} = 43 ft

Service Provider	Height H_G, ft	Height H_P, ft	Max. ERP	Angle Θ	F^2	R_P(m)	S (μW/cm2)	MPE%
AT&T UMTS 850	36.83	30.83	500.0	Θ_1 = 30 °	-15 dB (0.0316)	18.8	1.49437	0.26356
AT&T UMTS 1900	36.83	30.83	500.0	Θ_1 = 30 °	-20 dB (0.0100)	18.8	0.47256	0.04726
AT&T GSM 850	43.00	37.00	500.0	Θ_2 = 35 °	-17 dB (0.0200)	19.8	0.84938	0.14980
AT&T GSM 1900	43.00	37.00	500.0	Θ_2 = 35 °	-21 dB (0.0079)	19.8	0.33815	0.03381
Metro PCS	43.67	37.67	500.0	Θ_3 = 41 °	-22 dB (0.0063)	17.3	0.35054	0.03505
T-Mobile	52.50	46.50	500.0	Θ_4 = 48 °	-35 dB (0.0003)	19.2	0.01429	0.00143
						Total		0.53091

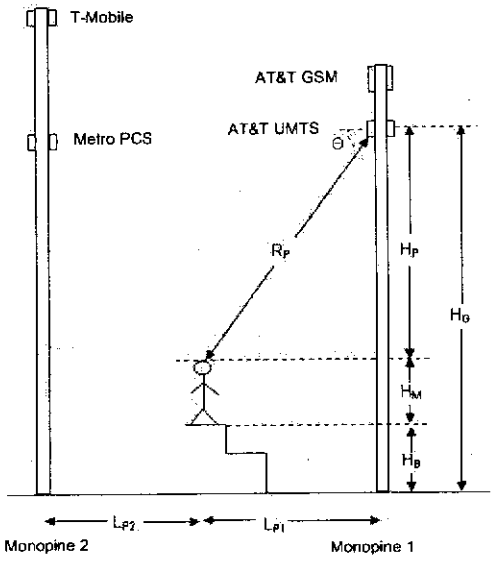
Location at ground from monopine 1, L_{P1} = 175 ft at Θ_1= 10 °

From monopine 2, L_{P2} = 79 ft

Service Provider	Height H_G, ft	Height H_P, ft	Max. ERP	Angle Θ	F^2	R_P(m)	S (μW/cm2)	MPE%
AT&T UMTS 850	36.83	30.83	500.0	Θ_1 = 10 °	-5 dB (0.3162)	54.1	1.80243	0.31789
AT&T UMTS 1900	36.83	30.83	500.0	Θ_1 = 10 °	-14 dB (0.0398)	54.1	0.22691	0.02269
AT&T GSM 850	43.00	37.00	500.0	Θ_2 = 12 °	-5 dB (0.3162)	54.5	1.77881	0.31372
AT&T GSM 1900	43.00	37.00	500.0	Θ_2 = 12 °	-14 dB (0.0398)	54.5	0.22394	0.02239
Metro PCS	43.67	37.67	500.0	Θ_3 = 26 °	-21 dB (0.0079)	26.6	0.18690	0.01869
T-Mobile	52.50	46.50	500.0	Θ_4 = 31 °	-20 dB (0.0100)	27.9	0.21443	0.02144
						Total		0.71683

EXHIBIT J

Scenario 2: Elevated Locations



Nearest building within sector A

H_B= 20 ft (120 ft from the monopine 1 and 150 ft from monopine 2)

Service Provider	Height H_G, ft	Height H_P, ft	Max. ERP	Angle Θ	F^2	R_P(m)	S (μW/cm2)	MPE%
AT&T UMTS 850	36.83	10.83	500.0	Θ_1 = 5 °	-2 dB (0.6310)	36.7	7.80870	1.34633
AT&T UMTS 1900	36.83	10.83	500.0	Θ_1 = 5 °	-3 dB (0.5012)	36.7	6.20267	0.62027
AT&T GSM 850	43.00	17.00	500.0	Θ_2 = 8 °	-2 dB (0.6310)	37.0	7.71742	1.33059
AT&T GSM 1900	43.00	17.00	500.0	Θ_2 = 8 °	-5 dB (0.3162)	37.0	3.86787	0.38679
Metro PCS	43.67	17.67	500.0	Θ_3 = 7 °	-10 dB (0.1000)	46.0	0.78758	0.07876
T-Mobile	52.50	26.50	500.0	Θ_4 = 10 °	-15 dB (0.0316)	46.4	0.24487	0.02449
						Total		3.78722

Nearest building within sector B

H_B= 22 ft (1102 ft from the monopine 1 and 989 ft from monopine 2)

Service Provider	Height H_G, ft	Height H_P, ft	Max. ERP	Angle Θ	F^2	R_P(m)	S (μW/cm2)	MPE%
AT&T UMTS 850	36.83	8.83	500.0	Θ_1 = 0 °	0 dB (1.0000)	336.0	0.14794	0.02551
AT&T UMTS 1900	36.83	8.83	500.0	Θ_1 = 0 °	0 dB (1.0000)	336.0	0.14794	0.01479
AT&T GSM 850	43.00	15.00	500.0	Θ_2 = 1 °	0 dB (1.0000)	336.0	0.14792	0.02550
AT&T GSM 1900	43.00	15.00	500.0	Θ_2 = 1 °	0 dB (1.0000)	336.0	0.14792	0.01479
Metro PCS	43.67	15.67	500.0	Θ_3 = 1 °	0 dB (1.0000)	301.6	0.18364	0.01836
T-Mobile	52.50	24.50	500.0	Θ_4 = 1 °	0 dB (1.0000)	301.6	0.18357	0.01836
						Total		0.11732

Nearest building within sector C

H_B= 10 ft (310 ft from the monopine 1 and 405 ft from monopine 2)

Service Provider	Height H_G, ft	Height H_P, ft	Max. ERP	Angle Θ	F^2	R_P(m)	S (μW/cm2)	MPE%
AT&T UMTS 850	36.83	20.83	500.0	Θ_1 = 4 °	-2 dB (0.6310)	94.7	1.17431	0.20247
AT&T UMTS 1900	36.83	20.83	500.0	Θ_1 = 4 °	-3 dB (0.5012)	94.7	0.93279	0.09328
AT&T GSM 850	43.00	27.00	500.0	Θ_2 = 5 °	-2 dB (0.6310)	94.9	1.17074	0.20185
AT&T GSM 1900	43.00	27.00	500.0	Θ_2 = 5 °	-3 dB (0.5012)	94.9	0.92995	0.09299
Metro PCS	43.67	27.67	500.0	Θ_3 = 4 °	-4 dB (0.3981)	123.8	0.43404	0.04340
T-Mobile	52.50	36.50	500.0	Θ_4 = 5 °	-3 dB (0.5012)	124.0	0.54455	0.05446
						Total		0.68845

EXHIBIT J

KATHREIN
SCALA DIVISION

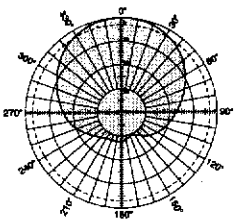
742 264

65° Dualband Directional Antenna

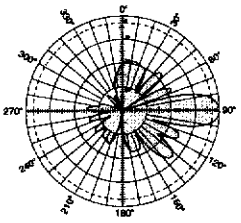
Kathrein's dual band antennas are ready for 3G applications, covering all existing wireless bands as well as all spectrum under consideration for future systems, AMPS, PCS and 3G/UMTS. These cross-polarized antennas offer diversity operation in the same space as a conventional 800 MHz antenna, and are mountable on our compact sector brackets.

- Wide band operation.
- Exceptional intermodulation characteristics.
- Remote control ready.
- Various gain, beamwidth and downtilt ranges.
- AISG compatible.
- High strength pultruded fiberglass radome.

824–960 MHz

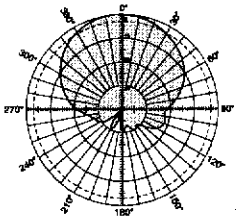


Horizontal pattern
±45°- polarization

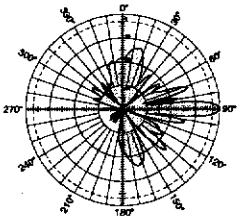


Vertical pattern
±45°- polarization
0°–14° electrical downtilt

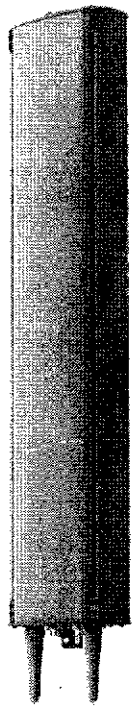
1710–2180 MHz



Horizontal pattern
±45°- polarization



Vertical pattern
±45°- polarization
0°–8° electrical downtilt



General specifications:

Frequency range	824–960 MHz 1710–2180 MHz
Impedance	50 ohms
VSWR	<1.5:1
Intermodulation (2x20w)	IM3: -150 dBc
Polarization	+45° and -45°
Connector	4 x 7/16 DIN female (long neck)
Isolation intrasystem intersystem	>30 dB >50 dB (824–960 // 1710–2180 MHz)
Weight	36.4 lb (16.5 kg)
Dimensions	51.8 x 10.3 x 5.5 inches (1316 x 262 x 139 mm)
Equivalent flat plate area	4.13 ft² (0.384 m²)
Wind survival rating*	120 mph (200 kph) sustained 150 mph (240 kph) in a 3 second burst
Shipping dimensions	63.6 x 11.9 x 7.6 inches (1615 x 302 x 192 mm)
Shipping weight	45 lb (20.4 kg)
Mounting	Fixed mount options are available for 2 to 4.6 inch (50 to 115 mm) OD masts.
See reverse for order information.	

Specifications:	**824–894 MHz**	**870–960 MHz**	**1710–1880 MHz**	**1850–1990 MHz**	**1920–2180 MHz**
Gain	14 dBi	14 dBi	16.5 dBi	16.8 dBi	17 dBi
Front-to-back ratio	>26 dB (co-polar)	>26 dB (co-polar)	>25 dB (co-polar)	>25 dB (co-polar)	>25 dB (co-polar)
Maximum input power per input total power	500 watts (at 50°C) 1000 watts (at 50°C)	500 watts (at 50°C)	250 watts (at 50°C)	250 watts (at 50°C) 500 watts (at 50°C)	250 watts (at 50°C)
+45° and -45° polarization horizontal beamwidth	68° (half-power)	65° (half-power)	65° (half-power)	65° (half-power)	63° (half-power)
+45° and -45° polarization vertical beamwidth	16° (half-power)	14.5° (half-power)	7.8° (half-power)	7.3° (half-power)	6.8° (half-power)
Electrical downtilt continuously adjustable	0°–14°	0°–14°	0°–8°	0°–8°	0°–8°
Sidelobe suppression for first sidelobe above main beam	0° 7° 14° T 14 14 13 dB	0° 7° 14° T 14 14 13 dB	0° 4° 8° T 14 14 14 dB	0° 4° 8° T 16 16 15 dB	0° 4° 8° T 15 16 15 dB
Cross polar ratio Main direction 0° Sector ±60°	 20 dB (typical) >10 dB	 20 dB (typical) >10 dB	 16 dB (typical) >10 dB	 18 dB (typical) >10 dB	 20 dB (typical) >10 dB

*Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

RoHS Lead-Free

10633-K
936.2887/b

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathre Internet: www.kathrein-scala.com

EXHIBIT

TMBX-6516-R2M

DualPol® Panel Antenna

Decibel®
Base Station Antennas

- Patented cross dipole and feed system
- Rugged, reliable design with excellent PIM suppression
- Includes factory installed AISG RET actuator
- Fully compatible with Andrew Teletilt® remote control antenna system

ELECTRICAL

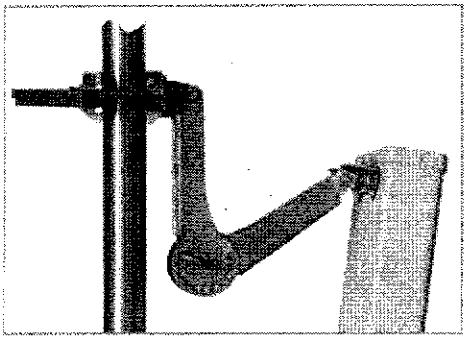
Frequency Range (MHz):	1710–2155					
Characteristic Impedance (Ohms):	50					
Azimuth BW (Deg):	65 ± 6					
Elevation BW (Deg):	7.2 ± 1.1					
Gain (dBi) :	17.5 ± 0.7					
Polarization:	±45°					
Front-to-Back Ratio (dB)	**0°**	**2°**	**4°**	**6°**	**8°**	**10°**
Copol, 180° ± 30°:	>25	>25	>25	>24	>24	>24
Total Power, 180° ± 30°:	>24	>24	>24	>24	>24	>22
Upper Sidelobe (dB)	**0°**	**2°**	**4°**	**6°**	**8°**	**10°**
Main Beam to +20°:	>18	>18	>17	>17	>15	>12
VSWR / Return Loss (dB):	1.35:1 / 16.5					
Port-to-Port Isolation (dB):	>30					
Electrical Tilt Range (Deg)*:	0–10					
Electrical Downtilt Accuracy (Deg):	± 0.6					
Cross-pol (dB)	**0°**	**2°**	**4°**	**6°**	**8°**	**10°**
3 dB Beamwidth:	>15	>15	>15	>15	>15	>14
Intermodulation Products (dBc)						
3rd Order, 2 x 20 Watts:	155					
Max. Input Power (Watts):	250					
Lightning Protection:	DC Ground					

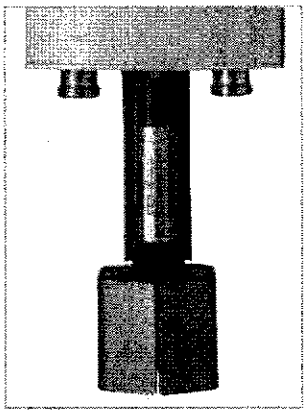
PERFORMANCE TRACKING

Gain Variation (dB) (between UL and DL frequency pair):	1.3
Electrical Tilt Accuracy (Deg) (between UL and DL frequncy pair within 0.5°):	<0.5
Azimuth HPBW (Deg) (between UL and DL frequncy pair):	9

MECHANICAL

Net Weight (kg / lbs):	5.1 / 11.2
Dimensions–LxWxD: (with actuator)	1499 x 168 x 84 mm 59 x 6.6 x 3.3 inch
Max. Wind Area (m² / ft²):	0.11 / 1.2
Max. Wind Load (N / lbf):	298.0 / 67.0
Max. Wind Speed (km/h / mph):	241 / 150
Hardware Material:	Hot Dip Galvanized
Connector Type:	7-16 DIN, Female (2)
Color:	Off White
Standard Mounting Hardware:	TM602030A





***Specifications may vary when using 0° or 1° electrical tilt.**

Andrew Corporation
2601 Telecom Parkway
Richardson, Texas U.S.A. 755082-3521
Tel: 214.631.0310

Fax: 214.688.0089
Toll Free Tel: 1.800.676.5342
Fax: 1.800.229.4706
www.andrew.com

3/9/2007

dbtech@andrew.com

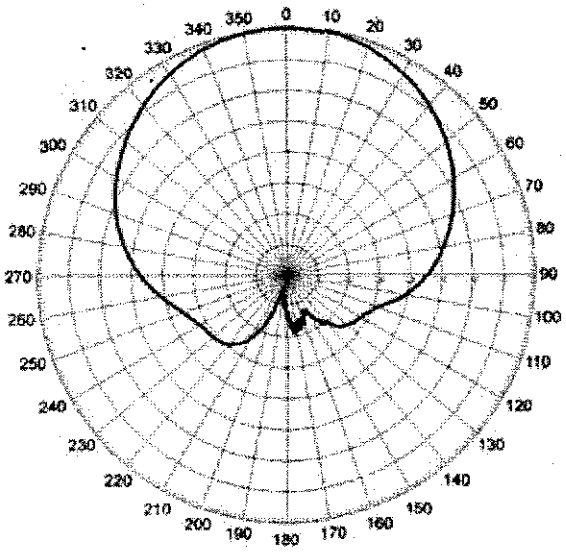
EXHIBIT J

TMBX-6516-R2M

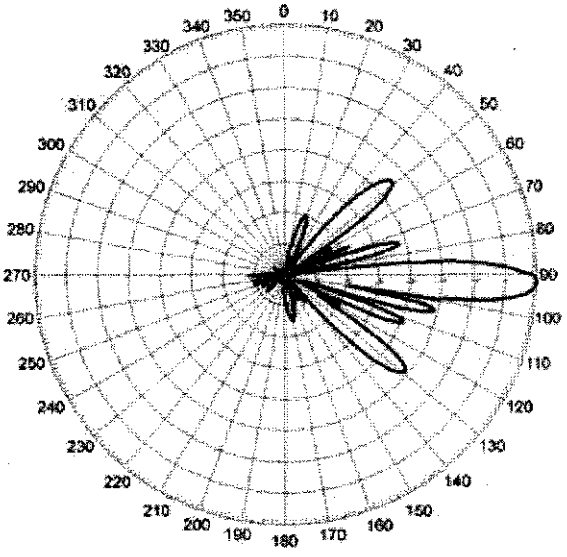
DualPol® Panel Antenna

Decibel®
Base Station Antennas

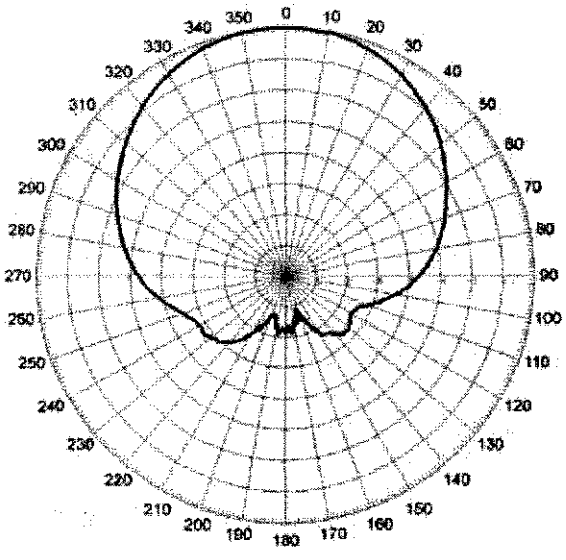
AZIMUTH PATTERN | **ELEVATION PATTERN**



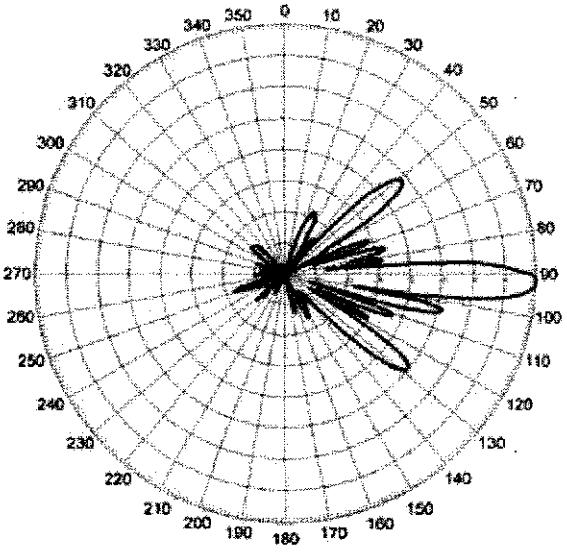
1732 MHz, Tilt: 2°



1732 MHz, Tilt: 2°



1880 MHz, Tilt: 2°



1880 MHz, Tilt: 2°

Note: Scale 5 dB per division.

Andrew Corporation
2601 Telecom Parkway
Richardson, Texas U.S.A. 755082-3521
Tel: 214.631.0310

Fax: 214.688.0089
Toll Free Tel: 1.800.676.5342
Fax: 1.800.229.4706
www.andrew.com

3/9/2007

dbtech@andrew.com

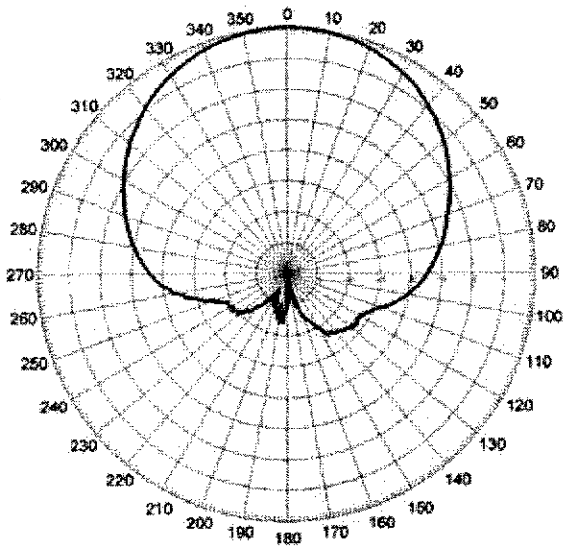
EXHIBIT J

TMBX-6516-R2M

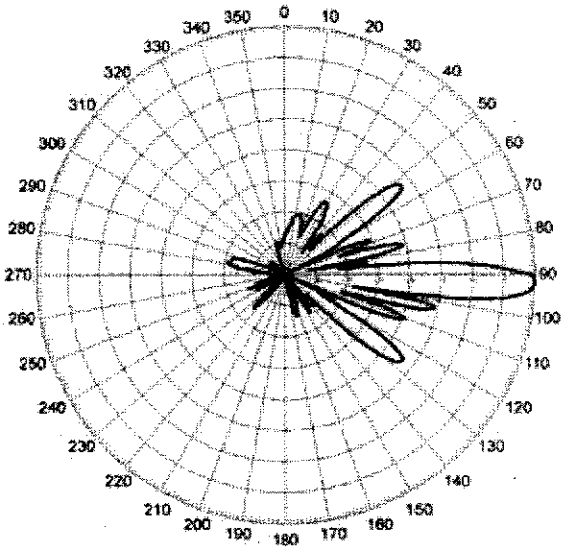
DualPol® Panel Antenna

Decibel®
Base Station Antennas

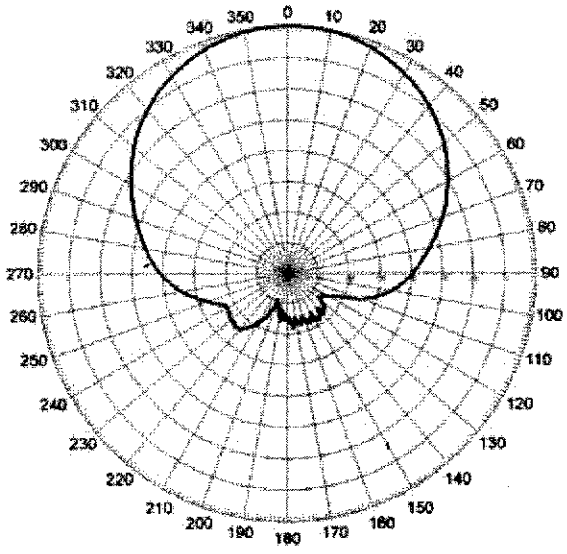
AZIMUTH PATTERN | **ELEVATION PATTERN**



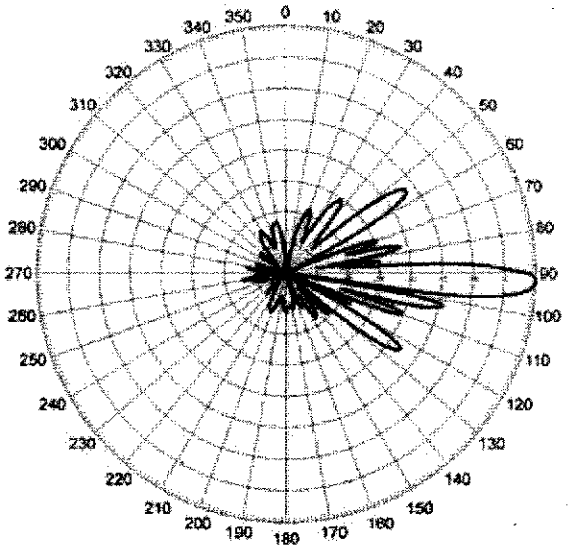
1960 MHz, Tilt: 2°



1960 MHz, Tilt: 2°



2132 MHz, Tilt: 2°



2132 MHz, Tilt: 2°

Note: Scale 5 dB per division.

Andrew Corporation
2601 Telecom Parkway
Richardson, Texas U.S.A. 755082-3521
Tel: 214.631.0310

Fax: 214.688.0089
Toll Free Tel: 1.800.676.5342
Fax: 1.800.229.4706
www.andrew.com

3/9/2007
Page 3 of 3
dbtech@andrew.com

EXHIBIT J

EMS Wireless

RR65-18-XXDPL2

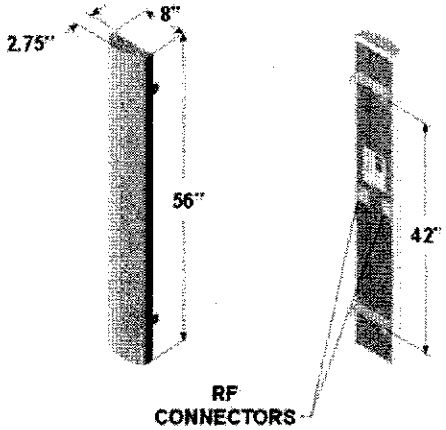
DualPol® Polarization

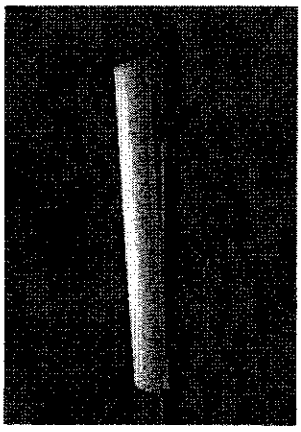
1850 MHz - 1990 MHz

OptiRange™ Suppressor™

Electrical Specifications

Azimuth Beamwidth (-3 dB)	65°
Elevation Beamwidth(-3 dB)	6°
Elevation Sidelobes (Upper)	≥ 18 dB
Gain	17.5 dBi (15.4 dBd)
Polarization	Dual Linear Slant (± 45°)
Port-to-Port Isolation	≥ 30 dB
Front-to-Back Ratio	≥ 30 dB
Electrical Downtilt Options	0°, 2°, 4°, 6°
VSWR	1.35:1 Max
Connectors	2; 7-16 DIN (female)
Power Handling	250 Watts CW
Passive Intermodulation	≤ -150 dBc [2 x 20 W (+ 43 dBm)]
Lightning Protection	Chassis Ground





Mechanical Specifications

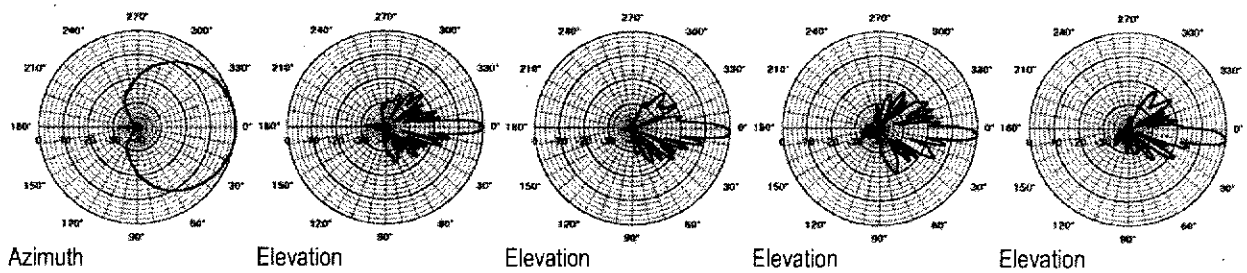
Dimensions (L x W x D)	56 in x 8 in x 2.75 in (142 cm x 20.3 cm x 7.0 cm)
Rated Wind Velocity	150 mph (241 km/hr)
Equivalent Flat Plate Area	3.1ft² (.29 m²)
Front Wind Load @ 100 mph (161 kph)	90 lbs (400 N)
Side Wind Load @ 100 mph (161 kph)	31 lbs (139 N)
Weight	18 lbs (8.2 kg)

Mounting Options

MTG-P00-10, MTG-S02-10, MTG-DXX-20*, MTG-CXX-10*, MTG-C02-10, MTG-TXX-10*

*Note: *Model number shown represents a series of products. See Mounting Options section for specific model number.*

Patterns



Azimuth	Elevation 0° Downtilt	Elevation 2° Downtilt	Elevation 4° Downtilt	Elevation 6° Downtilt

Revised 04/05/02

+1 770.582.0555 ext. 5310 • Fax +1 770.729.0036
www.emswireless.com

EXHIBIT J

COUNTY OF SANTA CRUZ | Planning Department

INTEROFFICE MEMO

APPLICATION NO: 08-0205

Date: June 23, 2008

To: Porcila Perez, Project Planner

From: Larry Kasparowitz, Urban Designer

Re: Cellular antennae at Highway 17 and El Rancho

COMPLETENESS ITEMS

- *None*

COMPLIANCE ISSUES

Design Review Authority

13.10.663 General development performance standards for wireless communication facilities.

Evaluation Criteria	Meets criteria In code(✔)	Does not meet criteria (✔)	Urban Designer's Evaluation
SITE LOCATION			
Visual character of site			
Site location and development of wireless communications facilities shall preserve the visual character, native vegetation and aesthetic values of the parcel on which such facilities are proposed, the surrounding parcels and road right-of-ways, and the surrounding land uses to the greatest extent that is technically feasible, and shall minimize visual impacts on surrounding land and land uses to the greatest extent feasible	✔		
Facilities shall be integrated to the maximum extent feasible to the existing characteristics of the site, and every effort shall be made to avoid, or minimize to the maximum extent feasible, visibility of a wireless communication facility within significant public viewsheds.	✔		
Utilization of camouflaging and/or stealth techniques shall be encouraged where appropriate.	✔		
Support facilities shall be integrated to the existing characteristics of the site, so as to minimize visual impact.	✔		

EXHIBIT K

Colocation			
Co-location is generally encouraged in situations where it is the least visually obtrusive option, such as when increasing the height/bulk of an existing tower would result in less visual impact than constructing a new separate tower in a nearby location.	✔		
Site Disturbance			
Disturbance of existing topography and on-site vegetation shall be minimized, unless such disturbance would substantially reduce the visual impacts of the facility.	✔		
Consistency with Other Regulations			
All proposed wireless communication facilities shall comply with the policies of the County General Plan/Local Coastal Plan and all applicable development standards for the zoning district in which the facility is to be located, particularly policies for protection of visual resources (i.e., General Plan/LCP Section 5.10). Public vistas from scenic roads, as designated in General Plan Section 5.10.10, shall be afforded the highest level of protection.	✔		
Visual Impacts to Neighboring Parcels			
To minimize visual impacts to surrounding residential uses, the base of any new freestanding telecommunications tower shall be set back from any residentially zoned parcel a distance equal to five times the height of the tower, or a minimum of three hundred (300) feet, whichever is greater.	✔		
This requirement may be waived by the decision making body if the applicant can prove that the tower will not be readily visible from neighboring residential structures, or if the applicant can prove that a significant area proposed to be served would otherwise not be provided personal wireless services by the subject carrier, including proving that there are no viable, technically feasible, environmentally equivalent or superior alternative sites outside the prohibited and restricted areas designated in Section 13.10.661(b) and 13.10.661(c).	✔		

Evaluation Criteria	Meets criteria In code (✔)	Does not meet criteria (✔)	Urban Designer's Evaluation
DESIGN REVIEW CRITERIA			
Non-flammable Materials			
All wireless communication facilities shall be constructed of non-flammable material, unless specifically approved and conditioned by the County to be otherwise (e.g., when a wooden structure may be necessary to minimize visual impact).	✔		
Tower Type			
All telecommunication towers shall be self-supporting monopoles except where satisfactory evidence is submitted to the appropriate decision-making body that a non-monopole (such as a guyed or lattice tower) is required or environmentally superior.	✔		
All guy wires must be sheathed for their entire length with a plastic or other suitable covering.	✔		
Support Facilities			
The County strongly encourages all support facilities, such as equipment shelters, to be placed in underground vaults, so as to minimize visual impacts.	✔		
Any support facilities not placed underground shall be located and designed to minimize their visibility and, if appropriate, disguise their purpose to make them less prominent. These structures should be no taller than twelve (12) feet in height, and shall be designed to blend with existing architecture and/or the natural surroundings in the area or shall be screened from sight by mature landscaping.	✔		

Exterior Finish			
All support facilities, poles, towers, antenna supports, antennas, and other components of communication facilities shall be of a color approved by the decision making body.	✔		
Components of a wireless communication facility which will be viewed against soils, trees, or grasslands, shall be of a color or colors consistent with these landscapes.	✔		
Visual Impact Mitigation			
Special design of wireless communication facilities may be required to mitigate potentially significant adverse visual impacts, including appropriate camouflaging or utilization of stealth techniques.	✔		
Use of less visually obtrusive design alternatives, such as "microcell" facility-types that can be mounted upon existing utility poles, is encouraged.	✔		
Rooftop or other building mounted antennas designed to blend in with the building's existing architecture shall be encouraged.	✔		
Co-location of a new wireless communication facility onto an existing telecommunication tower shall generally be favored over construction of a new tower.	✔		
Owners/operators of wireless communication towers/facilities are required to maintain the appearance of the tower/facility, as approved, throughout its operational life.	✔		
Public vistas from scenic roads, as designated in General Plan/LCP Section 5.10.10, shall be afforded the highest level of protection.	✔		
Lighting			
Except for as provided for under Section 13.l0.663(a)(5), all wireless communication facilities shall be unlit except when authorized personnel are present at night.	✔		
Roads and Parking			
All wireless communication facilities shall be served by the minimum sized roads and parking areas feasible.	✔		