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December 22, 2022

Perry Patel
Radiate Hospitality
953 Industrial Avenue, Suite 100
Palo Alto, CA 94303

Subject: 1220 Oakmead Parkway – Avian Collision Risk Assessment (HTH #4703-01)

Dear Perry Patel:

Per your request, H. T. Harvey & Associates has assessed avian collision risk and lighting impacts on birds in support of the proposed 1220 Oakmead Parkway redevelopment project in Sunnyvale, California. It is our understanding that the project will demolish the existing improvements on the 0.9-acre project site and construct a new 6-story, 152-room hotel. We further understand that you are requesting our assistance to assess the potential for avian collisions to occur with the proposed building for purposes of California Environmental Quality Act (CEQA) review of the project. This report summarizes our analysis of bird collision and lighting hazards associated with the project and describes any measures necessary, in our opinion, to mitigate potentially significant impacts to less-than-significant levels under CEQA.

Methods

This assessment was prepared by H. T. Harvey & Associates ornithologists Steve Rottenborn, Ph.D., and me. Briefly, our qualifications are as follows (résumés attached):

- I am a wildlife ecologist with a B.S. in Ecology from the University of California, San Diego and an M.S. in Fish and Wildlife Management from Montana State University, where my Master's thesis focused on factors affecting the nest survival of yellow warblers (*Setophaga petechia*), dusky flycatchers (*Empidonax oberholseri*), and warbling vireos (*Vireo gilvus*). Trained as an ornithologist, I specialize in the nesting ecology of passerine birds, with a broad range of avian field experience from across the United States. I am an avid birder, and I volunteered as a bird bander for the San Francisco Bay Bird Observatory, where I banded, sexed, and aged resident and migrant passerine species from 2010–2020. I have spent hundreds of hours in the field conducting nesting bird surveys for H. T. Harvey & Associates projects over the past 15 years, and have found hundreds of passerine nests as well as many nests of raptors.
- Steve Rottenborn has a Ph.D. in biological sciences from Stanford University, where his doctoral dissertation focused on the effects of urbanization on riparian bird communities in the South San Francisco

Bay area. He has been an active birder for more than 35 years and has conducted or assisted with research on birds since 1990. He has served for 9 years as an elected member of the California Bird Records Committee (including 3 years as chair), for 15 years as a Regional Editor for the Northern California region of the journal North American Birds, and for 6 years as a member of the Board of Directors of the Western Field Ornithologists.

In addition, H. T. Harvey & Associates Ecologist Jane Lien, B.S., conducted a reconnaissance-level survey of the project site on November 29, 2022 to characterize potential bird use of the site and immediately surrounding areas.

Although the subject of bird-friendly design is relatively new to the West Coast, we have performed avian collision risk assessments and identified measures to reduce collision risk for a number of projects in more than a dozen Bay Area municipalities.

Assessment of Bird Use

Existing Conditions

The 0.9-acre project site is located at 1220 Oakmead Parkway in Sunnyvale, California. It is bounded by Oakmead Parkway to the north and Lakeside Drive to the east. It is surrounded by commercial development to the south, east, and west, and by multi-family residential development to the north (Figure 1).

Figure 1. The project site, delineated in yellow, is surrounded by extensive residential and commercial development.

Habitat conditions on the site are of low quality for most native birds found in the region due to the scarcity of vegetation, absence of well-layered vegetation (e.g., with ground cover, shrub, and canopy tree layers in the same areas), and small size of the vegetated habitat patches. Trees, shrubs, and landscape plants on the site are all nonnative, and are confined to narrow landscaped strips along the margins of the site as well as a narrow landscaped strip adjacent to the building (Photos 1 and 2). Trees on the site include glossy privet (*Ligustrum lucidum*), magnolia (*Magnolia* sp.), callery pear (*Pyrus calleryana*) and Mexican fan palm (*Washingtonia robusta*). Shrubs, landscape plants, and groundcovers are small and sparse, and include rosemary (*Rosmarinus* sp.), geranium (*Pelargonium* sp.), and onion (*Allium* sp.). A small area of nonnative English ivy (*Hedera helix*) is present on the ground along the northeast corner of the building. The site is otherwise devoid of vegetation.

Photos 1 and 2. The project site consists of a single-story commercial building surrounded by a paved parking lot with small, scattered landscape trees and shrubs.

The nonnative trees and shrubs on the project site support fewer of the resources required by native birds compared to native vegetation, and the paucity and structural simplicity of this vegetation further limit resources available to birds. Nevertheless, there is a suite of common, urban-adapted bird species that occur in urban areas, some of which are expected to occur on the site regularly in small numbers. These include the native Anna's hummingbird (*Calypte anna*), American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottus*), house finch (*Haemorhous mexicanus*), dark-eyed junco (*Junco hyemalis*), and lesser goldfinch (*Spinus psaltria*), as well as the nonnative European starling (*Sturnus vulgaris*) and house sparrow (*Passer domesticus*). All of these birds are year-round residents that can potentially nest on or immediately adjacent to the project site. A number of other species, primarily migrants or winter visitors (i.e., nonbreeders), are expected to occur occasionally on or near the site as well, including the white-crowned sparrow (*Zonotrichia leucophrys*), golden-crowned sparrow (*Zonotrichia atricapilla*), and yellow-rumped warbler (*Setophaga coronata*). For example, low numbers of migrants are expected to forage in the landscape trees and shrubs on the site. However, no bird species are expected to occur on the site in large numbers, and all of the species expected to occur regularly are regionally abundant species. No special-status birds (i.e., species of conservation concern) are expected to nest or occur regularly on the site.

The project site is located in a highly urbanized area, and is surrounded by commercial and multi-family residential development with landscape vegetation similar to that on the project site (Figure 1). As a result, bird use of these surrounding areas is as described above for the project site. No sensitive habitats are located within the site vicinity. The nearest open area to the project site is an artificial lake located approximately 310 feet to the northeast. This lake is surrounded by a number of mature, locally nonnative coast redwoods (*Sequoia sempervirens*) and Canary Island pines (*Pinus canariensis*) that have been planted along its perimeter, as well as a paved pedestrian path. Due to the predominantly nonnative vegetation and high levels of disturbance within and adjacent to the lake, as well as the highly urbanized surrounding context, this open space area is not expected to provide especially valuable habitat for birds or attract large numbers of birds.

The project site is not located in a landscape position that would result in high numbers of birds, especially migratory birds, to be moving past the project site. Although a number of birds move along the edges of San Francisco Bay, the site is located approximately 1.6 miles from the edge of baylands habitats and is separated from those habitats by dense commercial and residential development. Because the project site is well inland from the baylands edge, waterbirds using habitats around the Bay would not commute in the direction of the project site. As a result, waterbirds associated with San Francisco Bay are not at risk of colliding with the proposed building. Moderate numbers of migratory songbirds are often concentrated at the edge of the bay during spring and fall migration; however, they tend to use more heavily vegetated areas such as riparian corridors or large, well-vegetated parks such as Coyote Point in San Mateo, Shoreline Park in Mountain View, or Sunnyvale Baylands Park in Sunnyvale. Similarly, the site is located more than 5.9 miles from well-vegetated foothills of the Santa Cruz Mountains where migrant landbirds may be concentrated.

No heavily vegetated areas or natural habitat such as riparian vegetation is present in the vicinity of the project site, and the project site is not located between two high-quality habitat areas such that birds would be flying past the site at an altitude as low as the proposed buildings Similarly, the nearest urban parks that provide habitat for larger numbers and higher diversities of migratory birds are Sunnyvale Baylands Park approximately 1.6 miles to the north, and Ulistac Natural Area approximately 2.3 miles to the northeast (Cornell Lab of Ornithology 2022) (Figure 2). The project site is isolated from these locations by dense commercial and residential development. As a result, there is no expectation that migratory songbirds would be particularly attracted to, or would make heavy use of, the habitats in the immediate project vicinity.

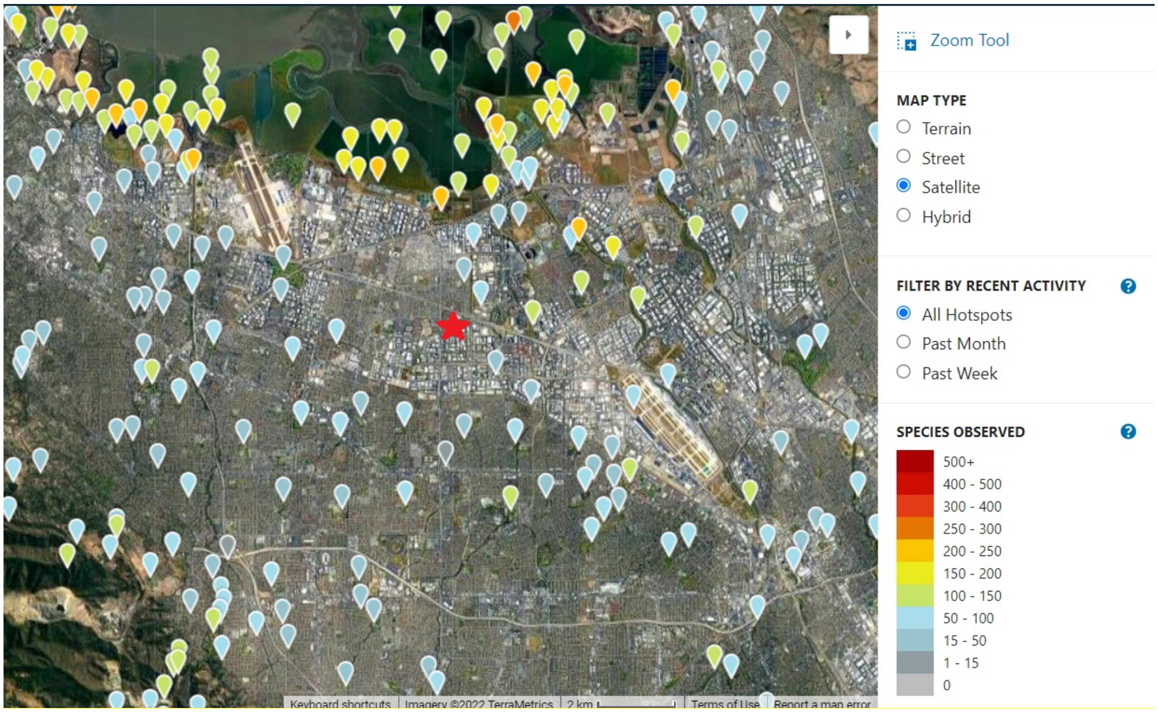

Figure 2. Map of eBird Hotspots in the project vicinity. The project site is indicated by a red star. Urban parks with higher abundance and diversity of birds (orange markers) are located along the San Francisco Bay to the north, as well as at Ulistac Natural Area to the northeast.

Proposed Conditions

The numbers of birds that currently use the site are expected to increase somewhat following project construction due to the proposed expansion of landscape areas and inclusion of several roof gardens and a green wall on the site (Figure 3). However, the project's preliminary planting plans include primarily nonnative trees, shrubs, and herbaceous plants, which offer fewer resources to native birds than native vegetation. Nonnative trees, shrubs and herbaceous plants planned for the site include London plane tree (*Platanus* x *acerifolia*), Shumard oak (*Quercus shumardii*), Brisbane box (*Tristania conferta*), photinia (*Photinia fraseri*), European olive (*Olea europaea*), Russian sage (*Perovskia* sp.), New Zealand flax (*Phorium* sp.), and rosemary (*Rosmarinus officinalis*), as well as various nonnative flowering herbaceous plants such as flax lily (*Dianella revoluta*), westringia (*Westringia* sp), creeping myoporum (*Myoporum parvifolium*), and berkeley sedge (*Carex divulsa*). A smaller number of native plants, including manzanita (*Arctostaphylos* sp.), ceanothus (*Ceanothus* sp.), California rose (*Rosa californica*), and California gray rush (*Juncus patens*) are also planned. This vegetation is likely to attract somewhat greater numbers of landbirds, perhaps including more migrant songbirds, than under existing conditions; however, none of the tree and plant species proposed to be planted on the site are not known to provide particularly valuable food, nesting, or cover resources for native birds. Further, the relatively small numbers of these trees and plants, coupled with the lack of structural diversity, would not provide high-quality habitat for native birds, and any increase in bird abundance as a result of the proposed landscaping would be modest.

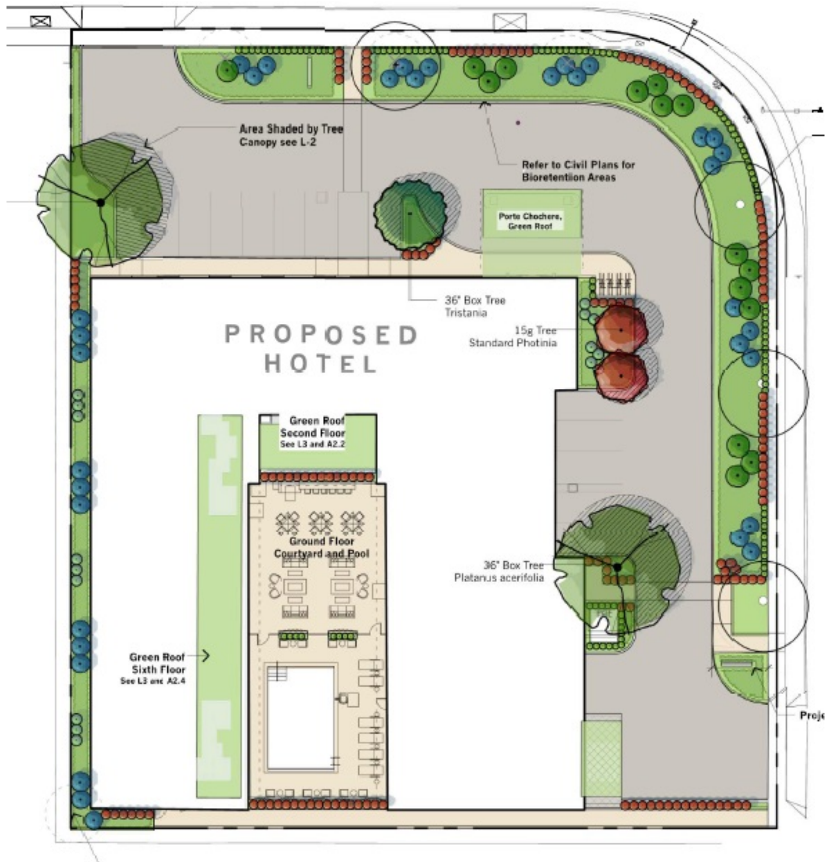

Figure 3. Schematic landscape plan. Existing street trees will be retained, and additional trees, shrubs, and herbaceous plants will be planted. Several green roofs are also planned on Levels 2 and 6.

Assessment of Collision Risk Due to Glazing

Because birds do not necessarily perceive glass as an obstacle (Sheppard and Phillips 2015), windows or other structures that reflect the sky, trees, or other habitat may not be perceived as obstacles, and birds may collide with these structures. Similarly, transparent windows can result in bird collisions when they allow birds to perceive an unobstructed flight route through the glass (such as at corners), and when the combination of transparent glass and interior vegetation results in attempts by birds to fly through glass to reach vegetation. A number of factors play a role in determining the risk of bird collisions with buildings, including the amount and type of glass used, lighting, properties of the building (e.g., size, design, and orientation), type and location of vegetation around the building, and building location.

As noted above, relatively low numbers of native, resident birds and occasional migrants occur in the project vicinity, but even during migration, the number of native birds expected to occur on the site will be low. As a result, the glass façades of the proposed building at 1220 Oakmead Parkway are expected to result in relatively few bird collisions, even in the absence of added bird-safe design. Further, several features of the proposed building would reduce the potential for avian collisions. Based on the project plans, the building's façades incorporate extensive opaque wall panels, mullions, awnings, and vertical metal fins that separate the relatively limited glazing on the facades (Figure 4). These features reduce bird collisions by making the building appear as a solid structure from a distance (rather than as reflected sky or vegetation).

Figure 4. The building façades incorporate extensive opaque wall panels, mullions, awnings, and vertical metal fins, which help birds perceive the building as a solid structure (rather than as reflected sky or vegetation).

There are some features evident in the project's plans where bird collisions are more likely to occur compared to other locations because they may not be as easily perceived by birds as physical obstructions. For example, the plans show free-standing glass railings along the peripheries of the Level 6 roof terrace, as well as a transparent glass corner on the northeast corner of the building (Figure 5). Where these features are located along potential flight paths that birds may use when traveling to and from landscape vegetation on the site, the risk of bird collisions is higher because birds may not perceive the intervening glass as a solid structure and attempt to fly to vegetation on the far side of the glass.

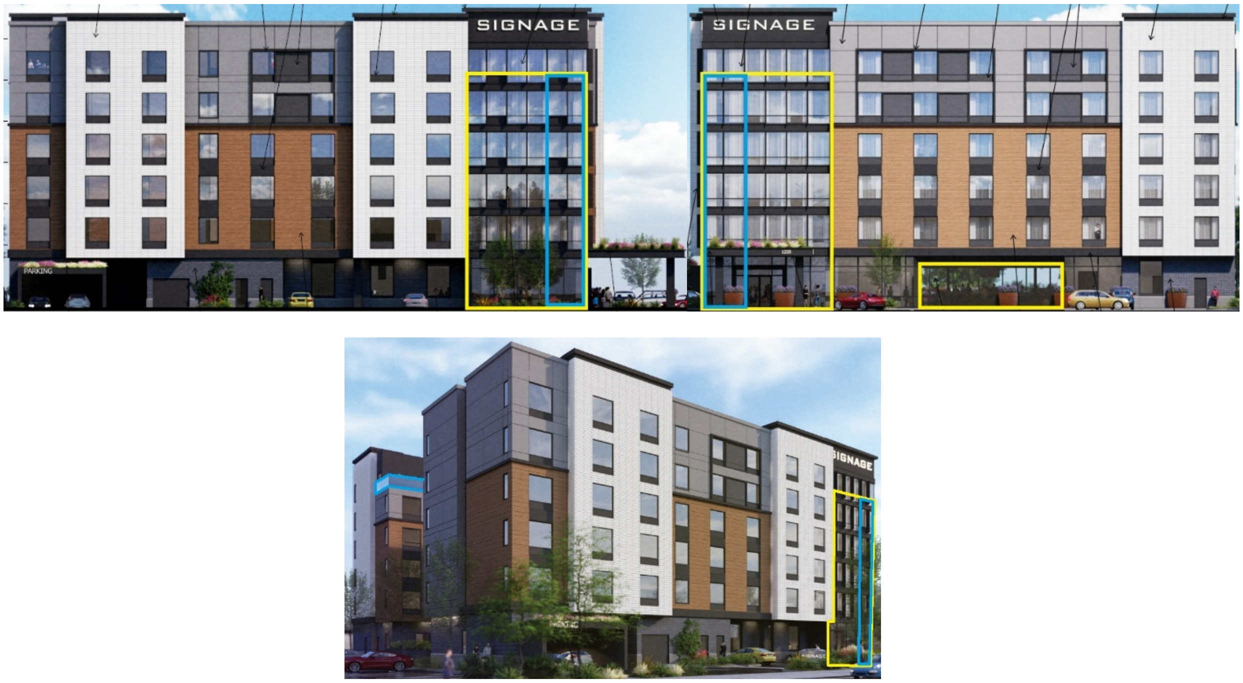

Figure 5. The building design includes a transparent glass corner and free-standing glass railing (both outlined in blue), as well as extensive glazing located adjacent to proposed landscape vegetation within 60 feet of the ground (outlined in yellow). These locations pose a heightened collision risk to birds.

In addition, the extent of glazing on a building and the presence of vegetation opposite the glazing are known to be two of the strongest predictors of avian collision rates (Gelb and Delacretaz 2009, Borden et al. 2010, San Francisco Planning Department 2011, Cusa et al. 2015, Sheppard and Phillips 2015, Riding et al. 2020). Extensive glazing is present opposite landscape vegetation at the building's northeast corner, and along a portion of Level 1 on the building's north façade (Figure 5). While these larger areas of glazing are visually disrupted by vertical and horizontal mullions, fins, and other architectural and structural elements, they nonetheless present large surfaces in which birds can potentially perceive reflected sky and/or vegetation and collide with the glass as they attempt to reach those reflections. Thus, these areas of extensive glazing pose a heightened collision risk to the small numbers of birds that use the site, especially where this glazing is located opposite landscape vegetation (i.e., trees and vegetation planted at ground level opposite the glazing, as well as proposed rooftop vegetation on the awning above the building's main entrance). The greatest risk of avian collisions with this extensive glazing is in the area within 60 feet of the ground, because this is the area in which most bird activity occurs (San Francisco Planning Department 2011). However, as discussed above, the project site is not expected to provide especially valuable habitat for birds or attract large numbers of birds. As a result, it is our opinion that this glazing does not represent a substantial collision hazard to birds due to the low number of birds expected to use the site.

In summary, we expect low numbers of avian collisions with glass façades on the proposed building to occur; such collisions are likely to be most frequent where extensive glazing is located opposite landscape vegetation (i.e., at the building's northeast corner and along a portion of Level 1 of the north facade), at free-standing glass railings surrounding the Level 6 roof terrace, and at the transparent glass corner on the building's southeast corner. However, due to the overall low abundance of birds on and immediately adjacent to the site, we expect the overall frequency of bird collisions with the building to be low. As a result, avian injury or mortality due to bird collisions with the proposed building would not meet the threshold of having a substantial adverse effect on populations of common, urban-adapted bird species that use the site, in our opinion. Thus, we do not expect the number of collisions to be so high over time as to result in a significant impact under CEQA.

Assessment of Lighting Impacts

Construction of the project will create new sources of lighting on the project site. Lighting would be the result of light fixtures illuminating buildings, building architectural lighting, pedestrian lighting, and artistic lighting. Depending on the location, direction, and intensity of exterior lighting, this lighting can potentially spill into adjacent areas, thereby resulting in an increase in lighting compared to existing conditions. The project is surrounded on all sides by urban development that does not support bird communities of conservation concern that might be substantially affected by illuminance from the project. Nevertheless, regionally common local resident birds and small numbers of migrating birds may be affected by an increase in lighting.

Visibility of Project Lights to Birds

Construction of the project will create new sources of lighting on the project site. Lighting would be the result of light fixtures illuminating buildings, building architectural lighting, pedestrian lighting, and artistic lighting. Depending on the location, direction, and intensity of exterior lighting, this lighting can potentially spill into adjacent areas, thereby resulting in an increase in lighting compared to existing conditions. The project is surrounded on all sides by developed areas that do not support bird communities that might be substantially affected by illuminance from the project. The following is a summary of the anticipated visibility of proposed fixture types to birds on the project site:

- The Ligman Lighting D-Series Size 0 LED Area Luminaire, URO-80496 Robust 3 Square Ceiling Downlight, and UQU-31344 Quarter 1 Surface are Dark-Sky-compliant[1] and will be shielded and directed downwards. These fixtures are not expected to spill light upwards or outwards into adjacent areas.
- The Ligman Lighting ULW-10873 Lightwave 2 Straight Bollard (180 degree distribution) will be shielded above and below but directed outwards horizontally, and light from this fixture may spill outwards into adjacent areas.

In summary, up-lighting is avoided in the project design, and we do not expect birds flying over the project site to be able to perceive luminance from the project's proposed exterior lighting fixtures. We expect birds located on and adjacent to the site to be able to perceive luminance from the Lightwave 2 Straight Bollards; however, buildings and trees surrounding the project site will block all or nearly all of this luminance horizontally.

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[1] Exterior lighting fixtures that meet the International Dark-Sky Association's standards for artificial lighting minimize glare while reducing light trespass and skyglow, and are required to be fully shielded and minimize the amount of blue light in the nighttime environment (International Dark-Sky Association 2022).

General Site Lighting Impacts

Many animals are sensitive to light cues, which influence their physiology and shape their behaviors, particularly during the breeding season (Ringer 1972, de Molenaar et al. 2006). Artificial light has been used as a means of manipulating breeding behavior and productivity in captive birds for decades (de Molenaar et al. 2006), and has been shown to influence the territorial singing behavior of wild birds (Longcore and Rich 2004, Miller 2006, de Molenaar et al. 2006). While it is difficult to extrapolate results of experiments on captive birds to wild populations, it is known that photoperiod (the relative amount of light and dark in a 24-hour period) is an essential cue triggering physiological processes as diverse as growth, metabolism, development, breeding behavior, and molting (de Molenaar et al. 2006). This suggests that increases in ambient light may interfere with these processes across a wide range of species, resulting in impacts on wildlife populations.

Artificial lighting may indirectly impact birds by increasing the nocturnal activity of predators such as owls, hawks, and mammalian predators (Negro et al. 2000, Longcore and Rich 2004, DeCandido and Allen 2006, Beier 2006). The presence of artificial light may also influence habitat use by breeding birds (Rogers et al. 2006, de Molenaar et al. 2006) by causing avoidance of well-lit areas, resulting in a net loss of habitat availability and quality.

Birds using the project site and nearby areas may be subject to increased predation, decreased habitat availability (for species that show aversions to increased lighting), and alterations of physiological processes if light fixtures on the project site produce appreciably greater illuminance within these areas compared to existing conditions. Based on the presence of buildings in between the project site and natural areas in the site vicinity, the project's use of Dark Sky-approved light fixtures and shielded/directed fixtures for most lighting, as well as the limited numbers of resident birds expected to use the site over the long term, it is our opinion that general project site lighting will not result in substantial impacts on birds.

Because up-lighting can affect birds in different ways than general site lighting, the impacts of project up-lighting on birds is discussed separately in the section below.

Impacts Related to Up-Lighting

Up-lighting refers to light that projects upwards above the fixture. There are two primary ways in which the luminance of up-lights might impact the movements of birds. First, local birds using habitats on a site may become disoriented during flights among foraging areas and fly toward the lights, colliding with the lights or with nearby structures such as the proposed building. Second, nocturnally migrating birds far above the site may alter their flight direction or behavior upon seeing lights; the birds may be drawn toward the lights or may become disoriented, potentially striking objects such as buildings, adjacent power lines, or even the lights themselves. These two effects are discussed separately below.

Local Birds. Seabirds may be especially vulnerable to artificial lights because many species are nocturnal foragers that have evolved to search out bioluminescent prey (Imber 1975, Reed et al. 1985, Montevecchi 2006), and thus are strongly attracted to bright light sources. When seabirds approach an artificial light, they seem unwilling to leave it and may become "trapped" within the sphere of the light source for hours or even days, often flying themselves to exhaustion or death (Montevecchi 2006). Seabirds using the Sunnyvale include primarily gulls. Although they are not primarily nocturnal foragers, there is some possibility that gulls, which often fly at night, may fly in areas where they could be disoriented by up-lights under conditions dark enough that the lights would affect the birds. Shorebirds forage along the San Francisco Bay nocturnally as well as diurnally, and move frequently between foraging locations in response to tide levels and prey availability. Biologists and hunters have long used sudden bright light as a means of blinding and trapping shorebirds (Gerstenberg and Harris 1976, Potts and Sordahl 1979), so evidence that shorebirds are affected by bright light is well established. Though impacts of a consistent bright light are undocumented, it is possible that shorebirds, like other bird species, may be disoriented by a very bright light in their flight path. However, the number of shorebirds foraging or flying over the project site is expected to be relatively low, as shorebirds do not congregate in large numbers at or near the project site. Passerine species have been documented responding to increased illumination in their habitats with nocturnal foraging and territorial defense behaviors (Longcore and Rich 2004, Miller 2006, de Molenaar et al. 2006), but absent significant illumination, they typically do not forage at night, leaving them less susceptible to the attraction and disorientation caused by luminance when they are not migrating.

Migrating Birds. Hundreds of bird species migrate nocturnally in order to avoid diurnal predators and minimize energy expenditures. Bird migration over land typically occurs at altitudes of up to 5,000 feet, but is highly variable by species, region, and weather conditions (Kerlinger 1995, Newton 2008). In general, night-migrating birds optimize their altitude based on local conditions, and most songbird and soaring bird migration over land occurs at altitudes below 2,000 feet, while waterfowl and shorebirds typically migrate at higher altitudes (Kerlinger 1995, Newton 2008).

Evidence that migrating birds are attracted to artificial light sources is abundant in the literature as early as the late 1800s (Gauthreaux and Belser 2006). Although the mechanism causing migrating birds to be attracted to bright lights is unknown, the attraction is well documented (Longcore and Rich 2004, Gauthreaux and Belser 2006). Migrating birds are frequently drawn from their migratory flight paths into the vicinity of an artificial light source, where they will reduce their flight speeds, increase vocalizations, and/or end up circling the lit area, effectively "captured" by the light (Herbert 1970, Gauthreaux and Belser 2006, Sheppard and Phillips 2015, Van Doren et al. 2017). When birds are drawn to artificial lights during their migration, they may become disoriented and possibly blinded by the intensity of the light (Gauthreaux and Belser 2006). The disorienting and blinding effects of artificial lights directly impact migratory birds by causing collisions with light structures, buildings, communication and power structures, or even the ground (Gauthreaux and Belser 2006). Indirect impacts on migrating birds might include orientation mistakes and increased length of migration due to light-driven detours.

It is unknown what light levels adversely affect migrating birds, and at what distances birds respond to lights (Sheppard and Phillips 2015). In general, vertical beams are known to capture higher numbers of birds flying at lower altitudes. High-powered 7,000-watt (equivalent to 105,000-lumen) spotlights that reach altitudes of up to 4 miles (21,120 feet) in the sky have been shown to capture birds migrating at varying altitudes, with most effects occurring below 2,600 feet (where most migration occurs); however, effects were also documented at the upper limits of bird migration at approximately 13,200 feet (Van Doren et al. 2017). A study of bird responses to up-lighting from 250-watt (equivalent to 3,750-lumen) spotlights placed on the roof of a 533-foot tall building and directed upwards at a company logo documented behavioral changes in more than 90% of the birds that were visually observed flying over the building at night (Haupt and Schillemeit 2011). One study of vertical lights projecting up to 3,280 feet found that higher numbers of birds were captured at altitudes below 650 feet, but this effect was influenced by wind direction and the birds' flight speed (Bolshakov et al. 2013). These studies have not analyzed the capacity for vertical lights to attract migrating birds flying beyond their altitudinal range, and the potential for the project up-lights to affect birds flying at various altitudes is unknown. Thus, birds that encounter beams from up-lights are likely to respond to the lights, and may become disoriented or attracted to the lights to the point that they collide with buildings or other nearby structures, but the range of the effect of the lights is unknown.

Up-Lighting Impacts. As stated above, it is unknown what light levels are safe for birds and at what distances birds respond to lights (Sheppard and Phillips 2015). Observations of bird behavioral responses to up-lights indicate that their behaviors return to normal quickly once up-lights are completely switched off (Van Doren et al. 2017), but no studies are available that demonstrate bird behavioral responses to reduced or dimmed up-lights. In general, up-lights within very dark areas are more likely to "capture" and disorient migrating birds, whereas up-lights in brightly lit areas (e.g., highly urban areas, such as Sunnyvale) are less likely to capture birds (Sheppard 2017). Birds are also known to be more susceptible to capture by artificial light when they are descending from night migration flights in the early mornings compared to when they ascend in the evenings; as a result, switching off up-lights after midnight can minimize adverse effects on migrating birds (Sheppard 2017). However, more powerful up-lights (e.g., 3,000 lumen spotlights) may create issues for migrating birds regardless of the time of night they are used (Sheppard 2017).

Because the project design avoids up-lighting, it is our opinion that project up-lighting will not result in substantial impacts on birds.

Summary

Because birds are present in the vicinity of the proposed building, and glazed façades of this building may not always be perceived by birds as physical impediments to flight, we expect some avian collisions with the proposed building to occur. Among the project components, we expect collision risk to be highest where extensive glazing is located opposite landscape vegetation (i.e., at the building's northeast corner and along a portion of Level 1 of the north facade), at free-standing glass railings surrounding the Level 6 roof terrace, and at the transparent glass corner on the building's southeast corner.

However, we expect the frequency of bird collisions to be relatively low compared to circumstances in which buildings with more expansive, unbroken glass facades occur within more natural habitats or along regular flight paths between areas of high-quality habitat. We base this conclusion on (1) the relatively low numbers of birds expected to occur in the immediate vicinity of the proposed project building due to habitat conditions; (2) the low numbers of birds expected to approach the project site from more natural habitats in the region (such as Sunnyvale Baylands Park and Ulistac Natural Area); and (3) the absence of any features such as dense, native vegetation or water features on or immediately adjacent to the site, that might otherwise attract birds to the vicinity; and (4) the appearance of the building facades, which in many areas are well broken-up by solid, opaque panels, thus making the facades more conspicuous.

Although building collisions by some migrant songbirds are likely to occur, we would expect that the majority of bird strikes would be by resident species, both because the low-quality habitat on the site is more conducive to use by urban-adapted resident birds than by migrants and because resident birds would spend far more time near the proposed buildings than would birds that are migrating through the region. The resident species occurring on the project site are all common, urban-adapted species that are widespread in urban, suburban, and (for many species) natural land use types throughout the San Francisco Bay area. As a result, these species have high regional populations, and the number of individuals that might be impacted by collisions with the project building would represent a very small proportion of regional populations. Therefore, the project would not result in the loss of a substantial proportion of any species' Bay-area populations or any Bay-area bird community, and according to CEQA standards, we would consider such impacts to be less than significant. As a result, it is our opinion that no mitigation measures are necessary to avoid a significant impact under CEQA.

Based on the project's location in a highly urban area of Sunnyvale, the use of Dark Sky-approved light fixtures and shielded/directed fixtures for most lighting, the avoidance of up-lighting, and the limited numbers of resident birds expected to use the site over the long term, it is our opinion that the proposed project site lighting will not result in substantial impacts on birds.

Please feel free to contact me at (408) 677-8737 or rcarle@harveyecology.com, or Steve Rottenborn at (408) 722-0931 or srottenborn@harveyecology.com, if you have any questions regarding this assessment. Thank you very much for contacting H. T. Harvey & Associates about this project.

Sincerely,

Robin Carle

Robin Carle, M.S.
Senior Associate Wildlife Ecologist/Project Manager

Attachments: Résumés

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Robin J. Carle, MS

Wildlife Ecology

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H. T. HARVEY & ASSOCIATES
Ecological Consultants
50 years of field notes, exploration, and excellence

HIGHLIGHTS

- 14 years of experience
- Avian ecology
- Environmental impact assessment
- Endangered Species Act consultation and compliance
- Nesting bird and burrowing owl surveys and monitoring
- Other special-status wildlife surveys and habitat assessments
- Bird-safe design

EDUCATION

MS, Fish and Wildlife Management, Montana State University

BS, Ecology, Behavior, and Evolution, University of California, San Diego

PERMITS AND LICENSES

Listed under CDFW letter permits to assist with research on bats, California tiger salamanders, California Ridgway's rails, and California black rails

USFWS 10(a)(1)(A) for California tiger salamander

PROFESSIONAL EXPERIENCE

Associate ecologist, H. T. Harvey & Associates, 2007–present

Volunteer bird bander, San Francisco Bay Bird Observatory, 2010–2020

Avian field technician, West Virginia University, 2006

Graduate teaching assistant, Montana State University, 2003–06

Avian field technician, Point Blue Conservation Science (formerly PRBO Conservation Science), 2004

PROFESSIONAL PROFILE

Robin Carle is an associate wildlife ecologist and ornithologist at H. T. Harvey & Associates, with more than 14 years of experience working in the greater San Francisco Bay Area. Her expertise is in the nesting ecology of passerine birds, and her graduate research focused on how local habitat features and larger landscape-level human effects combine to influence the nesting productivity of passerine birds in the Greater Yellowstone region. She also banded, sexed, and aged resident and migrant passerine birds with the San Francisco Bay Bird Observatory for 10 years. Her expertise extends to numerous additional wildlife species, and she has conducted surveys and assessments for burrowing owls; diurnal, nocturnal, and larval surveys for amphibians; acoustic and visual surveys for roosting bats; surveys and nest resource relocations for San Francisco dusky-footed woodrats; San Joaquin kit fox den surveys; trail camera surveys to document wildlife movement; and burrow-scoping surveys using fiber-optic orthoscopic cameras.

With an in-depth knowledge of regulatory requirements for special-status species, Robin has contributed to all aspects of client projects including NEPA/CEQA documentation, bird-safe design assessments, biological constraints analyses, special-status species surveys, nesting bird and raptor surveys and monitoring, construction implementation/permit compliance, Santa Clara Valley Habitat Plan/Natural Community Conservation Plan applications and compliance support, and natural resource management plans. Her strong understanding of CEQA, FESA, and CESA allows her to prepare environmental documents that fully satisfy the regulatory requirements of the agencies that issue discretionary permits. She manages field surveys, site assessments, report preparation, agency and client coordination, and large projects.

BIRD-SAFE DESIGN EXPERIENCE

Provides bird-safe design support for **development projects for major technology companies in Sunnyvale and Mountain View** including the preparation of avian collision risk assessments, sections of CEQA documents, assessments of project compliance with City requirements, design recommendations (e.g., related to the selection of bird-safe glazing), avian collision monitoring plans, and calculations of qualification for LEED Pilot Credit 55.

Provided bird-safe design support for a **development project in Berkeley** including the preparation of an avian collision risk assessment and development of bird-safe design options that could be incorporated into the project.

Provided bird-safe design support for a **large development project in Menlo Park** with unique architecture and extensive glazing. Services included the preparation of an avian collision risk assessment and development of bird-safe design standards to reduce project impacts due to bird collisions to less than significant levels under CEQA.

Stephen C. Rottenborn, PhD
Principal, Wildlife Ecology

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H. T. HARVEY & ASSOCIATES
Ecological Consultants
50 years of field notes, exploration, and excellence

HIGHLIGHTS

- 28 years of experience
- Avian ecology
- Wetlands and riparian systems ecology
- Endangered Species Act consultation
- Environmental impact assessment
- Management of complex projects

EDUCATION

PhD, Biological Sciences, Stanford University

BS, Biology, College of William and Mary

PROFESSIONAL EXPERIENCE

Principal, H. T. Harvey & Associates, 1997–2000, 2004–present

Ecology section chief/environmental scientist, Wetland Studies and Solutions, Inc., 2000–04

Independent consultant, 1989–97

MEMBERSHIPS AND AFFILIATIONS

Chair, California Bird Records Committee, 2016–19

Member, Board of Directors, Western Field Ornithologists, 2014–20

Scientific associate/advisory board, San Francisco Bay Bird Observatory, 1999–2004, 2009–18

Member, Board of Directors, Virginia Society of Ornithology, 2000–04

PUBLICATIONS

Erickson, R. A., Garrett, K. L., Palacios, E., Rottenborn, S. C., and Unitt, P. 2018. Joseph Grinnell meets eBird: Climate change and 100 years of latitudinal movement in the avifauna of the Californias, in Trends and traditions: Avifaunal change in western North America (W. D. Shuford, R. E. Gill Jr., and C. M. Handel, eds.), pp. 12–49. Studies of Western Birds 3. Western Field Ornithologists, Camarillo, CA.

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Rottenborn, S. C. 1999. Predicting the impacts of urbanization on riparian bird communities. Biological Conservation 88:289-299.

Rottenborn, S. C. and E. S. Brinkley. 2007. Virginia's Birdlife. Virginia Society of Ornithology, Virginia Avifauna No. 7.

PROFESSIONAL PROFILE

Dr. Steve Rottenborn is a principal in the wildlife ecology group in H. T. Harvey & Associates' Los Gatos office. He specializes in resolving issues related to special-status wildlife species and in meeting the wildlife-related requirements of federal and state environmental laws and regulations. Combining his research and training as a wildlife biologist and avian ecologist, Steve has built an impressive professional career that is highlighted by a particular interest in wetland and riparian communities, as well as the effects of human activities on bird populations and communities. Steve's experience extends to numerous additional special-status animal species. The breadth of his ecological training and project experience enables him to expertly manage multidisciplinary projects involving a broad array of biological issues.

He has contributed to more than 800 projects involving wildlife impact assessment, NEPA/CEQA documentation, biological constraints analysis, endangered species issues (including California and Federal Endangered Species Act consultations), permitting, and restoration. Steve has conducted surveys for a variety of wildlife taxa, including a number of threatened and endangered species, and contributes to the design of habitat restoration and monitoring plans. In his role as project manager and principal-in-charge for numerous projects, he has supervised data collection and analysis, report preparation, and agency and client coordination.

PROJECT EXAMPLES

Principal-in-charge for **bird-safe design support for more than 40 development projects** in more than 10 cities throughout the San Francisco Bay area. This work has entailed preparation of avian collision risk assessments, sections of CEQA documents, assessments of project compliance with requirements of the lead agency, design recommendations (e.g., related to the selection of bird-safe glazing), and avian collision monitoring plans.

Senior wildlife ecology expert on the South Bay Salt Pond restoration project — the largest (~15,000-acre) restoration project of its kind in the western United States.

Served on the **Technical Advisory Committees/Expert Panels for the Santa Clara Valley Water District's Upper Penitencia Creek, One Water, Science Advisory Hub, San Tomas/Calabazas/Pond A8 Restoration, and Coyote Creek Native Ecosystem Enhancement Tool** efforts; selected to serve on these panels for his expertise in South Bay wildlife, restoration, and riparian ecology.

Led H. T. Harvey's work on the biological CEQA assessment and permitting for extensive/regional **facilities and habitat management programs for the Santa Clara Valley Water District, San Jose Water Company, County of San Mateo, and Midpeninsula Regional Open Space District**.

Contract manager/principal-in-charge for **Santa Clara Valley Water District's Biological Resources On-Call contract** (four successive contracts, with over 120 task orders, since 2009).