Staff Report to the Zoning Administrator

Application Number: 171372

Applicant: Tricia Knight (Verizon)
Owner: Allan Dow
APNs: 030-081-32

Agenda Date: November 16, 2018
Agenda Item #: 6
Time: After 9:00 a.m.

Project Description: Proposal to construct a new roof mounted Wireless Communication Facility at an existing commercial building (Wilson's Tire). Project consists of construction of two 2 foot high panel antennas camouflaged as stove pipes and construction of a 4 foot high roof mount enclosure (250 square feet in size) to screen associated roof mounted equipment. Project also includes an 84 square foot lease area for ground mounted equipment located on the north side of the building. Project requires a Commercial Development Permit.

Location: Property located on the northwest corner of the intersection of Soquel Drive and Porter Street (4665 Soquel Drive).

Supervisorial District: First District (District Supervisor: John Leopold)

Permits Required: Commercial Development Permit

Staff Recommendation:

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- Approval of Application 171392, based on the attached findings and conditions.

Exhibits

A.	Categorical Exemption (CEQA determination)	F.	Photo-simulation views
B.	Findings	G.	Radio Frequency Emissions Report
C.	Conditions	H.	Assessor's, Location, Zoning and General Plan Maps
D.	Project plans	I.	Comments and correspondence
E.	Necessity Case Study		

Parcel Information

Parcel Size:	4,835 square feet
Existing Land Use - Parcel:	Commercial Service
Existing Land Use - Surrounding:	Commercial Service
Project Access:	Soquel Drive
Planning Area:	Soquel
Land Use Designation:	CC (Community Commercial)
Zone District:	C-2-GH (Service Commercial within the Geologic Hazards Combining District)
Coastal Zone:	__ Inside X Outside
Appealable to Calif. Coastal Comm.	__ Yes X No

Environmental Information

Geologic Hazards:	Mapped within FEMA Flood Zone (floodplain)
Soils:	N/A
Fire Hazard:	Not a mapped constraint
Slopes:	Flat site
Env. Sen. Habitat:	No physical evidence on site
Grading:	No grading proposed
Tree Removal:	No trees proposed to be removed
Scenic:	Not a mapped resource
Drainage:	No change to existing drainage
Archeology:	Not mapped/no physical evidence on site

Services Information

Urban/Rural Services Line:	X Inside __ Outside
Water Supply:	Soquel Creek Water District
Sewage Disposal:	Santa Cruz County Sanitation District
Fire District:	Central Fire Protection District
Drainage District:	Flood Control District 5

History

The subject property is developed with an existing one-story service commercial building currently occupied by Wilson's Tire. The current use was recognized under Commercial Development Permit 77-330-PD. Prior to the current use, the site was authorized as a service station which was recognized in 1962. The current use (absent of a gas station) is considered a non-conforming use in the Community Commercial (C-2) zone district.

In 2015 a proposal to construct a new Wireless Communication Facility was approved on the adjoining property located at 4633 and 4641 Soquel Drive. The previous proposal was comparable in size to that of the current proposal and intended to augment the lack of wireless coverage within the Soquel Village area. The previous project was never constructed due to the applicant being unable to secure lease terms with the property owner.

Project Setting

The project site is located on the northwest corner of the intersection of Porter Street and Soquel Drive in the commercial core of Soquel Village. The Soquel Village core is developed with a mix of commercial development consisting of a variety of architectural styles. Several designated historic structures front Soquel Drive to the south of the project site. The existing commercial building shares a common wall with the adjoining structure to the west and although the architectural styles differ slightly, the two buildings are similar in height creating a relatively smooth transition between buildings as seen from Soquel Drive. The project site shares a parking lot with a restaurant located on the adjacent parcel. The restaurant was constructed at a time the two parcels were a single lot.

Zoning & General Plan Consistency

The subject property is approximately 4,800 square feet in size, located in the Community Commercial within the Geologic Hazards Combining District (C-2-GH) zone district, a designation which allows commercial uses. The proposed wireless facility is an allowed use within the C-2-GH zone district and the zoning is consistent with the site's Community Commercial (CC) General Plan designation. The proposed improvements comply with the site standards for the zone district.

The site's Geologic Hazards (GH) Combining District designation indicates the parcel is located within the 100-year floodplain of Soquel Creek which lies to the east of the project site. It should be noted that virtually all of the Soquel Village core is located within the mapped 100-year flood plain. The proposed Wireless Communication Facility would comply with all of the provisions of chapter 16.10, Geologic Hazards Ordinance. A condition of approval requires that a Licensed Surveyor provide documentation in the form of a Flood Height Certification that the top of the new outdoor concrete equipment pad (supporting two new cabinets) is a minimum of 1-foot above the Base Flood Elevation (BFE).

Radio Frequency Radiation Emissions

A radio-frequency (RF) radiation exposure compliance study report has been prepared by Hammett and Edison, Inc., Consulting Engineers, dated October 1, 2018 (Exhibit F). Based upon this report the estimated worst-case scenario (i.e., at maximum power output) RF emission levels that could be expected once the new antenna goes into operation, would be 29% the Federal Communications Commission's (FCC) maximum permissible exposure limit for the public at street level and 3.8% of the FCC limit for members at any nearby building. The maximum calculated level at any nearby residence is 0.69%. It should be noted that these results include several "worst case" assumptions and therefore are expected to overstate actual power density levels from the proposed small cell facility. The RF emissions of the proposed wireless communication facility comply with FCC standards.

Design Review

The proposed wireless facility complies with the requirements of the County Design Review Ordinance, in that the proposed project would be located on an existing roof and sufficiently camouflaged and screened to ensure the project would result in the least visually intrusive design. The visual impact of the proposed development on surrounding land uses and the natural

landscape will be minimal. Photo-simulation views of the proposed facility are included as Exhibit G of the staff report.

Staff Recommendation

- Determine that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- **APPROVAL** of Application Number **171372,** 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: _____

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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: 171372
Assessor Parcel Number: 030-081-32
Project Location: 4665 Soquel Drive, Soquel, CA

Project Description: Proposal to install a wireless communication facility to include two antennas and associate equipment on the roof of an existing commercial building and ground mounted equipment.

Person or Agency Proposing Project: Tricia Knight (for Verizon)

Contact Phone Number: (805) 448-4221

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).

E. __X__ **Categorical Exemption**

Specify type: 15303. New Construction or Conversion of Small Structures

F. Reasons why the project is exempt:

Construction of a new roof mounted wireless communication facility and associated ground mounted equipment at an existing commercial building located in an area designated for commercial uses.

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

_____ Date: _____
Nathan MacBeth, Project Planner

EXHIBIT A

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 Wireless Communication Facility will be mounted on the roof of an existing commercial building and will include a combination of camouflaged and screening to ensure the project would not result in adverse visual impacts. Additionally, the proposed ground mounted equipment will be situated at the rear of the existing building to ensure the project will be screened from public views. The proposal will not significantly affect any designated visual resources and the site is not identified as an environmentally sensitive resource or significant County resource. Further, the proposed facility and conditions under which it will operate are consistent with the character of the Soquel Village core in which it will be located. The project is not visible from any nearby public schools.

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 project site is zoned Community Commercial (C-2), a zone district which allows wireless communication facilities and is not a prohibited or restricted zone district as described SCCC 13.10.661. The project site is located within the 100-year flood plain of Soquel Creek and subject to geologic hazards as denoted by the GH Combining District. The project has been designed and conditioned to ensure that all development is consistent with the County's geologic Hazards Ordinance and FEMA regulations.

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 use of the site (Wilson's Tire) was recognized in 1977 and is currently operating in compliance with past approvals. The project has been designed to be consistent with the character of the existing building and would remain in compliance with prior use approvals for the site. Further, the proposed project will comply with the rules and regulations pertaining to the zone districts in which it is located. The improvements meet the site standards, including, and without limitation, the setbacks, equipment height, etc.

EXHIBIT B

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 facility will be located on the roof of an existing commercial building resulting in an overall height of 20.5 feet. The height of the proposed development complies with the maximum height of 35 feet for the zone district therefore the project will not create a hazard for 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 a radio-frequency (RF) radiation exposure compliance study report has been prepared by Hammett and Edison, Inc., Consulting Engineers, dated October 1, 2018 (Exhibit F). Based upon this report the estimated worst-case scenario (i.e., at maximum power output) RF emission levels that could be expected once the new antenna goes into operation, would be 29% the Federal Communications Commission's (FCC) maximum permissible exposure limit for the public at street level and 3.8% of the FCC limit for members at any nearby building. The maximum calculated level at any nearby residence is 0.69%. It should be noted that these results include several "worst case" assumptions and therefore are expected to overstate actual power density levels from the proposed small cell facility. The RF emissions of the proposed wireless communication facility comply with FCC standards.

6. For wireless communication facilities in the coastal zone, the proposed wireless communication facility as conditioned is consistent with the all applicable requirements of the Local Coastal Program.

The proposed wireless communication facility is not located within the coastal zone.

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 project is located in an area designated for commercial uses and is not encumbered by physical constraints to development. Construction will comply with prevailing building technology, the California Building Code, and the County Building ordinance to insure the optimum in safety and the conservation of energy and resources. The proposed improvements will not deprive adjacent properties or the neighborhood of light, air, or open space, in that the structure will meet all current setbacks, as conditioned, that ensure access to these amenities. The project has been designed and conditioned to ensure all development will be consistent with County's Geologic Hazards Ordinance and FEMA requirements.

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 location of the proposed wireless facility will comply with all site and development standards for the C-2 zone district, behind the existing decorative parapet wall that runs across the frontage of the existing commercial buildings. Further, the conditions under which it would be operated or maintained will be consistent with all pertinent County ordinances and the purpose of the C-2-GH (Community Commercial with a Geologic Hazards Combining District) zone district in that the proposed improvements meet all current site standards for the zone districts including setbacks, maximum antenna height, etc.

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 that the proposed use is consistent with the use and density requirements specified for the Community Commercial (CC) land use designation in the County General Plan.

The proposed wireless project will be properly proportioned to the parcel size and the character of the neighborhood as specified in General Plan Policy 8.5.2 (Commercial Compatibility with other uses), in that the proposed wireless facility and associated equipment will comply with the site standards for the C-2-GH zone district (including setbacks, and height) and will result in a structure consistent with a design that could be approved on any similarly sized commercial lot in the vicinity.

The project site is identified as located within the northwest quadrant area of the Soquel Village Plan. The Village plan identifies the project side as being redeveloped at a future date as a pedestrian access or promenade which would result in the relocation or demolition of the existing commercial building. The project has been conditioned to ensure that the proposed wireless facilities will not impede implementation of the Soquel Village Plan by requiring the relocation

and or abandonment of the wireless facility in the event the subject property is redeveloped.

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 proposed "unmanned" wireless facility is to be constructed on an existing commercial lot. This development will not increase the existing level of traffic or adversely impact existing roads and intersections in the surrounding area nor overload utilities.

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 structure are located in a mixed commercial neighborhood containing a variety of architectural styles. The proposed wireless facility has been designed and conditioned to ensure the project will not result in an adverse impact to visual resources or impact the character of the Soquel Village. As proposed, the project is consistent with the land use intensity and density of the neighborhood.

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 wireless facility complies with the requirements of the County Design Review Ordinance, in that the majority of the roof mounted equipment will be located within a 4-foot-high parapet wall designed and painted to match the character of the existing building. Further, the two antennas will be camouflaged as stove pipes and consistent with the industrial character of the tire shop. The associated ground mounted equipment cabinet will be located behind the existing building and fenced to ensure the equipment is not visible from public view. Consequently, the visual impact of the proposed development on surrounding land uses and the natural landscape will be minimal. The proposed wireless facility will not be visible from nearby public schools and the project will not reduce or visually impact available open space in the surrounding area.

EXHIBIT B

Conditions of Approval

Exhibit D: 15 plan sheets prepared by SAC Wireless, revised 8/21/18

I. This permit authorizes the construction of a Wireless Communication Facility to include two Verizon Wireless antenna, six Remote Radio Units (RRU) and three diplexers mounted within a new roof mounted enclosure, and two ground mounted equipment cabinet to be located behind the existing commercial building. This approval does not confer legal status on any existing structures or existing uses 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.

1. Any outstanding balance due to the Planning Department must be paid prior to making a Building Permit application. Applications for Building Permits will not be accepted or processed while there is an outstanding balance due.

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

A. 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 "D" on file with the Planning Department. Any changes from the approved Exhibit "D" 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. A copy of the text of these conditions of approval incorporated into the full-size sheets of the architectural plan set.

2. Details showing compliance with fire department requirements. Prior to issuance of the Building Permit, submit a letter from the Soquel Fire Station confirming that the proposed antenna and RRUs will not interfere with their existing Emergency Response transmission system.

3. Parking plan showing one (1) compact parking space located in the northwest corner of the subject property.

4. For the protection of emergency response personnel, at any wireless communication facility where there is the possibility that RF radiation levels in excess of the FCC public exposure limit could be experienced by

EXHIBIT C

emergency response personnel working in close proximity to antennas/RF-emitting devices, said facility shall have an on-site emergency power shut-off (e.g., "kill switch") to de-energize all RF-related circuitry/components at the base station site, or some other method (acceptable to the local Fire Chief) for de-energizing the facility. As a multi-WCF (co-location) site, where there is a possibility that RF radiation levels in excess of the FCC public exposure limit could be experienced by emergency response personnel working in close proximity to antennas/RF-emitting devices, a single power shut off switch (or other method acceptable to the local Fire Chief) shall be installed that will de-energize all facilities at the site in the event of an emergency.

5. The outer perimeter of the NIER hazard shall be posted with bilingual NIER hazard warning signage that also indicates the name and phone number for the facility operator and an emergency contact. The emergency contact shall be someone available on a 24-hour a day basis who is authorized by the applicant to act on behalf of the applicant regarding an emergency situation. An RF exclusion zone of at least 25-feet in front of the "Sector A" antennas shall be maintained and shown on revised plans. Warning signs shall be posted on the rooftop and near the antennas to allow workers to exercise control over their exposure such that it remains within the FCC occupational/controlled limits.

B. Meet all requirements of the County Department of Environmental Health Services.

C. Meet all requirements and pay any applicable plan check fee of the Central Fire Protection District.

D. Submit an elevation survey from a licensed surveyor stating that the top of the new outdoor concrete equipment pad (supporting two new cabinets) is 1-foot above the Base Flood Elevation (BFE). The elevation survey shall be submitted to the Environmental Planning Section, for review, and prior to placement of the two new equipment cabinets.

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.

IV. Operational Conditions

A. Parking areas and isles shall remain clear of all materials and equipment

EXHIBIT C

associated with the proposed wireless facility and existing commercial use.

B. The proposed wireless facility shall not impede implementation of the Soquel Village Plan. In the event the project site is redeveloped in accordance with the Soquel Village Plan (including relocation and or demolition of the existing commercial structure), the proposed wireless facility shall be either relocated and all necessary approvals obtained for relocation or the wireless facility shall be abandoned.

C. 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.

D. The operator of the wireless communication facility must submit within 90 days of commencement of normal operations (or within 90 days of any major modification of power output of the facility) a written report to the Santa Cruz County Planning Department documenting the measurements and findings with respect to compliance with the established Federal Communications Commission (FCC) Non-Ionizing Electromagnetic Radiation (NEIR) exposure standard. The NIER measurements shall be made, at the applicant's expense, by a qualified third-party telecommunications or radio-frequency engineer, during typical peak-use periods, utilizing the Monitoring Protocol described in County Code Section 13.10.660(d). The report shall also include field measurements of NIER emissions generated by the facility and also other emission sources, from various directions at each of the three school sites located within 1,000 feet of the site. The wireless communication facility must remain in continued compliance with the NEIR standard established by the FCC at all times. Failure to submit required reports or to remain in continued compliance with the NEIR standard established by the FCC will be a violation of the terms of this permit.

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 three 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: _____

_____
Steven Guiney, AICP
Deputy Zoning Administrator

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

EXHIBIT C

Verizon Wireless Cell Site Necessity Case – Soquel Rd SC3

Prepared by Verizon Wireless
RF Engineering

Introduction:

There are two main drivers that prompt the creation of a cell site project, coverage and/or capacity. Most sites provide a mixture of both, but increasingly some sites are pure capacity.

Coverage is the need for expanded service often requested by our customers or emergency services personnel. While this initially meant providing coverage in vehicles, as usage patterns have shifted this now means improving coverage inside of buildings and in residential areas.

Capacity is the need for more bandwidth of service. In the simplest form this means a cell site can handle a limited number of voice calls, data mega bytes, or total number of active users. When any one of these limits are met or exceeded the user experience within the coverage area of that cell quickly starts to degrade during the busier hours of use.

Coverage is best shown in coverage maps. We use tools that take into account terrain, vegetation, building types, and cell site specifics to show predictions of the existing coverage and what we expect to see with a given cell site. The prediction models make some assumptions such as that the antennas are above the nearby ground clutter (Buildings and vegetation). Once the antennas fall below the ground clutter the models become inaccurate and cannot tell that specific trees or buildings are blocking the RF signal. Due to this, modeling of tower height requirements is frequently not accurate and misleading.

Capacity is best shown in graphs of usage growth and projected exhaustion. We utilize sophisticated programs to model current usage growth and project it into the future to determine when additional capacity will be required. The algorithms that predict capacity growth output numbers are not easily explained. Since it takes 2-3 years on average to complete a cell site project, we have to be looking about 3 years into the future to meet future customer demand.

While data capacity may not seem urgent, beginning in 2014 voice traffic began to migrate from the older 3G voice technology to 4G VoLTE (Voice over IP). This will add additional load to the 4G data network. Since voice is delay sensitive, exhaustion of the data network can cause degradation of voice calls including 911 calls.

"Why do you need a site here?"

A good capacity cell will be close to the user population and have the traffic evenly spread around the site. When we cannot get a location that accomplishes being close to the customers and central to the usage, we end up having to build additional cells to meet the demands for service. Capacity sites are generally lower in height than a coverage site with a full cell needing to be above the ground clutter (buildings, trees, & etc.) and a small cell being one that is at or below the ground clutter.

Where our customers use their wireless devices continues to evolve. While we once needed to cover highways and business districts, we are seeing increasing issues with high growth in residential areas. Current statistics show that about 1 of 3 households in the United States no longer have a landline phone. To serve this need we have to increase the cells we have in or very near residential areas.

Need Case for: Soquel Rd SC3

Summary: Coverage Maps and Utilization Graphs for the area on Soquel Dr.

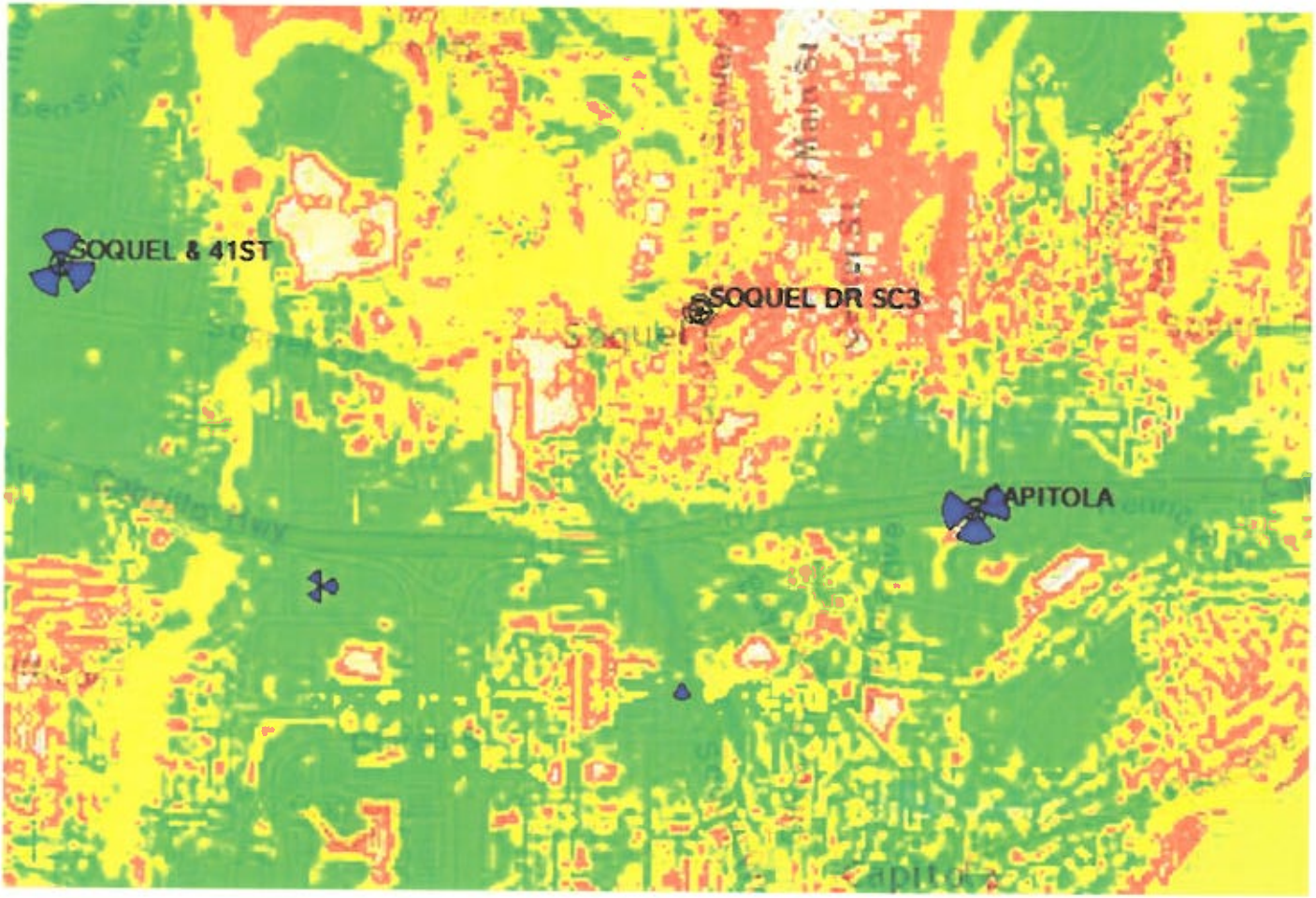
The area we wish to improve in Soquel with this Small Cell is Soquel Dr. between approximately Robertson St. and S. Main St. and the surrounding neighborhoods to the north and south. Small Cells are small coverage targeted cells with low visual impact.

The following plots show poor signal strength along Soquel Dr. In addition, the currently serving cell site Capitola which was offloaded by a new small cell near the mall, is back up to its capacity and will continue to go up. The last slide is a graph of Forward Data Volume showing these data trends. The small cell near the mall was activated in late July this year and quickly rose up to its limits.

When it reaches the red limit line, the site will exhaust and users will experience slow data rates and blocked calls.

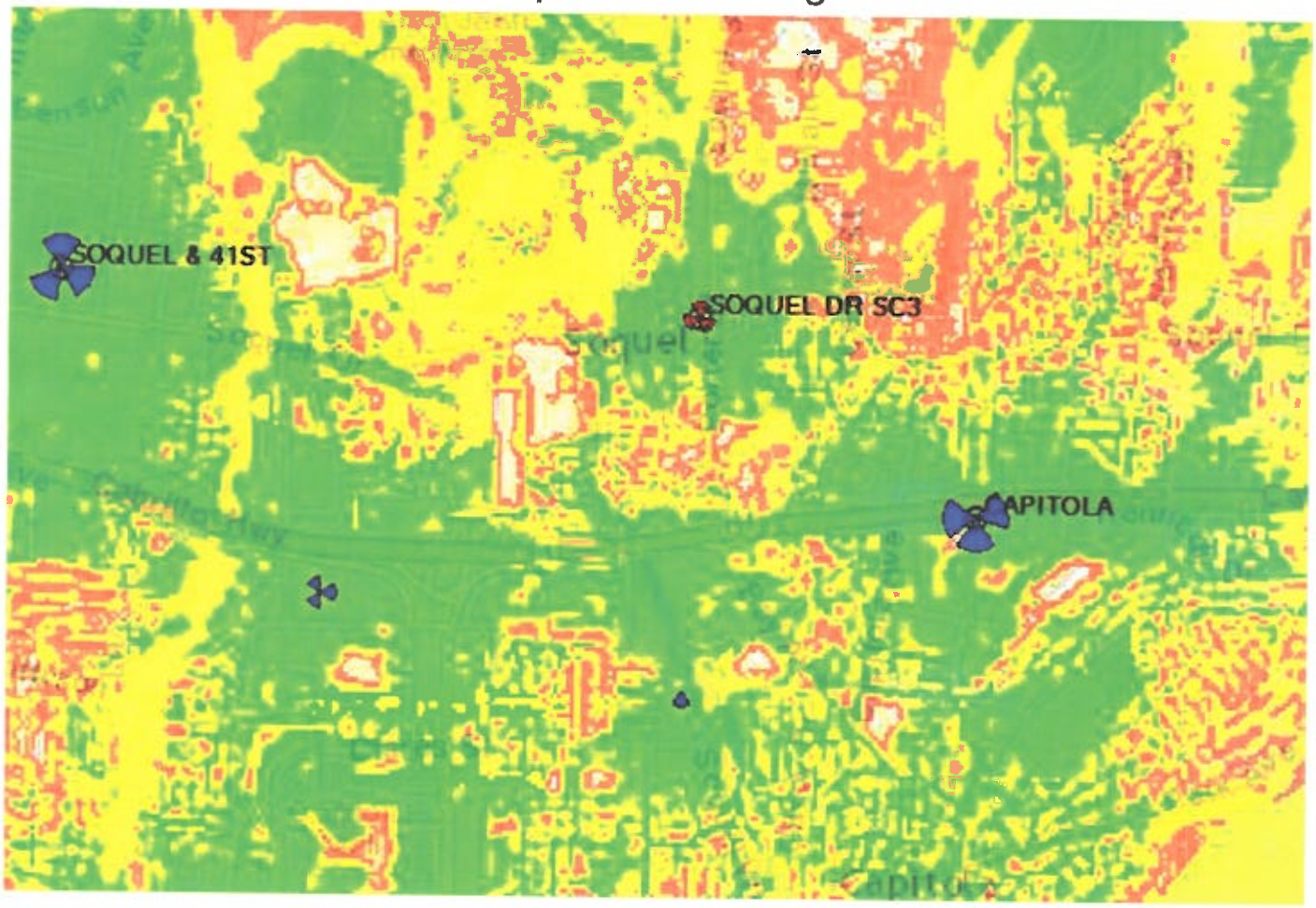
Need Case for: Soquel Rd SC3

Existing Coverage



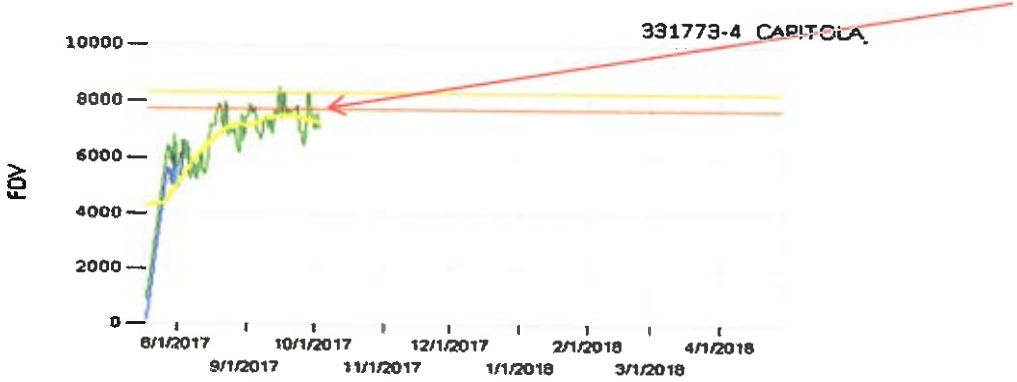
Need Case for: Soquel Rd SC3

Proposed Coverage

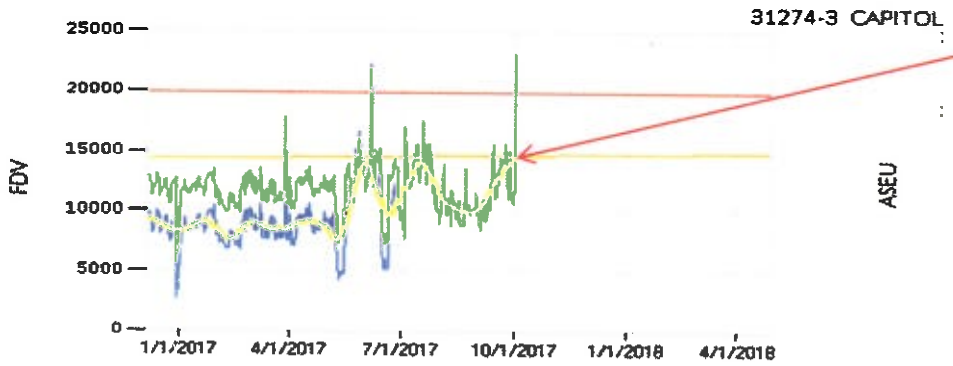


Need Case for: Soquel Rd SC3

'. Site: 331773 CAPITOLA_MALL_CLUSTER_1



Capitola Mall Small Cell quickly reached its capacity after activation in late July.



Capitola cell site returned to its capacity shortly after it was relieved by the small cell.

VICINITY MAP
PHOTOSIMULATION VIEWPOINTS

verizon

SOQUEL DRIVE SC3
PSL # 263385
4665 SOQUEL DR.
SOQUEL, CA 95073

5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
www.sacw.com

DISCLAIMER: THIS PHOTOSIMULATION IS INTENDED AS A GRAPHICAL REPRESENTATION OF EXISTING AND PROPOSED SITE CONDITIONS BASED ON THE PROJECT / DRAWING PLANS. IT IS NOT INTENDED FOR CONSTRUCTION. ACTUAL, FINAL CONSTRUCTION MAY VARY

verizon

SOQUEL DRIVE SC3
PSL # 263385
4665 SOQUEL DR.
SOQUEL, CA 95073

SAC AE DESIGN GROUP INC.
5015 SHOREHAM PLACE, SUITE 150
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PHOTOSIMULATION VIEWPOINT 1

DISCLAIMER: THIS PHOTOSIMULATION IS INTENDED AS A GRAPHICAL REPRESENTATION OF EXISTING AND PROPOSED SITE CONDITIONS BASED ON THE PROJECT / DRAWING PLANS. IT IS NOT INTENDED FOR CONSTRUCTION. ACTUAL, FINAL CONSTRUCTION MAY VARY

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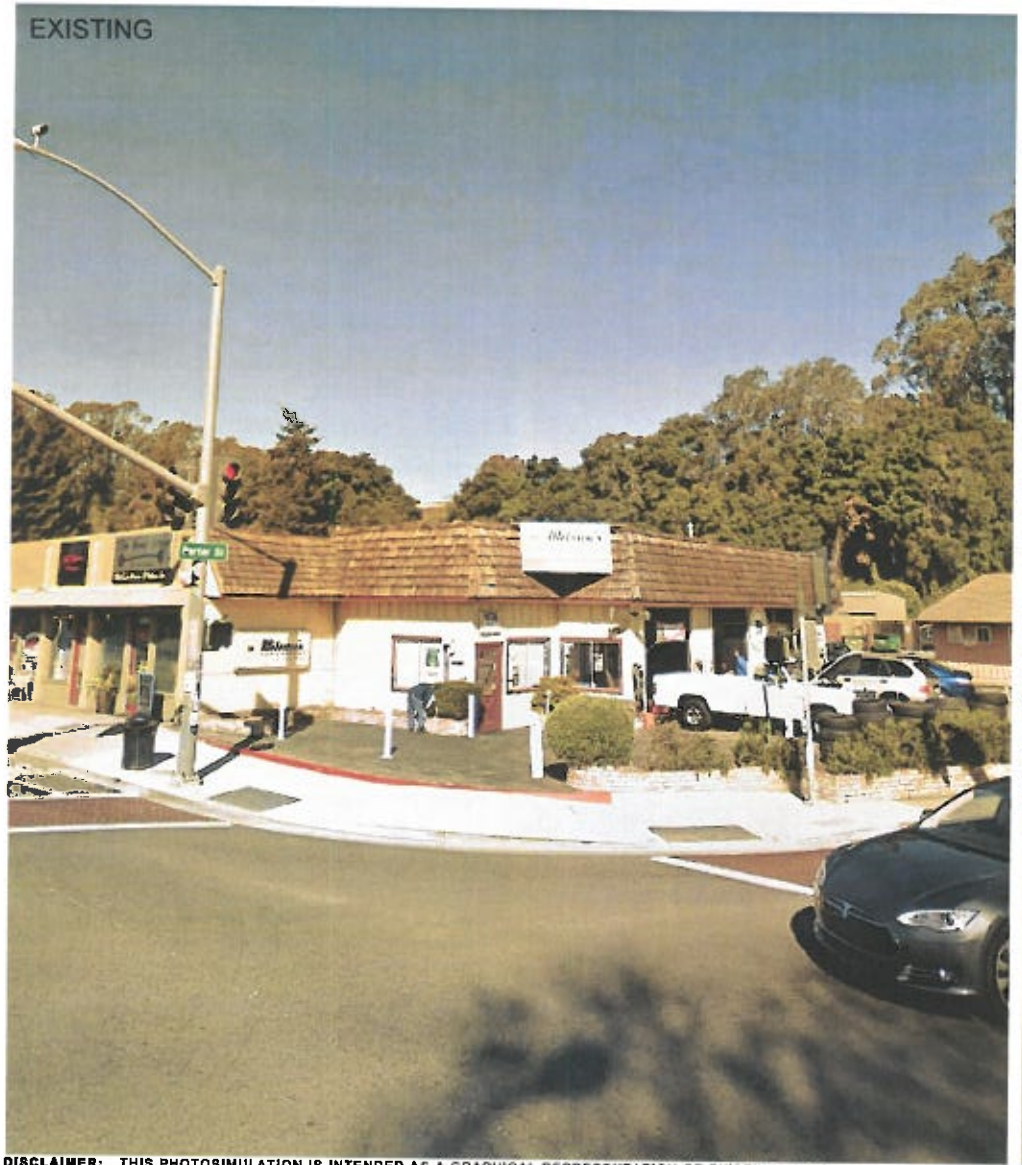
SOQUEL DRIVE SC3
PSL # 263385
4665 SOQUEL DR.
SOQUEL, CA 95073

SAC DESIGN GROUP INC
5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
www.sacw.com

PHOTOSIMULATION VIEWPOINT 2

EXISTING



NEW

DISCLAIMER: THIS PHOTOSIMULATION IS INTENDED AS A GRAPHICAL REPRESENTATION OF EXISTING AND PROPOSED SITE CONDITIONS BASED ON THE PROJECT / DRAWING PLANS. IT IS NOT INTENDED FOR CONSTRUCTION. ACTUAL, FINAL CONSTRUCTION MAY VARY

verizon

SOQUEL DRIVE SC3
PSL # 263385
4665 SOQUEL DR.
SOQUEL, CA 95073

SAC WIRELESS GROUP INC.
5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
www.sacw.com

PHOTOSIMULATION VIEWPOINT 3

DISCLAIMER: THIS PHOTOSIMULATION IS INTENDED AS A GRAPHICAL REPRESENTATION OF EXISTING AND PROPOSED SITE CONDITIONS BASED ON THE PROJECT / DRAWING PLANS. IT IS NOT INTENDED FOR CONSTRUCTION. ACTUAL, FINAL CONSTRUCTION MAY VARY

Verizon Wireless • Proposed Base Station (Site No. 263385 "Soquel Drive SC3")
4665 Soquel Drive • Soquel, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal wireless telecommunications carrier, to evaluate the base station (Site No. 263385 "Soquel Drive SC3") proposed to be located at 4665 Soquel Drive in Soquel, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

Verizon proposes to install directional antennas above the roof of the building located at 4665 Soquel Drive in Soquel. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy; certain mitigation measures are recommended to comply with FCC occupational guidelines.

Prevailing Exposure Standards

The U.S. Congress requires that the Federal Communications Commission ("FCC") evaluate its actions for possible significant impact on the environment. 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:

Wireless Service	Frequency Band	Occupational Limit	Public Limit
Microwave (Point-to-Point)	5–80 GHz	5.00 mW/cm^2	1.00 mW/cm^2
WiFi (and unlicensed uses)	2–6	5.00	1.00
BRS (Broadband Radio)	2,600 MHz	5.00	1.00
WCS (Wireless Communication)	2,300	5.00	1.00
AWS (Advanced Wireless)	2,100	5.00	1.00
PCS (Personal Communication)	1,950	5.00	1.00
Cellular	870	2.90	0.58
SMR (Specialized Mobile Radio)	855	2.85	0.57
700 MHz	700	2.40	0.48
[most restrictive frequency range]	30–300	1.00	0.20

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. A

small antenna for reception of GPS signals is also required, mounted with a clear view of the sky. 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. 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 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 Verizon, including construction drawings by SAC AE Design Group, Inc., dated August 29, 2018, it is proposed to install two Amphenol antennas – one Model CUUD070X06F bi-directional cylindrical antenna and one Model CUUX063X06F directional panel antenna – within individual enclosures, configured to resemble vent pipes, above the roof of the single-story Wilson's Tire & Service building located at 4665 Soquel Drive in Soquel. The antennas would employ no downtilt and would be mounted at an effective height of about 18½ feet above ground, 2 feet above the roof. The cylindrical antenna would be mounted above the southeastern corner of the roof and would be oriented with its principal directions toward 10°T and 130°T. The panel antenna would be mounted above the northern end of the roof and would be oriented toward 250°T. The maximum effective radiated power in any direction would be 2,670 watts, representing simultaneous operation at 2,180 watts for AWS and 490 watts for 700 MHz service. There are reported no other wireless telecommunications base stations at the site or nearby.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed Verizon operation is calculated to be 0.28 mW/cm^2, which is 29% of the applicable public exposure limit. The maximum calculated level at any nearby building* is 3.8% of the public exposure limit. The

* Located at least 90 feet away, based on photographs from Google Maps.

maximum calculated level at the second-floor elevation of any nearby residence† is 0.69% of the public exposure limit. The maximum calculated level at any building on the Soquel High School campus‡ is 0.42% of the public exposure limit. It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation. Levels are calculated to exceed the applicable public exposure limit on the roof of the Wilson's building, in front of the antennas.

Recommended Mitigation Measures

It is recommended that the roof access ladder be kept locked, so that the Verizon antennas are not accessible to unauthorized persons. To prevent occupational exposures in excess of the FCC guidelines, it is recommended that appropriate RF safety training, to include review of personal monitor use and lockout/tagout procedures, be provided to all authorized personnel who have access to the roof, including employees and contractors of Verizon and of the property owner. No access within 12 feet directly in front of the Verizon antennas themselves, such as might occur during certain maintenance activities, should be allowed while the base station is in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. It is recommended that boundary lines be marked on the roof with blue and yellow paint to identify areas within which exposure levels are calculated to exceed the public and occupational FCC limits, respectively, as shown in Figure 3. It is recommended that explanatory signs§ be posted at the roof access ladder, at the boundary lines, and at the antennas, readily visible from any angle of approach to persons who might need to work within that distance.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the base station proposed by Verizon Wireless at 4665 Soquel Drive in Soquel, California, can comply with the prevailing standards for limiting human exposure to radio frequency energy and, therefore, need 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. Locking the roof access ladder is recommended to establish compliance with public exposure limits; training authorized personnel, marking roof areas,

† Located at least 390 feet away, based on photographs from Google Maps.
‡ Located at least 90 feet away, based on photographs from Google Maps.
§ Signs should comply with OET-65 color, symbol, and content recommendations. Contact information should be provided (*e.g.*, a telephone number) to arrange for access to restricted areas. The selection of language(s) is not an engineering matter, and guidance from the landlord, local zoning or health authority, or appropriate professionals may be required.

and posting explanatory signs are recommended to establish compliance with occupational exposure limits.

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, 2019. 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.

William F. Hammett, P.E.
707/996-5200

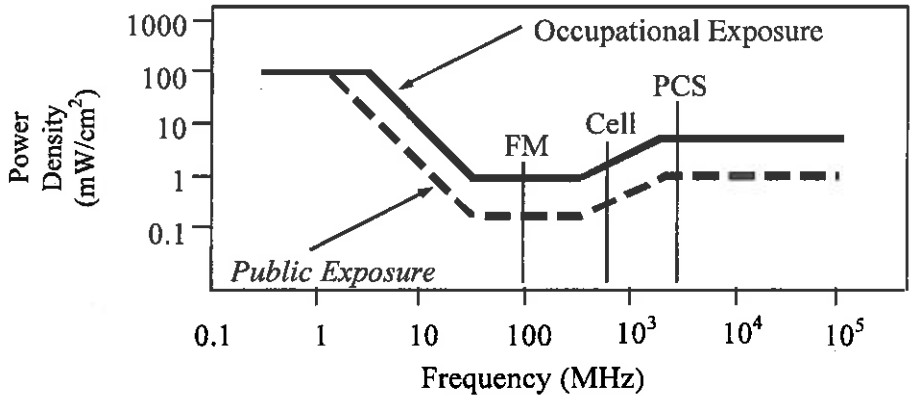
October 1, 2018

FCC Radio Frequency Protection Guide

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:

Frequency	Electromagnetic Fields (f is frequency of emission in MHz)					
Applicable Range (MHz)	Electric Field Strength (V/m)		Magnetic Field Strength (A/m)		Equivalent Far-Field Power Density (mW/cm^2)	
0.3 – 1.34	614	*614*	1.63	*1.63*	100	*100*
1.34 – 3.0	614	*823.8/f*	1.63	*2.19/f*	100	*180/f^2*
3.0 – 30	1842/ f	*823.8/f*	4.89/ f	*2.19/f*	900/ f^2	*180/f^2*
30 – 300	61.4	*27.5*	0.163	*0.0729*	1.0	*0.2*
300 – 1,500	$3.54\sqrt{f}$	*$1.59\sqrt{f}$*	$\sqrt{f}/106$	*$\sqrt{f}/238$*	f/300	*f/1500*
1,500 – 100,000	137	*61.4*	0.364	*0.163*	5.0	*1.0*



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.

RFR.CALC™ Calculation Methodology

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 $S_{max} = \frac{0.1 \times 16 \times \eta \times P_{net}}{\pi \times h^2}$, in mW/cm^2,

where θ_{BW} = half-power beamwidth of the antenna, in degrees, and
P_{net} = net power input to the antenna, in watts,
D = distance from antenna, in meters,
h = aperture height of the antenna, in meters, and
η = 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:

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

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

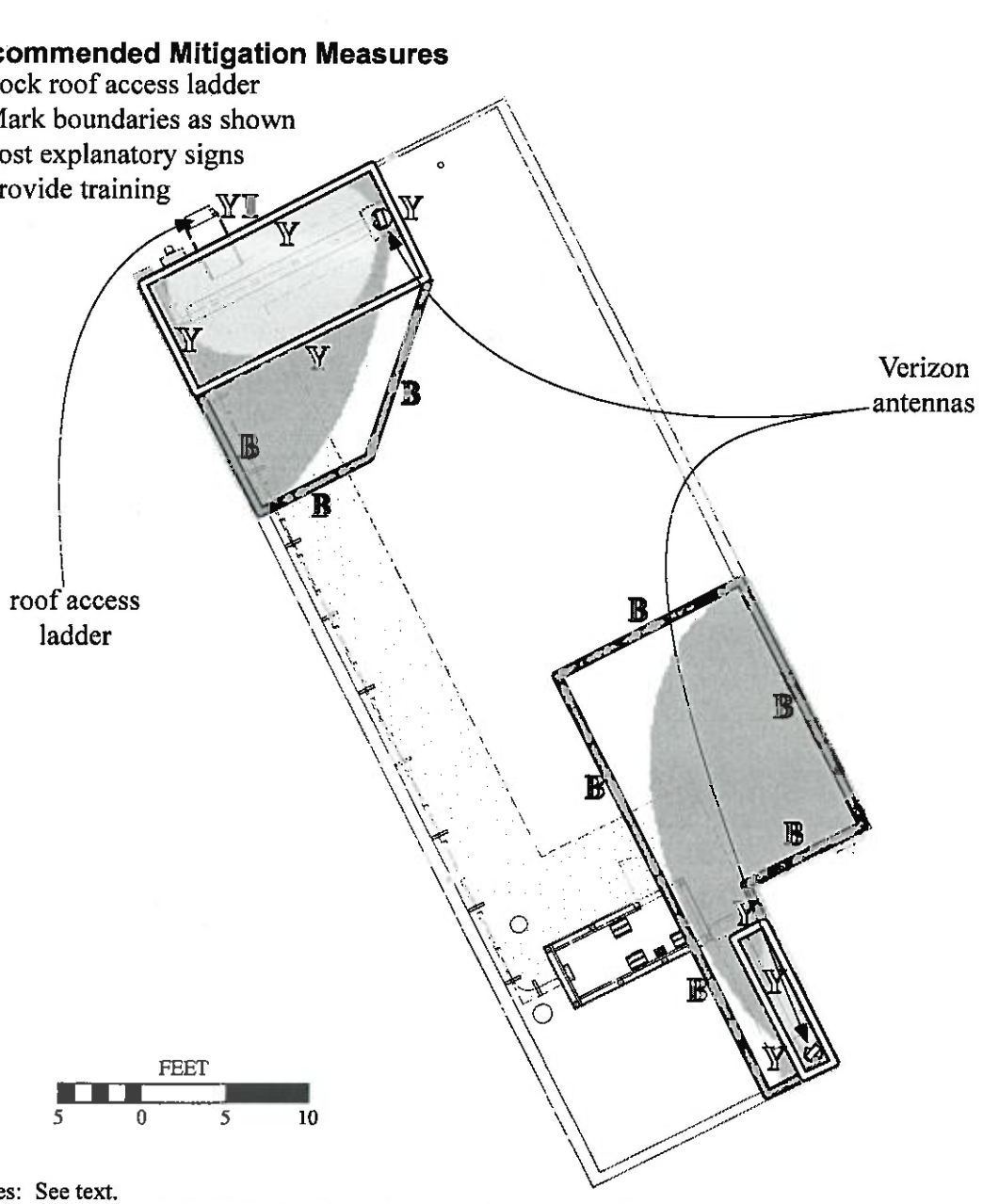
The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 (1.6 x 1.6 = 2.56). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units 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.

Verizon Wireless • Proposed Base Station (Site No. 263385 "Soquel Drive SC3")
4665 Soquel Drive • Soquel, California

Calculated RF Exposure Levels on Roof

Recommended Mitigation Measures

- Lock roof access ladder
- Mark boundaries as shown
- Post explanatory signs
- Provide training

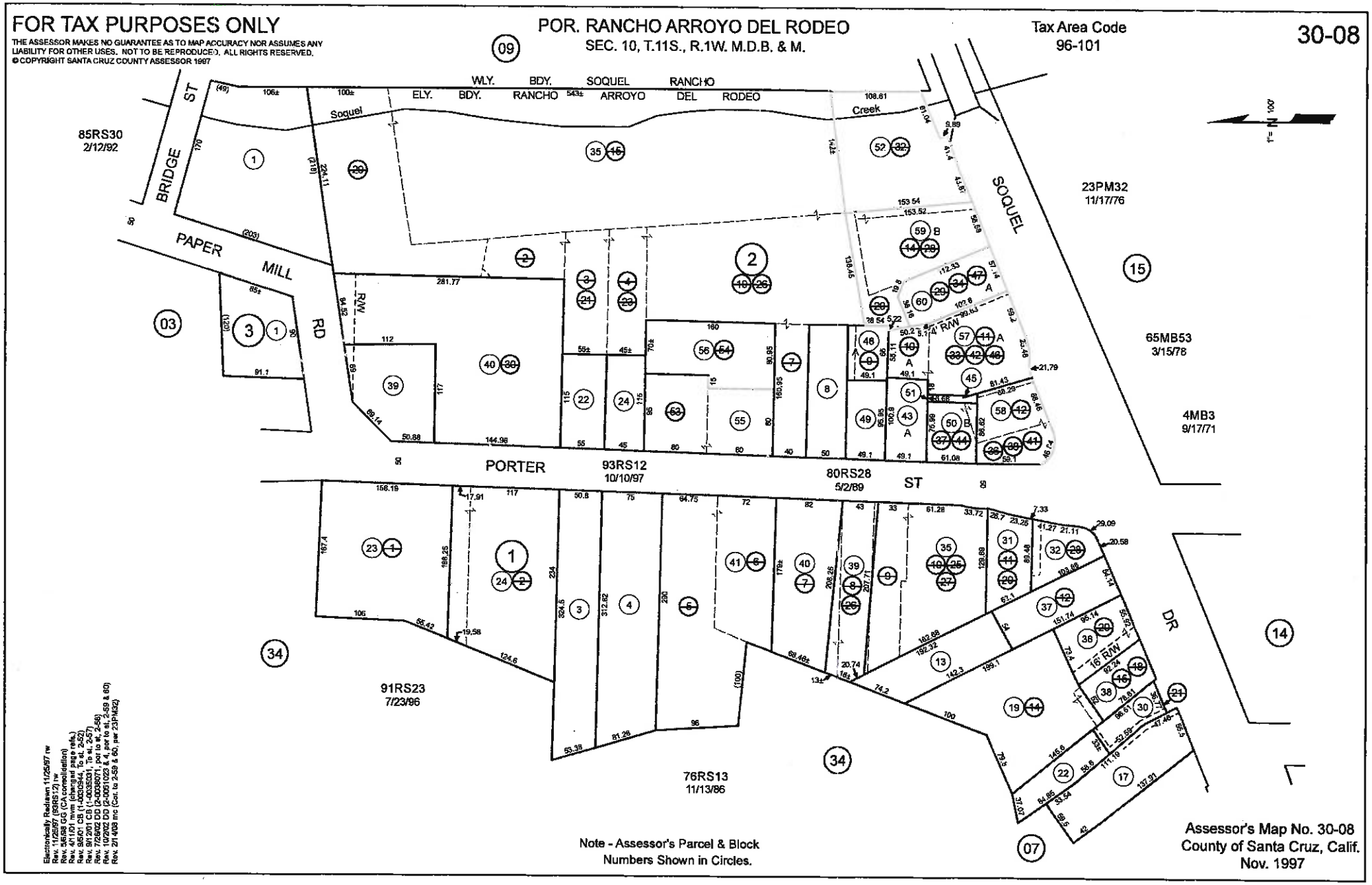


Notes: See text.
Base drawing from SAC AE Design Group, Inc., dated August 29, 2018.
Calculations performed according to OET Bulletin 65, August 1997.

Legend:	Less Than Public	Exceeds Public	Exceeds Occupational	Exceeds 10x Occupational
Shaded color	blank			
Boundary marking	N/A			
Sign type	I - Green INFORMATION	B - Blue NOTICE	Y - Yellow CAUTION	O - Orange WARNING

HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
SAN FRANCISCO

W3AH.2
Figure 3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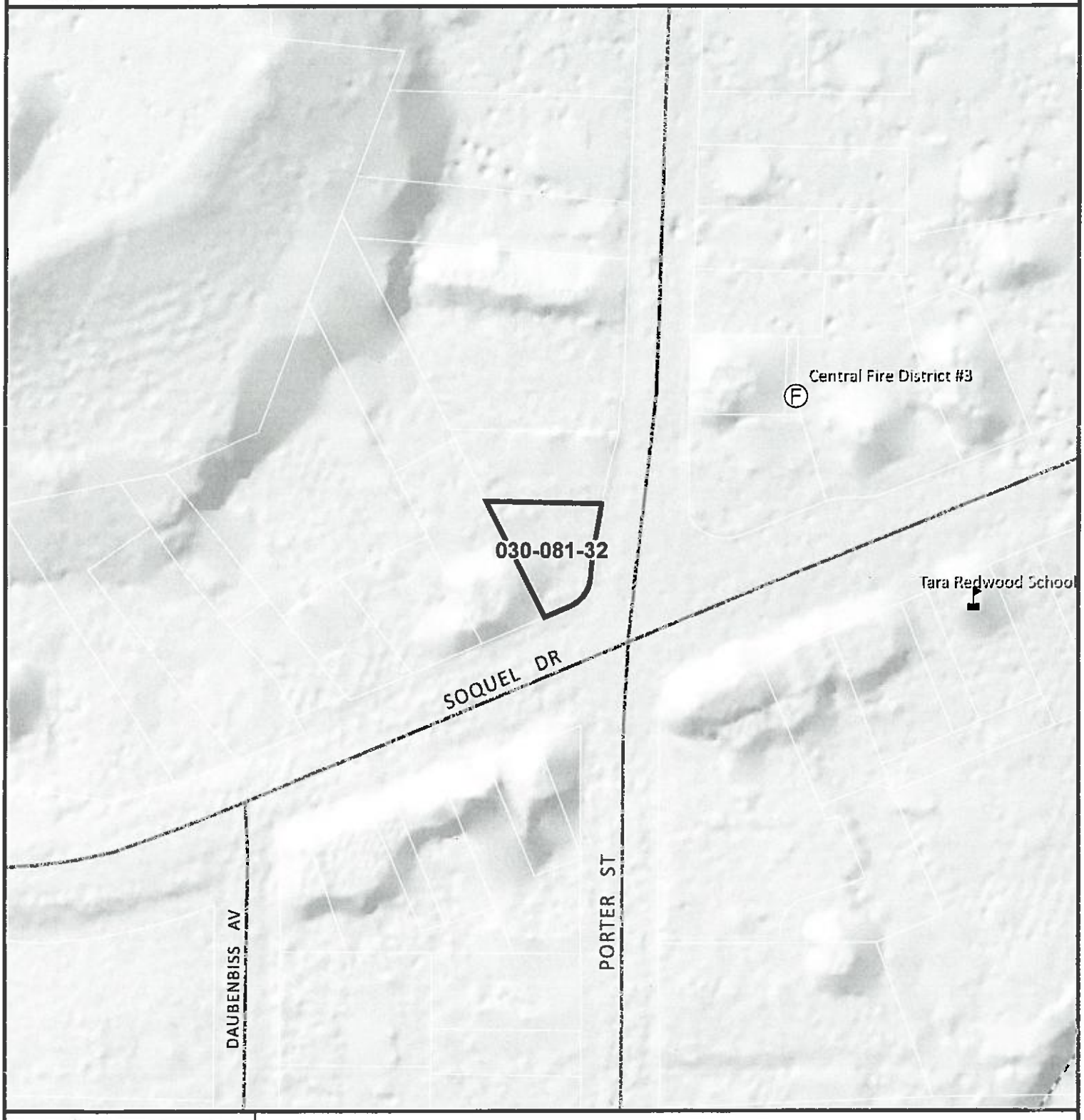
POR. RANCHO ARROYO DEL RODEO
SEC. 10, T.11S., R.1W. M.D.B. & M.
Tax Area Code
96-101
30-08
09
WLY. BDY. SOQUEL RANCHO
ELY. BDY. RANCHO ARROYO DEL RODEO
Soquel Creek
85RS30
2/12/92
BRIDGE ST
PAPER MILL RD
SOQUEL DR
23PM32
11/17/76
65MB53
3/15/78
4MB3
9/17/71
PORTER ST
93RS12
10/10/97
80RS28
5/2/89
91RS23
7/23/96
76RS13
11/13/86
03
15
14
34
07
R/W
Electronically Redrawn 11/25/97 rw
Rev. 11/22/97 (93RS12) rw
Rev. 5/6/98 GG (CA consolidation)
Rev. 4/11/01 mvm (changed page refs.)
Rev. 9/5/01 CB (1-0033944, To st. 2-52)
Rev. 9/12/01 CB (1-0033931, To st. 2-57)
Rev. 7/26/02 CB (2-0035071, por to st. 2-56)
Rev. 10/2/02 CB (2-0035703 & 4, por to st. 2-59 & 60)
Rev. 2/14/08 mc (Cor. to 2-59 & 60, per 23PM32)
Note - Assessor's Parcel & Block Numbers Shown in Circles.
Assessor's Map No. 30-08
County of Santa Cruz, Calif.
Nov. 1997

Parcel Location Map

Santa Cruz County Planning Department

Parcel Number
030-081-32
Jun. 19, 2018



Symbol Key

Ⓕ Fire Station

School

Street

Perennial Stream

N

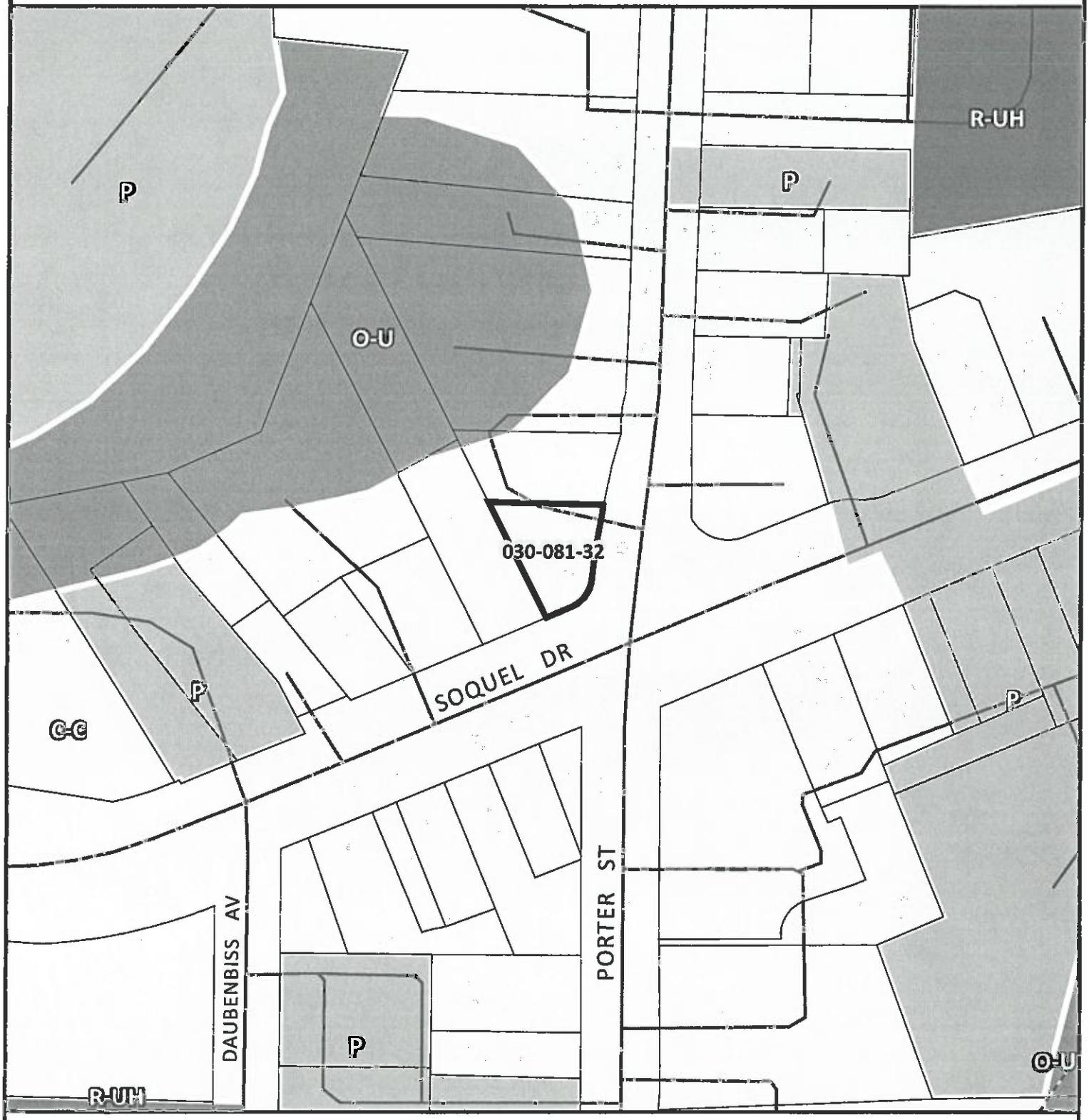
0 40 80

Feet

Parcel General Plan Map

Santa Cruz County Planning Department

Parcel Number
030-081-32
Jun. 19, 2018



General Plan

- C-C - Commercial-Community
- P - Public Facilites
- R-UH - Residential - Urban High Density
- O-U - Urban Open Space

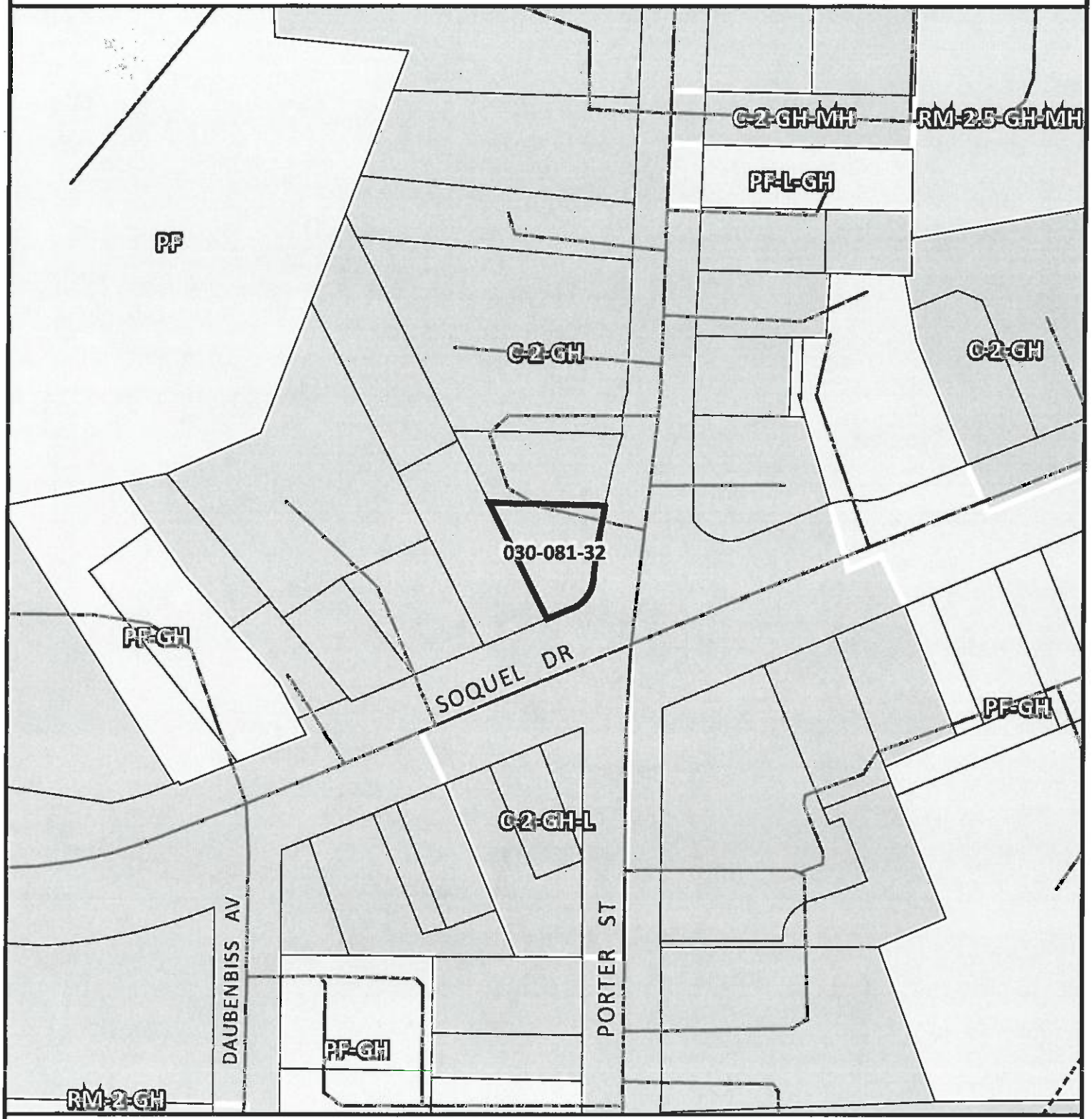
N

0 40 80
Feet

Parcel Zoning Map

Santa Cruz County Planning Department

Parcel Number
030-081-32
Jun. 19, 2018



Zoning

- (C-2) Commercial Community
- (PF) Public & Community Facilities
- (RM) Residential Multi-Family

N

0 40 80

Feet