County of Santa Cruz

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CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)
INITIAL STUDY/ENVIRONMENTAL CHECKLIST

Date: 10/11/2024 **Application Number:** 221049

Project Name: Summit Drive Wireless **Staff Planner:** Sheila McDaniel

I. OVERVIEW AND ENVIRONMENTAL DETERMINATION

APPLICANT: Delta Group Engineering **APN(s):** 080-062-02

OWNER: CTI Towers **SUPERVISORIAL DISTRICT:** 3

PROJECT LOCATION: The project is located on the east side of Summit Drive (186 Summit Drive) approximately 700 feet northeast of Empire Grade, approximately 3 miles north of the intersection of Felton Empire Road and Empire Grade Road, within the community of Bonny Doon in unincorporated Santa Cruz County (LOCATION MAP - FIGURE 1). Santa Cruz County is bounded on the north by San Mateo County, on the south by Monterey and San Benito counties, on the east by Santa Clara County, and on the south and west by the Monterey Bay and the Pacific Ocean.

SUMMARY PROJECT DESCRIPTION: Proposal to modify an existing wireless communication facility to include removal of the existing 70 foot 6 inch tall guyed lattice tower and related equipment, satellite dish, shed, 12 foot 6 inch tall lattice tower, and chain link fencing, and replacement with an approximately 151.1-foot tall wireless communication facility camouflaged as a monopine, with nine panel antennas and associated wireless equipment, generator within an existing equipment building, outdoor propane tank, repainted equipment building, landscape screening, and other miscellaneous improvements located within the existing building and site enclosure, proposed to be contained within an area surrounded by a new six-foot chain link fence with green slats and barbed wire above. Requires a Commercial Development Permit and Exception to Height. (SITE PLAN - FIGURE 2 AND DETAILED SITE PLAN – FIGURE 3)

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: *All of the following potential environmental impacts are evaluated in this Initial Study. Categories that are marked have been analyzed in greater detail based on project specific information.*

- ☒ Aesthetics and Visual Resources
- ☐ Agriculture and Forestry Resources
- ☒ Air Quality
- ☐ Mineral Resources
- ☒ Noise
- ☐ Population and Housing

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: *All of the following potential environmental impacts are evaluated in this Initial Study. Categories that are marked have been analyzed in greater detail based on project specific information.*

- ☒ Biological Resources
- ☒ Cultural Resources
- ☐ Energy
- ☒ Geology and Soils
- ☒ Greenhouse Gas Emissions
- ☒ Hazards and Hazardous Materials
- ☐ Hydrology/Water Supply/Water Quality
- ☐ Land Use and Planning
- ☐ Public Services
- ☐ Recreation
- ☒ Transportation
- ☐ Tribal Cultural Resources
- ☐ Utilities and Service Systems
- ☒ Wildfire
- ☐ Mandatory Findings of Significance

DISCRETIONARY APPROVAL(S) BEING CONSIDERED:

- ☐ General Plan Amendment
- ☐ Land Division
- ☐ Rezoning
- ☒ Development Permit
- ☐ Sewer Connection Permit
- ☐ Coastal Development Permit
- ☐ Grading Permit
- ☐ Riparian Exception
- ☐ LAFCO Annexation
- ☐ Other:

OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED (e.g., permits, financing approval, or participation agreement):

Permit Type/Action	Agency
N/A	N/A

CONSULTATION WITH NATIVE AMERICAN TRIBES: *Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?*

No California Native American tribes traditionally and culturally affiliated with the area of Santa Cruz County have requested consultation pursuant to Public Resources Code section 21080.3.1.

DETERMINATION:

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in

the project have been made or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

MATT JOHNSTON, Environmental Coordinator

2/5/25
Date

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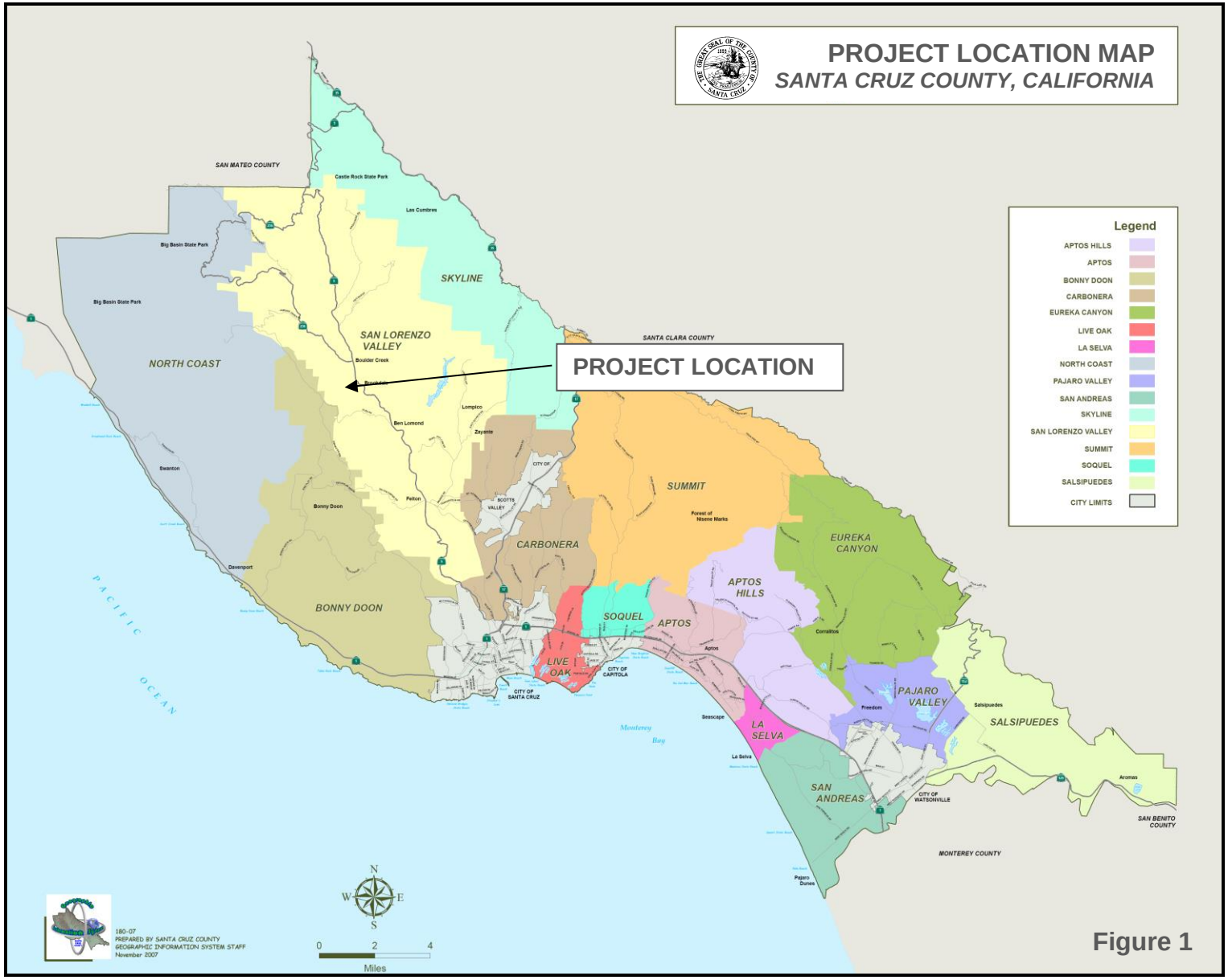
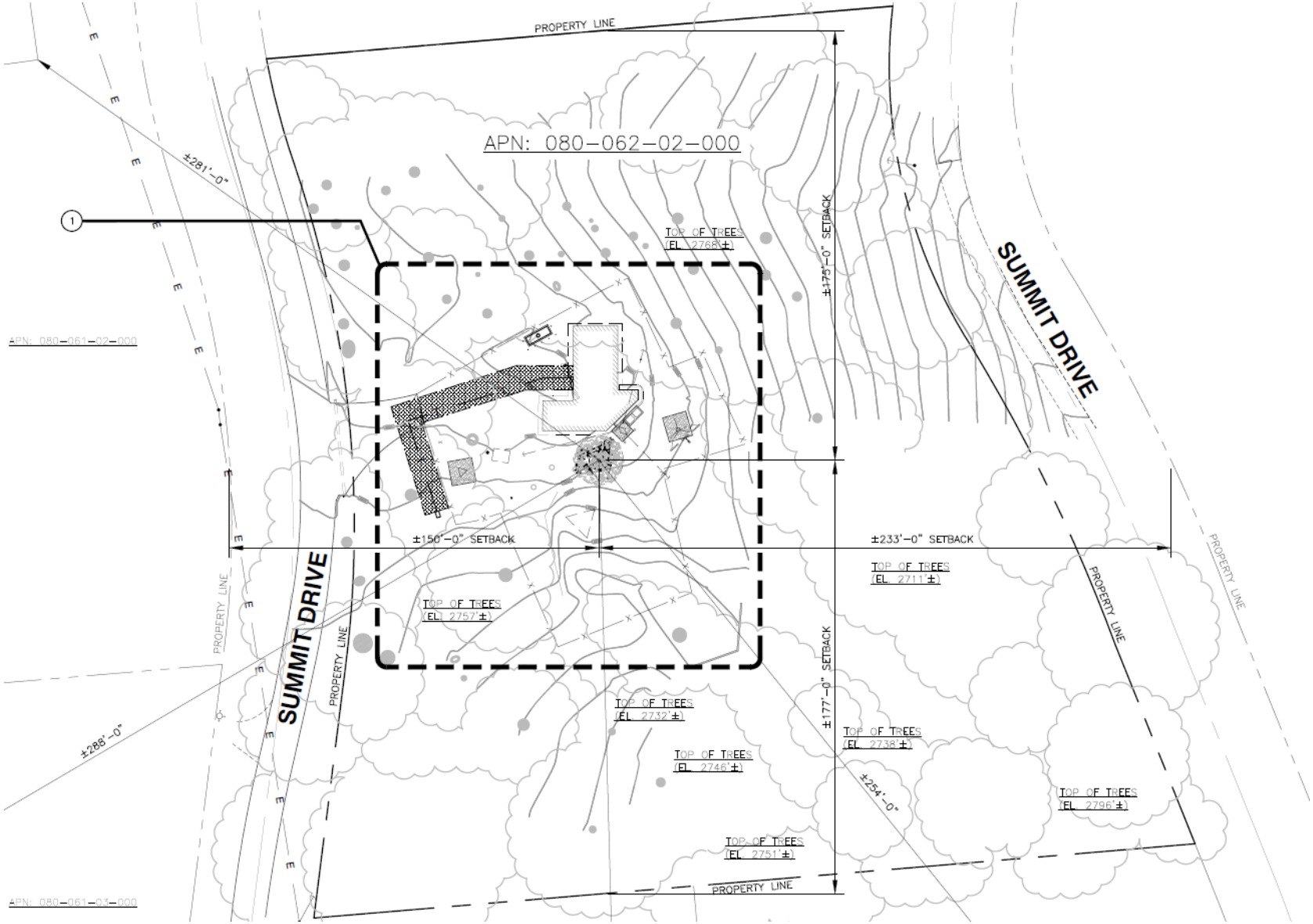

PROJECT LOCATION MAP
SANTA CRUZ COUNTY, CALIFORNIA
PROJECT LOCATION
Legend
APTOS HILLS
APTOS
BONNY DOON
CARBONERA
EUREKA CANYON
LIVE OAK
LA SELVA
NORTH COAST
PAJARO VALLEY
SAN ANDREAS
SKYLINE
SAN LORENZO VALLEY
SUMMIT
SOQUEL
SALSIPUEDES
CITY LIMITS
SAN MATEO COUNTY
SANTA CLARA COUNTY
MONTEREY COUNTY
SAN BENITO COUNTY
PACIFIC OCEAN
Monterey Bay
Miles
Figure 1



PROJECT SITE PLAN **FIGURE 2**

KEYED NOTES:

1. PROPOSED AT&T PANEL ANTENNAS (9 TOTAL– 3 PER SECTOR, TYP., 3 SECTORS TOTAL) MOUNTED ON A PROPOSED 150'–0" TALL MONOPINE
2. PROPOSED 25'–4"x17'–4" (APPROX. 439 SQ. FT.) AT&T EQUIPMENT AREA– LOCATION OF PROPOSED RADIO EQUIPMENT RACKS AND ASSOCIATED UTILITIES BOXES (2/A4)
3. PROPOSED 10'–1"x14'–1" (APPROX. 142 SQ. FT.) AT&T EQUIPMENT AREA– LOCATION OF PROPOSED 30KW DIESEL GENERATOR MOUNTED ON A CONCRETE PAD
4. PROPOSED CABLE BRIDGE TO PROPOSED MONOPINE– CONNECTS TO EXISTING CABLE BRIDGE AT EXISTING BUILDING
5. PROPOSED 6'–0" TALL CHAIN LINK FENCE TO REPLACE EXISTING– INCLUDES 3 STRANDS OF BARBED WIRE AND DARK GREEN VINYL SLATS
6. PROPOSED DOUBLE–SWING CHAIN LINK ACCESS GATE TO REPLACE EXISTING– INCLUDES 3 STRANDS OF BARBED WIRE AND DARK GREEN VINYL SLATS
7. PROPOSED ANTENNA CABLE ROUTING FROM EXISTING BUILDING TO PROPOSED MONOPINE– ROUTES ALONG EXISTING AND PROPOSED CABLE BRIDGE (APPROX. 50 L.F. FROM EXISTING BUILDING TO PROPOSED MONOPINE)
8. PROPOSED TELCO UNDERGROUND CONDUIT ROUTING WITHIN A 10'–0" WIDE UTILITIES EASEMENT (APPROX. 150 L.F. FROM PROPOSED TELCO P.O.C. TO EXISTING BUILDING)
9. EXISTING TELCO PEDESTAL (TELCO P.O.C.)
10. EXISTING BUILDING TO BE RE–PAINTED (COLOR: MOROCCAN HENNA BY BEHR)
11. PROPOSED 500 GALLON LIQUID PROPANE TANK MOUNTED ON A CONCRETE PAD
12. PROPOSED BOLLARD (TYP.)

DETAILED PROJECT SITE PLAN AND PROJECT DESCRIPTION **FIGURE 3**

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II. BACKGROUND INFORMATION

EXISTING SITE CONDITIONS:

Parcel Size (acres): 2.2 acres
Existing Land Use: Telecommunications facility
Vegetation: Trees and Shrubs
Slope in area affected by project: ☒ 0 - 30% ☐ 31 – 100% ☐ N/A
Nearby Watercourse: N/A
Distance To: N/A

ENVIRONMENTAL RESOURCES AND CONSTRAINTS:

Water Supply Watershed:	Yes – Mid San Lorenzo	Fault Zone:	N/A
Groundwater Recharge:	Yes	Scenic Corridor:	N/A
Timber or Mineral:	N/A	Historic:	N/A
Agricultural Resource:	N/A	Archaeology:	Archaeology report accepted; Absence of Resources determined.
Biologically Sensitive Habitat:	N/A	Noise Constraint:	N/A
Fire Hazard:	State Response Area: High	Electric Power Lines:	N/A
Floodplain:	N/A	Solar Access:	N/A
Erosion:	N/A	Solar Orientation:	N/A
Landslide:	N/A	Hazardous Materials:	Propane for generator
Liquefaction:	N/A	Other:	N/A

SERVICES:

Fire Protection:	County Fire	Drainage District:	Outside/ N/A
School District:	N/A	Project Access:	Summit Drive
Sewage Disposal:	N/A	Water Supply:	N/A

PLANNING POLICIES:

Zone District: R-R
Special Designation: N/A
General Plan: Rural Residential

Urban Services Line:	☐ Inside	☒ Outside
Coastal Zone:	☐ Inside	☒ Outside

ENVIRONMENTAL SETTING AND SURROUNDING LAND USES:

Natural Environment

Santa Cruz County is uniquely situated along the northern end of Monterey Bay approximately 55 miles south of the City of San Francisco along the Central Coast. The Pacific Ocean and Monterey Bay to the west and south, the mountains inland, and the prime agricultural lands along both the northern and southern coast of the county create limitations on the style and amount of building that can take place. Simultaneously, these natural features create an environment that attracts both visitors and new residents every year. The natural landscape provides the basic features that set Santa Cruz apart from the surrounding counties and require specific accommodations to ensure building is done in a safe, responsible and environmentally respectful manner.

The California Coastal Zone affects nearly one third of the land in the urbanized area of the unincorporated County with special restrictions, regulations, and processing procedures required for development within that area. Steep hillsides require extensive review and engineering to ensure that slopes remain stable, buildings are safe, and water quality is not impacted by increased erosion. The farmland in Santa Cruz County is among the best in the world, and the agriculture industry is a primary economic generator for the County. Preserving this industry in the face of population growth requires that soils best suited to commercial agriculture remain active in crop production rather than converting to other land uses.

PROJECT BACKGROUND:

The project site is currently developed with an existing television booster station established in 1969 and contains telecommunications equipment including an unsightly satellite dish and a 70-foot metal lattice tower and other ground equipment. In street level views, the facility is poorly screened from the surrounding private roads due to a lack of shrubby vegetation. The existing buildings, lower portion of the lattice towers and some of the other associated equipment, all of which are surrounded by a chain-link fence, are visible beneath the canopies of the surrounding trees. The only screening is a brown-toned cyclone fence which partially obscures some of the ground level equipment and satellite dish.

Measured plan height shows the proposed facility at approximately 151.1 feet in overall height from existing grade.

The project submittal package includes civil and architectural drawings, landscape screening plans, color and materials board, photo simulations, and wireless propagation maps and an alternative analysis. Technical reports include an acoustical noise study, radio frequency report, archaeological report and soils report. The archaeological and soils reports have been

reviewed and accepted. Acceptance letters are attached. The archaeological report confirmed an absence of archaeological resources. Noise and radio frequency reports confirm compliance with the General Plan noise thresholds and the FCC radio frequency thresholds.

DETAILED PROJECT DESCRIPTION:

The Detailed Project Site Plan and Project Description (Figure 3) describe the full scope of project improvements. The project plans area attached (Attachment 2). In general, the scope of the proposed project includes:

SCOPE OF WORK:

THIS IS AN APPLICATION FOR MODIFYING AN EXISTING TELECOMMUNICATIONS FACILITY. THE PROPOSED MODIFICATION IS REQUIRED TO PROVIDE BETTER COMMUNICATIONS SERVICE IN THE AREA.

THE PROPOSED MODIFICATION CONSISTS OF:

- THE REMOVAL OF AN EXISTING ±70'–6" TALL GUYED TOWER INCLUDING EXISTING COMCAST ANTENNAS AND ASSOCIATED CABLING, ±12'–6" LATTICE TOWER, METAL SHED, SATELLITE DISH, AND STEEL LATTICE STRUCTURE SUPPORT
- THE REMOVAL OF THE EXISTING CHAIN LINK FENCING AND REPLACEMENT OF A PROPOSED CHAIN LINK FENCE WITH 3 STRANDS OF BARBED WIRE AND DARK GREEN VINYL SLATS
- THE INSTALLATION OF A PROPOSED 150'–0" TALL MONOPINE
- THE INSTALLATION OF NINE (9) PANEL ANTENNAS, EIGHTEEN (18) RRUS, AND THREE (3) SURGE ARRESTORS MOUNTED ON THE PROPOSED 150'–0" TALL MONOPINE
- THE INSTALLATION OF EQUIPMENT RACKS MOUNTED INSIDE THE EXISTING BUILDING
- THE INSTALLATION OF ONE (1) GPS ANTENNA MOUNTED AT THE EXTERIOR OF THE EXISTING BUILDING
- THE INSTALLATION OF ONE (1) FIXED GENERATOR MOUNTED ON A CONCRETE PAD AND LOCATED INSIDE THE EXISTING BUILDING
- THE INSTALLATION OF A LIQUID PROPANE TANK MOUNTED ON A CONCRETE PAD AND LOCATED OUTSIDE, ADJACENT TO THE EXISTING BUILDING
- THE RE–PAINTING OF THE EXISTING BUILDING
- THE INSTALLATION OF ASSOCIATED UTILITIES AND COMMUNICATIONS WIRING AND ANCILLARY EQUIPMENT

The facility itself is designed to be camouflaged as a pine tree so that the improvements blend into the forest. Associated telecommunications equipment is proposed within an existing structure. Plans show the proposed antenna configuration.

The project includes minor site preparation for pad construction for both the propane tank and monopine foundations. All utilities are proposed underground to the structure, except for use of an existing cable bridge at the south and east side of the equipment building to the pole. The project includes minor trenching for the proposed underground utility lines and work within the interior of the existing equipment dwelling for placement of the generator and minor exterior modifications for GPS antenna attachment.

The project includes a color board with two shades of needles, pine bark brown, and is otherwise repainting the existing equipment building. The applicant proposes to repaint the building.

Plans proposed include replacement of the existing six-foot fence with a proposed six-foot chain link (with barbed wire). Plans include landscape screening of the proposed monopine with native species as shown in the project plans (landscaping screening) to provide additional screening to adjoining residences. No lighting is included in the project plans.

III. ENVIRONMENTAL REVIEW CHECKLIST

A. AESTHETICS AND VISUAL RESOURCES

Except as provided in Public Resources Code section 21099, would the project:

1.	*Have a substantial adverse effect on a scenic vista?*	☐	☐	☐	☒

Discussion: The project is located in a densely wooded area located in the northern portion of Santa Cruz County on the north side of Summit Drive, which extends northeast of Empire Grade Road. No mapped scenic vistas are mapped in this area. The project would not directly impact any public scenic vistas in the area.

Furthermore, the project is approximately 750 feet northeast of Empire Grade and 1.5 miles west of Highway 9, 6 miles northeast of Highway 1, 2.1 miles southwest of Highway 236, 8 miles west of Highway 17, 1.3 miles north of Pine Flat Road at Empire Grade Road; all these roads are designated Scenic roads. The project is closest to Empire Grade Road. As shown in project photo simulations (Attachment 3), the proposed project is not visible from public view from Empire Grade Road by location within an existing, mature forest. The proposed project is also not visible from the other mapped public roadways (FIGURE 4) given the significant distances from the roadways and/or intervening trees which block views. Thus, the project will have no impact on scenic vistas from any public road in the County.

FIGURE 4

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
2.	*Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*	☐	☐	☐	☒

Discussion: The project site is not located along a designated state scenic highway, or visible from a County-designated scenic road, public viewshed area, scenic corridor, or scenic resource area as noted in Item A.1. Therefore, no impact is anticipated.

3.	*Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?*	☐	☐	☐	☒

Discussion: No public views of the project are available. Thus, no impact would occur to public views.

Notwithstanding, the existing visual setting is comprised of an existing mature evergreen forest. The proposed facility is designed as a faux monopine to camouflage the wireless facility as a pine tree within the existing forested location as much as feasible. Project plans show the faux monopine with branching pattern similar to surrounding evergreen trees, including proposed landscaping and solid board fencing provided to reduce visual impacts from private views as much as feasible.

4.	*Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*	☐	☐	☒	☐

Discussion: No lighting is included in the project plans for operations or during construction. Thus, no impact would occur. However, if lighting is required for site maintenance, the project is conditioned to restrict lighting to manual control lighting and to require downcast shielded lights. This condition ensures that the project would not create a source of substantial light which would adversely affect day or nighttime views in the area.

B. AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to

use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

1.	*Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*	☐	☐	☐	☒

***Discussion*:** The project site does not contain any lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. In addition, the project does not contain Farmland of Local Importance. Therefore, no Prime Farmland, Unique Farmland, Farmland of Statewide or Farmland of Local Importance would be converted to a non-agricultural use. No impact would occur from project implementation.

2.	*Conflict with existing zoning for agricultural use, or a Williamson Act contract?*	☐	☐	☐	☒

***Discussion*:** The project site is zoned Rural Residential, which is not considered to be an agricultural zone. Additionally, the project site's land is not under a Williamson Act contract. Therefore, the project does not conflict with existing zoning for agricultural use, or a Williamson Act contract. No impact is anticipated.

3.	*Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?*	☐	☐	☐	☒

***Discussion*:** The project is not located near land designated as Timber Resource Lands under the County General Plan and Local Coastal Program, which are zoned Timber Production. The closest forest land is .32 mile(s) away from the project site Therefore, the project would

not affect the resource or access to harvest the resource in the future, and would not conflict with, or cause rezoning, of any forest land or timber land.

4.	*Result in the loss of forest land or conversion of forest land to non-forest use?*	☐	☐	☐	☒

***Discussion*:** No forest land occurs on the project site or in the immediate vicinity. Therefore, the project will not impact any forest land. See discussion under B-3 above. No impact is anticipated.

5.	*Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?*	☐	☐	☐	☒

***Discussion*:** The project site and surrounding area within a radius of 1.6 mile(s) do not contain any lands designated as Prime Farmland, Unique Farmland, Farmland of Statewide Importance or Farmland of Local Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. Therefore, no Prime Farmland, Unique Farmland, Farmland of Statewide, or Farmland of Local Importance would be converted to a non-agricultural use. In addition, the project site contains no forest land, and no forest land occurs within .32 mile(s) of the project site. Therefore, no impacts are anticipated.

C. AIR QUALITY

The significance criteria established by the Monterey Bay Air Resources District (MBARD)[1] has been relied upon to make the following determinations. Would the project:

1.	*Conflict with or obstruct implementation of the applicable air quality plan?*	☐	☐	☒	☐

***Discussion*:** The project would not conflict with or obstruct any long-range air quality plans of the MBARD. Project construction will result in temporary emissions from general construction activities. Because general construction activity related emissions (i.e., temporary sources) are accounted for in the emission inventories included in the air quality plans, impacts to air quality plan objectives are less than significant.

General estimated basin-wide construction-related emissions are included in the MBARD emission inventory (which, in part, form the basis for the air quality plans cited below) and

[1] Formerly known as the Monterey Bay Unified Air Pollution Control District (MBUAPCD).

are not expected to prevent long-term attainment or maintenance of the ozone and particulate matter standards within the North Central Coast Air Basin (NCCAB). Therefore, temporary construction impacts related to air quality plans for these pollutants from the project would be less than significant, and no mitigation would be required, since they are presently estimated and accounted for in the District's emission inventory, as described below. No stationary sources would be constructed that would be long-term permanent sources of emissions.

The project would result in new long-term operational emissions from vehicle trips (mobile emissions), the use of natural gas (energy source emissions), and consumer products, architectural coatings, and landscape maintenance equipment (area source emissions). Mobile source emissions constitute most operational emissions from this type of land use development project. In particular, monthly trips for facility maintenance are anticipated. However, emissions associated with buildout of this type of project is not expected to exceed any applicable MBARD thresholds. No stationary sources would be constructed that would be long-term permanent sources of emissions. Therefore, impacts to regional air quality as a result of long-term operation of the project would be less than significant.

Santa Cruz County is located within the NCCAB. The NCCAB does not meet state standards for ozone (reactive organic gases [ROGs] and nitrogen oxides [NOx]) and fine particulate matter (PM_{10}). Therefore, the regional pollutants of concern that would be emitted by the project are ozone precursors and PM_{10}.

The primary sources of ROG within the air basin are on- and off-road motor vehicles, petroleum production and marketing, solvent evaporation, and prescribed burning. The primary sources of NOx are on- and off-road motor vehicles, stationary source fuel combustion, and industrial processes. In 2010, daily emissions of ROGs were estimated at 63 tons per day. Of this, area-wide sources represented 49%, mobile sources represented 36%, and stationary sources represented 15%. Daily emissions of NOx were estimated at 54 tons per day with 69% from mobile sources, 22% from stationary sources, and 9% from area-wide sources. In addition, the region is "NOx sensitive," meaning that ozone formation due to local emissions is more limited by the availability of NOx as opposed to the availability of ROGs (MBUAPCD, 2013b).

PM_{10} is the other major pollutant of concern for the NCCAB. In the NCCAB, highest particulate levels and most frequent violations occur in the coastal corridor. In this area, fugitive dust from various geological and man-made sources combines to exceed the standard. The majority of NCCAB exceedances occur at coastal sites, where sea salt is often the main factor causing exceedance. In 2005 daily emissions of PM_{10} were estimated at 102 tons per day. Of this, entrained road dust represented 35% of all PM_{10} emission, windblown dust 20%,

agricultural tilling operations 15%, waste burning 17%, construction 4%, and mobile sources, industrial processes, and other sources made up 9% (MBUAPCD, 2008).

Given the modest amount of new traffic (one trip monthly anticipated) that would be generated by the project there is no indication that new emissions of ROGs or NOx would exceed MBARD thresholds for these pollutants; and therefore, there would not be a significant contribution to an existing air quality violation.

Project construction may result in a short term, localized decrease in air quality due to generation of PM_{10}. However, standard dust control best management practices (BMPs), such as periodic watering, would be implemented during construction to avoid significant air quality impacts from the generation of PM_{10}.

2.	*Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?*	☐	☐	☐	☒

***Discussion*:** The primary pollutants of concern for the NCCAB are ozone and PM_{10}, as those are the pollutants for which the district is in nonattainment. Project construction would have a limited and temporary potential to contribute to existing violations of California air quality standards for ozone and PM_{10} primarily through diesel engine exhaust and fugitive dust. The criteria for assessing cumulative impacts on localized air quality are the same as those for assessing individual project impacts. Projects that do not exceed MBARD's construction or operational thresholds and are consistent with the AQMP would not have cumulatively considerable impacts on regional air quality (MBARD, 2008). Because the project would not exceed MBARD's thresholds and is consistent with the AQMP, there would not be cumulative impacts on regional air quality.

3.	*Expose sensitive receptors to substantial pollutant concentrations?*	☐	☐	☒	☐

***Discussion*:** For CEQA purposes, a sensitive receptor is defined as any residence, including private homes, condominiums, apartments, and living quarters; education resources such as preschools and kindergarten through grade twelve (k-12) schools; daycare centers; and health care facilities such as hospitals or retirement and nursing homes (MBARD 2008).

The nearest sensitive receptor is a single-family residence located approximately 260 feet to the southeast of the proposed project. Other nearby sensitive receptors include a home approximately 292 feet to the north, a home approximately 260 feet to the southwest, a home approximately 289 feet to the south, and a home to the northwest approximately 267 feet away from the proposed project.

Construction Impacts

Construction projects which may cause or substantially contribute to the violation of other State or national AAQS or that could emit toxic air contaminants could result in temporary significant impacts. Projects which could generate 82 pounds per day or more of PM10 at the project site (e.g., quarries, truck stops) would result in substantial air emissions and have a potential impact on sensitive receptors. See Table 5-1 of the MBUAPCD CEQA Air Quality Guidelines.

TABLE 5-1

THRESHOLD OF SIGNIFICANCE
CONSTRUCTION IMPACTS
Pollutant: PM_{10}

Source	Threshold of Significance
Direct emissions	82 lb/day*

* District-approved dispersion modeling can be used to refute (or validate) this determination of significance if direct emissions would not cause an exceedance of State PM_{10} AAQS
Source: Monterey Bay Unified Air Pollution Control District 2000

Based on this threshold, Table 5-2 of the MBUAPCD CEQA Air Quality Guidelines identifies the level of construction activity that could result in significant temporary impacts if not mitigated.

TABLE 5-2

CONSTRUCTION ACTIVITY WITH POTENTIALLY SIGNIFICANT IMPACTS
Pollutant: PM_{10}

Activity	Potential Threshold*
Construction site with minimal earthmoving	8.1 acres per day
Construction site with earthmoving (grading, excavation)	2.2 acres per day

* Based on Midwest Research Institute, Improvement of Specific Emission Factors (1995). Assumes 21.75 working weekdays per month and daily watering of site.
Source: Monterey Bay Unified Air Pollution Control District 1996

Note: Construction projects below the screening level thresholds shown above are assumed to be below the 82 lb/day threshold of significance, while projects with activity levels higher than those above may have a significant impact on air quality. Additional mitigation and analysis of the project impact may be necessary for those construction activities.

The project site is approximately 2.2 acres in size and the construction area no greater than one half acre, an area vastly less than either threshold of significance identified in Table 5-2. Thus, construction activities associated with the project would not exceed either threshold of significance; thus, they are not considered a source of substantial pollutant concentrations. Thus, construction related impacts are considered less than significant.

Operational Impacts – Temporary Generator Emissions

Emissions from intermittent pollutant concentrations from periodic operation of a propane generator would result in the emission of carbon monoxide and carbon dioxide. CEQA Guidelines note that sources which directly emit 550 pounds or more per day of carbon monoxide (e.g., industrial operations) would result in substantial air emissions and have a significant impact on local air quality, including on nearby sensitive receptors. Based on the emissions threshold, the proposed periodic use of an emergency generator is not anticipated to result a substantial pollutant concentration from operational use in excess of the emissions threshold and therefore would be a less than significant impact.

4.	*Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?*	☐	☐	☒	☐

Discussion: Land uses typically producing objectionable odors include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed project does not include any uses that produce objectionable odors. Odor emissions from the proposed project would be limited to odors associated with vehicle and engine exhaust and idling from cars entering, parking, and exiting the facility. The project does not include any known sources of objectionable odors associated with the long-term operations phase.

During construction activities, only short-term, temporary odors from vehicle exhaust and construction equipment engines would occur. California ultralow sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight would be used in all diesel-powered equipment, which minimizes emissions of sulfurous gases (sulfur dioxide, hydrogen sulfide, carbon disulfide, and carbonyl sulfide). These are standardized construction vehicles and do not require mitigation. In addition, as the project site is in a coastal area that contains coastal breezes off of the Monterey Bay, construction-related odors would disperse and dissipate and would not cause substantial odors at the closest sensitive receptors (located approximately 260 feet to the southeast from the project site). Otherwise, construction-related odors would be short-term and would cease upon completion. Therefore, no objectionable odors are anticipated from construction activities associated with the project.

The project would not create objectionable odors affecting a substantial number of people; therefore, the project is not expected to result in significant impacts related to objectionable odors during construction or operation.

D. BIOLOGICAL RESOURCES

Would the project:

1.	*Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, or U.S. Fish and Wildlife Service?*	☐	☒	☐	☐

Discussion:

Habitat for Special Status Species does not occur on the project site. A query was conducted of the California Natural Diversity Database (CNDDB), maintained by the California Department of Fish and Wildlife, and while there is record of listed manzanita species in the vicinity of the project parcel, none are present on the subject parcel. No vegetation removal or habitat modification is proposed for this project. A site visit by the County Resource Planner for the

Bonny Doon area confirmed that the site is currently developed, and review of the proposed parcel disturbance area did not identify any biotic resources or sensitive habitat.

Construction activities have the potential to impact nesting birds protected by the Federal Migratory Bird Treaty Act. In order to avoid such impacts, the following mitigation measure shall be included as a condition of approval:

Bio-1: If Project-related work is scheduled during the nesting season (typically February 15 to August 30 for small bird species such as passerines; January 15 to September 15 for owls; and February 15 to September 15 for other raptors), a qualified biologist shall conduct two surveys for active nests of such birds within 14 days prior to the beginning of Project construction, with a final survey conducted within 48 hours prior to construction. Appropriate minimum survey radii surrounding the work area are typically the following: i) 250 feet for passerines; ii) 500 feet for small raptors such as accipiters; and iii) 1,000 feet for larger raptors such as buteos. Surveys shall be conducted at the appropriate times of day and during appropriate nesting times.

If the qualified biologist documents active nests within the project area or in nearby surrounding areas, a species appropriate buffer between the nest and active construction shall be established. The buffer shall be clearly marked and maintained until the young have fledged and are foraging independently. Prior to construction, the qualified biologist shall conduct baseline monitoring of the nest to characterize "normal" bird behavior and establish a buffer distance which allows the birds to exhibit normal behavior. The qualified biologist shall monitor the nesting birds daily during construction activities and increase the buffer if the birds show signs of unusual or distressed behavior (e.g. defensive flights and vocalizations, standing up from a brooding position, and/or flying away from the nest). If buffer establishment is not possible, the qualified biologist shall have the authority to cease all construction work in the area until the young have fledged, and the nest is no longer active.

2.	*Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, regulations (e.g., wetland, native grassland, special forests, intertidal zone, etc.) or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*	☐	☐	☐	☒

***Discussion*:**

There is no mapped or designated riparian habitat or other sensitive natural community on or adjacent to the project site. Therefore, no impacts would occur from project implementation.

3.	*Have a substantial adverse effect on state or federally protected wetlands (including,*	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

***Discussion*:** There are no mapped or designated federally protected wetlands on or adjacent to the project site. Therefore, no impacts would occur from project implementation.

4. *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*	☐	☐	☐	☒

***Discussion*:** The project does not involve any activities that would interfere with the movements or migrations of fish or wildlife or impede use of a known wildlife nursery site. Therefore, no impacts would occur from project implementation.

5. *Conflict with any local policies or ordinances protecting biological resources (such as the Sensitive Habitat Ordinance, Riparian and Wetland Protection Ordinance, and the Significant Tree Protection Ordinance)?*	☐	☐	☐	☒

***Discussion*:** The project would not conflict with any local policies or ordinances. Therefore, no impact would occur.

6. *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*	☐	☐	☐	☒

***Discussion*:** The project would not conflict with the provisions of any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, no impact would occur.

E. CULTURAL RESOURCES

Would the project:

1. *Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?*	☐	☐	☐	☒

***Discussion*:** The existing telecommunications equipment building and telecommunication transmissions structure(s) on the property is/are not designated as a historic resource on any

federal, state or local inventory. As a result, no impacts to historical resources would occur from project implementation.

2.	*Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?*	☐	☐	☐	☒

Discussion: According to the Archaeological Survey Report prepared by Steve Jankiewicz of EBI Consulting, dated January 4, 2022, there is no evidence of pre-historic cultural resources. The archaeological survey report is confidential. However, the archaeologic report acceptance letter is attached (Attachment 4). There is no evidence of pre-historic cultural resources. However, pursuant to section 16.40.040 of the SCCC, if archeological resources are uncovered during construction, the responsible persons shall immediately cease and desist from all further site excavation and comply with the notification procedures given in SCCC Chapter 16.40.040.

3.	*Disturb any human remains, including those interred outside of dedicated cemeteries?*	☐	☐	☒	☐

Discussion: Impacts are expected to be less than significant. However, pursuant to section 16.40.040 of the SCCC, and California Health and Safety Code sections 7050.5-7054, if at any time during site preparation, excavation, or other ground disturbance associated with this project, human remains are discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the Sheriff-Coroner and the Planning Director. If the coroner determines that the remains are not of recent origin, a full archaeological report shall be prepared, and representatives of local Native American Indian groups shall be contacted. If it is determined that the remains are Native American, the Native American Heritage Commission will be notified as required by law. The Commission will designate a Most Likely Descendant who will be authorized to provide recommendations for management of the Native American human remains. Pursuant to Public Resources Code section 5097, the descendants shall complete their inspection and make recommendations or preferences for treatment within 48 hours of being granted access to the site. Disturbance shall not resume until the significance of the resource is determined and appropriate mitigations to preserve the resource on the site are established.

F. ENERGY

Would the project:

1.	*Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?*	☐	☐	☒	☐

Discussion: The project, like all development, would be responsible for an incremental increase in the consumption of energy resources during site preparation and construction due to onsite construction equipment and materials processing during construction. All project construction equipment would be required to comply with the California Air Resources Board (CARB) emissions requirements for construction equipment, which includes measures to reduce fuel-consumption, such as imposing limits on idling and requiring older engines and equipment to be retired, replaced, or repowered. In addition, the project would comply with General Plan policy BE-4.2.2, which requires all new development to minimize site grading, thereby reducing unnecessary energy consumption. In particular, the project proposes site prep for wireless pad development and trenching for utilities, requiring minimal site grading and therefore minimizes energy consumption. As a result, impacts associated with the small temporary increase in consumption of fuel during construction are expected to be less than significant.

During operation of a wireless telecommunications facility electrical power is required for project implementation and propane during monthly generator testing and during emergencies. Therefore, the project will not result in wasteful, inefficient, or unnecessary consumption of energy resources.

2.	*Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?*	☐	☐	☒	☐

Discussion: AMBAG's 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) recommends policies that achieve statewide goals established by CARB, the California Transportation Plan 2040, and other transportation-related policies and state senate bills. The SCS element of the MTP targets transportation-related greenhouse gas (GHG) emissions in particular, which can also serve to address energy use by coordinating land use and transportation planning decisions to create a more energy efficient transportation system.

The Santa Cruz County Regional Transportation Commission (SCCRTC) prepares a County-specific regional transportation plan (RTP) in conformance with the latest AMBAG MTP/SCS. The 2040 RTP establishes targets to implement statewide policies at the local level, such as reducing vehicle miles traveled and improving speed consistency to reduce fuel consumption.

In 2013, Santa Cruz County adopted a Climate Action Strategy (CAS) focused on reducing the emission of greenhouse gases, which is dependent on increasing energy efficiency and the use of renewable energy. The strategy intends to reduce energy consumption and greenhouse gas emissions by implementing a number of measures such as reducing vehicle miles traveled

through County and regional long-range planning efforts, increasing energy efficiency in new and existing buildings and facilities, increasing local renewable energy generation, improving the Green Building Program by exceeding minimum state standards, reducing energy use for water supply through water conservation strategies, and providing infrastructure to support zero and low emission vehicles that reduce gasoline and diesel consumption, such as plug in electric and hybrid plug in vehicles.

In addition, the Santa Cruz County General Plan has historically placed a priority on "smart growth" by focusing growth in the urban areas through the creation and maintenance of an urban services line. The General plan BE-1.1 (Urban Growth + Rural Preservation) preserves a distinction between urban and rural areas of the County, encouraging new development within urban areas preserving rural areas. The Access and Mobility Element of the General Plan further establishes a more efficient transportation system through goals that promote the wise use of energy resources, reducing vehicle miles traveled, and transit and active transportation options.

Energy efficiency is a major priority throughout the County's General Plan. Measure C was adopted by the voters of Santa Cruz County in 1990 and explicitly established energy conservation as one of the County's objectives. The initiative is implemented by Objective AM-1.1 (Vehicle Miles Traveled + Greenhouse Gas Emissions), to respond to climate change by reducing greenhouse gases in compliance with regional and state goals by reducing per capita VMT and encouraging clean air vehicle usage. Goal 5 and Policy H-5.2(Energy Conservation), implements the County's Climate Action and Adaptation Plan, including strategies to require the electrification of new housing units.

The project will be consistent with the AMBAG 2040 MTP/SCS and the SCCRTC 2040 RTP. The project would also be required to comply with the Santa Cruz County General Plan and any implemented policies and programs established through the CAS. In addition, the project design would be required to comply with CALGreen, the state of California's green building code, to meet all mandatory energy efficiency standards. Therefore, the project would not conflict with or obstruct any state or local plan for renewable energy or energy efficiency.

G. GEOLOGY AND SOILS

Would the project:

1. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
A. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on	☐	☐	☒	☐

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				
B.	*Strong seismic ground shaking?*	☐	☐	☒	☐
C.	*Seismic-related ground failure, including liquefaction?*	☐	☐	☒	☐
D.	*Landslides?*	☐	☐	☐	☒

***Discussion (A through D)*:** All of Santa Cruz County is subject to some hazard from earthquakes, and there are several faults within the County. While the San Andreas fault is larger and considered more active, each fault is capable of generating moderate to severe ground shaking from a major earthquake. Consequently, large earthquakes can be expected in the future. The October 17, 1989, Loma Prieta earthquake (magnitude 7.1) was the second largest earthquake in central California history.

The project site is located outside of the limits of the State Alquist-Priolo Special Studies Zone or any County-mapped fault zone (County of Santa Cruz GIS Mapping, California Division of Mines and Geology, 2001). The project site is located approximately 7.5 mile(s) southwest of the San Andreas fault zone, and approximately 2.5 mile(s) southwest of the Zayante fault zone. A geotechnical investigation for the project was performed by Dees and Associates, Inc., dated April 29, 2020. The report concluded that primary concerns for the project include "providing support for the pole foundation, designing for some slope retreat where the pit excavation was made, and designing for strong seismic shaking. The proposed tower should be supported on a drilled concrete pier foundation embedded into the very hard sands located below 8.5 feet. Because of a steep slope located a few feet away and a seven feet deep pit excavated into the hillside about 20 feet from the proposed pole location, the upper 6 feet of soil should be neglected in foundation design. The proposed structure will most likely experience strong seismic shaking during the design lifetime. The foundation and structure should be designed utilizing current building code seismic design standards." Pursuant to the Grading Ordnance, these requirements are required as conditions of approval and incorporated in the project design as part of the acceptance of the geotechnical report and thus are not required to be mitigation measures.

Therefore, impacts associated with geologic hazards will be less than significant.

Implementation of the additional requirements included in the review letter prepared by Environmental Planning staff (Attachment 5) will serve to further reduce the potential risk of seismic shaking. Therefore, impacts will be less than significant.

2. *Result in substantial soil erosion or the loss of topsoil?*	☐	☐	☒	☐

***Discussion*:** Some potential for erosion exists during the construction phase of the project, however, this potential is minimal because the project is located in the same location as the existing facility pad and standard erosion controls are a required condition of the project. Prior to approval of a grading or building permit, the project must have an approved stormwater pollution control plan (SCCC Section 7.79.100), which would specify detailed erosion and sedimentation control measures. The plan would include provisions for disturbed areas to be planted with ground cover and to be maintained to minimize surface erosion. Impacts from soil erosion or loss of topsoil would be considered less than significant.

3. *Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?*	☐	☐	☒	☐

***Discussion*:** The geotechnical report cited above (see discussion under G-1) did not identify a significant potential for damage caused a geologic unit or location on soil that is unstable.

4. *Be located on expansive soil, as defined in section 1803.5.3 of the California Building Code (2016), creating substantial direct or indirect risks to life or property?*	☐	☐	☐	☒

***Discussion*:**
The geotechnical report for the project did not identify any elevated direct or indirect risks associated with expansive soils. Therefore, no impact is anticipated.

5. *Have soils incapable of adequately supporting the use of septic tanks, leach fields, or alternative waste water disposal systems where sewers are not available for the disposal of waste water?*	☐	☐	☐	☒

***Discussion*:** No septic systems are proposed. Therefore, there will be no impact.

6. *Directly or indirectly destroy a unique paleontological resource or site of unique geologic feature?*	☐	☐	☐	☒

Discussion: No unique paleontological resources or sites or unique geologic features are known to occur in the vicinity of the project. A query was conducted of the mapping of identified geologic/paleontological resources maintained by the County of Santa Cruz Planning Department, and there are no records of paleontological or geological resources in the vicinity of the project parcel. No direct or indirect impacts are anticipated.

H. GREENHOUSE GAS EMISSIONS

Would the project:

1. *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*	☐	☐	☒	☐

Discussion: The project, like all development, would be responsible for an incremental increase in greenhouse gas (GHG) emissions by usage of fossil fuels during the site grading and construction. In 2013, Santa Cruz County adopted a Climate Action Strategy (CAS) intended to establish specific emission reduction goals and necessary actions to reduce greenhouse gas levels to pre-1990 levels as required under Assembly Bill (AB) 32 legislation. The strategy intends to reduce GHG emissions and energy consumption by implementing measures such as reducing vehicle miles traveled through the County and regional long-range planning efforts and increasing energy efficiency in new and existing buildings and facilities. Implementing the CAS, the MBCP was formed in 2017 to provide carbon-free electricity. All PG&E customers in unincorporated Santa Cruz County were automatically enrolled in the MBCP in 2018. All project construction equipment would be required to comply with the CARB emissions requirements for construction equipment. Further, all new buildings are required to meet the State's CalGreen building code. As a result, impacts associated with the temporary increase in GHG emissions are expected to be less than significant.

2. *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*	☐	☐	☒	☐

Discussion: See the discussion under H-1 above. No significant impacts are anticipated.

I. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

1. *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*	☐	☐	☒	☐

Discussion: The project would not create a significant hazard to the public or the environment. No routine transport or disposal of hazardous materials is proposed. Fuel may be used at the project site for temporary construction related work and for periodic fueling

of proposed propane tank for emergency generator use. Both of these types of fueling are commonly associated with development in the rural area for emergency generator use during power outages, and property maintenance equipment needs. Impacts are expected to be less than significant.

2. *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*	☐	☐	☒	☐

Discussion: The project design includes a faux monopine with tree bark and leaves. A colors and materials board, and branch materials data sheet (including email from the applicant) are attached as Attachment 6. The materials for the bark and leaves are comprised of polyvinyl chloride (PVC), a ubiquitous type of plastic that can be designed in a rigid or a soft material.

Polyvinyl chloride is known as a durable material, resistant to moisture and abrasion and commonly used for cladding, windows, roofing, fencing, decking, wallcoverings, and flooring. Vinyl is also known to be noncorrosive and is commonly used for building construction materials and packaging products including pipes, siding and windows, wiring and cables. PVC is also commonly used for housing products and packaging, including clear plastic storage containers found at the grocery store deli, shrink-wrap, tamper resistant over the counter medication containers, bank cards, inflatable products, signage, etc.

PVC is typically used for wireless communication facility socks, needles, and bark due to its durability, resistance to environmental factors such as moisture and temperature variations, and its ability to be easily molded into various shapes required for the equipment.

PVC is known to degrade very slowly, between fifty to hundreds to thousands of years, unlike plastic bags, which are made of a different type of plastic, polyethylene, and decay into microplastics in up to 20 years.

The applicant provided a study of polyvinyl chloride completed for a Verizon wireless facility (Attachment 6) at Lake Tahoe completed in 2022. The study evaluated whether plastic needles, which are "macroplastics" (i.e., large pieces of plastic) and can shed/fall from faux tree tower structures over time, could degrade to smaller pieces over time (i.e., become "microplastics") and discharge to Lake Tahoe and impact water quality, fish, and wildlife.

Microplastics are tiny pieces of plastic debris, typically less than five millimeters in size, that originate from the breakdown of larger plastic items or are intentionally manufactured at a small size. The process of breaking down PVC into microplastics is influenced by factors such as exposure to sunlight, physical abrasion (breaking into smaller pieces), and environmental conditions.

Although the study is not specific to the 186 Summit Drive, in terms of the potential for PVC microplastics, the Tahoe Study concluded:

- The type of material used for monopine needles (PVC) is not a predominant source of microplastics found in water bodies.
- There is no evidence that monopine needles used on cell towers generate microplastics or pose a significant risk to water quality, fish, or wildlife.

As a result of information available regarding the types of microplastics in the attached study and elsewhere on the internet, the limited release of WCF needles into the environment would not be considered a source of hazardous materials as PVC is not listed as a hazardous material. Furthermore, the proposed project is not anticipated to result in a significant source of microplastics due to the PVC material proposed. Thus, the proposed project is not anticipated to result in significant impacts to the public or the environment, including water quality, fish, or wildlife via needles breaking free of the facility structure or result in the release of hazardous materials.

3.	*Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*	☐	☐	☐	☒

Discussion: There are no existing or proposed schools within one-quarter mile of the project site. No impacts are anticipated.

4.	*Be located on a site which is included on a list of hazardous materials sites compiled pursuant* to *Government Code section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*	☐	☐	☐	☒

Discussion: The project site is not included on the December 3, 2018, list of hazardous sites in Santa Cruz County compiled pursuant to Government Code section 65962.5. In addition, the State Water Resources Control Board geotracker database (http://geotracker.waterboards.ca.gov/) does not include this site as a hazardous site. No impacts are anticipated from project implementation.

5.	*For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or*	☐	☐	☐	☒

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

excessive noise for people residing or working in the project area?

Discussion: The project is not located within two miles of a public airport or public use airport. No impact is anticipated.

6. *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?* ☐ ☐ ☐ ☒

Discussion: The project would not conflict with implementation of the County of Santa Cruz Local Hazard Mitigation Plan 2015-2020 (County of Santa Cruz, 2020). Therefore, no impacts to an adopted emergency response plan or evacuation plan would occur from project implementation.

7. *Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?* ☐ ☐ ☒ ☐

Discussion: See discussion under Wildfire Question T-2. Impacts would be less than significant.

J. HYDROLOGY, WATER SUPPLY, AND WATER QUALITY

Would the project:

1. *Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?* ☐ ☐ ☒ ☐

Discussion: The project would not discharge runoff either directly or indirectly into a public or private water supply. However, runoff from this project may contain small amounts of chemicals and other household contaminants, such as pathogens, pesticides, trash, and nutrients. No commercial or industrial activities are proposed that would contribute contaminants. Potential siltation from the project would be addressed through implementation of erosion control BMPs. No water quality standards or waste discharge requirements would be violated and surface or ground water quality would not otherwise be substantially degraded. Impacts would be less than significant.

2. *Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?* ☐ ☐ ☒ ☐

Discussion:

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Although the project would be located in a mapped groundwater recharge area and the Mid San Lorenzo water supply water shed, the proposal would be consistent with General Plan policies 4.5.1 (Land Division and Density Requirements in Primary Groundwater Recharge Areas), 4.5.3 (Uses in Primary Groundwater Recharge Areas), and 4.2.12 (Drainage Design). The project would also be consistent with section 7.79.110 of the SCCC (New Development and Redevelopment). The code states, "All responsible parties shall mitigate impacts due to development and implement Best Management Practices (BMPs) per the County Design Criteria adopted by the County of Santa Cruz and Chapters 16.20 and 16.22 of the SCCC to control the volume, runoff rate, and potential pollutant load of stormwater runoff from new development and redevelopment projects to minimize the generation, transport, and discharge of pollutants, prevent runoff in excess of predevelopment conditions, and maintain predevelopment groundwater recharge." No adverse impact would occur to groundwater recharge with project implementation such that the project may impede sustainable groundwater management of the basin.

See Question J-5 for further discussion of sustainable groundwater management.

3.	*Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:*	☐	☐	☒	☐
	A. result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
	B. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☒	☐
	C. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or;	☐	☐	☒	☐
	D. impede or redirect flood flows?	☐	☐	☒	☐

***Discussion*:**

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

The project includes the addition of 50 square feet of new impervious surface area and plans show no changes to the existing drainage pattern. The project will not alter the course of any stream or river. The County Department of Public Works Stormwater Management Section staff has reviewed and approved the proposed drainage plan. The project will not substantially alter the existing drainage pattern of the site in a manner that would result in erosion or siltation, or an increase in runoff from the site.

4. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒

***Discussion*:**

According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, no portion of the project site lies within a flood hazard zone, and there would be no impact.

5. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

***Discussion*:**

There is no water well on site. The only water use proposed is temporary irrigation required during establishment of proposed landscaping.

The proposed project is not located within the Santa Cruz Mid-County or Corralitos – Pajaro Valley areas or Santa Margarita Basin and thus not subject to these management plans.

Notwithstanding, the project complies with SCCC Chapters 13.13 (Water Conservation – Water Efficient Landscaping), 7.69 (Water Conservation) and 7.70 (Water Wells), as well as Chapter 7.71 (Water Systems) section 7.71.130 (Water use measurement and reporting), to ensure that it will not conflict with or obstruct implementation of current water quality control plans or sustainable groundwater management plans.

In particular, the project does not require water for operational use, with exception of temporary irrigation required for establishment of proposed landscape screening trees over a three-year period. As noted on the project plans, the tree planting plan is proposed to comply with the County of Santa Cruz Design Criteria (Santa Cruz 2021- Figure 2). The project is also exempt from the water conservation requirements of SCCC 13.13 because landscape areas are proposed to include temporary irrigation for tree establishment not to exceed two to five years. Furthermore, the project does not include a water system or water well requiring water use measurement and reporting.

Lastly, a maximum of 50 square feet of impervious surface area is proposed for the foundation of the wireless facility. The project also includes removal of all non-essential structures

throughout the site as well. It is anticipated that new impervious surface area will be offset by removal of other existing improvements. In addition, the project does not include alteration of existing drainage patterns or increase the predevelopment run off rate associated with existing development. As a result, the proposed design would maintain whatever, if any, existing groundwater recharge that occurs on the site presently, as well maintain compliance with the existing pre-development run off rate, precluding discharge off site.

As a result of the proposed location or project design, the project will not conflict with water a quality control plan or sustainable groundwater management.

K. LAND USE AND PLANNING

Would the project:

1.	*Physically divide an established community?*	☐	☐	☐	☒

Discussion: The project does not include any element that would physically divide an established community. No impact would occur.

2.	*Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?*	☐	☐	☐	☒

Discussion: The project would not cause a significant environmental impact due to a conflict with any land use plan, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated.

L. MINERAL RESOURCES

Would the project:

1.	*Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*	☐	☐	☐	☒

Discussion: The site does not contain any known mineral resources that would be of value to the region and the residents of the state. Therefore, no impact is anticipated from project implementation.

2.	*Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*	☐	☐	☐	☒

Discussion: The project site is zoned Rural Residential, which is not considered to be an Extractive Use Zone (M-3) nor does it have a land use designation with a Quarry Designation

Overlay (Q) (County of Santa Cruz 1994). Therefore, no potentially significant loss of availability of a known mineral resource of locally important mineral resource recovery (extraction) site delineated on a local general plan, specific plan or other land use plan would occur as a result of this project.

M. NOISE

Would the project result in:

1.	*Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*	☐	☐	☒	☐

***Discussion*:**

County of Santa Cruz General Plan

Policy 9.2.6 of the Santa Cruz County General Plan Noise Element specifies "mitigation and/or best management practices to reduce construction noise as a condition of project approvals, particularly if noise levels would exceed 75 dB at neighboring sensitive land uses or if construction would occur for more than 7 days".

The General Plan also contains the following tables which specify the acceptable through unacceptable ranges of noise exposure by land use (Table 9-2) and the maximum allowable noise exposure, measured at the property line of the receiving land use) for stationary noise sources in their operational or permanent locations (Table 9-3).

Table 9-2
Acceptable through Unacceptable Ranges of Noise Exposure by Land Use*
**Outdoor noise exposure measured at the property line of receiving land use*

	LAND USE	COMMUNITY NOISE EXPOSURE DNL or CNEL, dB					
		55	60	65	70	75	80
A	Residential/Lodging – Single Family, Duplex, Mobile Home, Multi Family,						
B	Schools, Libraries, Religious Institutions, Meeting Halls, Hospitals						
C	Outdoor Sports Arena or Facility, Playgrounds, Neighborhood Parks						
D	Office Buildings, Business Commercial and Professional						
E	Industrial, Manufacturing, Utilities, Agriculture						

NORMALLY ACCEPTABLE:
Specific land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements, and can meet the indoor noise standards.

CONDITIONALLY ACCEPTABLE:
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design to meet interior and exterior noise standards, where applicable.

NORMALLY UNACCEPTABLE:
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design to meet interior and exterior noise standards, where applicable.

CLEARLY UNACCEPTABLE: New construction or development should generally not be undertaken.

Based on Draft General Plan Guidelines published by the California State Office of Planning and Research, 2014.

Table 9-3: Maximum Allowable Noise Exposure for Stationary Noise Sources[1]

	Daytime[5] (7:00 am to 10:00 pm)	Nighttime[2, 5] (10:00 pm to 7:00 am)
Hourly Leq average hourly noise level, dB[3]	50	45
Maximum Level, dB[3]	70	65
Maximum Level, dB – Impulsive Noise[4]	65	60

Notes:
1 As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied to the receptor side of noise barriers or other property line noise mitigation measures.
2 Applies only where the receiving land use operates or is occupied during nighttime hours
3 Sound level measurements shall be made with "slow" meter response.
4 Sound level measurements shall be made with "fast" meter response
5 Allowable levels shall be raised to the ambient noise levels where the ambient levels exceed the allowable levels. Allowable levels shall be reduced to 5 dB if the ambient hourly Leq is at least 10 dB lower than the allowable level.
Source: County of Santa Cruz 1994

Santa Cruz County Code

Pursuant to the General Plan Noise Element, the Santa Cruz County Code Chapter 13.15 regulates noise generation and noise exposures by applying standards through land use

planning and permitting, incorporating mitigation into project design conditions of approval to prevent unhealthful conditions, and enforcement to address violation of permit conditions.

Construction-related noise is exempted under SCCC 13.15, provided that said "activities take place between the hours of 8:00 a.m. and 5:00 p.m. on weekdays, unless the Building Official has in advance authorized said activities to start at 7:00 a.m. and/or continue no later than 7:00 p.m. Such activities shall not take place on Saturdays unless the Building Official has in advance authorized said activities, and provided said activities take place between 9:00 a.m. and 5:00 p.m. and no more than three Saturdays per month. Such activities shall not take place on Sunday or a federal holiday unless the Building Official has in advance authorized such work on a Sunday or federal holiday, or during earlier morning or later evening hours of a weekday or Saturday."

Potential Temporary Noise Impacts

The proposed project would result in noise impacts during construction of the facility that are a source of potential temporary noise impacts. Pursuant to the Noise Ordinance, construction related noise is exempt pursuant to required standard hours of construction operation and therefore temporary construction noise is considered a less than significant impact.

Potential Permanent Impacts

The project includes an emergency generator for backup power that is a permanent source of noise. A noise study (Attachment 7), prepared by Hammett and Edison, Inc., dated February 21, 2023, was submitted to evaluate the noise levels associated with the proposed back up power generator (Model SG035 with Level 2 Acoustic Enclosure), located inside the west wing of the existing concrete building, relative to the General Plan permissible noise thresholds. The proposed generator is proposed to be operated during the daytime for testing and maintenance and operated only at night during emergency events. The project meets the County General Plan noise standards. Thus, the project will result in less than significant impacts. An excerpt of the study results is provided below:

Study Results

The antennas are passive, generating no noise, and it is assumed for the purpose of this study that the radios are convectively cooled, with no installed fans. Generac reports that the Model SG035 has a maximum noise level of 63 dBA at a reference distance of 23 feet. The roofed, concrete-block building is conservatively assumed to provide at least 10 dBA of noise attenuation.

At the nearest edge of the subject property, 80 feet from the generator, the rated noise level corresponds to 42.1 dBA (22.3 dBA CNEL for its periodic testing, and 48.8 dBA CNEL for full-time operation during an emergency); when added to the measured ambient levels, the maximum noise level is 43.2 dBA daytime, 42.9 dBA at night, and 49.1 dBA CNEL.

At the property line of the nearest receiving property, 130 feet away, the rated noise level corresponds to 37.9 dBA; adding these to the measured ambient levels gives total noise equal to 40.3 dBA daytime, 39.7 dBA at night, 46.5 dBA CNEL, and 46.2 dBA L_{dn}.

These levels meet all the County's limits, described in the Prevailing Standard section, as follows:

A) The 43.2 dBA total noise daytime level at the subject property line is less than the County daytime limit of 75 dBA; the 42.9 dBA total noise level at night is less than the County nighttime limit of 60 dBA.

B) The 46.5 dBA CNEL total noise at the nearest receiving property line is less than the County limit of 60 dBA CNEL.

C) Because the 36.5 dBA daytime average ambient is more than 10 dBA below the 50 dBA daytime limit, a 5 dBA penalty is applied, putting the daytime limit at 45 dBA at the nearest receiving property line; the 43.2 dBA total daytime noise meets the limit. The 35.1 dBA nighttime average ambient is not more than 10 dBA below the 45 dBA nighttime limit, so that limit is not adjusted; the 42.9 dBA total nighttime noise meets the limit.

D) The 46.2 dBA L_{dn} total noise at the nearest receiving property line is an increase of 4.5 dBA over the ambient 41.7 dBA L_{dn}, meeting the 5 dBA increase allowed by the County when the total noise is less than 60 dBA L_{dn}.

E) AT&T proposes to operate the generator only during power outages and for testing and maintenance purposes.

2. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐

***Discussion*:** The use of construction and grading equipment would potentially generate periodic vibration in the project area. This impact would be temporary and periodic and is not expected to cause excessive noise; therefore, impacts are not expected to be significant.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3. *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*	☐	☐	☐	☒

Discussion: The project is not in the vicinity of a private airstrip or within two miles of a public airport. The project is not located within the vicinity of an airport land use plan. Therefore, the project would not expose people residing or working in the project area to excessive noise.

N. POPULATION AND HOUSING

Would the project:

1. *Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*	☐	☐	☒	☐

Discussion:

The project is designed at the density and intensity of development allowed by the General Plan and zoning designations for the parcel. Additionally, the project does not involve extensions of utilities (e.g., water, sewer, or new road systems) into areas previously not served. Consequently, it is not expected to have a substantial growth-inducing effect. Impacts would be less than significant.

2. *Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*	☐	☐	☐	☒

Discussion: The project would not displace any existing housing. No impact would occur.

O. PUBLIC SERVICES

Would the project:

1. *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:*

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. *Fire protection?*	☐	☐	☒	☐
b. *Police protection?*	☐	☐	☒	☐
c. *Schools?*	☐	☐	☐	☒
d. *Parks?*	☐	☐	☐	☒
e. *Other public facilities; including the maintenance of roads?*	☐	☐	☒	☐

***Discussion (a through e)*:** The project provides improved emergency communications to existing areas of development, potentially improving emergency response times for fire and police protection. The proposed project would not contribute to the need for additional public services as only a telecommunication facility is proposed. Moreover, the project meets all of the standards and requirements identified by the local fire agency or California Department of Forestry, as applicable. Impacts would be considered less than significant.

P. RECREATION

Would the project:

1. *Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*	☐	☐	☐	☒

***Discussion*:** No housing is proposed. Thus, the project would not increase the use of existing neighborhood and regional parks or other recreational facilities. No impact is anticipated by this telecommunications facility.

2. *Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*	☐	☐	☐	☒

***Discussion*:** The project does not propose the expansion or require the construction of additional recreational facilities. No impact would occur.

Q. TRANSPORTATION

Would the project:

1. *Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*	☐	☐	☒	☐

***Discussion*:**

Senate Bill (SB) 743, signed by Governor Jerry Brown in 2013, changed the way transportation impacts are identified under CEQA. Specifically, the legislation directed the State of California's Office of Planning and Research (OPR) to look at different metrics for identifying transportation impacts. OPR issued its "Technical Advisory on Evaluating Transportation Impacts in CEQA" (December 2018) to assist practitioners in implementing the CEQA Guidelines revisions to use vehicle miles traveled (VMT) as the preferred metric for assessing passenger vehicle related impacts. The CEQA Guidelines were also updated in December 2018, such that vehicle level of service (LOS) will no longer be used as a determinant of significant environmental impacts, and an analysis of Vehicle Miles Traveled (VMT) is required as of July 2020. A discussion of consistency with the Santa Cruz County General Plan LOS policy is provide below for informational purposes only.

Operational traffic

The project would, at most, create a small incremental increase in vehicular traffic on nearby roads and intersections relative to the existing wireless facility use on site. Facility maintenance and generator testing is proposed to occur once monthly. The existing baseline traffic or small increase would not cause the LOS at any nearby intersection to drop below LOS D, consistent with General Plan Policy 6.2.1. Therefore, impacts would be less than significant.

Construction Traffic

The project would result in a minor increase in construction-related traffic in and near the project area. Construction vehicles entering or exiting the project area could cause temporary delays or stoppage of through traffic on Summit Drive and within the vicinity of the general project area, which could adversely affect traffic circulation and safety, however, the increase in vehicles on the roadway would be relatively small, dispersed throughout the day, and short term. In addition, the existing loop road allows access to all residents should the section in front of the property be temporarily blocked. Thus, construction related traffic and traffic delays would not be a significant impact. Notwithstanding, the project is conditioned to require construction related traffic signage for road closure and/or traffic control during construction.

Once project construction activities are complete, the number of trips to and from the project area would be similar to previously approved conditions (once monthly for generator testing and maintenance), as project implementation would require similar maintenance trips to and from the area as are currently required. Impacts from both operational traffic and construction traffic would be less than significant.

2. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)(1) (Vehicle Miles Traveled)?	☐	☐	☐	☒

Discussion: In response to the passage of Senate Bill 743 in 2013 and other climate change strategies, OPR amended the CEQA Guidelines to replace LOS with VMT as the measurement for transportation impacts. The "Technical Advisory on Evaluating Transportation Impacts in CEQA," prepared by OPR (2018) provides recommended thresholds and methodologies for assessing impacts of new developments on VMT. There are also a number of screening criteria recommended by OPR that can be used to determine whether a project will have a less-than-significant impact. The screening criteria include projects that generate less than 110 net new trips, map-based screening, projects within a ½ mile of high-quality transit, affordable housing projects, and local serving retail. Since Santa Cruz County has a Regional Transportation Planning Authority and generally conducts transportation planning activities countywide, the county inclusive of the cities is considered a region.

In June of 2020, the County of Santa Cruz adopted a threshold of 15% below the existing countywide average per capita VMT levels for residential projects, 15% below the existing countywide average per employee VMT for office and other employee-based projects, no net increase in the countywide average VMT for retail projects, and no net increase in VMT for other projects. Based on the countywide travel demand model the current countywide average per capita VMT for residential uses is 10.2 miles. The current countywide per employee average VMT for the service sector (including office land uses) is 8.9 miles, for the agricultural sector is 15.4, for the industrial sector is 13.9, and for the public sector is 8.2. Therefore, the current VMT threshold for land use projects is 8.7 miles per capita for residential projects. For employee-based land uses the current thresholds are: 7.6 miles per employee for office and services projects, 13.1 miles per employee for agricultural projects, 11.8 miles per employee for industrial projects, and 7 miles per employee for public sector land use projects. The threshold for retail projects and all other land uses is no net increase in VMT. For mixed-use projects, each land use is evaluated separately unless they are determined to be insignificant to the total VMT.

The project consists of replacement of existing wireless communication equipment originally authorized at the subject property and would not cause any increase in vehicle trips above baseline and therefore would not increase VMT. No impact from project implementation would occur.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒

***Discussion*:** The project consists of replacement of an existing approved wireless communication facility. No increase in hazards would occur from project design or from incompatible uses. No impact would occur from project implementation.

4. Result in inadequate emergency access?	☐	☐	☒	☐

***Discussion*:** The project's road access meets County standards and has been approved by the local fire agency or California Department of Forestry, as appropriate. Therefore, this impact will be less than significant.

R. TRIBAL CULTURAL RESOURCES

1. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:*

A. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources Code section 5020.1(k), or	☐	☐	☐	☒
B. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

***Discussion*:** The project proposes to replace an existing wireless facility in the same location and remove multiple other old facility improvements (masts, satellite dish, etc.). Section 21080.3.1(b) of the California Public Resources Code (AB 52) requires a lead agency formally notify a California Native American tribe that is traditionally and culturally affiliated within the geographic area of the discretionary project when formally requested. As of this writing, no California Native American tribes traditionally and culturally affiliated with the Santa

Cruz County region have formally requested a consultation with the County of Santa Cruz (as Lead Agency under CEQA) regarding Tribal Cultural Resources. However, no Tribal Cultural Resources are known to occur in or near the project area. Additionally, pursuant to section 16.40.040 of the SCCC, if any Native American cultural sites are uncovered during construction, the responsible persons shall immediately cease and desist from all further site excavation and comply with the notification procedures given in SCCC Chapter 16.40.040. Therefore, no impact to the significance of a Tribal Cultural Resource is anticipated from project implementation.

S. UTILITIES AND SERVICE SYSTEMS

Would the project:

1.	*Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*	☐	☐	☒	☐

***Discussion*:**

Water

The proposed replacement wireless communication facility project would not require water treatment. No impacts are expected to occur.

Wastewater

The proposed wireless communication facility project would not require wastewater collection/treatment. No impacts are expected to occur.

Stormwater

The proposed project would not generate increased runoff; therefore, it would not result in the need for new or expanded drainage facilities. In particular, the project includes 50 square feet of new impervious surface area and removal of an existing small shed, satellite dish, and other wireless ground equipment. The proposed project was reviewed by the Public Works Drainage Division; it was determined that the proposed project would not alter existing drainage patterns or result in an increase in the predevelopment run off rate. Thus, no impact would occur.

Electric Power

Pacific Gas and Electric Company (PG&E) provides power to existing and new developments in the Santa Cruz County area. As of 2018, residents and businesses in the County were

automatically enrolled in MBCP's community choice energy program, which provides locally controlled, carbon-free electricity delivered on PGE's existing lines.

The proposed site is already served by electric power, but additional improvements are necessary to serve the site. However, no substantial environmental impacts will result from the additional improvements; impacts will be less than significant.

Natural Gas

The proposed site will be served by a propane tank, and no improvements related to natural gas service will be required. No impacts are anticipated.

Telecommunications

PVC

The project involves the replacement of an existing telecommunications facility in the same location as previously authorized, including trenching for underground electricity. The project proposed wireless services including AT&T, as well as FirstNet emergency service communications. The proposed WCF Bark, antenna socks, and needles are proposed as PVC materials and provide an incremental increase in the overall plastic in the environment. Notwithstanding, PVC is not listed as a hazardous material by the Environmental Protection Agency. Thus, the proposed project is anticipated to result in less than significant impacts.

Radio Frequency Emissions

Section 47 USC 332(c)(7)(B)(iv) of the Telecommunications Act of 1996 forbids jurisdictions from regulating the placement, construction, or modification of Wireless Communications Facilities based on the environmental effects of radio frequency (RF) emissions if these emissions comply with Federal Communication Commission (FCC) standards.

The attached RF report (Attachment 8), prepared by Hammett and Edison, dated July 6, 2021, confirmed compliance with the FCC wireless standards. Maximum RF emissions at the ground will be 4.2 percent of the applicable public exposure radio frequency exposure limit established by the (FCC). The maximum calculated level at any nearby building is 3.8 percent of the public exposure limit, both significantly less than the emissions threshold. The report notes that due to the antenna mounting locations, the proposed antennas would not be accessible to the general public, so no mitigation measures are necessary to comply with the FCC public exposure guidelines. As required by the wireless ordinance, the project is conditioned to provide post-installation RF emissions testing prior to unattended operations of the facility to demonstrate actual compliance with the FCC OET Bulletin 65 RF emissions safety rules for general population/uncontrolled RF exposure in all sectors. Furthermore, statutory requirements for post construction compliance with FCC standards are conditions of approval and not required mitigation measures. The proposed project is consistent with

the FCC regulations as proposed and conditioned and would not result radio frequency impacts.

2.	*Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?*	☐	☐	☐	☒

***Discussion*:**

The project would only use small amounts of water during construction for dust control and concrete work. No water use would be required during the operational phase of the project. No impacts are expected to occur from project implementation.

3.	*Result in determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*	☐	☐	☐	☒

***Discussion*:** No wastewater would be connected to the municipal sewer collection system during construction of the project. No wastewater would be generated during the operational phase of the project. Therefore, no impacts would occur from project implementation.

4.	*Generate solid waste more than state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?*	☐	☐	☒	☐

***Discussion*:** The project would not generate solid waste during the operational phase of the project. However, construction debris would be generated during demolition and construction, much of which would be recycled. The waste generated would not exceed local or state standards, or require additional landfills or recycling centers; therefore, impacts would be less than significant.

5.	*Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*	☐	☐	☐	☒

***Discussion*:** The project would comply with all federal, state, and local statutes and regulations related to solid waste disposal. No impact would occur.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

T. WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

1. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐

Discussion:

The project is mapped located in a *State Responsibility Area* but not mapped with a Very High Hazard Severity Zone or a Critical Fire Hazard area. The *San Mateo – Santa Cruz Unit Strategic Fire Plan and the Community Wildfire Protection Plan* address areas with inadequate access and evacuation routes and identify risk to life and property from wildland fire and provide information on firefighter safety, community evacuation and recommended actions by first responders. The plans also address post-fire responsibilities for natural resource recovery, including watershed protection reforestation, and ecosystem restoration. In addition, the project will be required to comply with the adopted Local Hazard Mitigation Plan 2021-2026 (County of Santa Cruz, 2021), as required by State law. In addition, the project has been reviewed by CalFire and provided a preliminary recommendation of approval in compliance with the California Fire Code and conditioned to provide final plan materials meeting all details of the State Fire Code. In addition, by statute, projects located in the Wildland-Urban Interface code (WUI) are required to comply with the California building code Chapter 7A. Lastly, the wireless code includes standards applicable to wireless facilities if determined by the County Fire Marshall, including:

a. At least one-hour fire resistant interior surfaces shall be used in the construction of all buildings. Building sprinklers shall be provided; and

b. Rapid entry (KNOX) systems shall be installed as required by the Fire Chief; and

c. Type and location of vegetation, screening materials and other materials within 10 feet of the facility and all new structures, including telecommunication towers, shall be reviewed for fire safety purposes by the Fire Chief. Requirements established by the Fire Chief shall be followed; and

d. All tree trimmings, debris, and refuse surrounding the facility shall be regularly removed from the site; and

e. For the protection of emergency response personnel, each wireless facility shall have an on-site emergency power shut-off ("kill switch") to de-energize all facilities at the site in the event of an emergency.

All local standards comply with state standards, including the local hazard mitigation plan. The project is conditioned to be developed consistent with all local and state statutory

requirements. Statutory requirements are not required as mitigation measures and are applied as conditions of approval. The project is conditioned to meet all fire standards. Therefore, impacts will be less than significant.

2.	*Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?*	☐	☐	☒	☐

***Discussion*:** The prevailing winds in this area are north to south. Although the project is mapped in a *State Responsibility Area*, the project design incorporates all applicable fire safety code requirements and includes fire protection devices as required by the local fire agency. In addition, the project will be required to meet the General Plan policies related to fire resilience and access in the Santa Cruz County General Plan, and standards for defensible spaces in the PRC and SCCC. Direct or indirect impacts would be less than significant.

3.	*Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?*	☐	☐	☒	☐

Discussion:

Although the project is mapped in a *State Responsibility Area*, the project design incorporates all applicable fire safety code requirements and includes fire protection devices as required by the local fire agency. In addition, the project will be required to meet the General Plan policies related to fire resilience and access in the Santa Cruz County General Plan, and standards for defensible spaces in the Public Resources Code (PRC) and Santa Cruz County Code (SCCC). With these required design features incorporated, direct or indirect impacts would be less than significant.

4.	*Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?*	☐	☐	☒	☐

***Discussion*:** Although the project is mapped in a *State Responsibility Area,* the project design incorporates all applicable fire safety code requirements and includes fire protection devices as required by the local fire agency. With these design features incorporated, direct or indirect impacts would be less than significant.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

U. MANDATORY FINDINGS OF SIGNIFICANCE

1. *Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal community or eliminate important examples of the major periods of California history or prehistory?*	☐	☒	☐	☐

Discussion: The potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory were considered in the response to each question in Section III (A through T) of this Initial Study. As a result of this evaluation, there is no fair argument that significant effects associated with this project would result with exception that construction activities have the potential to impact nesting birds protected by the Federal Migratory Bird Treaty Act. With incorporation of the mitigation measure detailed in Item D, Biological Resources, this project has been determined not to meet this Mandatory Finding of Significance.

2. *Does the project have impacts that are individually limited, but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*	☐	☐	☒	☐

Discussion: In addition to project specific impacts, the evaluation in this Initial Study considered the project's potential for incremental effects that are cumulatively considerable. As a result of this evaluation, there were determined to be no potentially significant cumulative effects associated with this project. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

3. *Does the project have environmental effects which will cause substantial*	☐	☐	☒	☐

adverse effects on human beings, either directly or indirectly?

***Discussion*:** In the evaluation of environmental impacts in this Initial Study, the potential for adverse direct or indirect impacts to human beings were considered in the response to specific questions in Section III (A through T). As a result of this evaluation, no potentially adverse effects to human beings associated with this project were identified. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

IV. REFERENCES USED IN THE COMPLETION OF THIS INITIAL STUDY

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County of Santa Cruz Local Hazard Mitigation Plan 2015-2020. Prepared by the County of Santa Cruz Office of Emergency Services.

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E-5 Population and Housing Estimates for Cities, Counties and the State—January 1, 2011-2018. Released by the State of California Department of Finance May 2018.

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MBUAPCD, 2008

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Attachment 1

Mitigation Monitoring and Reporting Program

No.	Environmental Impacts	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
Biological Resources					
Bio-1	Construction activities have the potential to impact nesting birds protected by the Federal Migratory Bird Treaty Act. In order to avoid such impacts, the following mitigation measure shall be included as a condition of approval.	Bio-1: If Project-related work is scheduled during the nesting season (typically February 15 to August 30 for small bird species such as passerines; January 15 to September 15 for owls; and February 15 to September 15 for other raptors), a qualified biologist shall conduct two surveys for active nests of such birds within 14 days prior to the beginning of Project construction, with a final survey conducted within 48 hours prior to construction. Appropriate minimum survey radii surrounding the work area are typically the following: i) 250 feet for passerines; ii) 500 feet for small raptors such as accipiters; and iii) 1,000 feet for larger raptors such as buteos. Surveys shall be conducted at the appropriate times of day and during appropriate nesting times. If the qualified biologist documents active nests within the Project area or in nearby surrounding areas, a species appropriate buffer between the nest and active construction shall be established. The buffer shall be clearly marked and maintained until the young have fledged and are foraging independently. Prior to construction, the qualified biologist shall	Applicant and County Staff	Submittal of preconstruction surveys and/or establishment of a species specific protective buffer prior to construction.	Prior to construction As conditioned, the applicant is required to hold a preconstruction meeting and submit the preconstruction survey to the Environmental Planning staff, confirming absence of nesting species. If species are determined to be present by the project biologist's letter, the Environmental Planning staff will confirm that the required buffer has been put in place, as determined by

No.	Environmental Impacts	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
		conduct baseline monitoring of the nest to characterize “normal” bird behavior and establish a buffer distance which allows the birds to exhibit normal behavior. The qualified biologist shall monitor the nesting birds daily during construction activities and increase the buffer if the birds show signs of unusual or distressed behavior (e.g. defensive flights and vocalizations, standing up from a brooding position, and/or flying away from the nest). If buffer establishment is not possible, the qualified biologist shall have the authority to cease all construction work in the area until the young have fledged, and the nest is no longer active.			the qualified biologist.

Attachment 2

Project Plans

BONNY DOON TOWER / CTI TOWERS COLO

186 UPPER SUMMIT DRIVE
SANTA CRUZ, CA 95060

PROJECT REFERENCE NUMBERS

CTI TOWERS -

SITE I.D.:	**10021**

AT&T -

SITE I.D.:	**CCL05741**
US I.D.:	**280390**
FA NO.:	**10067402**
ORACLE NO.:	**3701A0JC2P, 3701A0PY59, 3701A0PWEH, 3701A0PXSS, 3701A0PXBD**
PACE NO.:	**MRSFR051592, MRSFR063368, MRSFR063565, MRSFR063568, MRSFR063371**
PROGRAM:	**NSB**

PROJECT DESCRIPTION

SCOPE OF WORK:

THIS IS AN APPLICATION FOR MODIFYING AN EXISTING TELECOMMUNICATIONS FACILITY. THE PROPOSED MODIFICATION IS REQUIRED TO PROVIDE BETTER COMMUNICATIONS SERVICE IN THE AREA.

THE PROPOSED MODIFICATION CONSISTS OF:

- THE REMOVAL OF AN EXISTING ±70'–6" TALL GUYED TOWER INCLUDING EXISTING COMCAST ANTENNAS AND ASSOCIATED CABLING, ±12'–6" LATTICE TOWER, METAL SHED, SATELLITE DISH, AND STEEL LATTICE STRUCTURE SUPPORT
- THE REMOVAL OF THE EXISTING CHAIN LINK FENCING AND REPLACEMENT OF A PROPOSED CHAIN LINK FENCE WITH 3 STRANDS OF BARBED WIRE AND DARK GREEN VINYL SLATS
- THE INSTALLATION OF A PROPOSED 150'–0" TALL MONOPINE
- THE INSTALLATION OF NINE (9) PANEL ANTENNAS, EIGHTEEN (18) RRUS, AND THREE (3) SURGE ARRESTORS MOUNTED ON THE PROPOSED 150'–0" TALL MONOPINE
- THE INSTALLATION OF EQUIPMENT RACKS MOUNTED INSIDE THE EXISTING BUILDING
- THE INSTALLATION OF ONE (1) GPS ANTENNA MOUNTED AT THE EXTERIOR OF THE EXISTING BUILDING
- THE INSTALLATION OF ONE (1) FIXED GENERATOR MOUNTED ON A CONCRETE PAD AND LOCATED INSIDE THE EXISTING BUILDING
- THE INSTALLATION OF A LIQUID PROPANE TANK MOUNTED ON A CONCRETE PAD AND LOCATED OUTSIDE, ADJACENT TO THE EXISTING BUILDING
- THE RE–PAINTING OF THE EXISTING BUILDING
- THE INSTALLATION OF ASSOCIATED UTILITIES AND COMMUNICATIONS WIRING AND ANCILLARY EQUIPMENT

PROJECT INFORMATION

SITE ADDRESS:

186 UPPER SUMMIT DRIVE
SANTA CRUZ, CA 95060

PROPERTY OWNER:

CTI TOWERS
5000 CENTREGREEN WAY, SUITE 325
CARY, NC 27513
CONTACT: SCOTT CRISLER
PHONE: (919) 893–2841

LATITUDE (NAD83):

37° 05' 52.41" N

LONGITUDE (NAD83):

122° 08' 22.26" W

ELEVATION (NAVD88):

2323.2' A.M.S.L.

A.P.N.:

080–062–02–000

JURISDICTION:

COUNTY OF SANTA CRUZ

ZONING CLASSIFICATION:

RR (RURAL RESIDENTIAL)

CURRENT USE:

TRANSPORTATION & COMMUNICATIONS

NEW USE:

TRANSPORTATION & COMMUNICATIONS

CONSTRUCTION TYPE:

TYPE V–B

PROJECT TEAM

LESSEE:

AT&T MOBILITY
5001 EXECUTIVE PARKWAY, 4W750D
SAN RAMON, CA 94583
CONTACT: CHRIS KERR
PHONE: (925) 216–7034

LEASING MANAGER:

DELTA GROUPS ENGINEERING
6800 KOLL CENTER PARKWAY
SUITE 225
PLEASANTON, CA 94566
CONTACT: TOM DERKAS
PHONE: (925) 202–3333
EMAIL: TOMDERKAS@GMAIL.COM

ZONING MANAGER:

DELTA GROUPS ENGINEERING
6800 KOLL CENTER PARKWAY
SUITE 225
PLEASANTON, CA 94566
CONTACT: TOM DERKAS
PHONE: (925) 202–3333
EMAIL: TOMDERKAS@GMAIL.COM

ARCHITECT:

DELTA GROUPS ENGINEERING
6800 KOLL CENTER PARKWAY
SUITE 225
PLEASANTON, CA 94566
PHONE: (925) 468–0115
FAX: (925) 468–0355

RF ENGINEER:

AT&T MOBILITY
5001 EXECUTIVE PARKWAY, 4W750D
SAN RAMON, CA 94583
CONTACT: JAMES TEMPLE
PHONE: (916) 486–3008
EMAIL: Jt789y@att.com

CONSTRUCTION MANAGER:

QUALTEK WIRELESS
575 LENNON LANE, SUITE 125
WALNUT CREEK, CA 94598
CONTACT: JOSH ROBERSON
PHONE: (949) 505–4225

SHEET INDEX

T1	TITLE SHEET
C1	SURVEY (EXISTING SITE CONDITIONS)
C2	SURVEY (EXISTING SITE CONDITIONS)
A1	OVERALL SITE PLAN
A2	EQUIPMENT REMOVAL PLAN
A3	ENLARGED SITE PLAN & ANTENNA LAYOUT
A4	EQUIPMENT AREA & CABLE LADDER PLANS
A5.1	SOUTH ELEVATION
A5.2	WEST ELEVATION

CODE COMPLIANCE

SUBCONTRACTORS' WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

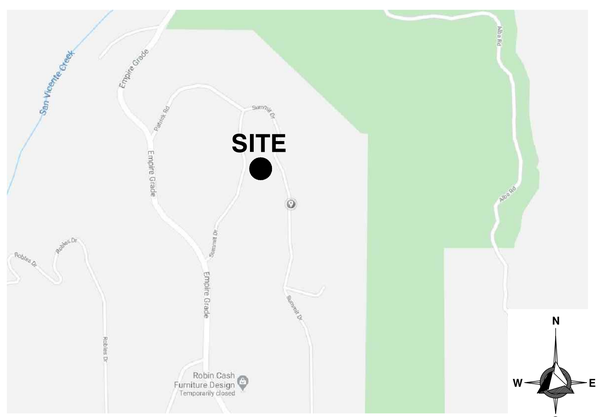
2022 CA ADMINISTRATIVE CODE
2022 CA BUILDING CODE
2022 CA ELECTRICAL CODE
2022 CA MECHANICAL CODE
2022 CA PLUMBING CODE
2022 CA FIRE CODE
2022 ENERGY CODE

SUBCONTRACTORS' WORK SHALL COMPLY WITH ALL LOCAL BUILDING CODES AND CITY/COUNTY ORDINANCES.

FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. ACCESSIBILITY IS EXEMPT BASED ON ADA STANDARDS 203.5 AND CBC 11B–203.5 "MACHINERY SPACES."

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

VICINITY MAP



DRIVING DIRECTIONS

FROM AT&t MOBILITY OFFICES LOCATED AT 5001 EXECUTIVE PARKWAY IN SAN RAMON, CA:

HEAD NORTHEAST ON EXECUTIVE PARKWAY AND TURN RIGHT ONTO CAMINO RAMON. THEN TURN RIGHT ONTO BOLLINGER CANYON ROAD. MERGE ONTO I–680 S TOWARDS SAN JOSE. EXIT CA–262 S/MISSION BOULEVARD AND CONTINUE ON MISSION BOULEVARD UNTIL IT MERGES INTO I–880. MERGE ONTO I–880 S TOWARDS SAN JOSE. CONTINUE ON I–880 S AND IT WILL TURN INTO CA–17 S. TAKE EXIT FOR MT. HERMON ROAD TOWARD FELTON/BIG BASIN. TURN RIGHT ONTO MT. HERMON ROAD. THEN TURN RIGHT ONTO GRAHAM HILL ROAD. CONTINUE ONTO FELTON EMPIRE ROAD. TURN RIGHT ONTO EMPIRE GRADE. TURN RIGHT ONTO SUMMIT DRIVE. SITE IS LOCATED ON THE RIGHT.

FROM SAN JOSE INTERNATIONAL AIRPORT LOCATED AT 1701 AIRPORT BOULEVARD IN SAN JOSE, CA:

HEAD NORTHWEST ON AIRPORT BOULEVARD. MERGE ONTO I–880 S TOWARDS SANTA CRUZ. CONTINUE ONTO CA–17 S. TAKE EXIT FOR MT. HERMON ROAD TOWARD FELTON/BIG BASIN. TURN RIGHT ONTO MT. HERMON ROAD. THEN TURN RIGHT ONTO GRAHAM HILL ROAD. CONTINUE ONTO FELTON EMPIRE ROAD. TURN RIGHT ONTO EMPIRE GRADE. TURN RIGHT ONTO SUMMIT DRIVE. SITE IS LOCATED ON THE RIGHT.

APPROVALS

APPROVED BY:	INITIALS:	DATE:
CTI TOWERS:		
VENDOR:		
R.F.:		
LEASING/LANDLORD:		
ZONING:		
CONSTRUCTION:		
POWER/TELCO:		
PG&E:		

RF DATA SHEET

VERSION: 4.00 DATE UPDATED: 6/9/21

CTI TOWERS
5000 CENTREGREEN WAY, SUITE 325
CARY, NC 27513

at&t
5001 EXECUTIVE PARKWAY, 4W750D
SAN RAMON, CA 94583

BONNY DOON TOWER/ CTI TOWERS COLO 10021/ CCL05741
186 UPPER SUMMIT DRIVE
SANTA CRUZ, CA 95060

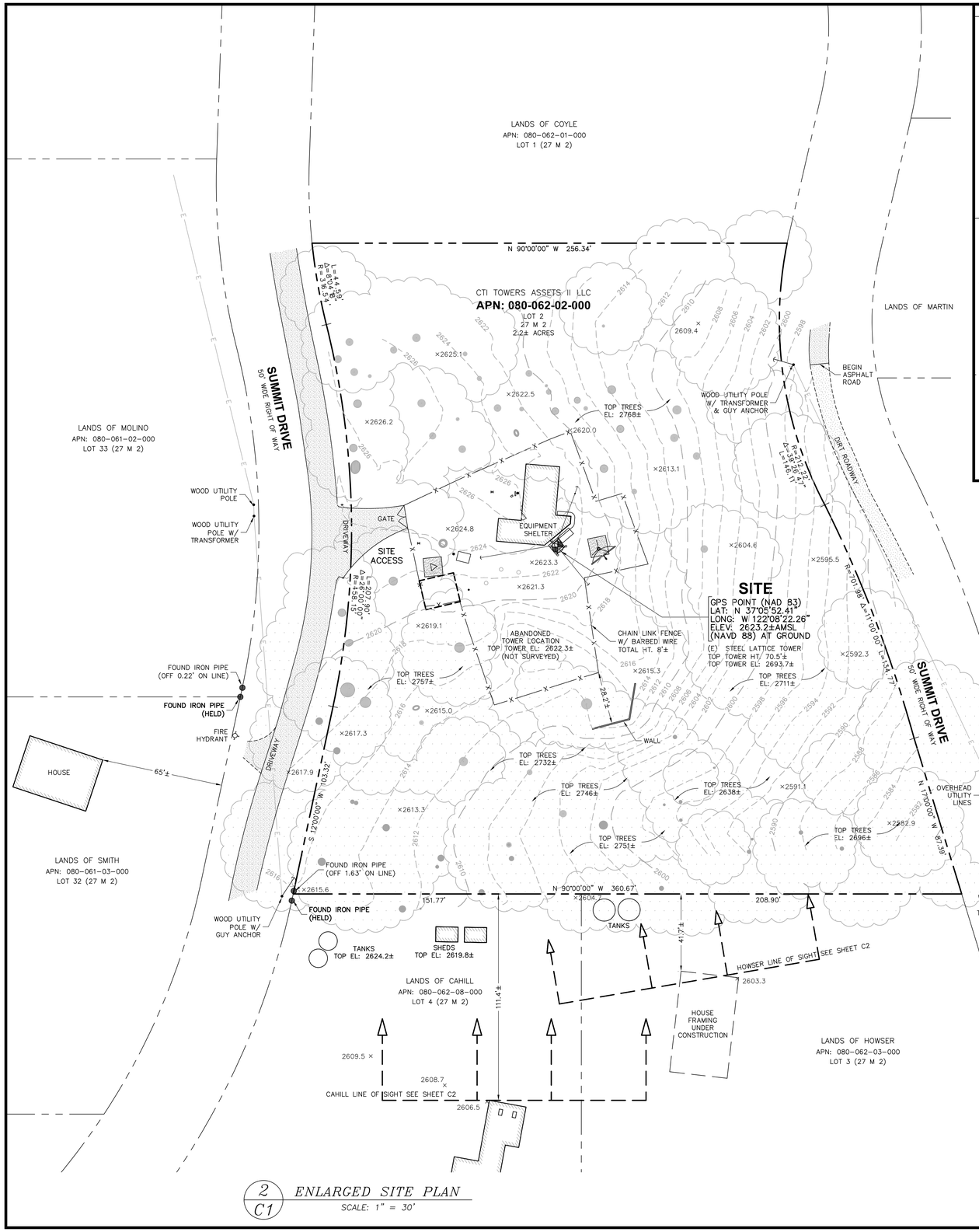
DELTA GROUPS ENGINEERING, INC.
CONSULTING ENGINEERS
6800 KOLL CENTER PARKWAY, SUITE 225
PLEASANTON, CA 94566
TEL: (925) 468–0115 FAX: (925) 468–0355

REV.	DATE	DESCRIPTION	BY	CHK
1	6/11/21	ISSUED FOR ZONING (REVIEW SET)	HT	.
2	10/12/21	ISSUED FOR ZONING (FINAL SET)	HT	.
3	2/18/22	ISSUED FOR ZONING (PLANNING COMMENTS)	HT	.
4	12/19/22	ISSUED FOR ZONING (INCOMP. LETTER RESP.)	HT	.
5	02/09/23	ISSUED FOR ZONING (GEN. DESIGN CHANGE)	HT	.
6	8/7/23	ISSUED FOR ZONING (INCOMP. LETTER RESP.)	HT	.
7	11/29/23	ISSUED FOR ZONING (MONOPINE REDESIGN)	HT	.

SHEET TITLE: TITLE SHEET

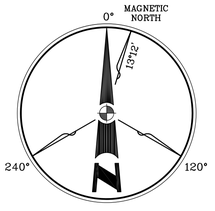
SHEET	DGE NO.
T1	P19AN002

SITE NAME: BONNY DOON TOWER



1 / C1 SITE PLAN
SCALE: 1" = 80'

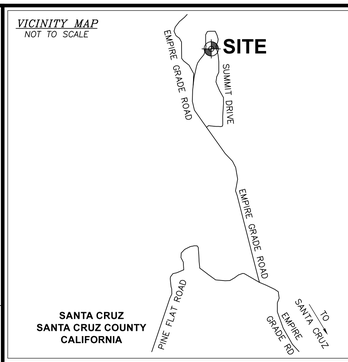
2 / C1 ENLARGED SITE PLAN
SCALE: 1" = 30'



QUIET RIVER
Land Services Inc.
1 1/2 0 1
SCALE IN INCHES
MAGNETIC DECLINATION = 13°12'
PER NOAA-NGDC

SUFFICIENT SURVEY EVIDENCE WAS NOT RECOVERED TO ESTABLISH THE POSITION OF THE BOUNDARY LINES SHOWN HEREON. THE BOUNDARY REPRESENTED ON THIS MAP IS BASED ON COMPILED RECORD DATA AND BEST FIT ONTO EXISTING IMPROVEMENTS. IT IS POSSIBLE FOR THE LOCATION OF THE SUBJECT PROPERTY TO SHIFT FROM THE PLACEMENT SHOWN HEREON WITH ADDITIONAL FIELD WORK AND RESEARCH. THEREFORE, ANY SPATIAL REFERENCE MADE OR SHOWN BETWEEN THE RELATIONSHIP OF THE BOUNDARY LINES AND EXISTING GROUND FEATURES, EASEMENTS OR LEASE AREA SHOWN HEREON IS INTENDED TO BE APPROXIMATE AND IS SUBJECT TO VERIFICATION BY RESOLVING THE POSITION OF THE BOUNDARY LINES.

VICINITY MAP
NOT TO SCALE



PROPERTY INFORMATION

Owner: CTI TOWERS ASSETS II LLC
Address: 38 POND STREET, #305
FRANKLIN, MA 02038

Site: CCL05741 / SUMMIT DRIVE
Address: 186 SUMMIT DRIVE
SANTA CRUZ, CA 95060

Assessor's Parcel Number: 080-062-02-000

Height of Building/Tower: 70.5'± (AGL) TOP OF GUYED LATTICE TOWER.

Title Report:
NO TITLE REPORT FURNISHED. EXCEPTIONS TO THE TITLE AND RESERVATIONS THEREFROM COULD NOT BE DETERMINED. BOUNDARY INFORMATION SHOWN IS COMPILED FROM AVAILABLE RECORD DATA.

Legal Description:
PROPERTY SITUATED IN THE CITY OF SANTA CRUZ, COUNTY OF SANTA CRUZ, STATE OF CALIFORNIA.

FEMA FLOOD ZONE DESIGNATION National Flood Insurance Program

County: SANTA CRUZ Effective Date: MAY 16, 2012
Community–Panel Number: 06087C-0185-E
The Flood Zone Designation for this site as plotted by scale is:

ZONE X (NO SHADING) – AREA OF MINIMAL FLOOD HAZARD

SURVEY DATA

NAD 83 Datum:
Lat: N 37°05'52.41" Long: W 122°08'22.26"
Datum Base: NAD 83 Equipment Used: CHCX90D-OPUS Receiver (See Note 2)
Site Ground Elevation: 2623.2± AMSL (NAVD88) BOTTOM TOWER PAD.
Basis of Elevations:
GLOBAL POSITIONING SYSTEM (GPS)
(SEE NOTE 2)
Basis of Bearings:
TRACT NO. 46 MAP OF SUMMIT PARK FILED IN BOOK 27 AT PAGE 2 IN THE RECORDS OF SANTA CRUZ COUNTY, AND TWO FOUND MONUMENTS AS SHOWN.
Date of Field Survey: JANUARY 21, 2020 & OCTOBER 10, 2022

NOTES

1.) This is not a boundary survey. This is a specialized topographic map with property lines and easements being a graphic depiction of various information gathered from preliminary title reports, back-up documents of record, maps and available monuments found during the field survey. No property monuments were set. No title research was performed by Quiet River Land Services, Inc.

2.) The latitude, longitude and elevation shown hereon were derived from post-processed L-1/L-2 data collected using Navstar Global Positioning System (GPS) and a CHCX90D-OPUS Receiver. CHC Navigation specifications report decimeter level accuracy (horizontally) when data is properly collected and processed. (Elevation = ±3.0 feet.)

3.) Unless otherwise noted, no underground utility locating service company was contacted prior to this map being prepared; therefore, there may be non-visible or obscure utilities existing on the property not shown on this map – so CALL BEFORE YOU DIG.

4.) Any electronic digital media provided by Quiet River Land Services, Inc. to our client is a courtesy and is not to be reproduced, distributed, sold, altered, revised, edited or amended without the express written consent of an Officer of Quiet River Land Services, Inc. Further, only the final stamped, signed and dated original "hard copy" version of our survey or map is considered to be our legally recognized product.

SURVEYOR'S STATEMENT

I, the undersigned, a Registered Professional Land Surveyor licensed under the laws of the State of California do hereby state that the information, measurements, easements, record boundary lines, bearings and distances as shown hereon are based upon a field survey as dated above and upon items of public record and data contained in a title report, as referenced. Furthermore, the Latitude and Longitude coordinates are reported in NAD 83 Datum and are accurate to within ±15 feet horizontally, and the ground elevation, reported in NAVD 1988 Datum, is within ±3 feet vertically. The coordinate values and elevations are within the 1-A Accuracy Code designation as listed in the A.S.A.C. Information Sheet 91:003 and are accurate to the best of my knowledge and belief.

SIGNATURE 2/8/2023 DATE

LEGEND

APN:	ASSESSOR'S PARCEL NUMBER		ASPHALT
CP	CONTROL POINT		CONCRETE
EL.	ELEVATION	△	CONTROL POINT
FH	FIRE HYDRANT	○	FOUND MONUMENT
FND.	FOUND	⊕	GPS POINT
HT.	HEIGHT	P 15.3 / R 12.3	PARAPET/ROOF ELEVATIONS
MON.	MONUMENT	× 12.3	SPOT ELEVATION
(M–M)	MONUMENT TO MONUMENT	■	TEMPORARY BENCHMARK
P.O.B.	POINT OF BEGINNING		
P.O.C.	POINT OF COMMENCEMENT		
PP	POWER POLE		
(TYP.)	TYPICAL		

DATE: FEBRUARY 8, 2023
DRAWN BY: MAS
FILE NO.: DLTA2202

REVISIONS

DATE	DESCRIPTION	INITIAL
1/27/20	90% ISSUE	MAS
10/13/22	ADD'L TOPO & ADD SHEET C2	MAS
2/8/23	CLIENT REDLINES	MAS

at&t
AT&T MOBILITY
5001 Executive Parkway
San Ramon, CA 94583

QUIET RIVER
Land Services Inc.
11501 Dublin Boulevard, Suite 200
Dublin, CA 94568
(925) 734-6788 Phone

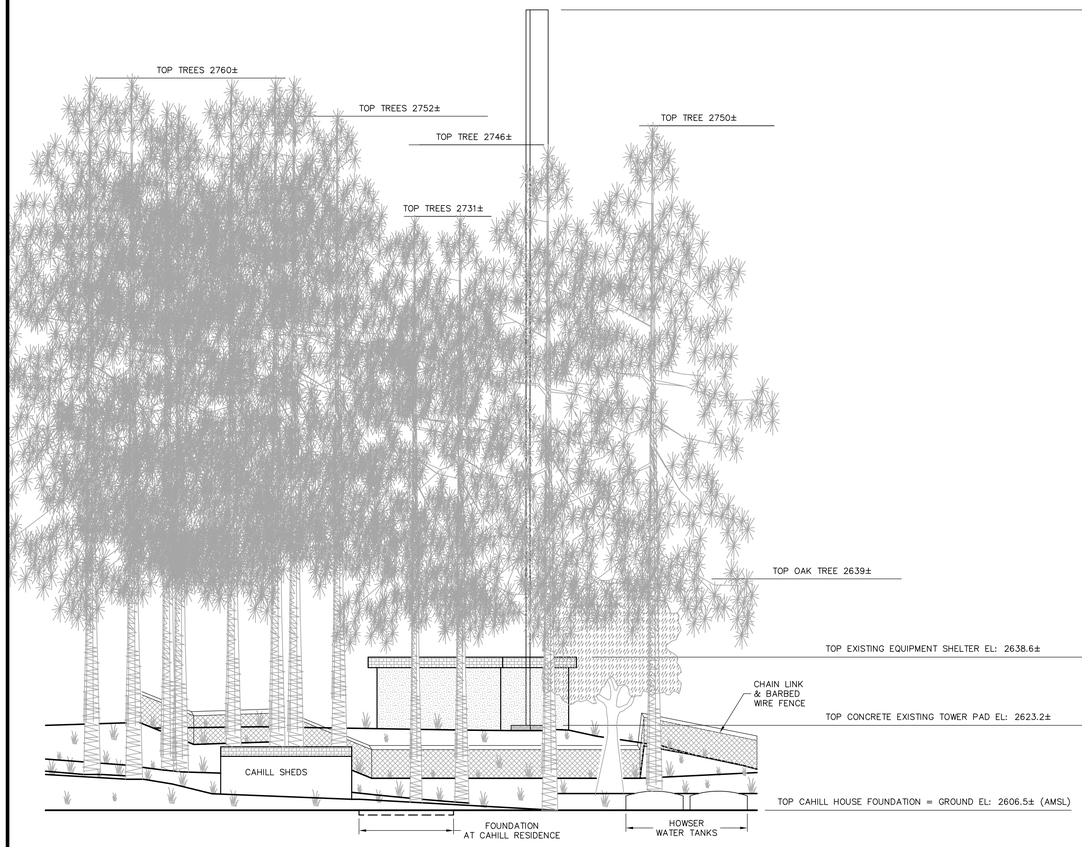
EXISTING SITE CONDITIONS

CCL05741
SUMMIT DRIVE

186 SUMMIT DRIVE
SANTA CRUZ, CA 95060

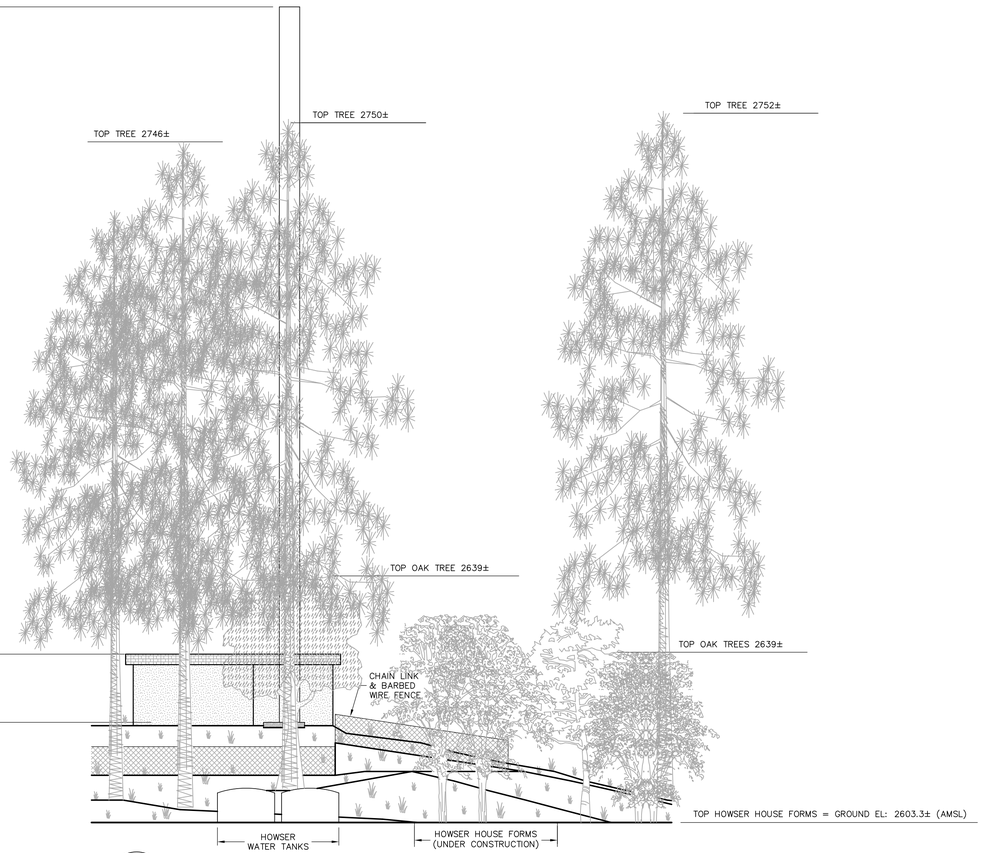
C1
OF 1 SHEET

M:\Projects_2022 TO BE ARCHIVED\DLTA2202\dwg\DLTA2202.dwg Feb. 08, 2023 - 5:45pm Owner



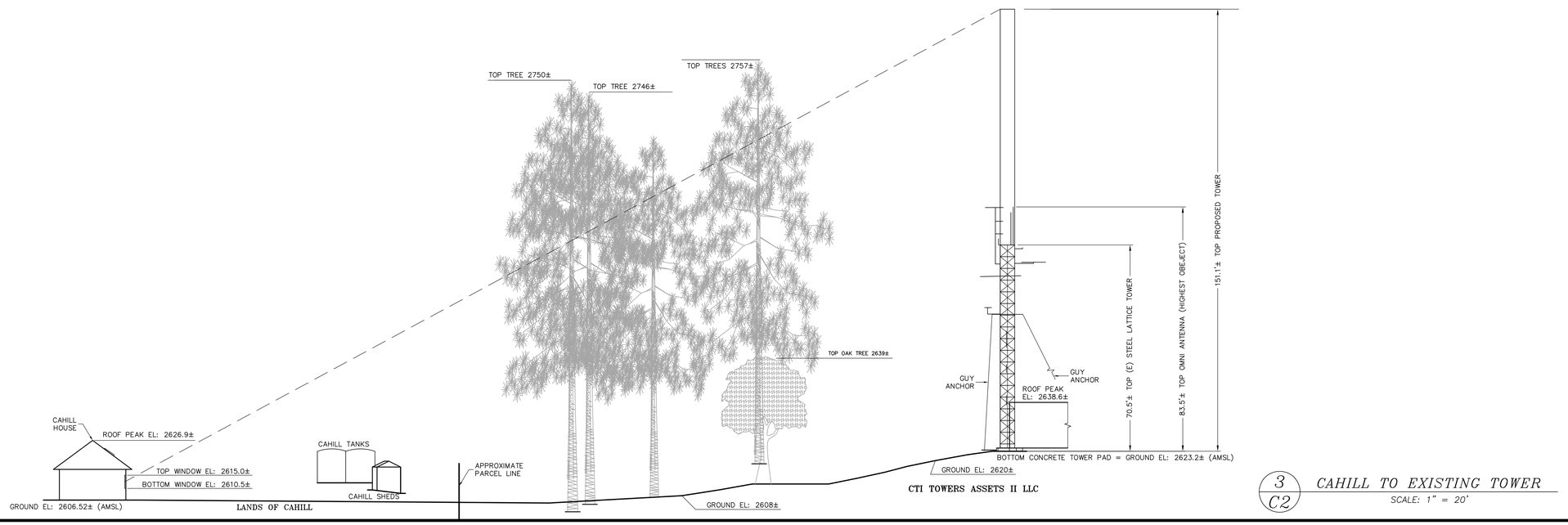
1/C2 *LINE OF SIGHT FROM CAHILL RESIDENCE LOOKING NORTH*

SCALE: 1" = 15'



2/C2 *LINE OF SIGHT FROM HOWSER RESIDENCE LOOKING NORTH*

SCALE: 1" = 15'



3/C2 *CAHILL TO EXISTING TOWER*

SCALE: 1" = 20'

DATE: FEBRUARY 8, 2023

DRAWN BY: MAS

FILE NO.: DLTA2202

REVISIONS

DATE	DESCRIPTION	INITIAL
1/27/20	90% ISSUE	MAS
10/13/22	ADD'L TOPO & ADD SHEET C2	MAS
2/8/23	CLIENT REDLINES	MAS

at&t
AT&T MOBILITY
5001 Executive Parkway
San Ramon, CA 94583

QUIET RIVER
Land Services Inc.
11501 Dublin Boulevard, Suite 200
Dublin, CA 94568
(925) 734-6788 Phone

EXISTING SITE CONDITIONS

CCL05741
SUMMIT DRIVE

186 SUMMIT DRIVE
SANTA CRUZ, CA 95060

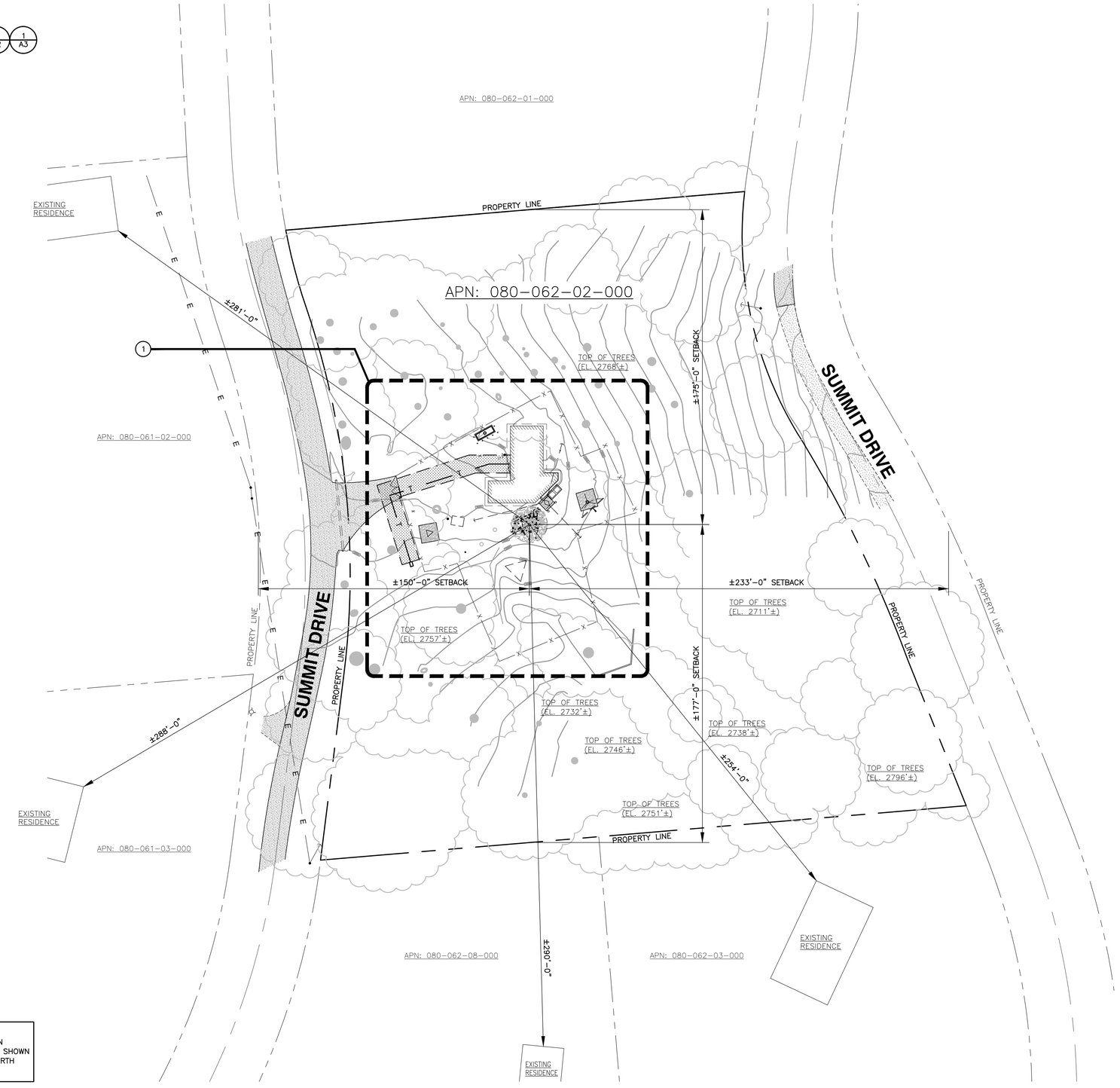
C2
OF 2 SHEETS

M:\Projects_2022 TO BE ARCHIVED\DLTA2202\dwg\DLTA2202.dwg Feb. 08, 2023 - 5:45pm Owner

EXHIBIT 3D - PLANS

KEYED NOTES:

(1) EXISTING CTI TOWERS TELECOMMUNICATIONS FACILITY– LOCATION OF PROPOSED MODIFICATION (1/A2) (1/A3)



N
W E
S

NOTE:
DO NOT SCALE DRAWINGS. ALL DIMENSIONS OF AND BETWEEN EXISTING BUILDINGS/STRUCTURES, OR RELATIVE DISTANCES AS SHOWN BETWEEN EXISTING BUILDINGS/STRUCTURES AND THE TRUE NORTH ARE TO BE CONFIRMED BY THE SURVEYOR.

UNUSED | - | **OVERALL SITE PLAN**

SCALE: 1 inch = 30 ft | 30' 0' 30' 60' | 1

CTI TOWERS
5000 CENTREGREEN WAY, SUITE 325
CARY, NC 27513

at&t
5001 EXECUTIVE PARKWAY, 4W750D
SAN RAMON, CA 94583

BONNY DOON TOWER/
CTI TOWERS COLO
10021/ CCL05741
186 UPPER SUMMIT DRIVE
SANTA CRUZ, CA 95060

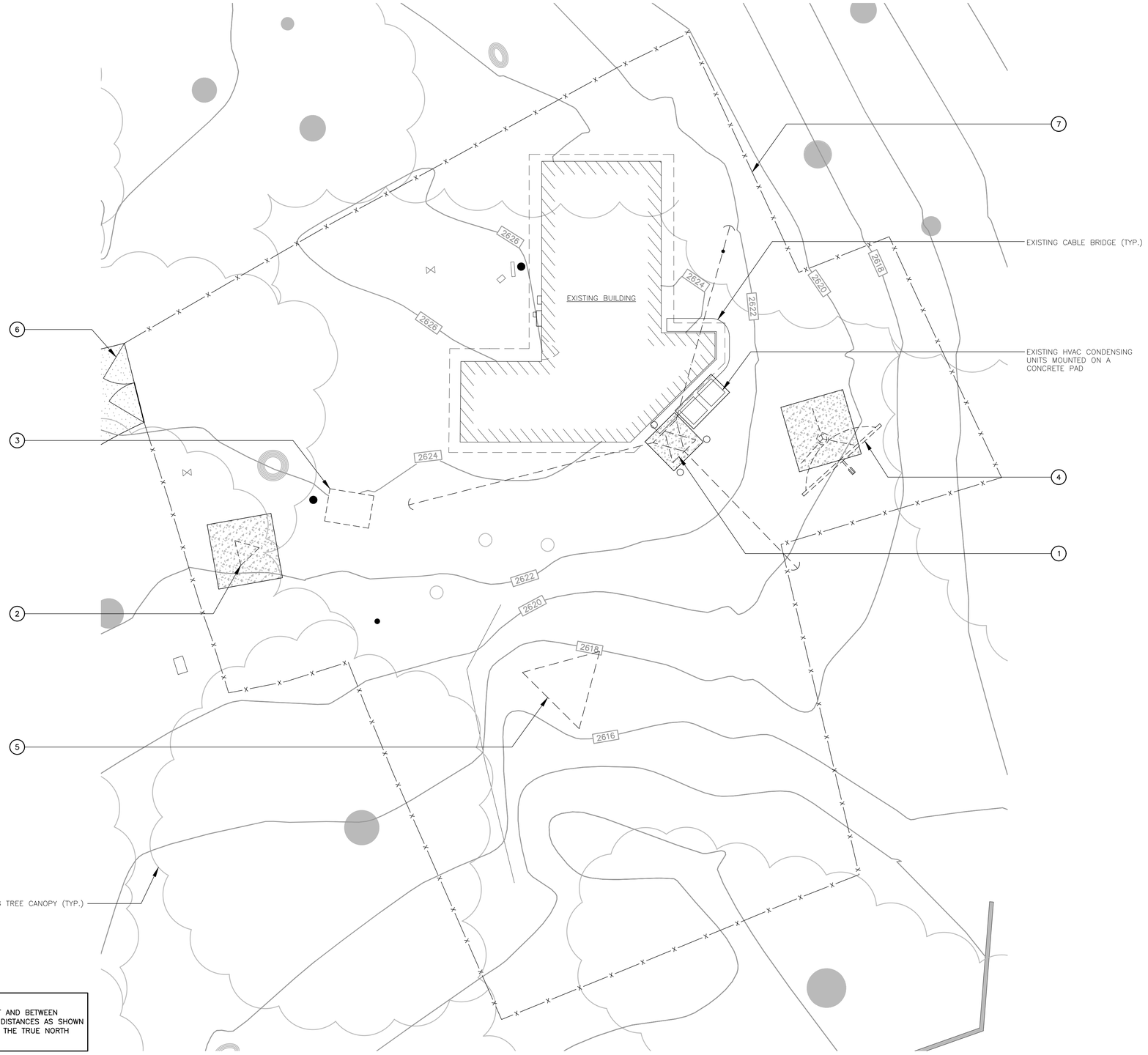
DELTA GROUPS ENGINEERING, INC.
CONSULTING ENGINEERS
6800 KOLL CENTER PARKWAY, SUITE 225
PLEASANTON, CA 94566
TEL: (925) 468–0115 FAX: (925) 468–0355

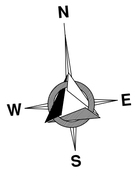
REV.	DATE	DESCRIPTION	BY	CHK
1	6/11/21	ISSUED FOR ZONING (REVIEW SET)	HT	.
2	10/12/21	ISSUED FOR ZONING (FINAL SET)	HT	.
3	2/18/22	ISSUED FOR ZONING (PLANNING COMMENTS)	HT	.
4	12/19/22	ISSUED FOR ZONING (INCOMP. LETTER RESP.)	HT	.
5	02/09/23	ISSUED FOR ZONING (GEN. DESIGN CHANGE)	HT	.
6	8/7/23	ISSUED FOR ZONING (INCOMP. LETTER RESP.)	HT	.
7	11/29/23	ISSUED FOR ZONING (MONOPINE REDESIGN)	HT	.

SHEET TITLE: OVERALL SITE PLAN
SHEET: A1
DGE NO.: P19AN002
SITE NAME: BONNY DOON TOWER

KEYED NOTES:

1. EXISTING ±70'-6" TALL GUYED TOWER MOUNTED ON CONCRETE- TOWER TO BE REMOVED
2. EXISTING ±12'-6" TALL LATTICE TOWER MOUNTED ON CONCRETE- TOWER TO BE REMOVED
3. EXISTING METAL SHED TO BE REMOVED
4. EXISTING SATELLITE DISH ASSEMBLY MOUNTED ON CONCRETE- DISH TO BE REMOVED
5. EXISTING STEEL LATTICE STRUCTURE TO BE REMOVED
6. EXISTING DOUBLE-SWING CHAIN LINK ACCESS GATE WITH 3 STRANDS OF BARBED WIRE TO BE REMOVED AND REPLACED
7. EXISTING CHAIN LINK FENCING WITH 3 STRANDS OF BARBED WIRE TO BE REMOVED AND REPLACED





NOTE:
DO NOT SCALE DRAWINGS. ALL DIMENSIONS OF AND BETWEEN EXISTING BUILDINGS/STRUCTURES, OR RELATIVE DISTANCES AS SHOWN BETWEEN EXISTING BUILDINGS/STRUCTURES AND THE TRUE NORTH ARE TO BE CONFIRMED BY THE SURVEYOR.

UNUSED | **-**

UNUSED | **-** | **EQUIPMENT REMOVAL PLAN**

SCALE: 1/8 inch = 1 ft

8' 0' 8' 16'

1

CTI TOWERS
5000 CENTREGREEN WAY, SUITE 325
CARY, NC 27513

at&t
5001 EXECUTIVE PARKWAY, 4W750D
SAN RAMON, CA 94583

BONNY DOON TOWER/
CTI TOWERS COLO
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CONSULTING ENGINEERS
6800 KOLL CENTER PARKWAY, SUITE 225
PLEASANTON, CA 94566
TEL: (925) 468-0115 FAX: (925) 468-0355

REV.	DATE	DESCRIPTION	BY	CHK
1	6/11/21	ISSUED FOR ZONING (REVIEW SET)	HT	.
2	10/12/21	ISSUED FOR ZONING (FINAL SET)	HT	.
3	2/18/22	ISSUED FOR ZONING (PLANNING COMMENTS)	HT	.
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5	02/09/23	ISSUED FOR ZONING (GEN. DESIGN CHANGE)	HT	.
6	8/7/23	ISSUED FOR ZONING (INCOMP. LETTER RESP.)	HT	.
7	11/29/23	ISSUED FOR ZONING (MONOPINE REDESIGN)	HT	.

SHEET TITLE: EQUIPMENT REMOVAL PLAN

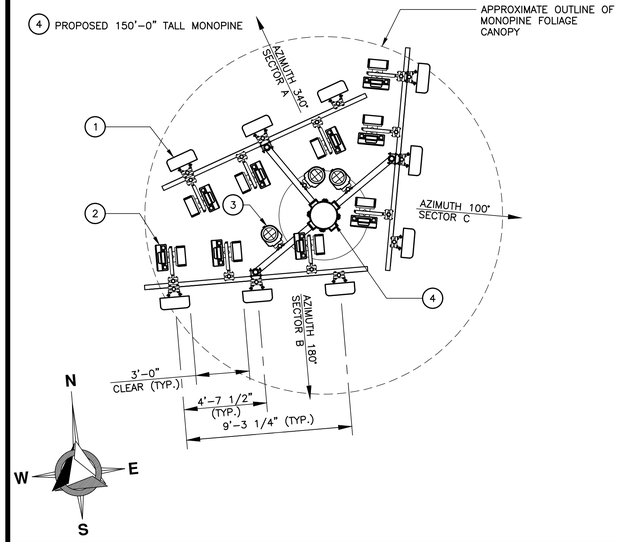
SHEET: A2

DGE NO.: P19AN002

SITE NAME: BONNY DOON TOWER

KEYED NOTES:

1. PROPOSED AT&T PANEL ANTENNAS (9 TOTAL– 3 PER SECTOR, TYP., 3 SECTORS TOTAL)
2. PROPOSED RRUS (TYP. OF 18)
3. PROPOSED SURGE ARRESTOR (TYP. OF 3)
4. PROPOSED 150'–0" TALL MONOPINE



ANT. LAYOUT | SCALE: 1/4 inch = 1 ft | 4' 0' 4' 8' | **2**

KEYED NOTES:

1. PROPOSED AT&T PANEL ANTENNAS (9 TOTAL– 3 PER SECTOR, TYP., 3 SECTORS TOTAL) MOUNTED ON A PROPOSED 150'–0" TALL MONOPINE (2/–)
2. PROPOSED 25'–4"x17'–4" (APPROX. 439 SQ. FT.) AT&T EQUIPMENT AREA– LOCATION OF PROPOSED RADIO EQUIPMENT RACKS AND ASSOCIATED UTILITIES BOXES (1/A4) (2/A4)
3. PROPOSED 10'–1"x14'–1" (APPROX. 142 SQ. FT.) AT&T EQUIPMENT AREA– LOCATION OF PROPOSED 30KW DIESEL GENERATOR MOUNTED ON A CONCRETE PAD
4. PROPOSED CABLE BRIDGE TO PROPOSED MONOPINE– CONNECTS TO EXISTING CABLE BRIDGE AT EXISTING BUILDING
5. PROPOSED 6'–0" TALL CHAIN LINK FENCE TO REPLACE EXISTING– INCLUDES 3 STRANDS OF BARBED WIRE AND DARK GREEN VINYL SLATS
6. PROPOSED DOUBLE–SWING CHAIN LINK ACCESS GATE TO REPLACE EXISTING– INCLUDES 3 STRANDS OF BARBED WIRE AND DARK GREEN VINYL SLATS
7. PROPOSED ANTENNA CABLE ROUTING FROM EXISTING BUILDING TO PROPOSED MONOPINE– ROUTES ALONG EXISTING AND PROPOSED CABLE BRIDGE (APPROX. 50 L.F. FROM EXISTING BUILDING TO PROPOSED MONOPINE)
8. PROPOSED TELCO UNDERGROUND CONDUIT ROUTING WITHIN A 10'–0" WIDE UTILITIES EASEMENT (APPROX. 150 L.F. FROM PROPOSED TELCO P.O.C. TO EXISTING BUILDING)
9. EXISTING TELCO PEDESTAL (TELCO P.O.C.)
10. EXISTING BUILDING TO BE RE–PAINTED (COLOR: MOROCCAN HENNA BY BEHR)
11. PROPOSED 500 GALLON LIQUID PROPANE TANK MOUNTED ON A CONCRETE PAD
12. PROPOSED BOLLARD (TYP.)

NOTE:
DO NOT SCALE DRAWINGS. ALL DIMENSIONS OF AND BETWEEN EXISTING BUILDINGS/STRUCTURES, OR RELATIVE DISTANCES AS SHOWN BETWEEN EXISTING BUILDINGS/STRUCTURES AND THE TRUE NORTH ARE TO BE CONFIRMED BY THE SURVEYOR.

UNUSED | - | **ENLARGED SITE PLAN** | SCALE: 1/8 inch = 1 ft | 8' 0' 8' 16' | **1**

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at&t
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SAN RAMON, CA 94583

BONNY DOON TOWER/
CTI TOWERS COLO
10021/ CCL05741
186 UPPER SUMMIT DRIVE
SANTA CRUZ, CA 95060

DELTA GROUPS ENGINEERING, INC.
CONSULTING ENGINEERS
6800 KOLL CENTER PARKWAY, SUITE 225
PLEASANTON, CA 94566
TEL: (925) 468–0115 FAX: (925) 468–0355

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1	6/11/21	ISSUED FOR ZONING (REVIEW SET)	HT	.
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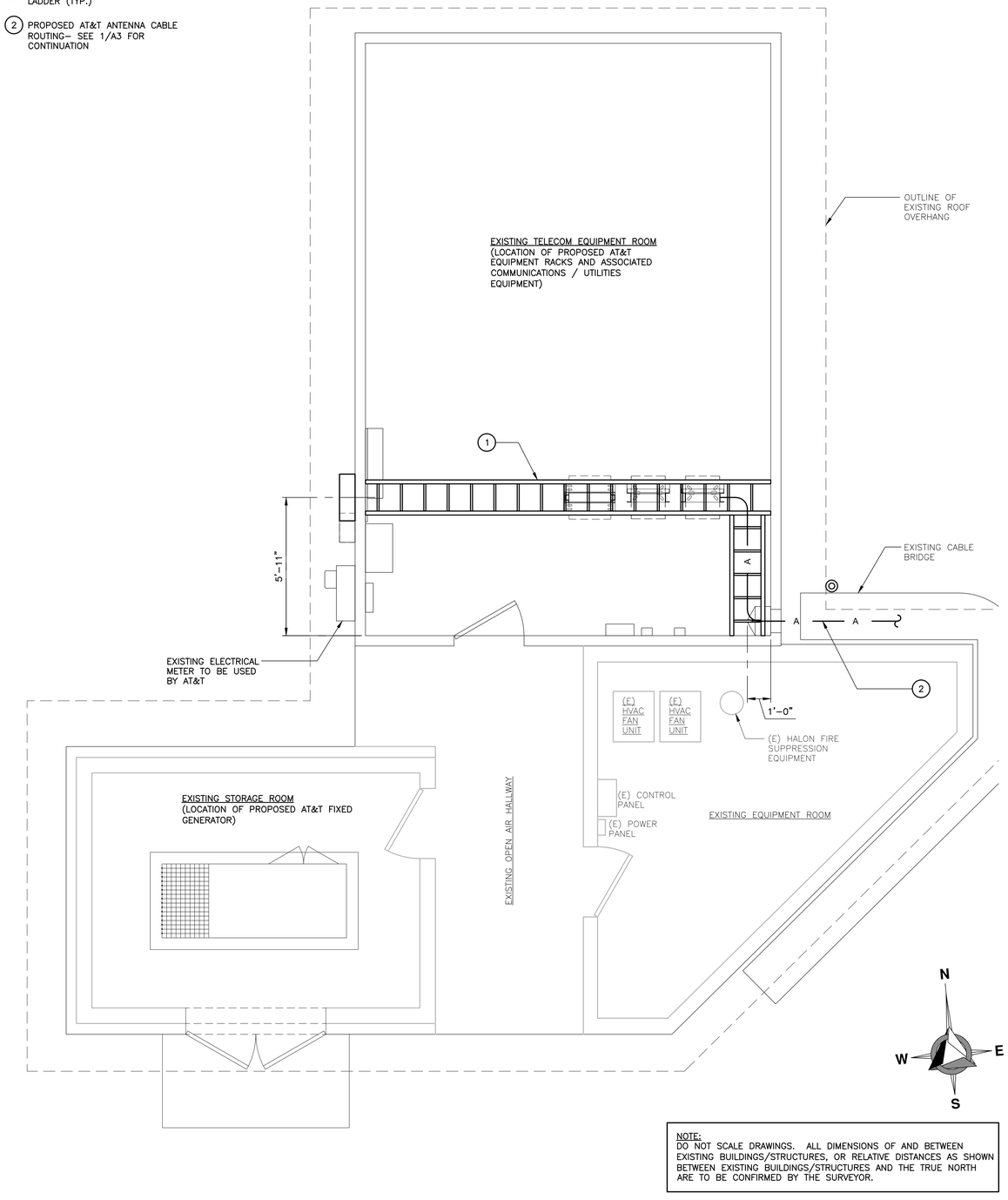
6	8/7/23	ISSUED FOR ZONING (INCOMP. LETTER RESP.)	HT	.
7	11/29/23	ISSUED FOR ZONING (MONOPINE REDESIGN)	HT	.

SHEET TITLE: ENLARGED SITE PLAN & ANTENNA LAYOUT

SHEET	DGE NO.
A3	P19AN002
	SITE NAME: BONNY DOON TOWER

KEYED NOTES:

1. PROPOSED AT&T OVERHEAD CABLE LADDER (TYP.)
2. PROPOSED AT&T ANTENNA CABLE ROUTING– SEE 1/A3 FOR CONTINUATION



NOTE:
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CABLE LADDER PLAN

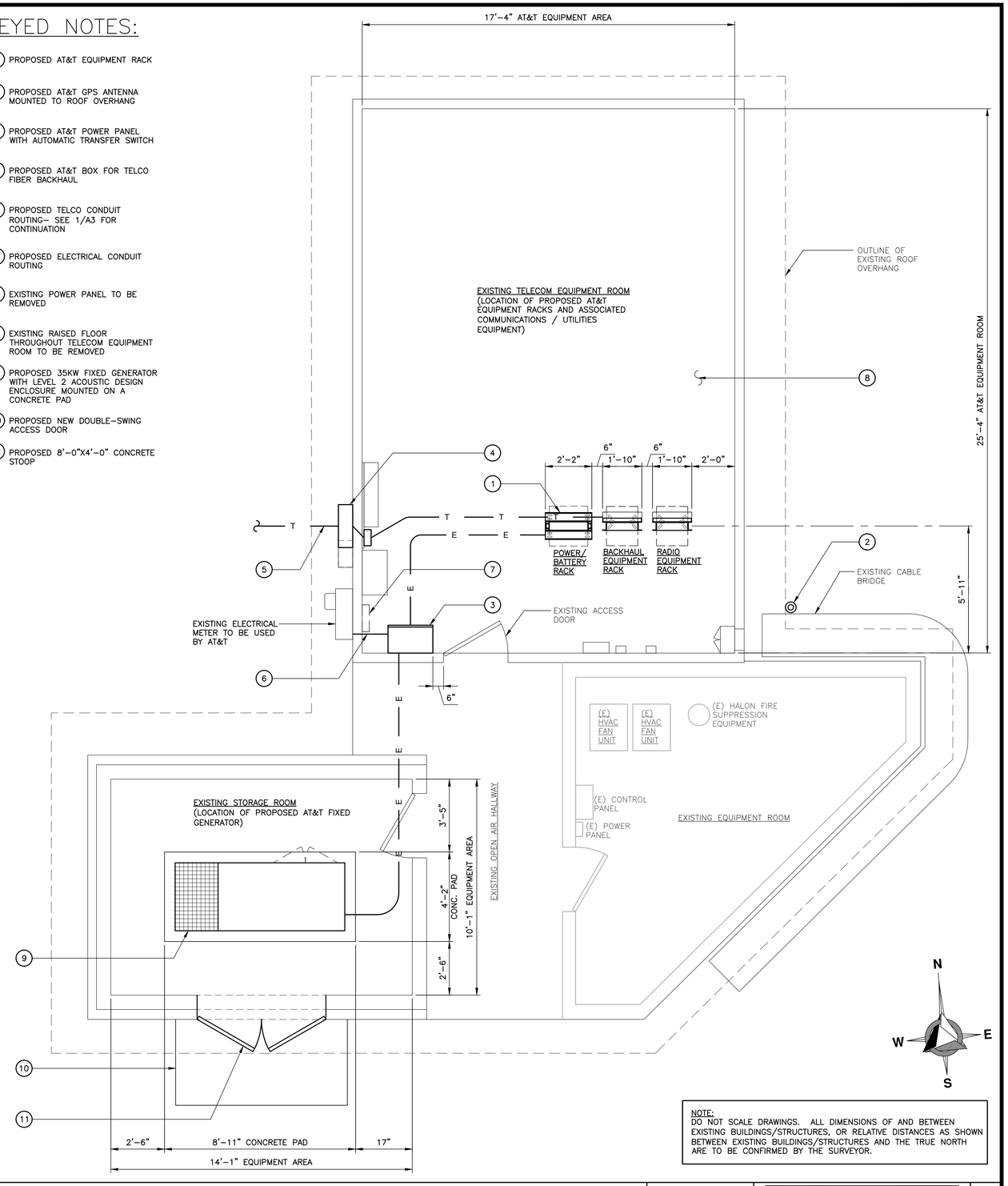
SCALE: 3/8 inch = 1 ft

3' 0' 3' 6'

2

KEYED NOTES:

1. PROPOSED AT&T EQUIPMENT RACK
2. PROPOSED AT&T GPS ANTENNA MOUNTED TO ROOF OVERHANG
3. PROPOSED AT&T POWER PANEL WITH AUTOMATIC TRANSFER SWITCH
4. PROPOSED AT&T BOX FOR TELCO FIBER BACKHAUL
5. PROPOSED TELCO CONDUIT ROUTING– SEE 1/A3 FOR CONTINUATION
6. PROPOSED ELECTRICAL CONDUIT ROUTING
7. EXISTING POWER PANEL TO BE REMOVED
8. EXISTING RAISED FLOOR THROUGHOUT TELECOM EQUIPMENT ROOM TO BE REMOVED
9. PROPOSED 35KW FIXED GENERATOR WITH LEVEL 2 ACOUSTIC DESIGN ENCLOSURE MOUNTED ON A CONCRETE PAD
10. PROPOSED NEW DOUBLE–SWING ACCESS DOOR
11. PROPOSED 8'–0"X4'–0" CONCRETE STOOP



NOTE:
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EQUIPMENT AREA PLAN

SCALE: 3/8 inch = 1 ft

3' 0' 3' 6'

1

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CTI TOWERS COLO
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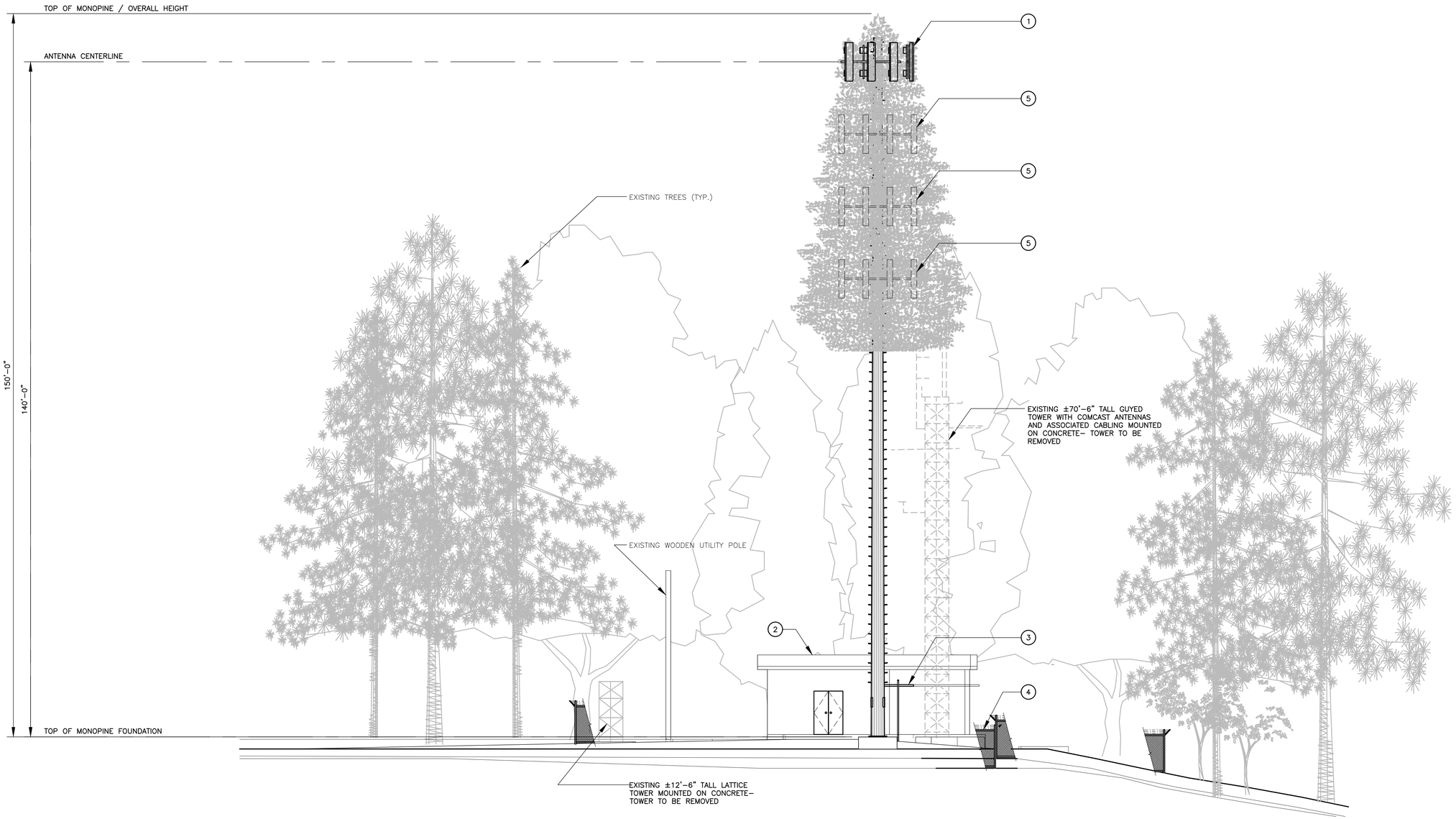
7	11/29/23	ISSUED FOR ZONING (MONOPINE REDESIGN)	HT	.

SHEET TITLE: EQUIPMENT AREA & CABLE LADDER PLANS

SHEET: A4

DGE NO.: P19AN002

SITE NAME: BONNY DOON TOWER



KEYED NOTES:

1. PROPOSED AT&T PANEL ANTENNAS (9 TOTAL- 3 PER SECTOR, TYP., 3 SECTORS TOTAL) MOUNTED ON A PROPOSED 150'-0" TALL MONOPINE- ANTENNAS TO BE COVERED WITH ANTENNA SOCKS TO MATCH THE FOLIAGE OF THE MONOPINE
2. EXISTING BUILDING- LOCATION OF PROPOSED RADIO EQUIPMENT RACKS AND ASSOCIATED UTILITIES BOXES- EXISTING BUILDING TO BE RE-PAINTED (COLOR: MOROCCAN HENNA BY BEHR)
3. PROPOSED CABLE BRIDGE TO PROPOSED MONOPINE- CONNECTS TO EXISTING CABLE BRIDGE AT EXISTING BUILDING
4. PROPOSED 6'-0" TALL CHAIN LINK FENCE TO REPLACE EXISTING- INCLUDES 3 STRANDS OF BARBED WIRE AND DARK GREEN VINYL SLATS
5. FUTURE PANEL ANTENNAS (TYP.)

SOUTH ELEVATION

SCALE: 3/32 inch = 1 ft

12' 0' 12' 24'

1

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7	11/29/23	ISSUED FOR ZONING (MONOPINE REDESIGN)	HT	.

SHEET TITLE: SOUTH ELEVATION

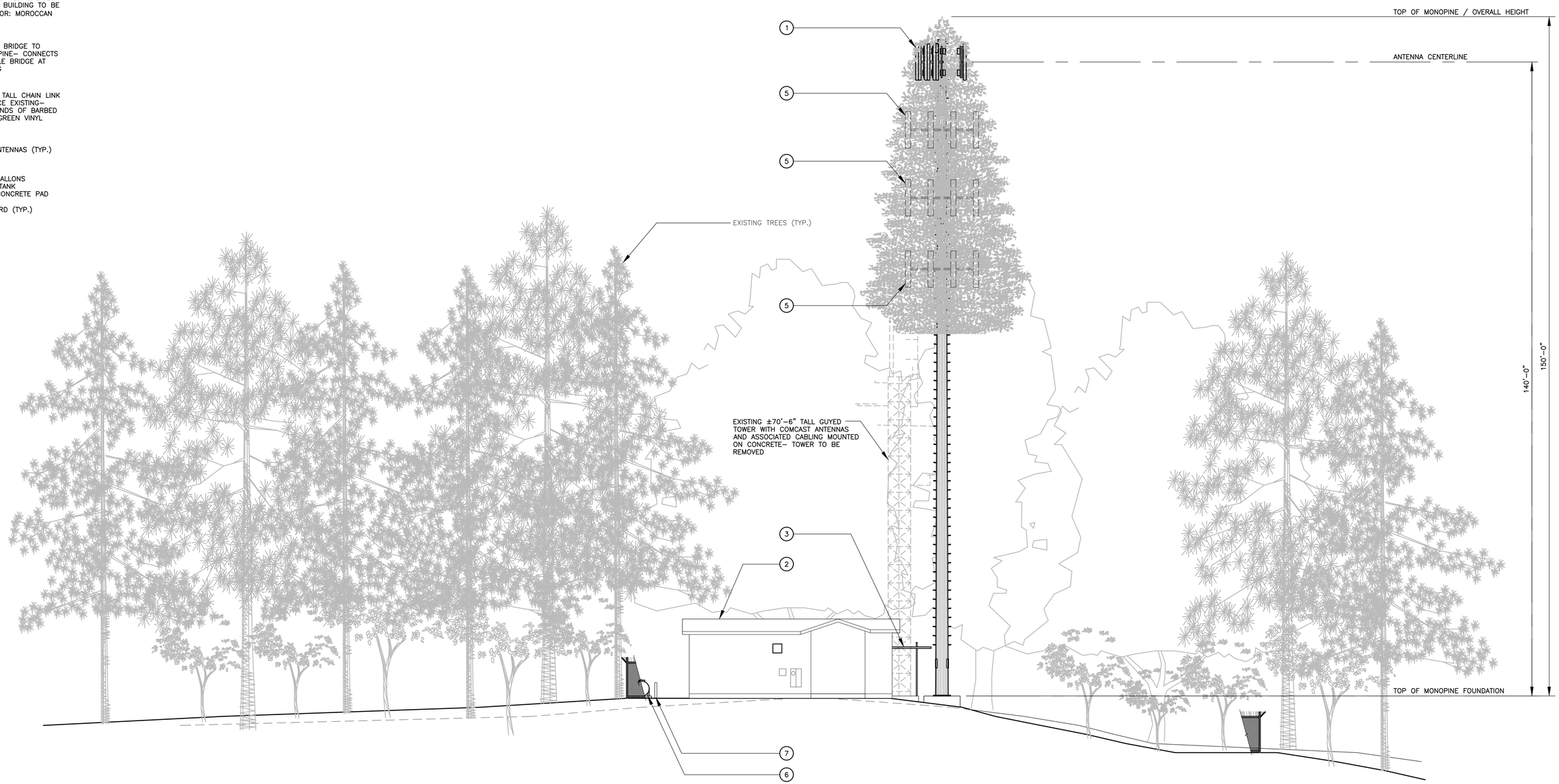
SHEET: A5.1

DGE NO.: P19AN002

SITE NAME: BONNY DOON TOWER

KEYED NOTES:

1. PROPOSED AT&T PANEL ANTENNAS (9 TOTAL– 3 PER SECTOR, TYP., 3 SECTORS TOTAL) MOUNTED ON A PROPOSED 150'–0" TALL MONOPINE– ANTENNAS TO BE COVERED WITH ANTENNA SOCKS TO MATCH THE FOLIAGE OF THE MONOPINE
2. EXISTING BUILDING– LOCATION OF PROPOSED RADIO EQUIPMENT RACKS AND ASSOCIATED UTILITIES BOXES– EXISTING BUILDING TO BE RE–PAINTED (COLOR: MOROCCAN HENNA BY BEHR)
3. PROPOSED CABLE BRIDGE TO PROPOSED MONOPINE– CONNECTS TO EXISTING CABLE BRIDGE AT EXISTING BUILDING
4. PROPOSED 6'–0" TALL CHAIN LINK FENCE TO REPLACE EXISTING– INCLUDES 3 STRANDS OF BARBED WIRE AND DARK GREEN VINYL SLATS
5. FUTURE PANEL ANTENNAS (TYP.)
6. PROPOSED 500 GALLONS LIQUID PROPANE TANK MOUNTED ON A CONCRETE PAD
7. PROPOSED BOLLARD (TYP.)



WEST ELEVATION

SCALE: 3/32 inch = 1 ft

12' 0' 12' 24'

1

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7	11/29/23	ISSUED FOR ZONING (MONOPINE REDESIGN)	HT	.

SHEET TITLE: WEST ELEVATION

SHEET	DGE NO.
A5.2	P19AN002
	SITE NAME: BONNY DOON TOWER

HELIX Environmental Planning, Inc.
1180 Iron Point Road, Suite 130
Folsom, CA 95630
916.435-1205 tel
619.462.0552 fax
www.helixepi.com

December 5, 2022 Project 08254.00002.001

Harold Trias
Delta Groups Engineering, Inc.
6800 Koll Center Parkway, Suite 225
Pleasanton, CA 94566

Subject: Bonny Doon CTI Towers Site #10021 / AT&T Site #CCL05741 Landscape Screening

Dear Mr. Trias:

The purpose of this letter is to provide recommendations for vegetation to visually screen the proposed Bonny Doon telecommunication facility (Site #CCL05741) from neighboring residences located on Assessor Parcel Numbers (APNs) 080-061-02 to the northwest, 081-061-03 to the southwest, 080-062-08 to the south, 080-062-03 to the southeast (under construction), and 080-063-04 to the southeast. The project site is located at 186 Upper Summit Drive in unincorporated Santa Cruz County, California. The proposed project will remove an existing 70-foot-tall, guyed telecommunications tower, 12-foot-tall lattice tower, metal shed, satellite dish and steel lattice support structure and construct a 150-foot-tall monopine structure and mount a GPS antenna on the roof of the existing building. Additional equipment will be installed within the existing building. The existing chain link perimeter fence will be removed and replaced with a six-foot-tall chain link fence with dark green vinyl slats. Access to the site will be via the existing driveway on Summit Drive.

View Sheds

Since the proposed monopine is approximately 80 feet taller than the existing telecommunications tower, there is potential for the new structure to be visible from the surrounding residences (Figure 1). Due to the raised canopies of the existing Douglas fir (*Pseudotsuga menziesii*) trees, ground level views to the site are relatively open, particularly from the residences to the south (Viewpoint 1) and from upper Summit Drive near the site driveway. Portions of the existing building and base of the new monopine will remain moderately visible through the proposed fence. Overhanging canopy of existing mature trees surrounding the site substantially block upward views from the majority of Summit Drive. There is one location on Summit Drive southeast of the project site where a lack of mature trees along the road provides a view of the proposed tower location (Viewpoint 2).

Screening Vegetation

The type and location of screening vegetation was developed based on conversations with adjacent residents about both screening and fire safety concerns, site observation, consideration of mature height in relation to cell tower functionality, and review of a three-dimensional model of the project. Two types of screening vegetation will be used to address the different visual concerns. Broadleaf trees will be planted near the fence and encouraged to grow as low-branching or multi-trunked trees to provide visual screening of the tower base from surrounding residence. Taller redwood (*Sequoia sempervirens)* trees will be placed in and near the existing natural swale area closer to Summit Drive to cut off views of the tower as the trees mature. The proposed plant palette is shown in Table 1, below. All plants are native to the area, evergreen, and moderate to fast-growing (UFEI 2022). Visual simulations of the proposed project and screening vegetation at planting and at 10 years following planting are included in Attachment A.

Table 1
PROPOSED SCREENING TREES

Scientific Name	Common Name	Coniferous or Broadleaf	Annual Growth Rate	Size at Maturity (Width x Height)	Water Demand[1]	Fire Resistance[1]
Arbutus menziesii	Madrone	Broadleaf	2’	30’ x 50’	Low	No rating
Notholithocarpus densiflorus	Tanoak	Broadleaf	2’	20’ x 40’	Low	Resistant
Quercus chrysolepis	Canyon Live Oak	Broadleaf	2’	30’ x 50’	Low	No rating
Sequoia sempervirens	Coast redwood	Coniferous	3’–5’	20’ x90’	High	Resistant in wet areas

1 As defined in the Water Use Classification of Landscape Species IV (Costello and Jones 2014)
2 As recommended in *Living with Fire in Santa Cruz County* (Santa Cruz 2009)

Installation

The trees shall be installed in compliance with the Tree Planting in Landscape Area detail as included in the County of Santa Cruz Design Criteria (Santa Cruz 2021) (Figure 2). To accommodate the setting and natural slope, the detail will need to be modified in the following ways:

- The drains will be excluded due to the drainage provided by the existing slope.
- The root barrier will be excluded due to the naturalistic adjacent environment.
- The excavation of the planting pit will be the full container depth in the center, deeper on the upslope side, and shallower on the downslope side.
- Based on soil health, the fertilizer tablets may be excluded.

Temporary irrigation will be provided during the plant establishment period by hand watering and the use of temporary watering bags.

Establishment

A three-year establishment period is anticipated. Within these three years, plants that are sickly or dead shall be replaced with the same species in the same container size. If the species is not thriving, it may be replaced with a similar species from the above list. The irrigation watering schedule shall be based on monthly evapotranspiration rates and plant water demand, as developed by a licensed landscape architect. During the first year, water application shall be 20 percent above recommended levels. The second year, the operation run time shall be at recommended levels. The third year, water application shall be 50 percent below recommended levels to prepare the plants to survive unirrigated. After the third year, irrigation shall be stopped, and all irrigation equipment shall be removed. At the end of the third year, stakes and ties shall also be removed from the trees.

Please do not hesitate to call me at (916) 365-8700 or email me at MeredithB@helixepi.com if you have any questions about this report.

Sincerely,

Meredith Branstad
Professional Landscape Architect CA #5122

Attachments:

Figure 1: Viewsheds and Approximate Proposed Tree Locations
Figure 2: Tree Planting in Landscape Area
Attachment A: Visual Simulations of Proposed Improvements

REFERENCES

Costello, L.R. and Jones, K.S. 2014. WUCOLS IV: Water Use Classification of Landscape Species. California Center for Urban Horticulture, University of California, Davis. Available: http://ucanr.edu/sites/WUCOLS/.

Santa Cruz, County of. December 2021. Design criteria containing standards for the construction of streets, storm drains, sanitary sewers, water systems, driveways within the unincorporated portion of Santa Cruz County.

2009. *Living with Fire in Santa Cruz County* [accessed 2022 December 2]. Available at: Living with Fire.pdf (sccoplanning.com).

Urban Forestry Ecosystems Institute (UFEI). 2022. SelecTree: a tree selection guide. California Polytechnic State University [cited 2022 December 2]. Available at: https://selectree.calpoly.edu/.

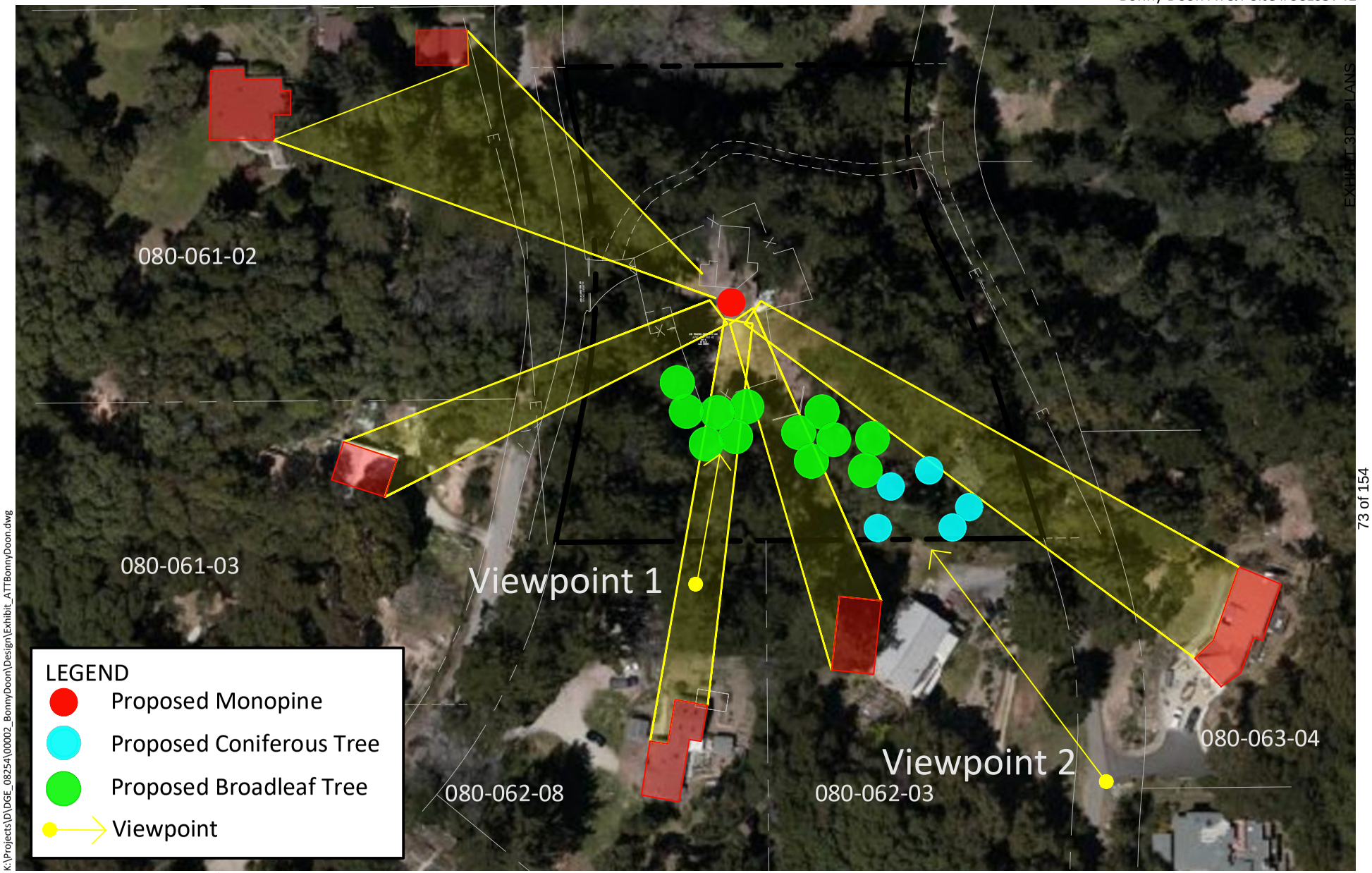

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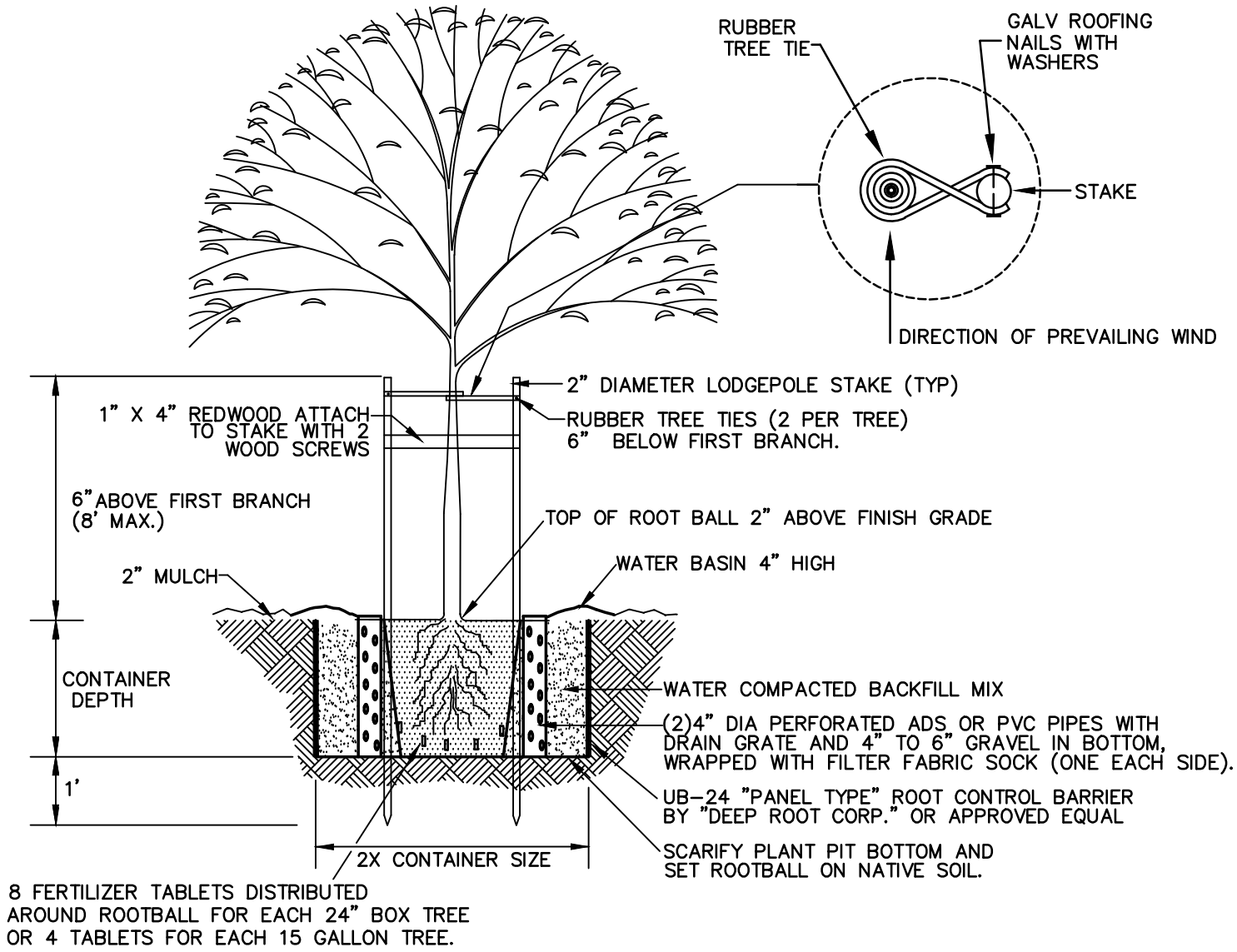
EXHIBIT 3D PLANS

Topographic Survey, October 2022.

HELIX Environmental Planning

Viewsheds and Approximate Proposed Tree Locations

Figure 1



TREE PLANTING IN LANDSCAPE AREA

Appendix A

Visual Simulations

Viewpoint 1 – Existing Condition

Viewpoint 1 – At Planting

HELIX Environmental Planning

Viewpoint 1 – 10 Years After Planting

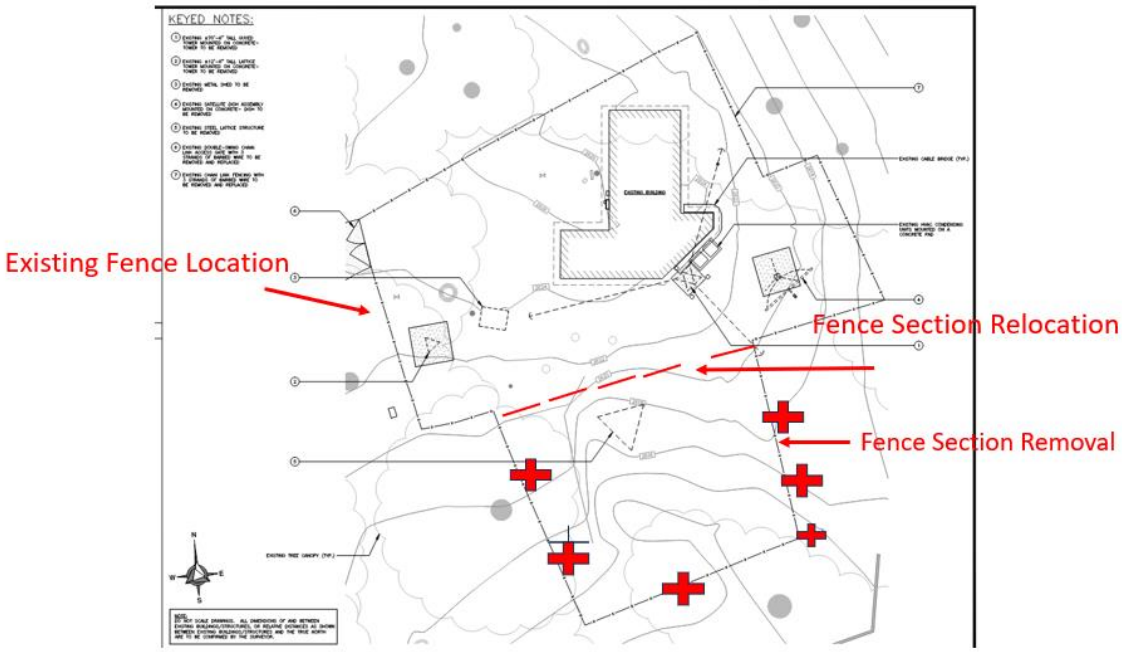
HELIX Environmental Planning

Viewpoint 2 – Existing Condition

Viewpoint 2 – At Planting

Viewpoint 2 – 10 Years After Planting

Staff Recommended Fencing Plan



Attachment 3

Photo Simulations

CTI TOWERS

at&t

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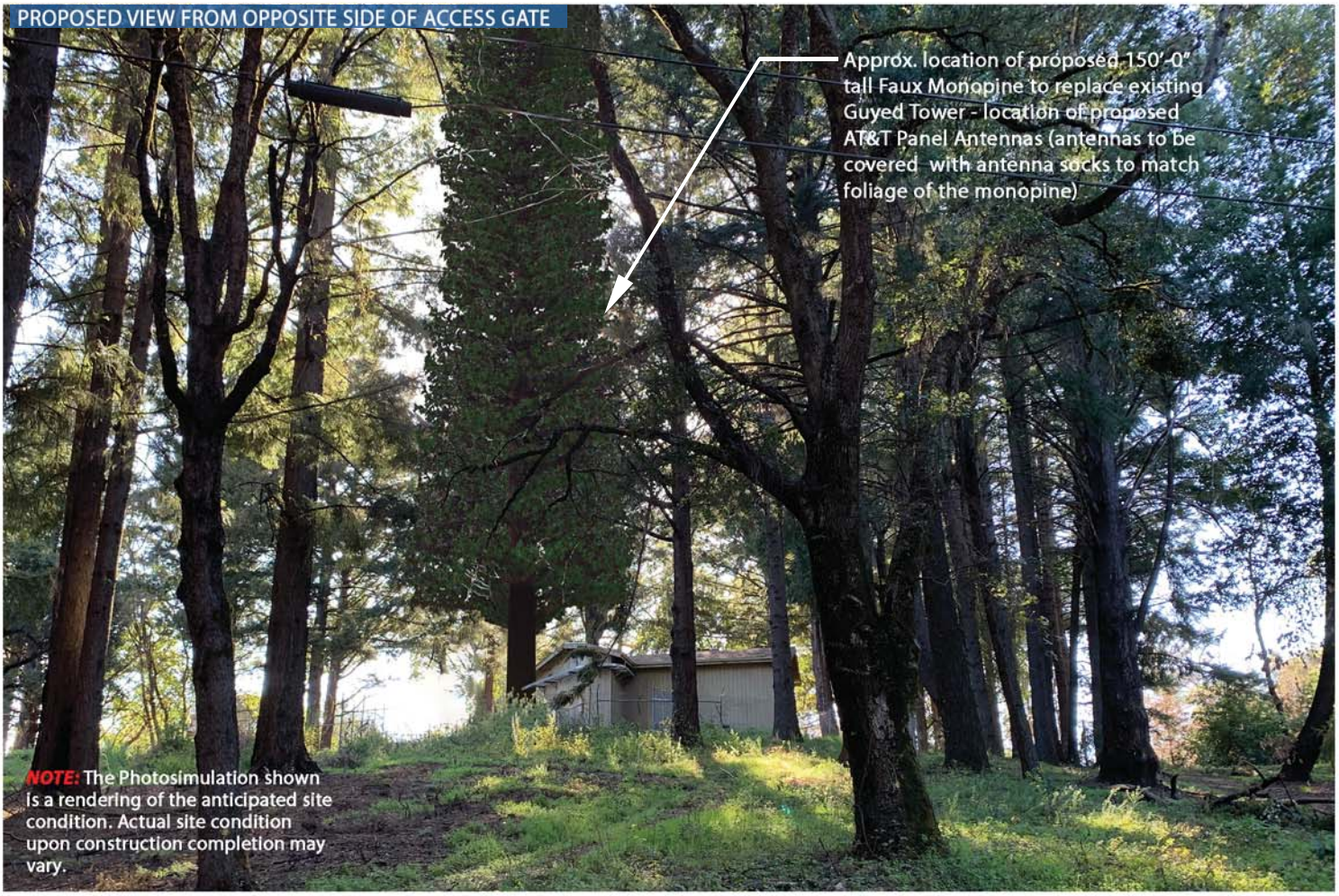
925.468.0115 (T)

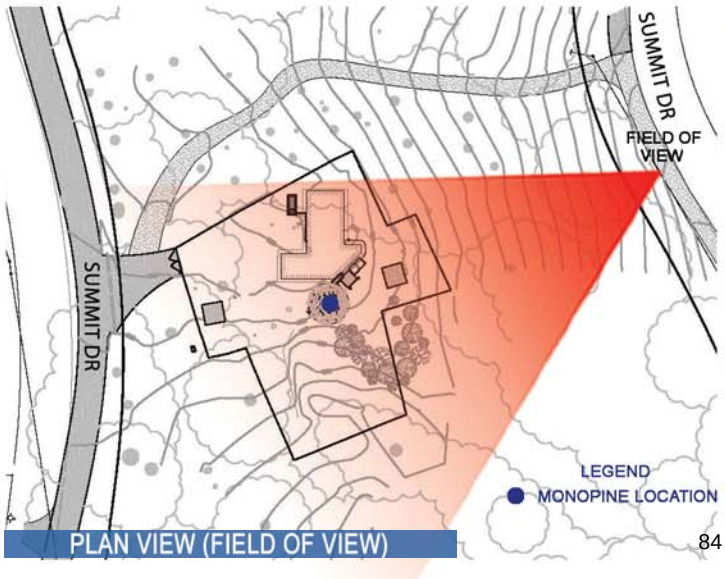
P19AN002

BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

PROPOSED VIEW FROM OPPOSITE SIDE OF ACCESS GATE





PLAN VIEW (FIELD OF VIEW)

EXISTING VIEW FROM OPPOSITE SIDE OF ACCESS GATE

CTI TOWERS

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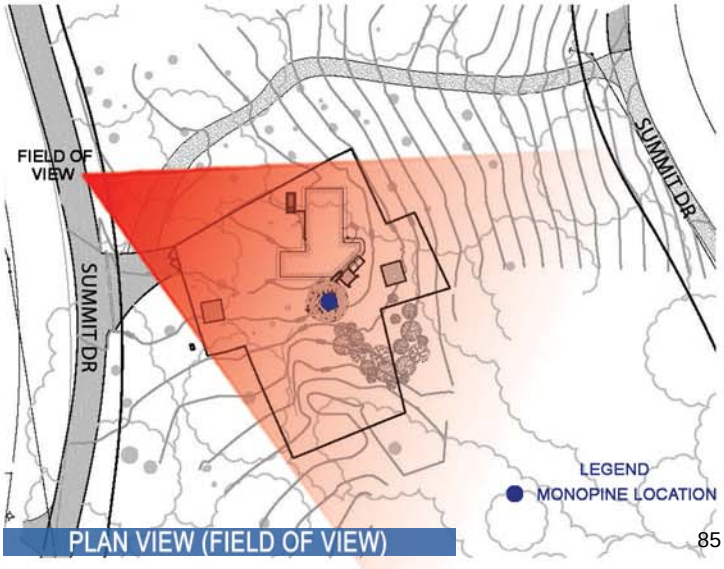
P19AN002

BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

PROPOSED VIEW AT ACCESS GATE



PLAN VIEW (FIELD OF VIEW)

EXISTING VIEW AT ACCESS GATE

CTI TOWERS

at&t

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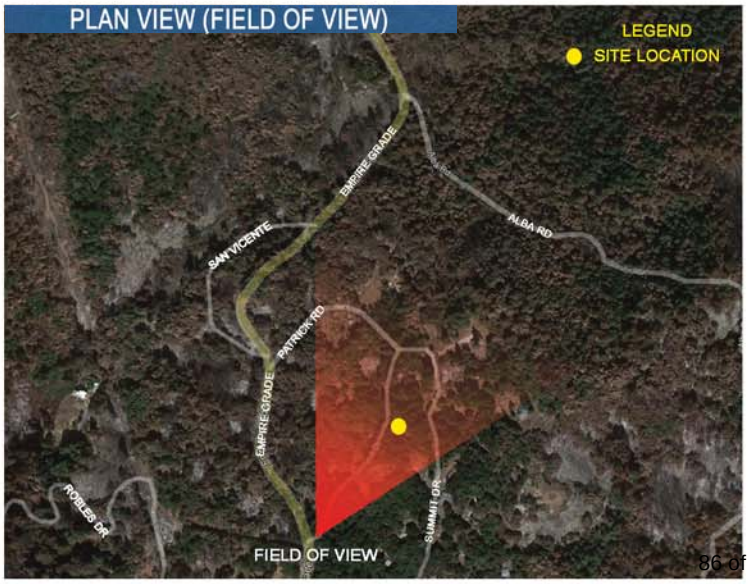
P19AN002

BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

VIEW FROM EMPIRE GRADE & SUMMIT DR

PLAN VIEW (FIELD OF VIEW)



CTI TOWERS

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P19AN002

BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

VIEW FROM EMPIRE GRADE & PATRICK RD

PLAN VIEW (FIELD OF VIEW)

CTI TOWERS

at&t

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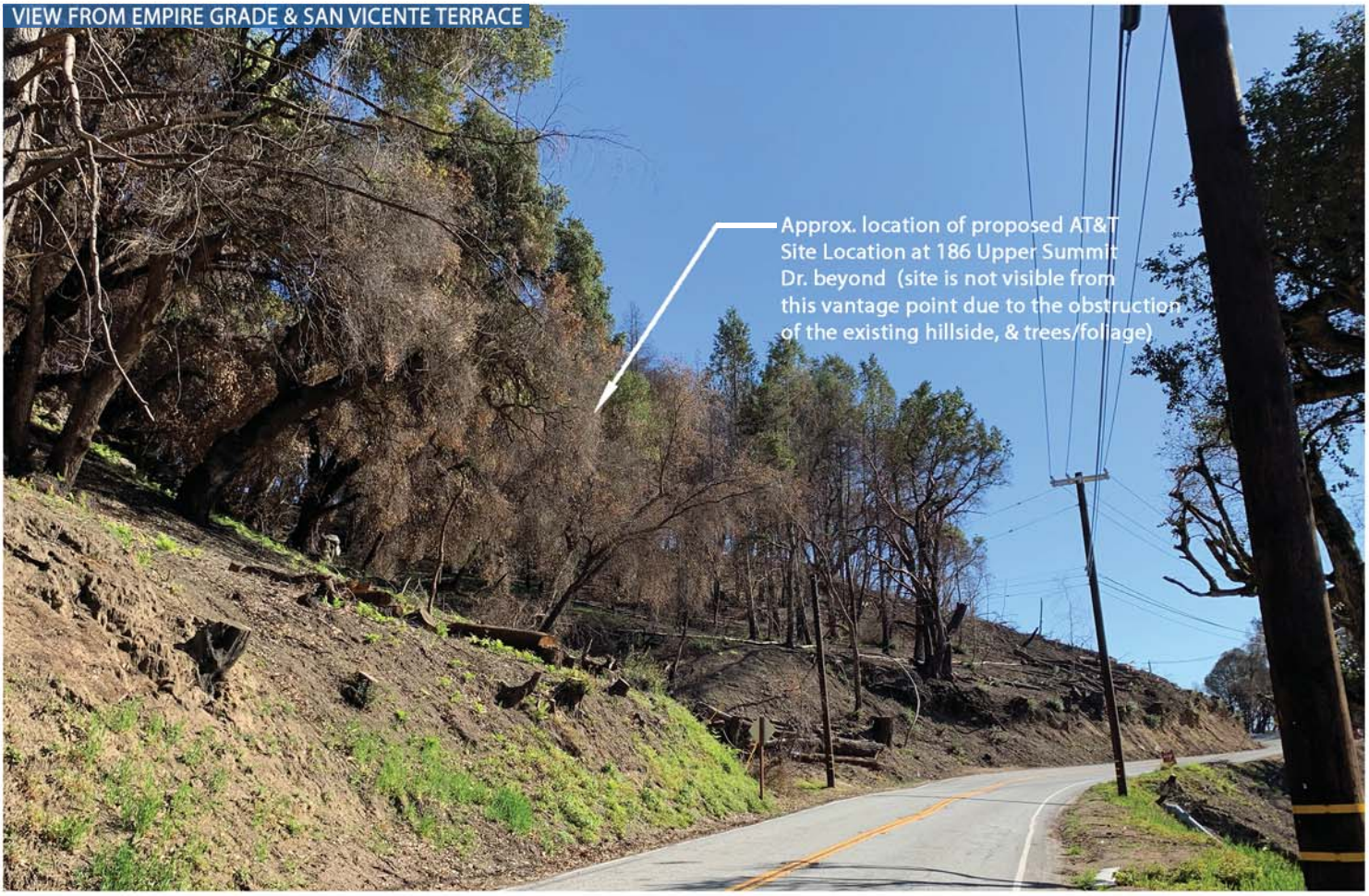
BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

VIEW FROM EMPIRE GRADE & SAN VICENTE TERRACE



PLAN VIEW (FIELD OF VIEW)

CTI TOWERS

at&t

DELTA GROUPS ENGINEERING, INC.
6800 KOLL CENTER PARKWAY, SUITE 225, PLEASANTON, CA 94566
925.468.0115 (T)

P19AN002

BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

VIEW FROM EMPIRE GRADE & ALBA ROAD

PLAN VIEW (FIELD OF VIEW)

CTI TOWERS

at&t

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6800 KOLL CENTER PARKWAY, SUITE 225, PLEASANTON, CA 94566
925.468.0115 (T)

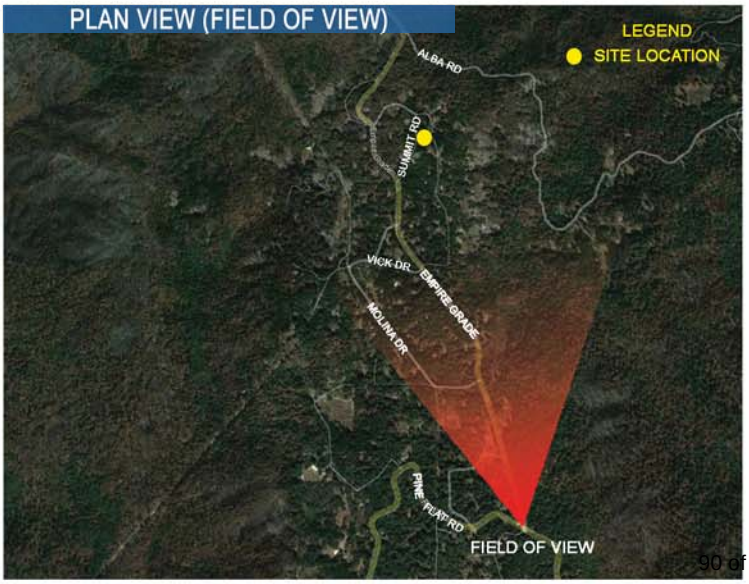
P19AN002

BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

VIEW FROM EMPIRE GRADE & FLAT PINE RD

PLAN VIEW (FIELD OF VIEW)



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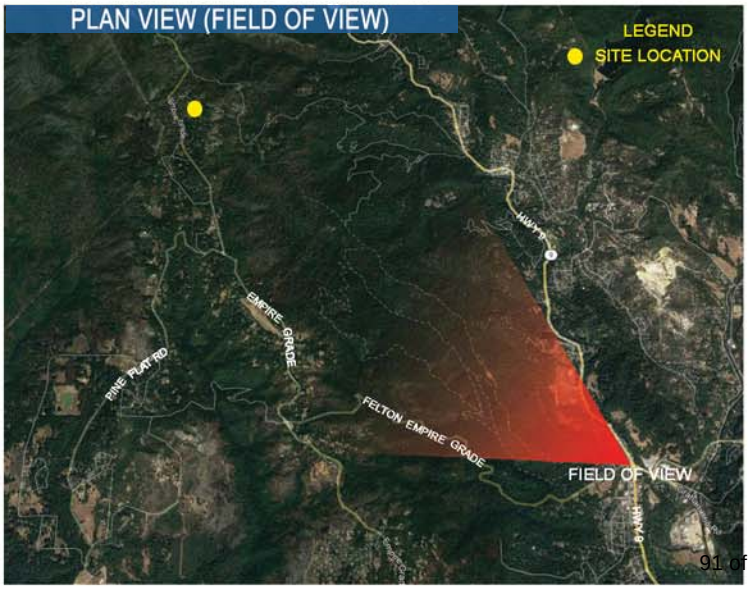
BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

VIEW FROM HWY 9

PLAN VIEW (FIELD OF VIEW)



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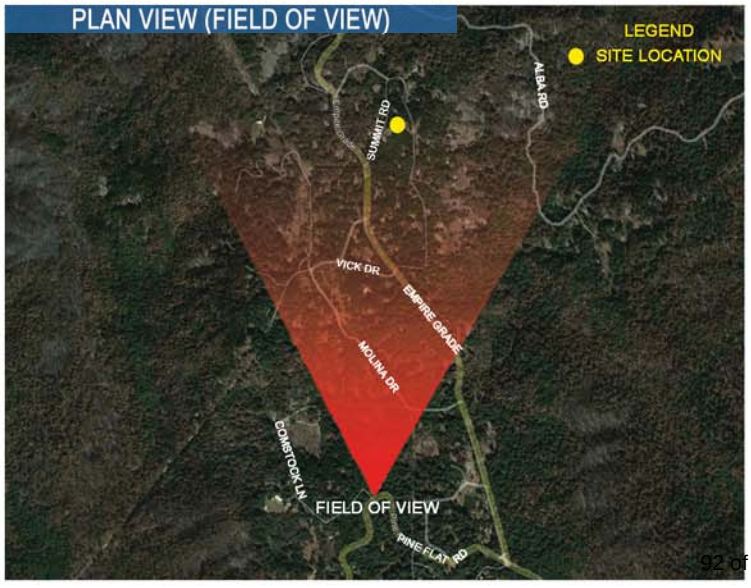
BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

VIEW FROM FLAT PINE RD & COMSTOCK LN

PLAN VIEW (FIELD OF VIEW)



CTI TOWERS

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P19AN002

BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

VIEW FROM HWY 9 & HWY 236

PLAN VIEW (FIELD OF VIEW)

CTI TOWERS

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925.468.0115 (T)

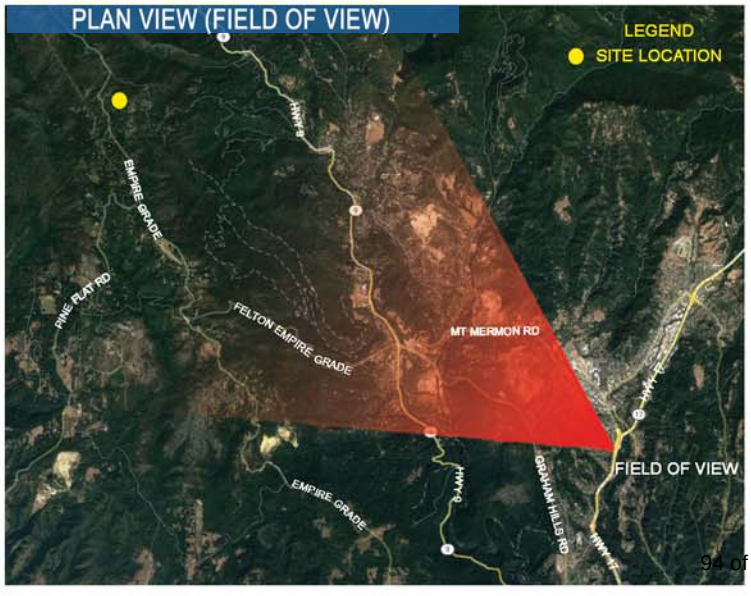
P19AN002

BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

VIEW FROM HWY 17

PLAN VIEW (FIELD OF VIEW)



CTI TOWERS

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925.468.0115 (T)

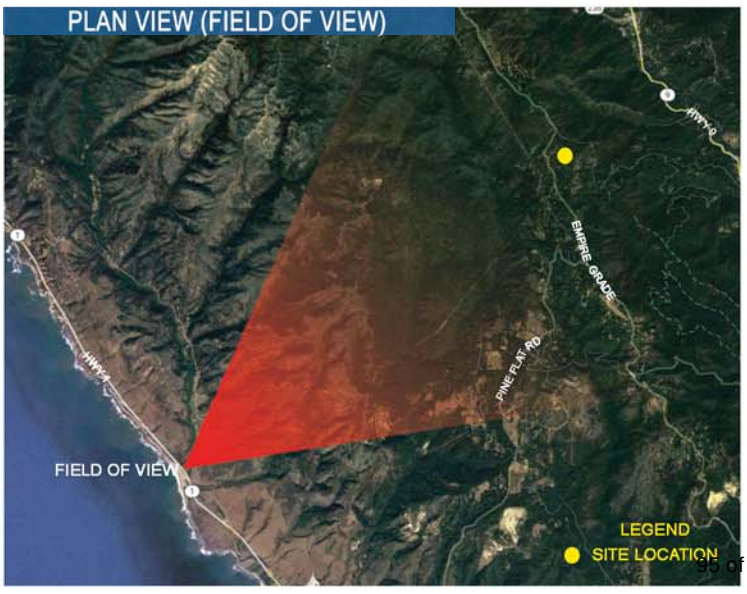
P19AN002

BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

VIEW FROM HWY 1

PLAN VIEW (FIELD OF VIEW)



CTI TOWERS

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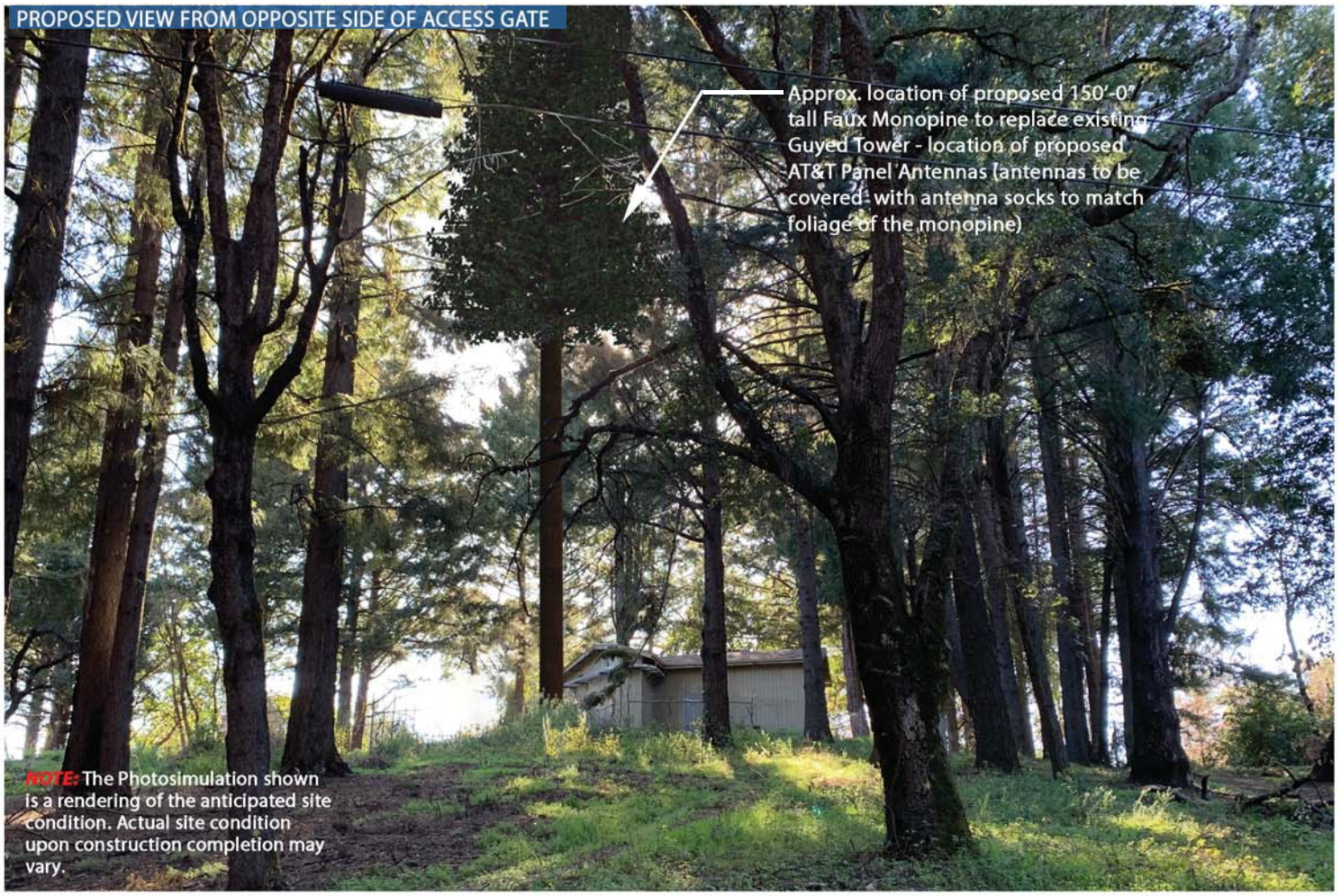
925.468.0115 (T)

P19AN002

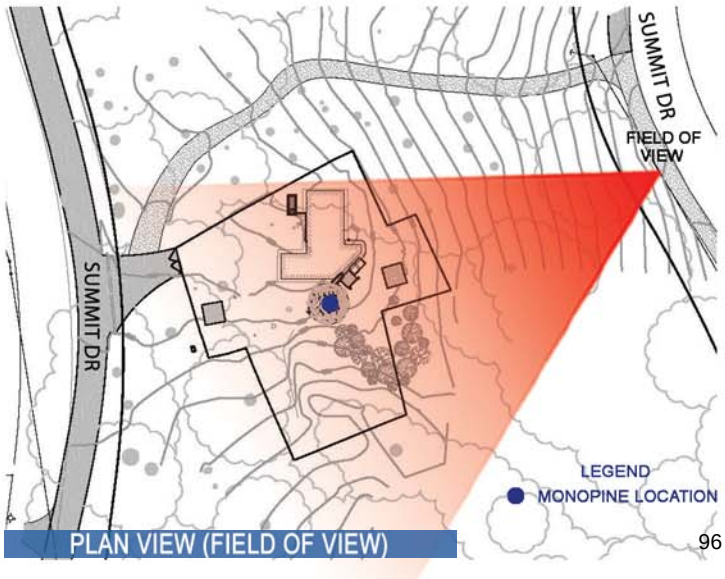
BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

PROPOSED VIEW FROM OPPOSITE SIDE OF ACCESS GATE



NOTE: The Photosimulation shown is a rendering of the anticipated site condition. Actual site condition upon construction completion may vary.



PLAN VIEW (FIELD OF VIEW)

EXISTING VIEW FROM OPPOSITE SIDE OF ACCESS GATE

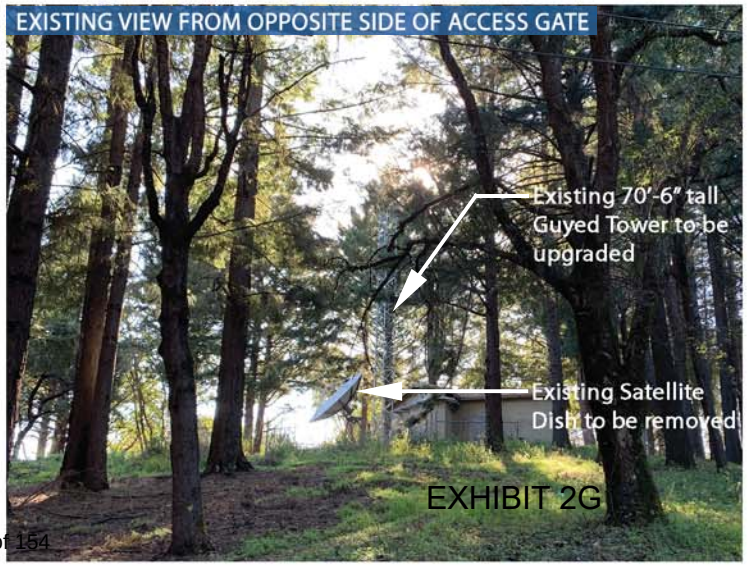


EXHIBIT 2G

CTI TOWERS

at&t

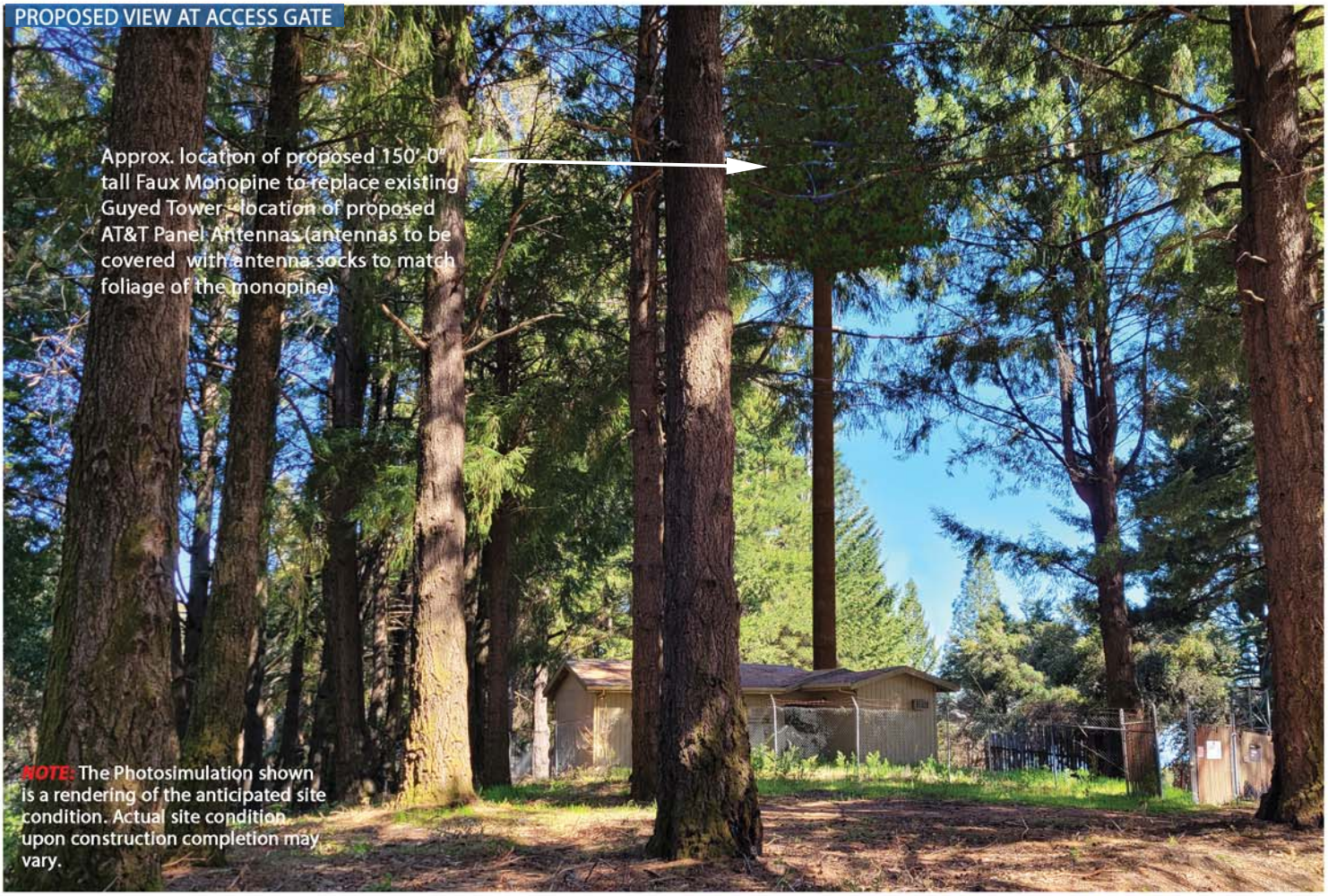
DELTA GROUPS ENGINEERING, INC.
6800 KOLL CENTER PARKWAY, SUITE 225, PLEASANTON, CA 94566
925.468.0115 (T)

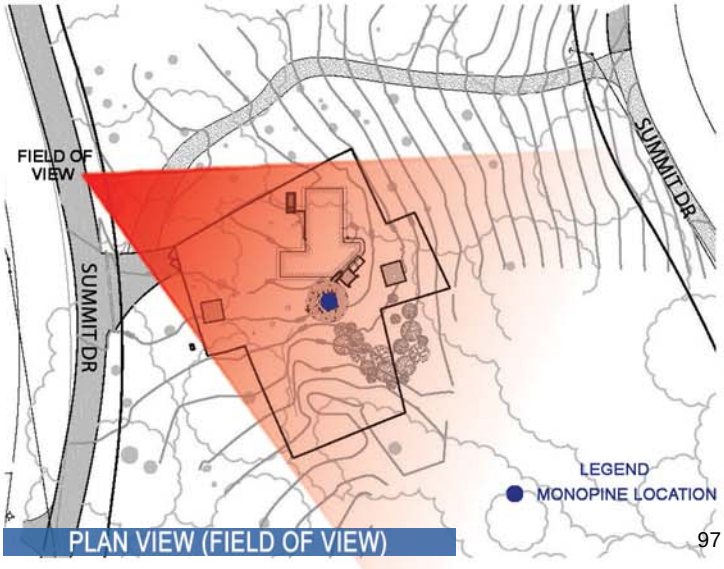
P19AN002

BONNY DOON TOWER/CTI TOWERS COLO

186 UPPER SUMMIT DRIVE, SANTA CRUZ, CA 95060

PROPOSED VIEW AT ACCESS GATE





PLAN VIEW (FIELD OF VIEW)

EXISTING VIEW AT ACCESS GATE

EXHIBIT 2G

Attachment 4

Archaeological Report Acceptance Letter

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123

March 7, 2022

Delta Group Engineering
c/o Tom Derkas
80 Huntington St., #701
Huntington Beach, CA 92648

RE: Archaeological Survey Report for Bonny Doon Tower CCL0574, prepared by Steve Jankiewicz of EBI Consulting, dated January 4, 2022. EBI Project number 6121010321
APN: 080-062-02
App #: REV221043

Dear Mr. Derkas:

This letter is to inform you that we have received and reviewed the Archaeological Survey Report referenced above. The subject report was submitted to evaluate the potential impact on archaeological resources by the proposed construction of an approximately 150-foot tall monopine wireless communication facility with an associated equipment enclosure.

The report included a review of historic maps, aerial images, a record request inquiry from the Northwest Information Center, and a site pedestrian survey. Conclusions in the report suggest that the project site is unlikely to contain significant precontact and/or historical archaeological resources. This conclusion is supported by the unfavorable environmental setting and negative results of the archaeological fieldwork conducted at the Project Area. No impact on archaeological resources is predicted. The following conditions of approval will be included in the Coastal Development Permit 221049.

A. Pursuant to Sections 16.40.040 and 16.42.080 of the County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this development, any artifact or other evidence of an historic archaeological resource or a Native American cultural site is discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the Sheriff-Coroner if the discovery contains human remains, or the Planning Director if the discovery contains no human remains. The procedures established in Sections 16.40.040 and 16.42.080 shall be observed.
B. If intact or undisturbed cultural deposits are exposed during construction, all work within 100 feet of the find will halt, and a qualified professional archaeologist shall be contacted for further review and recommendations. If the find is significant, appropriate mitigation measures shall be formulated and implemented.
C. Final plans shall provide contact information for the archaeologist of record.

Please call me at 831-454-3164 or Leah.MacCarter@SantaCruzCounty.us if you have any questions regarding this letter.

Sincerely,

DocuSigned by:
Leah MacCarter
B18EEB4C207E4ED...

Leah MacCarter
Resource Planner III
Environmental Planning

Attachment 5

Geotechnical Report Acceptance Letter

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123

2 March 2022

Tom Derkas – Delta Engineering Group <tomderkas@gmail.com>
80 Huntington Street, #701
Huntington Beach, CA 92648

Subject: Review of the Geotechnical Investigation for Proposed 150 Feet High Monopole Tower at 186 Summit Drive/APN 080-062-02 dated 29 April 2020 by Dees & Associates, Inc. - Project No. SCR-1470

Project Site: 186 Summit Drive
APN 080-062-02
Application No. REV221042

Dear Applicant:

The purpose of this letter is to inform you that the Planning Department has accepted the subject report. The following items shall be required:

1. All project design and construction shall comply with the recommendations of the report.

2. Final plans shall reference the subject report by title, author, and date. Final Plans should also include a statement that project shall conform to the report's recommendations.

3. After plans are prepared that are acceptable to all reviewing agencies, please submit a completed Soils (Geotechnical) Engineer Plan Review Form to Environmental Planning. The author of the soils report shall sign and stamp the completed form. Please note that the plan review form must reference the final plan set by last revision date.

   Any updates to report recommendations necessary to address conflicts between the report and plans must be provided via a separate addendum to the soils report.

Electronic copies of all forms required to be completed by the Geotechnical Engineer may be found on our website: www.sccoplanning.com, under "Environmental", "Geology & Soils", and "Assistance & Forms".

After building permit issuance the soils engineer *must remain involved with the project* during construction. Please review the Notice to Permits Holders (attached).

Our acceptance of the report is limited to its technical content. Other project issues such as zoning, fire safety, septic or sewer approval, etc. may require resolution by other agencies.

Please note that this determination may be appealed within 14 calendar days of the date of service. Additional information regarding the appeals process may be found online at: http://www.sccoplanning.com/html/devrev/plnappeal_bldg.htm

If we can be of any further assistance, please contact the undersigned at (831) 454-3168 or rick.parks@santacruzcounty.us

Sincerely,

Rick Parks, GE 2603
Civil Engineer – Environmental Planning

Cc: Dees & Associates, Inc, Attn: Becky Dees, GE
Environmental Planning, Attn: Leah MacCarter
Planning Department, Attn: Shelia McDaniel
CTI Towers <jpeduto@ctitowers.com>

Attachments: Notice to Permit Holders

NOTICE TO PERMIT HOLDERS WHEN A SOILS REPORT HAS BEEN PREPARED, REVIEWED AND ACCEPTED FOR THE PROJECT

After issuance of the building permit, the County requires your soils engineer to be involved during construction. Several letters or reports are required to be submitted to the County at various times during construction. They are as follows:

1. **When a project has engineered fills and / or grading**, a letter from your soils engineer must be submitted to the Environmental Planning section of the Planning Department prior to foundations being excavated. This letter must state that the grading has been completed in conformance with the recommendations of the soils report. Compaction reports or a summary thereof must be submitted.

2. **Prior to placing concrete for foundations**, a letter from the soils engineer must be submitted to the building inspector and to Environmental Planning stating that the soils engineer has observed the foundation excavation and that it meets the recommendations of the soils report.

3. **At the completion of construction,** a *Soils (Geotechnical) Engineer Final Inspection Form* from your soils engineer is required to be submitted to Environmental Planning that includes copies of all observations and the tests the soils engineer has made during construction and is stamped and signed, certifying that the project was constructed in conformance with the recommendations of the soils report.

   If the *Final Inspection Form* identifies any portions of the project that were not observed by the soils engineer, you may be required to perform destructive testing in order for your permit to obtain a final inspection. The soils engineer then must complete and initial an *Exceptions Addendum Form* that certifies that the features not observed will not pose a life safety risk to occupants.

Attachment 6

Colors and Materials Board
Safety Data Sheet
Polyvinyl Chloride Study

Colors and Materials Board

SAFETY DATA SHEET

SECTION 1. PRODUCT IDENTIFICATION

MATERIAL NAME: **PVC Pipe and Fittings**

PRODUCT USE: Water, sewer, conduit and industrial piping

MANUFACTURER/SUPPLIER: IPEX Inc.
807 Pharmacy Avenue
Scarborough, Ontario
Canada
M1L 3K2

TELEPHONE NO.: 866-473-9462 (Canada)
800-463-9572 (USA)

PREPARED BY: Health, Safety and Environment

SECTION 2. HAZARDS IDENTIFICATION

This product is an article and therefore is not subject to the requirements of the federal Hazardous Products Act (HPA) and Health Canada's Hazard Products Regulations (HPR) to provide a Safety Data Sheet (SDS). This product should not present a health or safety hazard under recommended or normal use.
This product is an article and therefore is not subject to the requirements of the US Hazard Communication Standard (HCS) (29 CFR 1910.1200) to provide a Safety Data Sheet (SDS). This product should not present a health or safety hazard under recommended or normal use.

Classification GHS Not Classified
GHS labelling No Labeling Applicable

SECTION 3. HAZARDOUS INGREDIENTS

This article does not contain any substances required to be mentioned according to the Canadian or American criteria.

SECTION 4. FIRST AID MEASURES

SPECIFIC FIRST AID MEASURES: No situation is likely to arise from routine handling of PVC pipes.

EYES: Remove particles with clean water. If irritation persists, consult a physician.

SKIN: Wash with soap and water.

INGESTION: Do not induce vomiting: consult a physician.

INHALATION: If irritation persists, consult a physician

ACUTE/CHRONIC (LONG-TERM) SYMPTOMS AND EFFECTS: Not expected to present a significant hazard under anticipated conditions of normal use.

SECTION 5. FIRE-FIGHTING MEASURES

FIRE FIGHTING: Wear self-contained breathing apparatus (SCBA) equipped with a full face piece and operated in a pressure-demand mode or other positive-pressure mode and protective clothing. Personnel not having suitable respiratory protection must leave the area to prevent significant exposure to toxic gases from combustion, burning, or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack

phase of fire fighting operations. Run off water from fire fighting may have corrosive effects.

EXTINGUISHING MEDIA: Water spray, carbon dioxide, foam, dry chemical.

HAZARDOUS COMBUSTION PRODUCTS: Hydrogen Chloride, Carbon Dioxide, Carbon Monoxide, benzene, aromatic and aliphatic hydrocarbons other substances dependent on fire conditions.

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: No special personal precautions required.

ENVIRONMENTAL PRECAUTIONS: No special environmental precautions required.

MATERIALS NOT TO BE USED FOR CONTAINMENT AND CLEAN UP: None applicable

PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL: Pipe fragments and debris should be swept up and removed to a disposal container.

SECTION 7. HANDLING AND STORAGE

HANDLING PROCEDURES AND EQUIPMENT: Avoid creating and breathing PVC dust.

STORAGE REQUIREMENTS: None

SECTION 8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

EXPOSURE LIMITS: Not required for articles.

PERSONAL PROTECTIVE EQUIPMENT TO BE USED: When cutting, the use of eye protection and a NIOSH-approved respirator for dust is recommended.

ENGINEERING CONTROLS TO BE USED: Ventilate adequately when cutting.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Solid

ODOUR AND APPEARANCE: White, blue, green, grey or orange, odourless

BOILING POINT: Not applicable

MELTING POINT: > 66 °C (> 150 °F)

FREEZING POINT: Not applicable

VAPOUR PRESSURE: Not applicable

VAPOUR DENSITY: Not applicable

SPECIFIC GRAVITY: 1.38 – 1.40

pH:	Not applicable
ODOUR THRESHOLD:	Not applicable
EVAPORATION RATE:	Not applicable
COEFFICIENT WATER/OIL DISTR:	Not applicable
FLASH POINT:	Not applicable
LOWER FLAMMABLE LIMIT:	Not applicable.
UPPER FLAMMABLE LIMIT:	Not applicable.
AUTOIGNITION:	450 – 507°C (842 – 945°F)
CONDITIONS OF FLAMMABILITY:	Only if highly heated and exposed to a continuous source of ignition. PVC pipe will not support combustion.
IMPACT SENSITIVITY:	Not available
STATIC DISCHARGE:	Not available
SOLUBILITY:	Not applicable
DECOMPOSITION TEMPERATURE:	150 – 250°C (302 – 482°F)
VISCOSITY:	Not applicable

SECTION 10. STABILITY AND REACTIVITY DATA

STABILITY:	Not available.
REACTIVITY:	Not available
CONDITIONS TO AVOID:	Avoid all possible sources of ignition, heat and flames
HAZARDOUS POLYMERIZATION:	Will not occur
INCOMPATIBILITY WITH OTHER SUBSTANCES:	Acetal, acetal copolymers, amines
HAZARDOUS DECOMPOSITION:	See section 5

SECTION 11. TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE TO PRODUCT:	No acute health effects reported with the inhalation of PVC dust; dust may irritate the eyes.
EFFECTS OF CHRONIC EXPOSURE TO PRODUCT:	Vinyl resin is not known to cause any disease. Dust exposure should always be minimized. Routine inhalation of dust of any kind should be avoided. Exercise care when dumping bags, sweeping, mixing or doing other tasks which can create dust.
ROUTES OF ENTRY:	Inhalation, eye contact with dust (only when cutting or grinding).

SENTITIZATION: None known

IRRITANCY: Not available

CHRONIC/CARCINOGENICITY: Not available

REPRODUCTIVE TOXICITY: Not available

TERATOGENICITY: Not available

MUTAGENICITY: Not available

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: Not available

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICITY: The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

PERSISTENCE AND DEGRADABILITY: Not established.

BIOACCUMULATIVE POTENTIAL: Not established.

MOBILITY IN SOIL: No additional information available.

OTHER ADVERSE EFFECTS: Not established.

SECTION 13. DISPOSAL CONSIDERATIONS

Handle in accordance with federal, state, provincial and municipal regulations.

SECTION 14. TRANSPORT INFORMATION

SPECIAL SHIPPING INFORMATION: Not applicable

SECTION 15. REGULATORY INFORMATION

No information available.

SECTION 16. OTHER INFORMATION

DATE OF PREPARATION: August 2019
REVISION DATE: August 2019

Disclaimer

The information contained in this safety data sheet is based on information available to IPEX Inc. and is believed to be accurate. Where this information is based on data developed by third parties, IPEX Inc. expressly denies liability. IPEX Inc. makes no warranty, expressed or implied, regarding the accuracy of this information or data or the results obtained from its use. All recommendations are made without guarantee, since the conditions of use of this product are beyond IPEX Inc.'s control. IPEX Inc. assumes no responsibility for any damages resulting from the use of this product described herein.

Please consult IPEX Inc. for further information.

Evaluation of Monopine Needles
Verizon Wireless Monopine, 1360 Ski Run Boulevard

Special Use Permit File # 19-026

Prepared for
Verizon Wireless

Prepared by

Bridgette Deshields, Principal Scientist
Sean L. Culkin, P.G., C.H.G., Consultant
505 Montgomery Street, 11th Floor
San Francisco, CA 94111

Bridgette Deshields **Sean L. Culkin, P.G., C.H.G.**

March 3, 2022

INTRODUCTION

In the context of a permitting effort for a new cell phone tower at 1360 Ski Run Boulevard (APN 025-580-07), we were asked to evaluate whether the synthetic monopine needle structures used in the production of faux tree towers that provide stealthing to wireless communications facilities raise plastic pollution concerns, particularly with respect to nearby Lake Tahoe. The monopine needles are made of polyvinyl chloride (PVC), a type of hard plastic. The specific issue we have assessed is whether the plastic needles, which are "macroplastics" (i.e., large pieces of plastic) and can shed/fall from faux tree tower structures over time, could degrade to smaller pieces over time (i.e., become "microplastics") and possibly discharge to Lake Tahoe and impact water quality, fish, and wildlife.

In summary, because of their composition, the material specifications, and the methods of usage and maintenance, significant breakdown of monopine needles into microplastics that would lead to pollution of waterways is unlikely. Specifically:

- The type of material used for monopine needles (PVC) is not a predominant source of microplastics found in water bodies.
- There is no evidence that monopine needles used on cell towers generate microplastics or pose a significant risk to water quality, fish, or wildlife.
- Migration of monopine needles from the proposed tower site into Lake Tahoe is unlikely.
- In the unlikely event that monopine needles would migrate downgradient, existing management plans to manage runoff, trash, and plastics will prevent transport plastics from the proposed tower via surface water transport to Lake Tahoe.
- Existing local barriers and planned maintenance will minimize any plastic accumulation or potential migration.

In summary, due to the nature of the materials (which are designed to be durable), the lack of environmental conditions that would facilitate degradation, the lack of transport pathways, and measures in place to reduce inputs from the watershed to the lake, pollution of the lake from monopine needles at the cell phone tower proposed for 1360 Ski Run Boulevard is unlikely.

Resumes (Curriculum vitae) for the authors, Bridgette DeShields and Sean Culkin, are attached.

PVC AND MONOPINE NEEDLES

Monopine needles consist of a spine and "needles" that mimic the appearance of a pine tree. Based on information from the manufacturer, the spine and the needles are made of PVC. They

are designed to be relatively durable in the environment, although the materials can "shed" from the structure over time.

PVC is a widely used plastic (the third-most widely produced synthetic plastic polymer, after polyethylene and polypropylene).[1] It is commonly used for infrastructure (e.g., pipes, decking, siding) and a variety of molded products (household products, medical devices) because it is stable, maintains its integrity, and resists degradation.

Studies have shown that major mechanisms of microplastic generation within surface water bodies are either by weathering on beaches[2] or mechanical stress and photo- or bio-degradation in the water body itself.[3] A study by U.C. Santa Barbara indicated that large, rigid plastic pieces may not be major sources of microplastics and nanoplastics to water bodies.[4] Therefore, relatively large, rigid plastics like the majority of the components on the PVC branches and monopine needles on faux tree tower structures have less potential for breakdown to microplastics in the relatively static, upland environment in which they would be deposited, as is observed at the proposed site at Ski Run Boulevard.

PLASTICS IN THE ENVIRONMENT

Plastic pollution is of global concern, particularly in surface water bodies. Several studies and management plans to address trash, including plastics, are ongoing in California and the Lake Tahoe region and discussed below.

Lake Tahoe Region Microplastics Studies

Studies of microplastics in Lake Tahoe are in progress and detailed study reports providing the data have yet to be published. However, there are overviews and summary information available for the studies in progress.[5] In summary, the available information shows:

- A wide variety of types of plastics have been found in the lake. The type of plastic used for monopine needles, PVC, is not a major contributor of the plastics found in the lake (see Figures 1 and 2 below).
- The main sources of microplastics from studies in Lake Tahoe (and elsewhere) include clothing fibers, microbeads, rubber, cigarette filters, toys, food packaging, disposable

[1] https://www.sciencedirect.com/topics/materials-science/polyvinyl-chloride
[2] https://www.sciencedirect.com/science/article/pii/S0025326X11003055?via%3Dihub
[3] https://pubs.rsc.org/en/content/articlehtml/2021/em/d0em00446d
[4] https://pubs.acs.org/doi/10.1021/acssuschemeng.9b06635
[5] https://lands.nv.gov/uploads/documents/CUTL_2020_REPORT_Version_1.pdf

containers and cups, and plastic bottles and bags. Also, prevalent plastics are those generated from items from boats and recreational activities (including fiberglass).

- Predominant plastic constituents include polyethylene and plastic fibers (e.g., nylon polyester and acrylic).

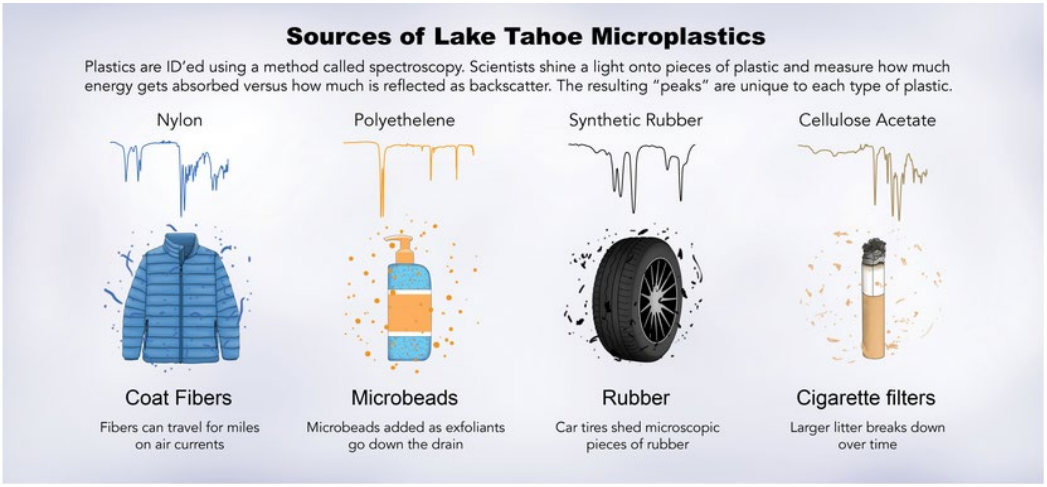
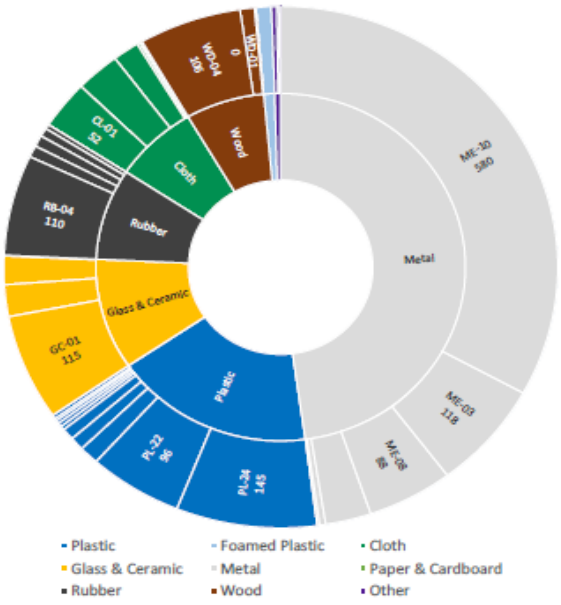


Figure 1. Sourced from "Lake Tahoe's pristine legacy threatened by microplastics": https://ucscsciencenotes.com/feature/lake-tahoes-pristine-legacy-threatened-by-microplastics/.



From a pollutant stand point, it is important to note that items in the rubber and cloth material categories are often comprised of plastic. Rubber tires are partially or entirely made of synthetic rubbers, which are polymers similar to plastics. Synthetic and synthetic blend clothing (e.g. polyester, elastics) and ropes are composed of plastic fibers.

Figure 2: Sourced from "A Clean Up The Lake Report: Results of the 2020 Lake Tahoe SCUBA-Enabled Litter Cleanup Dives" (March 24, 2021)[5] showing litter removed by weight per material (inner ring) and material sorting category (outer ring). Major categories include the category ID and total weight removed over the 6-mile cleanup (data labels).

Other Microplastics Studies

Because limited data are available from the ongoing microplastics studies in Lake Tahoe, we examined other more comprehensive and complete studies for water bodies in California. Although PVC is widely used, as discussed above, studies show no evidence that PVC fragments are a significant contributor of microplastics to these water bodies since they are not found in high abundance relative to other types of plastic. This may be due to the lower degradation rate of PVC relative to other plastics.[6]

A relevant study for San Francisco Bay[7] provides a large and comprehensive data set expected to be representative of other large water bodies. Similar to Lake Tahoe, several tributaries and storm drain systems empty into San Francisco Bay. San Francisco Bay is more developed and urban than Lake Tahoe, so it is likely that it receives a higher volume of plastic pollution. However, the types of plastic pollution are likely similar, although there could be more sources of PVC given its widespread usage in the Bay Area. The Bay Area also likely has many more cell towers with monopine needles. In fact, based on information from Verizon Wireless, there are approximately seven times more cell towers with monopine needles in the Bay Area than in the Tahoe basin.

In summary, the San Francisco Bay microplastics study (Figures 3 and 4) showed:

- Stormwater showed that fragments (59%) and fibers (39%) are the main microplastic items found, with nearly half of the fragments consisting of rubber.
- In surface water, the dominant microplastic particle type was fibers. Polyethylene and polypropylene fragments, polystyrene foams, and polyethylene and polypropylene films made up a majority of the microparticles (likely from single-use plastic items, packaging, and plastic bags). Polyethylene beads were also identified, possibly linked to microbeads found in personal care and cleaning products.
- The predominant type of microplastics found in fish were also fibers.
- PVC was not listed as a predominant source of microplastics.

[6] https://pubs.acs.org/doi/10.1021/acssuschemeng.9b06635

[7] https://www.sfei.org/sites/default/files/biblio_files/Microplastic%20Levels%20in%20SF%20Bay%20-%20Final%20Report.pdf

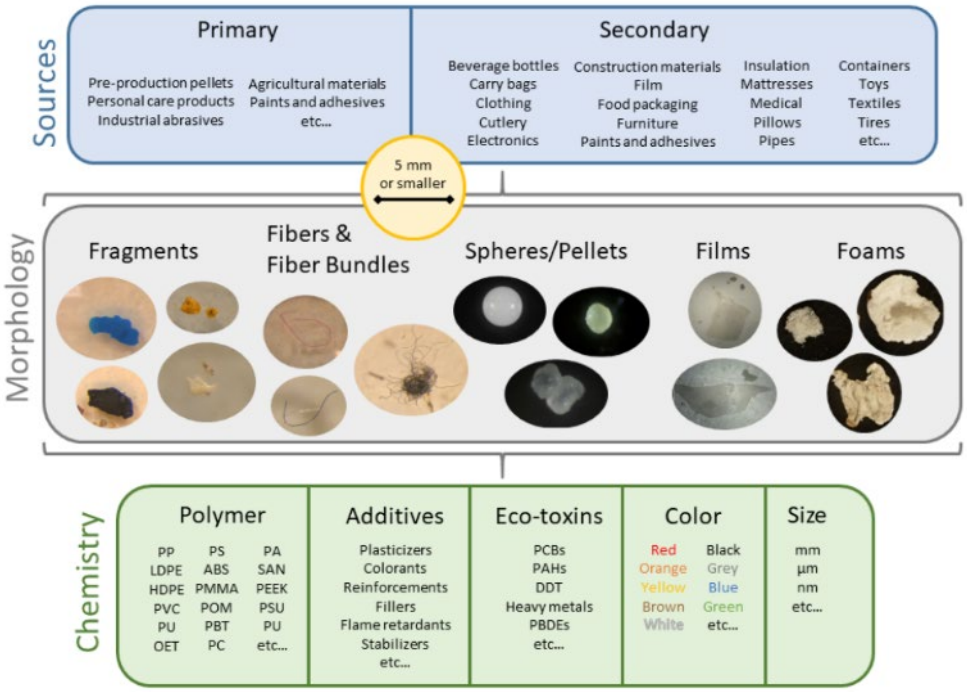


Figure 1.1. Microplastics are a diverse class of contaminants. Figure adapted from Rochman et al., 2019; Tanaka and Takada, 2016; and Wessel et al., 2016.

Figure 3. Sourced from: "Understanding Microplastic Levels,Pathways, and Transport.": https://www.sfei.org/sites/default/files/biblio_files/Microplastic%20Levels%20in%20SF%20Bay%20-%20Final%20Report.pdf

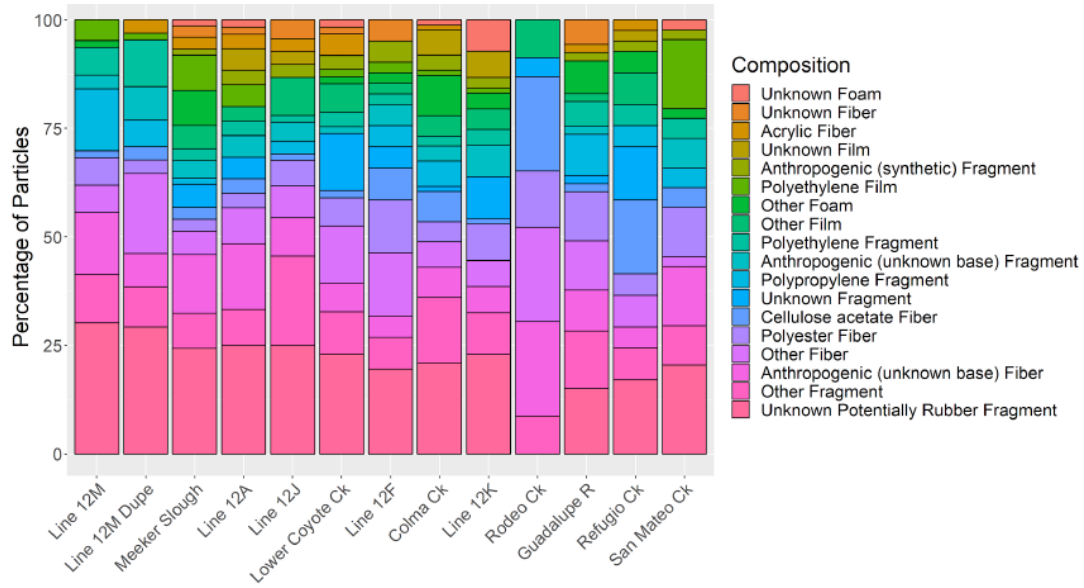


Figure 2.5. Polymer type distribution for microparticles. Polyethylene, polypropylene, cellulose acetate, polyester, and rubber are considered plastic. The most abundant 14 categories of particles are listed, while the abundances of all other particles are combined into the categories labeled "Other."

Figure 4. Sourced from: "Understanding Microplastic Levels,Pathways, and Transport.": https://www.sfei.org/sites/default/files/biblio_files/Microplastic%20Levels%20in%20SF%20Bay%20-%20Final%20Report.pdf

Although there are no specific estimates of the mass of plastics entering Lake Tahoe, the potential mass load of plastic from the proposed tower is expected to be very small due to limited potential for migration (see below). Furthermore, based on the findings of the studies summarized above and the nature of the materials (PVC, which resists degradation), monopine needles are not likely to be a significant source of microplastics to surface water.

SURFACE WATER MIGRATION POTENTIAL

Significant migration of monopine needles from the proposed tower site to Lake Tahoe via existing surface water pathways is unlikely, as outlined below. If any monopine needle pieces were to migrate outside the enclosure, very few would be likely to end up in Lake Tahoe because:

- There is no readily observable pathway for plastic falling in the immediate vicinity of the proposed tower to enter Bijou Park Creek via surface water runoff (see Figures 6 and 7 below).
  - The site of the proposed faux tree tower is currently occupied by a shed, which will be removed prior to construction of the tower, on the property of Hansen's Snow Tube & Saucer Hill. The shed is at the edge of a slope that angles down towards Ski Run Boulevard. Verizon Wireless will construct a new shelter immediately adjacent to the tower.
  - Between the shed and Ski Run Boulevard are several buildings consisting of a motel, retaining wall, and other structures that would act as local barriers to surface water flow and any associated plastic transport.
  - The shed is approximately 330 linear feet from the uppermost section of Bijou Park Creek drainage area, which is off the property in the north-northwest direction. Separating the watershed from the creek drainage area is a sled/tubing run that appears in photos as a built-up berm that would also act as a barrier to surface water flow downslope of the proposed tower across the property line to the northeast (see image below).
  - The location of the proposed tower is not in the Bijou Park Creek Stream Environmental Zone (see Figure 8 below).
  - The location of the proposed tower is not within the documented 100-year flood inundation area of the creek (see Figure 9 below).
  - The location of the proposed tower is not within areas documented to be prone to flooding (see Figure 10 below).
  - The potential offsite surface water flow direction was observed to be predominantly in the direction of Ski Run Boulevard from the proposed tower site.

- The potential pathway for plastics from the uppermost drainage area of Bijou Park Creek through the creek to the outfall near Lake Tahoe Harbor is a distance of approximately 1.1 miles, and includes highly vegetated surface drainages that would act as a barrier to plastic monopine needle transport.
- The **Bijou Park Creek Watershed Restoration Project** is currently under development. When completed, the project would provide additional barriers for potential transport of plastic needles from the site of the proposed tower via Ski Run Boulevard or Bijou Park Creek. These proposed restoration activities include sediment traps, reduced stream gradient for upper Bijou Park Creek, and diversion of stormwater away from the Ski Run/Needle Peak intersection to an existing treatment basin.

Figure 5: View of proposed tower site from Needle Peak Road.

Figure 6: Proposed tower site.

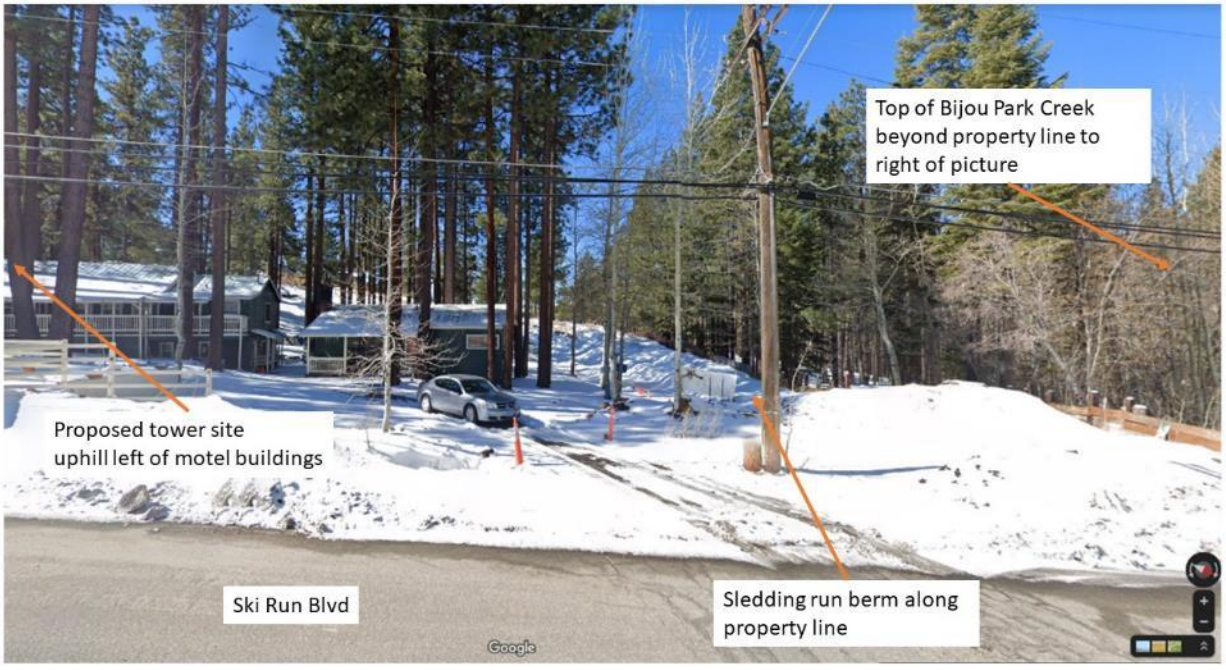


Figure 7: View of the Hansen's Snow Tube & Saucer Hill from Ski Run Boulevard.

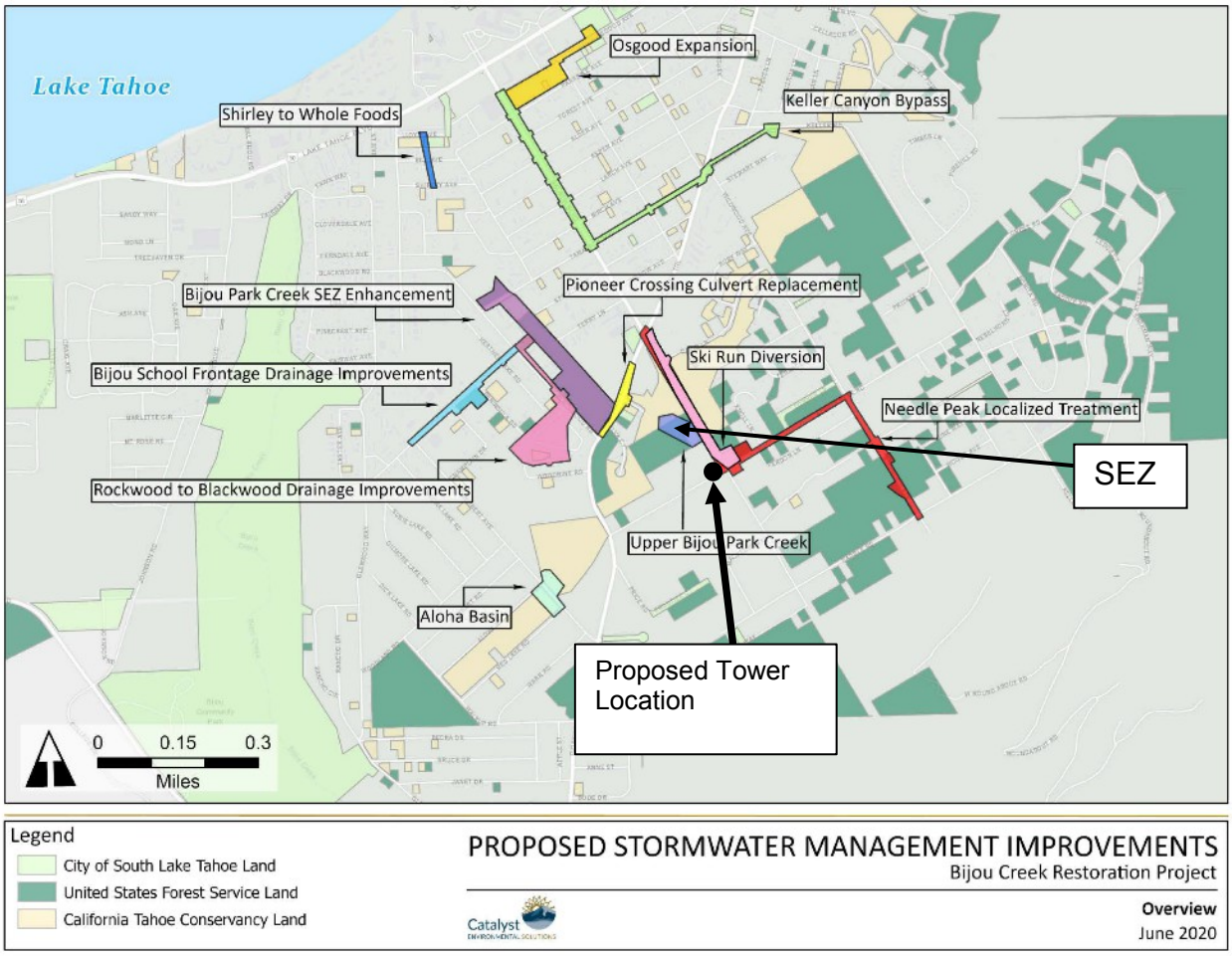


Figure 8: Map showing planned improvements for the Bijou Park Creek Stream Environment Zone (source: City of South Lake Tahoe 2020[8]).

[8] City of South Lake Tahoe. 2020. Public meeting for the Bijou Park Creek Watershed Restoration Project. PowerPoint presentation. City of South Lake Tahoe, CA.

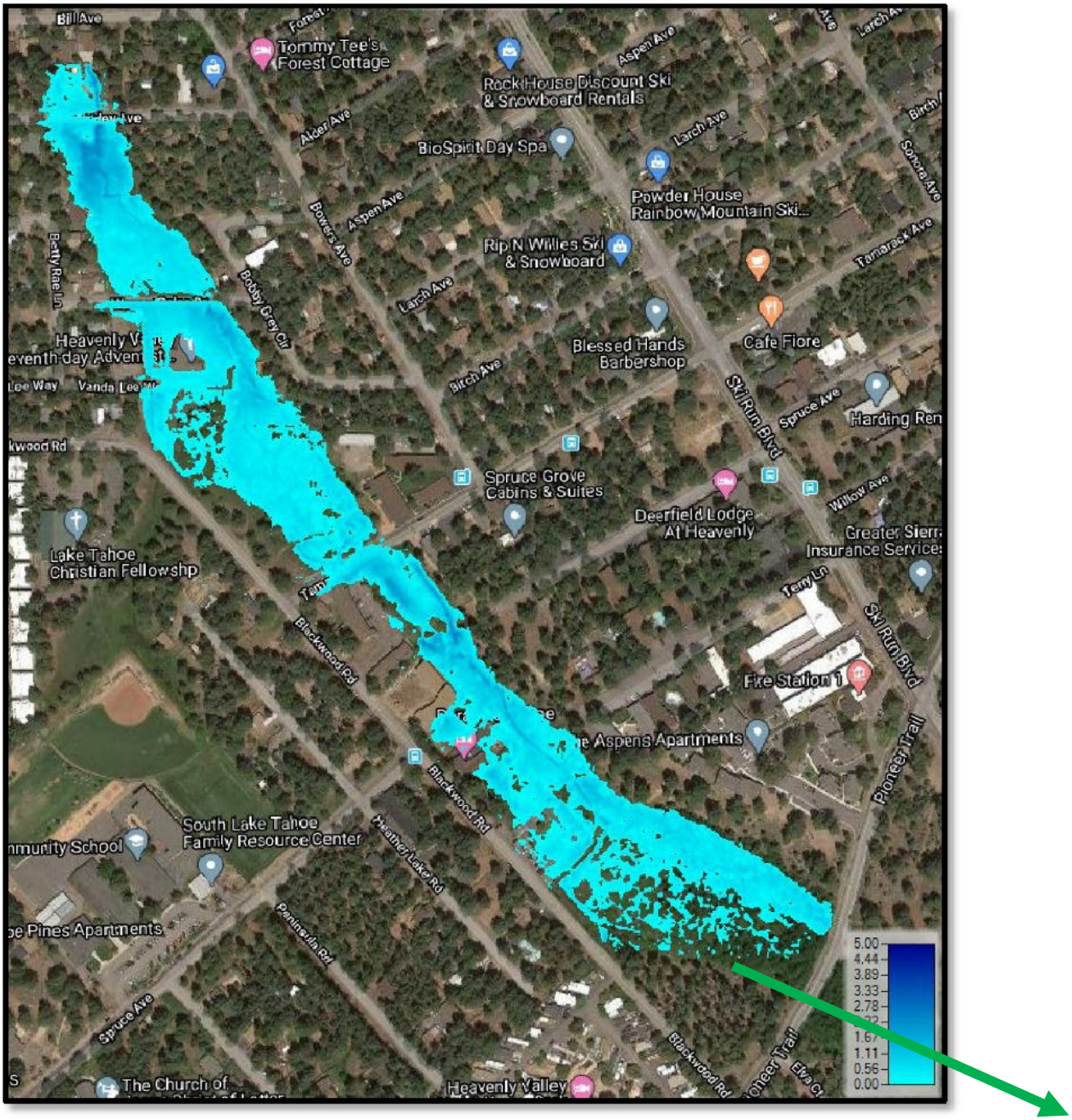


Figure 14. Bijou Park Creek Meadow 100-year flood inundation.

Figure 9: Bijou Park Creek Meadow 100-year flood inundation

NOTE: The proposed tower is off the map to the southeast (source: Wildscape 2020[9]).

[9] Wildscape. 2020. Bijou Park Creek Watershed Restoration Project – Preliminary Design Report. Prepared for Public Works Department, City of South Lake Tahoe, CA. Wildscape Engineering Inc., South Lake Tahoe, CA. September 4.

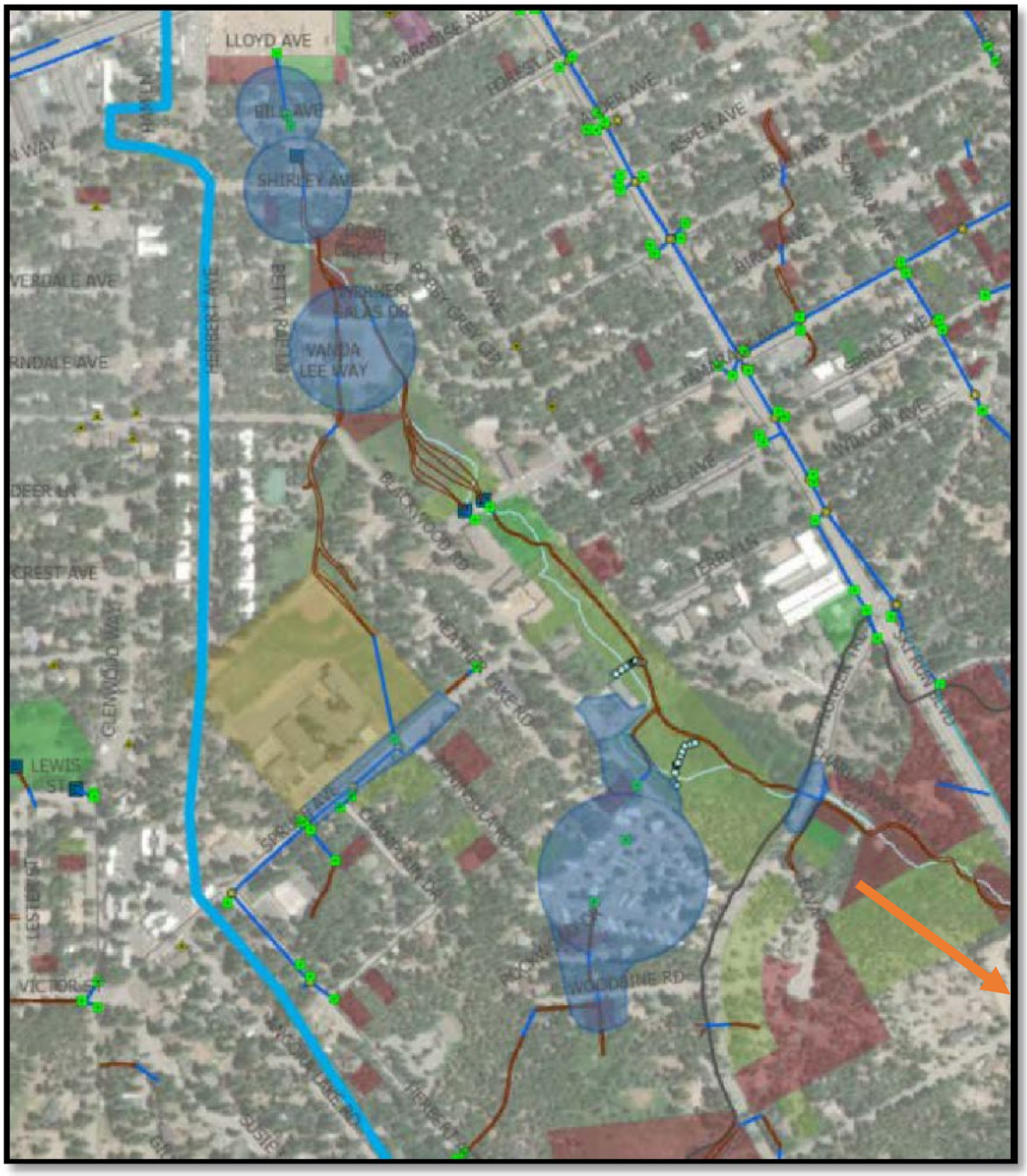


Figure 15. Flood prone areas shown in blue.

Figure 10: Flood prone areas shown in blue.

NOTE: The proposed tower is off the map to the southeast (source: Wildscape 2020[9]).

There is a low likelihood of monopine needles from the proposed faux tree tower leading to microplastic contamination of Lake Tahoe via surface water transport. The lack of an obvious,

observable transport pathway for monopine needles from the proposed site to nearby surface water channels corresponds with a low likelihood of needles reaching the lake. As a result, the mechanical and chemical degradation processes associated with beach and open water body environments, that in turn can lead to microplastic contamination, would not occur on monopine needles that fall from the proposed tower. The environment in the vicinity of the proposed tower, which is "static" (in contrast to dynamic aquatic environments) and covered by snow for a portion of the year, does not have high potential for facilitating these degradation processes.

PLASTIC AND TRASH MANAGEMENT IN THE LAKE TAHOE REGION

The recognized litter problem in the Tahoe area is the focus of management efforts. In addition, there is a statewide trash total maximum daily load (TMDL) program aimed at reducing pollution in the form of trash. In 2015, the State Water Resources Control Board adopted statewide trash provisions to address trash impacts to the state's surface waters.

In 2017, the Lahontan Water Board issued an order to implement the statewide trash provisions, which include design and implementation of full capture systems (responsibility of local municipal stormwater agencies, industrial and construction stormwater permittees, and the California Department of Transportation).[10] For the Tahoe region, plans for trash management include street sweeping, capturing trash to prevent it from reaching streams and the lake, cleanup events, and banning single use plastic items. There is also a focus on reducing sedimentation to streams and the lake.

Other programs in the Tahoe region to manage trash include:

- Nevada Tahoe Conservation District
- City of South Lake Tahoe (street sweeping, particle capture, etc.)
- South Lake Tahoe Stormwater Management Program; www.cityofslt.us/342/Stormwater-Program
- Collaboration with Nevada Division of Environmental Protection (NDEP); https://ndep.nv.gov/uploads/water-tahoe-docs/tahoe-improve-pamphlet.pdf
- The NDEP 2020-2024 Nonpoint Source State Management Plan: https://ndep.nv.gov/uploads/water-nonpoint-docs/FINAL_2020-2024_NV_NPS_State_Management_Plan_9.20.pdf.

[10] https://www.waterboards.ca.gov/lahontan/board_info/agenda/2021/oct/item7.pdf

Tahoe area stormwater and trash management practices and programs are meant to limit plastics/trash/sediment inputs to the lake overall. This would further limit any transport of plastics from the tower area to the lake.

OTHER PATHWAYS[11]

Wind is an unlikely pathway for significant dispersal of plastics from monopine needles because it mainly entrains smaller pieces (such as fibers). In a study of snow samples, there was a dominance of fibers over other types of plastic carried on the wind. The study states that only the lightest pieces are carried by wind, including synthetic fibers such as nylon, polyester and acrylic, which make up more than 60% of clothing materials today.[12]

CONCLUSION

In summary, due to the nature of the materials (which are designed to be durable), the lack of environmental conditions that would facilitate degradation, the lack of transport pathways, and measures in place to reduce inputs from the watershed to the lake, pollution of the lake from monopine needles at the cell phone tower proposed for 1360 Ski Run Boulevard is unlikely.

[11] The potential for groundwater impacts from leaching of plastics for the monopine needles is low; there is no evidence that groundwater in the South Lake Tahoe region is significantly impacted by plastic constituents, especially with so many sources of plastic in the environment. South Tahoe Public Utility District water quality reports (see Appendix D in https://stpud.us/asset/8955/) have shown very infrequent detections of indicator chemicals associated with plastics such as phthalates (when detected, concentrations are below water quality thresholds). No phthalates were been detected in the Tahoe Basin study unit in the most recent U.S. Geological Survey California Groundwater Ambient Monitoring and Assessment (GAMA) report (https://pubs.usgs.gov/sir/2011/5216/pdf/sir20115216.pdf).

[12] https://ucscsciencenotes.com/feature/lake-tahoes-pristine-legacy-threatened-by-microplastics/

Attachment A

Resumes

Bridgette R. DeShields

Principal

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santa rosa, CA

bdeshields@integral-corp.com

Ms. Bridgette DeShields has more than 35 years of experience and is a specialist in regulatory strategy, site investigation, site remediation, sediment and water quality management, environmental toxicology, and environmental permitting and planning. She has managed programs ranging from large site investigations to screening and quantitative ecological and human health risk assessments. She also designed and participated in dredging program management, field evaluations, bioaccumulation studies, literature reviews, and specially designed study programs. Her work has been focused on sediment assessments and waterfront projects with natural resource components and complex regulatory frameworks. She also has extensive experience in navigating California regulatory and permitting programs. Ms. DeShields also has expertise in prepared environmental documents under the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA).

Ms. DeShields has provided litigation support and expert testimony in the areas of water quality, regulatory compliance, human and ecological risk assessment, waste disposal under California and federal regulations, and Superfund cost allocation. She has developed excellent working relationships with regulatory agency staff, including federal agencies, state agencies in California and Oregon, natural resource trustees and local agencies.

Ms. DeShields represents the interests of the Bay Area refineries on San Francisco Bay water and sediment quality issues as a representative for the Western States Petroleum Association, serving as chair of the Regional Monitoring Program (RMP) Technical Review Committee since January 2000. She has taught courses on risk assessment, sediment assessment and remediation, and TSCA compliance.

Education & Credentials

M.S., Environmental Management, University of San Francisco, San Francisco, California, 1998

B.S., Biochemistry, University of California, Davis, California, 1986

Continuing Education

Hazardous Waste Operations and Emergency Response 40-Hour Certification (1994; refreshers 1995–present)

Loss Prevention System

Certified Project Manager

Professional Affiliations

Society for Environmental Toxicology and Chemistry

Bay Planning Coalition

Western Dredging Association

Relevant Experience

LITIGATION SUPPORT

Litigation Support for Contaminated Sediments, San Francisco Bay, California — Provided expert support on a 3-party litigation case involving an advocacy group and metals contamination in an estuary.

Litigation Support for Contract Dispute, East Bay Area, California — Testified in a case involving trucking of soils from a construction site and disposal of those soils. Provided expert testimony on the requirements for waste characterization in California and the definition of “clean soils” under California and federal regulations and common practices.

Litigation Support for Contract Dispute, San Diego, California — Provided an support for a mediation process involving a dispute over payment for disposal of materials as hazardous waste. Required knowledge of California and federal waste regulations.

Litigation Support for PCBs — Consulting expert for multiple cases involving PCB contamination.

HUMAN HEALTH RISK ASSESSMENT

Assessment of Lead in Soil, Santa Rosa, California — Conducted a risk assessment for soils along the Santa Rosa Creek corridor for the Sonoma County Environmental Health and Sonoma County Water Agency. Evaluated risks for a residential property adjacent to the creek as well as within the creek corridor itself. The primary issue was lead in soils from placement of fill material.

Development of Approach for Assessing Risks to Livestock for Petroleum Hydrocarbons, Nationwide — Developed a framework to determine when livestock should be included in a risk evaluation, and estimated risks of petroleum hydrocarbon exposure to livestock. A conceptual site model was developed to assess whether complete and significant exposure pathways exist at a given site. To estimate potential risks, TRVs, and drinking water and soil, RBSLs for petroleum hydrocarbons,

including crude oil, benzene, toluene, ethylbenzene, and xylene, and PAHs were developed for a variety of livestock receptors. The TRVs and RBSLs developed for this framework were comparable to human health RBSLs and other published livestock guidelines. The approach can be adapted for assessing other chemicals (i.e., metals, PCBs, pesticides).

Human Health and Ecological Risk Assessment at a Former Petroleum Refinery, Lawrenceville, Illinois — Prepared work plans for the human health and ecological risk assessment, including a problem formulation document. Conducted a baseline ecological risk assessment and baseline human health risk assessment (BHHRA) using the data collected as part of the remedial investigation. Provided strategic consulting related to the remedial investigation and risk drivers for remediation. Participated in agency meetings with Illinois EPA regarding risk assessment tasks. Several unique and innovative approaches were used, including use of area-weighting with Thiessen polygons to estimate exposure point concentrations, which overall improved risk estimates; site-specific prey tissue data; site-specific bioassays; and lead bioavailability testing, which also provided more site-specific estimates of bioavailability and risks and overall lower risk estimates. The risk assessment assumed a presumptive remedy area that also resulted in an overall more favorable impression of residual site risks. A site-specific assessment of lead bioavailability was also conducted.

Human Health Risk Evaluation, Redevelopment Project, Newark, California — Assessed risks and assisted in the development of remedial action plans for a site that is part of a large transit-oriented development. Site includes multiple parcels that were former industrial sites. Contaminants include pentachlorophenol, volatile organic compounds (VOCs), metals, and dioxins/furans. Scope also included development of a risk management plan, soil management plan, community protection plan (including an air quality monitoring program for protection of offsite residents), and health and safety plans and guidelines and well as assessment of risks due to VOCs in air during and post-construction. Developed guidelines for utility workers that could be exposed to contaminated groundwater and soil (as well as vapor in trenches) during installation and maintenance of infrastructure. Evaluated soils for offsite disposal, including profiling of soils for landfill disposal and conducting an evaluation if RCRA listed wastes.

Risk Assessment of Expedited Remedial Action Program, Golden Technology Site, Santa Rosa, California —

Complete site assessment and risk assessment activities, primarily for VOCs, at a site consisting of three parcels of land located in the southern portion of the City of Santa Rosa zoned for commercial use. DTSC was the lead agency for the program.

Risk Assessments for Perchlorate at Space and Missile Propulsion System Test Facility, California — Performed three risk assessments to assess potential perchlorate exposures. The first risk assessment, submitted to DTSC, was conducted to provide support for the Resource Conservation and Recovery Act post-closure permit application process for a former onsite station and three surface impoundments. Human health-based screening levels (HBSLs) for perchlorate in soil were developed based on a range of regulatory recommended provisional toxicity criteria for various exposure scenarios. The second risk assessment was submitted to the California RWQCB and consisted of both human health and ecological risk evaluations of potential exposures to perchlorate in soil and groundwater at three onsite areas. HBSLs for perchlorate in soil were developed based on direct contact exposures; protection of groundwater; and provisional toxicity criteria recommended by both Cal/EPA's Office of Environmental Health Hazard Assessment and EPA. The third risk assessment was conducted to support potential compliance issues associated with the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Risk assessment methodologies were used to characterize and assess potential releases of perchlorate from onsite operations in order to evaluate notification responsibilities specified under Proposition 65 regulations. RBSLs were developed for ecological and human health receptors to support a site-wide RAP. Supported real-time decision-making during remediation and conducted a post-remedial risk assessment for this 5,000-acre site. The sitewide risk assessment assessed excavation and regraded areas and included land use restrictions where necessary to specify acceptable future uses. Assessed both human and ecological receptors, soil, groundwater, and surface water.

Risk Evaluations for Forest Products Sites, California — Conducted risk-based screening assessments at several sites in Northern California on former sawmill sites. Sites include both Water Board and DTSC lead and evaluation of future residential and commercial land uses. Contaminants include petroleum products, metals, and dioxins/furans as well as some VOCs and semivolatile organic compounds (SVOCs). Also assessed waste management options for soil.

Risk-Based Assessment at a Former Tannery Site, Santa Cruz, California — Conducted a risk assessment for former tannery based on specific site development plans. Evaluated potential

exposures to chemicals in soil and groundwater for future residents and office and construction workers. Chemicals of concern included chromium(VI) and arsenic as well as VOCs and TPH. The risk assessment was used to inform the redevelopment plan. Provided target cleanup levels for soil and participated in public outreach programs, including presentations at city planning and city council meetings. Lead agency was the California DTSC. Site has now been built out as a mixed use live-work arts center.

Toxicology Evaluation of Remedial Action Objectives, California — Conducted an in-depth assessment of outdated remedial action objectives for a specific contaminated site in California. Reevaluated the toxicology and quantitative risk assessment for a specific unregulated contaminant of concern at the site. Calculated new screening levels based on updated risk assessment methodologies to ensure that remediation actions remain protective of public health.

REMEDIAL DESIGN

Engineering Evaluation and Cost Analysis (EE/CA) and Remedial Design for Yosemite Slough, San Francisco, California —
Supported the PRP group in coordinating with the EPA Region 9 effort to develop an EE/CA for this site. Assisted EPA's consultant by developing work plans and reports to support the EE/CA and assisting in the development of cleanup goals and permitting strategies. Also involved with risk evaluations, source investigations, and historical data evaluations, as well as the development of remedial alternatives. Studies conducted include geotechnical assessments, evaluations of the biologically active zone, and natural attenuation. Currently engaged in pre-design studies for the remedy.

Sediment Capping Design for a New Ferry Terminal, San Francisco, California — As part of the design team, working on a project involving development of a new ferry terminal. Because of the presence of contaminated sediments, additional dredging and a sediment cap will be required. The team designed the sediment cap and developed specifications. Provided input on remedial strategy and permitting considerations and mitigation planning. Integral also led the field oversight for capping of contaminated sediments.

Sediment Remediation and Upland Source Tracing Activities, Electrical Generating Station, Hawaii —
Since 2014, Integral has been providing a range of technical services to a private party in association with the planned Superfund cleanup of PCB-impacted sediments in Pearl Harbor. Activities have included review and comment on RI/FS documents prepared by others for the U.S. Navy, sediment transport modeling to ensure remedy efficacy, and site-specific ecological risk assessment to support selection of alternative remedial action levels. The risk assessment included co-located sediment and invertebrate biota sampling to support site-specific risk calculations. The net result of these activities is a better, less costly proposed remedy and expected additional improvements to the final remedy during remedial design. Current work includes remedial design, permitting, and TSCA compliance. Other activities include developing a permitting plan for source removals in upland areas, outfalls and other conveyances.

Waterfront Sediment and Upland Area Remedial Action, Eureka, California — Led a team for a sediment investigation and remedial action planning program to address offshore sediments and upland soils contaminated with metals and PCBs in downtown Eureka. PCB contamination was managed with oversight from the RWQCB (no involvement necessary from EPA's TSCA group). Developed risk-based cleanup goals, an RAP, and an implementation plan, as well as mitigation plans for avian species and eelgrass. Successfully negotiated approval of the RAP with the North Coast RWQCB. Ultimately, the site will be redeveloped as open space and waterfront commercial development.

FEASIBILITY STUDIES

Environmental Investigation, Feasibility Study, Risk Assessment, and Related Services at a Former Industrial Facility, San Francisco Bay Area, California —
Led the investigation, risk assessment, and feasibility study for a 10-acre parcel containing two freshwater lagoons adjacent to San Francisco Bay. Constituents of concern include metals, thiocarbamate, organochlorine pesticides (OCPs), and PCBs. Assessment included a treatability study to evaluate the effectiveness of carbon amendment to reduce leachability and bioavailability of constituents. Lead agency was DTSC with involvement from EPA on TSCA compliance. Also conducted human and ecological risk assessments and developed a feasibility study that included a combination of excavation, treatment, and capping/cover. Several natural resource trustee agencies were also involved in the project due to the proximity to sensitive habitats that support special-status species, including California clapper rail. Led the regulatory and permitting strategy efforts for the project as

well

WATER MANAGEMENT

Evaluation of TMDLs in the Los Angeles Area — Did a comprehensive literature review and evaluation of TMDLs for contaminants, bacteria and trash in the LA region as part of litigation support. Prepared technical reports evaluating best management practices. Also reviewed fish consumption advisories, TMDL target development, toxicity evaluations, and proposed management measures.

Mercury Total Maximum Daily Load (TMDL) Review, San Francisco Bay, California — Reviewed the draft TMDL for mercury document prepared by the San Francisco Regional Water Board and provided review comments relative to technical approach and evaluations as well as implementation issues. Issues of concern identified included bioaccumulation into fish tissues and research required to adequately characterize the levels and processes associated with methylmercury content in bay sediments, surface water, and fish/shellfish tissues. Source characterization and control was also an issue of concern.

San Francisco Bay Regional Monitoring Program, San Francisco Bay, California — Has served on the Regional Monitoring Program (RMP) Technical Review Committee (TRC) since January 2000 and has been the committee chair for over 10 years. Provides technical review and oversight of the monitoring and related research programs. Areas of focus include sediment, water and biota tissue characterization; PCBs, mercury, nutrients, PAHs, pesticides, and selenium; stormwater runoff, emerging contaminants (including PFAS and microplastics); fate and transport modeling as well as identifying sources, pathways and loadings.

Shell Mounds Project, Ventura, California — Reviewed technical reports regarding shell mounds offshore that remained after removal of drilling rigs. The public and the Coastal Commission want the structures removed. Assessed chemical and biological data and provided recommendations.

VAPOR INTRUSION

Risk Communication and Risk Assessment, San Francisco, California — Evaluated site data (soil, groundwater, soil vapor and indoor air) for a daycare center that was formerly a dry cleaner site. Assessed the potential for adverse health effects to daycare workers and children through site-specific risk assessment. Developed a communication plan and talking points and presented findings at a meeting with parents and daycare workers. Assisted in the development of recommended actions/next steps.

Soil Vapor and Indoor Air Evaluation, Napa, California — Assessed risk and developed risk communication plans for a large former dry cleaner site with a plume extending under homes and a bed & breakfast. Developed a communication plan, fact sheet and talking points for residents and other neighbors. Also assisting in the development of soil vapor and indoor air sampling plans. Constituents of concern were TCE, PCE and vinyl chloride. Site is under the lead of the SF RWQCB. Remedial action planning is ongoing.

Soil Vapor and Indoor Air Evaluation, Oakland, California — Assessed risk for a large former UST site with residual NAPL and benzene. The groundwater plume extended under an apartment building with a basement and adjacent commercial buildings. The property owner of the apartment was concerned about residents; an indoor air sampling program was developed. Met with the regulatory agency to discuss the next steps and additional data needs to support a risk assessment and site cleanup plan. Additional characterization and remedial action planning is ongoing.

Vapor Intrusion Evaluations — Working on several sites in northern and southern California where chlorinated VOCs are chemicals of concern (COCs). Services include site assessment, indoor and outdoor air monitoring, risk evaluations, regulatory agency negotiations, and developing mitigation plans. Projects range from operating facilities to commercial/industrial and residential redevelopment projects. Sites include those under both the Regional Water Quality Control Board (RWQCB) and California Department of Toxic Substances Control (DTSC) lead, as well as some sites under County lead. Sites are in Oakland, South San Francisco, Sunnyvale, Mountain View, and Napa. Also working on two sites in the Los Angeles/Orange County areas. Issues range from characterization of soil vapor and indoor air, to determination of remedial needs and mitigation measures. Also assessed Proposition 65 notification requirements for two sites and provided guidance on risk communication. Several sites are contaminated due to releases from former dry cleaners with chlorinated VOCs.

SITE INVESTIGATION

Comprehensive Investigation and Remedial Planning and Implementation, Antioch, California — Served

as project manager for a comprehensive investigation and remediation project at a closed paper mill. Developed work plans and technical reports in support of investigation activities under the AB2061 program. In addition, risk-based screening levels (RBSLs) were developed and presented in a report as were background levels. The background level report developed upper-bound background concentrations for metals using DTSC guidance but also presented an approach and rationale for determining whether dioxins/furans detected onsite were due to ubiquitous anthropogenic sources or site-related sources. Site investigations were conducted at eight properties. Chemicals evaluated included metals, dioxins/furans, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), PAHs, OCPs, and herbicides. Risk evaluations were conducted for each of the subject properties based on an unrestricted land use scenario to support sale/transfer of the properties. Completed an RI/FS work plan to assess soil and groundwater and an underground utility investigation. Also, developed an RAP and a California Environmental Quality Act document and completed activities pursuant to DTSC's Public Participation Guidance Manual, including developing a mailing list and an initial fact sheet and community survey; interviewing community members and local officials; developing a public participation plan (which included a community profile); and conducting a public meeting and responsiveness summary.

Environmental Investigation, Remediation, Risk Assessment, and Related Services at a Former Sawmill in Northern California, Fort Bragg, California —
Managed a multiyear, multisite investigation and remediation project at a former sawmill site in northern California slated for mixed use redevelopment. Primary constituents of concern were PCBs, VOCs, dioxins/furans and petroleum hydrocarbons. The assessment included both the 415-acre mill site as well as a ranch area offsite. Tasks included site investigations at five operable units (including sediments within a complex of ponds) and offshore sediments, risk assessment (human and ecological), background evaluations, dioxin characterization, pond and offshore sediment sampling, remedial planning, construction, demolition, and oversight, and negotiations with multiple regulatory agencies. The site is a high profile project managed by DTSC, but with input from RWQCB, CDFW, USFWS, NOAA, city and county agencies, and CCC. The project included multiple regulatory and permitting requirements specific to the coastal zone of California that require integration of archaeologists, Native American monitors, biologists, botanists, marine mammal specialists, and geotechnical and other engineering disciplines. Completed multiple investigation and monitoring reports, a remedial investigation, two remedial action plans (RAPs), and a risk assessment. Implemented 3 years of remedial actions for soil and groundwater including bioremediation of the petroleum-impacted soils. Also conducted a complex quantitative analysis to develop background levels for dioxins as well as a method for source identification. Conducted site-specific bioaccumulation assessments for metals and dioxins/furans in upland soils and pond sediments. Successes include a no further action for large areas of the site and the offshore sediments, implementation of various remedial measures, and a strategy to address pond sediments and the jurisdictional dam. Also achieved site certification for the offsite ranch and coastal portion. The coastal portion was sold/transferred to the city to create a coastal trail.

Site Assessment and Screening Evaluation, Former Machine Shops, Alameda, California — Conducted several rounds of investigation, both upland and offshore, for a 4 acre site in Alameda that had been used as a machine shop for over 50 years. Contaminants included metals, PCBs, TPH and VOCs. Developed a risk-based screening framework for evaluating potential site redevelopment and in support of due diligence efforts.

Site Assessment, Remediation, and Facility Closure at a Former Chemical Plant, Elk Grove Area, California —
Led a team in conducting site investigation and developing plans and implementing remedial activities at a former resin manufacturing facility. Chemicals of concern included phenolics, toluene, ethylbenzene and xylenes. Developed site-specific cleanup goals protective of groundwater, soil vapor, and human exposure. Developed a demolition and facility closure plan and implemented a sampling program. Developed a remedial action planand managed the excavation activities. Negotiated entrance into DTSC's voluntary cleanup program and achieved closure from both DTSC and Sacramento County with no land use restrictions by demonstrating acceptable post-remedial conditions.

SEDIMENT INVESTIGATION

Baypoint Oil Spill, Pittsburg, California — Compiled data on the nature and extent of PAH and petroleum contaminants in sediment and surface water resulting from the spill. Staff conducted a toxicological and spatial analysis to determine the degree and spatial extent of the impacts. In addition, used PAH profiling (i.e., expanded PAH analysis) to evaluate the source of PAHs detected at

various locations to distinguish impacts from the spill material from ambient conditions and other potential sources. Identified two distinct source materials.

Extended Site Sediment Investigation, Sausalito, California — Developed both a work plan and a sampling and analysis/quality assurance plan for the collection of Horseshoe Bay sediment data as part of an extended site inspection in support of the base realignment, closure of the U.S. Army East Fort Baker Facility, and transfer of the property to the National Park Service. Managed sampling efforts and conducted aquatic bioassays and chemical analyses of sediments. The study was designed to determine if historical East Fort Baker operational practices had caused any adverse impact to the adjacent Horseshoe Bay sediments of sufficient magnitude to warrant dredging. Assessed the data to describe the presence and extent of sediment contamination and associated risks to aquatic biota and wildlife, and presented an extended site investigation report. Risks were shown to be minimal and no action was concluded based on the risk evaluation.

Maintenance Dredging Program, Moss Landing Harbor District, California — Managed the maintenance dredging program for Moss Landing Harbor, the largest fishing port between San Francisco and Los Angeles, for more than 4 years, including the successful preparation and implementation of SAPs, dredging plans, testing reports, and post-dredge reports. The main COC in sediments was DDT. Worked with USACE, CCC, and RWQCB in establishing a multiyear permit. Also responsible for designing, constructing, and operating an upland disposal site and restoring the site into a visitor-serving recreational area, including restoration of native coastal dune habitats, and working with USFWS pursuant to designation of the area as critical habitat. . Developed a CEQA document for the North Harbor expansion project which involved addressing coastal erosion issues and protection of eelgrass beds. Gave presentations at public meetings, interfaced with the press, and worked with a local congressman, as well as EPA's congressional liaison. An assessment was conducted to support a dredged material management plan for navigational dredging of Moss Landing Harbor. Developed a work plan, summarized background information, and conducted a screening-level modeling analysis to estimate concentrations of pesticides in offshore sediments following a hypothetical set of dredging events. The results of the model were used to estimate ecological effects of dredged material placement over time. Analysis included a review and compilation of available information and literature for the site, evaluation of transport dynamics in the highly complex canyon environment, screening-level modeling of the mixing conditions at the disposal location (DCORMIX), transport and deposition of the suspended material plume (SSFATE), and recovery analysis (RECOVERY). The preliminary risk assessment and the supporting screening-level modeling analysis were summarized in a draft report and submitted for independent peer review. Peer review findings recommended additional data collection and modeling work to further support the conclusions of the screening-level study. Revisions to the report were in response to requests by the peer review panel. The conclusions of the report support the continued dredging and aquatic disposal of the dredged material, with no unacceptable risks.

Maintenance Dredging Project, Port of San Francisco, California — Managed the port's dredging program for 3 years, including designing and implementing sampling and analysis plans (SAPs), applying for and negotiating permits, designing and managing upland disposal of sediment, managing and inspecting dredging contractors, and conducting water-quality and circulation studies. Represented the port at meetings of local stakeholder working groups, including the long-term management strategy for San Francisco Bay meetings and the sediment quality guidelines working group. Negotiated dredged material suitability and permit conditions with the Division Material Management Office (DMMO), consisting of USACE, EPA, the Bay Conservation and Development Commission, RWQCB, CDFW, and the National Marine Fisheries Service. Prepared budgets, evaluated alternatives for dredged material disposal, and managed a project to design an upland rehandling facility for PAH-contaminated sediments.

Portland Harbor Superfund Site Investigations, Portland, Oregon — Represented a client on the Portland Harbor Light Products Study Group. This group is investigating the distribution and potential effects on PAHs and other petroleum-related compounds in sediments within Portland Harbor as part of the Portland Harbor Superfund site investigations. Conducted a spatial analysis of the extent of PAH contamination within Portland Harbor to evaluate whether elevated levels of PAHs could be associated with light petroleum products terminals.

San Mateo-Hayward Bridge Seismic Retrofit Project, San Mateo, California — Assisted with environmental review and permitting. Key environmental issues included potential contamination of bay sediments; associated water-quality impacts; impacts to seasonal wetland habitat; temporary alteration or closure of public facilities; potential entrainment of steelhead trout during hydraulic dredging; and potential impacts to fish and marine mammals from noise, vibrations, and turbidity

during construction. Conducted studies to assess the level of contamination of bay sediments to be dredged as part of the construction. Consulted with member agencies of the DMMO, investigated on-land and aquatic disposal options, and developed detailed cost estimates for these options. In addition, reviewed environmental databases, California Department of Transportation (Caltrans) maintenance records, and effluent data from outfalls in the vicinity of the bridge to investigate the potential for sediment contamination. Prepared a SAP for sampling and testing sediments in accordance with DMMO requirements (Tier II), which was approved by the DMMO and Caltrans. The results of the sediment testing were incorporated into agency permit application packages. Assisted in preparing the public notice to support an individual permit application from USACE under Section 404 of the federal Clean Water Act.

Sediment Assessment and Remediation Evaluation, Portland, Oregon — Supported sediment assessment, risk assessment and remedial design effort for a former industrial property on the Willamette River. Assisted in developing a work plan for conducting a field investigation that includes sediment sampling, bioassay testing, coring, and passive sampling. The site was a former pesticide and chlor-alkali manufacturer, and COCs included DDT, monochlorobenzene, dioxins/furans, sodium perchlorate, and hexavalent chromium. Also evaluated the cleanup goals for PCBs.

Sediment Assessment, San Diego, California — Evaluated sediment chemistry and toxicity in marine sediments at a site where the main COCs included PCBs and metals. Assessed the data relative to California's Sediment Quality Objectives (SQO) program and negotiated an approach with the RWQCB. Also participated in the SQO stakeholder advisory committee.

Sediment Investigation and Bioavailability Assessment, Kansas — Led an effort to characterize sediments in drainage channels leading from a former smelter site to a river in Kansas. Chemicals of concern included arsenic, cadmium, lead, and zinc. The field program included bulk sediment and porewater, including measures of acid volatile sulfide and simultaneously extracted metals and other parameters that were used in a weigh-of-evidence approach to assess risks to human and aquatic receptors. Successfully applied the approach to limit the findings of impacts to areas just downstream from the former facility.

Sediment Investigation, Pittsburg, California — Conducted a sediment sampling and analysis program to evaluate potential risks to aquatic receptors offshore of a petroleum coke loading terminal. Sediment cores were collected, examined for the presence of coke, segmented, and analyzed for metals and PAHs. Used the results to evaluate whether aquatic communities exposed to offshore sediments were at risk from the presence of coke, and whether any remedial activities were needed. Conducted solid-phase bioassays on the samples with elevated coke content. Showed that the sediment, although containing high levels of coke, were not toxic to aquatic life and that chemical contaminant levels were at or below screening level. No remedial activities were deemed necessary.

PERMITTING

Categorical Exemption for a Former Resins Plant, Elk Grove Area, California — Worked with DTSC's CEQA group to develop a categorical exemption (CatEx) for a remedial measure at the facility involving phenolics and solvents in subsurface soil. In order to move forward with the CatEx, cultural resources and biological resources at the site needed to be investigated. Also developed fact sheets and a community mailing list.

CEQA and Coastal Permitting for Remediation at a Waterfront Site, Eureka, California — Completed a CEQA document (mitigated negative declaration) for a remedial action program to address offshore sediments and upland soils contaminated with metals and PCBs in downtown Eureka. Project included upland excavation and dredging. Worked with various permitting agencies including the City of Eureka (lead CEQA agency), North Coast Regional Water Quality Board (lead remediation agency), USACE, CCC, the local Harbor District, CDFW, USFWS, and NOAA to issue project permits. Obtained a Nationwide 38 permit and water quality certification as well as a coastal development permit. Project included restoration of shoreline habitat and addressing impacts to benthic communities. Ultimately, the site will be redeveloped as open space and waterfront commercial development.

CEQA and Coastal Zone Permitting for Remediation at a Former Sawmill, Fort Bragg, California — Developed CEQA documents (categorical exemptions and mitigated negative declarations) for three separate interim remediation projects, developed fact sheets and a project website, attended and presented at public meetings, and led negotiations with multiple regulatory agencies. The site was a high profile project managed by DTSC and included multiple regulatory and permitting requirements specific to the coastal zone of California that required integration of archaeologists (due to sensitive subsurface cultural resources on the site), Native American monitors, biologists, botanists, marine

mammal specialists, and geotechnical and other engineering disciplines. The CEQA documents supported two remedial action plans (RAPs). Also worked with City land use planners to incorporate the final remediation projects into a Specific Plan and EIR for the site reuse. The coastal portion was sold/transferred to the city to create a coastal trail. The three interim remedial measures were completed successfully.

CEQA and Permitting for PAH Remediation Site, San Francisco, California — Lead consultant for CEQA and permitting for a project involving multiple pier areas along the San Francisco Waterfront. The project will include dredging and capping of PAH-contaminated sediment with the RWQCB as the lead agency for CEQA. Permitting agencies include the USACE, Water Board and BCDC with consultations on essential fish habitat and endangered species with the CDFW, NOAA/NMFS and USFWS.

CEQA and Permitting for Remediation at a Former Wastewater Plant, Larkspur, California — Developed a California Environmental Quality Act (CEQA) document (mitigated negative declaration) for a former wastewater plant with PCB contamination. The lead cleanup agency is EPA Region 9 (for TSCA) but the Ross Valley Sanitary District was the lead for CEQA. The assessment included an evaluation of air quality impacts using CalEEMod and greenhouse gas impacts as well as tribal consultations under AB52. Also updated the site's wetland delineation and worked with the USACE to evaluate seasonal wetland impacts and related requirements. Follow-on work included obtaining grading and other permits for implementation of the remediation with the City of Larkspur and Marin County. Also closed out an existing construction stormwater permit.

CEQA and Permitting, Sewer Rehabilitation Projects, Ross Valley Sanitary District — Lead on all permitting and CEQA work for RVSD. Includes obtaining permit from the USACE, CDFW (e.g., streambed alteration permits), and others for sewer rehabilitation, sewer replacements, sewer extensions and other related projects. Also conducts CEQA compliance reviews and CEQA documents, as needed. These have included Notice of Exemptions and Initial Study/Mitigated Negative Declarations.

CEQA and Public Participation for Two Former Mills, Antioch, California — Developed a CEQA document (mitigated negative declaration) for DTSC for an interim remedial measure at a former pond, including assessment of two federally endangered plant species and cultural resources. Also completed activities pursuant to DTSC's Public Participation Guidance Manual, including developing a mailing list and an initial fact sheet and community survey; interviewing community members and local officials; developing a public participation plan (which included a community profile); and conducting a public meeting and responsiveness summary.

Remedial Strategy, CEQA and Permitting for a Harbor Renovation and Remediation Project, San Francisco, California —

Work has included remedial strategy, determining the adequacy of CEQA documents and the need for a CEQA addendum, and permitting for a remediation project on the San Francisco Waterfront that also involves marina renovation. Developed a Categorical Exemption and obtained permits from the San Francisco Bay Conservation and Development Commission, USACE, and the RWQCB for an interim remedial measure. Working on permitting and pre-CEQA studies for the next phase.

Risk Evaluation for Placement of Dredged Sediments at Winter Island, Winter Island Reclamation District, Sacramento Delta, California —

Developed "acceptability" criteria for placing contaminated sediments along levees at Winter Island. The Winter Island Reclamation District needed 500,000 yd3 of sediments to rehabilitate levees and, particularly, needs silty material to "cap" the levees and prevent erosion. Worked with the San Francisco RWQCB to develop levels of contaminants acceptable for material placed on levees, and also developed management and engineering practices to prevent erosion and migration of placed material to a nearby wetland. Contaminants evaluated included metals, PAHs, PCBs, and DDT.

ECOLOGICAL RISK ASSESSMENT

Ecological Assessment of Petroleum Hydrocarbons, San Francisco, California — Provided technical review of Tier 1 and Tier 2 screening levels for ecological receptors in the marine ecological protection zone of the San Francisco Airport developed by RWQCB. Reviewed and commented on the 3-dimensional migration models and bioassay tests used to develop TPH cleanup levels. Reevaluated the likelihood of petroleum hydrocarbons (TPH-diesel and benzene) in groundwater and soil detected near terminals at San Francisco Airport to migrate to San Francisco Bay. Estimated effects of TPH and benzene on aquatic receptors in the bay using site-specific information. Revised cleanup developed based on the results of this evaluation.

Ecological Assessment of Stormwater Runoff to a Freshwater Marsh, Fairfield, California — Conducted a screening ecological assessment to evaluate the effects of metals and organic compounds in

stormwater runoff and seepage from a natural spring on aquatic and terrestrial receptors at a freshwater marsh. Conducted a biological inventory to select indicator species for the assessment. Developed screening criteria based on applicable state and federal freshwater sediment and surface-water criteria. Identified areas of concern and recommended additional site characterization.

Ecological Risk Assessment for Sulphur Bank Mercury Mine, Clear Lake Oaks, California — Conducted a terrestrial ecological risk assessment for the upland portions of the mine site. Mercury is the main contaminant of concern, although other metals with elevated levels were evaluated as well. Evaluation included assessing spatial scale of risks in relation to native plant populations and balancing restoration goals with cleanup efforts. Developed risk-based action levels for seven receptors and incorporating information about speciation/bioavailability of metals onsite. An assessment of cultural issues (ceremonial uses of plants and ingestion of game animals) important to the adjacent tribe was included. Tribe members participated in the scoping process, and the ultimate remedy was negotiated with EPA and the tribe representatives.

Ecological Risk Assessment in a Desert Environment, Topock, California — Technical lead for an ecological risk assessment for several dry wash areas in the Mohave Desert near an operating facility. Main chemical of interest is chromium (total and hexavalent) as well as a number of other metals. Developed a conceptual site model and risk assessment work plan and contributed to site characterization work. Completed a groundwater risk assessment.

Ecological Risk Assessment, Presidio of San Francisco, California — Conducted a basewide study to develop cleanup levels for aquatic and terrestrial receptors for the feasibility study to support future uses and redevelopment of the Presidio. Developed cleanup levels for metals, pesticides, PCBs, VOCs, and SVOCs as well TPH constituents. Negotiated the approach with the regulatory agencies and presented the cleanup levels at public meetings (restoration advisory board and other community work groups). Provided technical review and oversight of other contractors' assessments, including other ecological risk evaluations and several studies to develop action levels for TPH. Conducted an evaluation to develop site-specific cleanup levels for TPH diesel and fuel oil in the freshwater riparian zone. Crissy Field Area: Conducted an HHRA for recreational receptors theoretically exposed to soil excavated from one area onsite to create a wetland, and disposed of at areas on site slated for future recreational use. Chemicals of concern included metals and PAHs. Used information from the risk assessment to finalize construction plans for the wetland. Lobos Creek Area: Conducted a data review and remedial investigation that recommended no further action for the creek and watershed.

Fort Ord Ecological Risk Assessments, Monterey, California — Performed quantitative human health and ecological risk assessment at 41 sites. Human receptors included residential, commercial/industrial, and recreational users. Ecological receptors included aquatic life, mammals, birds, reptiles, insects, and plants. Developed toxicity reference values (TRVs) and site-specific exposure assessments. Evaluated the results of bioassays on aquatic organisms and plants. Assessed possible impacts to special status species, characterized sites, conducted fate and transport analyses, and modeled exposure and effects. Site-specific studies included butterfly and lizard population surveys; collection and analysis of site-specific plant, reptile, and mammal tissues; a plant health and condition study; a leaf litter study; and an enhanced preliminary assessment for the offshore marine environment. Primary contaminants of concern were lead and other heavy metals associated with small arms, dioxins in burn-pit areas, petroleum hydrocarbons from motor pools (a site-specific total petroleum hydrocarbon [TPH] cleanup level was developed), and explosive compounds. Pesticides and PCBs were also found at some of the sites. Worked with the regulatory agencies (mainly EPA and DTSC, but with selected and focused involvement of USFWS, CDFW, and NOAA for specific aspects) in a cooperative manner, such that the agencies have been very supportive of innovative techniques for site characterization and risk assessment. Made presentations at public and technical group meetings and have presented data jointly with agency at scientific meetings. Worked with U.S. Army Center for Health Promotion and Preventative Medicine (USACHPPM) to develop methods to evaluate the bioavailability of lead and site-specific conditions at small arms firing ranges. The record of decision has been signed for all sites at Fort Ord. Additional work was undertaken at the unexploded ordnance range site, where the risk evaluation was conducted. Site-specific field studies on lead uptake into plants, insects, lizards, and small mammals have been conducted as well as site-specific bioavailability jointly with USACHPPM. The risk assessment included using this site-specific data and an approach aimed at balancing site cleanup, risk reduction, and preservation of rare and declining habitats is being used. This analysis was used to develop site-wide cleanup levels and a site-wide cleanup approach for this 8,000-acre area.

Milepost 68 Oil Spill, Utah — Conducted an ecological risk assessment to evaluate potential effects on aquatic and wildlife receptors potentially exposed to petroleum products in freshwater marsh

sediments due to a pipeline break. A cleanup level of 20,000 parts per billion for total PAH was negotiated with EPA, USFWS, and the State of Utah.

Sediment Investigations and Ecological Risk Assessment, Oakland Army Base, Oakland, California — Managed a program to evaluate potential risks to ecological receptors from contaminants in offshore marine sediments and a small freshwater marsh habitat as well as upland areas. Developed an ecological risk assessment work plan and sediment SAP, including a tiered chemical and biological testing program designed to focus the investigation on the areas and chemicals of most concern, thus reducing costs. Conducted bioassay and bioaccumulation tests at 12 stormwater outfalls to evaluate potential impacts to aquatic receptors, amphibians, birds, mammals, and plants potentially exposed to chemicals. Risks from ubiquitous anthropogenic contamination were factored out. Successfully negotiated approval of these plans, as well as the risk assessment results, with EPA, DTSC, RWQCB, and resources agencies including CDFW, USFWS, and NOAA. This work supported current redevelopment efforts by the City and Port of Oakland. Currently supporting East Bay Regional Parks, who will receive a portion of Parcel 1 at the Former Oakland Army Base, in working with the Army, the RWQCB, and DTSC to develop a mutually agreeable remedy for offshore sediments. The main contaminant is PCBs. Developed a technical framework, providing technical assistance, and facilitating discussions between parties to complete a record of decision.

Site Remediation Project, Casmalia, California — Developed work plans, developed biological and endangered species reports, and negotiated an ecological risk assessment approach for the Casmalia Site Remediation Project, a former hazardous waste landfill site in central California. Conducted a multipathway, multispecies ecological risk assessment to address residual contamination from closed ponds and pads and areas around multiple capped landfills that held metals, solvents, PCBs, pesticides, sludges, and oily wastes. Species of concern at the site included red-legged frogs, western spadefoot toad, southwestern pond turtle, and other threatened and endangered species in both upland and aquatic areas. The ecological remedial assessment is designed to focus on areas that will not undergo presumptive remedies (i.e., landfill caps), mainly the liquid impoundments and some upland portions of the site used for disposal of waste. The approach focused on functional groups of receptors representing important components of the food web and will be conducted on a site-wide basis and in a phased manner. Participated in subcommittee meetings with the regulatory agencies and with the technical committee. Assisted the PRP group with issues related to natural resource damages and habitat restoration/mitigation. Produced a biological species and habitat survey report and an assessment of risks to burrowing mammals through inhalation of burrow air as part of the interim progress report for the RI/FS. Site-specific background levels, selection of chemicals of potential concern, and the ecological risk assessment have been completed and approved. A site-specific study of bioaccumulation and bioavailability was conducted. Following approval of the remedial investigation, developed cleanup goals and provided input to the Feasibility Study and selection of remedial alternatives.

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DeShields, B.R., J.J. Gravenmier, and S.R. Hansen. 1993. A step-wise treatability study on a refinery effluent. Presented at the Society of Environmental Toxicology and Chemistry 3rd Annual Meeting of NorCal, Oakland, CA.

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Mr. Sean Culkin is a consulting professional with more than 10 years of experience serving a diverse range of clients. He is a California registered professional geologist and certified hydrogeologist who leverages his skills in analytical and quantitative hydrogeology to support a wide range of projects for private and public sector clients. His experience includes site characterization, water resources management, project management, conceptual site model development, soil and groundwater remediation, remedy optimization, and regulatory compliance. He has developed a solid track record of successful project execution and has provided technical guidance and oversight for numerous projects throughout the United States. Mr. Culkin has extensive experience with industry-standard groundwater modeling software applications, and has used site-specific numerical and analytical groundwater models to support both remediation system design and evaluation, geotechnical operations, and basin-wide resource management planning for groundwater and surface water supplies.

Education & Credentials

M.S., Geosciences, Pennsylvania State University, University Park, Pennsylvania, 2007

B.A., Earth and Planetary Sciences, Johns Hopkins University, Baltimore, Maryland, 2005

Professional Geologist: California (License No. 8845)

Certified Hydrogeologist: California (License No. 990)

Continuing Education

Hazardous Waste Operations and Emergency Response 40-Hour Certification (2007; refreshers 2008 through 2017)

First Aid and CPR Certified (2008)

QSP/QSD Training (2011)

Professional Affiliations

Groundwater Resources Association of California

National Ground Water Association

Relevant Experience

LITIGATION SUPPORT

Construction Dewatering Effects on Groundwater Flow, Seattle, Washington — Analyzed the impact of numerous construction dewatering projects on groundwater flow and contaminant transport in the vicinity of an urban redevelopment project. Performed groundwater drawdown and capture analysis. The revised hydrogeologic conceptual model supported expert testimony on site contamination transport history.

Groundwater Investigation, Santa Cruz County, California — Led groundwater pumping well, stream/aquifer interaction, and sampling investigations in response to state inquiries in Santa Cruz County, resulting in successful resolution with the state for the agricultural landowner.

Groundwater Modeling Related to Residential Development, San Francisco, California — Lead expert hydrogeologist on a team of geotechnical and structural engineers supporting litigation related to a high-profile residential development in San Francisco. Constructed site-specific groundwater models for analysis of local hydrogeology and construction dewatering. Gave formal presentations of technical findings to the mediation group. Quickly developed a detailed conceptual site model of the downtown San Francisco groundwater basin. Worked with geotechnical engineer partners to develop a 3-dimensional time history of subsurface material property changes in the vicinity of the building. These efforts contributed to a favorable settlement for the property developer.

PFAS Litigation Support, Various Locations, Nationwide — Provided technical analysis of PFAS fate and transport in the vicinity of various industrial facilities. Reviewed hydrologic data and developed analytical models to calculate riverine contaminant flux time histories.

Superfund Site, Portland, Oregon — Produced expert report for litigation surrounding a specific parcel of a large industrial Superfund site. Worked with counsel to refine and redevelop a complex fate and transport conceptual site model of interconnected surface water and groundwater pathways at this multiparty site. Case ongoing.

REMEDIAL DESIGN

Agricultural Well Investigation, Northern California — Performed ambient and dynamic down-hole flow logging at wells on an organic farm that had been impacted with chlorinated solvents. Calculated groundwater and contaminant mass flux through screen intervals for other flow pathways. Characterized well construction and hydrostratigraphy through a video log of open rock boreholes. Oversaw pump reinstallation and well maintenance. The resulting analysis provided the basis for successful ongoing well operations to maintain groundwater availability from the wells.

Characterization and Groundwater Remediation of a Former Chemical Production Facility, Los Angeles, California —
Led the monitoring/reporting program for remediation of a chlorinated solvent site and directed subcontractors. Used geospatial analysis to implement sampling frequency reduction for the monitoring well network and reduce costs. Characterized local hydrostratigraphy via well logs and an in-well transducer network. Assessed injection well operations for the West Coast Basin Barrier Project to address concerns about potential interaction with contaminants in coastal aquifers.

Characterization and Groundwater Remediation of a Former Chemical Production Facility, Los Angeles, California —
Employed analytical element modeling to assist groundwater remediation system design. These models provided an efficient platform for design of injection/extraction well configuration and operations. Acted as groundwater monitoring and reporting program leader and directed the industrial client's offsite data management contractors, which resulted in substantial cost savings for routine analysis and reporting.

Former Wood Treating Facilities, Various Locations, United States — Lead hydrogeologist for characterization and remediation of former wood treating sites in a variety of geologic settings, including riparian, coastal, and shallow karst environments. Developed site characterization work plans for feasibility studies and data gaps analysis. Prepared technical documentation on the fate and transport of dense nonaqueous-phase liquid and remediation feasibility. Developed site-specific groundwater models to assess fate and transport of PAHs and support remedy alternative design. Provide strategic and technical support of existing consultant teaming partners.

Groundwater Remediation Operations, Superfund Site, San Fernando Valley, California — Contributed to ongoing updates to the basin conceptual site model via well log analysis/correlation and evaluation of depositional histories. Acted as team leader for extensive hydrogeological field investigation, including aquifer testing, slug testing, and down-hole electromagnetic flow logging. These analyses, along with review of available well logs, contributed to a successful update of the conceptual site model and remedial strategy. Delineated contaminant distribution of chlorinated solvents, metals, and 1,4-dioxane through geostatistical interpolation that filled significant data gaps and improved understanding of plume delineation.

Hydrogeologic Assessment at a PFAS Site, Confidential Location — Supported hydrogeologic assessment of a site impacted by per- and polyfluoroalkyl substances (PFAS). Performed aquifer test analysis, groundwater model updates, and containment system optimization.

Perchlorate Groundwater Remediation Project, San Francisco Bay Area, California — Provided technical oversight for the assessment and remediation of a sedimentary basin contaminated with perchlorate resulting in impacts to private and municipal water users. Characterized basin hydrostratigraphy and contributed to conceptual model development via sonic core logging, aquifer pumping and injection tests, monitoring of a basin-wide transducer network, pneumatic slug testing, and lateral/vertical plume delineation from a network of nested monitoring wells and domestic pumping wells. Characterized basin groundwater flow, as well as groundwater–surface water interactions, via chemical and isotope analysis. Developed the conceptual design and performance estimates for an innovative remediation well network via analytical solutions, flow and transport modeling, and model optimization techniques. Efforts significantly reduced client implementation costs. Led the team that designed and implemented an efficient groundwater monitoring network to meet stringent regulatory requirements. Developed a regional groundwater flow model to support of treatment system design and remedial optimization. Performed statistical analysis for evaluating an approved natural attenuation remedy for a portion of the basin. These efforts contributed to substantial reduction of monitoring time and expenditure by the client and successful remediation of private water supply wells.

RCRA Corrective Action, Brunswick, Georgia — Used density-dependent groundwater flow and transport modeling to assist project team's reinterpretation of the conceptual site model for offsite migration of VOCs for a revised corrective action approach. Updated previous consultant's model to more accurately simulate coastal aquifer dynamics. Used particle tracking and 1-dimensional transport and attenuation models to support offsite plume characterization.

Remediation of a Brownfield Site, San Francisco Bay Area, California — Characterized site geology, hydrogeology, and extent of solvent and metals contamination via direct-push sampling and logging. Oversaw an *in situ* bioremediation pilot study for enhanced reductive dechlorination that led to successful full-scale injection operations and eventual site closure and redevelopment.

Remediation of Current and Former Military Facilities, California and Nevada — Developed work at a portfolio of military facilities through longstanding partnership with 8(a) contractor and U.S. Army

Corps of Engineers. Work included construction of a calibrated flow and transport model in a regional coastal aquifer system. Used calibrated models as the basis for a groundwater model optimization effort to maximize the effectiveness of the extraction/injection well network for active remediation of chlorinated solvents. These efforts successfully informed efficient installation and operation of capture wells concurrent with a treatment system redesign. Used flow models to perform ongoing capture zone analysis to assess ongoing successful treatment system performance, as well as fate and transport models to demonstrate long-term migration of contaminants.

Soil and Groundwater Remediation of a Former Chemical Production and Storage Facility, San Francisco Bay Area, California —
Led groundwater monitoring program on dynamic, multi-consultant site with ongoing *in situ* remediation of chlorinated solvents. Responsible for RCRA regulatory compliance and was lead author on report deliverables. Oversaw aquifer testing and characterization, including short-term pumping tests and slug tests. These tests provided relatively low-cost, efficient characterization of aquifer properties of contaminated areas with minimal waste generation that contributed to *in situ* remediation design.

WATER MANAGEMENT

Groundwater Resources Management, Santa Cruz County, California — Provided project and task management for a group of public clients utilizing a shared groundwater resource within Santa Cruz County. Coordinated with environmental impact report team of consultants and agencies for planned supplemental water supply projects within the basin. Authored documents pursuant to the California Sustainable Groundwater Management Act that resulted in acceptance of basin boundary modifications by the California Department of Water Resources, and promoted sustainable groundwater management through basin consolidation. Led construction of groundwater–surface water models in conjunction with the U.S. Geological Survey and made presentations to the basin Technical Advisory Committee. This model will provide a robust platform to test a number of groundwater management alternative strategies within the basin. Developed and ran site-specific flow and transport models to evaluate impact of seawater intrusion, resulting in updated management objectives for the basin that improved on previous methods.

Simulation of Groundwater Flow, Hawaii — Used groundwater models to simulate groundwater flow and seawater intrusion dynamics in a coastal volcanic aquifer. These models were used to assess the ecological risk of heated wastewater discharged to offshore through the aquifer. This work was performed in support of discharge permitting for a proposed bioenergy facility.

Water Budget Study, City of Oakland, California — Developed an analytical tool to estimate average water demand for public properties based on landscaping type and evapotranspiration data. Estimated values were generally corroborated by water use data from the city. Results were used to inform future water use strategies.

Water Resources Management, Olympic Valley, California — Acted as project manager and lead groundwater modeler to support the public utility client and associated private property developers, including developments undergoing environmental impact studies. Acted as a technical resource for the client at public-facing meetings. Performed groundwater model calibration and utilized the updated model for long-term planning operations for client. Successfully developed criteria for estimating long-term maximum groundwater supply within the valley that refined and improved on previous investigations. Provided review and evaluation of local hydrogeology to assist developers with property dewatering and construction operations.

GEOTECHNICAL

Construction Dewatering Projects, Los Angeles Basin, California — Oversaw all phases of planning, scoping, permitting (including NPDES), performance, and data collection associated with aquifer characterization to aid in dewatering design and subsurface construction plans. Analyzed pumping and slug test data to evaluate projected inflow during construction dewatering. Results of the investigations led to substantial improvements over the dewatering contractor recommendations and averted large future costs and engineering difficulties for the clients. Utilized analytical element and traditional numerical flow models to evaluate the effects of dewatering systems on the local hydrogeology. Used models to perform forensic analysis to improve the clients' understanding of unsuccessful dewatering designs.

Transit and Utility Alignment Projects, Los Angeles Basin, California — Provided technical support for aquifer tests associated with dewatering activities for subsurface transit alignments. These projects included the Westside Subway Extension, as well as water pipeline alignments.

Publications

Culkin, S. 2013. Use of genetic algorithm optimization for operational management of extraction wells within a mature groundwater plume, Monterey Bay, California. *MODFLOW and More 2013*.

Chamberlain, W.C., S. Culkin, and X. Xu. 2012. Hydrogeologic characterization in the development of underground structures—Los Angeles Basin, California. *Environmental and Engineering Geoscience* 18(3):295–308.

Culkin, S. 2008. Implications of rate-limited mass transfer for aquifer storage and recovery efficiency. *Ground Water* 46(4):591–601.

Presentations / Posters

Culkin, S. 2019. Evaluation saltwater–freshwater dynamics in coastal aquifer conceptual site model development and groundwater management. Platform presentation at AEHS 29th Annual International Conference on Soil, Water, Energy, and Air, San Diego, CA. March 18–21.

Culkin, S. 2017. Using cross-sectional models to develop proxy measurable thresholds for seawater intrusion. SGMA Conference, Tools for Developing a GSP, Groundwater Resources Association of California, Modesto, CA.

Culkin, S. 2016. Using cross-sectional models to develop measurable objectives for saltwater intrusion. 2016 Annual Meeting Program, Modeling Extremes: Drought to Flood and In-Betweens, California Water and Environmental Modeling Forum, Folsom, CA.

Culkin, S. 2013. Hydrogeological characterization in the development of underground structures—Los Angeles Basin, California. 2013 Annual Meeting Program with Abstracts, Association of Environmental & Engineering Geologists, Seattle, WA.

Culkin, S. 2007. Understanding aquifer storage and recovery efficiency in a clastic-limestone aquifer, Charleston, South Carolina. Geological Society of America Abstracts with Programs, Vol. 39. No. 1.

Culkin, S., and A.M. Franzese. 2004. Distinguishing between provenance changes and sorting effects on the Rb-Sr systematics in glacial and Holocene South Atlantic sediments. AGU Fall Meeting Abstracts.

Attachment 7

Noise Study

AT&T Mobility • Base Station No. CCL05741
186 Summit Drive • Santa Cruz, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of AT&T Mobility, a personal telecommunications carrier, to evaluate the proposed modifications to its base station (Site No. CCL05741) located at 186 Summit Drive in Santa Cruz, California, for compliance with appropriate guidelines limiting sound levels from the installation.

Executive Summary

AT&T proposes to install antennas and equipment at its base station at 186 Summit Drive in Santa Cruz County. Noise levels from the proposed operation will comply with the County's permitted limits.

Prevailing Standard

The County of Santa Cruz regulates noise in Chapters 8.30 "Noise," 13.10 "Zoning Regulations," and 13.15 "Noise Planning" of its County Code and in Chapter 9 "Noise" of its General Plan. Not all these limits are consistent; some are more restrictive than others, depending on the situation.

A) Sections 8.30.C.1.a.ii and 8.30.C.1.b.iii limit noise at the boundaries of the property from which noise is generated to 75 dBA during the day and to 60 dBA at night (10 pm to 8 am).

Sections 13.15.050.A and 13.15.070.A reference Tables 9-2 and 9-3 of the General Plan.

B) Table 9-2 limits noise to 60 dBA CNEL* at receiving property lines.

C) Table 9-3 limits the average hourly noise level at receiving property lines to 50 dBA during the day, and to 45 dBA at night (10 pm to 7 am). If the existing hourly ambient level is below the limit by more than 10 dBA, that limit is tightened by 5 dBA.

D) Section 13.15.070.A of the Code and Policy 9.2.2 of the General Plan also limit an increase in ambient noise at the receiving property line to 5 dBA above ambient if the resulting level is at or below 60 dBA L_{dn}† and to 3 dBA if the result is above 60 dBA L_{dn}.

E) Sections 13.10.660.H.2.b limits operation of backup generators to power outages and for testing and maintenance purposes.

F) Section 13.15.050.B limits fuel for back-up power generators to propone or natural gas in residential zones, limits noise levels to 65 dBA at the boundary of the property where the generator is located, and sets certain minimum setbacks from the property boundary based on the generator noise rating.

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* The composite Community Noise Equivalent Level ("CNEL") incorporates a 5 dBA penalty applied during evening hours (7 pm to 10 pm) in addition to a 10 dBA penalty at night (10 pm to 7 am). A noise level expressed in CNEL is, by definition, 6.7 dBA higher than the equivalent level L_{eq} averaged over the same 24-hour period.

† The composite "day-night" average L_{dn} incorporates a 10 dBA penalty at night (10 pm to 7 am) to reflect typical residential conditions, where noise is more readily heard at night. A noise level expressed in L_{dn} is, by definition, 6.4 dBA higher than the equivalent level L_{eq} averaged over the same 24-hour period.

Section 13.15.040.B exempts noise levels "in the performance of emergency work," which would include emergency operation of back-up power generators during an extended outage of commercial power. Therefore, only a generator's operation during periodic, no-load daytime testing‡ is evaluated for compliance.

Figure 1 attached describes the calculation methodology used to determine applicable noise levels for evaluation against the prevailing standard.

General Facility Requirements

Wireless telecommunications facilities ("cell sites") typically consist of two distinct parts: the electronic base transceiver stations ("BTS" or "cabinets") that are connected to traditional wired telephone lines, and the antennas that send wireless signals created by the BTS out to be received by individual subscriber units. The BTS are often located outdoors at ground level and are connected to the antennas by coaxial cables. The BTS typically require environmental units to cool the electronics inside. Such cooling is often integrated into the BTS, although external air conditioning may be installed, especially when the BTS are housed within a larger enclosure.

Most cell sites have back-up battery power available, to run the base station for some number of hours in the event of a power outage. Many sites have back-up power generators installed, to run the station during an extended power outage.

Site & Facility Description

The site located at 186 Summit Drive in unincorporated Santa Cruz County was visited by Mr. David Kelly, a qualified field technician employed by Hammett & Edison, Inc., on January 4, 2022. Several guyed lattice towers and a satellite dish assembly were observed for use by AT&T next to a single-story equipment building at the site, about 10 miles northwest of the City of Santa Cruz. A Larson Davis Sound Meter SoundTrack LxT2 (Serial No. 0005461) was installed at the appropriate property line of the nearest residential property, across Summit Drive, and was retrieved the following day, to provide a 24-hour monitoring period, as shown in the graph on page 4. The average daytime and nighttime ambient levels at the site were 36.5 dBA and 35.1 dBA, respectively, which correspond to 41.7 dBA L_{dn}. The meter was under current calibration by the manufacturer.

Based upon information provided by AT&T, including zoning drawings by Delta Groups Engineering, Inc., dated February 9, 2023, that carrier proposes to remove its existing towers and to install one 150-foot tall pole, configured to resemble a pine tree, on the south side of the equipment building. Nine directional panel antennas and eighteen radios would be mounted near the top of the pole.

‡ Back-up power generators are typically exercised for a 15-minute period once a week during daytime hours on a non-holiday weekday.

AT&T also proposes to install a Generac propane emergency back-up power generator, assumed for the purpose of this study to be a Model SG035 with Level 2 Acoustic Enclosure, inside the west wing of the building, which is constructed of concrete block.

The nearest boundary of the subject property is about 80 feet west of the proposed generator. The property line of the nearest receiving property is about 130 feet from the generator, also to the west, at 185 Summit Drive.

Study Results

The antennas are passive, generating no noise, and it is assumed for the purpose of this study that the radios are convectively cooled, with no installed fans. Generac reports that the Model SG035 has a maximum noise level of 63 dBA at a reference distance of 23 feet. The roofed, concrete-block building is conservatively assumed to provide at least 10 dBA of noise attenuation.

At the nearest edge of the subject property, 80 feet from the generator, the rated noise level corresponds to 42.1 dBA (22.3 dBA CNEL for its periodic testing, and 48.8 dBA CNEL for full-time operation during an emergency); when added to the measured ambient levels, the maximum noise level is 43.2 dBA daytime, 42.9 dBA at night, and 49.1 dBA CNEL.

At the property line of the nearest receiving property, 130 feet away, the rated noise level corresponds to 37.9 dBA; adding these to the measured ambient levels gives total noise equal to 40.3 dBA daytime, 39.7 dBA at night, 46.5 dBA CNEL, and 46.2 dBA L_{dn}.

These levels meet all the County's limits, described in the Prevailing Standard section, as follows:

A) The 43.2 dBA total noise daytime level at the subject property line is less than the County daytime limit of 75 dBA; the 42.9 dBA total noise level at night is less than the County nighttime limit of 60 dBA.

B) The 46.5 dBA CNEL total noise at the nearest receiving property line is less than the County limit of 60 dBA CNEL.

C) Because the 36.5 dBA daytime average ambient is more than 10 dBA below the 50 dBA daytime limit, a 5 dBA penalty is applied, putting the daytime limit at 45 dBA at the nearest receiving property line; the 43.2 dBA total daytime noise meets the limit. The 35.1 dBA nighttime average ambient is not more than 10 dBA below the 45 dBA nighttime limit, so that limit is not adjusted; the 42.9 dBA total nighttime noise meets the limit.

D) The 46.2 dBA L_{dn} total noise at the nearest receiving property line is an increase of 4.5 dBA over the ambient 41.7 dBA L_{dn}, meeting the 5 dBA increase allowed by the County when the total noise is less than 60 dBA L_{dn}.

E) AT&T proposes to operate the generator only during power outages and for testing and maintenance purposes.

F) AT&T proposes to install a propone-fueled generator. The 48.8 dBA CNEL generator noise at the edge of the subject property meets the County limit of 65 dBA CNEL, though its operation is already exempt from this limit during an emergency outage of commercial power. During its periodic testing, which is not exempt, the 22.3 dBA CNEL noise from the generator is well below the County's limit. The 80-foot setback is much larger than the 20 feet required for the 63 dBA rating of the generator.

Conclusion

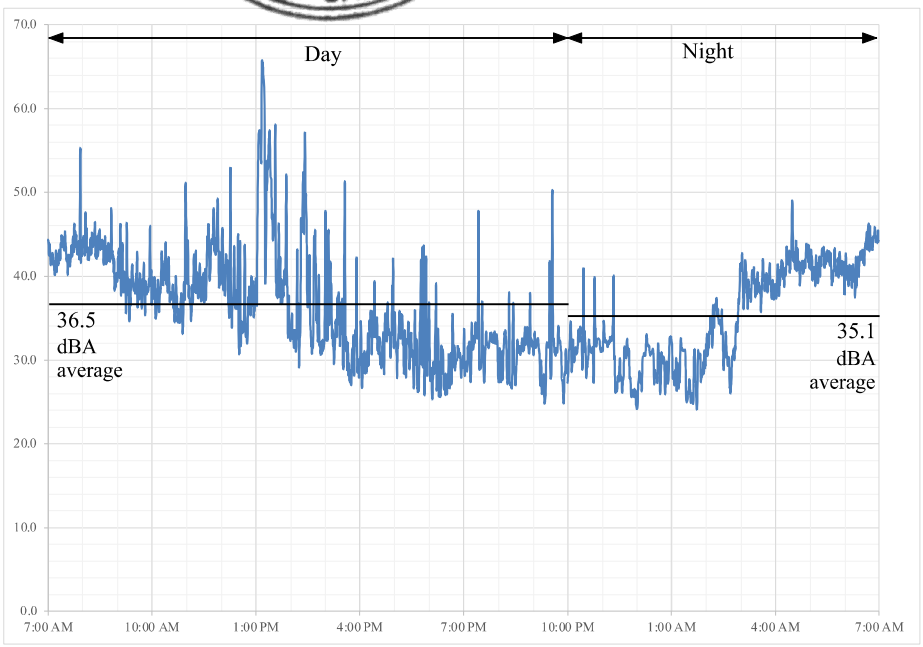
Based on the information and analysis above, it is the undersigned's professional opinion that the proposed modifications to the AT&T Mobility base station located at 186 Summit Drive in Santa Cruz, California, will comply with that City's requirements for limiting acoustic noise emission levels.

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, 2023. 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.

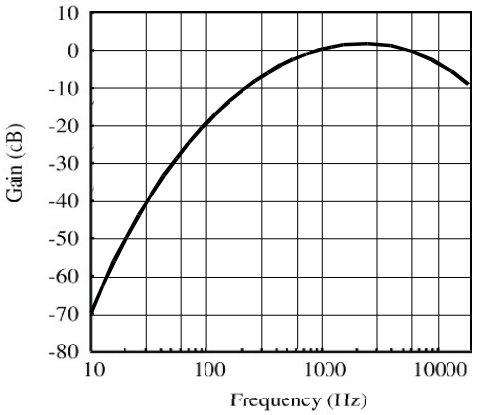
William F. Hammett, P.E.
707/996-5200

February 21, 2023



Noise Level Calculation Methodology

Most municipalities and other agencies specify noise limits in units of dBA, which is intended to mimic the reduced receptivity of the human ear to Sound Pressure ("L_P") at particularly low or high frequencies. This frequency-sensitive filter shape, shown in the graph to the right as defined in the International Electrotechnical Commission Standard No. 179, the American National Standards Institute Standard No. 5.1, and various other standards, is also incorporated into most calibrated field test equipment for measuring noise levels.



30 dBA	library
40 dBA	rural background
50 dBA	office space
60 dBA	conversation
70 dBA	car radio
80 dBA	traffic corner
90 dBA	lawnmower

The dBA units of measure are referenced to a pressure of 20 µPa (micropascals), which is the threshold of normal hearing. Although noise levels vary greatly by location and noise source, representative levels are shown in the box to the left.

Manufacturers of many types of equipment, such as air conditioners, generators, and telecommunications devices, often test their products in various configurations to determine the acoustical emissions at certain distances. This data, normally expressed in dBA at a known reference distance, can be used to determine the corresponding sound pressure level at any particular distance, such as at a nearby building or property line. The sound pressure drops as the square of the increase in distance, according to the formula:

$$L_P = L_K + 20 \log(D_K/D_P),$$

where L_P is the sound pressure level at distance D_p and L_K is the known sound pressure level at distance D_K.

Individual sound pressure levels at a particular point from several different noise sources cannot be combined directly in units of dBA. Rather, the units need to be converted to scalar sound intensity units in order to be added together, then converted back to decibel units, according to the formula:

where L_T is the total sound pressure level and L_1, L_2, etc are individual sound pressure levels.

$$L_T = 10 \log \left(10^{L_1/10} + 10^{L_2/10} + \ldots\right),$$

Certain equipment installations may include the placement of barriers and/or absorptive materials to reduce transmission of noise beyond the site. Noise Reduction Coefficients ("NRC") are published for many different materials, expressed as unitless power factors, with 0 being perfect reflection and 1 being perfect absorption. Unpainted concrete block, for instance, can have an NRC as high as 0.35. However, a barrier's effectiveness depends on its specific configuration, as well as the materials used and their surface treatment.

Attachment 8

Radio Frequency Study

AT&T Mobility • Proposed Base Station (Site No. CCL05741)
186 Upper Summit Drive • Santa Cruz, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of AT&T Mobility, a personal wireless telecommunications carrier, to evaluate the base station (Site No. CCL05741) proposed to be located at 186 Upper Summit Drive in Santa Cruz, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

AT&T proposes to install directional panel antennas on a new 150-foot steel pole, configured to resemble a pine tree, to be sited within the fenced compound located at 186 Upper Summit Drive in Santa Cruz. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

Prevailing Exposure Standard

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 limit for exposures of unlimited duration at several wireless service bands are as follows:

Wireless Service Band	Transmit Frequency	"Uncontrolled" Public Limit	Occupational Limit (5 times Public)
Microwave (point-to-point)	1–80 GHz	1.0 mW/cm^2	5.0 mW/cm^2
Millimeter-wave	24–47	1.0	5.0
Part 15 (WiFi & other unlicensed)	2–6	1.0	5.0
CBRS (Citizens Broadband Radio)	3,550 MHz	1.0	5.0
BRS (Broadband Radio)	2,490	1.0	5.0
WCS (Wireless Communication)	2,305	1.0	5.0
AWS (Advanced Wireless)	2,110	1.0	5.0
PCS (Personal Communication)	1,930	1.0	5.0
Cellular	869	0.58	2.9
SMR (Specialized Mobile Radio)	854	0.57	2.85
700 MHz	716	0.48	2.4
600 MHz	617	0.41	2.05
[most restrictive frequency range]	30–300	0.20	1.0

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. 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"). This methodology is an industry standard for evaluating RF exposure conditions and has been demonstrated through numerous field tests to be a conservative prediction of exposure levels.

Site and Facility Description

Based upon information provided by AT&T, including zoning drawings by Delta Groups Engineering, Inc., dated June 11, 2021, it is proposed to install nine CommScope Model NNH4-65C-R6H4 directional panel antennas on a new 150-foot steel pole, configured to resemble a pine tree, to be sited within the fenced compound located at 186 Upper Summit Drive in Santa Cruz. The antennas would employ up to 10° downtilt, would be mounted at an effective height of about 140 feet above ground, and would be oriented in groups of three toward 100°T, 180°T, and 340°T. The maximum effective radiated power in any direction would be 31,080 watts, representing simultaneous operation at 3,360 watts for WCS, 5,160 watts for AWS, 10,140 watts for PCS, 3,770 watts for cellular, and 8,650 watts for 700 MHz service. There are reported no other wireless telecommunications base stations at the site or nearby.*

* The existing towers and antennas located on the property are to be removed.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed AT&T operation is calculated to be 0.030 mW/cm^2, which is 4.2% of the applicable public exposure limit. The maximum calculated level at the second-floor elevation of any nearby building† is 3.8% 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.

No Recommended Mitigation Measures

Due to their mounting locations and height, the AT&T antennas would not be accessible to unauthorized persons, and so no measures are necessary to comply with the FCC public exposure guidelines. It is presumed that AT&T will, as an FCC licensee, take adequate steps to ensure that its employees or contractors receive appropriate training and comply with FCC occupational exposure guidelines whenever work is required near the antennas themselves.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the base station proposed by AT&T Mobility at 186 Upper Summit Drive in Santa Cruz, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating base stations.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-18063, which expires on June 30, 2023. 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.

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STATE OF CALIFORNIA

July 6, 2021

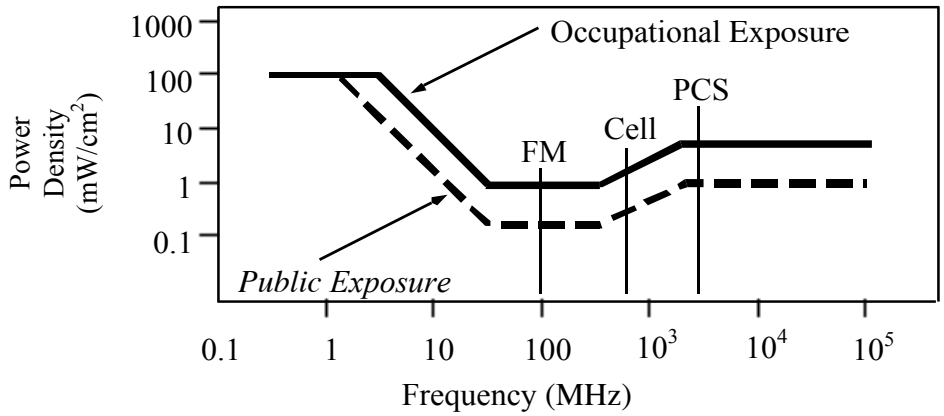
† Located at least 250 feet away, based on aerial photographs from Google Maps.

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 incorporated those formulas in a computer program capable of calculating, at thousands of locations on an arbitrary grid, the total expected power density from any number of individual radio frequency sources. The program allows for the inclusion of uneven terrain in the vicinity, as well as any number of nearby buildings of varying heights, 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 antenna, in degrees,
P_{net} = net power input to antenna, in watts,
D = distance from antenna, in meters,
h = aperture height of 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 = three-dimensional relative field factor toward point of calculation, and
D = distance from antenna effective height to 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 is used in a computer program capable of calculating, at thousands of locations on an arbitrary grid, the total expected power density from any number of individual radio frequency sources. The program also allows for the inclusion of uneven terrain in the vicinity, as well as any number of nearby buildings of varying heights, to obtain more accurate projections.