



SAN FRANCISCO PLANNING DEPARTMENT

Letter of Determination

November 29, 2017

Mr. Charles J. Higley
Farella Braun + Martel LLP
Russ Building
235 Montgomery Street, 17th Floor
San Francisco, CA 94104

| | |
|------------------------------|--|
| Site Address: | 555 Howard Street |
| Assessor's Block/Lot: | 3736/086 |
| Zoning District: | C-3-O(SD) (Downtown—Office (Special Development)) |
| Staff Contact: | Andrew Perry, (415) 575-9017 or andrew.perry@sfgov.org |

Dear Mr. Higley:

This letter is in response to your August 2, 2017 request to waive or modify the requirements of Planning Code Section 139 (Standards for Bird-Safe Buildings) for the project at 555 Howard Street ("Project"). The property is located in the C-3-O(SD) (Downtown—Office Special Development) Zoning District and 350-S Height and Bulk District. The Project is being undertaken by Pacific Eagle Holding ("Project Sponsor"), as owner and developer.

Planning Code Section 139(c)(3)(C) states that the Zoning Administrator may either waive the requirements contained within Section 139(c)(1) (Location-Related Standards) and Section 139(c)(2) (Feature-Related Standards) or modify such requirements to allow equivalent Bird-Safe Glazing Treatments upon the recommendation of a qualified biologist.

In considering a waiver or modification from Planning Code Section 139, it is necessary to determine which Bird-Safe Standards apply – Location-Related and/or Feature-Related Standards. While the property is not located within 300 feet of an established Urban Bird Refuge, nevertheless, the property is located within 300 feet of the site of the future Transbay Transit Center, which contains an elevated rooftop park known as "City Park" ("Park"). The Park will function as an approximately 5.4 acre rooftop park and will be well vegetated with trees and shrubs, which could provide habitat for birds. Given that the Park's landscaped and vegetated area is greater than 2 acres in size, and the proposed glass façade of the Project is within 300 feet of, and in an unobstructed line to the Park, it has been determined that the Location-Related Standards of Planning Code Section 139(c)(1) apply to the Project, starting at the height level of the Park's vegetated roof and extending upwards for 60 feet from such point.

Additionally, the Project contains two outdoor terraces, the first located at level 21 for use by condominium residents, the other located at the uppermost roof (level 37) and open to the general public. These terrace areas will be landscaped with trees and other plantings, and are bordered by free-standing glass windscreens that replicate the overall fenestration patterns of the building at the levels below. The

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windscreens will rise approximately 10 and 20 feet above the finished surface of the terraces at levels 21 and 37, respectively. Each individual windscreen pane, as found similarly on the rest of the building, will be separated by approximately 4-inch wide vertical mullions and horizontal spandrels between 14- and 17-inches tall; however, each individual pane will contain roughly 27.5 square feet of unbroken glazing. As these panes are larger than 24 square feet and constitute a free-standing glass wall or wind barrier, they are considered a Feature-Related Hazard; therefore, it has been determined that the Feature-Related Standards of Planning Code Section 139(c)(2) apply to the proposed windscreens at terrace levels 21 and 37.

In assessing Bird-Safe Standards for the Project, the Project Sponsor retained the services of H.T. Harvey & Associates, an ecological consulting firm, to prepare an Avian Collision Risk Assessment report dated April 2017 ("Report"). The Report, prepared by Stephen C. Rottenborn, Ph.D., a wildlife ecologist and qualified ornithologist, challenged the overall avian collision risk posed by the Project citing a low, native resident bird population in the existing conditions surrounding the property, and the likelihood still for low bird use in the Park upon completion, given that migratory birds are less likely to habituate to the conditions found in urban parks. Additionally, the Report also noted that the Project site is not located immediately adjacent to the Park, but rather just within the 300-foot radius, fully separated by Howard Street and the highly likely additional tower developments along the northwest side of Howard Street.¹ The Report cited the Project's unique architectural design features which will help the building appear more conspicuous; specifically, 4-inch vertical mullions, which separate the individual glass panes, will project out by 7 inches from the building's exterior on the northern and eastern facades, which are the facades most directly facing the Park, and help to make the building appear more solid from oblique sight angles. With regard to the proposed terrace windscreens at terrace levels 21 and 37, the Report acknowledges that birds flying over the site (e.g. long-distance migrants) may be drawn to the trees and vegetation proposed for the terrace rooftops, and subsequently collide with these free-standing feature-related hazards. The Report then goes on to argue, however, that the potential for such collisions is low due to the overall height of the building, the relative undesirability of the rooftop terrace as a place of habitat in comparison to the larger and more vegetated City Park above the Transbay Terminal, the continuation of the mullion pattern from the rest of the building below, and the incorporation of solar hot water tubes behind the glass windscreens on the southern and western sides of the building.

In consideration of the Report, the Planning Department concurs with the findings that the building's design features, specifically the projecting mullions on the northern and eastern facades, could help reduce avian collisions. These mullions will be particularly visible from oblique angles, which characterize any likely approach route a bird traveling from the Park is likely to take. These oblique approaches are primarily due to the anticipated tower developments along the northwestern side of Howard Street. Once completed, these towers will not only eliminate any straight, direct line between the Project and the Park, but they will also generally act as a buffer and flight deterrent between the two sites.

¹ Anticipated developments along the northwest side of Howard Street include: (a) 542-550 Howard Street (Transbay Parcel F) – entitlements submitted and under review, proposed for 61-story, 800-foot tall building; (b) 524 Howard Street – entitlements approved for 48-story, 495-foot tall building; and (c) 540 Howard Street – preliminary project review meeting held only.

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555 Howard Street


However, the Department does not concur with the Report's conclusion that a waiver should be granted for the feature-related hazards found in the glass windscreens at the rooftop terraces. Migratory birds, and particularly juvenile migrants, have been found to be some of the most at-risk for potential building collisions. The referenced mullions only project outward from the building, and would not help the building appear more conspicuous for birds that do manage to land on the rooftop terraces and are then facing the interior surfaces of the glass windscreens. The proposed solar hot water tubes are effective as an alternative bird-safe treatment given their narrow spacing, however, these are not proposed along the northern and eastern facades. Therefore, treatment of the feature-related hazards along the northern and eastern facades are still required pursuant to Planning Code Section 139(c)(2). It should be noted that any future removal of the solar hot water tubes along the southern and western facades would also necessitate bird-safe treatments in those locations as well.

Lastly, the Project Sponsor has voluntarily introduced an Avian Collision Monitoring Plan ("Monitoring Plan"), prepared by H.T. Harvey & Associates, and aimed at monitoring avian collisions following the construction of the Project. The Monitoring Plan, which is intended to collect data from avian collisions, calls for the evaluation of potential "hotspots" where there are higher frequencies of avian collisions occurring, and the consideration of post-construction measures to reduce avian collisions. The Project Sponsor and their assigned Avian Collision Monitors should pay particular attention to areas with indoor vegetation placed along or near the building's glass facades, and around vegetated areas on the rooftop terraces. As the Project Sponsor periodically reviews avian collision data to determine whether any potential hotspots are present, this data shall also be shared with the Planning Department.

In response to the requirement set forth in Planning Code Section 139 for Location-Related and Feature-Related Standards, the Project Sponsor has demonstrated partial compliance with the requirements. Therefore, based upon the findings listed above, and the evidence outlined in the April 20, 2017 Report, I hereby grant a waiver from the requirements of Planning Code Section 139(c)(1)(A); however, bird-safe treatments are still required for any feature-related hazard where solar hot water tubes are not present and functioning as an alternative means of compliance.

APPEAL: If you believe this determination represents an error in interpretation of the Planning Code or abuse in discretion by the Zoning Administrator, an appeal may be filed with the Board of Appeals within 15 days of the date of this letter. For information regarding the appeals process, please contact the Board of Appeals located at 1650 Mission Street, Room 304, San Francisco, or call (415) 575-6880.

Sincerely,



Scott F. Sanchez
Zoning Administrator

cc: Thomas Mead, Pacific Eagle Holdings Corporation, 353 Sacramento Street, Suite 1788,
San Francisco, CA 94111
Mark Cavagnero Associates Architects, 1045 Sansome Street, Suite 200, San Francisco, CA 94111
Neighborhood Groups



**FARELLA
BRAUN + MARTEL LLP**

CHARLES J. HIGLEY
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August 2, 2017

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CK # 000744 \$678.50
A. PERRY (ME)

RECEIVED

AUG 07 2017

**CITY & COUNTY OF S.F.
PLANNING DEPARTMENT
ZA OFFICE**

Via Hand Delivery

Scott Sanchez
Zoning Administrator
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

Re: 555 Howard Street – Request for Waiver of Bird Safe Buildings Requirements pursuant to Planning Code Section 139(c)(3)(C)

Dear Mr. Sanchez:

(3736/086)

We represent Pacific Eagle Holding (“*Project Sponsor*”), the owner and developer of the project at 555 Howard, a 385-foot tall mixed use tower approved by the San Francisco Planning Commission on March 2, 2017 (the “*Project*”). On behalf of the Project Sponsor and pursuant to Planning Code Section 139(c)(3)(C),¹ we respectfully submit this formal request for a waiver of the “Standards for Bird Safe Buildings” set forth in Section 139.

Section 139 contains requirements for “Location-Related Standards” for buildings within 300 feet of an Urban Bird Refuge (Section 139(c)(1)), and “Feature-Related Standards” for certain glazed building elements (Section 139(c)(2)). Because of its proximity to the new rooftop park at the Transbay Transit Center, and because of the glass windscreens that surround its rooftop open space, the Planning Department has determined that the Project is subject to both the Location-Related Standards and Feature-Related Standards set forth in Section 139.

Section 139(c)(3)(C) provides that the Zoning Administrator may grant a waiver or modification of the requirements of Sections 139(c)(1) and 139(c)(2) upon the recommendation of a qualified biologist. As described in greater detail in the enclosed materials, biologist and avian expert Steve Rottenborn, Ph.D. has recommended a waiver of the Location-Related Standards because, although the Project is within 300 feet of the new Transbay Transit Center park, the approximately 800-foot tall mixed use tower proposed for the property between the Project and the new park (542 Howard) will prevent direct avian flight paths between the Project and the new park.

¹ All further references to a “Section” in this letter refer to the San Francisco Planning Code.

Mr. Rottenborn also recommends a waiver of the Feature-Related Standards related to the glazing associated with the windscreen at the Project's rooftop open space for several reasons:

- (1) the height of the open space (+385') is too high for local resident birds to forage, and not large enough to attract migratory birds;
- (2) the types of trees and density of plantings proposed for the Project's roof are too limited to attract migratory birds;
- (3) migratory birds are likely to avoid the Project and other nearby towers long before they could perceive any bird-safe application to the Project glazing;
- (4) project design features (i.e., tight spacing of the façade modules, deep mullion projections, vertical trusses supporting the glass windscreens) create a lattice-like appearance that will deter bird collisions; and
- (5) solar hot water tubes located within the south and west double-facades create a visual deterrence to bird collisions on these facades.

In addition, the Project Sponsor proposes to implement a robust mitigation and monitoring program to further reduce bird collisions associated with the Project. Proposed measures include a weekly survey of the Project site, reporting of the same, and an education program for residents and hotel guests of the Project.

Please refer to the enclosed letter from the Project's architect, as well as the "Avian Collision Risk Assessment" and "Proposed Monitoring Program" prepared by Mr. Rottenborn, for a more detailed explanation of all of the above. Thank you for your consideration of the waivers requested hereby. If you have any questions or need additional information, please do not hesitate to contact me.

Very truly yours,

Did they submit any supporting materials?
This should be handled as a LOI and reviewed by Andrew Perry.
Thanks!
- Scott

8/11/2017
CJ 1) LEFT VM TO CJ HIGLEY
- FEE - \$664
- SUPPORTING DOCUMENTS
9/21/17 = LEFT 2ND VM
9/22/17 - CJ CALLED ME BACK
10/13/17 - CHECK RECEIVED

August 02, 2017

Scott Sanchez
Zoning Administrator
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

Subject: Formal Request for Waiver to the Standards for Bird-Safe Buildings – 555 Howard

Dear Mr. Sanchez,

At the direction of Mr. Andrew Perry of the San Francisco Planning Department, I am pleased to submit a formal request for waiver to the *Standards for Bird-Safe Buildings* on behalf of Pacific Eagle Holdings, the project sponsor for 555 Howard, a mixed-use 385' tower. The project team has performed a detailed risk assessment for bird collisions under the guidance of Steve Rottenborn Ph.D, a wildlife ecologist with expertise in avian ecology, and presented our findings to SF Planning. Working together with SF Planning and Mr. Rottenborn, we have developed a request for waiver based on the unique conditions of our project site as well as a robust avian collision monitoring program to validate and report any bird strikes that may occur post-construction.

Project Description

The project demolishes three existing two-story buildings on three lots in San Francisco's South of Market (SOMA) neighborhood. The three lots combine for a total lot area of 14,505 square feet. The property is bounded by Howard Street to the north, Tehama Street to the south, an existing building and parking lot to the east, and a new elevated bus ramp with a park below at grade to the west. The new structure is proposed to be 385' above Howard Street to the roof elevation. The building will be 36 stories tall over 4 levels of basement and provides approximately 430,000 Gross Square Feet (GSF) of building area. The program includes a 237-room five star hotel on levels 1 through 20 owned and operated by the Langham Hospitality Group. 63 condominiums occupy the upper floors on levels 20 through 36. Space for an enclosed bar is located on level 36 with an open stair providing direct access a public roof garden at level 37. The roof garden is protected by 20' tall glass screens and landscaped with trees and other plantings. A terrace for exclusive use by the condominium residents is located at level 21. The Hotel amenities include a restaurant on the ground floor and a ballroom with meeting spaces on levels 2 through 4. An outdoor pool is located on level 4, and spa and gym are located level 5. All 5 floors of amenities are connected by an open stair. The restaurant faces west toward the elevated bus ramp and connects with the new park. All the amenity floors, including the bars and roof garden at levels 36 and 37, are served by 6 elevators; 4 passenger elevators and 2 service elevators. In addition, the restaurant is served by a dedicated elevator which travels from the basement kitchen on B1, to the ground floor restaurant, the level 2 ballroom, and meeting rooms on levels 3 and 4. On-site automobile parking is accomplished by valet service and cars are stored in an automated parking system on basement levels B1 through B3. Access to the parking system is from Tehama Street. An

enclosed loading dock is also located on Tehama Street adjacent to the automobile parking entry/exit. The project is committed to LEED Platinum Certification and has been approved by SF Planning for Priority Processing.

Rational for Waiver

The project site at 555 Howard is located in the heart of the new Transbay Redevelopment Area, one block south of the Transbay Transit Center. As outlined in the *Standards for Bird-Safe Buildings*, hazards to birds fall into (2) basic categories: Location related hazards or building feature related hazards. With regard to location related hazards, the north façade of the tower fronting Howard Street falls within 300' of the future Transbay Park, an elevated green space above the Transbay Transit Center. Given the large size of the park and proximity of our site, a potential location related hazard for the urban bird refuge will exist at this frontage upon completion of the park. Despite this adjacency to the future Transbay Park, potential hazards to avian life are largely mitigated by plans for an 806' tall tower to be built directly across the street from 555 Howard. This tower and other existing structures prevent direct flight paths between the Transbay Park and 555 Howard within the bird collision zone and therefor provide justification for a waiver from this location related hazard.

With regard to building feature related hazards, the tower at 555 Howard is proposed to have an elevated public open space at the Level 37 roof terrace equipped with 20' tall windscreens, outdoor furniture, and a perimeter ring of trees for shade. The vision put forth by Renzo Piano Building Workshop (RPBW), with approval by the Planning Commission, is for an active and inviting open space that provides 360 degree views for the public to enjoy. We understand that the free standing wind screens are considered a building feature related hazard under the *Standards for Bird-Safe Buildings*, however we believe potential bird strikes would be low for the following reasons:

- The height of the terrace, at 385' above ground, is too high for local resident birds to forage and not large enough to attract migratory birds
- The type of trees and density of plantings is too limited to attract migratory birds
- The migratory birds approaching from afar would avoid the 555 Howard tower and adjacent towers long before any bird safe application to the glass is perceived
- The tight spacing of the façade modules combined with deep mullion projections create a lattice-like appearance to deter bird collisions
- The vertical trusses that support the glass windscreens are also at a depth and frequency that would enhance the lattice effect and further deter bird collisions
- The south and west facades utilize a double skin façade system that houses Solar Hot Water (SHW) tubes within the cavity and act as a visual baffle to deter bird collisions

The items listed above are documented in further detail in *Avian Collision Risk Assessment* prepared by Mr. Rottenborn and included as an attachment.

Proposed Mitigation Measures

Although the risk of bird collisions at 555 Howard is low based on analysis by Mr. Rottenborn, the project team seeks to work in partnership with SF Planning to further reduce bird collisions for the project and document potential bird fatalities should they occur. Our mitigation and monitoring program proposes the following actions:

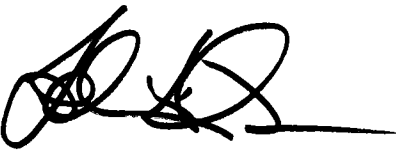
- Weekly visual survey of the grounds around 555 Howard for dead or injured birds by building management
- Results from weekly survey shall be published annually for (2) years to share findings with SF Planning
- Avian collision awareness pamphlets will be provided to condo tenants and hotel guest
- Housekeeping service will be scheduled during daytime hours to avoid nighttime light pollution

The items listed above are documented in further detail in the *Proposed Monitoring Program* prepared by Mr. Rottenborn and included as an attachment.

Conclusion

The project team for 555 Howard believes that the findings shared in the series of documents and reports provide insight and rationale for our request for waiver. We look to establish a partnership with SF Planning through our monitoring program to promote a bird safe environment for the city. Please share any questions or comments you may have as review the information provided.

Sincerely,



Felicia Dunham

Project Architect, Mark Cavagnero Associates Architects



April 20, 2017

Thomas Mead
Pacific Eagle Holdings Corporation
353 Sacramento Street, Suite 1788
San Francisco, California 94111

Subject: 555 Howard Street – Avian Collision Risk Assessment (HTH #4026-01)

Dear Mr. Mead:

Per your request, H. T. Harvey & Associates has performed an assessment of avian collision risk for the proposed 555 Howard Street Project in San Francisco, California. It is our understanding that the Project entails the construction of a 37-story, 385-foot tall tower near the future Transbay Park. The tower will be located on the south side of Howard Street, between 1st and 2nd Streets. Because the 555 Howard Street tower is less than 300 feet from future Transbay Park, the City of San Francisco has suggested that bird-safe design measures (specifically, treatment of glazing within 60 feet of the elevation of Transbay Park) may need to be implemented on the north side (i.e., the side facing Howard Street and Transbay Park) of the 555 Howard Street tower. In addition, the presence of untreated free-standing glass wind screens on the building's roof may also conflict with the City's bird-safe building design standards. However, the City's standards for bird-safe buildings indicate that the Zoning Administrator may waive or modify the bird-safe building requirements upon the recommendation of a qualified biologist.

This report describes my assessment of bird occurrence in the vicinity of the 555 Howard Street tower under existing conditions and anticipated conditions present after construction of the Project and Transbay Park, as well as my opinion regarding the potential risk of avian collisions with the northern façade and roof terrace wind screens of the 555 Howard Street tower. In preparing this assessment, I have considered all the items in the City's "Bird-Safe Building Checklist" (attached). As a result, my assessment pertains to the collision risk involving the building's façade within 60 feet of the baseline elevation (i.e., the elevation of Transbay Park) on the north side of the building, which faces Transbay Park, and collision risk with the roof terrace wind screens. As described below, I have concluded that the frequency of bird collisions with the proposed 555 Howard Street tower will be low, even after Transbay Park is constructed.

Briefly, my qualifications are as follows (resume attached). I have a Ph.D. in biological sciences from Stanford University, where my doctoral dissertation focused on the effects of urbanization on riparian bird communities in the South San Francisco Bay area. I have been an active birder for nearly 40 years and have conducted or assisted with research on birds since 1990. I have served for 8 years as an elected member of the California Bird Records Committee (and I am currently Chair of that committee) and for 12 years as a Regional Editor for the Northern California region of the journal *North American Birds*. I am a member of the Scientific Advisory Board for the San Francisco Bay Bird Observatory, the Technical Advisory Committee for the South Bay Salt Ponds Restoration Project, and the Board of Directors of Western Field Ornithologists. I have performed avian collision risk assessments and identified measures to reduce collision risk for a number of Projects in the Bay

Area, including Projects in the cities of San Francisco, Menlo Park, Oakland, Mountain View, Sunnyvale, and San Jose.

Relevant Bird-Safe Design Measures

Two measures in the City of San Francisco's *Standards for Bird-Safe Buildings* warrant consideration in the case of the 555 Howard Street tower:

- (1) *Location-Related Standards. These standards apply to buildings located inside of open spaces two acres and larger dominated by vegetation, including vegetated landscaping, forest, meadows, grassland, or wetlands, or open water (hereinafter an Urban Bird Refuge). These standards also shall apply to buildings less than 300 feet from an Urban Bird Refuge if such buildings are in an unobstructed line to the refuge. The standards are as follows:*
 - (A) *Facade Requirement. Bird-Safe Glazing Treatment is required such that the Bird Collision Zone, as defined below, facing the Urban Bird Refuge consists of no more than 10% untreated glazing. Building owners are encouraged to concentrate permitted transparent glazing on the ground floor and lobby entrances to enhance visual interest for pedestrians. The Bird Collision Zone shall mean the portion of buildings most likely to sustain bird-strikes from local and migrant birds in search of food and shelter and includes:*
 - (i) *The building facade beginning at grade and extending upwards for 60 feet, or*
 - (ii) *Glass facades directly adjacent to landscaped roofs 2 acres or larger and extending upwards 60 feet from the level of the subject roof.*
 - (B) *Lighting. Minimal lighting shall be used. Lighting shall be shielded. No uplighting shall be used. Event searchlights are prohibited on property subject to these controls.*
 - (C) *Wind Generation. Wind generators in this area shall comply with the Planning Department's permitting requirements, including any monitoring of wildlife impacts that the Department may require.*

Applicability to 555 Howard Street Project – the northern façade of the proposed tower is located approximately 270 feet from the edge of Transbay Park, which the City will consider to be an Urban Bird Refuge once the Park is completed (Figure 1). Because Transbay Park is essentially a landscaped roof, and it is more than 2 acres in size, the potential Bird Collision Zone under consideration for the 555 Howard Street tower would extend from the elevation of Transbay Park (approximately 65 feet above the ground surface) upward for 60 feet (see Figure 4). However, as discussed in detail under *Assessment of Collision Risk* below, the 555 Howard Street tower will be largely obstructed from Transbay Park by an 806-foot tall tower, with only oblique flight lines around the intervening tower being open between the Park and 555 Howard Street.

- (2) *Feature-Related Standards. Feature-related hazards include free-standing glass walls, wind barriers, skywalks, balconies, and greenhouses on rooftops that have unbroken glazed segments 24 square feet and larger in size. Feature-related hazards can occur throughout the City. Any structure that contains these elements shall treat 100% of the glazing on Feature-Specific hazards.*

Applicability to 555 Howard Street Project – the proposed tower would have a roof terrace with free-standing glass wind screens; a few trees are proposed on the roof (Figure 2).



Figure 1. Location of the proposed 555 Howard Street tower (on the left) relative to Transbay Park. Areas within 300 feet of the 555 Howard Street tower are indicated by the dashed line. Note the proposed 806-foot tower between 555 Howard Street and the Park (labeled “Parcel F”). The other intervening buildings (at 530 and 540 Howard Street) are shorter than the proposed elevation of Transbay Park and do not obstruct the 555 Howard Street tower from the Park.



Figure 2. Rendering of the roof of the proposed 555 Howard Street tower, showing the proposed glass wind screens with some trees.

Description of 555 Howard Street Tower

Figure 3 includes two views of the Project site. On the left, the location of the proposed 555 Howard Street tower is shown relative to Transbay Park (shown in its future condition, after completion of the Park) and an 806-foot tower that is proposed to be constructed between 555 Howard Street and Transbay Park. The rendering on the right shows the west façade of the 555 Howard Street tower. The northern façade, which is the side of the building that would be closest to Transbay Park, would have an overall appearance similar to that of the western façade shown in the right portion of Figure 3, but with slight differences discussed below.

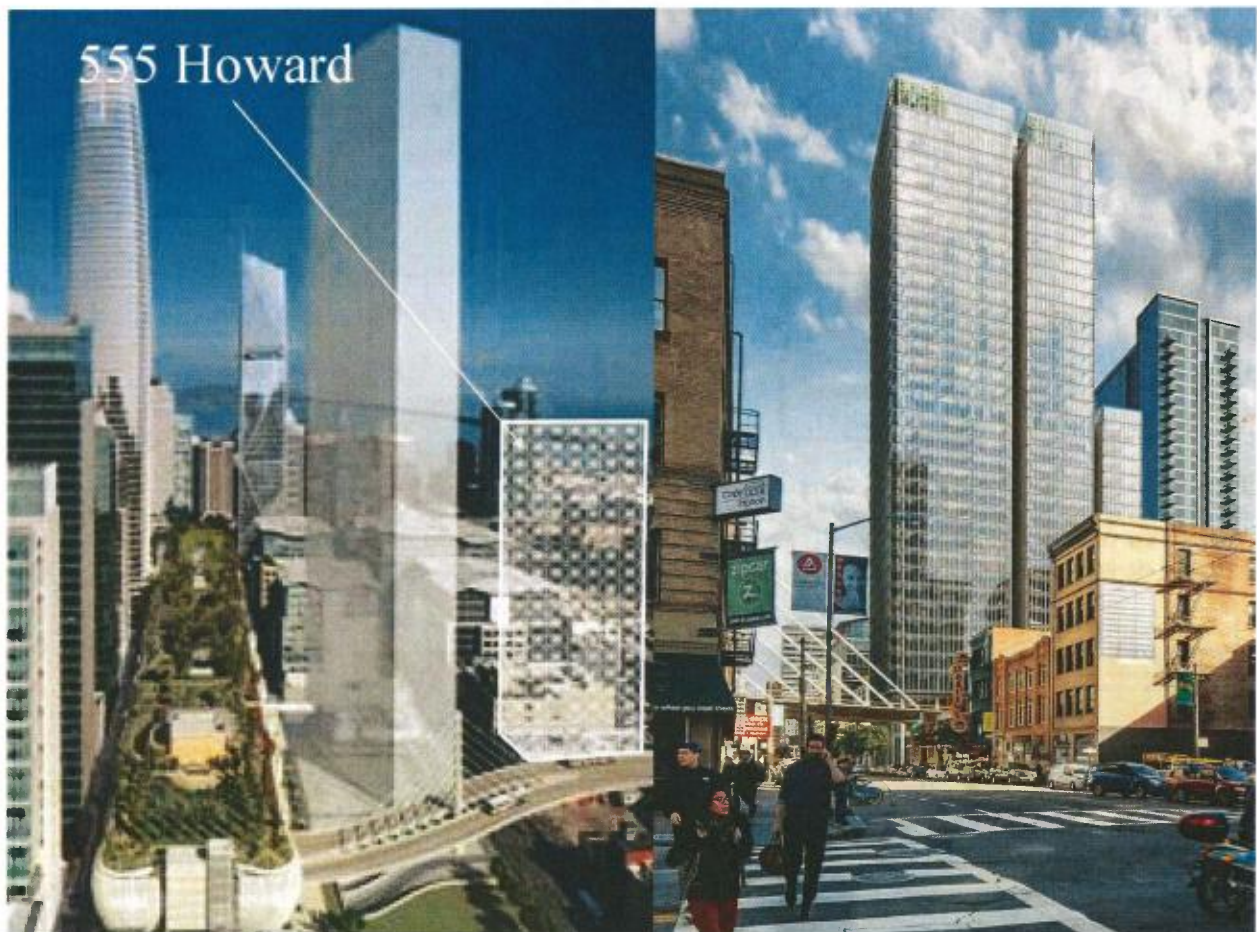


Figure 3. View of the proposed 555 Howard Street Tower from the west, showing the Project site relative to future Transbay Park and a proposed 806-foot tower that would be constructed between 555 Howard Street and the Park (on the left) and showing the overall appearance of the 555 Howard Street Tower's facades (on the right).

Within the potential Bird Collision Zone, the single skin façades on the north side (i.e., the side facing Howard Street and Transbay Park) and east side of the 555 Howard Street tower will be composed of glass panes 36 inches wide by 110 inches tall, separated from one another by 4-inch wide vertical mullions and 17-inch wide horizontal spandrels. The mullions project 7 inches out from the glass surface, and thus from oblique angles, these mullions become more and more conspicuous. The double skin façades on the south and west sides will have an appearance similar to the single-skin facades, but with the glass separated from one another by 3¾-inch wide vertical mullions and 14-inch wide horizontal spandrels, and with the mullions projecting 1 inch out from the glass surface.

The single skin and double skin façades are continuous from Level 04 to the top of the roof terrace wind screens, so the wind screens at the roof will have these characteristics as well (varying between the north/east sides and the south/west sides of the building). Figure 2 depicts the appearance of the wind screens on the roof terrace.

As mentioned above, the potential Bird Collision Zone under consideration for the 555 Howard Street tower would extend from the elevation of Transbay Park (approximately 65 feet above the ground surface) upward for 60 feet. This zone, as applied to the 555 Howard Street tower, is depicted on Figure 4.

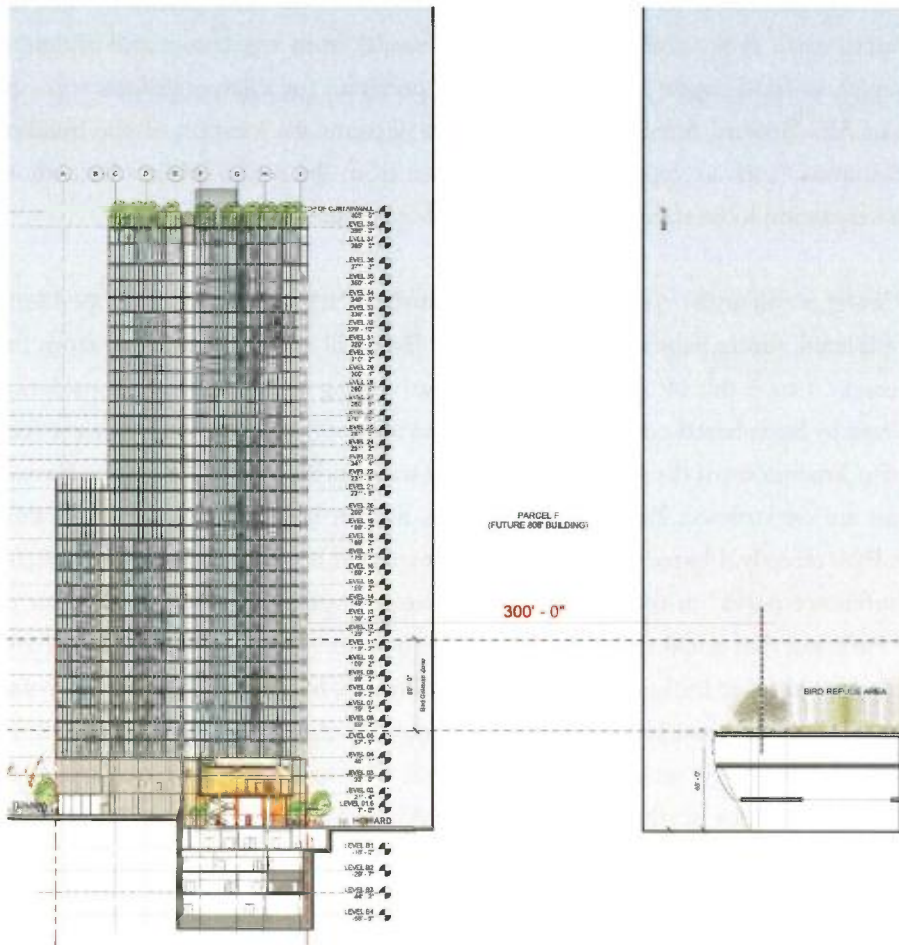


Figure 4. Potential Bird Collision Zone, as defined by City of San Francisco's bird-safe design standards, on the proposed 555 Howard Street Tower.

Little vegetation would be planted around the building. At street level, up to eight trees are proposed along Howard Street, two along Tehama Street, and five on the west side of the building. Although the tree species to be planted have not yet been identified, it is expected that these will be hardy, urban-adapted, non-fruiting street trees that will not have particularly high habitat value for birds.

Avian Collision Risk Assessment Methods

From approximately 8:00 to 9:00 a.m. on April 5, 2017, I walked around the vicinity of 555 Howard Street looking for birds to assess existing bird use of the Project area. This time of year, the terrestrial bird community in San Francisco is in the mid-stages of northbound migration, and most residents have begun nesting. Because observations during my site visit just represented a brief “snapshot” of conditions during this season, I also assessed the suitability of habitat within the survey area to support birds that might not have been present during my site visit (such as wintering birds). I assessed how birds might use resources around the Project site, such as using vegetation or artificial structures as roost or nest sites or for cover from predators and the elements; obtaining food resources (such as invertebrate prey, fruit, or seeds) from vegetation; and obtaining anthropogenic food resources such as food waste. I also assessed the potential for avian collisions with the northern facade of the proposed 555 Howard Street tower, taking into account the location of the building relative to food or structural resources (such as vegetation); the distance from the proposed facade to those resources; and the potential for vegetation to be reflected in glass incorporated into the facade.

Because the Transbay Transit Center is still under construction, and Transbay Park will not be developed until the Transit Center has been completed, future habitat conditions in the Park will differ considerably from the conditions that are currently present. I took this into account while I was visiting the Project site, considering the potential future use of the Park by birds based on the conceptual drawings of the Park available to me (i.e., showing vegetation plantings), the dimensions of the future Park, and the surrounding land use once the Project and the Transbay Transit Center are constructed. Because the Park has not yet been constructed and I thus could not assess bird use of the Park directly, I based my assessment of expected bird use of Transbay Park on August 1, 2014 visits to two “reference parks” in the vicinity that possessed vegetation potentially similar to that in the proposed Transbay Park and that could thus provide a sense of future bird use of Transbay Park. These reference parks were visited for another bird collision assessment Project, but because they were visited specifically for the purpose of assessing potential future bird use of Transbay Park, the results of that 2014 assessment are applicable to the 555 Howard Street tower Project as well. The two reference parks were Sue Bierman Park located approximately 0.6 miles north of the proposed 555 Howard Street tower Project, and Walton Square located approximately 0.7 miles north of the Project site. At these locations, I recorded the number of individuals of each bird species I saw within 15-minute periods and assessed habitat conditions to allow me to evaluate the potential for occurrence of birds at other times of year, and to place into context the bird records from these areas that I gleaned from other sources (described in the next paragraph).

Because my site visit only represented a snapshot of avian occurrence in the Project vicinity, I also 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 at the Project site and the reference parks. This database search was conducted on April 20, 2017 to obtain up-to-date occurrence information.

Results – Assessment of Bird Occurrence

Assessment of Bird Occurrence under Existing Conditions. During the hour I spent walking the streets around the site, the only birds I saw using the few trees along Howard Street and Tehama Street were four non-native house sparrows (*Passer domesticus*). Otherwise, I observed only two bird species – non-native rock pigeons (*Columba livia*) that were present in small numbers, and western gulls (*Larus occidentalis*) flying high over the area. House sparrows and rock pigeons are not protected by the Federal Migratory Bird Treaty Act or California Fish and Game Code because they are not native to North America. As a result, these species are not discussed further, as this report focuses on potential collision risk of protected, native birds. The western gulls were simply flying through the City rather than using habitat near the Project site, and this species is unlikely to occur frequently, if at all, in the vicinity of the 555 Howard Street tower at an elevation that could bring it into contact with the building's potential Bird Collision Zone.

The scarcity of native birds in the Project vicinity was not surprising, as very little habitat for native birds is present. Only a few non-native street trees are present along Howard Street and Tehama Street. These trees are likely used as foraging sites by occasional migrant birds that drop in to the heavily urbanized surroundings, and it is possible that small numbers of native birds, such as the Brewer's blackbird (*Euphagus cyanocephalus*) and house finch (*Haemorhous mexicanus*), could nest in the vicinity. However, given the paucity of vegetation present, the intensively urban surroundings, and high human use of the Project site and vicinity, the number of native bird species and individuals that could use this square is very limited. Furthermore, any birds occurring in the vicinity are expected to be regionally abundant, urban-adapted species that are not of conservation concern, as no habitat for rarer species is present anywhere in the vicinity of the Project. No reference to birds found in the Project vicinity was noted in the eBird database.

Assessment of Bird Occurrence under Future Conditions. Under future conditions, the closest edge of Transbay Park would be located approximately 270 feet northwest of the 555 Howard Street tower (see Figure 1). Based on conceptual plans for the Park, it would be fairly well vegetated with trees and shrubs that could provide habitat for birds. However, bird use of, and abundance within, the Park will be limited by a number of factors. For example, human use of the Park is expected to be very high owing to the number of office and residence spaces in the immediate vicinity of the Park and the Park's proximity to the Transit Center. Although many birds habituate to high human use and the disturbance (e.g., from dogs being walked, noise, and human activity) associated with it, human disturbance will limit bird use of the Park.

During my 15-minute visits to each of the reference parks, I observed 28 individuals of nine native species in Sue Bierman Park and one individual of one native species in Walton Square. Although these totals are not particularly high (e.g., compared to more natural areas around San Francisco Bay), they represented just brief snapshots of bird use of these areas, and inspection of eBird records revealed much higher bird use of these reference parks. At least 26 species of native birds have been recorded at Walton Square. Excluding waterbirds recorded at adjacent Ferry Park, Sue Bierman Park has hosted at least 94 native species. Both Walton Square and Sue Bierman Park are most heavily covered by birders during migration and winter, when more individuals and more native species are expected to be present than during my late-summer visit.

Because vegetation at these reference parks is likely similar to the vegetation that will be planted at Transbay Park, the bird use of these reference parks provides some insight into potential bird use at Transbay Park. I expect Transbay Park to support moderate bird use – a number of species may use the Park, particularly during migration. However, the majority of individuals expected to use the Park would be regionally abundant, urban-adapted birds, with birds such as Neotropical migrants representing a much smaller proportion of bird use.

I also expect several differences between these reference parks and Transbay Park that would result in lower bird use of Transbay Park, relative to the reference parks:

- Because Transbay Park will be constructed on top of the Transit Center, soil depths will be lower at Transbay Park than in the reference parks. As a result, trees selected for Transbay Park are unlikely to be species that can reach the heights of trees in the reference parks. There is a well-known relationship between native bird diversity and foliage height diversity, or the layering of vegetation¹. Because bird diversity tends to increase with the number of layers of vegetation, having shorter trees at Transbay Park is likely to result in lower bird use than the reference parks.
- Based on 16 December 2014 planting plans prepared by PWP Landscape Architecture for the Transbay Joint Powers Authority, trees will be scattered throughout much of Transbay Park, but the majority of them (by area) would be within a “meadow sod” area. Understory shrubs would be planted only in narrow, linear areas on the east and west sides of the Park. As a result, foliage height diversity, with multiple layers of vegetation (ground cover, understory, and tree canopy) would be high only in very limited parts of the Park. The limited foliage height diversity at Transbay Park will limit the diversity of birds that would regularly use vegetation in the Park.
- Native vegetation tends to support more of the resources required by native birds than non-native vegetation.^{2,3} Based on the planting plans for Transbay Park, very few native plant species are proposed. Although coast live oak (*Quercus agrifolia*), California buckeye (*Aesculus californica*), and coast redwood (*Sequoia sempervirens*) are proposed, the vast majority of trees (and most of the shrubs as well) to be planted are not native to San Francisco. As a result, the overall plant palette is not conducive to attracting and supporting high diversity and abundance of native birds.
- At Sue Bierman Park, migrant songbirds and other birds are known to make particularly heavy use of the planted poplars/cottonwoods (*Populus* sp.), which support many insects in summer and fall. Such trees are not proposed at Transbay Park.

¹ MacArthur, R. H. and J. W. MacArthur. 1961. On bird species diversity. *Ecology* 42:594-598.

² Anderson, B. W., A. E. Higgins, and R. D. Ohmart. 1977. Avian use of saltcedar communities in the lower Colorado River valley. Pages 128-136 in R. R. Johnson and D. A. Jones (eds.), *Importance, preservation, and management of riparian habitats*. USDA For. Serv. Gen. Tech. Rep. RM-43.

³ Mills, G. S., J. B. Dunning, Jr., and J. M. Bates. 1989. Effects of urbanization on breeding bird community structure in southwestern desert habitats. *Condor* 91:416-429.

- Transbay Park will be smaller than many of the other parks and open space areas in the City that support higher numbers of birds (see Figure 5 below). The numbers of birds using a given park in an urban setting is expected to be correlated with park size due to potential for habitat/microhabitat diversity; availability of areas that may be less affected by intensive human use; conspicuousness from the air to migrant songbirds; and sizes of the populations of a given bird species, which would influence persistence of that species in the park (particularly for more sedentary species).

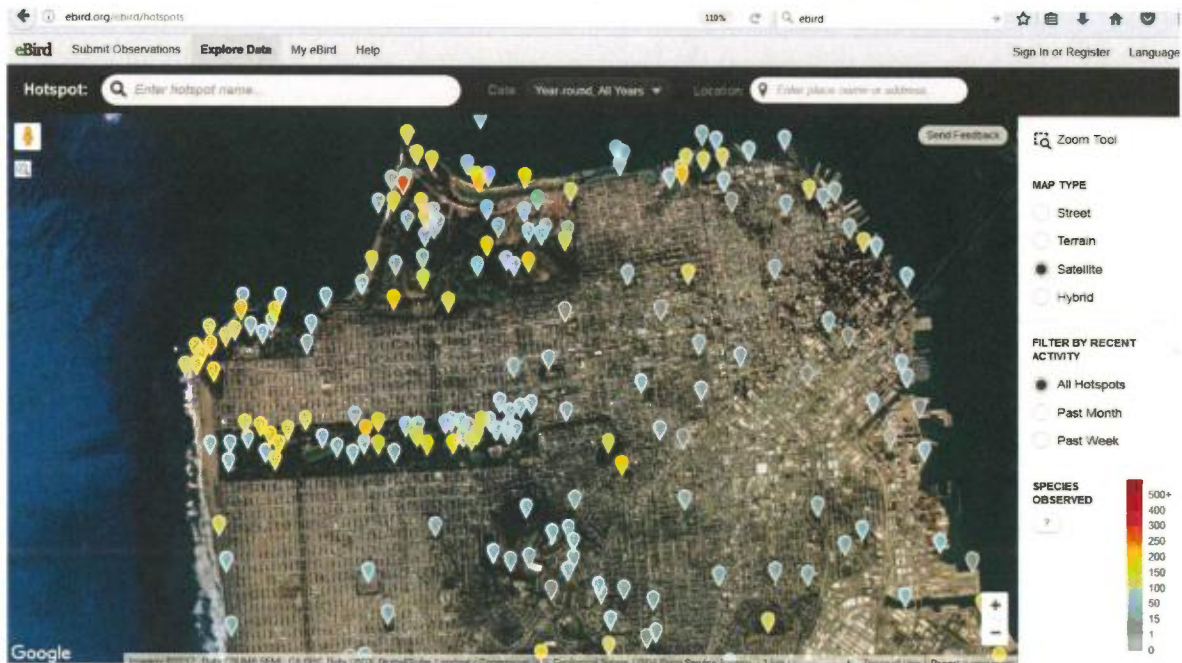


Figure 5. eBird hotspots in San Francisco

- The height of the existing and proposed buildings adjacent to Transbay Park, coupled with the narrow nature of the Park, will likely make the birds seem “hemmed in”, increasing the urban context of the Park and making the habitat seem less natural (and thus less attractive) to birds.
- Most of the parks with high bird use in San Francisco are either larger than Transbay Park (as indicated above) or are located in closer proximity to San Francisco Bay or the Pacific Ocean. Figure 5 indicates the locations of eBird “hotspots” within the City and depicts (using the legend in the lower right) the approximate numbers of bird species that have been recorded at each location. Transbay Park will be separated from the shoreline of San Francisco Bay by several blocks of very tall buildings, whereas Sue Bierman Park is much closer to the bay and is not separated from the Bay by tall buildings. Migrants flying over or along the edge of the bay or Pacific Ocean drop into suitable habitat nearby, and thus easily detect Sue Bierman Park and other bayside or coastside parks, as well as large parks that are not surrounded by such tall buildings. Such migrants would be far less likely to see (and thus descend into) Transbay Park due to intervening tall buildings.
- It would be difficult for bird species with relatively low vagility (i.e., more sedentary resident species), particularly species associated with low, dense vegetative cover, to disperse to Transbay Park because of the absence of suitable habitat in areas between the Park and areas where these species currently occur. In the event that individuals of such species wandering through the City were able to find

Transbay Park, the likelihood of finding a mate and breeding, or sustaining a population through immigration over the long term, would be very low.

In summary, Transbay Park is expected to attract a number of native bird species, as the reference parks currently do, after the vegetation is planted and it begins to mature. Native bird use of Transbay Park will be highest during migration, when birds are moving over the City and can detect Transbay Park nestled among the tall surrounding buildings. Bird use will be lower in winter, and particularly low in summer, when relatively few native birds are expected to nest in the Park due to its narrow nature, anticipated high human use, and intensively urban surroundings. Bird use of the Park is expected to be lower than at the reference parks, both in terms of the number of native species and the abundance of these birds. Nevertheless, some native birds will be present in the Park year-round, and native bird abundance in the vicinity of the 555 Howard Street tower Project will be higher after Transbay Park is vegetated than under existing conditions.

Results – Assessment of Collision Risk

It has been well documented that glass windows and building facades can result in injury or mortality of birds due to birds' collisions with these surfaces.⁴ 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 60 feet of the ground, because this is the area in which most bird activity occurs.⁵

After the 555 Howard Street tower and Transbay Park are constructed, there will be a low risk of bird collisions with the portion of the building's facade within 60 feet of the Park's elevation. Although birds flying near the building may not perceive that the glass facades represent solid surfaces, a number of factors will limit the frequency with which birds may collide with the building:

- As described above, very few native birds are present in the Project vicinity under existing conditions, and future bird use of Transbay Park is expected to be relatively low, which will limit the number of birds present in the vicinity of the building.
- No habitat of even moderate quality will be present around the 555 Howard Street tower, or between the tower and Transbay Park, that would attract birds from the Park to fly in the direction of the 555 Howard Street tower.

⁴ Klem, D. Jr. February, 2009. Avian Mortality at Windows: The Second Largest Human Source of Bird Mortality on Earth. Proceedings of the Fourth International Partners in Flight Conference: Tundra to Tropics. 244-251.

⁵ San Francisco Planning Department. 2011. Standards for Bird-Safe Buildings.

- As indicated in Figures 1, 3, and 4, flight lines and views from Transbay Park toward the 555 Howard Street tower will be largely obstructed by an 806-foot tall building. The shortest flight line between the Park and the 555 Howard Street tower would be completely obstructed.
- The proposed 555 Howard Street building is not located directly adjacent to Transbay Park. Rather, it is separated from the Park by a row of buildings. Birds flying toward 555 Howard Street via the more oblique flight paths available to them would have to overfly several buildings (albeit, below the elevation of the Park) to reach 555 Howard Street 270 feet away.
- On the north side of the 555 Howard Street tower (i.e., the side facing Transbay Park), glass panes would be separated from one another by 4-inch wide vertical mullions and 17-inch wide horizontal spandrels. The mullions project 7 inches out from the glass surface, and thus from oblique angles, these mullions become more and more conspicuous. Because of the 806-foot tower directly between the Park and the 555 Howard Street tower, the only pathways by which birds from the Park could reach the 555 Howard Street tower would be via oblique flight lines. As a result, birds flying toward the tower will be able to perceive (from the projecting mullions) that a solid building is present long before reaching the building.

It is also my opinion that there will be a low risk of bird collisions with the roof terrace. The roof will include some trees, and it is possible that birds flying over the site (e.g., long-distance migrants) will see the trees and descend to the building's rooftop, where collisions with the free-standing glass wind screens are possible. However, the potential for, and frequency of, such collisions will be low for the following reasons:

- The height of the roof terrace (385 feet) is so great that local, resident birds are unlikely to ever know that trees are present on the roof (i.e., local, resident birds will not occur on the roof). Rather, any birds potentially occurring on the roof would be migrants that are flying high overhead and that are descending into the City to rest or forage.
- The extent of the roof and its plantings are so limited that they will not be a significant attractant to birds migrating overhead. In comparison to the much larger, more heavily vegetated Transbay Park nearby, the tower's roof will not be a draw to birds migrating high overhead, as any such birds that descend to forage or rest in the Project vicinity would select the Park instead.
- The glass wind screens would have mullions like those described for the rest of the building, increasing the detectability of the screens.
- Solar hot water tubes will be present behind the glass wind screens on the south and west sides of the building's crown. These tubes will make the windows on the south



Figure 6. Appearance of solar hot water tubes, which will be present behind the glass wind screens on the south and west sides of the building's crown.

and west sides of the building even more evident as solid structures to birds (Figure 6).

- Birds flying at an altitude of 400 feet in the Project vicinity would consist primarily of migrants or dispersing birds making long-distance movements through the City, rather than birds making local foraging or nesting movements. As a result, these birds would be moving long distances and would see features before them, such as buildings, long before they got very close to those buildings. Such birds approaching from afar would see the Project building as a solid feature to be avoided; whether it contains glass in certain areas, or whether that glass has been treated (e.g., with bird-safe patterns), is inconsequential to a bird that views the building as a whole as something to be avoided. Long-distance migrants or dispersants flying high above the ground will perceive and avoid this building before they get close enough to collide with the building.
- There is some potential for bird strikes to occur with any part of the building (including the crown) at night, when birds may be less able to perceive the presence of the building (especially in bad weather). However, large-scale collision events involving nocturnal migrants such as those that have been documented at high-rise buildings in the East and Midwest have not been documented in the West. The Project does not propose any very bright spotlights or other lighting that would be pointed upward or outward and that may serve to attract or confuse birds. Furthermore, it is worth noting that the composition of the building's surface (e.g., presence or absence of glass, or whether the glass includes bird-safe treatments) would have no influence on whether nocturnal migrants collide with the building if they are unable to perceive the building due to darkness in the first place.

Applicability of San Francisco Standards for Bird-Safe Buildings

I have reviewed the design of the proposed building with respect to the City's "Bird-Safe Building Checklist"; a copy of the checklist completed for this Project is attached. Three rows on the checklist warrant further discussion in the case of the proposed Project:

- Item #5 ("Is the structure inside of, or within a distance of 300 feet from an open space 2 acres or larger dominated by vegetation?") – the building will be located 270 feet from the edge of Transbay Park. However, for the reasons summarized under *Assessment of Collision Risk* above, the building's location would not result in a substantial avian collision risk.
- Item #13 ("Is the building's glass treated with bird-safe treatments such that the 'collision zone' contains no more than 10% untreated glazing for identified 'location-related hazards' (lines 4-7) and such that 100% of the glazing on 'feature-related hazards' (lines 19-22) is treated?") – the façade (including the area within the potential Bird Collision Zone) and the wind screens on the roof are composed predominantly of untreated glazing. However, for the reasons summarized under *Assessment of Collision Risk* above, the potential for avian collisions with the building's untreated glazing would be low.
- Item #19 ("Does the structure contain a 'feature-related' hazard or potential 'bird trap' such as free-standing clear-glass walls, greenhouse or other clear barriers on rooftops or balconies?") – the roof terrace will be surrounded by glass wind screens. However, for all the reasons summarized under

Assessment of Collision Risk above, the potential for avian collisions with the glass wind screens would be low.

The City's bird-safe design guidelines state that the City may waive its bird-safe design requirements or allow alternative treatments based upon the recommendations of a qualified biologist. As a biologist qualified to provide a professional opinion regarding the issue of bird-safe design, I offer the conclusions and recommendations in the following section to indicate why, in lieu of bird-safe glazing treatment, the building's overall architectural design is sufficient to avoid substantial avian impacts from collisions with the building.

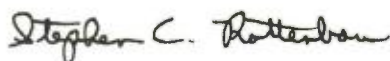
Conclusions and Recommendations

It is my professional opinion that the frequency of collisions between native birds and the northern facade (or any facade) of the proposed 555 Howard Street tower will be low, even after Transbay Park is constructed. I base this conclusion primarily on (1) the relatively low numbers of birds expected to use Transbay Park (e.g., relative to the reference parks), (2) the infrequency with which birds from Transbay Park would fly toward the proposed building, (3) the obstruction between Transbay Park and the 555 Howard Street tower posed by the intervening 806-foot tall building, (4) the intervening distance (270 feet) and buildings that birds would need to fly over to reach the Project site from Transbay Park, and (5) the projecting mullions on the facade facing Transbay Park, which will make the facade more conspicuous as a solid feature to be avoided by birds approaching the building from the only (oblique) angles available to them, given the intervening tower.

It is also my opinion that the frequency of collisions between native birds and the glass wind screens on the building's roof will be low, based on (1) the 385-foot height of the building, which precludes local and resident birds from occurring on the roof, (2) the lack of a strong attractant to migratory birds that the roof will represent, compared to the much larger and better vegetated Transbay Park nearby, (3) the mullions separating the glass panes, which will make the glass more perceptible to birds, (4) the solar hot water tubes behind the glass wind screens on the south and west sides, which will make the windows on these sides more evident to birds, and (5) the ability of high-flying birds to perceive the tower as a solid structure to avoid, long before they are close enough to the building to be confused by the glass.

Because the frequency of bird collisions will be low, these collisions will not result in the loss of a substantial proportion of any species' Bay-area populations or any Bay-area bird community. Therefore, in my opinion, the overall architectural design of the building in lieu of bird-safe glazing treatment should be sufficient to avoid any substantial impacts on birds from collisions. Please feel free to contact me at (408) 722-0931 or strottenborn@harveyecology.com if you have any questions regarding this assessment. Thank you very much for contacting us about this Project.

Sincerely,



Stephen C. Rottenborn, Ph.D.
Principal – Wildlife Ecologist

BIRD-SAFE BUILDING CHECKLIST

Using the key on the prior page, complete this checklist as a guide to help evaluate potential bird-hazards or eligibility for Bird-Safe Building Certification.

| | QUESTION | YES | NO |
|--|--|---|-------------------------------------|
| MACRO-SETTING (PAGE 12, 16) | 1 Is the structure located within a major migratory route? (All of San Francisco is on the Pacific Flyway) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 2 Is the location proximate to a migratory stopover destination? (Within 1/4 mile from Golden Gate Park, Lake Merced or the Presidio) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 3 Is the structure location in a fog-prone area? (Within 1/2 mile from the ocean or bay) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| MICRO-SETTING (LOCATION-RELATED HAZARD) (PAGES 13, 16, 28-29) | 4 Is the structure located such that large windows greater than 24 square feet will be opposite of, or will reflect interlocking tree canopies? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 5 Is the structure inside of, or within a distance of 300 feet from an open space 2 acres or larger dominated by vegetation? (Requires treatment of glazing, see page 28) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 6 Is the structure located on, or within 300 feet from water, water features, or wetlands? (Requires treatment of glazing, see page 28) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 7 Does the structure feature an above ground or rooftop vegetated area two acres or greater in size? (Requires treatment of glazing, see page 29) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| GLAZING QUANTITY (PAGE 8) | 8 Is the overall quantity of glazing as a percentage of façade: (Risk increases with amount of glazing) | Less than 10%? <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 9 Will the glazing be replaced? | More than 50%? (Residential Buildings in R-Districts must treat 95% of unbroken glazed segments 24 square feet or greater in size if within 300 feet of an Urban Bird Refuge.) <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| GLAZING QUALITY (PAGE 6, 7) | 10 Is the quality of the glass best described as: | Transparent (if so, remove indoor bird-attractions visible from outside the windows.) <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 11 | Reflective (if so, keep visible light reflectance low (between 10-20%) and consider what will reflect in the windows. Note: Some bird-safe glazing such as fitting and UV spectrum glass may have higher reflectivity that is visible to birds.) <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 12 | Mirrored or visible light reflectance exceeding 30%. (Prohibited by Planning Code.) <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| GLAZING TREATMENTS (PAGE 18-21) | 13 Is the building's glass treated with bird-safe treatments such that the "collision zone" contains no more than 10% untreated glazing for identified "location-related hazards" (lines 4-7) and such that 100% of the glazing on "feature-related hazards" (lines 19-22) is treated? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 14 Is the building's glass treated for required "bird hazards" (as described in line 13) and such that no more than 5% of the collision zone (lower 60") glazing is untreated but not for the entire building? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 15 Is the building glazing treated (as described above in lines 14 and 15) and such that no more than 5% of the glazing on the exposed façade is left untreated? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| BUILDING FAÇADE GENERAL (PAGE 8, 13) | 16 Is the building façade well-articulated (as opposed to flat in appearance)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 17 Is the building's fenestration broken with mullions or other treatments? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 18 Does the building use unbroken glass at lower levels? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| BUILDING FEATURE-RELATED HAZARDS AND BIRD TRAPS (PAGE 8, 30-31) | 19 Does the structure contain a "feature-related" hazard or potential "bird trap" such as: | Free standing clear-glass walls, greenhouse or other clear barriers on rooftops or balconies? (Prohibited unless the glazing is treated with bird-safe applications.) <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 20 | Free standing clear-glass landscape feature or bus shelters? (Prohibited unless the glazing is treated with bird-safe applications.) <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 21 | Glazed passageways or lobbies with clear sight lines through the building broken only by glazing? <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 22 | Transparent building corners? <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| LIGHTING DESIGN (PAGE 10, 25) | 23 Does the structure, signage or landscaping feature uplighting? (Prohibited within 300 feet of an Urban Bird Refuge) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 24 Does the structure minimize light spillage and maximize light shielding? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 25 Does the structure use interior "lights-out" motion sensors? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 26 Is night lighting minimized to levels needed for security? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 27 Does the structure use decorative red-colored lighting? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| LIGHTING OPERATIONS (PAGE 12, 24-25) | 28 Will the building participate in San Francisco Lights Out during the migration seasons? (February 15-May 31 and August 15- November 30th) To achieve "sterling" certification the building must participate in year-round best management practices for lighting. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| OTHER BUILDING ELEMENTS (PAGE 23) | 29 Does the structure feature rooftop antennae or guy wires? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 30 Does the structure feature horizontal access wind generators or non-solid blades? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| CONSENT (PAGE 34) | 31 Does the building owner agree to distribute San Francisco's Bird-Safe Building Standards to future tenants? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Authorized Signature

X Stephen C. Rottenberg

Date: Apr 20, 2017



Stephen C. Rottenborn, Ph.D.

Vice President, Wildlife Ecology

srottenborn@harveyecology.com
408.458.3205

PROFESSIONAL PROFILE

AREAS OF EXPERTISE

- Avian ecology
- Wetlands and riparian systems ecology
- Endangered Species Act consultations/compliance
- Environmental impact assessment

EDUCATION

- Ph.D. Biological Sciences, Stanford University, 1997
- B.S. Biology, College of William and Mary, 1992

OTHER PROFESSIONAL EXPERIENCE

- Ecology Section Chief/Environmental Scientist, Wetland Studies and Solutions, Inc., 2000-2004
- Sr. Wildlife Ecologist, H. T. Harvey & Associates, 1997-2000
- Scientific Associate/Scientific Advisory Board, San Francisco Bay Bird Observatory, 1999-2004, 2009-present
- Member, Board of Directors, Virginia Society of Ornithology, 2000-2004
- Member, Board of Directors, Western Field Ornithologists, 2014-present
- Chair, California Bird Records Committee, 2016-present

KEY PROJECTS

- Candlestick Point/Hunters Point Shipyard
- Concord Community Reuse Project EIR
- Santa Clara Valley Water District Stream Maintenance Program
- Envision San Jose 2040 General Plan Update
- South Bay Salt Ponds Restoration Project

KEY PUBLICATIONS

- Rottenborn, S. C. 2000. Nest-site selection and reproductive success of red-shouldered hawks in central California. *Journal of Raptor Research* 34:18-25.
- 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

Steve is a principal in our wildlife group; his primary role is addressing wildlife-related CEQA/NEPA and special-status species issues. While much of his work focuses on wildlife issues, Steve's broad training enables him to expertly manage multi-disciplinary projects involving a broad array of biological issues.

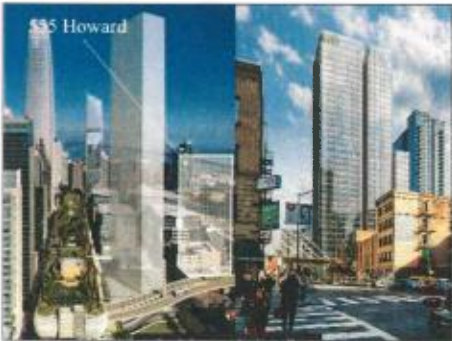
In his past research, Steve conducted studies detailing the effects of urbanization, land use, and habitat degradation on riparian bird communities in the South San Francisco Bay. In addition, he identified habitat features important to individual bird species, predicted how urbanization would impact these communities, and conducted a study of nest-site selection and reproductive success of urban-nesting red-shouldered hawks. He has also conducted studies of shorebird use of agricultural fields, an assessment of habitat associations and population dynamics of colonially nesting birds, and a study of resource partitioning among members of an oak woodland foraging guild.

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. He has contributed to more than 600 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 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.

Steve has managed a number of large and complex projects involving wildlife issues, including CEQA assessment and/or Endangered Species Act consultation for the Santa Clara Valley Water District's Stream Maintenance Program, Concord Community Reuse Project, Braddock & Logan's Fallon Village project, Newark Areas 3 & 4 Specific Plan, Las Positas College Master Plan, and Hecker Pass Specific Plan. He served as the senior wildlife ecologist for our work on the South Bay Salt Pond Restoration Project. He managed the preparation of a resource management plan for the Santa Clara Valley Transit Authority's Coyote Ridge conservation area, and is currently assisting Lennar and the City of San Francisco with biological planning and permitting for the Candlestick Point – Hunters Point redevelopment project.

Steve also has considerable experience managing biological resources issues for large on-call projects. He has served as project manager or principal-in-charge for more than 35 task orders for Caltrans on-call projects, more than 30 task orders for the Santa Clara Valley Water District, and numerous task orders for PG&E's Hydrotect project.

Although much of Steve's work has been performed in the San Francisco Bay area, he has been heavily involved in projects throughout California. He provided considerable input on biological resources reports and permit applications for the California Valley Solar Ranch project in San Luis Obispo County and has managed a number of projects in the Central Valley, from the southern San Joaquin Valley north to the Sacramento Valley.



H. T. HARVEY & ASSOCIATES

Ecological Consultants

**555 Howard Street
Avian Collision Monitoring Plan**

Project #4026-01

Prepared for:

Thomas Mead

Pacific Howard Corporation

353 Sacramento Street, Suite 1788

San Francisco, CA 94111

Prepared by:

H. T. Harvey & Associates

July 13, 2017

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Appendices

Appendix A. Example Avian Collision Data Form A-1

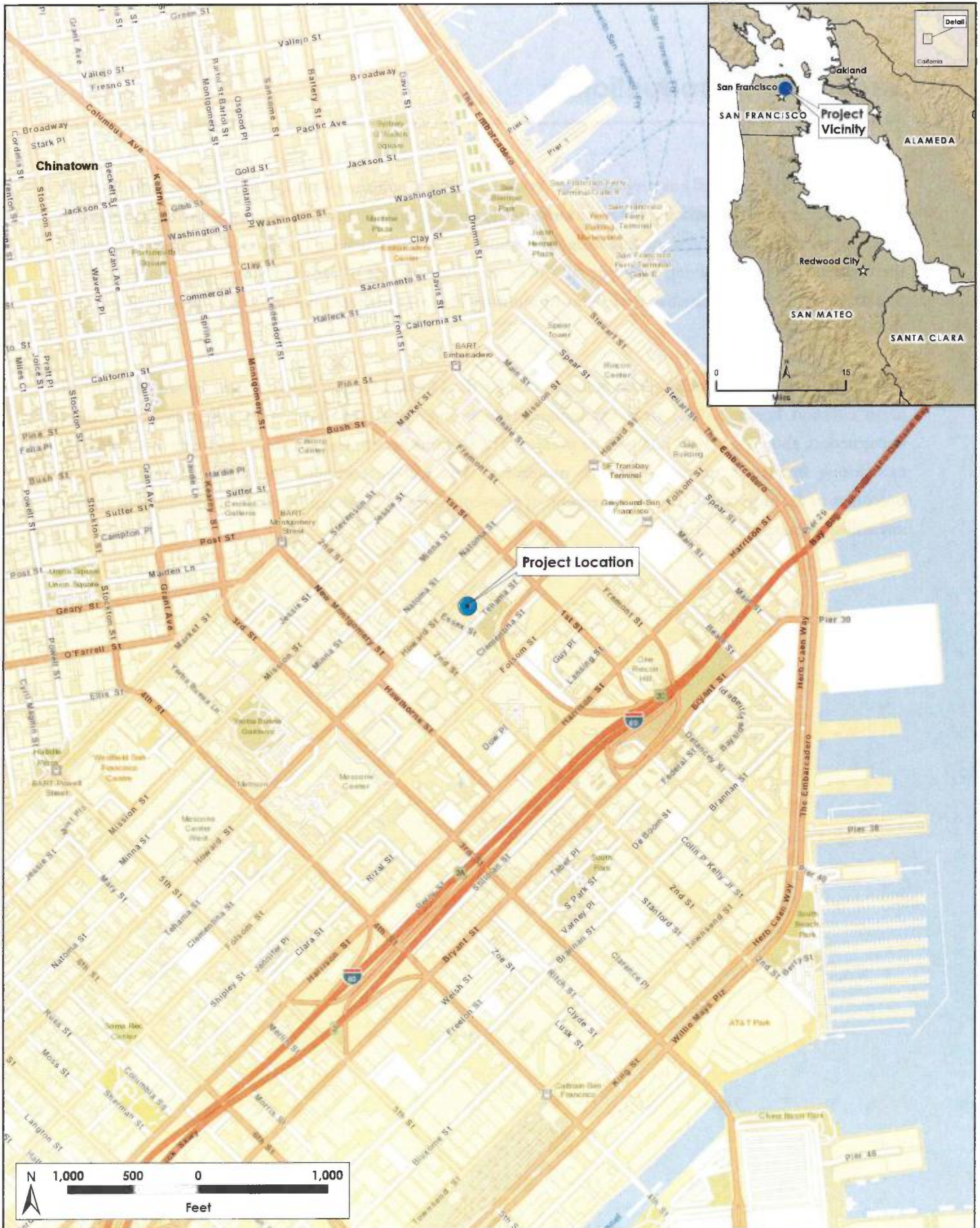
List of Preparers

Steve Rottenborn, Ph.D., Principal
Robin Carle, M.S., Project Manager

Section 1. Introduction

H. T. Harvey & Associates has prepared this Avian Collision Monitoring Plan (Monitoring Plan) for the 555 Howard Street project describing the monitoring program that Pacific Howard Corporation will implement in order to minimize avian collisions following the completion of construction. The proposed project consists of the construction of a 37-story, 385-foot tall tower on the south side of Howard Street, between 1st and 2nd Streets, near the future Transbay Park. This Monitoring Plan was prepared per recommendations of the City of San Francisco.

The purpose of this Monitoring Plan is to provide Pacific Howard Corporation a means by which to detect avian collision hotspots (i.e., areas exhibiting relatively high levels of avian collisions) following project construction, should any such hotspots be present. The sections herein describe the monitoring methodology, monitoring frequency, process by which monitoring data will be compiled and reviewed, and potential outcomes of the monitoring (e.g., consideration of post-construction measures to reduce avian collisions should any collision hotspots be identified).



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H. T. HARVEY & ASSOCIATES
Ecological Consultants

Figure 1. Vicinity Map
555 Howard Street Avian Collision Monitoring Plan (4026-01)
July 2017

Section 2. Methods

Prior to preparing this Monitoring Plan, H. T. Harvey & Associates ecologists reviewed the project plans; guidelines on avian collision monitoring provided in the City of San Francisco's *Standards for Bird-Safe Buildings* (San Francisco Planning Department 2011); our April 20, 2017 assessment of potential avian collision risk posed by the new building (H. T. Harvey & Associates 2017); and other avian collision monitoring plans that H. T. Harvey & Associates has previously prepared for other projects.

Section 3. Avian Collision Monitoring Measures

Pacific Howard Corporation will monitor avian collisions around the proposed tower at 555 Howard Street for a period of two years following completion of construction to identify whether there are any collision hotspots (i.e., areas where collisions occur repeatedly). Specific monitoring measures are described below.

3.1 Avian Collision Monitors

Pacific Howard Corporation will designate one or more Avian Collision Monitors who will be responsible for implementing the monitoring measures outlined in this Monitoring Plan. Monitors will be dedicated staff members working in the proposed building who have been trained to have an adequate understanding of bird identification and detection of bird-strike evidence on and around the buildings. Monitors will be provided with a field guide to bird identification covering all bird species in California, as well as a flashlight, camera, and data sheet (Appendix A) to facilitate data collection.

3.2 Weekly Survey

The Avian Collision Monitor will conduct weekly ground searches for dead or injured birds around the perimeter of the building and in areas within 100 feet of the building. Monitoring will take place before 9:00 in the morning to reduce the potential for scavengers such as crows and ravens to remove dead or injured birds. In addition, the monitor will look for detectable evidence of strikes such as imprints, blood, or feathers on glass (Photo 1). If evidence of an avian collision, or any dead or injured bird (or parts thereof) is detected, the incident will be assigned a unique identification number and the following information will be collected:

- Date
- Bird species, if it can be determined¹



Photo 1. Imprint left behind after a bird struck a window. Photo Credit: Eric Tofsrud

¹ If the Avian Collision Monitor(s) are unable to identify a dead or injured bird, the photograph of the individual will be forwarded to an expert for identification, and/or the bird will be recorded to the most specific level possible (e.g., “flycatcher”, “sparrow”, “unidentified”, etc.).

- Location (including the building, the side of the building, the specific location on that side of the building, the height above ground of any evidence of a collision, and the physical structure where the collision occurred [e.g., glass window or opaque wall]).
- Photograph (with size reference, if feasible)

Collision information will be recorded on an Avian Collision Data Form (an example of which is provided as Appendix A) and subsequently entered into an avian collision spreadsheet or database to be created by Pacific Howard Corporation.

3.3 Environmental Awareness Program

In addition to weekly monitoring, Pacific Howard Corporation will develop a worker environmental awareness training program for 555 Howard Street employees. The training will cover the purpose of the Avian Collision Monitoring Plan and will inform all personnel to report dead or injured birds to the Avian Collision Monitors. This will increase awareness and the likelihood that avian collision data will be documented.

3.4 Hotspot Analysis

At a frequency of no less than every six months, Pacific Howard Corporation will review the avian collision data to determine whether any potential hotspots are present (i.e., if strikes have occurred repeatedly in the same locations). Hotspots may be relatively small (e.g., the area around a single highly reflective window) or quite large (e.g., an entire building façade). If any such potential hotspots are found, Pacific Howard Corporation will review the data to determine which, if any, of the following factors may be responsible for the relatively high number of avian collisions at that location:

- Interior lighting
- Exterior lighting
- Landscaping (e.g., proximity to vegetation that is highly attractive to birds)
- Glass characteristics (e.g., reflectivity, transparency, or degree of fritting)
- Proximity to outdoor trash and recycling receptacles or eating areas

Based on this analysis, Pacific Howard Corporation will consider the feasibility of implementing modifications to the external factor(s) thought to be leading to collisions (e.g., adding translucent or opaque patterning to untreated or already treated windows, installation of blinds, or alteration of landscaping) to reduce avian collisions at the hotspot location.

Section 4. References

H. T. Harvey & Associates 2017. 555 Howard Street – Avian Collision Risk Assessment. Prepared for Pacific Eagle Holdings Corporation. April 20, 2017.

San Francisco Planning Department. 2011. Standards for Bird-Safe Buildings. Planning Department. July 14, 2011.

Appendix A. Example Avian Collision Data Form

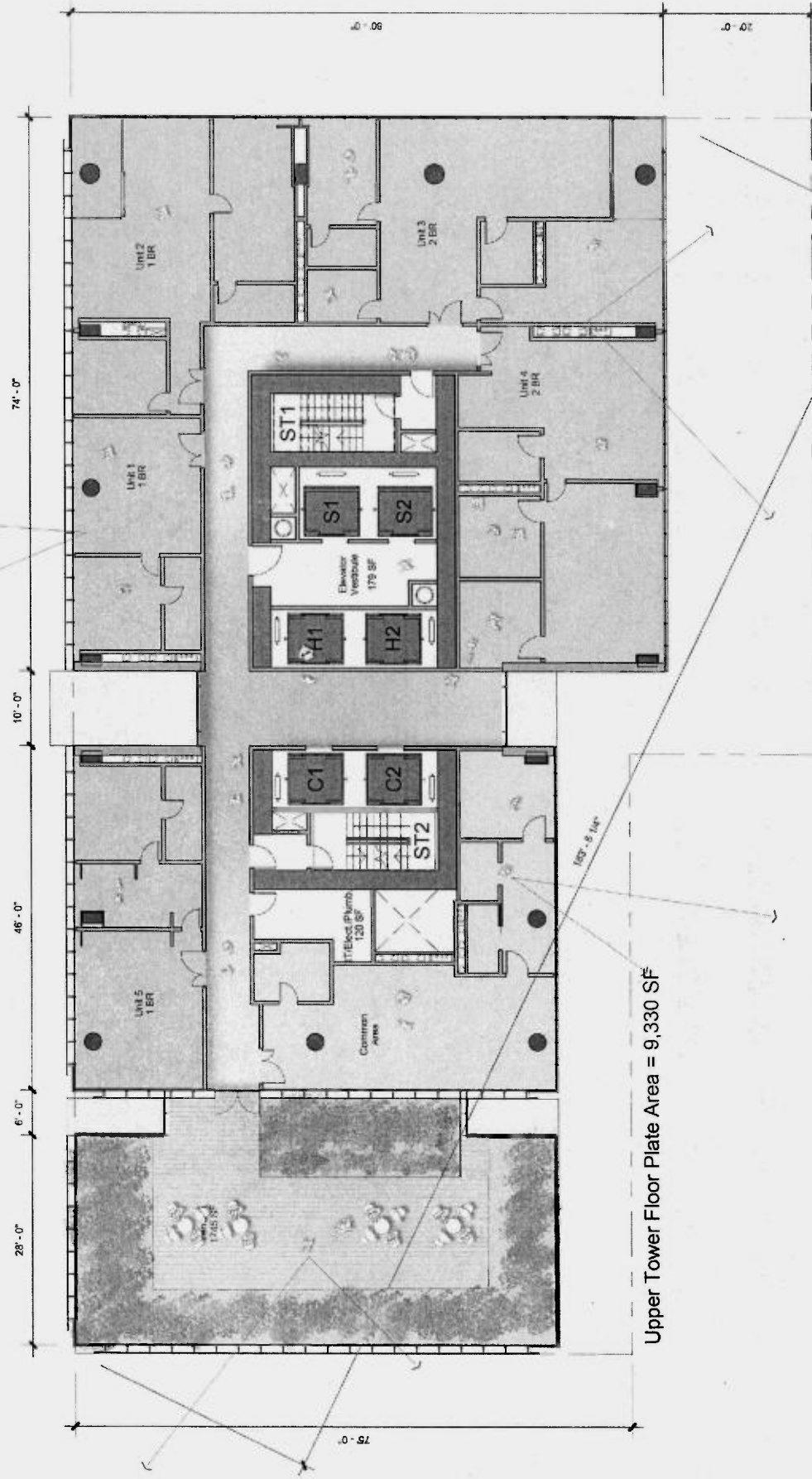
Monitor Name: _____

| Identification Number ² | Evidence Type ³ | Location ⁴ | Bird Species | Photo Taken? Y/N | Observer Comments |
|------------------------------------|----------------------------|-----------------------|--------------|------------------|-------------------|
|------------------------------------|----------------------------|-----------------------|--------------|------------------|-------------------|

² For each new casualty, create a unique ID value. Start the ID with date (month/day/year) followed by the monitor's initials and a number (e.g., "2017-07-11-JD-03" indicates the strike was recorded on July 11, 2017 by monitor John Doe and was the third strike recorded by the monitor that day).

³ D = Dead bird, I = injured bird, S = secondary evidence (e.g., imprint, feathers, or blood on glass).

⁴ Including the building, the side of the building, the specific location on that side of the building, the height above ground of any evidence of a collision, and the physical structure where the collision occurred (e.g., glass window or opaque wall).



Upper Tower Floor Plate Area = 9,330 SF

