

Appendix A – Bird Strike Analysis



May 2, 2019

Shannon George
David J. Powers & Associates
1871 The Alameda, Suite 200
San Jose, CA 95126

Subject: Adobe North Tower – Revised Avian Collision Risk Assessment (HTH #4257-01)

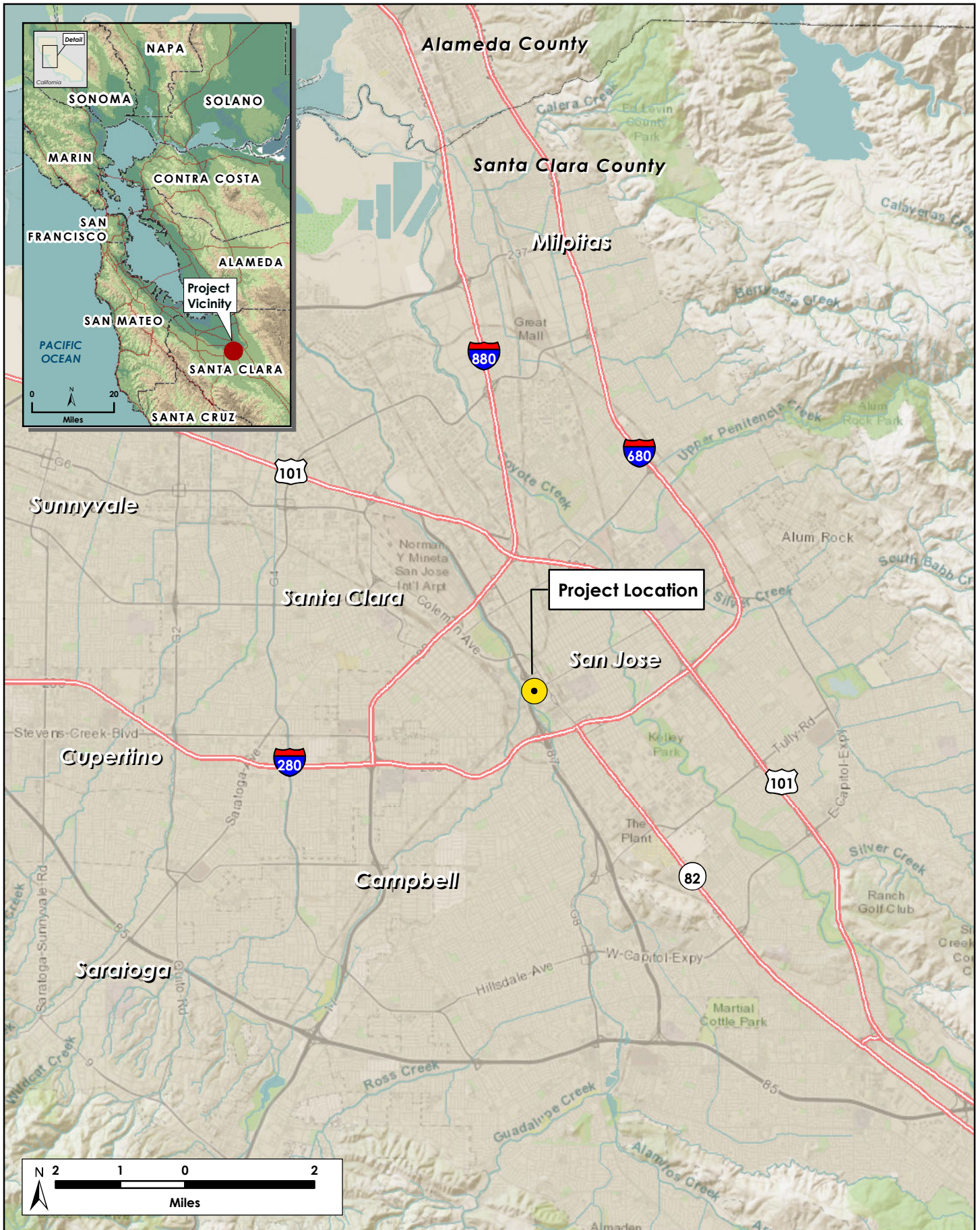
Dear Ms. George:

Per your request, H. T. Harvey & Associates has performed an assessment of avian collision risk for the Adobe North Tower project in San Jose, California. It is our understanding that the project entails the development of the property that is currently used as a parking lot with a new 1,329,213 square-foot, 19-story office building. We further understand that you are requesting our assistance with an analysis of potential bird collision issues related to the construction of the new building. In November 2018, we assessed collision risk based on the project's design at that time. The design has since been modified, and the project proponent has since provided voluntary bird-safe design measures, so this letter represents our assessment of avian collision risk with the building as currently proposed.

The City of San Jose's bird-safe design standards (Policy No. 6-34) are not required at the project site, as those design standards are only required north of State Route 237; the Adobe North Tower project would be located in downtown San Jose, well south of State Route 237. Other City bird-safe design guidelines are voluntary rather than required, though we understand that the City has asked Adobe to consider voluntarily implementing bird-safe design measures, and Adobe has proposed some measures. Our report does not focus on design standards specifically required or recommended by the City. Rather, this report evaluates our opinion of potential project impacts related to bird collisions with the proposed new building (including incorporation of voluntary bird-safe design measures) as we would evaluate them under the California Environmental Quality Act (CEQA), such as if we were preparing the biological resources section of a CEQA document.

Project Description and Location

The approximately 2.5-acre Adobe North Tower project site is located at 333 West San Fernando Street in San Jose, California (Figure 1). The site is bounded by the Guadalupe Freeway (State Route 87) to the west; a four-story parking garage to the north; an approximately 8-story Bridge Bank building and an approximately 11-story Union Bank building to the northeast and east; and West San Fernando Street, John P. McEnery Park and the Adobe Systems, Inc. headquarters consisting of the 18-story Almaden Tower and 18-story West Tower to the south (Figure 2). Surrounding areas consist of a mix of high-density commercial and residential development in downtown San Jose. The Guadalupe River flows under the Guadalupe Freeway approximately



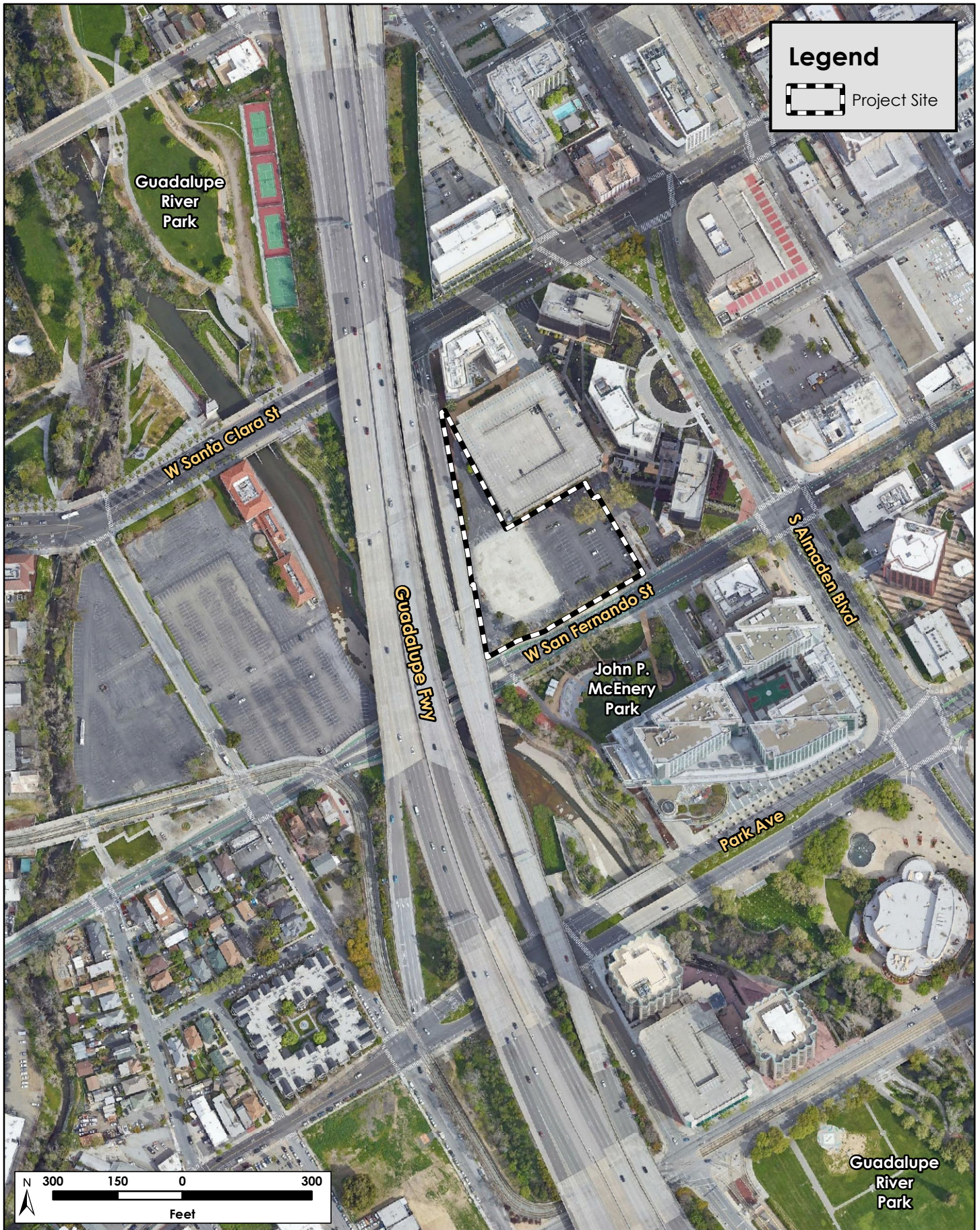
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Ecological Consultants


Figure 1. Vicinity Map

Adobe North Tower Avian Collision Risk Assessment (4257-01)
May 2019



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Legend

 Project Site

Guadalupe River Park

W Santa Clara St

Guadalupe Fwy

W San Fernando St

John P. McEnery Park

S Almaden Blvd

Park Ave

Guadalupe River Park



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Figure 2. Project Site

Adobe North Tower Avian Collision Risk Assessment (4257-01)

May 2019

150 feet to the west of the site, and the Guadalupe River Trail and approximately 1.3-acre John P. McEnery Park provides lawn, shrubs, and various trees which attract some birds as described below. These green spaces are relatively small, and no extensive natural areas are located in the immediate site vicinity. The Guadalupe River Park, located 0.25 miles to the northwest and southeast of the site (Figure 2), offers some native riparian habitat.

Methods

Prior to conducting field work, H. T. Harvey & Associates ecologists reviewed aerial photos (Google Earth 2018); project plans depicted in the August 16, 2018 Site Development Permit package and the voluntary bird-safe design measures originally proposed by Adobe (revised plans and the revised voluntary bird-safe design measures were reviewed after our field visit, but prior to the preparation of this revised report); Avian Collision Risk Assessments that we have prepared for other nearby properties in the past year; and environmental documents for nearby projects, including the *Museum Place Mixed-Use Project First Amendment to the Draft Supplemental Environmental Impact Report* (EIR). Following our background review, ecologist Matthew Timmer, M.S., and I conducted a field survey of the project site and surrounding areas, including the Guadalupe River Trail adjacent to the site and John P. McEnery Park, on November 7 and 8, 2018, respectively.

For the bird collision hazard assessment, H. T. Harvey & Associates ornithologists assessed the suitability of habitat within the project site and immediate vicinity to support birds that might be present as breeders/permanent residents, migrants, and wintering birds. We also assessed how birds might use resources around the project site, including using vegetation or artificial structures as roost or nest sites or for cover from predators and the elements; obtaining food (such as invertebrate prey, fruit, or seeds) from vegetation; and obtaining anthropogenic food resources such as food waste. We evaluated likely flight paths used by birds in the project vicinity.

In preparing this revised assessment, we evaluated the potential for avian collisions with the façades of the proposed building (based on the more recent designs) and with other project features (such as the glass railings on green roofs), taking into account the locations of the proposed structures relative to food or structural resources (such as vegetation along the Guadalupe River and at John P. McEnery Park); the distance from the proposed glass façades/railings to those resources; the potential for vegetation to be reflected in the glass façades; the existing conditions of the façades of other buildings in the vicinity; and the voluntary bird-safe design measures being proposed by Adobe.

Because some new vegetation will be planted at the Adobe North Tower and on the walkway over West San Fernando Street, future habitat conditions in the project vicinity will differ somewhat from existing conditions. Thus, we also considered the potential future use of the site by birds based on the conceptual drawings and planting plans (i.e., showing the locations of proposed vegetated areas), the surrounding land use, and existing/expected bird use of the site. We are familiar with the birds of the Guadalupe River Parks and the Guadalupe River riparian corridor adjacent to the site, and we drew on this knowledge in assessing bird use of

this habitat near the site. To ensure that we were taking into account all available information, we also searched for bird observations on the internet to determine what birds others have seen in the vicinity of the site and nearby areas. We searched the archives of the “South Bay Birds” list (<https://groups.io/g/southbaybirds>) for observations in the site vicinity. This internet list is used by the community of birders in Santa Clara County to report interesting bird observations. In addition, we searched the eBird database (<http://ebird.org/content/ebird/>), which has been established by the Cornell University Laboratory of Ornithology to archive records of birds seen worldwide, for records in the vicinity of the site, particularly at natural areas along the Guadalupe River.

Assessment of Impacts from Avian Collisions with the New Building

Existing and Expected Future Bird Use

Under existing conditions, terrestrial land uses and habitat conditions on the project site and in surrounding areas consist primarily of developed areas such as buildings (varying in height from 4 to 18 stories), parking lots, freeway overpasses, and roads. Vegetation in these surrounding developed areas is very limited in extent, and consists almost entirely of non-native landscaped trees and shrubs. Non-native vegetation supports fewer resources required by native birds than native vegetation, and the structural simplicity of the vegetation (without well-developed ground cover, understory, and canopy layers) further limits resources available to birds (Anderson et al. 1977, Mills et al. 1989). Thus, although a number of bird species will regularly use the vegetation on the project site and surrounding developed areas, they typically do so in low numbers, and particularly rare species or species of conservation concern are not expected to occur on or close to the project site. As a result, the number of individual birds that inhabit and regularly use vegetation on the project site at any given time is relatively low under existing conditions.

Habitat conditions and bird occurrence in the immediate vicinity of the project site (i.e., on the site and on immediately adjacent lands) are typical of much of the urbanized San Francisco Bay area. The site consists of a paved parking lot surrounded by narrow, interrupted areas of landscaping. Street trees along West San Fernando Street consist of nonnative London plane (*Platanus x acerifolia*) trees interspersed with horsetail trees (*Casaurina equisetifolia*), honey locust (*Gleditsia triacanthos*), and mayten (*Maytenus boaria*) trees. Bradford pear (*Pyrus calleryana*) trees line the eastern border of the parking lot and sweet gum (*Liquidambar styraciflua*), coast redwood (*Sequoia sempervirens*), and southern magnolia (*Magnolia grandiflora*) trees in the northern portion of the site near the parking garage. Birds observed on and adjacent to the site during the surveys were the native dark-eyed junco (*Junco hyemalis*), black phoebe (*Sayornis nigricans*), bushtit (*Psaltriparus minimus*), chestnut-backed chickadee (*Poecile rufescens*), yellow-rumped warbler (*Setophaga coronata*), and Anna’s hummingbird (*Calypte anna*), as well as the nonnative rock pigeon (*Columba livia*). White-throated swifts (*Aeronautes saxatalis*), which may nest in weep holes on the underside of the Guadalupe Freeway bridge overpass, were also observed foraging near the overpass during the survey, as were old mud nests of cliff swallows (*Petrochelidon pyrrhonota*) on the underside of the overpass. Birds that occur along the Guadalupe River to the west include year-round residents such as the lesser goldfinch (*Spinus psaltria*), Anna’s hummingbird, and mallard (*Anas platyrhynchos*); summer-resident breeding birds such as the northern rough-winged swallow (*Stelgidopteryx serripennis*); and migrants such as the cedar

waxwing (*Bombycilla cedrorum*), yellow-rumped warbler, and ruby-crowned kinglet (*Regulus calendula*) (Cornell Lab of Ornithology 2018). Raptors are uncommon in downtown San Jose, but up to one pair of red-shouldered hawks (*Buteo lineatus*) and Cooper's hawks (*Accipiter cooperii*) may nest and forage in the vicinity (especially at parks such as Guadalupe River Park), and occasional sharp-shinned hawks (*Accipiter striatus*) and merlins (*Falco columbarius*) may forage in the vicinity (Cornell Lab of Ornithology 2018). Some of these birds may occasionally occur on the project site. For example, migrating birds may occasionally forage in the ornamental vegetation on the site. However, no bird species are expected to occur on or immediately adjacent to the site in large numbers, even on the underside of the Guadalupe Freeway overpass and along the Guadalupe River adjacent to the project site, and all of the species expected to occur regularly are regionally abundant, urban-adapted species. No special-status birds (i.e., species of conservation concern) are expected to nest or occur regularly on or adjacent to the site.

We do not expect large numbers of birds to use the project site or vicinity as an important flight path. Although some songbirds that migrate along the Pacific Flyway and travel through the site vicinity are expected to be attracted to this reach of the Guadalupe River, this habitat is not likely to be heavily used by migrating birds. The riparian habitat adjacent to the site is highly fragmented due to the surrounding high-density urban development and the presence of bridges, road crossings, and channelization along nearby portions of the river, and therefore lacks connectivity to higher-quality riparian habitats in the region. Riparian habitat in the closest reaches of the Guadalupe River (e.g., from Park Avenue to the south to West Santa Clara Street to the north) consists of scattered, planted trees with no understory or dense ground cover and high levels of human activity. The massive Guadalupe Freeway overpass also creates a physical barrier between the Guadalupe River corridor and the project site. The project site is also not located between two high-quality habitat areas such that birds would be making flights at the altitude of the proposed buildings while moving between such areas. As a result, there is no expectation that large numbers of birds would be moving past the project area in a way that would subject them to a high risk of collision with the proposed buildings.

Under proposed conditions, based on the Site Development Permit package, the project will remove approximately 55 small to moderately-sized trees and replant approximately 95 trees-10 trees at ground level and 85 trees on the 7th floor, including a podium and the proposed bridge connection to the existing Adobe campus. There will be a small planted green roof on the 9th floor and a somewhat larger green roof at the 17th floor in the southeastern corner. The site is not expected to provide habitat that is of substantially greater value to birds following project construction. Birds that occur on the site and in the vicinity will be attracted to new trees and landscaped areas along the street and the planting areas on level 7 and along the walkway. Due to the small size, the type of vegetation, and the height from the ground, the limited green roofs on the 9th and 17th floors will likely not attract many birds. Birds that utilize the vegetation at ground level and level 7 will primarily move between the small areas of landscaping on the site and in the surrounding vicinity. However, 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. As a result, following project construction, the project site may support only slightly higher numbers of regionally common, resident and migrant urban-adapted bird species compared to existing conditions due to the anticipated increase in trees and other vegetation on the site, but no major changes

to the habitat in areas surrounding the project site, nor any substantial increases in bird abundance or diversity in the immediate site vicinity, are anticipated following project construction.

Potential for Bird Collisions

It has been well documented that glass windows and building façades can result in injury or mortality of birds due to birds' collisions with these surfaces (Klem et al. 2009, Sheppard and Phillips 2015). Because birds do not perceive glass as an obstruction the way humans do, they may collide with glass when the sky or vegetation is reflected in glass (e.g., they see the glass as sky or vegetated areas); when transparent windows 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 (such as in planted atria) results in attempts by birds to fly through glass to reach that vegetation. The greatest risk of avian collisions with buildings occurs in the area within 40–60 feet of the ground, because this is the area in which most bird activity occurs (Sheppard and Phillips 2015, San Francisco Planning Department 2011). Very tall buildings (e.g., buildings 500 feet or more high) would pose a threat to birds that are migrating through the area, particularly to nocturnal migrants that may not see the buildings or that may be attracted to lights on the buildings, but the proposed building will not be greater than 246 feet in height due to Federal Aviation Administration (FAA) restrictions.

Some features of the architecture of the proposed building are expected to reduce the potential for avian collisions to some extent. Based on the project plans, vertical and horizontal louvers and spandrel panels break up the glassy façades of the proposed building, above the 7th floor, somewhat (Figure 3). These features are present on most of the building and would increase the likelihood that birds will be able to perceive this building as a solid obstruction to flight than if the glassy surface appeared more uniform (though no spandrel panels are present on the clear glass curtain wall over the main entrance [above the 7th floor] or on the ground level). Opaque perforated panels over the garage levels (levels 2 through 6) clearly make those levels appear more solid.

However, the overall reflective, glassy nature of the building's facades, especially when viewed from straight on (i.e., if a bird were approaching the building head-on), is expected to result in some collisions by birds that occur around the project site. Birds that are approaching a façade head-on may perceive the glassy panels between the louvers and spandrel panels as open flight paths. Even with the use of low-reflectivity glazing (which is proposed in some areas to reduce bird collisions), birds may not be deterred from trying to fly "through" the glass.

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. Birds are likely to use the green roof on level 17, and the much smaller green roof on level 9, infrequently and in very low numbers due to the height of these green roofs above the vegetation in surrounding areas, their limited extent, and the short/sparse nature of vegetation proposed in these areas. However, migrants or other birds flying overhead may occasionally descend to these green roofs, and these birds may collide with glass railings along the edges of the green roofs.



Figure 3. The façades of the Adobe North Tower are composed primarily of glass, but vertical and horizontal louvers and spandrel panels break up the façades on most of the proposed building to some extent. Opaque panels are present over the garage levels.



Figure 4. Bird collisions with the curtain wall in the alcove may be greater due to the clear glass panels without spandrels and the vegetation shown on the inside of the building. In addition, glass railings along the edge of the 17th floor green roof will pose collision hazards to some extent.

In addition, the shallow alcove from level 7 to the top of the building is surrounded on three sides by glass, including a clear-glass curtain wall composed of highly transparent glass; Figure 4 depicts vegetation inside the

building (behind glass) within this alcove, and some birds are likely to collide with the clear glass while trying to reach that vegetation. Birds may also collide with the corners of the buildings, as they may perceive the ability to fly “through” the glass in those areas.

We understand that Adobe has voluntarily agreed to implement some bird-safe design features. Based on Adobe’s April 4, 2019 letter regarding voluntary bird-safe design measures and April 5, 2019 plan set, we understand that Adobe is proposing measures to minimize impacts to birds associated with lighting. Such measures include restricting landscape lighting to the minimum needed for pedestrian safety; directing landscape lighting downward; minimizing light emittance from the building (e.g., using occupancy sensors to turn off lights when the building is unoccupied and programming lights to shut off during non-work hours and between 10:00 p.m. and sunrise); and avoiding the use of exterior spotlights. With implementation of these measures, it is our opinion that lighting impacts on birds will be appropriately minimized. Based on Adobe’s April 4, 2019 letter and April 5, 2019 plan set, we understand that Adobe also proposes to use low-reflective glass on the facades of the first floor or two above the garage level specifically to reduce the risk of bird collisions. Glazing with 15% reflectance or lower can help reduce bird collisions because it does not reflect sky or vegetation well (Sheppard 2017). However, in the absence of patterning on the glass, low-reflective glass is still transparent, and would therefore not be perceived by birds as a solid object.

We expect that the frequency of bird collisions with the proposed Adobe North Tower will be slightly higher than other nearby buildings due to the size and height of the building, extent of reflective glazing, and proximity to the Guadalupe River. However, the number of native birds expected to occur on or adjacent to the site is fairly low. John P. McEnery Park and the vegetation associated with the Guadalupe River supports a number of common native bird species, but these green spaces are isolated from more natural areas in the region and are not located in a landscape position (e.g., along the San Francisco Bay, along a major riparian corridor, or near a large natural area) where large numbers of resident or migrating birds are expected to occur. Although some birds may move along the Guadalupe River, the project site is separated from higher-quality riparian and riverine habitats by the Guadalupe Freeway. Migrants flying along the river corridor are expected to see the freeway, the project site, and the intensively developed areas around the project site as poor-quality habitat, and rather than stopping at or around the project site or flying through the airspace near the building, we expect most birds to continue flying past the project vicinity toward higher-quality habitat areas to the north or south.

Due to the overall low abundance of birds on and immediately adjacent to the site, we expect the frequency of bird collisions with the building to be low. Although building collisions by some migrant and wintering songbirds are likely to occur, the majority of bird strikes is expected to be by resident species, both because the low-quality habitat on the site and at the adjacent park 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 building than would birds that are migrating through the region. The resident species occurring on the project site and immediately adjacent areas 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 (i.e., South Bay) 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' populations, or any bird community, on the scale of the South San Francisco Bay area. In our opinion, impacts due to bird collisions with the project's structures, including the building and glass railings on green roofs, would be less than significant under CEQA, even in the absence of bird-safe design measures associated with glazing.

There is some potential for certain common bird species with high vulnerability to collisions to occur on the project site and collide with the proposed building, as follows:

- Several old nests of cliff swallows were observed on the underside of the Guadalupe Freeway overpass, indicating that this species breeds near the site. In addition, white-throated swifts were observed foraging in the vicinity of the Guadalupe Freeway overpass immediately to the west of the project site, and this species commonly nests in weep holes under bridges, which are present under the freeway overpass. Swifts can be more vulnerable to collisions compared with certain other bird species (Loss et al. 2014). Cliff swallows and white-throated swifts' diet consists entirely of flying insects; therefore, these birds forage aerially and often taking advantage of thermal air currents that bring together dense swarms of insects (Brown et al. 2017, Ryan and Collins 2000). Large buildings that absorb heat and result in air temperature differences near the ground could cause convective air currents that concentrate insects that these birds feed upon. Due to the close proximity of the proposed Adobe North Tower building to the cliff swallow and white-throated swifts' nesting sites, there is some potential for cliff swallows and white-throated swifts to collide with the proposed building while foraging in the future. However, the presence of louvers and spandrel panels on the portions of the facades closest to the overpass will alert individuals to the presence of a solid structure, to some extent, reducing the number of collisions by these species. It is our opinion that occasional collisions by individual cliff swallows and white-throated swifts with the Adobe North Tower would not represent a significant impact under CEQA, as we typically assess CEQA significance relative to regional populations (e.g., on the scale of the South Bay), and the small population potentially nesting on the Guadalupe Freeway overpass represents a very small proportion of the South Bay population.
- Raptors can also be more vulnerable to collisions compared with certain other bird species (Sheppard and Phillips 2015). Red-shouldered hawks occur in the vicinity primarily in larger open parks in the region, and are unlikely to be present on the site itself or collide with the proposed building. However, Cooper's hawks will forage in urban areas, and individuals of this species may forage on the site occasionally. Thus, there is some possibility that one or more Cooper's hawks may collide with the proposed building in the future.
- Migrating birds that can potentially occur on the site include foraging cedar waxwings, which have been found to be more vulnerable to collisions than some other bird species (Klem 1989). Thus, as with cliff swallows, white-throated swifts, and Cooper's hawks, there is some possibility that cedar waxwings may collide with the proposed building.

Cliff swallows, white-throated swifts, Cooper's hawks, and cedar waxwings are relatively common and widespread in the Bay area, particularly in urban areas such as the location of the project site. As a result, these species have high regional populations; the number of individuals that might be impacted by collisions with the

project's structures will be low and would thus represent a very small proportion of regional populations. Therefore, the project would not result in the loss of a substantial proportion of these species' South Bay populations, and such an impact would be less than significant under CEQA, in our opinion.

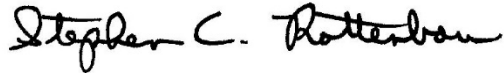
However, due to the design elements discussed above that pose a risk to birds and the proximity of the proposed building to the Guadalupe River corridor, we have the following recommendations for Adobe to consider:

- We expect bird collisions with the glass railings on the green roofs to occur more frequently than at other locations because vegetation that may attract birds will be placed immediately behind low-reflective glass. It is our opinion that using low-reflective glass on these railings would have little benefit from a bird-safe design perspective, as it is the railings' transparency (with vegetation behind the railing) that may lead to collisions. Although the impact to regional bird populations from collisions with the green roof railings is not expected to be substantial, we recommend that the glass railings in these areas be treated to make the glass more readily perceived as a solid structure to avoid. Bird-safe glazing treatments may include fritting, netting, permanent stencils, frosted glass, exterior screens, physical grids placed on the exterior of glazing, or ultraviolet patterns visible to birds. Vertical elements of the patterns should be at least ¼-inch wide at a minimum spacing of 4 inches, and horizontal elements should be at least ⅛-inch wide at a minimum spacing of 2 inches. Available bird-safe glazing products that would be appropriate to minimize bird collisions with the railing are as follows:
 - A list of effective architectural products that have been tested by the American Bird Conservancy is provided at <https://abcbirds.org/get-involved/bird-smart-glass/>. Additional products are listed in the American Bird Conservancy's threat score table for Leadership in Energy and Environmental Design Pilot Credit 55 at <https://abcbirds.org/wp-content/uploads/2016/03/ABC-LEED-Threat-table-2015.pdf>.
 - Walters & Wolf is a local company based in Fremont, California that produces bird-safe glass: <https://www.waltersandwolf.com/>.
- We recommend that no vegetation be placed behind clear, extensive glass panels; if vegetation must be placed behind windows, those panels should be treated with bird-safe design elements such as patterned glass. As noted above, the interior vegetation visible behind glass in the alcove in Figure 4 is expected to result in collisions by birds trying to reach that vegetation. If the vegetation were omitted, there would be little reason for birds to approach the façade in those areas.
- Because of the potential for birds to collide with the building, Adobe should consider implementing a bird strike monitoring plan after the building is constructed to document whether there are bird collision "hotspots" (areas subject to a disproportionate number of collisions) on the building, and, if so, retrofit those hotspots (e.g., with internal blinds or patterning applied to the glass) to address the problem areas to reduce the number of bird collisions.

S. George
May 2, 2019
Page 12 of 13

Please feel free to contact me 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,

A handwritten signature in black ink that reads "Stephen C. Rottenborn". The signature is written in a cursive style with a large, prominent initial "S".

Stephen C. Rottenborn, Ph.D.
Vice President – Wildlife Ecologist

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