Memorandum

Project No. 4588-01

December 6, 2021

To: **Jessica Viramontes, Senior Environmental Planner, ICF**

From: **Scott Terrill, PhD, Steve Rottenborn, PhD, Vice Presidents and Senior Wildlife Biologists**

Subject: **555 Middlefield Road, Mountain View Project—Existing and Proposed Wildlife Value**

Introduction

This memo was produced in response to a request by the City of Mountain View for an independent ecological review of the 555 West Middlefield Road proposed project. Specifically, that request involved professional opinion of the current ecological value of the site, providing input on the wildlife value of potential tree species proposed for replanting on the site as part of the project, and regarding the value of the project site as a movement corridor (e.g., as a component of the Stevens Creek riparian-habitat corridor).

Site Visit

Prior to site visits, proposed tree removal and project replanting plans were reviewed. Site visits were conducted on November 2, 2021 by Scott Terrill, PhD and on November 3, 2021 by Steve Rottenborn, PhD, both senior wildlife biologists, to offer an evaluation of the current overall ecological value of the site, to facilitate project planting recommendations relative to wildlife-habitat value, and to evaluate the site as a potential part of a functional wildlife movement corridor associated with Stevens Creek.

Assessment of Existing and Potential Ecological Value

Habitat Value of the Project Site under Existing Conditions

Currently, the project site is mostly developed, and what landscaping vegetation is present consists primarily of nonnative species. Wildlife use of the site is expected to involve widespread, common, urban-adapted species, with no special-status species using the site regularly. Migrant birds that do not regularly nest in urban habitats use the site to varying degrees during migration and winter (and several, including Townsend's [*Setophaga townsendi*] and yellow-rumped [*S. coronata*] warblers were observed during the site visits), but the site does not represent an overall high-value site to migrants. Although nonnative plants vary widely with respect to value to

native wildlife, generally nonnative plants lack an adaptive history with native fauna and support insect communities that are less abundant and diverse relative to native vegetation, and this can change food availability and can negatively impact the local ecology, for example decreasing native bird populations (Narango et al. 2018). Research in southern California has shown that native trees, along with a select handful of nonnative trees, can be beneficial to birds, but that the vast majority of nonnative trees appear to provide very little apparent benefit to foraging birds (Wood and Esaian 2020). Currently, the project site supports a mostly nonnative flora, which has some value to birds, but is low relative to a site with a higher percentage of appropriate (local) natives.

Wildlife Habitat Corridor

A wildlife or habitat corridor is an area of habitat that allows connection between populations or patches of habitat separated by anthropogenic barriers, including structures such as roads and other development and loss of habitat. Central to the concept of habitat corridors is the capacity to facilitate movement along the corridor and that they are continuous from one location to another (Meiklejohn et al. 2010). Many species of wildlife use corridors, including birds, mammals, reptiles, amphibians, and insects.

Although limited in width and extent, the presence of Stevens Creek and its associated riparian corridor east of the project site (across State Route [SR] 85) and approximately 700 feet south of the project site (on the same side of SR 85 as the project site) provides a unique, ecologically important landscape feature lacking in the directly surrounding urban environment. The habitat along the creek itself is classified as riparian habitat, although the vegetation includes introduced and other species that do not represent native riparian species, as well as some native riparian species.

Roads can act as barriers to animal movement through mortality during crossing attempts or behavioral avoidance that can ultimately result in local extinction (Shepard et al. 2008). Birds can fly back and forth across urban barriers between corridors and patches of habitat in the landscape disjunct from the habitat associated with the corridor itself. However, in the case of the project area, SR 85 represents a formidable barrier (and risk) to dispersal from the Stevens Creek corridor to the project site for both terrestrial and aquatic species. Roads can impact survival and reproduction for wildlife, even among birds that can cross roads easily (Riley et al. 2014).

The most heavily vegetated area on the project site, and that could be impacted by the proposed project, is a strip of dense vegetation along the eastern edge of the site, adjacent to SR 85. This strip of vegetation on the project site is separated from the nearest segment of Stevens Creek and any riparian influence from the creek by SR 85. This on-site strip of vegetation supports dense, mature trees and in most places a relatively dense understory. We understand that the issue of whether this strip of vegetation represents a movement corridor for wildlife and/or supplements the corridor provided by Stevens Creek farther east has been raised. Approximately 700 feet to the south (at Central Avenue), this vegetation strip connects directly with Stevens Creek. To the north, the strip of vegetation dead-ends at U.S. 101. The SR 85-U.S. 101 ramps do not have overpasses that would allow terrestrial animals to move north from the site to that interchange and then under

the ramps to the creek. If animals dispersing northward (downstream) along the Stevens Creek riparian corridor entered this strip of vegetation (e.g., at Central Avenue) they would need to use the Middlefield Road bridge over SR 85 or the Moffett Boulevard undercrossing of SR 85, both very busy streets, to get back to the creek corridor. Middlefield Road and Moffett Boulevard would represent either impediments to dispersal, due to animals' behavioral reluctance to use them due to traffic, or hazards if animals actually do use them. Upon reaching these roads, animals may well retrace their path back (south) and not attempt to reconnect with the creek corridor north of the Central Avenue connection, in which case this strip of vegetation would not represent a functional corridor. Thus, this strip of vegetation is not nearly as important for connectivity and wildlife movement as the creek corridor itself, which includes a continuous channel connection, an important connectivity feature lacking in the strip of vegetation on the project site, and is continuous all the way to San Francisco Bay habitats rather than ending at U.S. 101. These factors all contribute to substantially reducing the value of the strip of vegetation on the eastern portion of the site as a linkage to the corridor represented by Stevens Creek, or as a linkage between the Stevens Creek riparian corridor and any other important habitat patches. The strip of vegetation on the eastern portion of the site, from an ecological function perspective, functions more as a long, linear patch of habitat with one relatively limited connection to the creek (at Central Avenue) rather than a means by which animals can disperse along the creek or between the creek and other habitat areas.

The strip of vegetation under discussion does not contain drainages or wetlands, so amphibians and odonates (dragonflies and damselflies) are not expected to use the site extensively. Slender salamanders (*Batrachoseps attenuatus*) could be present, though road mortality would already limit their dispersal capabilities.

It is our opinion that removal of most or all of the non-native vegetation in this strip and replacing it with multi-layered native vegetation would improve conditions if this patch of vegetation were kept as extensive as it is. This would improve habitat quality of this patch of vegetation for birds, but not necessarily improve the value of the strip as a creek-related movement corridor due to the continued presence of barriers at one end. Based on the project's conceptual plans, it appears that the width of this strip of on-site vegetation would be reduced by the project. Reducing the width of the strip and the size and extent of vegetation in the strip as proposed would compromise any habitat improvement, even if nonnative vegetation were replaced with natives.

In summary, although wildlife may attempt to move from the Stevens Creek corridor to the strip of vegetation at Central Avenue, they would have to either retrace their path or cross major roadways to return to the creek. Further, the strip of vegetation does not meet the definition of a habitat movement corridor in that it is interrupted by barriers rather than being continuous and does not lead from one area of habitat to another.

This strip of vegetation provides a visual buffer between SR 85, but extensive plantings with non-native vegetation reduces its habitat value as does the proximity to SR 85. The habitat value of this area could be improved by replacing it with multi-layered native vegetation, which would improve the value if this patch of vegetation were kept as extensive as it currently is.

Planting Recommendations

This area was historically vast oak woodland and savanna, with some wet meadows as the landscape approached the bay edge and these meadows likely occurred along the drainages as well. Given the current condition of leveled, urban land in the region including the project site, likely augmented with imported soils and by soil compaction in many areas, we would recommend fairly robust trees to withstand these conditions. The project site is also clearly separated from Stevens Creek, and any real riparian influence, by SR 85. The native tree species we recommend would be coast live oak (*Quercus agrifolia*), valley oak (*Quercus lobata*), California buckeye (*Aesculus californica*), and box elder (*Acer negundo*). If there are bioretention areas, or areas with high groundwater, then hydrophytic species such as Fremont cottonwood (*Populus fremontii*), red willow (*Salix laevigata*), and white alder (*Alnus rhombifolia*) would be recommended. These species all have high value to native wildlife that are adapted to them, and increasing the number of native trees and shrubs would provide higher wildlife value relative to existing conditions. In addition, these species would contribute to other projects planting similar species in the City of Mountain View and elsewhere in the South Bay, which synergistically increases the overall presence of ecologically valuable native vegetation on a regional scale (the "re-oaking" concept – San Francisco Estuary Institute-Aquatic Science Center 2017). If the proposed plantings increase the number of native species that provide favorable wildlife habitat, including those recommended above, it would be a long-term benefit of the proposed replanting.

In addition, we have specific comments on some of the proposed plantings relative to their potential wildlife value. These comments are based largely on decades of personal observations of birds in the South Bay.

Natives

- *Cercis occidentalis*—a native, but this tree's foliage, flowers, and structure are not of high value to wildlife
- *Platanus racemose*—relatively high habitat value (structure for roosting and nesting, foraging by insectivores); it is important that the project plants native California sycamores, not London planetrees (*Platanus x acerifolia*) or hybrids
- *Quercus agrifolia*—high wildlife habitat value, but only a few (~7) are currently proposed; we would recommend a much increased planting rate

Nonnatives

- *Arbutus x marina*—hummingbirds forage at the flowers, but otherwise does not appear to have high wildlife habitat value
- *Cinnamomum camphora*—based on observed bird use, this species does not appear to have high habitat value to birds
- *Melaleuca styphelioides*—based on observed bird use, this species does not appear to have high habitat value to birds

- *Olea europaea*—some use by birds for foraging and nesting, but not of high wildlife habitat value
- *Prunus ilicifolia lyonii*—some use by birds for foraging (frugivores) and nesting, but in general, not a tree of high habitat value
- *Trachycarpus fortune*—supports nesting hooded orioles (*Icterus cucullatus*), and possibly nesting/roosting barn owls (*Tyto alba*) and bats when mature, but relatively low wildlife habitat value
- *Lyonothamnus floribundus*—some use by birds for foraging and nesting, but not generally a high wildlife habitat-value tree
- *Podocarpus gracilior*—low wildlife habitat value
- *x Chitalpa Tashkentensis*—some use by birds for foraging and nesting, but in general, not a tree of high habitat value

Increasing the number of native trees and shrubs (including oaks) would provide higher wildlife habitat value relative to the existing plant palette. Planting any tree in these urban settings, but especially native trees, requires that the planting design provide for good drainage, irrigation during the establishment period, and substantial soil volume for healthy rooting of mature trees. Many urban trees, both native and nonnative, suffer health declines as they mature due to inadequate soil volume for rooting, compaction and poor drainage. Investing in these conditions at the time of planting pays dividends in a healthy, mature urban forest.

Summary

In summary, although wildlife may move from the Stevens Creek riparian corridor to the strip of vegetation via the Central Avenue connection, they would have to either retrace their path or cross major roadways to return to the creek. Further, the strip of vegetation does not meet the definition of a habitat movement corridor in that it is interrupted by barriers rather than being continuous and does not lead from one area of habitat to another, but rather represents a linear set of disjunct patches of habitat that terminates at U.S. 101.

This strip of vegetation provides a visual buffer between SR 85, but extensive plantings with non-native vegetation reduces its habitat value as does the proximity to SR 85. The habitat value of this area could be improved by replacing it with multi-layered native vegetation, which would improve the value if this patch of vegetation were kept as extensive as it currently is.

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