

Comment Letter 34 – Craig Collins

Note: The two exhibits attached to this letter follow the responses.

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September 23, 2016

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Via Email & U.S. Mail

Re: *Comments on Sycamore Canyon Business Park Buildings 1 and 2 DEIR,
State Clearinghouse # 2015081042*

Dear Ms. Brenes and the City of Riverside:

Pursuant to the California Environmental Quality Act ("CEQA"), this letter is to serve you with comments on behalf of the SoCal Environmental Justice Alliance ("SEJA") regarding the Sycamore Canyon Business Park Buildings 1 and 2 ("the Project") Draft Environmental Impact Report ("DEIR"). We understand the Project to comprise the removal of a blue line stream and its replacement with a 2.96 acre "mitigation area," and the construction and operation a logistics center consisting of two buildings located approximately 0.4 miles west of Sycamore Canyon Boulevard at the western terminus of Dan Kipper Drive and north and west of Lance Drive in the City of Riverside, California, along with its associated street and utility improvements on a 76 gross acre, 71 net acre set of parcels. Building 1 would be sited on Parcel 1 and approximately 1,012,995 square feet in size. Building 1 would have 147 dock doors located along the east and west sides of the structure and would be approximately 41 feet from grade. Building 2 would be sited on Parcel 2 to the north of Building 1. Building 2 will be approximately 362,174 square feet in size, which includes up to approximately 10,000 square feet of office space, and approximately 352,174 square feet of logistics/industrial use. Building 2 will have 45 dock doors along the south side of the structure and would be approximately 37 feet from grade. The two Buildings would have separate owners and the Project is being built on speculation with no future tenants identified.

34-A

Our comments track the sections of the DEIR as reorganized by you or your consultant. Thus, we go from Section 5.1 Aesthetics to Section 5.10 Land Use and Planning and then back to Section 5.3 Air Quality (we have no comments Section 5.2 Agriculture and Forestry).

34-B

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Project Objectives

We believe your Project Objectives are tightly defined to require the construction of two logistics centers on the Project site. This is disappointing as they will pose a threat to residents and to the adjacent Sycamore Canyon Wilderness Park. The applicants and you could have chosen an office use, which would be compatible with the General Plan designation and zoning, and was recommended by at least one neighborhood group.

34-C

Comments on NOP

You received comments from among other entities the City of Moreno Valley, which calculated based on the ITE Trip Generation Manual that the Project would generate 1006 truck trips daily. Your assessment was that it would “only” generate 917. Please explain this discrepancy.

34-D

Friends of Riverside’s Hills commented that the DEIR should assess impacts to the federally endangered Stephens’ Kangaroo Rat (“SKR”), for which a Core Reserve exists immediately adjacent to the site in the Sycamore Canyon Wilderness Park. You failed to do this entirely, relying solely on the payment of a mitigation fee. The payment of a mitigation fee will not avoid mortality to any SKR on the Project site, and you did not survey for them. Friends also noted that the City’s General Plan is adjacent to a residential neighborhood (two, actually) and will pollute; this is contrary to General Plan Policy AQ-1.3 which says to separate, buffer and protect sensitive receptors from significant sources of pollution to the greatest extent possible. An office use would have avoided this conflict.¹

34-E

The Pechanga had extensive comments on impacts to Cultural Resources which we will discuss when we get to that section of the DEIR but also they mentioned in particular that the DEIR should address impacts from smog to rock art in the area which the DEIR does not do.

34-F

The Sycamore Highlands Action Group (“SHAG”) commented that residents were led to believe that that site would be used for an office building or an appropriate light industrial building that would buffer the nuisance and environmental effects from the nearby distribution centers. The present use will significantly exacerbate those effects. SHAG noted that the Project would lead to significant noise pollution, light pollution, traffic impacts, and health impacts. SHAG specifically mentioned that the health impacts of cumulative projects should be assessed with this one, such that the diesel particulate matter (“DPM”) from the other adjacent distribution centers *along with* the present Project would be honestly assessed. This was not done.

34-G

¹ To the extent that you assert that office use would be precluded by the March Air Reserve Base Airport Compatibility Plan, we disagree: office uses are apparently not precluded because you are including them in the Project anyway. Indeed, the DEIR concedes that Zones D and C1 of the MARB/Inland Port Land Use Compatibility Plan permits residential uses on the site.

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In oral comments on the NOP residents asserted that 2001 should be used as a baseline on noise, and that cumulative impacts from the World Logistics Center (“WLC”) should be considered. The WLC was considered, but, as we note below, a number of other projects appear to have been left out. Commenters also noted that the NOP was apparently only sent to 18 homes in the area and that this was inadequate notice. We agree, and it appears that the NOP only gave an effective two days’ notice for the community meeting.

34-H

Alternatives Analysis Summary

You did not evaluate an office use; you chose to evaluate a manufacturing use that was more intensive. You did not evaluate an alternative that allowed the blue line stream to continue running through the site, despite the requests of NOP commenters that you do so. You rejected a Reduced Density Alternative as economically infeasible. CEQA requires you to assess alternatives that *reduce* environmental impacts; your manufacturing use did not do this, and your choice of alternatives did not represent a reasonable range. With regard to your rejection of a 700,000 square foot and 300,000 square foot building as infeasible, this is cherry-picking, as the smaller building would be in this range anyway. You did not need to define the Project Objectives to have a building over 1,000,000 square feet in size and you haven’t provided an economic analysis supporting your conclusion that only such a building would have a market.

34-I

Other CEQA Topics

The document refuses to acknowledge that the construction of two logistics centers on undeveloped land represents a significant and unreversible change, on the ground that the site is designated for development under the Sycamore Canyon Business Park Specific Plan (“SCBPSP”). This ignores reality: the site is undeveloped and presently contains a blue line stream, and you propose to develop it and eliminate the stream. This is by definition a significant and unreversible change. Also you state there will be no significant long term energy use. We beg to differ, based at very least on all the combustible diesel fuel that will go into the operation and use of the Project and the fact that you have failed to require rooftop solar, which you could have.

34-J

Project Site – Existing Conditions and Proposed Project

You acknowledge that the Project site is bordered by the Sycamore Canyon Wilderness Park to the west, residential development to the north and northwest, a Ralph’s Distribution Center to the south, Big 5 and Flex Steel Distribution Centers to the east, and the recently approved Sycamore Canyon Business Center at the site’s northeast corner. In light of all these intensive uses to the east and south and the sensitive uses to the west and north, a buffering use such as an office building or light manufacturing should have been considered. Neither were. The General Plan designates the site as Business/Office Park (B/OP). While the SCBPSP designates the site as industrial, this conflicts with the General Plan, which would have to be amended.

34-K

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The Project proposes General Plan and Specific Plan amendments to eliminate planned circulation through the site. The Tentative Parcel Map would combine 17 existing parcels into 2 parcels and three lettered lots. Grading exceptions would be required. Building 1 would be 41 feet from grade and Building 2 would be 37 feet from grade. You claim that the buildings won't be visible from the residential areas because they will be below grade from them; however, in your Aesthetics discussion you contain renderings which belie this assertion.

34-L

Under "Sustainability Features," it appears that you largely intend to comply with green building codes; nothing more. You provide for "solar ready" roofs, not solar. You provide for three EV charging stations for the hundreds of cars that will be accessing the site; you do not provide for EV charging for the trucks. You provide for bicycle parking though this will exacerbate the risk of lung damage and asthma for employees given the use of the site. And you do not prohibit the use of transport refrigeration units ("TRUs") onsite though they will be in close proximity to residents and pose significant health threats to them according to the California Air Resources Board ("CARB").

34-M

Effects Found Not to Be Significant

We disagree with your conclusion that the following effects are not significant, as discussed in the following sections: aesthetics, cultural resources, biological resources, greenhouse gases ("GHGs"), hydrology and water quality.

34-N

Aesthetics

At 5.1-9 you note that the proposed trail will interfere with the fire access/maintenance road as presently planned. We question whether there will be room for any landscaping on this side of the development.

34-O

Here you acknowledge that Buildings 1 and 2 will be visible to the homes to the north and northwest. You indicate that the Buildings will have mounted lighting 34 and 32 feet above finished floor elevations, respectively. You try to suggest that the lighting will have no impact on residents or the adjacent Wilderness Park because these lights will have "no uptilt," but the light is going to disperse. With respect to the Wilderness Park you assert that the lighting will comply with the Sycamore Canyon Wilderness Park SKR Management Plan and Updated Conceptual Development Plan but you do not specify how. You acknowledge that the lighting will be sufficient for the distribution centers' 24/7 hours of operation, and you acknowledge that Building 2 is a mere 100 feet from the residential lots to the north. DEIR at 5.1-8.

34-P

Threshold A: Would the Project substantially affect a scenic vista? Here you acknowledge that construction of the Project has the potential to impact views of the Box Springs Mountains for homes to the west of the Project site, but you claim it won't due to the height of the Mountains. You have not provided any depictions to convince us of this, and the buildings could obstruct views of the lower parts of those Mountains. You further acknowledge that views from homes to the north of the Project site will be

34-Q

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impacted but say this isn't significant because the proposed Project is within an area zoned for industrial use. This is still a significant impact, which you fail to recognize, especially for homes to the northeast which presently have unobstructed views of the Sycamore Canyon Wilderness Park through the Project site.

↑ 34-Q
cont

Threshold B: Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a state scenic highway? You read this threshold to mean only impacts to a state scenic highway, but that reads out the first part of the sentence, which specifically makes the latter part of the sentence dependent upon it. This is not based on substantial evidence. You assert that the trees that will be lost as a result of development "are typical of riparian vegetation and not unique to the area," but they are natural, unlike those immature trees that you will plant in the proposed Mitigation Area. We disagree with your assessment.

34-R

Threshold C: Would the Project substantially degrade the existing visual character or quality of the site and its surroundings? Again you claim the riparian feature is not "unique." We disagree, as it is to the area. The fact that development is occurring "as intended per the General Plan 2025, the Sycamore Canyon Business Park Specific Plan, and the Zoning Code," does not detract from this being a significant impact.

34-S

You provide sample views from the residences to the west and north once landscaping is "mature" but you do not specify how long that will take. We project ten years. At 5.1-25 the view from the residences to the north from the second story discloses that the Project will totally obstruct their view of the hills in the distance. You also do not include a photo rendering of how views from the Sycamore Canyon Wilderness Park will be affected.

34-T

You assert that the development "will not substantially degrade the existing visual character or quality of the Project site or its surroundings," because the Project is consistent with views to the east and south of other logistics warehouses, and will eliminate illegal dumping, but the Project will eliminate open space which offers expansive views to the homes to the north, and any illegal dumping is not visible from those homes especially based on the photos provided.

34-U

Mitigation Measure ("MM") AES 1 provides for an eight-foot tall decorative block wall between the Project site and the homes to the north and west. This will not be sufficiently high to screen views of the trucks. The same is true for AES 4.

34-V

Threshold D: Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? You say "the" potential impact associated with exterior lighting is spill light or light trespass but you go on to acknowledge that glare can also be an impact, though you do not evaluate it. You seem to be asserting that MM HAZ 4, which requires compliance with the Zoning Code and Riverside County Airport Land Use Commission conditions of approval, will reduce impacts to less than significant. We disagree with your conclusion as not based on substantial evidence. The Zoning Code, according to you, requires "that on-site lighting

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be arranged so as to reflect away from the adjoining property or any public streets, and that lighting not be directed skyward or in a manner than [sic] interferes with aircraft operation.” Whether or not the building lights are directed skyward or toward the adjacent properties, there will be significant spill light given that they will be mounted 34 and 32 feet up. You say this will be so “except along the north building wall where the lights will be lowered to a level to provide safety while not producing glow into the neighboring yards *to the maximum extent feasible*,” which you do not define. This is a significant impact for the properties to the north of Building 2 which will only be 100 feet from the property line. And you haven’t addressed the properties facing the western portion of Building 2, which will only be 138 feet east of the property line. Finally, you have not addressed glare or light spill from the parking lot lighting which will face the residences to the west. *Compare* Figure 3-10 with Figure 3.1-1, Surrounding Area. That lighting is proposed at the maximum height permissible under the Zoning Code, 20 feet.

34-W
cont

Next you state that “Existing large-scale light industrial uses to the east and south of the Project site provide night lighting in the area, and also “street lights on roadways within the Sycamore Canyon Business Park, including Dan Kipper Drive and Lance Drive . . . as well as on roadways within the residential subdivisions north and northwest of the Project site provide an additional source of existing lighting,” and that “As a result, lighting from the proposed Project would not result in a substantial source of new light or glare.” We disagree strongly. The backyards of the houses to the north and northwest face the Project site. The new lights will be *substantially* higher and closer than anything they are experiencing now.

34-X

In short, we disagree with your conclusion that impacts to aesthetics, light and glare are less than significant with mitigation.

34-Y

Concerning your MM’s, MM AES 9 requires the “same elements” as used in the front elevation, including office areas, at every corner of Buildings 1 and 2. To the extent this calls for windows, those windows will create a source of daytime glare that was not evaluated, particularly from the western elevations of Buildings 1 and 2 when the sun is setting. MM HAZ 4 is solely addressed to hazards from or to the nearby March Air Reserve Base and only prevents lights from being directed upwards.

34-Z

Land Use and Planning

You skip from section 5.1 to section 5.10. We’re not sure why, but to the extent that you are trying to demonstrate in Section 5.10 (Land Use) that the Project was pre-ordained, we beg to differ for the reasons stated earlier.

34-AA

Here you seek a “minor” CUP to allow for a warehouse of greater than 400,000 square feet pursuant to Riverside Municipal Code 19.150 Base Zones Permitted Land Uses, which requires discretionary review to look at the Riverside Good Neighbor Guidelines as to compatibility. We disagree with any conclusion that the Project is consistent with the Good Neighbor Guidelines, particularly since you did not designate truck routes to avoid residential neighborhoods as they require.

34-BB

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You assert that the Project is consistent with the SCBPSP because it recommends the development of light industrial, distribution warehousing or product assembly. Either light industrial or product assembly uses would result in far less intensive air quality and other impacts to adjacent residents. The DEIR concedes the backyards along the northwest portion of the site will be 138 feet from Building 2 and accordingly they won't be much further from the loading docks at Buildings 1 and 2. Building 1 will have dock doors and truck exhaust directly facing the residences.

34-CC

You fail to analyze the Good Neighbor Guidelines in the DEIR, relegating the discussion to an appendix. This violates CEQA. *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal. 4th 412.

34-DD

Threshold A: Will the Project physically divide an established community? We believe the answer is yes. The development of the Project will eliminate pedestrian access between the Very Low Density Residential to the west and the Medium Density Residential to the north. You are effectively placing an industrial use between two residential neighborhoods.

34-EE

Threshold B: Would the Project conflict with any applicable land use plan, policy or regulation . . . adopted for the purpose of avoiding or mitigating an environmental effect? Here, the answer is again yes, based on conflicts between the Good Neighbor Guidelines and the Project. Specifically, as noted above, you should have designated truck routes to avoid residential areas and did not. Further, your health risk assessment did not address background levels of DPM from existing distribution facilities in the vicinity, and if it had, it would have found a significant impact.

34-FF

Noise

As predicted by local residents, local nighttime noise levels exceeded the 45 dBA nighttime residential noise standard "for all hours," at least at location LT1, and ranged from 51.0 dBA to 58.1 dBA.² This is almost certainly due to the existing distribution center uses in the vicinity. This situation would almost certainly be exacerbated by the Project. For location LT2 the nighttime residential noise standard of 45 dBA was exceeded at 10 pm and from 4 am to 7 am.

34-GG

You report that noise levels for single family residences which the Project is adjacent to, are per the General Plan 2025:

- Normally Acceptable at up to 60 dBA CNEL/L_{dn}
- Conditionally Acceptable at 60-65 dBA CNEL/L_{dn}

34-HH

² You write "It is important to note that there is an existing wooden fence along the residential property line at location LT1 and the noise meter was placed on the Project side of the property line; thus, the noise level on the residential side may be lower." It is unlikely that the noise level is lower due to a wooden fence and if so it would only be minimally lower. Also there is a drop from the residential properties to the Project site. Therefore the noise more than likely travels to the residences as there is no barrier to stop it, as the residents report from their direct experience.

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- Normally Unacceptable at 65-70 dBA CNEL/L_{dn}
- Conditionally Unacceptable at 70 dBA CNEL/L_{dn}

34-HH
cont

Nuisance sound limits per the Municipal Code are 70 dBA for industrial anytime (exterior) and 45 dBA night or 55 dBA day for residential (exterior), although for *Code Enforcement* purposes, the City grants 5 dBA leeway for 15 or 30 minutes per hour, or 10 dBA for five minutes or 15 dBA for 1 minute in any hour, or 20 dBA for (apparently) an instantaneous noise.

You quote the Municipal Code Section 7.35.010(B) which makes it unlawful to load and unload from 10 pm to 7 am "in such a manner as to cause a noise disturbance across a residential property line," but then you promptly disregard this standard.

34-II

At 5.12-19 you actually suggest that the immature landscaping to the north of the Project site will limit sound traveling from the site to the residences. Then you state that the Project will be designed to allow for "right-in, right out" access so as to limit the amount of traffic coming from Dan Kipper Drive. This makes no sense, you would need left-in, right out to achieve this result.

34-JJ

Threshold A: Noise levels in excess of local General Plan or noise ordinance. You concede that construction noise will reach 80 dBA L_{eq} at residences to the north and northwest and in Sycamore Canyon Wilderness Park and that even with the placement of a 12 foot noise barrier the impacts will be significant and unavoidable. With regard to operational noise you state impacts will be less than significant except as to receptor numbers 3 and 4 where the noise will exceed the exterior noise nighttime standard of 45 dBA L_{eq}. As to these two receptors you propose placing sound barriers *on their property*. You then conclude noise inside the residences would be 35 dBA L_{eq}, but you do not address whether the 45 dBA outdoor standard would still be exceeded. You concede the impact is significant and unavoidable because you cannot assure the residents will accept the barriers.

34-KK

You then assert the maximum permissible noise threshold is 75 dBA for daytime and 65 dBA for nighttime. You get there by using the Code Enforcement leeway of 20 dBA for an instantaneous noise of less than one minute. Since the operational noise will not be instantaneous you have misapplied the Municipal Code to the severe detriment of your residents. You then assert that the maximum noise from backup beepers is 55 dBA L_{max}. This is in excess of the 45 dBA outdoor noise standard for residences, but you misread the Municipal Code again to justify your result. We also disagree with your implicit assertion (where you say that noise will be 44 dBA indoors, which you say is OK relative to the 45 dBA standard) that the cited Municipal Code provision addresses *indoor* noise. And this conclusion is again based on the assumption that you can place the noise barriers on private property under MM NOI 16.

34-LL

You then move on to trash compactors which the applicants apparently intend to have operating outside. The trash compactors would, you say, generate levels of 59 dBA and 62 dBA at the top of the slope to the west which you claim would be dampened by 10

34-MM

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dBA by the NOI 16 barriers. Again, you are presuming they can be placed there. And you again are relying on your misreading of the Code to allow for 65 dBA nighttime noise.

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34-MM
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At 5.12-33 it appears from Figure 5.12-7 that you have modeled all of 1 backup beeper at the nearest dock from Building 2 to the west. This is not representative as there will likely be multiple backup beepers going at once, including from Building 1, which while further to the south is completely exposed to the residences to the west and has 72 loading docks.

34-NN

At 5.12-34 you summarize. You nowhere address operational noise impacts to Sycamore Canyon Wilderness Park. There will be no sound barrier present to protect the Park.

34-OO

Threshold B: Would the Project cause the exposure of persons to or the generation of excessive groundborne vibration or groundborne noise levels? Here you contend at 5.12-37 that “According to the FTA, buildings can be exposed to ground-borne vibration levels up to 0.5 PPV without experiencing structural damage. Additionally, the FTA has determined that individuals can experience vibration levels up to 80 VdB (RMS) before being adversely affected by vibration.” We think this is a serious mischaracterization of what the FTA said. With respect to buildings, some buildings are far more fragile and can only tolerate 0.25 in/sec PPV (FTA 2006). With respect to human response, what the FTA said was that 80 VdB relative to 10^{-6} in/sec would result in residential annoyance for *infrequent* events, but that for frequent events (e.g., rapid transit, or here, vibration from construction) annoyance occurs at about 72-73 VdB. See Figure 7-3, Typical Levels of Ground-Borne Vibration, from *Transit Noise and Vibration Impact Assessment*, Chapter 7 (included as Attachment A).

34-PP

You then assert that Table 5.12-I shows that heavy construction equipment will be perceptible but not annoying. The Table doesn't show this. To the extent that 87 RMS is VdB, that *would* be considered annoying. You then assert that the vibration would be attenuated at 40 feet and that “the majority” of the construction equipment would be operating at a distance of 40 or more feet away from the residences. Here you assert that the nearest residential structure is 14 feet from the property line. This conflicts with what you said in the Aesthetics section. If it is true there is no substantial evidence for your 40 foot figure, and you don't translate to VdB so we cannot evaluate your conclusions. Under *Vineyard* and other cases you need to establish the path from your analysis to your conclusions and you have not done that here.

34-QQ

Threshold C: Would the Project create a substantial permanent increase in ambient noise levels existing without the Project? Unbelievably, in this section, you claim that the ambient noise levels will go *down* from existing levels at all but two receptors, at one of which noise will remain the same and at one of which it will increase by 10 dBA CNEL. This is not at all credible. Since you acknowledge that the only noise mitigation measure is the noise barrier at the residences which you do not know that you can impose, there is no basis for concluding that the noise from a vacant field will be less

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than the noise from two large 24/7 distribution center buildings with truck bays in the hundreds.

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cont

Next you claim that even as to the one receptor where noise will go up by 10 dBA, the mitigated noise levels would still be within the GP 2025 "Normally Acceptable" compatibility criteria for neighborhood parkland use. This isn't neighborhood parkland, and in any event, you earlier stated the threshold was whether there was a substantial increase in noise, measured as 5 dBA, which at least that one receptor will experience. Also, it appears you have not modeled the noisiest uses identified in the immediately preceding section: you state here that the "dominant operational noise will generally include noise associated with diesel truck engines, exhaust systems, braking and fork lifts," in other words, you did not apparently model (1) the backup beepers, (2) the trash compactors, or (3) the HVAC systems. But above all, you have not explained how you reached the implausible conclusion that noise levels from the site would be reduced.

34-SS

Next you get into off-site noise, which you should have modeled with the on-site noise but did not.

34-TT

Concerning your mitigation measures, MM NOI 8 purports to limit haul truck deliveries to the same hours as for construction equipment, but the hours for deliveries of construction equipment are nowhere specified.

34-UU

Public Services

Your discussion of Fire Protection does not address the comments of residents that "emergency responders stationed at the firehouse on Sycamore Canyon Blvd. will be unable to exit their facility or quickly traverse Sycamore Canyon Blvd. when responding to an emergency." NOP at 48 of PDF document.

34-VV

Recreation

At 5.15-1 you acknowledge there are nine categories of parks in the City including neighborhood parks and wilderness reserve parks. You then try to call Sycamore Canyon Wilderness Park a "reserve/open space park," which obfuscates its true role. Then you assert (at 5.15-6) SKR Management Plan and Conceptual Development Plan calls for either a masonry wall or a fence per Standard Detail No. 5520. We believe the Management Plan prefers a masonry wall, in part due to the noise issue, and we think a wall should be placed there.

34-WW

You also indicate here that the access to the Park which was previously planned via Kangaroo Court would instead be provided by an extremely narrow fire lane delineated in Figure 3-11 Conceptual Landscape Plan. Figure 3-7B shows that Kangaroo Court was to be a paved 2-lane road whereas the fire lane looks to be less than one lane and gravel. You state at 5.14-1 there will be a less than significant impact regarding fire "because some fire access will be maintained via the proposed on-site trail and parking lot." This

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doesn't address whether the fire access will be adequate, and access via that fire lane would be the only access for the entire east end of the Park.

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cont.

Transportation and Traffic

Figure 5.16-5 Project Trip Distribution (Trucks – Outbound) discloses that you assume only 5% of the truck traffic will merge onto the I-215 and SR 60 at Fair Isle Drive while 45% will go northbound on I-215 from Eastridge Ave/Eucalyptus. This is a convenient assumption but we do not think it has a basis in reality as the residents have observed from existing truck traffic. Unless you prohibit access at Fair Isle Drive (which you should) there is nothing to prevent far higher numbers of trucks traversing a residential neighborhood via the Sycamore Canyon Blvd./Fair Isle Drive route. You display similar optimism at Figure 5.16-6 Project Trip Distribution (Trucks – Inbound). We also do not see a basis for your conclusion that 15% of trucks will go to/from Sycamore Canyon Blvd. as opposed to taking Eastridge Avenue to the I-215 south, but this has far less consequences to the most affected residents.

34-YY

As noted earlier, you claim to have relied upon the ITE Trip Generation Manual 9th edition, but your numbers are at odds with those generated by the City of Moreno Valley. See NOP Comments, PDF at 24, projecting 1006 truck trips versus the 917 you identify. Also you should have disclosed the number of truck trips in your Transportation and Traffic section but you did not.

34-ZZ

At 5.16-18 Table 5.16-E Trip Generation Rates has Peak Hour trip rates where the numbers do not add up for trucks. This may have led to underestimates for your air quality analysis.

34-AAA

Threshold A: Would the Project conflict with an applicable plan ordinance or policy establishing measures of effectiveness for the circulation system? We believe Table 5.16-J represents an underestimate as to intersections 1 (I-215 Northbound Ramps/Fair Isle Drive/Box Springs Road) and 2 (Sycamore Canyon Blvd./Fair Isle Drive) based on your failure to assign a truly representative number of trips to and from the Project site along this route.

34-BBB

At 5.16-08 you indicate that you identified cumulative projects in the City of Riverside and the City of Moreno Valley. Your failure to identify cumulative projects in unincorporated Riverside County is a major omission. We are aware of at least two distribution center projects that would show up on the cumulative projects map if you had bothered to include them: the Alessandro Commerce Centre (off Alessandro Blvd.) and the Freeway Business Center (between old 215 Frontage Road and the I-215). These projects are highly significant to both traffic and air quality and should have been included.

34-CCC

At 5.16-45 you concede that the Northbound Ramps for I-215 at Fair Isle Drive/Box Spring will be at LOS F under EAC and EAPC conditions and that this is significant. However, for the reasons stated above we believe you have underestimated this impact.

34-DDD

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Regarding queuing, you concede that the number of trucks projected to arrive at Building 2 in the AM peak hour may result in queuing by three or four trucks outside the facility. This violates Strategy 1a of the Good Neighbor Guidelines, attached as Attachment B. You claim that this won't result in parking on nearby residential streets because there is designated parking on Sycamore Canyon Blvd. and portions of Box Springs Blvd., and commercial parking elsewhere would violate RMC 10.52.155(a). That doesn't mean it won't happen. It is likely the trucks will stop, and idle, on Dan Kipper Drive and Lance Drive, increasing the pollutant load to which nearby residents are exposed. To the extent they are discouraged from parking on Dan Kipper Drive, they may well park on residential streets. This is a significant impact.

34-EEE

Threshold E: Will the Project result in inadequate emergency access? You acknowledge here that the fire lane will only be 12 feet wide and made of gravel. This is extremely narrow for fire vehicle access. And again you did not address the issue of Fire Station egress raised by SHAG.

34-FFF

Utilities and Service Systems

Threshold D: Would the Project have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new and expanded entitlements required? Here you concede the Project's projected demand is 100 afy and that this demand is "almost double" the planned development for the Project site estimated in Western's 2010 UWMP. Actually, it is over double. You claim nevertheless that it is consistent with the "overall projected increase in commercial water demand within Western's Riverside Retail Area as set forth in the 2010 UWMP." This does not mean Western will have enough water. The projected increase will happen anyway from Western's additional and existing customers.

34-GGG

You say Metropolitan's 2010 UWMP shows it "has supply capabilities to meet expanded demands from 2015 through 2035 under single dry-year and multiple dry-year conditions," however, you then say "Metropolitan's Condition 3 water supply allocation," which you don't identify, and Western's water use reductions represent a more severe shortage condition than what occurred under the single-year or multiple dry-year scenarios identified by Metropolitan's 2010 UWMP. You claim that Western has modeled potential cutbacks under Metropolitan's WSAP in the WSA and that this analysis is more stringent than that required by SB610. You don't specify how. Apparently Western looked at 10-20 % reductions in imported supply, but Western may well experience more than that, based on past experience and future potential conditions in the Bay Delta. You rely on Western to conclude that water supplies "are sufficient," but we believe you have to exercise your independent judgment on the evidence, and you don't have a substantial evidence basis for reaching your conclusion here.

34-HHH

Air Quality

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First, as to your discussion of criteria air pollutants and health impacts, we do not think you have adequately acknowledged the significant health impacts from ozone as required under *Bakersfield Citizens for Local Control*. First of all, certainly there are relevant studies that postdate 1993, and those studies have shown that children face a greater risk of asthma. Second, you don't appear to note anywhere that EPA recently adopted a more stringent standard. Third, you haven't admitted that the Basin is expected to take more than 17 years to come into attainment status.

34-III

With respect to Toxic Air Contaminants ("TACs"), you concede there is no safe level for them. You claim that the South Coast Air Quality Management District's ("SCAQMD's") MATES-IV study disclosed a 16 percent reduction from that of MATES-III for the Project area, but you don't address whether MATES-IV evaluated emissions from the many new distribution centers in the area. Meanwhile, CARB has proposed a bright-line limit of not placing a distribution center within 1000 feet of a residential center, and you are disregarding this.

34-JJJ

Table 5.3-B discloses there were 41 days in 2014 that the area violated the older, less stringent federal standard of 0.075 ppm; that number will go up independent of this Project now due to the new federal standard. With respect to PM₁₀ there were 17 exceedances and with respect to PM_{2.5} there were 5.

34-KKK

Concerning the Riverside General Plan 2025 you assert that the Project is consistent with the following policies and we disagree as follows:

34-LLL

- *Objective AQ-1: Adopt land use policies that site polluting facilities away from sensitive receptors and vice versa; improve jobs-housing balance; reduce vehicle miles travelled and length of work trips; and improve the flow of traffic:* Here you are not siting polluting facilities away from sensitive receptors and you are not improving the flow of traffic, at a minimum.
- *Policy AQ-1.8: Promote 'Job/Housing Opportunity Zones' and incentives to support . . . jobs in housing-rich areas, where the jobs are located on nonpolluting or extremely low-polluting entities:* You are not following the underlined mandate here, at all.
- *Policy AQ-2.11: Develop ways to incorporate the "Good Neighbor Guidelines for Siting New and/or Modified Warehouse Distribution Facilities" into the Development Review process and Citywide air quality education programs:* You have ignored the Good Neighbor Guidelines with this development.

The Riverside Good Neighbor Guidelines come next.

- *Goal 1: Minimize exposure to diesel emissions to neighbors that are situated in close proximity to the warehouse/distribution center.* You could consider viable alternatives to a distribution center for the site, but you don't. The heavy manufacturing use you posit would, we believe, require a zone change.
- *Strategy 1a:* We already established you have violated Strategy 1a.

34-MMM

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- *Strategy 1b: To the extent possible, locate driveways, loading docks, and internal circulation routes away from residential uses.* You could have located the loading docks to face onto Lance Drive only.
- *Strategy 1c* requires a health risk assessment when truck traffic areas of an industrial project are located within 1000 feet of sensitive receptors; your health risk assessment should have addressed impacts from the many other distribution centers in the vicinity as well as this one; it did not.
- *Goal 2, [which you skip but we've included] Eliminate diesel trucks from unnecessarily traveling through residential neighborhoods* – you haven't done this; instead you generated an overly optimistic traffic analysis that assumes only 5% of trucks will enter/exit the I-215 at Fair Isle Drive even though it is the most expeditious exit point for southbound traffic. Particularly since you project so few trucks will use the route it would have been easy to prohibit it.
- *Strategy 2a: Same.*
- *Strategy 2d: Require warehouse/distribution centers to provide signage or flyers that advise truck drivers of the closest restaurants [and] fueling stations.* You could have required food and fueling options on site, particularly since the site is so large. This would have prevented trucks from traversing the neighborhoods.
- *Goal 3: Eliminate trucks from using residential areas and repairing vehicles on the streets.* You have included no enforceable commitment here.

34-MMM
cont

At 5.3-17 you note that CARB's Diesel Risk Reduction Program provides that by 2023 nearly all trucks and buses will need to have 2010 model year engines or the equivalent. You ignore that the City and this facility could require compliance with this mandate earlier.

34-NNN

Then you address the CARB Air Quality and Land Use Handbook, which should be a part of the administrative record for this Project since you have referred to it. It suggests prohibiting distribution centers within 1000 feet of residential neighborhoods. You reject this, asserting "These are recommendations, not mandates, and land use decisions will ultimately lie with the local agency which needs to balance other considerations." You are ignoring both the CARB Handbook and your own General Plan in rushing this Project through.

34-000

Threshold B: Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation? With respect to operations you concede impacts would be significant at 339.39 lbs/day of NO_x emitted versus a daily threshold of 55 pounds. With respect to CO hotspots, you claim that there would have to be traffic like that at Veteran Avenue and Wilshire with an average daily vehicle count of 100,000 or more for there to be a CO violation. This depends on the relative emissions of trucks versus cars, which you have not addressed.

34-PPP

Threshold C: Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment? You acknowledge this impact as significant based solely on the individual Project's NO_x emissions.

34-QQQ

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Regarding cumulative impacts, you rely on SCAQMD guidance to conclude that cumulative impacts are not exceeded because the Project does not exceed project-specific thresholds. We do not believe it is appropriate to rely on the SCAQMD guidance as it flies in the face of multiple CEQA Guidelines as well as Pub. Resources Code §21083(b)(2). See Guidelines §§ 15130(a), 15064(h)(1), 15065(a)(3), 15355(b). CEQA does not excuse an EIR from evaluating cumulative impacts simply because the project-specific analysis determined its impacts would be less than significant. Gordon & Herson, "Demystifying CEQA's Cumulative Impact Analysis Requirements: Guidance for Defensible EIR Evaluation," *Cal. Env't'l. L. Reporter* 379, 381 (Sept. 2011)(Vol. 2011, Issue 9) (Attachment B).

34-RRR

Threshold D: Would the Project expose sensitive receptors to substantial pollutant concentrations? Here at 5.3-32 you claim your methodology was to split the site up into "eight equal areas of 36,100 square meters . . . each and the average (composite) distances from the centroids of the corresponding volume sources to the nearest residential and worker receptors were determined." If we understand this correctly, you assigned equal amounts of pollutants throughout the site. This is not proper as the pollution will be coming from the docks to the south side of Building 2 and the west side of Building 1 toward the residences to the west. We believe this would result in significant underestimates of exposure as it disperses pollution throughout the site in a way that does not fit with the reality of what will occur.

34-SSS

We also think it is counterintuitive and unlikely that the MICR for construction would be greater than that from operation, and this suggests an error in your modeling.

34-TTT

Biological Resources

It is apparent from your discussion that you did not survey for the SKR, even though the Project site is adjacent to a reserve for this species. Thus, there could well be and likely are SKR on the site that will be killed by the Project, and you have made no plans for their removal to avoid this.

34-UUU

You assert that the DBESP finds that the future drainage is "superior" to the present one because it will continue to convey runoff from the residential areas to the northwest of the Project site, because it will be planted with native riparian and riparian scrub habitat, because it will "meander like a naturally occurring drainage," and because it will supposedly provide better nesting habitat for birds. We find most of these assertions to be doubtful and in any event not convincing grounds for determining that the new, narrow drainage to be placed on a thin strip to the west of a massive trucking facility is going to be "superior" to the naturally occurring blue-line stream that exists now.

34-VVV

Threshold A: Will the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status species in local or regional plans, policies or regulations or by the CDFW or USFWS? The answer is almost certainly yes as to the SKR and the San Diego black-tailed jackrabbit. Both species should be trapped and relocated.

34-WWW

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We also disagree that you have fully mitigated regarding the burrowing owl and nesting birds, as discussed when we get to your mitigation measures.

34-XXX

Threshold B: Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community? We note that you plan for a Habitat Mitigation & Monitoring Program which is not included with the documents for the DEIR. This excludes the public from meaningful review under CEQA. We do not see how the DBESP can determine that the created habitat will be superior in the absence of this HMMP.

34-YYY

Threshold D: Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors? Here you state "Because the site was not contemplated for conservation (i.e., not a Criteria Cell) the Project site is not intended to be a link between the Sycamore Canyon Wilderness Park and the Box Springs Mountains." Whether it is intended to be such a linkage is not the issue. The fact that it may be functioning as such a link is substantiated by the presence of a willow flycatcher and a golden eagle on the site when the Project's consultants happened to be looking.

34-ZZZ

Threshold E: Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? You claim here the Project is consistent with Objective LU-7 of the General Plan 2025 "Preserve and protect significant areas of native wildlife and plant habitat, including endangered species." We disagree. You haven't surveyed for the SKR and don't plan to.

34-AAAA

Threshold F: Would the Project conflict with the provisions of an adopted HCP or NCCP? Here you assert the Project will comply with Sections 6.1.2, 6.1.3, 6.1.4, 6.3.2, Appendix C, and Section 7.5.3 of the MSHCP. In at least a couple of instances we disagree with you.

34-BBBB

First with regard to Section 6.1.2, you assert that you surveyed for the least Bell's vireo ("LBV") the southwestern willow flycatcher ("SWFL") and the western yellow-billed cuckoo. You did not. The applicants surveyed for the LBV *only*. For that matter, even though there were no protocol level surveys for the other species, the biologist did note a willow flycatcher which he could not identify which was likely a SWFL. With respect to the yellow-billed cuckoo the consultants merely stated that it was "not incidentally detected." These are not protocol-level surveys, and Section 6.1.2 clearly calls for focused surveys for *each species*: "If the mapping noted above identifies suitable Habitat for the species listed below, and the proposed project design does not incorporate avoidance of the identified Habitat, *focused surveys for those species shall be conducted.*" The species identified are the SWFL, the LBV, and the western yellow-billed cuckoo. See MSHCP, Section 6.1.2, Final MSHCP, Volume 1, Section 6 at 6-23. This document should be a part of the administrative record on this Project since you are citing to it.

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Next you say “None of the Section 6.1.2 riparian bird species were found to be occupying the site.” First of all, as noted above, you didn’t look properly, and second, it appears you may well have identified a SWFL.

34-CCCC

Next with regard to Section 6.1.4, Guidelines Pertaining to the Urban/Wildlands Interface, you present Table 5.4-B. As discussed in our own table, we don’t believe you have complied:

34-DDDD

<p>Avoid discharge of untreated runoff from developed and paved areas into the MSHCP Conservation Area</p>	<p>You say in the “post-Project condition, runoff will leave the Project site via a storm drain” and that it will ultimately enter into the Sycamore Canyon Wilderness Park after going through an “existing water quality basin.”</p> <p>(1) It’s not clear that you have done anything to prevent incidental runoff from the paved portions on the western part of the site from running into the Mitigation Area, and</p> <p>(2) You have included no provisions of which you speak here for reducing the toxic load from the site going into the water quality basin.</p>
<p>“Land uses proposed in proximity to the MSHCP Conservation Area that use chemicals <i>or</i> generate bioproducts such as manure that are potentially toxic or may adversely affect wildlife species” are addressed. Applicants are to “incorporate measures to ensure that application of such chemicals does not result in discharge to the MSHCP Conservation Area.”</p>	<p>First, there is apparently no prohibition on the use of pesticides on the landscaping, which would be of concern here. And you have not addressed the toxic load to runoff from the site as addressed above.</p>
<p>“Night lighting shall be directed away from the MSHCP Conservation Area to protect species within the MSHCP Conservation Area from direct night lighting.”</p>	<p>You claim the lighting will be directed away from the Park but then you acknowledge that Building 1’s lights will be 34 feet up and Building 2’s 32 feet up. This effectively acknowledges there will be glow going into the Park. We will address this further immediately below this Table.</p>
<p>“Proposed noise generating land uses affecting the MSHCP Conservation Area shall incorporate setbacks, berms or walls to minimize the effects of noise on MSHCP Conservation Area resources . . . For</p>	<p>You claim that once the Project is completed, it “will include walls surrounding the truck yards and loading/docking areas.” With respect to the actual interface between the Park and</p>

34-EEEE

34-FFFF

34-GGGG

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planning purposes, wildlife in the MSHCP Conservation Area <i>should not be subject to noise that would exceed residential noise standards.</i> "	the Project site, however, there will be no wall, but only a fence, made of wrought iron. This obviously will provide <i>no sound barrier at all.</i> ³
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34-GGGG

The impacts of light pollution on species within the Park can be significant. Light pollution is a major problem which can significantly confuse migratory birds and otherwise disrupt wildlife foraging and breeding. *See e.g.,* CNN, "Light Pollution Threatens National Park," 1999. "The cumulative effects of behavioral changes induced by artificial night lighting on competition and predation have the potential to disrupt key ecosystem functions." Longcore & Rich, 2004. Many bird species fly at night and have evolved to migrate in the dark aided by star and moonlight, which will be blocked by artificial light sources. Birds can be attracted to lit structures, including streetlights, and can become disoriented. American Bird Conservancy, 2008. Disorientation often results in collisions with lit structures. *Id.* Bird species can also become entrapped in lit areas, refusing to move for the night, increasing their risk of predation. Longcore & Rich.

34-HHHH

Particularly with regard to the SKR, the risk of predation from artificial light is an issue. COSEWIC 2006.

34-IIII

Light pollution need not be extensive to have a major impact on wildlife. Longcore & Rich found that desert rodents reduced foraging activity when exposed to a single camp lantern. And artificial lights over 100 miles away could still affect wildlife. CNN.

At 5.4-30 you begin discussing mitigation measures. MM BIO 1 proposes to mitigate impacts to nesting birds. Birds nest from January 1 through September 15, surveys February 1 through August 31 are not sufficient to protect them. *See* Attachments C1, C2, and C3. MM BIO 2 calls for passive relocation of the burrowing owl if it is found outside the nesting season. The DEIR should specify compliance with the 2012 CDFW Burrowing Owl Staff Report to the extent they are found present during the nesting season. MM BIO 3 calls for a HMMP to be developed and approved by USFWS and CDFW prior to grading. It should have been included with the DEIR. MM BIO 4 calls for a conservation easement but you say only "to an approved mitigation entity." The entity should be approved by CDFW pursuant to Gov. Code Section 65967. CDFW has only approved those entities listed at <https://www.wildlife.ca.gov/Conservation/CESA/Endowments>. MM BIO 5 calls for approval from regulatory agencies prior to disturbance of jurisdictional waters. That approval *must* (not may) come from CDFW, RWQCB and USACE. The mitigation must come from the applicant, not the agencies. MM BIO 6 makes no sense unless there is also provision for trapping and release of SKR offsite.

34-JJJJ

³ To the extent that the fence represents a preference by the Riverside Parks Dept. based on graffiti concerns those concerns should not hold sway over the very real risk to the SKR and other species from excessive sound.

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Cultural Resources

Here you assert that no written comments were received regarding Cultural Resources. This is false. You received an extensive comment letter from the Pechanga Tribe. See Appendix A, PDF at 33-39.

34-KKKK

Several tribes expressed interest in the site, requesting consultation and monitoring. The Pechanga and the Soboba in particular asserted cogently that the site contained Tribal Cultural Resources, see DEIR at 5.5-32 (requesting full avoidance). The City is apparently rejecting these claims on the ground that the integrity of setting has been disturbed by the development of other logistics warehouses in the area. The City should not be able to escape its responsibilities by looking to its past actions inconsistent with these resources. We disagree with your conclusions that there were no significant impacts to identify and that you have reduced these impacts to less than significant.

34-LLLL

Greenhouse Gas Emissions

Your GHG analysis is inadequate on several fronts. First of all, you don't use the CEQA Appendix G thresholds. Second, you fail to measure the significant GHGs you identify against a quantitative threshold, when the emissions you identify, a minimum of 25,509.10 MTCO₂e would be significant via any metric you could choose: whether it is the SCAQMD threshold for its own industrial projects of 10,000 MTCO₂e or the far more appropriate 3,000 MTCO₂e for land use projects. You reject the standard adopted in Executive Order B-30-15 even though it was well on its way to becoming the law (in S.B. 32) when you issued the DEIR, and it is the law now. You apply a CEQA Guideline, Section 15083.5, which to our knowledge does not exist. You conduct a BAU scenario in a manner that the California Supreme Court amended its *Newhall Ranch* decision to specifically reject. Finally, you project a reduction in emissions from "vegetation change" based on trees you are adding though we do not think you are accounting for the vegetation you are removing. You say you have reduced emissions based on factors you can't quantify in CalEEMod when the factors you can quantify show substantial emissions. The DEIR is not based on substantial evidence and should be substantially revised and recirculated to address these flaws.

34-MMMM

We look forward to your responses. Should you choose to prepare one, please notify us of the availability of a Final Environmental Impact Report when it becomes available at collins@blumcollins.com and bentley@blumcollins.com. Thank you.

34-NNNN

Sincerely,

Craig M. Collins

attachments: A-C3

Note: The attachments to this Comment Letter can be found at the end of the Responses for this Letter.

Response to Comment Letter 34 – Craig Collins

Response to Comment 34-A:

This comment, which generally describes, the Project, does not identify any significant new environmental issues or impacts that were not already addressed in the Draft Environmental Impact Report (DEIR).

Response to Comment 34-B:

The DEIR was initially posted in the wrong order on the City’s website, this error has been corrected. This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-C:

Pursuant to the California Environmental Act (CEQA), “A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid decision makers in preparing findings or statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project.” CEQA Guidelines Section 15124(b). The objectives prepared for this project meet this requirement.

The proposed logistics center at the Project site is consistent with the land use designation for the site in both the City’s General Plan 2025 (GP 2025) and the Sycamore Canyon Business Park Specific Plan (SCBPSP).

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-D:

The trip generation rates for high-cube warehouses are based on the average weighted average trip generation rate provided in the *Trip Generation Manual (9th Edition)* by the Institute of Traffic Engineers (ITE), 2012. The Project truck trip generation used in the Traffic Impact Analysis (TIA) is based on the ITE 9th Edition Trip Generation Manual’s truck trip generation for high-cube warehouse. The Fontana Truck Trip Generation Study, specifically cited as a source for truck axle splits in the ITE Manual, was then used to split the projected number of trucks into different kinds of trucks to estimate the passenger car equivalent (PCE). This use of the Fontana truck study is noted as a footnote under TIA Table 4-1 – Trip Generation Rates in addition to DEIR **Table 5.16-E – Trip Generation Rates**. (DEIR, pp. 5.16-18; DEIR Appendix J, p. 4-1.) The City has accepted the use of the Fontana Study for splitting the types of trucks. Traffic generation used for the study area is based upon the development of 1,433,599 square feet gross floor area high-cube warehouse, which is greater than the 1,375,169 SF of high-cube warehouse proposed at the site; therefore, this represents a conservative estimate (DEIR, p. 5.16-9). Using these assumptions, the Project will generate 917 truck trips total, including 2-axle, 3-axle, and 4-axle trucks. (DEIR, Table 5.16-F.)

According to the information provided by the City of Moreno Valley in the Notice of Preparation (NOP) comment letter (DEIR, Appendix A), it appears they split the office away from the warehouse and did a separate trip generation on the office square footage and the warehouse square footage for each building, which is not appropriate or necessary. The *Revised Traffic Impact Analysis for the Sycamore Canyon Industrial Buildings 1 & 2* (the TIA), which is the basis for the analysis in the DEIR used the trip generation rates for high-cube warehouses/distribution centers from the Institute of Transportation Engineers (ITE) *Trip Generation Manual (9th Edition)*. High-cube warehouses/distribution centers, as described in the ITE *Trip Generation Manual (9th Edition)*, are "...used for the storage of materials, goods and merchandise prior to their distribution to retail outlets, distribution centers or other warehouses. These facilities are typically characterized by ceiling heights of at least 24 feet with small employment counts due to a high level of mechanization. High-cube warehouses/distribution centers generally consist of large steel or masonry shell buildings and may be occupied by single or multiple tenants. A *small ancillary office* (emphasis added) use component may be included and some limited assembly and repackaging may occur within these facilities."

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-E:

The Project site is not located within a designated Core Reserve of the Stephens' Kangaroo Rat Habitat Conservation Plan (SKR-HCP); thus, the site itself is not intended to be used for conservation of this species. Outside of the Core Reserves, the SKR-HCP established a fee assessment area by which individual projects are deemed consistent with the SKR-HCP through payment of fees. (DEIR, pp. 5.4-14.) Although payment of the SKR-HCP fee may not avoid mortality of any SKR at the Project site, the Project is consistent with the SKR-HCP with payment of the SKR-HCP fee when the grading permit is issued.

With regard to the GP 2025 Policy AQ-1.3, it is the City's, and not the Project Applicant's, responsibility to designate land use patterns, including taking steps to separate, buffer, and protect sensitive receptors from significant sources of pollution. The Project is consistent with the land use designation for the site in both the GP 2025 and the SCBPSP and will incorporate several design features to mitigate air quality impacts to the adjacent residences. (DEIR, pp. 5.3-35 – 5.3-39 [MM AQ1 – MM AQ 25].)

The commenter also suggests construction and operation of an office building at the Project site instead of a logistics center; however, an office building would likely not meet the density requirements for the March Air Reserve Base/Inland Port Authority Compatibility Criteria for Zone C1, which limits the site to 100 people/acre on average, or 250 people/acre for a single acre. (DEIR, p. 5.8-21.) Further, the City has zoned the site Business and Manufacturing Park (BMP), which is one of four industrial zones within the City; therefore, use of this site for non-light industrial uses would not make economic sense. (DEIR, Figure 3-5.)

Thus, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-F:

Pursuant to Senate Bill (SB 18) and Assembly Bill (AB) 52 the City had extensive consultation with the Pechanga Band of Luiseño Indians, Soboba Band of Luiseño Indians, and the Morongo Band of Mission Indians. (DEIR, pp. 5.5-18–5.5-20.) The three documented archaeological sites within the Project site represent prehistoric bedrock milling features. (DEIR, Table 5.5-A.) Therefore, there is no rock art at the Project site or in its immediate vicinity. The consultation process included meetings, conference calls, on-site visits (by representatives of the Pechanga Band of Luiseño Indians and Morongo Band of Mission Indians), review of the *Cultural Resources Assessment of the Sycamore Canyon Business Park Buildings 1 & 2, Riverside County, California* (included as Appendix D.1 of the DEIR) and the confidential results of the records search. As a result of the consultation process, the following mitigation measures will be implemented to reduce impacts to tribal cultural resources to less than significant: (DEIR, pp. 5.5-31–5.5-33.)

MM CR 1: Prior to grading permit issuance: If there are any changes to project site design and/or proposed grades, the Applicant shall contact interested tribes to provide an electronic copy of the revised plans for review. Additional consultation shall occur between the City, Applicant and interested tribes to discuss the proposed changes and to review any new impacts and/or potential avoidance/preservation of the cultural resources on the Project. The Applicant will make all attempts to avoid and/or preserve in place as many as possible of the cultural resources located on the project site if the site design and/or proposed grades should be revised in consult with the City. In specific circumstances where existing and/or new resources are determined to be unavoidable and/or unable to be preserved in place despite all feasible alternatives, the developer shall make every effort to relocate the resource to a nearby open space or designated location on the property that is not subject any future development, erosion or flooding.

MM CR 2: Archaeological Monitoring: At least 30-days prior to application for a grading permit and before any grading, excavation and/or ground disturbing activities on the site take place, the Project Applicant shall retain a Secretary of Interior Standards qualified archaeological monitor to monitor all ground-disturbing activities in an effort to identify any unknown archaeological resources.

1. The Project Archaeologist, in consultation with interested tribes, the Developer and the City, shall develop an Archaeological Monitoring Plan to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. Details in the Plan shall include:
 - a. Project grading and development scheduling;

- b. The development of a rotating or simultaneous schedule in coordination with the applicant and the Project Archeologist for designated Native American Tribal Monitors from the consulting tribes during grading, excavation and ground disturbing activities on the site: including the scheduling, safety requirements, duties, scope of work, and Native American Tribal Monitors' authority to stop and redirect grading activities in coordination with all Project archaeologists;
- c. Plan for the controlled grading within 50 feet of the boundaries of CA-RIV-8750, CA-RIV-8751 and CA-RIV-8752. Grading within 50-feet of these sites shall be conducted using controlled grading techniques. Large indiscriminate grading equipment shall not be used, and the controlled grading technique shall be reviewed by the Project Archaeologist, in consultation with interested tribes, the Developer and the City. The archaeologist and Native Tribal Monitors shall ensure that the grading efforts in these areas are conducted in a manner that allows for the identification of subsurface cultural resources. Any resources observed shall be addressed in accordance with Mitigation Measure CR 3;
- d. The determination by the project archaeologist, Developer, City and Native Tribal Monitors as to which features of sites CA-RIV-8750, CA-RIV-8751 and CA-RIV-8752 can be successfully relocated to locations onsite that will be mutually agreed upon. The relocated features will be placed in an area that will be preserved in perpetuity, so that no future disturbances will occur;
- e. The protocols and stipulations that the Developer, City, Tribes and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation;
- f. The 3D modeling on all the sites located within the Project site, specifically in Areas 1 (CA-RIV-8750), 2 (CA-RIV-8751), and 3 (CA-RIV-8752), as delineated on the Site Plan attached to the Archaeological Monitoring Plan shall take into account the potential impacts to undiscovered buried archaeological and cultural resources and procedures to protect in place and/or mitigate such impacts;
- g. The location of the Cottonwood Tree requested by the Morongo Band of Mission Indians for their tribal requirements shall be noted on the Archaeological Monitoring Plan. The Monitoring Plan shall

address the timing of the removal of the tree by the Morongo Band of Mission Indians and transfer of the tree to them; and

- h. The scheduling and timing of the Cultural Sensitivity Training noted in Mitigation Measure CR 4.

MM CR 3: Treatment and Disposition of Cultural Resources: In the event that Native American cultural resources are inadvertently discovered during the course of grading for this Project. The following procedures will be carried out for treatment and disposition of the discoveries:

1. Temporary Curation and Storage: During the course of construction, all discovered resources shall be temporarily curated in a secure location onsite or at the offices of the project archaeologist. The removal of any artifacts from the project site will need to be thoroughly inventoried with tribal monitor oversight of the process; and
2. Treatment and Final Disposition: The landowner(s) shall relinquish ownership of all cultural resources, including sacred items, burial goods, and all archaeological artifacts and non-human remains as part of the required mitigation for impacts to cultural resources. The applicant shall relinquish the artifacts through one or more of the following methods and provide the City of Riverside Community and Economic Development Department with evidence of same:
 - a. Accommodate the process for onsite reburial of the discovered items with the consulting Native American tribes or bands. This shall include measures and provisions to protect the future reburial area from any future impacts. Reburial shall not occur until all cataloguing and basic recordation have been completed;
 - b. A curation agreement with an appropriate qualified repository within Riverside County that meets federal standards per 36 CFR Part 79 and therefore would be professionally curated and made available to other archaeologists/researchers for further study. The collections and associated records shall be transferred, including title, to an appropriate curation facility within Riverside County, to be accompanied by payment of the fees necessary for permanent curation;
 - c. For purposes of conflict resolution, if more than one Native American tribe or band is involved with the project and cannot come to an agreement as to the disposition of cultural materials, they shall be curated at the Western Science Center or Riverside Metropolitan Museum by default; and.
 - d. At the completion of grading, excavation and ground disturbing activities on the site a Phase IV Monitoring Report shall be submitted

to the City documenting monitoring activities conducted by the project Archaeologist and Native Tribal Monitors within 60 days of completion of grading. This report shall document the impacts to the known resources on the property; describe how each mitigation measure was fulfilled; document the type of cultural resources recovered and the disposition of such resources; provide evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting; and, in a confidential appendix, include the daily/weekly monitoring notes from the archaeologist. All reports produced will be submitted to the City of Riverside, Eastern Information Center and interested tribes:

- i. Information on the location of, up to, 13 protein residue tests on the site and one or more control sites, will be provided in the final report.

MM CR 4: Cultural Sensitivity Training: The County Certified Archaeologist and Native American Monitors shall attend the pre-grading meeting with the developer/permit holder's contractors to provide Cultural Sensitivity Training for all construction personnel. This shall include the procedures to be followed during ground disturbance in sensitive areas and protocols that apply in the event that unanticipated resources are discovered. Only construction personnel who have received this training can conduct construction and disturbance activities in sensitive areas. A sign in sheet for attendees of this training shall be included in the Phase IV Monitoring Report. (DEIR, pp. 5-33–5-36.).

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-G:

The proposed Project will operate as a logistics center, which is consistent with the land use designations for the site in both the GP 2025 and SCBPSP. Because the site is located between the residences and several further-away warehouses within the SCBPSP area, construction of the Project will reduce some of the impacts from these warehouses to the residences.

This comment states that residents were misled about what was to be built on this property, but does not provide any explanation, information, specific examples, or other support for the comment. It is not known where the residents receive such information as the Sycamore Highlands Specific Plan and the Sycamore Canyon Business Park Specific Plan were both created prior to anything being built in either Specific Plan and the land use designation of Project site has not changed since the creation of these Specific Plans. A comment which draws a conclusion without elaborating on the reasoning behind, or the factual support for, those conclusions does not require a response. Under CEQA, the lead agency is obligated to respond to timely comments with "good faith, reasoned analysis" (CEQA Guidelines 15088(c)). These responses "shall describe the disposition of the significant environmental issues raised .

. . [and] giv[e] reasons why specific comments and suggestions were not accepted (CEQA Guidelines, 15088(c)). To the extent that specific comments and suggestions are not made, specific responses cannot be provided and, indeed, are not required (*Browning-Ferris Industries of California, Inc. v. City Council of the City of San Jose* [1986] 181 Cal.App.3d 852 [Where a general comment is made, a general response is sufficient]).

The DEIR fully addresses and compares the impacts associated with the Project. The impact analysis and significance conclusions presented in the DEIR are based upon and supported by substantial evidence, including the technical analyses (i.e., traffic, noise, air quality, greenhouse gas emissions, biology, hydrology, land use consistency, and cultural resources) provided as appendices to the DEIR (DEIR Appendices C-J). The technical information is summarized and presented in the body of the DEIR, thus providing in full the factual basis for the conclusions.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-H:

State CEQA Guidelines Section 15125 provides that a project’s environmental setting is the “baseline” for environmental analysis. The “environmental setting” is defined as the physical conditions in the vicinity of a project as they exist at the time the notice of preparation (NOP) is published or, in the absence of an NOP, at the time environmental analysis is commenced. (CEQA Guidelines, § 15125.) Thus, contrary to the commenter’s assertion, it would not have been appropriate to use 2001 as the baseline for the DEIR’s evaluation of potential noise impacts from the Project.

A list of cumulative development Projects for consideration in the DEIR was prepared in consultation with the City of Riverside and the City of Moreno Valley to quantify impacts from all related development Projects in proximity to the Project site located within each city. Existing noise levels at the Project site were measured in December 2015, and would have taken into consideration any cumulative noise from the existing warehouses and distribution centers within the SCBPSP.

The commenter’s assertion that the NOP was only sent to 18 homes with two days’ notice prior to the community meeting is incorrect. The NOP was sent to 639 residents on August 18, 2015 and a scoping meeting was held in the community on August 26, 2015. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-I:

With respect to the selection of alternatives to be considered in an EIR, State CEQA Guidelines Section 15126.6(b) states “...the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.” That is, each alternative must be capable of avoiding or substantially lessening any significant effects of the proposed Project.

The Project site is zoned BMP on the City's Zoning Map, and is within one of four industrial zones within the City. Therefore, construction and operation of an office building at the Project site would not take full advantage of the unique development opportunities of the site, and would not meet the Project objectives. Additionally, development of an office building would result in higher density employment, which would substantially increase the number of vehicle trips to the Project site. Based on the *ITE Trip Generation Manual (9th Edition)* approximately 1.4 million SF of a general office building office use would generate over 15 million daily trips,¹ which is a substantial increase over the 2,409 daily trips generated by the proposed Project. (DEIR, p. 5.16-28.) Even if only 700,000 SF of office space was constructed on the Project site, this would result in over seven million daily trips. The increased number of trips would result in impacts greater than the proposed Project. This increased traffic would result in greater air quality and circulation impacts in the Project vicinity. Construction noise would be the same as the proposed Project regardless of the ultimate use, because the same type of equipment would be used. Thus, this alternative was not considered in the DEIR.

The "Original Project as Submitted" alternative was rejected from further consideration because it consisted of a total of 1.43 million square feet of logistics center uses at the Project site and would have generated substantially worse impacts on the adjacent residences than the 1.37 million square feet proposed Project. As a result of discussion with the City, the Applicant withdrew this proposal. (DEIR, p. 8-5.) Additionally, due to the location of the blue-line stream running through the center of the Project site, avoidance of this feature is not possible. (DEIR, Figure 5.4-2.) Rather, the Project proposes relocation of this blue-line stream to the Project's approximately 3-acre Mitigation Area, along the western edge of the Project site. The proposed Mitigation Area will vary in total width from 52 feet to 72 feet with a length of 2,008 feet totaling approximately three (3) acres. The Mitigation Area will include a low-flow channel (10- to 25-feet wide) designed to meander; thus creating a natural sinuosity to mimic a naturally occurring drainage. Vegetation within the Mitigation Area will be dominated by willow riparian scrub habitat (0.50 acres) with upland scrub and oaks along the upper banks (an additional approximately 2.5 acres). Based on the findings of the *Determination of Biologically Equivalent or Superior Preservation (DBESP)* for the Project (DEIR Appendix C.4), the habitat that will be created in the Mitigation Area will be superior to the existing drainage and habitat. A Habitat Mitigation Monitoring Program (HMMP) will also be prepared by the Applicant to describe the habitat creation and establish long-term success criteria. (DEIR, pp. 5.4-21.)

Alternative 3 – Reduced Density would reduce development by 30 percent in comparison to the proposed Project; however, it would meet the Project objectives to a lesser degree and due to the scarcity of sites of this size, the attendant land costs of sites of this size, and the low Inland Empire market lease rates for products of this type, the rate of return from the lease would be too low to justify the cost and risk of investment under the reduced density alternative. Further, this alternative would also result in significant and unavoidable impacts to air quality, noise, and transportation/traffic. (DEIR, p. 8-26 – 8-30.)

¹ ITE generation rate for general office is 11.03 daily trips per 1,000 SF.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-J:

State CEQA Guidelines Section 15126.2(c) identifies, as examples of significant irreversible changes in the environment, such things as use of nonrenewable natural resources, irreversible changes in land use, and irreversible damage to the environment resulting from environmental accidents associated with a project.

Although the Project site is currently undeveloped, the proposed Project is consistent with the land use designations for the site in both the GP 2025 and the SCBPSP; therefore, construction and operation of the Project will not result in an irreversible change to land use. (DEIR, p. 3-14.) Additionally, the existing blue-line stream will be relocated to the western edge of the Project site, not removed. The existing MSHCP jurisdictional areas at the Project site consist of two drainages (1.65 and 0.02 acres, respectively), as well as 0.24 acres of isolated riparian habitat (DEIR, **Table 5.4-A – Summary of Jurisdictional Areas**). As a result of discussions with the resource agencies during pre-application meetings on December 9, 2015, and February 10, 2016, the Project incorporates an approximately 3-acre Mitigation Area along the western edge of the Project site to mitigate for a proposed 1.91-acre permanent impact to riparian/riverine habitat. The proposed Mitigation Area will vary in total width from 52 feet to 72 feet with a length of 2,008 feet. The Mitigation Area will include a low-flow channel (10- to 25-foot wide) designed to meander; thus creating a natural sinuosity to mimic a naturally occurring drainage. Vegetation within the Mitigation Area will be dominated by willow riparian sage scrub habitat (0.50 acres) with upland scrub and oaks along the upper banks (an additional approximately 2.5 acres). (DEIR, p. 5.4-18.)

A Determination of Biologically Equivalent or Superior Preservation (DBESP) was prepared to demonstrate that the habitat created in the Mitigation Area will be considered superior in quality to the existing drainage and habitat. A Habitat Mitigation Monitoring Plan (HMMP) will also be prepared by the applicant to describe the habitat creation and establish long-term success criteria. (DEIR, p. 5.4-18.)

Diesel fuel is not a long-term energy use and, as analyzed in Section 7.0 of the DEIR, the Project will not result in wasteful or inefficient and unnecessary consumption of energy. (DEIR, p. 7-22.) Although solar panels will not be installed at the Project site now, roofing will be solar-ready to accommodate later installation of solar panels, if economically feasible, as included in the Project's design features and mitigation measure **MM AQ 7** listed below.

MM AQ 7: All buildings shall be designed with "solar ready" roofs that can structurally accommodate future installation of rooftop solar panels. Prior to building permit issuance, the City shall verify roofs are "solar ready." If future building operators are providing rooftop solar panels, they shall submit plans for solar panels to the City prior to occupancy.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-K:

The GP 2025 designates the site as Business/Office Park (B/OP), which allows for development of logistics centers such as the proposed Project. Although the Project includes a General Plan Amendment, this amendment would modify the circulation plan of the Project vicinity and is not related to land use at the site. (DEIR, p. 3-17.)

Further, the Project site is zoned Business and Manufacturing Park (BMP) on the City's Zoning Map, consistent with the SCBPSP, which is only one of four industrial zones within the City. Additionally, office uses would create more traffic and more frequent trips, which in turn would result in greater air quality and noise impacts than the proposed Project. Manufacturing was evaluated in the DEIR as Alternative 2. Alternative 2 would result in twice as many trips as the proposed Project and none of the environmental impacts would be decreased in comparison to the proposed Project. Impacts would remain significant and unavoidable in relation to air quality, noise, and transportation/traffic. Further, impacts related to air quality, greenhouse gas emissions, noise and transportation/traffic would be greater under this alternative in comparison to the proposed Project due to the increased vehicle traffic associated with Alternative 2. (DEIR, pp. 8-17-8-22.) Development of an office building at the Project site would not meet the Project objectives, and would result in underutilization of the site for its intended use as one of the few industrial areas within the City. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-L:

The Project includes a General Plan Amendment (P16-0101) to the GP 2025 Circulation Element; Specific Plan Amendment (P16-0101) to the Circulation Plan of the SCBPSP; Tentative Parcel Map No. 36879 to combine 17 existing parcels into two lettered lots; Minor Conditional Use Permit (P14-1082) to allow for warehouses greater than 400,000 square feet; and Grading Exceptions and Variance (P16-0103) to implement the Project's proposed grading plan and reduction of parking. (DEIR, pp. 3-17-3-23.) Once onsite landscaping is mature, only the top of Building 2 will be visible from the residences to the north of the Project site (DEIR, **Figures 5.1-2a, -2b, -2c – Photo Simulations**).

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-M:

Comment noted. The Project Applicant is not required to implement additional sustainability features beyond those required by Green Building Codes. According to the California Air Resources Board's (CARB's) *Air Quality and Land Use Handbook*, CARB recommends to avoid the placement of new sensitive land uses within 1,000 feet of a distribution center (accommodating more than 100 trucks per day, 40 trucks with transport refrigeration units

(TRUs), or where TRUs operate more than 300 hours a week) and to take into account the configuration of existing distribution centers and avoid locating residences and other sensitive land uses near entry and exit points. However, these are recommendations, not mandates, and land use decisions ultimately lie with the local agency which needs to balance other considerations. (DEIR, p. 5.3-18.)

At present, electric trucks for distribution are not common in the industry, and the code does not currently require installation of electric truck charging stations. Trucks incapable of using the electrical transport refrigeration unit hookups shall be prohibited from accessing the site, as set forth in the lease agreement and mitigation measure **MM AQ 14**. (DEIR, p. 5.3-22.)

MM AQ 14: Electrical hookups shall be installed at all loading docks to allow transport refrigeration units (TRUs) with electric standby capabilities to plug in when TRUs are in use. Trucks incapable of using the electrical hookups shall be prohibited from accessing the site as set forth in the lease agreement. The City shall verify electrical hookups have been installed prior to occupancy and shall confirm lease agreement includes such language.

As described in DEIR Section 3.2.6 (Sustainability Features), the Project will meet or exceed all applicable standards under California's Green Building Code (CalGreen) and Title 24. (DEIR, pp. 5.3-20-22.) The proposed Project includes mitigation measures that exceed the requirements of the CalGreen Code and Title 24 standards. **MM AQ 1** requires solar or light-emitting diodes (LEDs) to be installed for outdoor lighting. **MM AQ 2** ensures that the site and buildings be designed to take advantage of daylight, such that the use of daylight is an integral part of the lighting systems. **MM AQ 3** requires trees and landscaping to be installed along the west and south exterior building walls to reduce energy use and vegetative or man-made exterior wall shading devices or window treatments shall be provided for east, south, and west-facing walls with windows. **MM AQ 4** requires cool pavement in parking areas. **MM AQ 5** and **MM AQ 6** require the use of Energy Star rated windows, space heating and cooling equipment, light fixtures, and appliances. **MM AQ 8** requires water-efficient landscaping with a preference for xeriscape landscape palette. **MM AQ 18** ensures that at least 10 percent of the construction materials used for the Project be locally produced and/or manufactured. **MM AQ 19** requires that green building materials, or those materials that are resource efficient and recycled and manufactured in an environmentally friendly way, will be used where feasible.

MM AQ 1: Solar or light-emitting diodes (LEDs) shall be installed for outdoor lighting. Prior to building permit issuance, the City shall verify building plans contain these features.

MM AQ 2: Indoor and outdoor lighting shall incorporate motion sensors to turn off fixtures when not in use. The site and buildings shall be designed to take advantage of daylight, such that use of daylight is an integral part of the lighting systems. Prior to building permit issuance, the City shall verify building plans contain these features.

- MM AQ 3:** Trees and landscaping shall be installed along the west and south exterior building walls to reduce energy use. Vegetative or man-made exterior wall shading devices or window treatments shall be provided for east, south, and west-facing walls with windows. Landscaping and/or building plans shall contain these features and are subject to City verification prior to building permit issuance.
- MM AQ 4:** Light colored “cool” roofs shall be installed over office area spaces and cool pavement shall be installed in parking areas. Prior to building permit issuance, the City shall verify building plans contain these features.
- MM AQ 5:** Energy efficient heating and cooling systems, appliances and equipment, and control systems that are Energy Star rated shall be installed in future office improvement plans. Refrigerants and heating, ventilation, and air conditioning (HVAC) equipment shall also be selected to minimize or eliminate the emission of compounds that contribute to ozone depletion and global warming. The efficiency of the building envelope shall also be increased (i.e., the barrier between conditioned and unconditioned spaces). This includes installation of insulation to minimize heat transfer and thermal bridging and to limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption. The City shall verify tenant improvement plans include these features. The City shall verify these features are installed prior to issuance of occupancy permits.
- MM AQ 6:** Energy Star rated windows, space heating and cooling equipment, light fixtures, appliances, or other applicable electrical equipment shall be installed. Prior to building permit issuance, the City shall verify building plans contain these features.
- MM AQ 8:** The Project’s landscaping plans shall incorporate water-efficient landscaping, with a preference for xeriscape landscape palette. Landscaping plans shall be approved by the City prior to building permit issuance.
- MM AQ 18:** Locally produced and/or manufactured building materials shall be used for at least 10% of the construction materials used for the Project. Verification shall be submitted to the City prior to issuance of a building permit.
- MM AQ 19:** “Green” building materials shall be used where feasible, such as those materials that are resource efficient and recycled and manufactured in an environmentally friendly way. Verification of the feasibility or infeasibility

of securing these materials shall be submitted to the City prior to issuance of a building permit.

Project-related emissions will not result in a significant elevated cancer or non-cancer risk, and parking will be provided at the Project site so that employees may elect to ride their bicycle to work. (DEIR, Tables 5.3-I, 5.3-J.) Thus, the Project will comply with the California Green Building Code and this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-N:

Comment noted. This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

The Fire Access/Parks Maintenance Road will consist of a 12-foot wide road with a minimum 10-foot wide, 4-inch thick decomposed gravel surface and 13.5-foot vertical clearance. (DEIR, p. 3-39.) **Figure 3-11 – Conceptual Landscape Plan** in the DEIR currently shows trees within the Fire Access/Parks Maintenance Road; however, these trees will be moved so that they are adjacent to the trail and not within the road (DEIR, **Figure 3-11**). Building 1 is setback approximately 235 feet from the southern property line, and there will be sufficient space to accommodate landscaping, the trail, and the Fire Access/Parks Maintenance Road. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-P:

The Project will introduce new sources of light in the form of security lighting, internal roadway and parking lot lighting within the Project site for public safety and operation of the proposed structures. The proposed lighting at the Project site has been designed in accordance with all applicable City codes and will be appropriately shielded and directed away from the residential and wilderness park areas adjacent to the site to reduce spillover. Impacts with regard to new sources of light and glare were determined to be less than significant through compliance with the City's Zoning Code, mitigation measures **MM AES 10** and **MM HAZ 4**, any other applicable lighting requirements and regulations, and compliance with Staff Recommended Conditions of Approval listed below. (DEIR, pp. 5.1-29–5.1-31.) To ensure that light spill will not take place, **MM AES 10** will be revised in the Final EIR (FEIR) as follows:

MM AES 10: To ~~reduce~~eliminate light spill and glow into the residential backyards to the north, lighting mounted on the north wall of Building 2 shall be placed on this wall as low as feasible to provide the required security lighting.

MM HAZ 4: The following additional MARB-required risk-reduction Project design features shall be incorporated into Project design:

- The Project will not include:

- Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA-approved navigational signal light, visual approach slope indicator, or FAA-approved obstruction lighting;
 - Any use which would cause sunlight to be reflected towards an aircraft engaged in an initial straight climb following takeoff or towards an aircraft engaged in a straight final approach towards a landing at an airport;
 - Any use which would generate smoke or water vapor or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within the area;
 - Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation; or
 - Although such uses are not anticipated, in Building 1: Children's schools, day care centers, libraries, hospitals, skilled nursing and care facilities, congregate care facilities, places of assembly, noise sensitive outdoor nonresidential uses and hazards to flight are prohibited.
- Any outdoor lighting that is installed will be hooded or shielded so as to prevent either the spillage of lumens or reflection into the sky. All outdoor lighting will be downward facing;
 - March Air Reserve Base must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result;
 - No skylights will be included;
 - Exterior walls will consist of 8-inch-thick solid grouted, 4-hour rated concrete masonry;
 - Building roof will consist of structural steel columns and steel roof structure framing elements, including structural steel decking;
 - Use of windows will be limited to only the structures' main entrances;
 - The structure will incorporate an enhanced fire sprinkler system to exceed California Fire Code requirements; and
 - The structure will include emergency exits that exceed the exit requirements set forth by the Riverside County Fire Code by approximately 15 to 20 percent.
 - The applicant will not propose any uses prohibited or discouraged in Compatibility Zones C1 or D. (DEIR, p. 5.1-36.)

With regard to lighting and the height of any light poles adjacent to the residences to the north, Staff Recommended Condition of Approval 20 requires:

An exterior lighting plan shall be submitted to Design Review staff for review and approval. A photometric study and manufacturer's cut sheets of all exterior lighting on the building, in the landscaped areas and in the parking lots shall be submitted with the exterior lighting plan. All on-site lighting shall provide a minimum intensity of one foot-candle and a maximum of ten foot-candles at ground level throughout the areas serving the public and used for parking, with a ratio of average light to minimum light of four to one (4:1). The light sources shall be hooded and shielded to minimize off-site glare, shall not direct light skyward and shall be directed away from adjacent properties and public rights-of-ways. No light spill shall be permitted on the MSHCP Conservation Area (Sycamore Canyon Wilderness Park). If lights are proposed to be mounted on buildings, down-lights shall be utilized. Light poles shall not exceed 14 feet in height, including the height of any concrete or other base material, **within the 100-foot setback between Building 2 and the residential property lines to north** ~~property line~~ and **shall not exceed 20 feet in height, including the height of any concrete or other base material,** elsewhere on the property. (Planning Commission Memorandum for the November 3, 2016 Meeting, available at the City of Riverside Economic and Community Development Department, Planning Division or may be downloaded from: <http://riversideca.legistar.com/gateway.aspx?M=F&ID=820840d7-e9e6-4bfa-a5bb-f886243a00ed.pdf>, accessed October 26, 2016.)

For the reasons set forth above, impacts with regard to Project lighting will be less than significant with mitigation. (DEIR, p. 5.1-31.)

The City will also require the Project Applicant to submit exterior lighting plans to the City for approval to ensure that proposed lighting at the site is consistent with City codes and the Sycamore Canyon Wilderness Park Stephens' Kangaroo Rat Management Plan and Updated Conceptual Development Plan (DEIR, p. 5.1-10). Although the Project does not propose any lighting into the Sycamore Canyon Wilderness Park, mitigation measures **MM AES 10** as revised and **MM BIO 7** will further ensure that site lighting is designed to eliminate edge effects and other impacts on the Park, consistent with the MSHCP Urban/Wildlands Interface Guidelines (DEIR, **Table 5.4-B – Project Compliance with MSHCP Urban/Wildlands Interface Guidelines**).

MM BIO 7: The Project shall also comply with the following BMPs, not outlined in Volume I, Appendix C of the MSHCP:

- Any night lighting shall be directed away from natural open space areas and directed downward and towards the center of the development. Energy-efficient LPS or HPS lamps shall be used exclusively to dampen glare.
- During construction, equipment storage, fueling, and staging areas will be located on areas of the site with minimal risks of direct drainage into riparian areas or other sensitive habitats. These designated areas will be located in such

a manner as to prevent any runoff from entering sensitive habitat. Necessary precautions will be taken to prevent the release of cement or other toxic substances into surface waters. Project related spills of hazardous materials will be reported to appropriate entities including but not limited to applicable jurisdictional City, UFWS, and CDFW, RWQCB regulated areas and will be cleaned up immediately and contaminated soils removed to approved disposal areas.

- To avoid attracting predators of the species of concern during site grading and construction activities, the Project site will be kept clean of debris. All food related trash items will be enclosed in sealed containers and regularly removed from the site(s). This requirement will be addressed by the biologist conducting the training session prior to site grading.

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-Q:

Because the Project site is located west of the of existing industrial development and south of the majority of the residences adjacent to the Project site, the Project will not block views of the Box Springs Mountains from these locations. Although construction of the buildings may impact views of the lower parts of the Box Springs Mountains from the residences located adjacent to the western boundary of the Project site, this will be a less than significant impact due to the much greater relative height of the mountains compared to the proposed development. (DEIR, p. 5.1-11.) Any construction at the Project site will reduce views of the Sycamore Canyon Wilderness Park and the existing warehouses and distribution centers from residences located north of the Project site; however, the Project site is zoned as Business-Manufacturing Park (BMP) in the City's Zoning Code, thus, it is reasonable to assume that the site will be developed at some point. The Project's proposed Building 1 will be approximately 41 feet in height and Building 2 will be approximately 37 feet in height. Thus, the proposed structures are consistent with the maximum building height allowed and this does not represent a significant change in the viewshed. (DEIR, p. 5.1-11.)

Therefore, development of the Project site will have a less than significant impact on scenic vistas. This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-R:

Comment noted. The discussion in the DEIR is not limited to resources within state scenic highways. The commenter correctly asserts that mature trees will be removed from the site, including red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), Gooding's black willow (*Salix douglasii*), narrow-leaf willow (*Salix exigua*), Fremont cottonwood (*Populus fremontii ssp. fremontii*), and mule fat (*Baccharis salicifolia*) within the riparian area at the Project site. (DEIR, p. 5.4-2.) As a result of discussions with the resource agencies during pre-application meetings on December 9, 2015, and February 10, 2016, the Project incorporates an approximately 3-acre Mitigation Area along the western edge of the Project site to mitigate for a proposed 1.91-

acre permanent impact to riparian/riverine habitat. The proposed Mitigation Area will vary in total width from 52 feet to 72 feet with a length of 2,008 feet. The Mitigation Area will include a low-flow channel (10- to 25-feet wide) designed to meander; thus creating a natural sinuosity to mimic a naturally occurring drainage. Vegetation within the Mitigation Area will be dominated by willow riparian sage scrub habitat (0.50 acres) with upland scrub and oaks along the upper banks (an additional approximately 2.5 acres). (DEIR, p. 5.4-18.)

As discussed in the DEIR and the *Determination of Biologically Equivalent or Superior Preservation* (DBESP) prepared for the Project (DEIR, Appendix C.4), vegetation and habitat created within the mitigation area will be superior to the habitat and trees lost onsite. (DEIR, p. 5.4-18.) Vegetation in this mitigation area will consist of native plants, similar to the type that will be removed, and will be maintained and monitored via the Habitat Mitigation Management Plan (HMMP) prepared for the Project to ensure the biological success of this area. Further, the Mitigation Area will be permanently conserved in a conservation easement, or equivalent, and managed in perpetuity with funds from a non-wasting endowment. (DEIR, p. 5.4-18.)

Thus, the assessment that Project implementation will have a less than significant impact to scenic resources is correct. This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-S:

It is also important to note that the riparian feature will not be removed; rather, it will be relocated to the mitigation area along the western edge of the Project site. This recreated habitat will be biologically superior to the existing drainage and habitat and will feature a meandering drainage to mimic natural conditions, and will be planted with a variety of native plants. (DEIR, p. 5-18.)

As a result of discussions with the resource agencies during pre-application meetings on December 9, 2015, and February 10, 2016, the Project incorporates an approximately 3-acre Mitigation Area along the western edge of the Project site to mitigate for a proposed 1.91-acre permanent impact to riparian/riverine habitat. The proposed Mitigation Area will vary in total width from 52 feet to 72 feet with a length of 2,008 feet. The Mitigation Area will include a low-flow channel (10- to 25-feet wide) designed to meander; thus creating a natural sinuosity to mimic a naturally occurring drainage. Vegetation within the Mitigation Area will be dominated by willow riparian sage scrub habitat (0.50 acres) with upland scrub and oaks along the upper banks (an additional approximately 2.5 acres). (DEIR, p. 5.4-18.)

As discussed in the DEIR and the *Determination of Biologically Equivalent or Superior Preservation* (DBESP) prepared for the Project, the habitat that will be created in the proposed Mitigation Area is considered superior in comparison to the existing drainage because it will:

- continue to convey the runoff from the residential development to the northwest of the Project site;
- be planted with native riparian and riparian scrub habitat;
- meander like a naturally occurring drainage; and

- provide better quality habitat for nesting birds.

A Habitat Mitigation Management Plan (HMMP) will be prepared by the Applicant to describe the habitat creation and establish long-term success criteria. The HMMP will be submitted to the resource agencies (i.e., the USFWS and CDFW) for review prior to any ground disturbance. The Mitigation Area will be permanently conserved in a conservation easement, or equivalent, and managed in perpetuity with funds from a non-wasting endowment. (DEIR, p. 5.4-18.) Development of this site will not *significantly* change the visual character of the area because there are already views of industrial areas from the residences to the north and northwest. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-T:

Although Building 2 will be more visible until landscaping reaches maturity, it is important to note that these visual impacts will continually lessen in time as landscaping grows. All tree species proposed at the Project site have been strategically selected to mitigate views of the logistics center buildings at maturity and all are anticipated to reach a height of at least 10 feet within the first five to ten years after installation. At full maturity, trees at the Project site will range from 25 to 70 feet in height.² The City standard when reviewing landscaping is to require, at a minimum, that 20% of the trees be 24-inch box in size and 10% of the trees at least 36-inch box or larger at the time of planting. The Project will obstruct views of the hills in the distance; however, because these hills already feature a variety of industrial developments, this does not represent a significant change in the visual character of the area.

The topography of the Sycamore Canyon Wilderness Park will limit views of the Project site from the majority of the park. Although views of the logistics center buildings will be available from portions of the Wilderness Park, current views from the park across the Project site are of the existing single family homes and existing industrial development; therefore, this does not represent a significant change. Additionally, although the proposed Building 1 and the truck yard will be somewhat visible from portions of the Sycamore Canyon Wilderness Park that are at the same elevation as the Project site, landscaping at the Project site will screen views of Building 1 and the truck yard. The onsite trail and Mitigation Area along the Project's southern boundary will further buffer views of the buildings at the Project site from users within the Sycamore Canyon Wilderness Park. (DEIR, **Table 5.1-A – Line of Sight Analysis.**) Thus, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-U:

Although the Project site is currently undeveloped, it is designated as BMP in the City's Zoning Code and as a planned Industrial land use in the SCBPSP. Therefore, the Project will not eliminate open space.

² From email between WEBB and Project Landscape Architect on 11/28/16.

Further, because there are already warehouses and distribution centers within the Sycamore Canyon Business Park, the construction of the proposed Project will not introduce a new land use to the area, and will not result in a substantial degradation of the existing visual character of the site or its surroundings.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-V:

Mitigation measures **MM AES 1** and **MM AES 4** are not intended to block the view of the trucks, which will only be visible by approximately 5 residences to the west of the Project site within an approximately 195-foot gap between Building 2 and Building 1. The visual character of the surrounding area already includes existing industrial uses and views of trailer and truck parking. The City is requiring the Project Applicant to install an 8-foot tall decorative block wall (**MM AES 1**) because the City has determined that 8-feet is sufficient to create a better visual appearance and cut down on noise attenuation. (DEIR, p. 5.1-8.)

MM AES 1: To provide separation between the Project site and the adjacent residential uses and to be consistent with the wall constructed on the project located east of the Project site and north of Dan Kipper Drive, the developer shall install an 8-foot tall wall constructed of two-sided decorative masonry material along the Project site's northern property line and that portion of the Project's westerly property line adjacent to existing residential uses. As part of the Design Review process and prior to the issuance of a grading permit, the Project developer shall submit a revised site plan showing the 8-foot tall wall and the proposed materials and decorative treatment for such wall to the City of Riverside Community and Economic Development Department, Planning Division and the Parks, Recreation, and Community Services Department for review and approval.

Fencing, screening views of the parking lot, loading docks, and trailer parking areas from the public right-of-way, in addition to the on-site fencing securing the trailer parking areas and the metal, manual operated gates that permit access to these areas as required by **MM AES 4**, will block views of trucks from the public right-of-way.

MM AES 4: In order to screen views of the parking lot, loading docks, and trailer parking areas from the public right-of-way, the on-site fencing securing the trailer parking areas and the metal, manual operated gates that permit access to these areas shall incorporate an opaque layer (i.e. mesh or screening) that will withstand wind loads of 85 miles per hour. As part of Design Review and prior to the issuance of a grading permit, a revised site plan and materials board showing the proposed screening shall be submitted to the Community and Economic Development Department, Planning Division for review and approval.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-W:

See Response to Comment 34-P. Glare is caused either by improperly aimed or blocked lighting sources or reflection of a light source against a surface. The building will primarily consist of concrete, which is not a reflective surface; therefore, glare is not anticipated to be a significant issue. Additionally, all lighting installed at the Project site will be subject to the City's "Standard Lighting Condition," mitigation measure **MM AES 10** as revised (see Response to Comment 34-P), as well as the MSHCP Urban-Wildlands Interface Guidelines which require, among other things, light sources to be shielded to minimize off-site glare. (DEIR, pp. 5.1-30 – 5.1-31.)

All lighting at the Project site will be properly shielded, as required by City policy and the Riverside County Airport Land Use Commission (ALUC). This includes a requirement that the Project Applicant submit lighting plans to City Planning staff for review. Lighting spillover onto adjacent properties will be limited to the greatest extent feasible, given economic and technological constraints as well as the necessity to provide sufficient light at the Project site for safety of workers at the site. Mitigation measure **MM HAZ 4** (see Response to Comment 34-P) identifies several March Air Reserve Base-required risk-reduction Project design features, including an additional requirement that lighting is hooded or shielded to prevent spillage of lumens or reflection into the sky.

Mitigation measure **MM AES 10** also requires that light mounted on the north side of Building 2 shall be placed on the building wall as low as feasible to provide the required security lighting while preventing as much light spill and glow into the residential backyards to the north (DEIR, p. 5.1-30).

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-X:

See Responses to Comments 34-P and 34-W. As discussed in Response to Comment 34-P, mitigation measure **MM AES 10** will be revised to eliminate any light spillage onto adjacent properties. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-Y:

See Response to Comments 34-O through 34-X. This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-Z:

The intent of mitigation measure **MM AES 9** is to require articulation to break up the long expanses of wall, and not incorporation of windows in non-office areas of the buildings. To clarify this intent, mitigation measure **MM AES 9** will be revised in the FEIR as follows:

MM AES 9: To offset the long expanses of wall surfaces on Building 1 and Building 2, prior to the issuance of a grading permit as part of the Design Review process, revised

architectural plans and elevations shall be submitted for review and approval by the City of Riverside Design Review staff.

- a. The revised architectural plans and building elevation for the west elevation of Building 1 shall include some of the same elements used on the front elevation to offset the long (1,394 feet) expanse of wall surface, including providing design techniques like those at the office areas on every corner of Building 1 (excluding windows). The new design shall implement articulation to create pockets of light and shadow.
- b. The revised architectural plans and building elevation for the north elevation of Building 2 shall be articulated in the same manner as the front elevation and shall include the same elements used on the east elevation to offset the long (978 feet) expanse of wall surface. The exterior features provided at the office areas shall be provided on every corner of Building 2. The new design shall implement articulation to create pockets of light and shadow.

In particular, mitigation measure **MM HAZ 4** (see Response to Comment 34-P) restricts use of windows to only the structures' main entrances.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-AA:

See Response to Comment 34-B. This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-BB:

As noted on page 3-22 of the DEIR, A Minor Conditional Use Permit (MCUP) is required to allow for warehouses greater than 400,000 square feet pursuant to City of Riverside Municipal Code, Title 19, Zoning Code, Chapter 19.150, Base Zones Permitted Land Uses. This requirement is to provide for a discretionary review that looks at both the City of Riverside Good Neighbor Guidelines in terms of the proposed use's compatibility and whether the proposed use can provide significant jobs to warrant the number of truck trips a building of such a size will generate." The City adopted *Good Neighbor Guidelines Siting New and/or Modified Warehouse/Distribution Facilities* to provide the City and developers with a variety of strategies that can be used to reduce diesel emissions from heavy-duty trucks that deliver goods to and from warehouse and distribution centers, such as the proposed Project. (DEIR, p. 5.3-16.) As discussed in DEIR Appendix M, the proposed Project is consistent with all of the goals and strategies outlined in the City's *Good Neighbor Guidelines*. (DEIR Appendix M, pp. M-66–M-72.) Because each Project and property have different characteristics and circumstances, the City's *Good Neighbor Guidelines* do not include recommendations regarding setbacks between distribution center buildings and adjacent residential uses. Rather, it recommends that a Health Risk Assessment (HRA) be prepared for any warehouse project within 1,000-feet of residential properties. The HRA should indicate how the project can be

designed to limit health risks. The site has been designed in order to minimize impacts on the adjacent residential area, including placement of driveways and onsite parking areas away from the adjacent residential areas, consistent with the policies contained in the City's *Good Neighbor Guidelines*. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-CC:

This comment does not make any statements or questions regarding the analysis in the DEIR other than to incorrectly assert that Building 1 will have dock doors and truck exhaust directly facing the residences. Only Building 2 interfaces with residential boundaries.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-DD:

CEQA requires that the data in an EIR not only be sufficient in quantity, but also presented in a manner calculated to adequately inform the public and decision makers, who may not be previously familiar with the details of the project. (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal. 4th 412, 442.) In accordance with CEQA, the Project's compliance with the City's *Good Neighbor Guidelines* is discussed on page 5.3-16 of the DEIR and in greater depth in Appendix M to the DEIR. (DEIR Appendix M, pp. M-66-M-72). Thus, contrary to the commenter's assertion, this discussion is not "scattered here and there in EIR appendices" or "buried in an appendix," and is fully-compliant with CEQA. (*Id.*; *California Oak Found. v. City of Santa Clarita* (2005) 133 Cal.App.4th 1219, 1239.)

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-EE:

The proposed Project does not change the existing site development of the residential properties and, therefore, will not eliminate pedestrian access between the Very Low Density Residential to the west and the Medium Density Residential to the north because there is not authorized access across the Project site. The Project will not affect access provided on City sidewalks. The Project site is owned by a private developer; therefore, the site is not intended to provide connection between the Very Low Density Residential and Medium Density Residential areas and any pedestrian activity currently occurring at the Project site constitutes illegal trespass. The Project Applicant has the legal authority to develop the site and restrict access between these two areas via their property. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-FF:

See Response to Comment 34-BB.

The City does not have any designated truck routes, and the Project Applicant is not responsible for establishing these routes. However, pursuant Chapter 10.56 of the City's Municipal Code, commercial vehicles (trucks) over 10,000 pounds are prohibited from using Lochmoor Drive, Fair Isle Drive and Sycamore Canyon Boulevard, between El Cerrito Drive and University Drive. Residents who notice trucks where restrictions are in place can call 311 and their complaint will be routed to the Traffic Department and Police Department so that the appropriate response can be coordinated.

In response to the comment letter received from the South Coast Air Quality Management District (SCAQMD), a more detailed Screening Health Risk Assessment (HRA) was prepared in 2016 for the Project (included in Appendix B of the DEIR) and a Refined HRA per SCAQMD comments was prepared in November 2016 (found on the City's website at <http://www.riversideca.gov/planning/pdf/eir/sycamorecanyon/Refined-HRA-Report-11-9-16.pdf>). The Refined HRA is consistent with the requested SCAQMD guidance and methodology. According to both the HRA included as Appendix B of the DEIR and the Refined HRA, none of the cancer or non-cancer thresholds will be exceeded as a result of Project construction or operation for workers or residents within the proposed Project vicinity. Therefore, the Project will not result in the exposure of sensitive receptors to substantial pollutant concentrations during Project construction or operation. (DEIR, p. 5.3-34.)

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-GG:

The noise study was conducted to evaluate potential noise impacts associated with the proposed Project not those associated with other projects. The ambient noise measurements were taken near sensitive receptors adjacent to the Project site as these are the most likely to be affected by Project noise. The noise model, SoundPLAN, is a three-dimensional noise model that takes into consideration the acoustic effects of existing and proposed topography as well as existing and proposed buildings. So, any sound reflection associated with the proposed buildings was taken into consideration. It is also important to understand that existing ambient noise levels were taken to document existing ambient noise levels and were not taken as representative noise measurements to be utilized in the noise model. The SoundPLAN noise model has an expansive library with a variety of construction, industrial and recreational noise reference levels. Appropriate assumptions were entered for Project operations, including back-up beeper noise, trailer drop noise, HVAC noise etc. Meteorological effects were taken into account in the noise model. SoundPLAN allows the user to input temperature, humidity and air pressure. The following meteorological parameters were entered: humidity 49%, average annual temperature 66°F, air pressure 985 mbar.

Noise events that occur within the line of sight of the homes on the ridge west of the project site are expected to be more audible than those events that may be closer in distance but not within a direct line of sight.

With regard to the footnote to this comment, the existing fences provide minimal attenuation. However, the ambient noise measurements used for the analysis in the DEIR are those that were taken on the Project site outside the fence.

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-HH:

The commenter correctly references the GP 2025 Noise/Land Use Compatibility Criteria shown on DEIR **Figure 5.12-2 – Noise/Land Use Compatibility Criteria** and stated on page 5.12-15 of the DEIR. As stated on pages 5.12-13 of the DEIR,

In compliance with California Government Code Section 65302, the GP 2025 Noise Element identifies noise and land use compatibility criteria that identifies “Normally Acceptable,” “Conditionally Acceptable,” “Normally Unacceptable,” and “Conditionally Unacceptable” noise exposure ranges for various land uses as shown in **Figure 5.12-2 – Noise/Land Use Compatibility Criteria** (Figure N-10 of the GP 2025).

These standards are primarily used for planning purposes such as determining a project’s compatibility with a proposed site with regard to existing and future acoustical impacts upon a project site sourced from the surrounding environment. In other words, the noise impacts *from* existing surrounding land uses *to* a proposed project.

The “Normally Acceptable” range is defined as: specific land use is satisfactory, based on the assumption that any building is of normal conventional construction, without any special noise insulation requirements.

The “Conditionally Acceptable” range is defined as: new construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

The “Normally Unacceptable” range is defined as: new construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in design.

The “Conditionally Unacceptable” range is defined as: new construction or development should generally not be undertaken, unless it can be demonstrated that noise reduction requirements can be employed to reduce noise impacts to an acceptable level. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

The City includes industrial uses in two different land use categories as shown on **Figure 5.7-5**, “Industrial, Manufacturing Utilities, Agriculture,” and “Freeway Adjacent Commercial, Office, and Industrial Uses.” Because the proposed Project is not adjacent to the I-215 freeway, it fits within the “Industrial, Manufacturing Utilities, Agriculture” land use category. Noise levels for industrial uses in this land use category are shown as being “Normally Acceptable” ranging up to 70 dBA CNEL/L_{dn}, “Conditionally Acceptable” ranging from 70 to 80 dBA CNEL/L_{dn} and “Normally Unacceptable” starting from 80 dBA CNEL/L_{dn}.

The highest allowable noise level for the category of “Industrial, Manufacturing Utilities, Agriculture” in the most stringent “Normally Acceptable” range is 70 dBA CNEL/L_{dn}.

Noise impacts projected onto the adjacent properties from the Project are regulated by Sections 7.25.010 and 7.35.010 of the Riverside Municipal Code, not by the GP 2025 land use compatibility criteria. Section 7.25.010 and 7.35.010 of the Riverside Municipal Code provide general regulations with regard to noise that is produced and projected onto surrounding land uses. These limits are applicable to noise generated as a result of the Project’s temporary construction and ongoing operational activities. **Table 5.12-E – Riverside Municipal Code Exterior Nuisance Sound Level Limits** from the DEIR, reproduced below, clearly defines the City’s noise level limits for applicable land uses in the Project vicinity. (DEIR, pp. 5.12-15–5.12-16.) Section 7.25.010 of the City’s Municipal Code also provides criteria that apply to any exceedance of the limits and outlines parameters by which a noise exceedance would be evaluated. (DEIR, p. 5.12-16.) This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Table 5.12-E – Riverside Municipal Code Exterior Nuisance Sound Level Limits^a

Land Use Category	Time Period	Noise Level Limit
Residential	Night (10 p.m. to 7 a.m.)	45 dBA
	Day (7 a.m. to 10 p.m.)	55 dBA
Office/Commercial	Any Time	65 dBA
Industrial	Any Time	70 dBA
Public Recreation Facility	Any Time	65 dBA

Notes:

^a Source: City of Riverside, Riverside Municipal Code, Title 7 Noise Control, Table 7.25.010A

Response to Comment 34-II:

Construction and operation at the Project site will be consistent with the noise standards outlined in the City’s Municipal Code Section 7.35.010(B), which makes it unlawful to load and unload from 10:00 PM to 7:00 AM (DEIR, pp. 5.12-31, 5.12-37). The Project is consistent with this Code requirement because all loading and unloading will take place inside either Building 1

or Building 2. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-JJ:

Although mature landscaping will provide more noise reduction, even newly installed immature landscaping will act as a barrier between the Project site and the residences to reduce some noise attenuation from the Project site. Nonetheless, noise impacts will be compliant with City standards for all residences to the north of the Project site with incorporation of all design features and mitigation measures to minimize noise impacts.

The second paragraph of Section 5.12.4 – Project Design Features of the DEIR will be revised as follows:

“Due to the proximity of the homes north of the Project site, the Project proposes 64-feet of landscaping along the northern boundary. Building 2 does not propose any dock doors or parking on the north side of the building, so as to locate those activities away from the Sycamore Highlands neighborhood. As shown on **Figure 3-10 – Site Plan**, all of docks and truck parking associated with Building 2 are located south of the building. Vehicular parking is located on the east and west of Building 2. The proposed Project will be designed to allow for ~~right-in, right-out~~ only turns at all Project driveways in order to limit the amount of vehicles (both cars and trucks) from using Dan Kipper Drive.”

The Project will allow for right-out only at all Project driveways to direct traffic away from the residential area to the north of the Project site. Traffic will be allowed to make left-in turns from all driveways along Lance Drive. This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-KK:

The comment accurately summarizes the construction impacts as discussed on pages 5.12-21–5.12-24.

With regard to operational noise at receptor nos. 3 and 4, as shown on DEIR **Figure 5.12-6 – Operational Noise Levels (Leq) with Mitigation**, noise at the residences will be equal to or less than 45 dBA, which is the City’s nighttime exterior noise standard. Noise at the property line between the Project site the residences (receptor nos. 31, 32, and 33 as shown on DEIR **Figure 5.12-6**) will also be less than 45 dBA. As discussed in the DEIR, because the noise barrier would be installed on private property, neither the City nor the Project Applicant can ensure that mitigation measure **MM NOI 16** is actually implemented and therefore impacts remain significant and unavoidable. (DEIR, pp. 5.12-28, 5.12-34.)

MM NOI 16: Prior to finalization of building permit, the temporary 12-foot noise barrier shall be removed and the Project applicant shall work with City Design Review staff and the property owners of receptor location 3 (6063 Bannock) and receptor location 4 (6066 Cannich) to determine the design and materials for a

noise barrier that is mutually acceptable to the Project Applicant, City Design Review staff, and the property owners. The noise barrier shall be ten-foot high installed at the top of the slope of the residential properties west of the Project site. The designed noise screening will only be accomplished if the barrier's weight is at least 3.5 pounds per square foot of face area without decorative cutouts or line-of-site openings between the shielded areas and the project site. Noise control barrier may be constructed using one, or any combination of the following materials: masonry block; stucco veneer over wood framing (or foam core), or 1-inch thick tongue and groove wood of sufficient weight per square foot; glass (1/4 inch thick), or other transparent material with sufficient weight per square foot; or earthen berm.

Prior to the issuance of a Certificate of Occupancy for the Project, the Project applicant shall construct said noise barrier provided all of the property owners upon whose property the barrier is proposed to be constructed provide written authorization for such construction. The Project applicant shall provide written notice to the property owners of its intent to commence wall construction at least 90-days prior to the anticipated construction date. If all of the property owners do not authorize the construction of the wall in writing, including providing the applicant with all requisite legal access to the affected properties, within 60 days of applicant's written notice, the applicant shall instead pay to the property owners the equivalent cost to construct the wall, based on applicant's good faith estimate.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-LL:

The DEIR accurately interprets and applies the City's Noise Code. The Project's operational noise levels shown on DEIR **Figure 5.12-5 – Project Operational Noise Levels (Leq) No Mitigation** and **Figure 5.12-6 – Project Operational Noise Levels (Leq) with Mitigation** includes all noise associated with Project operations including: vehicles arriving, trucks and trailers moving around the Project site, back-up beepers, hitching and unhitching of trailers, and the movement of trailers into the loading docks averaged over a one hour period. During any given one hour period, there will be a maximum noise level (L_{max}). The L_{max} , generally results from an impulsive noise event, which is why the City's Municipal Code places time limits for noise events exceeding the exterior noise standard as discussed below.

Section 7.25.010 of the Riverside Municipal Code outlines exterior and interior nuisance sound level limits and provides criteria that apply to any exceedance of the designated noise nuisance limits (DEIR, **Table 5.12-E – Riverside Municipal Code Exterior Noise Sound Level Limits** and **Table 5.12-F – Riverside Municipal Code Interior Noise Sound Level Limits**). These criteria are primarily used for the purposes of code enforcement, but are provided below to outline the parameters by which a noise exceedance would be evaluated. The applicable exterior noise criteria state:

- A. Unless a variance has been granted as provided in this chapter, it shall be unlawful for any person to cause or allow the creation of any noise which exceeds the following:
1. The exterior noise standard of the applicable land use category, up to 5 decibels, for a cumulative period of more than 30 minutes in any hour; or
 2. The exterior noise standard of the applicable land use category, plus 5 decibels, for a cumulative period of more than 15 minutes in any hour; or
 3. The exterior noise standard of the applicable land use category, plus 10 decibels, for a cumulative period of more than 5 minutes in any hour; or
 4. The exterior noise standard of the applicable land use category, plus 15 decibels, for the cumulative period of more than 1 minute in any hour; or
 5. The exterior noise standard for the applicable land use category, plus 20 decibels or the maximum measured ambient noise level, for any period of time.
- B. If the measured ambient noise level exceeds that permissible within any of the first four noise limit categories, the allowable noise exposure standard shall be increased in five decibel increments in each category, as appropriate, to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.
- C. If possible, the ambient noise level shall be measured at the same location along the property line with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the offending noise is inaudible. If the measurement location is on the boundary between two different districts, the noise shall be the arithmetic mean of the two districts.

Likewise, the applicable interior noise sound level limits and criteria for exceedance state:

- A. No person shall operate or cause to be operated, any source of sound indoors which cause the noise level, when measured inside another dwelling unit, school or hospital, to exceed:
1. The interior noise standard for the applicable land category area, up to five decibels, for a cumulative period of more than five minutes in any hour;
 2. The interior noise standard for the applicable land use category, plus five decibels, for a cumulative period of more than one minute in any hour;

3. The interior noise standard for the applicable land use category, plus ten decibels or the maximum measured ambient noise level, for any period of time.
- B. If the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level.
- C. The interior noise standard for various land use districts shall apply, unless otherwise specifically indicated, within structures located in designated zones with windows opened or closed as is typical of the season.

The noise levels disclosed on page 5.12-31 of the DEIR for back-up beepers and trash compactors are the maximum noise, the L_{max} , not the L_{eq} . Thus, because refrigeration units, back-up warning beepers, and trash compactors would not be in use continuously at the Project site, noises associated with these activities would be subject to the short-term decibel exceedance limits outlined in Section 7.25.010 of the City's Municipal Code. For instance, if a trash compactor were to operate for one-half hour within any hour, noise associated with operation could be up to 5 decibels greater than the City's exterior noise standard without being in violation of the City's Noise Code.

With regard to transportation refrigeration units (TRUs), electrical hookups will be provided at the Project site, and only TRUs with electric standby capabilities will be allowed at the Project site, as set forth in the lease agreement and mitigation measure **MM AQ 14** (listed previously in Response to Comment 34-M). (DEIR, pp. 5.12-28, 5.12-46.) Similarly, noise associated with back-up beepers will be reduced through implementation of mitigation measure **MM NOI 13** listed below, which requires the use of ambient-sensitive self- or manual-adjusting back up alarms. (DEIR, pp. 5.12-31, 5.12-46.)

MM NOI 13: To reduce noise associated with the use of back-up alarms, either ambient-sensitive self-adjusting backup alarms or manually adjustable alarms shall be used on all equipment in use on the Project site that requires a backup alarm. Ambient sensitive self-adjusting backup alarms increase or decrease their volume based on background noise levels. The alarm self-adjusts to produce a tone that is readily noticeable over ambient noise levels (a minimum increment of 5 decibels is typically considered readily noticeable), but not so loud as to be a constant annoyance to neighbors. Close attention shall be given to the alarm's mounting location on the machine in order to minimize engine noise interference, which can be sensed by the alarm as the ambient noise level. These alarms shall be mounted as far to the rear of the machine as

possible. An alarm mounted directly behind a machine radiator will sense the cooling fan's noise and adjust accordingly.

If manually-adjustable alarms are used, each alarm shall be set at the beginning of each day and night shift. The manual setting feature eliminates the machine mounting location problem of the ambient-sensitive self-adjustable backup alarms. Alternatively, back-up movements can be supervised with a guide and flagging system.

Noise associated with operation of trash compactors onsite will not exceed the daytime noise standard of 75 dBA L_{max} or the nighttime maximum noise standard of 65 dBA L_{max} at the top of the slope west of the Project site. For the two residences at receptors 3 and 4, noise will not exceed the City's standard, contingent on construction of the 10-foot noise barrier outlined in mitigation measure **MM NOI 16** (listed in Response to Comment 34-G). (DEIR, pp. 5.12-32, 5.12-47.) However, because the noise barrier would be installed on private property, neither the City nor the Project Applicant can ensure that mitigation measure **MM NOI 16** is actually implemented. Therefore, impacts remain significant and unavoidable. (DEIR, pp. 5.12-28, 5.12-34.)

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-MM:

Trash compactors will not operate continuously, and so noise associated with their operation is subject to the City's 65 dBA nighttime instantaneous noise standard as discussed in Response to Comment 34-MM.

However, because the noise barriers outlined in mitigation measure **MM NOI 16** (listed in Response to Comment 34-G) would require installation on private property and neither the Project proponent nor the City have the authority to require implementation of this mitigation measure, the DEIR appropriately concluded that impacts would be significant and unavoidable. (DEIR, pp. 5.12-34, 5.12-44, 5.12-48.) This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-NN:

Noise modeling prepared for the Project takes into account noise associated with operation of both of the proposed buildings. Further, although Building 1 has 72 dock doors, many of these doors will not be directly adjacent to the residences, which will reduce noise impacts from these dock doors on the residences.

Although the Noise Impact Analysis (NIA) prepared for this Project included a single back-up beeper to determine the L_{max} ; however, the L_{eq} for Project operations included the back-up beepers, and hitching/unhitching anticipated to be associated with normal operation of the Project site averaged over a one-hour period. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-OO:

Operational noise impacts on the Sycamore Canyon Wilderness Park were analyzed in the Draft Environmental Impact Report as receptor no. 34 in the noise study (DEIR, **Figure 5.12-5 – Operational Noise Levels (Leq) No Mitigation**, and **Figure 5.12-6 – Operational Noise Levels (Leq) with Mitigation**). The operational noise level at the property line between the Project site and the Sycamore Canyon Wilderness Park is 55 dBA L_{eq} . Because this noise level is less than the Municipal Code noise standard for public recreational facilities (65 dBA L_{eq}), operational noise impacts to the Sycamore Canyon Wilderness Park are less than significant.

Thus, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-PP:

There is a distinction between exposure of persons to excessive groundborne vibration and exposure to structures to excessive groundborne vibration. The Federal Transit Administration (FTA) has two different criteria depending on whether the receiver is a structure or a person.

With regard to impacts to persons (annoyance) as noted in the comment, the *Federal Transit Administration Transit Noise and Vibration Impact Assessment* (May 2006) has guidance on how to assess noise and vibration impacts of proposed mass transit projects. Vibration impact criteria are presented in Chapter 8 (Table 8-1) of this document. This criterion is in relation to annoyance of affected persons and is not applicable to impacts to structures. The criteria are based on the maximum root-mean-square (rms) vibration levels for repeated events of the same source.

Table 8-1 in the *Federal Transit Administration Transit Noise and Vibration Impact Assessment* presents criteria based on land use type and event frequency. The sensitive receptors that may be affected by the proposed Project would fall into Category 2, (residential land uses). The criteria is divided based upon the number of expected events per day to take into account that the community is likely to be more tolerant of vibration events that occur with less frequency in any given day. Specifically, frequent events are defined as more than 70 events per day, occasional events range between 30 and 70 events per day, and infrequent events are fewer than 30 events per day. Impact criteria for residential land uses is 72 VdB for frequent events; 75 VdB for occasional events, and 80 VdB for infrequent events.

Table 1 in the *Sycamore Canyon Business Park Warehouse Noise Impact Analysis* (DEIR Appendix I) (the “NIA”) presents “Vibration Source Levels for Construction Equipment” (Federal Transit Administration 2006). DEIR **Table 5.12-I – Vibration Source Levels for Construction Equipment** includes the same information. NIA Table 2 and DEIR **Table 5.12-H – Typical Human Reaction and Effect on Buildings Due to Groundborne Vibration** includes “Typical Human Reaction and Effect on Buildings due to Groundborne Vibration (Caltrans 2002). The NIA acknowledges that vibratory construction equipment may annoy persons within 100 feet of on-site Project construction.

Use of a vibratory roller, which may occur within 25 feet of an adjacent receptor could generate up to 0.21 PPV (94 VdB) at a distance of 25 feet; and operation of a large bulldozer (0.089 PPV (87 VdB) at a distance of 25 feet (two of the most vibratory pieces of construction equipment) for a few days. Groundborne vibration at sensitive receptors associated with this equipment would drop off as the equipment moves away. For example, as the vibratory roller moves further than 100 feet from the sensitive receptors, the vibration associated with it would drop below 75 VdB. Considering that use of vibratory construction equipment will be short term and temporary the use of a threshold intended to evaluate annoyance related to train pass-bys (permanent) is not appropriate.

Further, any annoyance would only occur during site grading and preparation activities as trailer trucks are prohibited from use of the driveway located between the sensitive receptors located north of the Project site and the proposed building and sensitive receptors upslope and to the west of the Project site are too far away to be affected.

With regard to structural damage, NIA Table 2 and DEIR **Table 5.12-H** identifies PPV levels between 0.4 and 0.6 as vibration levels greater than normally expected from traffic, but would cause “architectural” damage and possible minor structural damage. As shown in NIA Table 1 and DEIR **Table 5.12-H**, a vibratory roller could produce a PPV of 0.21 inch per second at 25 feet and a large bulldozer could produce up to 0.089 PPV at 25 feet. Page 23 of the NIA acknowledged that the use of vibratory equipment within 25 feet of adjacent residential dwelling units could result in structural damage. The DEIR includes mitigation measures **MM NOI 6** and **MM NOI 9** to minimizing vibration impacts.

MM NOI 6: All equipment staging during all phases of construction shall be located in areas that will create the greatest distance between construction-related noise/vibration sources and the residences to the north and west and the Sycamore Canyon Wilderness Park to the west. (DEIR, p. 5.12-45.)

MM NOI 9: It is acknowledged that some soil compression may be necessary along the Project boundaries; however, the use of heavy equipment or vibratory rollers and soil compressors along the Project site’s north and western boundaries shall be limited to the greatest degree feasible. (DEIR, p. 5.12-46.)

Thus, according to the Federal Transit Agency’s (FTA) *Transit Noise and Vibration Impact Assessment* guidance document, reinforced concrete, steel, or timber buildings can tolerate groundborne vibration levels of 0.5 peak particle velocity (PPV) without experiencing structural damage. The proposed Project will use this type of construction; therefore, the fact that some buildings are more fragile is irrelevant to this Project. (DEIR, p. 5.12-37.)

With respect to human response, the FTA asserts that individuals can experience vibration levels up to 80 decibel (VdB) root mean squared (RMS) before being adversely affected by vibration from infrequent events. “Infrequent event” is defined by the FTA as fewer than 30 vibration events of the same kind per day; therefore, it is reasonable to apply this standard because it is likely that groundborne vibration-generating activities will not be used

continuously at the site.³ Thus, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-QQ:

Groundborne vibration attenuates quickly with distance. Therefore, although use of heavy construction equipment generates vibration levels of 87 RMS at a distance of 25 feet, this vibration will be reduced to below the 80 RMS threshold for human annoyance at the nearest residences located approximately 81 feet from the area to be graded to the nearest residential structure to the west of the Project site and 46 feet from the area to be graded to the nearest residential structure to the north.

Groundborne vibration attenuates quickly with distance and the PPV level from heavy equipment would be approximately 0.44 PPV at 40 feet, which is equivalent to 30.8 RMS, based on FTA and Caltrans methodologies.⁴ As stated in Section 5.12 of the DEIR, the majority of construction activity will be more than 40 feet from these residential structures and would not be considered annoying. (DEIR, pp. 5.12-37.) Contrary to the commenter's assertions, the DEIR's analysis and conclusions related to the Project's potential impacts from groundborne construction vibration are adequate, supported by substantial evidence and consistent with the requirements of CEQA.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-RR:

This comment is in reference to the information presented in DEIR **Table 5.12-J – Pre- and Post Project Noise Levels in CNEL** on pages 5.12-39–5.12-40 of the DEIR. Noise impacts at several of the receptors, particularly the receptors north of the Project site are anticipated to decrease in part because the buildings proposed at the Project site will cut down on the amount of noise reaching the residences from the other warehouses and distribution centers in the Sycamore Canyon Business Park, and the Project includes mitigation measure **MM NOI 16** (listed in Response to Comment 34-G). If implemented, **MM NOI 16** will place a noise barrier at the top of the slope for the residences identified as receptor nos. 3 and 4 on DEIR **Figure 5.12-6 – Operational Noise Levels (L_{eq}) with Mitigation**.

However, because the implementation of mitigation measure **MM NOI 16** is uncertain, post-Project Community Noise Equivalence Level (CNEL) was determined for receptor nos. 3 and 4 as shown in the table below. The mitigated operational noise levels for receptor nos. 3 and 4 with mitigation measure **MM NOI 15** (listed below) only (i.e., no noise barrier as required by **MM NOI 16**) is shown in Figure A, which is attached to this response.

³ Federal Transit Agency, *Transit Noise and Vibration Impact Assessment Guidelines*, Table 8-1. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf

⁴ According to Caltrans, RMS value is approximately 70 percent of PPV. Source: http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf_p.7.

Monitored Location ^a	Measured Noise Level (CNEL ^b) In dBA	Receptor No. ^c	Mitigated Operational Noise Level (with MM NOI 15 only) (CNEL) In dBA	Difference In dBA	Substantial Increase?	Mitigated Operational Noise Level (includes MM NOI 15 and MM NOI 16) (CNEL) In dBA	Difference In dBA	Substantial Increase?
ST2/LT2	52	4 (1 st floor)	52	0	No	46	-6	No
		4 (2 nd floor)	54	2	No	51	-1	No
		3 (1 st floor)	51	-1	No	46	-6	No
		3 (2 nd floor)	54	2	No	50	-2	No

Thus, as indicated in the above table, even if the noise barrier identified in mitigation measure **MM NOI 16** is not constructed, with implementation of mitigation measure **MM NOI 15** (listed below), there will be a less than substantial increase (i.e., less than 5 dBA) from the Project’s operational noise on receptor nos. 3 and 4.

MM NOI 15: A restriction of nighttime use between the hours of 10:00 PM to 7:00 AM shall be implemented for the portion of the loading area and trailer parking located just south of Building 2 and within 360 feet of the western property line as shown on **Figure 5.12-6 – Operational Noise Levels (L_{eq}) with Mitigation.** (DEIR, p. 5.12-46.)

This amplification of the noise analysis to exclude implementation of mitigation measure **MM NOI 16** on two receptors does not constitute significant new information that would require recirculation of the DEIR. (CEQA Guidelines, § 15088.5.)

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR

Response to Comment 34-SS:

Although Sycamore Canyon Wilderness Park is categorized as a reserve/open space park by the City, the GP 2025 does not contain specific CNEL standards for this type of parkland. (DEIR, p. 5.15-1, **Figure 5.12-2.**) Therefore, the CNEL standard for neighborhood parkland was used because it represents the most similar land use to the Sycamore Canyon Wilderness Park. Additionally, sensitive receptors consist of structures, people, and equipment that may be sensitive to noise for CEQA purposes. Thus, the Park is not considered a sensitive receptor and so although it will experience an increase in noise levels above 5 dBA; this is not a significant impact. (DEIR, pp. 5.12-43–5.12-44.)

The SoundPLAN model was used to quantify anticipated noise impacts as a result of Project construction and operation. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-TT:

The off-site noise (traffic) analysis applies to off-site receptors along road segments affected by Project-generated off-site traffic. Off-site traffic would not noticeably increase noise levels at sensitive receptors located adjacent to the Project site that would be affected by on-site operational noise. Therefore, it is appropriate that these impacts were modeled separately. This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-UU:

The intent of mitigation measure **MM NOI 8** is to ensure that haul truck deliveries only occur during the times approved for construction equipment operation, which will reduce the amount of noise at the site. (DEIR, p. 5.12-24.) At the time the Notice of Preparation was released for the DEIR, the Riverside Municipal Code Section 7.35.010 prohibited construction, drilling, repair, alteration, grading, or demolition work that would result in sound creating a noise disturbance across a residential or commercial property line between the hours of 7:00 PM and 7:00 AM on weekdays, between 5:00 PM and 8:00 AM on Saturdays, and at any time on Sunday or a federal holiday (DEIR, pp. 5.12-37 – 5.12-38). On August 18, 2016 (taking effect 30-days later), the City Council of the City of Riverside adopted Ordinance 7341 amending the Noise Code to exempt construction noise between the hours of 7:00 a.m. and 7:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays from the standards of the Noise Code. Nevertheless, the DEIR continued to use the previous version of the Noise Code and associated standards throughout the DEIR. Thus, haul truck deliveries will also be limited to these hours pursuant to mitigation measure **MM NOI 8**.

MM NOI 8: Haul truck deliveries shall be limited to the same hours specified for construction equipment.

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-VV:

Project-related traffic impacts were analyzed at several intersections along Sycamore Canyon Boulevard in the Traffic Impact Analysis (TIA) prepared for the Project (DEIR, Appendix J). All of the study intersections will continue to operate at an acceptable Level of Service with the addition of Project traffic along with traffic associated with ambient growth in the area (DEIR, pp. 5.16-57). Therefore, it can be reasonably assumed that emergency responders stationed at the firehouse on Sycamore Canyon Boulevard will be able to exit their facility and traverse Sycamore Canyon Boulevard when responding to an emergency. This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-WW:

The commenter's assertion that calling Sycamore Canyon Wilderness Park a "reserve/open space park" obfuscates its true role is not accurate. Per the GP 2025, Parks and Recreation

Element, the City's park system consists of three park classifications (local parks, regional / reserve parks and signature parks) plus County/Other Parks and Joint Use Facilities. The local park classification includes four park types (Pocket Parks, Neighborhood Parks, Community Parks and Special Use). Some parks fall under multiple categories, such as Fairmount Park which is a Signature Regional/Reserve Park but also serves as a local park (with neighborhood and community park amenities). Sycamore Canyon Wilderness Park is classified as a Regional/Reserve park which includes natural open space parks and Wilderness Reserve Parks.

The park classifications are designations that put each of the parks in broader categories identifying ownership and development impact categories; e.g. – Parks designated as regional/reserve parks are eligible for Regional/Reserve funds collected to mitigate development impact to the park system vs. improvements to local parks, signature parks or parks not owned by the City wouldn't be eligible to use Regional/Reserve funds collected.

The Sycamore Canyon Wilderness Park Stephens' Kangaroo Rat Management Plan and Updated Conceptual Development Plan (the SKR Management Plan) calls for installation of *either* a 7-foot high masonry wall or fence constructed per City of Riverside Parks, Recreation, and Community Services Department Standard Detail No. 5520 and specifications with a 100-foot wide stubble management zone, or firebreak, on the park side of the fence to be maintained by the City. (DEIR, p. 5.15-6.) The SKR Management Plan indicates that the masonry wall acts as a heat deflector from wildfires and eliminates any need for fuel management along the boundary of the Park. The wall also serves to screen the adjacent industrial/commercial service areas. The SKR Management Plan also allows for the possible substitution of the wall with a 6-foot high open iron fence. If the City permits an open iron fence, a 100-foot wide stubble management zone shall be maintained in between the industrial property and wilderness park. The City elected to condition the alternative iron fence for the following reasons: (i) the development includes a Mitigation Area in between the park and development which will provide an effective screen and buffer, (ii) the fence is not subject to constant graffiti, and (iii) as a whole the City's Parks, Recreation, and Community Services Department felt it would be more visually pleasing than the block wall. Also, the City already maintains a large stubble management area which would meet the 100-foot wide zone.

The Project will implement mitigation measure **MM AES 2**, to ensure that the fence between the Project site and the Wilderness Park is consistent with the Plan.

MM AES 2: For consistency with the Sycamore Canyon Wilderness Park Management Plan, the Project developer shall install fencing along the western boundary of the Project site. The fence and gate shall be constructed per the specifications of the City of Riverside Parks, Recreation, and Community Services Department Standard Detail No. 5520 and specifications. If the developer chooses to install a taller fence, a maximum 8-foot high fence is permitted. Note that increased fence height may require increased post, footing and rail sizes, which shall be engineered and stamped approved by a structural engineer. As part of Design Review and prior to the issuance of a

grading permit, the developer shall submit a revised site plan showing this fence, the modified standard detail (if a fence taller than 8 feet is proposed), and specifications to the City of Riverside Community and Economic Development Department, Planning Division and the Parks, Recreation, and Community Services Department for review and approval.

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-XX:

The Conceptual Landscape Plan will be revised to remove the landscaping currently shown within the Fire Access/Parks Maintenance Road shown on **Figure 3-11** of the DEIR pursuant to mitigation measure **MM AES 7** (listed below).

The previously planned Kangaroo Court was intended to serve as a Trailhead, emergency vehicle access, and that it would be used to access a future interpretive center. The nature center was constructed at an alternate site off of Central Avenue and no longer requires road access at this location. The proposed trailhead access with parking lot to be constructed as detailed in mitigation measure **MM AES 5** is adequate and meets the needs of the City's Parks, Recreation, and Community Services Department. The emergency vehicle access has been reviewed and approved as adequate access by the City's Fire Department as long as mitigation measures are implemented.

MM AES 5: To provide safe and controlled pedestrian and bicycle access to the Sycamore Canyon Wilderness Park in a manner consistent with the design and materials of the fence in mitigation measure **MM AES 2**, the Project developer shall:

- a. Construct the proposed trail consistent with the City of Riverside Parks, Recreation, and Community Services Department trail standards. As part of Design Review and prior to the issuance of a grading permit, a revised site plan that identifies this standard and shows the Parks, Recreation, and Community Services Department Standard Trail Construction detail shall be submitted to the Parks, Recreation, and Community Services Department for review and approval.
- b. Install a galvanized steel swing arm gate access gate that locks in the open and closed positions at the trail and parking lot driveway entry. As part of Design Review and prior to the issuance of a grading permit, a revised site plan that shows the detail for this gate and Standard Detail No. 5110 shall be submitted to the City of Riverside Community and Economic Development Department, Planning Division and the Parks, Recreation, and Community Services Department for review and approval.
- c. Install pedestrian/bicycle gates between the trail and parking lot and the beginning of the trail and between the western terminus of the trail and the

Sycamore Canyon Wilderness Park per the City's standard pedestrian/bicycle gate. These gates shall be minimum 4-feet wide and constructed of material to match Standard Detail No. 5520 identified in mitigation measure **MM AES 2**. The pedestrian/bicycle gates shall be lockable in the open and closed position. As part of Design Review and prior to the issuance of a grading permit, a revised site plan that shows the detail for these gates shall be submitted to the City of Riverside Community and Economic Development Department, Planning Division and the Parks, Recreation, and Community Services Department for review and approval.

- d. Install Parks, Recreation, and Community Services Department Standard PVC trail fence along the northern side of the trail in-between the Fire Access/Parks Maintenance Road and along those portions of the southern side of the trail where the grade drops 3 feet or more. As part of Design Review and prior to the issuance of a grading permit, a revised site plan that references the Standard 3-rail PVC fence detail only and includes Parks, Recreation, and Community Services Department Standard PVC trail fence shall be submitted to the Parks, Recreation, and Community Services Department for review and approval.
- e. Install Parks, Recreation, and Community Services Department standard trail sign at the Project's western property line and at the proposed parking lot on Lot B of Tentative Parcel Map 36879. As part of Design Review and prior to the issuance of a grading permit, a revised site plan that includes a note that states "PRCSD standard trail sign" and Parks, Recreation, and Community Services Department standard trail sign detail 12 shall be submitted to the Parks, Recreation, and Community Services Department for review and approval.

Specifically, the fire access road will be 12-feet wide with a minimum 10-foot wide, 4-inch thick decomposed gravel surface and 13.5-foot vertical clearance as required by City of Riverside Parks, Recreation, and Community Services Department and the City Fire Department and mitigation measures **MM AES 6** and **MM AES 7**.

MM AES 6: To provide access for fire and parks maintenance vehicles consistent with the intent of the Sycamore Canyon Wilderness Park Stephens' Kangaroo Rat Management Plan and Updated Conceptual Development Plan, the Project developer shall:

- a. Design and construct the Fire Access/Parks Maintenance Road per the City of Riverside Fire Department requirements, including but not limited to, providing a 36,000 pound wheel load. As part of Design Review and prior to the issuance of a grading permit, the Fire Access/Parks Maintenance Road detail shall be submitted to the Community and Economic Development Department, Planning Division, the Parks, Recreation, and Community Services Department, and the City Fire Department for review and approval.

- b. Install vehicular gates between the vehicular access road on the south end of the Project site and the eastern terminus of the Fire Access/Parks Maintenance Road and between the western terminus of the Fire Access/Parks Maintenance Road and the Sycamore Canyon Wilderness Park. The vehicular gates shall be double galvanized steel swing arm gates a minimum of 12-feet in width and provided with a Knox padlock. The gates shall lock in the open and closed positions per Park Standard Detail No. 5110. The gate at the western property line shall be constructed to match Standard Detail No. 5520. As part of Design Review and prior to the issuance of a grading permit, a revised site plan that shows the details of these gates and Park Standard Detail No. 5110 shall be submitted to the Community and Economic Development Department, Planning Division and the Parks, Recreation, and Community Services Department for review and approval.

MM AES 7: To ensure there is adequate clearance for the fire vehicles, prior to building permit issuance the landscape plans shall be revised to relocate the trees shown on the trail and the Fire Access/Parks Maintenance Road such that all trees shall be setback from the trail and Fire Access/Parks Maintenance Road easements a minimum of 5 feet. Once planted, the developer shall maintain all trees such that a minimum 13.5-foot vertical clearance over the Fire Access/Parks Maintenance Road and a minimum 8.5-foot vertical clearance over the trail is provided and maintained. The revised landscape plans shall be designed per the City's Water Efficient Landscape and Irrigation Ordinance adopted on December 1, 2015 (<http://aquarius.riversideca.gov/clerkdb/0/doc/215696/Page1.aspx>). The revised landscape plans shall be reviewed and approved by City Design Review staff and Western Municipal Water District as part of Design Review prior to the issuance of a grading permit.

Therefore, fire access to the eastern portion of the Sycamore Canyon Wilderness Park will be adequate and this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-YY:

With regard to the trip distribution (i.e. the trip directional orientation of Project-generated traffic) used in the *Revised Traffic Impact Analysis for the Sycamore Canyon Industrial Buildings 1 & 2* (the TIA) and the DEIR, the TIA was prepared by a registered professional traffic engineer with local experience and expertise in traffic modeling. The trip distribution used in the TIA is based on professional engineering judgement and was approved by the City as part of the scoping agreement. (See Appendix A of the TIA.) Factors taken into consideration in developing the trip distribution model include: the existing roadway system, existing traffic patterns, and existing and future land uses. The Project will prevent passenger car and truck egress onto Dan Kipper Drive by installing small barriers (referred to as "pork chops") at all three Project driveways that will limit left-out turns onto Lance Drive. (DEIR pp. 5.16-26.) This will force both outbound (i.e. leaving the Project site) passenger cars and trucks to turn south

onto Lance Drive to Sierra Ridge Drive and then east on Sierra Ridge Drive to Sycamore Canyon Boulevard (see **DEIR Figure 5.16-3 – Project Trip Distribution (Passenger Cars – Outbound)**, and **DEIR Figure 5.16-5 Project Trip Distribution (Trucks – Outbound)**). From the intersection of Sierra Ridge Drive and Sycamore Canyon Boulevard, outbound vehicles will either turn north or south to travel to I-215 or other surrounding roadways. (DEIR, pp. 5.16-26.) From the intersection of Sierra Ridge Drive/Sycamore Canyon Road, it is approximately 0.7 miles to the Eastridge-Eucalyptus interchange and approximately 0.9 miles to the Fair-Isle/Box Springs interchange. Additionally, the Eastridge-Eucalyptus interchange is geometrically easier for trucks to turn at than the Fair Isle-Box Springs interchange. The Eastridge-Eucalyptus interchange is a single point interchange (SPI) which has large sweeping radii for all turning movements. The Fair Isle-Box Springs interchange is a partial diamond/partial hook ramp design with relatively small radii for many turning movements. For these reasons, it is reasonable to expect that more trucks will use the Eastridge-Eucalyptus interchange.

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-ZZ:

With regard to the differences between the City of Moreno Valley’s trip generation and the trip generation rates used in the TIA and the DEIR, please refer to Response to Comment 34-D.

The number of truck trips was disclosed in in the DEIR’s Project Description on page 3.43 and on page 5.16-28 of the DEIR in **Table 5.16-F – Project Trip Generation Rates**. A total of 917 truck trips will be generated by the Project, including: 156 2-axle truck trips, 208 3-axle truck trips, and 553 4-axle truck trips. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-AAA:

There was a typographical error in the daily trip generation rate for 4+ axle trucks in the DEIR; however, this does not impact the analysis because the TIA did not have a typo and all of the analysis presented in the DEIR is based off of the TIA.

Nonetheless, the 4+ axle trip rates will in DEIR **Table 5.16-E – Trip Generation Rates** will be revised in the FEIR as follows:

Table 5.16-E – Trip Generation Rates

Land Use	Unit	Peak Hour Trip Rates						Daily
		AM			PM			
		Total	In	Out	Total	In	Out	
High-Cube Warehouse Land Use Category: 152	TSF ^b							
Trucks (4+ Axle)		0.018	0.013	0.013	0.024	0.007	0.007	0.0386

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-BBB:

With regard to the trip distribution used in the TIA and DEIR, please refer to Response to Comment 34-YY. This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-CCC:

With regard to traffic-related cumulative impacts as a result of the Alessandro Commerce Center and the Freeway Business Center, traffic from these projects would be accounted for as part of the 2 percent ambient growth rate used in the TIA. To account for ambient growth in the Project area, a two percent per year ambient growth rate was applied to existing traffic volumes to account for area-wide growth that is not reflected by cumulative development project.⁵ Ambient growth was added to daily and peak hour traffic volumes on surrounding roadways in addition to traffic generated by the Project. (DEIR, pp. 5.16-9, 5.16-29.)

Response to Comment 34-DDD:

With regard to trip distribution, refer to Response to Comment 34-YY. As described below, counts were conducted in July 2015 and adjusted per the independent professional judgement of the City’s Traffic Engineer to more accurately reflect anticipated Project conditions when the schools in the Project vicinity are in session. Additionally, trucks over 10,000 pounds are already prohibited from traveling on Fair Isle Drive, Lochmoor Drive, and Sycamore Canyon Boulevard, between El Cerrito Drive and University Drive pursuant to Chapter 10.56 of the City’s Municipal Code.

Existing AM and PM peak period intersection turning movement counts were conducted in July 2015 and are included in Appendix C to the TIA. The counts were increased per agreement with the City of Riverside since counts were taken during the off-school period of July 2015. (DEIR, p. 5.16-17; DEIR Appendix J, p. 3-2.) The following are the edits to the counts listed by intersection number. The counts used in the TIA were increased (based on older counts taken when school was in session) to simulate vehicles travelling through the intersections from residential neighborhoods to nearby schools.

Intersection	Increase in Counts
1. I-215 Northbound Ramps (NS) / Fair Isle Drive-Box Springs Road (EW)	+200 WBR in AM
2. Sycamore Canyon Boulevard (NS) / Fair Isle Drive (EW)	+200 NBT in AM
3. Sycamore Canyon Boulevard (NS) / I-215 Southbound Ramps (EW)	+200 NBT in AM

⁵ A two percent per year ambient growth rate is considered the industry standard for estimating growth in the region and was agreed upon during the traffic study scoping process. (DEIR, p. 5.16-33.)

Intersection	Increase in Counts
4. Sycamore Canyon Boulevard (NS) / Dan Kipper Drive (EW)	+200 NBT in AM
5. Sycamore Canyon Boulevard (NS) / Box Springs Boulevard (EW)	+200 NBT in AM
6. Sycamore Canyon Boulevard (NS) / Sierra Ridge Drive (EW)	+200 NBT in AM
7. Sycamore Canyon Boulevard (NS) / Eastridge Avenue (EW)	+200 NBT in AM +300 WBL in PM
8. Box Springs Boulevard (NS) / Eastridge Avenue (EW)	+300 WBT in PM
9. I-215 Ramps (NS) / Eastridge Avenue- Eucalyptus Avenue (EW)	+300 SBR in PM

Therefore, because the existing traffic was accurately quantified, and the trip distribution is appropriate, the projections in the TIA accurately quantified the significant impacts to the Northbound Ramps for Interstate-215 at Fair Isle Drive/Box Springs Road. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-EEE:

The DEIR evaluates the Project assuming 24-hour a day, seven days a week operations. This means trucks arriving at the Project site would be able to enter and not have to wait for the operator to open the gates. If the Project was not a 24/7 operation, the potential for truck queuing on public streets is the highest in the morning when it is expected that multiple trucks arrive at the Project site prior to the gates opening. The queuing capacity for Building 1 is approximately 32 to 35 trailer trucks, which is greater than the anticipated number of trucks expected to arrive at Building 1 during AM Peak Hours. Therefore, the queuing capacity of Building 1 will not be exceeded as shown in the DEIR on **Figures 5.16-10 – Site Queuing Analysis with 53’ Trailer Trucks** and **5.16-11 – Site Queuing Analysis with 48’ Trailer Trucks**. Although it is possible that during the AM Peak Hours the queuing capacity for Building 2 will be exceeded by three to four trailer trucks, this should not result in trucks queuing or parking on the residential streets in proximity to the Project site because there is designated commercial vehicle parking on portions of Box Springs Boulevard. (DEIR, p. 5.16-49.)

The second full paragraph on page 5.16-49 of the DEIR incorrectly described commercial vehicle parking on Sycamore Canyon Boulevard. This paragraph will be revised in the FEIR as follows:

“The queuing capacity for Building 2 is approximately five to six trailer trucks, which is less than the anticipated number of trucks expected to arrive at

Building 2 during AM Peak Hours (9 trailer trucks). Although it is possible that during the AM Peak Hours the queuing capacity for Building 2 will be exceeded by three to four trailer trucks, this should not result in trucks queuing or parking on the residential streets in proximity to the Project site because there is designated commercial vehicle parking on ~~Sycamore Canyon Boulevard~~ and portions of Box Springs Boulevard. Per Riverside Municipal Code 10.52.155(a), it is unlawful to park commercial vehicles (with a gross vehicle weight of 10,000 pounds or more) and all commercial trailers or semi-trailers on any public street, highway, road or alley within the City except in specific locations designated by the City Traffic Engineer and identified by signs indicating commercial vehicle parking is allowed. There are only five ~~six~~ streets in the City where commercial vehicle, commercial trailers, and semi-trailers may be parked: Atlanta Avenue, Box Springs Boulevard, Marlborough Avenue, Northgate Street, and Palmyrita Avenue, ~~and Sycamore Canyon Boulevard~~. Parking on Lance Drive and Sierra Ridge Drive is not permitted.” (DEIR, p. 5.16-49.)

Per Riverside Municipal Code 10.52.155(a), it is unlawful to park commercial vehicles (with a gross vehicle weight of 10,000 pounds or more) and all commercial trailers or semi-trailers on any public street, highway, road or alley within the City except in specific locations designated by the City Traffic Engineer and identified by signs indicating commercial vehicle parking is allowed. Residents who notice trucks where restrictions are in place can call 311 and will be routed to both Traffic and the Police Department so that these agencies can coordinate the appropriate response. Residents are encouraged to call 311 because it is a centralized system that ensures that staff can be efficiently dispatched to mitigate the situation without creating duplication among City staff responses.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-FFF:

See Responses to Comments 34-VV and 34-XX. The Fire Access/Parks Maintenance Road will be designed and constructed pursuant to the City of Riverside Fire Department Requirements to ensure that it provides sufficient access for fire emergency vehicles to access the Sycamore Canyon Wilderness Park in the event of an emergency, in accordance with mitigation measure **MM AES 6** (listed in Response to Comment 34-XX). (DEIR, p. 5.8-28.) Impacts to fire station egress will be less than significant because the traffic study area intersections in the vicinity of the fire station will continue to operate at an acceptable level of service. Thus, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-GGG:

A *Water Supply Assessment* was prepared by Western Municipal Water District and approved on February 17, 2016. The water provider for the site determined that the demand associated with development of the Project site is consistent with the overall projected increase in

commercial water demand within Western's Riverside Retail Area as set forth in Western's 2015 Urban Water Management Plan (DEIR, Appendix K). Thus, Western has determined that there will be enough water to serve the Project and this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-HHH:

The Metropolitan Water District of Southern California (Metropolitan) has adopted a Water Supply Allocation Plan (WSAP) to provide guidance on managing regional water supply actions. When the WSAP is in effect, Metropolitan member agencies, including Western, do not lose their ability to receive imported water but instead are limited in the amounts that they can purchase without being assessed a surcharge.

The *Water Supply Assessment* (WSA) prepared for this Project by Western accounts for potential cutbacks under Metropolitan's WSAP, which represent a more severe shortage condition than the single-dry year or multiple-dry year scenarios presented in Metropolitan's 2010 Regional Urban Water Management Plan. Thus, the analysis contained in the WSA is more in-depth and updated than is required by State Bill 610.

"An EIR for a land use project must address the impacts of *likely* future water sources, and the EIR's discussion must include a reasoned analysis of the circumstances affecting the likelihood of the water's availability. [Citation.]" (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 432.) As the water provider to the site, it is acceptable to utilize and rely on Western's detailed assessment of water supply to determine the availability of sufficient supplies to serve the Project site. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-III:

The comment claims that health impacts from ozone (O₃) have not been adequately acknowledged. However, Section 5.3 of the DEIR adequately analyzes the health effects of ozone. The DEIR's air quality analysis evaluates Oxides of Nitrogen (NO_x) and Volatile Organic Compounds (VOC), which are precursors to ozone formation. The analysis of NO_x and VOC is consistent with South Coast Air Quality Management District (SCAQMD) guidance and established significance thresholds. The Project does not have sources of direct ozone emissions that are of sufficient levels to be reportable.

The formation of ozone from NO_x and VOC is an intricate atmospheric process and requires sophisticated modeling that is more suitably assessed on a regional basis. The SCAQMD performs regional ozone modeling as part of the Air Quality Management Plan (AQMP) process, which requires detailed regional emission inventories. Since the correlation between emissions increases and health effects is complex and the science is imprecise, it would be speculative to attribute even a portion of the health impacts that could potentially be associated with the regional NO_x and VOC concentrations as being a result of a single Project.

The comment also notes that the DEIR does not acknowledge a recently adopted more stringent ozone standard. In 2015, the Environmental Protection Agency (EPA) revised the primary and secondary ozone standard levels to 0.070 parts per million (ppm) (70 parts per billion (ppb)), and retained their indicators (O₃), forms (fourth-highest daily maximum, averaged across three consecutive years) and averaging times (eight hours). The Basin continues to be designated as nonattainment for ozone with this more stringent standard. Since the Basin's attainment status remains unchanged, this does not affect the results of the analysis of the DEIR. The most recent published data for the Project site is presented in **Table 5.3-B – Air Quality Monitoring Summary from 2012-2014 (SRA 23)**. Data for 2015 to replace the data in **Table 5.3-B** of the DEIR is not yet available. Therefore, the new standard was not noted in the DEIR.

The SCAQMD prepares the Air Quality Management Plan (AQMP). The purpose of an AQMP is to bring an air basin into compliance with federal and state air quality standards and is a multi-tiered document that builds on previously adopted AQMPs.

The DEIR determined that the Project was consistent with the AQMP and thus would not interfere with attainment implementation. (DEIR, pp. 5.3-22-23.)

The comment also notes that the DEIR does not mention the year of the attainment goal for ozone in the Basin. According to the most recent adopted 2012 AQMP, the Basin is expected to reach attainment for the 2008 ozone standard in 2023 (to attain the 80 ppb National Ambient Air Quality Standards (NAAQS)) and 2032 (to attain 75 ppb NAAQS)⁶. The draft 2016 AQMP, which has not yet been adopted, identifies an attainment deadline of 2037 for the 2015 8-hour ozone NAAQS (70 ppb)⁷. Since the Project is consistent with the AQMP, the Project will not interfere with Basin attainment and the impacts from ozone and its related health impacts were adequately analyzed in the DEIR.

In accordance with State CEQA Guidelines Section 15126.2, subdivision (a), and consistent with the decision in *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219-1220, the DEIR adequately discloses and analyzes "health and safety problems caused by the physical changes" that the proposed Project will precipitate, including correlating identified Project-related adverse air quality impacts to resultant adverse health effects.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-JJJ:

The comment alleges that the DEIR concedes that there is no safe level for Toxic Air Contaminants (TACs). As explained in Section 5.3 of the DEIR, a TAC is defined as an air

⁶ [http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-air-quality-management-plan/final-2012-aqmp-\(february-2013\)/main-document-final-2012.pdf](http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-air-quality-management-plan/final-2012-aqmp-(february-2013)/main-document-final-2012.pdf)

⁷ http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/2016aqmp_factsheet.pdf?sfvrsn=8

pollutant which may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are generally present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at very low concentrations. For those TACs that cause cancer, there is no concentration that does not present some low-level risk. In other words, there is no threshold below which adverse health impacts are not expected to occur. (DEIR, p. 5.3-6.)

The comment also notes that the DEIR did not explain whether or not the Multiple Air Toxics Exposure Study IV (MATES-IV) includes new distribution centers in the area in its emission evaluation. The cancer risk level in the MATES-IV program results is approximately 16 percent lower than the background cancer risks based on the MATES-III study that used the toxics emission inventory for the year 2005, which illustrates the trend of declining health risk from TACs. (DEIR, p. 5.3-8.) The measurements and modeling for MATES IV spanned July 1, 2012, to June 30, 2013, which accounts for new development in the region at that time, including new distribution centers, since the MATES-III study.

The comment also incorrectly refers to the CARB recommendation to not place a distribution center within 1,000 feet of a residential center as a bright-line limit. According to CARB's *Air Quality and Land Use Handbook*, CARB recommends to avoid the placement of new sensitive land uses within 1,000 feet of a distribution center (accommodating more than 100 trucks per day, 40 trucks with transport refrigeration units (TRUs), or where TRUs operate more than 300 hours a week) and to take into account the configuration of existing distribution centers and avoid locating residences and other sensitive land uses near entry and exit points. However, these are recommendations, not mandates, and land use decisions ultimately lie with the local agency which needs to balance other considerations. (DEIR, p. 5.3-18.) The distance-based guidelines and recommendations contained in CARB's *Air Quality and Land Use Handbook* are not regulatory or binding on local agencies and were developed with a more qualitative approach than the uniform, quantified risk thresholds typically shown in air quality permitting programs. The 1,000 foot recommendation is advisory and should not be interpreted as a strictly defined buffer zone⁸.

Since the Project involves the construction of a logistics center approximately 100 feet (30 meters) from the nearest sensitive receptor, a detailed Screening Health Risk Assessment (HRA) was prepared in June 2016 for the Project (included in Appendix B of the DEIR) and a Refined HRA was prepared in November 2016 to address specific comments from SCAQMD (included in the Final EIR as Response to Comment Letter 36). The Refined HRA is included as Attachment A of the Final EIR. The Refined HRA is consistent with the requested SCAQMD guidance and methodology. According to both the June HRA and November HRA, none of the cancer or non-cancer thresholds will be exceeded as a result of Project operation for workers or residents within the proposed Project vicinity. Therefore, the Project will not result in the exposure of sensitive receptors to substantial pollutant concentrations during Project operation. (DEIR, p. 5.3-34.)

⁸ <https://www.arb.ca.gov/ch/handbook.pdf>

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-KKK:

The comment again brings up the issue of the older federal ozone standard being evaluated in **Table 5.3-B** of the DEIR. As discussed in Response to Comment 34-III, the EPA revised the primary and secondary ozone standard levels to 0.070 parts per million (ppm) (70 ppb) in 2015. However, **Table 5.3-B** discloses the number of days exceeding standards in effect at the time the data was collected and published. Data for 2015 is not yet available from SCAQMD.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-LLL:

The comment disputes that the Project is consistent with a number of policies in the Riverside General Plan 2025. Appendix M of the DEIR identifies applicable City of Riverside General Plan 2025 objectives and policies and evaluates the Project's consistency level with those objectives and policies. In regards to Objective AQ-1, or adopting land use policies that site polluting facilities away from sensitive receptors and vice versa; improve job-housing balance; reduce vehicle miles traveled and length of work trips; and improve the flow of traffic, the Project was found to be consistent with this Objective through consistency with GP 2025 Policies AQ-1.1 through AQ-1.4 and AQ-1.21 and AQ-1.22. (DEIR Appendix M, pp. M-58-60.)

GP 2025 Policy AQ-1.8 aims to promote "Job/Housing Opportunity Zones" and incentives to support housing in job-rich areas and jobs in housing-rich areas, where the jobs are located at nonpolluting or extremely low-polluting entities. This is a Policy and not a mandate, as asserted by the comment. This is also a municipal measure that is not directly applicable to the proposed Project. Nevertheless, as outlined in the Project's consistency level with Policy AQ-1.1, the Project site is designated for Light Industrial in the City's 2025 General Plan 2025. The currently proposed Project involves construction and operation of two logistics center buildings at the Project site, which is consistent with the site's land use designation. Further, as discussed in Section 5.3.14 of the DEIR (p. 5.3-40), neither the short-term nor long-term Project-related emissions will exceed the localized significance thresholds for air quality impacts to sensitive receptors for NO_x, CO, PM-10, or PM-2.5. The Project will also not expose workers or residents in the immediate Project vicinity to cancer or non-cancer risks in excess of SCAQMD thresholds. (DEIR Appendix M, p. M-58.) Appendix M has been clarified to include analysis of Policy AQ-1.8:

Applicable City of Riverside General Plan 2025 Objectives and Policies		Relationship of the Project to the Policy	Consistency Level
Policy AQ-1.8	Promote “Job/Housing Opportunity Zones” and incentives to support housing in job-rich areas and jobs in housing-rich areas, where the jobs are located at nonpolluting or extremely low-polluting entities.	<p><u>This is a municipal measure that is not directly applicable to the proposed Project. Nevertheless, the Project site is designated for Light Industrial in the City’s 2025 General Plan. The currently proposed Project involves construction and operation of two logistics center buildings at the Project site, which is consistent with the site’s land use designation.</u></p> <p><u>Further, as discussed in Section 5.3.14 of the DEIR (p. 5.3-40), neither the short-term nor long-term Project-related emissions will exceed the localized significance thresholds for air quality impacts to sensitive receptors for NO_x, CO, PM-10, or PM-2.5. The Project will also not expose workers or residents in the immediate Project vicinity to cancer or non-cancer risks in excess of SCAQMD thresholds.</u></p>	Consistent

As discussed in Appendix M of the DEIR, General Plan 2025 Policy AQ-2.11 aims to develop ways to incorporate the “Good Neighbor Guidelines for Siting New and/or Modified Warehouse/Distribution Facilities” into the Development Review process and City-wide air quality education programs. Building 2 does not propose any dock doors or parking on the north side of the building, so as to increase distance and locate those activities away from the Sycamore Highlands neighborhood and to minimize impacts to these neighbors. Operational NO_x emissions are anticipated to exceed the SCAQMD regional significance threshold and, due to proximity to existing residences, a detailed Screening HRA was prepared in June 2016 for the Project (included in Appendix B of the DEIR) and a Refined HRA was prepared in November 2016 to address specific comments from SCAQMD (included in the Final EIR as Response to Comment Letter 36). The Refined HRA is included as Attachment A of the Final EIR. The Refined HRA is consistent with the requested SCAQMD guidance and methodology. According to both the June HRA and November HRA, none of the cancer or non-cancer thresholds will be exceeded as a result of Project operation for workers or residents within the proposed Project vicinity. Therefore, the Project will not result in the exposure of sensitive receptors to substantial pollutant concentrations during Project operation. (DEIR, p. 5.3-34.) Although cancer and non-cancer risks are predicted to be less than the thresholds set by SCAQMD, the City will be required to adopt a Statement of Overriding Considerations for the proposed Project due to operational NO_x emissions. Further, the Project will exceed CARB requirements by limiting truck idling to three (3) minutes rather than five (5) minutes at the Project site, consistent with Goal 4 of the Good Neighbor Guidelines. (DEIR Appendix M, p. M-61.) Thus, the Project is consistent with the “Good Neighbor Guidelines” as discussed in detail in Appendix M of the DEIR. (DEIR Appendix M, pp. 66-77.)

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-MMM:

The comment disputes that the Project is consistent with a number of policies in the Riverside Good Neighbor Guidelines.

Goal 1: The Project is consistent with Goal 1 of the City of Riverside Good Neighbor Guidelines that entails minimizing exposure to diesel emissions to neighbors that are situated in close proximity to the warehouse/distribution center as described in Appendix M of the DEIR. In accordance with State CEQA Guidelines Section 15126.6, an EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. Section 8 – Alternatives of the DEIR evaluates three alternatives and found the alternatives to be infeasible due to a failure to meet the Project objectives or similar, increased, or reduced but still significant and unavoidable environmental impacts when compared with the proposed Project. (DEIR, pp. 8-34-35.) Additionally, the logistics center use proposed by the Project is consistent with the current General Plan 2025 land use designation of B/OP – Business Office Park and is zoned BMP-SP – Business Manufacturing Park and Specific Plan (Sycamore Canyon Business Park Specific Plan) Overlay Zones. The proposed Project will be consistent with both the existing land use designation of the General Plan 2025 and the Sycamore Canyon Business Park Specific Plan and would not require a change of zone. (DEIR, p. 5.10-10.)

Goal 1a: The Project is consistent with Good Neighbor Guideline Strategy 1a in that the Project is expected to be a 24/7 operation and there are queuing areas on site and designated commercial vehicle parking areas in proximity to the Project site. Refer to Response to Comment 34-EEE. Because the Project operator is unknown at this time and it has been noted that similar logistics uses in the City have resulted in trucks queuing on public streets, the potential for the Project to result in trucks queuing onto public streets while waiting for the operator to open the gates in the morning to accept deliveries was analyzed in Section 5.16 of the DEIR. If the Project was not a 24/7 operation, the potential for truck queuing on public streets is the highest in the morning when it is expected that multiple trucks arrive at the Project site prior to the gates opening. As shown on **Figures 5.16-10 – Site Queuing Analysis with 53' Trailer Trucks** and **5.16-11 – Site Queuing Analysis with 48' Trailer Trucks**, the queuing capacity of Building 1 will not be exceeded. Although it is possible that during the AM Peak Hours the queuing capacity for Building 2 will be exceeded by three to four trailer trucks, this should not result in trucks queuing or parking on the residential streets in proximity to the Project site because there is designated commercial vehicle parking on portions of Box Springs Boulevard. (DEIR, p. 5.16-49.) Therefore, traffic and neighborhood compatibility issues resulting from the three or four trucks that may have to queue are not anticipated and the Project is consistent with this Strategy. (DEIR Appendix M, p. M-67.)

Goal 1b: The Project is consistent with Good Neighbor Guideline Strategy 1b in that the Project has been designed such that no parking is provided along the northern side of Building 2, nearest the residential uses. Building 2 has also been designed to have no cross-dock

facilities. Site access will be taken via Lance Drive to the east of the Project site and Sierra Ridge Drive to the south of the Project site, with limited access from Dan Kipper Drive (exit only), north of the Project site. Thus, access will be located away from residential uses to the extent feasible. All driveways exiting the site will be limited to right turn only movements to avoid traffic headed east on Dan Kipper Drive, closest to the residential uses. (DEIR Appendix M, p. M-67.)

Goal 1c: The Project is consistent with Good Neighbor Guideline Strategy 1c in that a Health Risk Assessment (HRA) was performed for the residences to the north and northwest area of the Project site. The nearest residential property line is approximately 100 feet (30 meters) from the edge of the proposed buildings. The June 2016 Screening HRA included in Appendix B of the DEIR found that construction or operation of the proposed Project will not pose a significant cancer or non-cancer risk to residents or workers in the Project. (DEIR Appendix M, pp. M-68-69.) A Refined HRA was prepared in November 2016 to address specific comments from SCAQMD (included in the Final EIR as Comment Letter 36). The Refined HRA is included as Attachment A of the Final EIR. The Refined HRA is consistent with the requested SCAQMD guidance and methodology. According to both the June HRA and the Refined HRA, none of the cancer or non-cancer thresholds will be exceeded as a result of Project operation for workers or residents within the proposed Project vicinity. Therefore, the Project will not result in the exposure of sensitive receptors to substantial pollutant concentrations during Project construction or operation. (DEIR, p. 5.3-34.)

As stated in the Refined HRA, the SCAQMD has not established a significance threshold for ambient cumulative TAC impacts affecting the Basin. The SCAQMD has established a significance threshold for incremental project-level TAC impacts. This same significance threshold (10 in one million) is applied by SCAQMD in determining whether a given project's incremental contribution to ambient TAC-source cancer risks is cumulatively considerable. (Refined HRA, p. 26.)

Nonetheless, the Refined HRA provided context for, and quantified cumulative TAC effects within the Project area. The Project-specific cancer risk and the cancer risks from the related projects were added to the total background risk derived by the MATES IV study, yielding a maximum potential cumulative TAC-source risk affecting the Project area. The maximum potential cumulative cancer risk within the Project area is estimated at 712.58 in one million. (Refined HRA, p. 31.)

The MATES-IV ambient background plus related cumulative project TAC impact represents approximately 99 percent of the total cumulative impact; and due to its magnitude when compared to project-level TAC impact significance thresholds, is presumed to be cumulatively significant. The Project would incrementally contribute to this presumably significant cumulative impact. However, the Project's maximum incremental contribution of 1.64 incidents per million population does not exceed the established SCAQMD threshold (10 incidents per million population) at which project-level TAC contributions would be determined cumulatively considerable. On this basis, the Project TAC emissions impacts are not considered cumulatively considerable. (Refined HRA, p. 31.)

Goal 2 and 2a: The Project was evaluated for consistency with Good Neighbor Guideline Goal 2 in Appendix M of the DEIR. In terms of Good Neighbor Guideline Strategy 2a, the Project has an established specific truck distribution between the Project site and the freeways in that the Project site is accessed from Sycamore Canyon Boulevard, a 4-lane divided major arterial. Further, the “urban intersect” as described in the Sycamore Canyon Business Park Specific Plan at the Interstate 215 and Eastridge Avenue has since been constructed, allowing for a direct connection to Interstate 215. Therefore, the Project is consistent with this Strategy. (DEIR Appendix M, p. M-70.) In the City of Riverside, trucks are generally not restricted to specific roadways; however, the majority of trucks will use the I-215 Ramps at Eastridge Ave-Eucalyptus Ave since it utilizes the “urban intersect”. Trucks are not anticipated to travel into residential neighborhoods given the existing freeway access. Based on the average daily trip calculations from the traffic study, only 5 percent of Project truck traffic would only account for approximately 5 percent of travel on Fair Isle Drive from Sycamore Canyon Boulevard to the I-215 Northbound Ramps.

Goal 2d: The Project is consistent with Good Neighbor Guideline Strategy 2d in that mitigation measure **MM AQ 25** (listed below) was included in the Air Quality Section of the DEIR requiring both building operators to provide flyers that advise truck drivers of the closest restaurants, fueling stations, truck repair facilities, lodging and entertainment. (DEIR Appendix M, p. M-70.) The Project is consistent with this Strategy and no further analysis is required.

MM AQ 25: The building operator shall provide signage or flyers that advise truck drivers of the closest restaurants, fueling stations, truck repair facilities, lodging, and entertainment.

Goal 3: The Project was evaluated for consistency with Good Neighbor Guideline Goal 3 in Appendix M of the DEIR. The Project is required to comply with the City Municipal Code which codifies the strategies of Goal 3. Specifically, the Project will adhere to Sections 10.52 pertaining to stopping, standing, or parking on streets, Section 10.52.155⁹ pertaining to prohibited parking of certain commercial vehicles, trailers, and semi-trailers, and Section 10.52.160 pertaining to prohibited parking of certain commercial vehicles in residential districts. (DEIR Appendix M, p. M-71.) Therefore, the Project is consistent with Good Neighbor Guideline Goal 3. Additionally, **MM AQ 22** will be implemented which requires that, within six months after operations commence, signs will be posted informing truck drivers about the health effects of diesel particulates, the CARB diesel idling regulations, and the importance of being a good neighbor by not parking in residential areas. Mitigation measure **MM AQ 22** will be revised in the FEIR as shown below:¹⁰

MM AQ 22: The Project shall implement the following measures to reduce emissions from on-site heavy duty trucks within six months after operations commence:

⁹ <https://www.riversideca.gov/parking/pdf/boxspringtruckparking.pdf>

¹⁰ Deletions are shown with strikethrough text (example text) and additions are shown with double underline text (example text).

a) Post signs informing truck drivers about the health effects of diesel particulates, the requirement that CARB diesel idling times cannot exceed three minutes regulations, and the importance of being a good neighbor by not parking in residential areas.

b) Tenants shall maintain records on its fleet equipment and vehicle engine maintenance to ensure that equipment and vehicles serving the building are in good condition, and in proper tune pursuant to manufacturer's specifications. The records shall be maintained on site and be made available for inspection by the City.

cb) The facility operator will ensure that site enforcement staff in charge of keeping the daily log and monitoring for excess idling will be trained/certified in diesel health effects and technologies, for example, by requiring attendance at California Air Resources Board approved courses (such as the free, one-day Course #512).

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-NNN:

The comment alleges that the DEIR ignores that the City and the Project can require compliance with CARB's Diesel Risk Reduction Program earlier than 2023. Regulations adopted by CARB in December 2008 and last amended in December 2014 ensure that, by 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. (DEIR, p. 5.3-18.) While the City and facility could require compliance with this mandate earlier, the regulations will go into effect a few years following the commencement of Project operations, regardless. This makes the air quality analysis more conservative since it does not take these regulations into account.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-OOO:

The comment again claims that the DEIR disregards the CARB recommendation to not place a distribution center within 1000 feet of a residential center and states that the DEIR is ignoring the General Plan 2025. As discussed in Response to Comment 34-JJJ, the DEIR discloses (and thus, includes in the administrative record) CARB recommendations. However, the DEIR also states that these are recommendations, not mandates, and land use decisions ultimately are the responsibility of the local agency which needs to balance other considerations. (DEIR, p. 5.3-18.)

Since the Project involves the construction of a logistics center approximately 100 feet (30 meters) from the nearest sensitive receptor, a detailed Screening Health Risk Assessment (HRA) was prepared for the Project (Appendix B of the DEIR). According to the HRA, none of the cancer or non-cancer thresholds will be exceeded as a result of Project construction or operation for workers or residents within the proposed Project vicinity. A refined HRA was prepared in November 2016 to address specific comments from SCAQMD (included in the Final EIR as Response to Comment Letter 36). The refined HRA is consistent with the

requested SCAQMD guidance and methodology. According to both the June HRA and November HRA, none of the cancer or non-cancer thresholds will be exceeded as a result of Project operation for workers or residents within the proposed Project vicinity. Therefore, the Project will not result in the exposure of sensitive receptors to substantial pollutant concentrations during Project operation. (DEIR, p. 5.3-34.)

As stated previously, the CARB recommends, but does not mandate that new sensitive land uses should not be placed within 1,000 feet of a distribution center. Furthermore, Appendix M of the DEIR identifies applicable City of Riverside General Plan 2025 objectives and policies and the Project's consistency level with those objectives and policies. The Project was found to be consistent with the General Plan 2025 Air Quality Element Objectives and Policies. (DEIR Appendix M, pp. M-58-65.)

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-PPP:

The comment is in regards to the analysis in Threshold B in Section 5.3 of the DEIR (pp. 5.3-23-30). As adequately disclosed in the DEIR, long-term Project operational emissions will exceed the threshold for NO_x, even with the incorporation of proposed Project design features (which are also listed as mitigation measures **MM AQ 1** through **MM AQ 15**, **MM AQ 18**, and **MM AQ 19**, as well as additional **MM AQ 22** through **MM AQ 25**). **MM AQ 7**, **MM AQ 14**, **MM AQ 22**, and **MM AQ 25** were previously listed. **MM AQ 1** through **MM AQ 6**, **MM AQ 8** through **MM AQ 12**, **MM AQ 15** through **21**, **MM AQ 23** and **MM AQ 24** are listed below. **MM AQ 13** will be revised in the FEIR as shown below.¹¹

MM AQ 1: Solar or light-emitting diodes (LEDs) shall be installed for outdoor lighting. Prior to building permit issuance, the City shall verify building plans contain these features.

MM AQ 2: Indoor and outdoor lighting shall incorporate motion sensors to turn off fixtures when not in use. The site and buildings shall be designed to take advantage of daylight, such that use of daylight is an integral part of the lighting systems. Prior to building permit issuance, the City shall verify building plans contain these features.

MM AQ 3: Trees and landscaping shall be installed along the west and south exterior building walls to reduce energy use. Vegetative or man-made exterior wall shading devices or window treatments shall be provided for east, south, and west-facing walls with windows. Landscaping and/or building plans shall contain these features and are subject to City verification prior to building permit issuance.

¹¹ Deletions are shown with strikethrough text (example text) and additions are shown with double underline text (example text).

MM AQ 4: Light colored “cool” roofs shall be installed over office area spaces and cool pavement shall be installed in parking areas. Prior to building permit issuance, the City shall verify building plans contain these features.

MM AQ 5: Energy efficient heating and cooling systems, appliances and equipment, and control systems that are Energy Star rated shall be installed in future office improvement plans. Refrigerants and heating, ventilation, and air conditioning (HVAC) equipment shall also be selected to minimize or eliminate the emission of compounds that contribute to ozone depletion and global warming. The efficiency of the building envelope shall also be increased (i.e., the barrier between conditioned and unconditioned spaces). This includes installation of insulation to minimize heat transfer and thermal bridging and to limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption. The City shall verify tenant improvement plans include these features. The City shall verify these features are installed prior to issuance of occupancy permits.

MM AQ 6: Energy Star rated windows, space heating and cooling equipment, light fixtures, appliances, or other applicable electrical equipment shall be installed. Prior to building permit issuance, the City shall verify building plans contain these features.

MM AQ 8: The Project’s landscaping plans shall incorporate water-efficient landscaping, with a preference for xeriscape landscape palette. Landscaping plans shall be approved by the City prior to building permit issuance.

MM AQ 9: All building owners shall provide education about water conservation and available programs and incentives to building operators to distribute to employees.

MM AQ 10: Interior and exterior waste storage areas shall be provided for recyclables and green waste. Prior to occupancy permits, the City shall verify interior and exterior storage areas are provided for recyclables and green waste. The property operator will also provide readily available information provided by the City for employee education about reducing waste and available recycling services.

MM AQ 11: Up to three electric vehicle charging stations shall be provided to encourage the use of low or zero-emission vehicles. Prior to building permit issuance, the City shall verify building plans contain electric vehicle charging stations.

MM AQ 12: Adequate bicycle parking near building entrances shall be provided at the site. Facilities that encourage bicycle commuting (e.g., locked bicycle storage or covered or indoor bicycle parking) shall be provided. Prior to building permit issuance, the City shall verify building plans contain adequate bicycle parking.

MM AQ 13: All facilities shall post signs informing users of requirements limiting idling to three five-minutes or less in excess of pursuant to Title 13 of the California Code of Regulations, Section 2485. The City shall verify signage has been installed prior to occupancy.

MM AQ 15: Service equipment (i.e., forklifts) used within the site shall be electric or compressed natural gas-powered.

MM AQ 18: Locally produced and/or manufactured building materials shall be used for at least 10% of the construction materials used for the Project. Verification shall be submitted to the City prior to issuance of a building permit.

MM AQ 19: “Green” building materials shall be used where feasible, such as those materials that are resource efficient and recycled and manufactured in an environmentally friendly way. Verification of the feasibility or infeasibility of securing these materials shall be submitted to the City prior to issuance of a building permit.

MM AQ 23: In order to promote alternative fuels, and help support “clean” truck fleets, the developer/successor-in-interest shall provide building occupants with information related to SCAQMD’s Carl Moyer Program, or other such programs that promote truck retrofits or “clean” vehicles and information including, but not limited to, the health effect of diesel particulates, benefits of reduced idling time, CARB regulations, and importance of not parking in residential areas. If trucks older than 2007 model year will be used at a facility, the developer/successor-in-interest shall require, within one year of signing a lease, future tenants to apply in good-faith for funding for diesel truck replacement/retrofit through grant programs such as the Carl Moyer, Prop 1B, VIP, HVIP, and SOON funding programs, as identified on SCAQMD’s website (<http://www.aqmd.gov>). Tenants will be required to use those funds, if awarded.

MM AQ 24: Any yard trucks used on-site to move trailers in or around the loading areas shall be electric in place of traditional diesel powered yard trucks.

Because long-term operation of the proposed Project will exceed the SCAQMD threshold for NO_x, impacts are considered to be significant and unavoidable after implementation of mitigation, and a Statement of Overriding Considerations will be required should the City choose to approve the Project. (DEIR, p.5.3-30.)

The Project was evaluated for Carbon Monoxide (CO) hotspots based on SCAQMD’s 2003 Air Quality Management Plan and the Revised 1992 Federal Attainment Plan for Carbon Monoxide by comparing the Wilshire Boulevard and Veteran Avenue intersection daily traffic (100,000 vehicles per day) and Project-related traffic (20,213 average daily trips). This comparison does not differentiate between cars and trucks which have differing emissions factors because information on truck percentage was not provided. Considering existing traffic, plus 2018 ambient traffic, plus cumulative traffic plus Project-related traffic, the Traffic Impact Analysis (TIA) prepared for this Project calculated that the highest average daily trips would be 20,213

on Eastridge Avenue between Box Springs Boulevard to the I-215 Ramps, which is lower than the values studied by SCAQMD in their 1992 CO Plan and 2003 AQMP, as described above (DEIR, Appendix J). Therefore, none of the roadway segments in the vicinity of the proposed Project site would have daily traffic volumes exceeding those at the intersections modeled in the 2003 AQMP, nor would there be any reason unique to the meteorology to conclude that this intersection would yield higher CO concentrations. Since the Wilshire Boulevard and Veteran Avenue intersection daily traffic is almost five times higher than the cumulative Project-related traffic on Eastridge Avenue between Box Springs Boulevard to the I-215 Ramps, the comparison of project CO hot-spot impacts support the analogy, regardless of unknown truck percentages. (DEIR, p. 5.3-29-30.)

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-QQQ:

The comment is in regards to the analysis in Threshold C in Section 5.3 of the DEIR (pp. 5.3-30-31). The portion of the Basin within which the Project is located is designated as a non-attainment area for PM-10 under State standards, and for ozone and PM_{2.5} under both State and federal standards. Ozone is not directly emitted into the atmosphere; rather, it forms via a reaction of VOC and NO_x in the atmosphere. (DEIR, p.5.3-30.)

As stated in the DEIR, SCAQMD considers the thresholds for project-specific impacts and cumulative impacts to be the same. Therefore, projects that exceed project-specific significance thresholds are considered by SCAQMD to be cumulatively considerable. Based on SCAQMD's regulatory jurisdiction over regional air quality, it is reasonable to rely on its thresholds to determine whether there is a cumulative air quality impact. None of the SCAQMD mass daily significance thresholds are exceeded during Project construction; however, the mass daily significance threshold for NO_x would be exceeded during Project operation. Thus, the Project would have a cumulatively considerable increase in emissions due to operational NO_x. In terms of localized air quality impacts, none of the SCAQMD LST thresholds are exceeded. Thus, the Project would not have a cumulatively considerable impact due to criteria pollutant emissions. Because the Project would have a cumulatively considerable increase in emissions due to operational NO_x, even with implementation of mitigation measures **MM AQ 1** through **MM AQ 25** (listed previously), the impact is significant and unavoidable after implementation of mitigation, and a Statement of Overriding Considerations will be required should the City choose to approve the Project. (DEIR, p.5.3-31.)

Since none of the other criteria pollutants exceed SCAQMD thresholds, the Project is considered to have a cumulatively considerable increase due to criteria pollutant emissions based on the exceedance of NO_x during Project operations.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-RRR:

As discussed in Section 5.3 of the DEIR, SCAQMD considers the thresholds for project-specific impacts and cumulative impacts to be the same. Therefore, projects that exceed project-specific significance thresholds are considered by SCAQMD to be cumulatively considerable. Based on SCAQMD's regulatory jurisdiction over regional air quality, it is reasonable to rely on its thresholds to determine whether there is a cumulative air quality impact. (DEIR, pp. 5.3-31.)

Additionally, cumulative impacts were analyzed in Section 6 – Other CEQA Topics of the DEIR (pp. 6-1-29). In terms of localized air quality impacts, construction of the Project would not have a cumulatively considerable impact due to criteria pollutant emissions. However, because the Project's emissions exceed applicable SCAQMD thresholds during operation due to Project-related NO_x, the Project will result in significant and unavoidable cumulative impacts to air quality. (DEIR, pp. 6-9-10.) Therefore, the DEIR adequately analyzed cumulative air quality impacts based on significant and unavoidable impacts.

The DEIR's analysis cumulative impacts analysis and reliance upon SCAQMD's guidance for thresholds is adequate and complies with CEQA, including State CEQA Guidelines Sections 15130(a), 15064(h)(1), 15065(a)(3), and 15355(b) referenced in the comment. The commenter's citation to Public Resource Code section 21083.2(b)(2) appears to be misplaced as that provision relates to the treatment of unique archaeological resources and, more specifically, ensuring the protection of such resources by leaving them in place through the deeding of conservation easements.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-SSS:

The comment is in regards to the Screening HRA analysis in Threshold D in Section 5.3 of the DEIR (pp. 5.3-31-34). SCAQMD's *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis* (Guidance) states that volume or area source characterizations are most appropriate for modeling emissions associated with truck idling and movement.¹² To be conservative, the Screening HRA divided the Project site into eight equal areas (each 8.92 acres). The 8.92 acre area closest to existing sensitive (residential) and worker receptors was modeled concentrating all of the Project's mobile source emissions in one area. This is conservative because the Project's mobile source emissions will be generated across the entirety of the Project site, which provides more distance between the loading bays and on-site truck movement associated with Building 1 and the nearest residences and would reduce the concentration of diesel particulate matter (DPM).

A Refined HRA was prepared in November 2016 to address specific comments from SCAQMD (included in the Final EIR as Response to Comment Letter 36). The Refined HRA is included as Attachment A of the Final EIR. The Refined HRA is consistent with the requested SCAQMD

¹² <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis>

guidance and methodology and individually modeled the on-site roadways, loading bays, and truck travel on off-site roadways leading to and from the Project site and freeways. According to the Refined HRA, none of the cancer or non-cancer thresholds will be exceeded as a result of Project operation for workers or residents within the Project vicinity. In fact, the estimated maximum cancer risk reduced from 5.3 in one million (DEIR, Table 5.3-J) to 1.64 in one million at the nearest residential receptor. Thus, the Screening HRA included in the DEIR conservatively overestimated exposure from mobile source emissions and did not underestimate cancer or non-cancer risk resulting from the proposed Project.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-TTT:

The commenter disagrees with the Air Quality Report's finding that the Maximum Individual Cancer Risk (MICR) would be greater than that from operation and suggests a modeling error.

As outlined in the Air Quality Report, or Appendix B of the DEIR, a project's construction phase produces many types of emissions, but PM-10 (including PM-2.5_{2.5}) in fugitive dust and diesel engine exhaust are the pollutants of greatest concern. Fugitive dust emissions can result from a variety of construction activities, including excavation, grading, demolition, vehicle travel on paved and unpaved surfaces, and vehicle exhaust. Construction-related emissions can cause substantial increases in localized concentrations of PM-10, as well as affecting PM-10 compliance with ambient air quality standards on a regional basis. Particulate emissions from construction activities can lead to adverse health effects as well as nuisance concerns such as reduced visibility and soiling of exposed surfaces. The use of diesel-powered construction equipment emits ozone precursors NO_x and Reactive Organic Gas (ROG), diesel total organic gases (DTOG), and diesel particulate matter (DPM), the latter being a composite toxic air contaminant (TAC) containing a variety of hazardous substances. Large construction projects using multiple, large earth-moving equipment are evaluated to determine if operations may exceed the SCAQMD's daily threshold for NO_x emissions and could temporarily expose area residents to hazardous levels of DPM. Use of architectural coatings and other materials associated with finishing buildings may also emit ROG and TACs. CEQA significance thresholds address the impacts of construction activity emissions on local and regional air quality. Thresholds are also provided for other potential impacts related to project construction, such as odors and TACs. (DEIR Appendix B, pp. 2-3.)

The term "project operations" refers to the full range of activities that can or may generate criteria pollutant, Greenhouse Gas (GHG), and TAC emissions when the project is functioning in its intended use. For projects such as office parks, shopping centers, residential subdivisions, and other indirect sources, motor vehicles traveling to and from the project represents the primary source of air pollutant emissions. For industrial projects and some commercial projects, equipment operation and manufacturing processes, i.e., permitted stationary sources, can be of greatest concern from an emissions standpoint. CEQA significance thresholds address the impacts of operational emission sources on local and

regional air quality. Thresholds are also provided for other potential impacts related to project operations, such as odors. (DEIR Appendix B, p. 3.)

Construction – particularly the site preparation and grading phases – utilizes heavy, powerful off-road equipment such as bulldozers, scrapers, and front-end loaders. Off-road diesel engines emit more DPM than on-road engines (e.g., trucks) of similar size due to 1) less stringent emission standards, 2) generally older fleets due to long equipment life and high replacement costs, and 3) cyclic operation (i.e., frequent throttle-up & throttle down). Thus, construction can have a higher time-weighted impact than the on-site fraction of operational emissions. This is because the OEHHA residential risk calculations incorporate a tenfold early-in-life potency factor adjustment for the third trimester and ages zero to less than two, and a threefold adjustment factor for ages two to less than sixteen. Since construction would occur for about one year, the early-in-life potency factor adjustment dominates the cancer risk calculation.

Since construction of the Project will result in earth moving and large, higher-emitting construction equipment operating concurrently on-site and many operational emissions would occur off-site due to truck travel to and from the ports, it is reasonable to conclude that the Maximum Individual Cancer Risk (MICR) for construction would be greater than that from operation. Further, at the conservative screening level, the Air Quality Report (Appendix B) shows that cancer and non-cancer health risks are below SCAQMD thresholds for both construction and operation of the proposed Project. (DEIR Appendix B, p. 6.)

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-UUU:

Although the Project site is located within the boundary of the adopted Stephens' Kangaroo Rat Habitat Conservation Plan (SKR-HCP), it is not within the Core Reserve and so impacts to this species are offset through payment of SKR-HCP fees. The SKR-HCP does not require surveys for this species outside the Core Reserve and impacts to any SKR that may occur at the Project site will be offset via payment of fees. The SKR-HCP is available online at: <http://www.skrplan.org/skr.html>.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-VVV:

The existing drainage that runs through the project site is currently unprotected and unmaintained. While it has some native vegetation, the existing drainage also has numerous invasive species and is subject to degradation, trespass and illegal dumping. The DEIR included an analysis of the loss of this natural drainage feature per Section 6.1.2 of the MSHCP, Riparian and Riverine Policy. (DEIR, p. 5.4-24.) Following the requirements of Section 6.1.2 of the MSHCP, the City had a Determination of Biologically Equivalent or Superior (DBESP) prepared to analyze the quality of habitat on the Project site and provided an analysis

of the mitigated area proposed to recreate a drainage along the western edge of the site. (DEIR, Appendix C.4.) Prior to development of the DBESP document, the City met with the Regional Conservation Authority (RCA), the agency responsible for determining MSHCP compliance, the California Department of Fish and Wildlife (CDFW) and the US Fish and Wildlife Service (USFWS) on December 9, 2015, and February 10, 2016. (DEIR, Appendix C.4, p. 5-7.) The purpose of these meetings was to discuss the location and the characteristics of the drainage and proposed Mitigation Area that would fulfill the requirements of Section 6.1.2 of the MSHCP.

The DBESP was reviewed by the CDFW and USFWS for 60 days per the MSHCP requirements. As of November 22, 2016, CDFW determined that the habitat that will be created in the Project's Mitigation Area is considered biologically superior in comparison to the existing drainage. (DEIR, pp. 5.4-21.) Because the relocated drainage will be protected in perpetuity, it will be maintained and kept free of invasive. The relocated drainage into the Mitigation Area also provides habitat and buffering between the proposed development and the MSHCP Conservation Area (i.e. Sycamore Canyon Wilderness Park) to the west. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-WWW:

See Response to Comment 34-UUU. Species trapping is neither required nor necessary because there is an SKR HCP (<http://www.skrplan.org/skr.html#004>), of which the Project will pay fees and the Project site is not located in a Core Reserve of the HCP. (DEIR pp. 5.4-14 – 5.4-15.) Regarding the San Diego black-tailed jackrabbit, this species is a Covered Species under the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) (<http://wrc-rca.org/about-rca/multiple-species-habitat-conservation-plan/>). The Covered Species status means that as long as the Project pays MSHCP fees and is compliant with Section 6.0 of the MSHCP (namely Sections 6.1.2, 6.1.3, 6.1.4 and 6.3.2), then the Project can obtain take authorization for the San Diego black-tailed jackrabbit. Per Section 6.1.1 of the MSHCP, impacts to this species are mitigated fully under CEQA through the City's payment of MSHCP fees, which is required of the Project Applicant under the MSHCP and pursuant to City Ordinance No. 6709, as well as compliance with the MSHCP. (DEIR, p. 5.4-19.) Therefore, trapping and relocation of the San Diego black-tailed jackrabbit is not necessary or required as a result of the Project.

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-XXX:

See Response to Comment 34-JJJJ. This comment does not provide any substantial evidence that changes the analysis and determinations in the DEIR. This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-YYY:

It is not common practice for the Habitat Mitigation Monitoring Plan (HMMP) to be prepared concurrently with the DEIR because HMMPs are drafted in response to regulatory permitting requirements related to the details of how the Mitigation Area will be monitored for success. The HMMP does not provide the plan for how the Mitigation Area is to be created, that document is the DBESP, which is the appropriate level document to have in the DEIR, and is also the requirement to show compliance with the MSHCP. An HMMP is not a requirement of the MSHCP. An HMMP would be required by any of the regulatory agencies responsible for issuing permits per the Clean Water Act and Streambed Alteration Agreement which can only happen after the CEQA document is approved. A draft of the HMMP success criteria has been included in the DBESP which was addressed in the DEIR analysis. For instance, the DBESP states that the Mitigation Area, when complete, should have 85 percent coverage of the existing riparian habitat, no more than 10 percent cover of non-native species, and reduction of supplemental watering during the last two years of monitoring. (DEIR, Appendix C.4, p. 6-1.)

The HMMP will be prepared once detailed discussions related to the regulatory permitting process is underway. The HMMP would not include any more details or analysis that would change the determination of the DBESP nor the determination that the Project will have a less than significant impact related to biological resources. The HMMP document would also not include any details that would change the MSHCP compliance determinations utilized in the DEIR.

Additionally, the Wildlife Agencies (CDFW and USFWS) were given an opportunity to review and comment on the DBESP from May 20, 2016, through June 20, 2016. None of the agencies requested changes to the text of the DBESP, and the DBESP determined that the habitat that will be created in the Mitigation Area is considered biologically superior in comparison to the existing drainage.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-ZZZ:

There is no “link” (i.e. connectivity) between the Sycamore Canyon Wilderness Park and the Box Springs Mountains through the Project Site. Existing development has eliminated any such link or connections. Further, the MSHCP which is the guiding document used to identify locations of linkages and/or corridors through the identification of the MSHCP Conservation Area does not identify any conservation or “links” (i.e. the Criteria Area) on the Project Site (<http://wrc-rca.org/about-rca/multiple-species-habitat-conservation-plan/>). Thus, even if the Project site currently provides natural habitat that may be used by species in the vicinity, the site is not within an MSHCP Criteria Cell. During the biological resources assessment conducted by AMEC, a golden eagle was observed flying over the Project site; however, the Project site contains low quality raptor foraging habitat, the loss of which is not considered a significant impact (DEIR, p. 5.4-19). One willow flycatcher was observed flying through the site; however, the Project site does not present suitable breeding habitat for this species and the

bird was not detected during any subsequent surveys and this individual was determined to have been a transitory individual that happened to be passing through at the time of the survey. (DEIR, Appendix C.2, pp. 1 – 2.) Once the Mitigation Area and the perimeter landscaping is complete, trees such as pines, sycamores and oaks will provide raptor habitat (DEIR, **Figure 3-11 – Conceptual Landscape Plan**). Additionally, the riparian vegetation proposed in the Mitigation Area (willows, mulefat) could provide habitat for southwestern willow flycatchers that may stray over from the Wilderness Park.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-AAAA:

See Response to Comment 34-UUU. Impacts to Stephens' Kangaroo Rat are mitigated through payment of fees pursuant to the Stephens' Kangaroo Rat Habitat Conservation Plan; further, the SKR-HCP does not have a survey requirement for areas outside of the designated Core Reserve.¹³

Therefore, the Project is consistent with Objective LU-7 of the City's General Plan 2025 because it will adequately mitigate any potential impacts to Stephens' Kangaroo Rat through payment of fees as required by the SKR-HCP. This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-BBBB:

The DEIR fully evaluated compliance with the MSHCP, in particular Sections 6.1.2, 6.1.3, 6.1.4 and 6.3.2. (DEIR, pp. 5.4-23 – 5.4-28.) Pursuant to Section 6.1.2 of the MSHCP, focused surveys for riparian birds are required when suitable habitat is identified on the site that cannot be avoided. Per the Biological Assessment (DEIR, Appendix C.1, p. iii), the Project site supports suitable habitat for least Bell's vireo and southwestern willow flycatcher.

During the least bell's vireo (LBVI) presence/absence surveys, the biologists also focused on the potential presence of southwestern willow flycatcher and yellow-billed cuckoo, as well as to other special-status species known to occur in the area. The willow flycatcher detected during the surveys was recorded with a GPS and mapped per the requirements of the survey protocol. However, no suitable habitat for willow flycatcher was identified on the site (DEIR, Appendix C.2, p. 1) during these focused surveys. As noted in Response to Comment 34-ZZZ, the southwestern willow flycatcher observed passing through the Project site was determined to be a transitory individual passing through the site, as the site does not present suitable breeding habitat for this species. No LBVI or yellow-billed cuckoos were detected during any of the focused surveys. (DEIR, Appendix C.2, p. 4.)

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

¹³ Stephens' Kangaroo Rat Habitat Conservation Plan, Section 5.C.1.O.6; Available at <http://www.skrplan.org/skr.html#004>, Accessed October 24, 2016.

Response to Comment 34-CCCC:

See Responses to Comments ZZZ and BBBB. Special attention was given to the presence of southwestern willow flycatcher and yellow-billed cuckoo during the LBVI protocol surveys. One southwestern willow flycatcher was observed passing through the site, and this observation was recorded pursuant to survey protocols for this species. Biologists determined that because the Project site does not possess suitable breeding habitat for this species and because surveys were conducted during the migration period of this species, it is very likely that this individual was passing through. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-DDDD:

The Mitigation Area along the western edge will be designed so that it will not receive untreated stormwater flows. Further, all runoff from the Mitigation Area will also drain into the onsite detention basin for treatment before reaching the offsite storm drain system and regional marsh.

The Project proposes 10.69 acres of “self-treating” areas, which include a component of Low Impact Development (LID) principles. In general, self-treating areas include no impervious areas, unless very small, and slopes are gentle enough to ensure runoff from impervious areas will be absorbed into the vegetation and soil. More than 10 percent of the developed site area will be designated self-treating areas that meet the requirement for LID Best Management Practices (BMPs). (DEIR, p. 5.9-22.) These self-treating areas will reduce the creation or severity of potential pollutant sources and will reduce the toxic load from the site going into the regional water quality basin.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-EEEE:

Source Control Best Management Practices (BMPs), such as onsite storm drain inlet markings as well as interior floor drains, and regular maintenance of refuse areas, will limit the contact between pollutant sources and stormwater at the Project site. In particular, one of the Operational Source Control BMPs includes landscape maintenance with minimal pesticide use and providing Integrated Pest Management information to new occupants (DEIR, pp. 5.9-21).

Additionally, as described in Response to Comment 34-DDDD, the Project site incorporates self-treating areas to limit the creation of potential pollutant sources and to limit the amount of runoff from the Project site. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-FFFF:

Although lighting at the Project site will be installed 34 feet high on Building 1 and 32 feet high on Building 2, all Project lighting will be shielded to minimize offsite glare, will not direct light skyward, and will be directed away from adjacent properties and public rights-of-way. In addition, the Project will introduce new sources of light in the form of security lighting, internal

roadway and parking lot lighting within the Project site for public safety and operation of the proposed structures. The proposed lighting at the Project site has been designed in accordance with all applicable City codes to minimize spillover. Impacts with regard to new sources of light and glare were determined to be less than significant through compliance with the City's Zoning Code, mitigation measures **MM AES 10** (as revised per Response to Comment 34-P), **MM HAZ 4**, and **MM BIO 7** (listed in Response to Comment 34-P), any other applicable lighting requirements and regulations, and compliance with Staff Recommended Conditions of Approval listed below: (DEIR, pp. 5.1-29–5.1-31.) In addition, the height of any freestanding light poles in the parking areas etc. are subject to the design called out in the Section 3 – Project Description (DEIR, pp. 3-34-35.) and as conditioned under Staff Recommended Condition of Approval 20:

An exterior lighting plan shall be submitted to Design Review staff for review and approval. A photometric study and manufacturer's cut sheets of all exterior lighting on the building, in the landscaped areas and in the parking lots shall be submitted with the exterior lighting plan. All on-site lighting shall provide a minimum intensity of one foot-candle and a maximum of ten foot-candles at ground level throughout the areas serving the public and used for parking, with a ratio of average light to minimum light of four to one (4:1). The light sources shall be hooded and shielded to minimize off-site glare, shall not direct light skyward and shall be directed away from adjacent properties and public rights-of-ways. No light spill shall be permitted on the MSHCP Conservation Area (Sycamore Canyon Wilderness Park). If lights are proposed to be mounted on buildings, down-lights shall be utilized. Light poles shall not exceed 14 feet in height, including the height of any concrete or other base material, within the 100-foot setback between Building 2 and the residential property lines to north property line and shall not exceed 20 feet in height, including the height of any concrete or other base material, elsewhere on the property.

Therefore, with implementation of **MM AES 10**, as revised in Response to Comment 34-P, and the Project's Condition of Approval 20, there will be no lighting spillover into the Sycamore Canyon Wilderness Park. This comment does not does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-GGGG:

Although the Sycamore Canyon Wilderness Park is not classified as a neighborhood park land use by the City, this is the closest land use CNEL standard, and can be used to determine the significance of noise impacts to the park. The Project's mitigated noise levels are within the City's General Plan 2025 "Normally Acceptable" compatibility criteria for neighborhood park land uses. (DEIR, p. 5.12-40.) Therefore, because noise levels within the park will not exceed the threshold, no additional noise barriers will be required to minimize impacts to the Sycamore Canyon Wilderness Park.

DEIR Table 5.4-B – Project Compliance with MSHCP Urban/Wildlands Interface Guidelines incorrectly indicates there will be a wall surrounding the truck yards and loading/docking areas and will be revised in the FEIR as follows:

MSHCP Guidelines	Project Features
Noise	
<p>Proposed noise generating land uses affecting the MSHCP Conservation Area shall incorporate setbacks, berms or walls to minimize the effects of noise on MSHCP Conservation Area resources pursuant to applicable rules, regulations and guidelines related to land use noise standards. For planning purposes, wildlife within the MSHCP Conservation Area should not be subject to noise that would exceed residential noise standards.</p>	<p>As discussed in Section 5.13 – Noise, the Project will install a temporary construction noise barrier along its western boundary to minimize the effect of noise on the Sycamore Canyon Wilderness Park. <u>Once the Project is operational, noise at the boundary between the Park and the Project site will not exceed the City’s “Normally Acceptable” compatibility criteria for neighborhood parks land uses.</u> Once completed, the Project will include walls surrounding the truck yards and loading/docking areas. Therefore, the Project is consistent with the MSHCP Urban/Wildlands Interface Noise Guidelines.</p>

The above correction does constitute significant new information that would require recirculation of the DEIR. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-HHHH:

As described in Response to Comment 34-GGGG, lighting at the Project site will be properly shielded and arranged so as to minimize spillover onto adjacent properties. However, to ensure no light spillover occurs, mitigation measure MM AES 10 will be revised as described in Response to Comment 34-P.

Additionally, the Project vicinity is generally developed with a variety of warehouse and residential uses and so construction and operation of the Project will not create a new source of light in a previously unlit, rural area, nor will it substantially alter the lighting environment of the Project vicinity. Furthermore, the Project site does not currently provide a link between the Sycamore Canyon Wilderness Park and Box Springs Mountain and no significant wildlife movement or corridor areas were documented on the site during the biological habitat assessment. (DEIR, p. 5.4-22.)

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-III:

See Response to Comment 34-GGGG. Except for the Sycamore Canyon Wilderness Park, the area surrounding the Project site is generally developed and is already incrementally impacted by night lighting at each of these developments. Project lighting will be designed to minimize

spillover and the Project's lighting plans will be subject to approval by the City Planning Department prior to installation. Therefore, lighting impacts to the park will be less than significant and this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-JJJJ:

The following documents were provided and referenced in this comment: Attachment C1, *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher*, US Fish and Wildlife Service dated 2010; Attachment C2, *Final Report – NCCP/MSCP Raptor Monitoring Project (January 1, 2001 – December 31, 2003)*, Wildlife Research Institute dated 2005; Attachment C3, *Least Bell's Vireo*, Michael Patten, undated. Although not explained in the comment, these documents are provided to presumably refute the nesting season referenced in the DEIR (February 1 to August 31) per MM BIO 1. (DEIR, p 5.4-30.) These documents do not provide substantial evidence that February 1 to August 31 is an inappropriate breeding season for all of the birds that could be expected to nest on the site. C1 documents the background and survey protocol for the southwestern willow flycatcher which outlines the type of habitats associated with southwestern willow flycatcher (i.e. standing and slow moving water/saturated soils and dense riparian vegetation with canopy) none of which are located on the Project site. Additionally, C1 reports the breeding season as being from early May to August, depending on migration patterns. The breeding season discussed in the DEIR matches this time period.

Document C2 provided by the Commenter relates to raptor monitoring that took place in San Diego County, south of State Route 78. The area monitored is over 50 miles south of the Project site and does not represent the same habitat and regional conditions found on the Project site. Additionally, this report was prepared for the sole purpose of monitoring the success of the Multiple Species Conservation Program (MSCP). Specifically, this study utilized its own established seasons (p. 6) based on the latitude of the survey area. This report acknowledges "...raptor nesting activities can start as early as December and run into August. However, wintering raptors are commonly observed in this region December through February, with some remaining (or migrating through) into mid-March. Therefore, we have, somewhat arbitrarily, called the field observations made December through February 'winter' survey data. However, 'breeding' season data are not limited to a specific timeframe....." (C2, Attachment p. 6). Hence, this report acknowledges that it utilized arbitrary timeframes for breeding seasons. As such, Document C2 does not provide substantial evidence that the breeding season of February 1 to August 31 is incorrect.

Lastly, Attachment C3 to this comment is a paper from a biology professor at the University of California on least Bell's vireo (LBV). This paper is a generic summary of the LBV and its habitats, history, population status and threats analysis. The breeding season referenced in this document is mid-March to September. This time period is consistent with the DEIR's breeding season of February 1 to August 31.

MM BIO 1: To comply with the provisions of the MBTA and the California Fish and Game Code, potential impacts to nesting habitat (i.e., site grading or removal of trees) shall be limited to the times when birds are less likely to be nesting (i.e., the non-breeding season, approximately September to February) to the extent feasible. The period from approximately February 1 to August 31 covers the breeding season for most birds that may occur in the Project area. If construction is conducted during breeding season, a qualified biologist shall check potential nesting sites no more than three (3) days prior to any Project related ground disturbance or tree removal activities. If nesting birds are present, the area shall be avoided until young have fledged (as determined by a qualified biologist). Avoidance will involve prescribed 500-foot buffer zone for birds of prey and 100- to 300-foot buffer zone for songbirds from sensitive locations.

Regarding **MM BIO 2**, relocation of burrowing owls shall be conducted pursuant to the requirements outlined in the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Burrowing Owl Survey Protocols. Because of the existence of the MSHCP, the CDFW 2012 Burrowing Owl Guidelines do not need to be followed as long as the MSHCP guidelines are being fulfilled. Thus, because **MM BIO 2** cites the requirement laid out in the MSHCP, no change to the language mitigation measure is required.

Mitigation measure **MM BIO 2** reads as follows in the DEIR:

MM BIO 2: Per MSHCP Species-Specific Objective 6, preconstruction presence/absence surveys for burrowing owl shall be conducted on the Project site and within 150 meters (500 feet) 30 days by a qualified biologist prior to any ground disturbance. Take of active nests shall be avoided. Passive relocation (use of one-way doors and collapse of burrows) will occur when owls are present outside the nesting season. If feasible, the owls will be relocated to the Sycamore Canyon Wilderness Park or to property owned by the California Department of Fish and Wildlife in proximity to the Project site.

As outlined in response to Comment 34-YYY, above, it is not common practice for the Habitat Mitigation Monitoring Plan (HMMP) to be prepared concurrently with DEIR. Thus, a HMMP will be prepared at a later date pursuant to mitigation measure **MM BIO 3**. Nonetheless, as explained in Response to Comment 34-YYY, the requirements for the HMMP are clearly outlined in the DBESP prepared for the Project, and include “85 percent coverage of the existing riparian habitat, no more than 10 percent cover of non-native species, and reduction of supplemental watering during the last two years of monitoring. (DEIR, Appendix C.4, p. 6-1.)

Mitigation measure **MM BIO 3** reads as follows in the DEIR:

MM BIO 3: As required by the Project’s DBESP, prior to issuance of grading permits the Project proponent shall provide evidence to the City Planning Division that a Habitat Mitigation and Monitoring Plan (HMMP) has been

approved by the USFWS and CDFW for the Mitigation Area. Success criteria for the HMMP will include: 85% percent coverage of the existing riparian habitat, no more than 10% cover of non-native species, and reduction of supplemental watering during the last two years of monitoring. The Mitigation Area shall be monitored by a qualified biologist figure retained by the Project proponent for a minimum of five (5) years and monitoring reports shall be provided to the City, RCA, USFWS, and CDFW.

With regard to mitigation measure **MM BIO 4**, Government Code Section 65967 does not require the mitigation entity to be approved by the California Department of Fish and Wildlife (CDFW); nonetheless, entities on the CDFW approved list will be considered when this measure is implemented.

Mitigation measure **MM BIO 4** reads as follows in the DEIR:

MM BIO 4: Prior to the issuance of any occupancy permit, the Project proponent shall provide evidence to the City Planning Division that the Mitigation Area has been placed under a conservation easement and dedicated to an approved mitigation entity to be managed in perpetuity.

Mitigation measure **MM BIO 5** reads as follows in the DEIR:

MM BIO 5: Prior to any ground disturbing activities within jurisdictional waters, the Project proponent shall obtain the necessary authorization from the regulatory agencies for proposed impacts to jurisdictional waters. Impacts to jurisdictional waters shall require authorization by the corresponding regulatory agency. Authorization may include, but is not limited to, a Section 404 permit from the USACE, a Section 401 Water Quality Certification from the RWQCB, and a Section 1602 Streambed Alteration Agreement from CDFW. Project-specific impacts to jurisdictional waters shall be mitigated by the USACE, CDFW, and the RWQCB where applicable.

The Project Applicant will obtain necessary approvals from the United States Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife for impacts to waterways under the jurisdiction of each corresponding agency which occurs after the CEQA document is approved by the City. Any mitigation requirements that arise out of the regulatory process referenced in MM BIO 5 will be the responsibility of the Project Applicant.

The commenter takes issue with the lack of requirement for trapping and release of Stephens' Kangaroo Rat offsite, and suggests that full compliance with mitigation measure **MM BIO 6** cannot be attained without this requirement. However, as discussed in Response to Comment 34-UUU, the Project site is not within the SKR-HCP Core Reserve area and impacts to this species are mitigated through payment of SKR-HCP fees. Thus, no revisions to mitigation measure **MM BIO 6** are necessary.

Mitigation measure **MM BIO 6** reads as follows in the DEIR:

MM BIO 6: The Project shall be required to comply with the following standard best management practices (BMPs) outlined in Volume I, Appendix C of the MSHCP:

- A condition shall be placed on grading permits requiring a qualified biologist to conduct a training session for project personnel prior to grading. The training shall include a description of the species of concern and its habitats, the general provisions of the Endangered Species Act (Act) and the MSHCP, the need to adhere to the provisions of the Act and the MSHCP, the penalties associated with violating the provisions of the Act, the general measures that are being implemented to conserve the species of concern as they relate to the project, and the access routes to and project site boundaries within which the project activities must be completed.
- Projects that cannot be conducted without placing equipment or personnel in sensitive habitats should be timed to avoid the breeding season of riparian species identified in MSHCP Global Species Objective No. 7.
- The qualified project biologist shall monitor construction activities for the duration of the project to ensure that practicable measures are being employed to avoid incidental disturbance of habitat and species of concern outside the project footprint.
- Construction employees shall strictly limit their activities, vehicles, equipment, and construction materials to the proposed project footprint and designated staging areas and routes of travel. The construction area(s) shall be the minimal area necessary to complete the project and shall be specified in the construction plans. Construction limits will be fenced with orange snow screen. Exclusion fencing should be maintained until the completion of all construction activities. Employees shall be instructed that their activities are restricted to the construction areas.
- The Permittee, City of Riverside, shall have the right to access and inspect any sites of approved projects including any restoration/enhancement area for compliance with project approval conditions including these BMPs.

No revisions to the mitigation measures referenced by the commenter are necessary because this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-KKKK:

Although it is true that the Pechanga Band of Luiseño Indians submitted a comment letter in response to the Notice of Preparation time line, the letter restated legislative requirements for

government-to-government consultation and provided a general history of the Pechanga Band of Luiseño Indians' Tribal activities in the Project vicinity. The City engaged in consultation with both the Pechanga Band of Luiseño Indians, the Soboba Band of Luiseño Indians and the Morongo Band of Mission Indians pursuant to Assembly Bill 52 (AB 52) and Senate Bill 18 (SB 18). (DEIR, pp. 5.5-18–5.5-20.) The consultation process included meetings, conference calls, on-site visits (by representatives of the Pechanga Band of Luiseño Indians and Morongo Band of Mission Indians), review of the *Cultural Resources Assessment of the Sycamore Canyon Business Park Buildings 1 & 2, Riverside County, California* (included as Appendix D.1 of the DEIR) and the confidential results of the records search. As a result of the consultation process, the following mitigation measures will be implemented to reduce impacts to tribal cultural resources to less than significant: (DEIR, pp. 5.5-31–5.5-33.)

MM CR 1: Prior to grading permit issuance: If there are any changes to project site design and/or proposed grades, the Applicant shall contact interested tribes to provide an electronic copy of the revised plans for review. Additional consultation shall occur between the City, Applicant and interested tribes to discuss the proposed changes and to review any new impacts and/or potential avoidance/preservation of the cultural resources on the Project. The Applicant will make all attempts to avoid and/or preserve in place as many as possible of the cultural resources located on the project site if the site design and/or proposed grades should be revised in consult with the City. In specific circumstances where existing and/or new resources are determined to be unavoidable and/or unable to be preserved in place despite all feasible alternatives, the developer shall make every effort to relocate the resource to a nearby open space or designated location on the property that is not subject any future development, erosion or flooding.

MM CR 2: Archaeological Monitoring: At least 30-days prior to application for a grading permit and before any grading, excavation and/or ground disturbing activities on the site take place, the Project Applicant shall retain a Secretary of Interior Standards qualified archaeological monitor to monitor all ground-disturbing activities in an effort to identify any unknown archaeological resources.

1. The Project Archaeologist, in consultation with interested tribes, the Developer and the City, shall develop an Archaeological Monitoring Plan to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. Details in the Plan shall include:
 - a. Project grading and development scheduling;
 - b. The development of a rotating or simultaneous schedule in coordination with the applicant and the Project Archeologist for designated Native American Tribal Monitors from the consulting tribes during grading, excavation and ground disturbing activities on

the site: including the scheduling, safety requirements, duties, scope of work, and Native American Tribal Monitors' authority to stop and redirect grading activities in coordination with all Project archaeologists;

- c. Plan for the controlled grading within 50 feet of the boundaries of CA-RIV-8750, CA-RIV-8751 and CA-RIV-8752. Grading within 50-feet of these sites shall be conducted using controlled grading techniques. Large indiscriminate grading equipment shall not be used, and the controlled grading technique shall be reviewed by the Project Archaeologist, in consultation with interested tribes, the Developer and the City. The archaeologist and Native Tribal Monitors shall ensure that the grading efforts in these areas are conducted in a manner that allows for the identification of subsurface cultural resources. Any resources observed shall be addressed in accordance with Mitigation Measure CR 3;
- d. The determination by the project archaeologist, Developer, City and Native Tribal Monitors as to which features of sites CA-RIV-8750, CA-RIV-8751 and CA-RIV-8752 can be successfully relocated to locations onsite that will be mutually agreed upon. The relocated features will be placed in an area that will be preserved in perpetuity, so that no future disturbances will occur;
- e. The protocols and stipulations that the Developer, City, Tribes and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation;
- f. The 3D modeling on all the sites located within the Project site, specifically in Areas 1 (CA-RIV-8750), 2 (CA-RIV-8751), and 3 (CA-RIV-8752), as delineated on the Site Plan attached to the Archaeological Monitoring Plan shall take into account the potential impacts to undiscovered buried archaeological and cultural resources and procedures to protect in place and/or mitigate such impacts;
- g. The location of the Cottonwood Tree requested by the Morongo Band of Mission Indians for their tribal requirements shall be noted on the Archaeological Monitoring Plan. The Monitoring Plan shall address the timing of the removal of the tree by the Morongo Band of Mission Indians and transfer of the tree to them; and
- h. The scheduling and timing of the Cultural Sensitivity Training noted in Mitigation Measure CR 4.

MM CR 3: Treatment and Disposition of Cultural Resources: In the event that Native American cultural resources are inadvertently discovered during the course of grading for this Project. The following procedures will be carried out for treatment and disposition of the discoveries:

1. Temporary Curation and Storage: During the course of construction, all discovered resources shall be temporarily curated in a secure location onsite or at the offices of the project archaeologist. The removal of any artifacts from the project site will need to be thoroughly inventoried with tribal monitor oversight of the process; and
2. Treatment and Final Disposition: The landowner(s) shall relinquish ownership of all cultural resources, including sacred items, burial goods, and all archaeological artifacts and non-human remains as part of the required mitigation for impacts to cultural resources. The applicant shall relinquish the artifacts through one or more of the following methods and provide the City of Riverside Community and Economic Development Department with evidence of same:
 - a. Accommodate the process for onsite reburial of the discovered items with the consulting Native American tribes or bands. This shall include measures and provisions to protect the future reburial area from any future impacts. Reburial shall not occur until all cataloguing and basic recordation have been completed;
 - b. A curation agreement with an appropriate qualified repository within Riverside County that meets federal standards per 36 CFR Part 79 and therefore would be professionally curated and made available to other archaeologists/researchers for further study. The collections and associated records shall be transferred, including title, to an appropriate curation facility within Riverside County, to be accompanied by payment of the fees necessary for permanent curation;
 - c. For purposes of conflict resolution, if more than one Native American tribe or band is involved with the project and cannot come to an agreement as to the disposition of cultural materials, they shall be curated at the Western Science Center or Riverside Metropolitan Museum by default; and.
 - d. At the completion of grading, excavation and ground disturbing activities on the site a Phase IV Monitoring Report shall be submitted to the City documenting monitoring activities conducted by the project Archaeologist and Native Tribal Monitors within 60 days of completion of grading. This report shall document the impacts to the known resources on the property; describe how each mitigation measure was fulfilled; document the type of cultural resources

recovered and the disposition of such resources; provide evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting; and, in a confidential appendix, include the daily/weekly monitoring notes from the archaeologist. All reports produced will be submitted to the City of Riverside, Eastern Information Center and interested tribes:

- i. Information on the location of, up to, 13 protein residue tests on the site and one or more control sites, will be provided in the final report.

MM CR 4: Cultural Sensitivity Training: The County Certified Archaeologist and Native American Monitors shall attend the pre-grading meeting with the developer/permit holder's contractors to provide Cultural Sensitivity Training for all construction personnel. This shall include the procedures to be followed during ground disturbance in sensitive areas and protocols that apply in the event that unanticipated resources are discovered. Only construction personnel who have received this training can conduct construction and disturbance activities in sensitive areas. A sign in sheet for attendees of this training shall be included in the Phase IV Monitoring Report. (DEIR, pp. 5-33-5-36.)

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-LLLL:

See Response to Comment 34-KKKK. Through the Senate Bill 18/Assembly Bill 52 consultation process, the Pechanga Band of Luiseño Indians Tribe requested full avoidance of all three archaeological sites at the Project site, but acknowledges that the current design of the proposed Project will entail removal of all the known archaeological resources at the Project site (DEIR, p. 5.5-32). Thus, at the Tribe's request, the Project will implement mitigation measures **MM CR 1** through **MM CR 4** listed under Response to Comment 34-KKKK above to reduce impacts to the known archaeological resources.

The tribes recognize that full avoidance of these resources is not feasible due to site design; however, mitigation measures **MM CR 1** through **MM CR 4** will ensure that impacts to these resources are less than significant and ensure that any newly discovered resources are properly handled. Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-MMMM:

The comment alleges that the Greenhouse Gas (GHG) analysis is inadequate on the basis of failing to use the CEQA Appendix G thresholds. Significance Thresholds used are discussed in Section 5.7.3 of the DEIR (pp. 5.7-28-31) Consistent with CEQA Guidelines Appendix G, the three factors identified in CEQA Guidelines Section 15064.4 and the California Supreme Court opinion in *Ctr. for Biological Diversity v. California Dep't of Fish & Wildlife* (2015) 62 Cal.4th 204(*Newhall Ranch*), the following thresholds were considered in determining the significance of impacts from GHG in the DEIR:

- Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emission of GHGs (see Threshold A).

Analysis under Threshold A involved both a qualitative and quantitative analysis of the Project's compliance with the City of Riverside's Climate Action Plan ("CAP"). The CAP is a geographically specific plan that was adopted by the City of Riverside for the purpose of reducing GHG emissions under the control or influence of the City consistent with Assembly Bill 32 (AB 32) and subsequent state legislation and state agency action to address climate change.

- Would the Project conflict with the CARB Scoping Plan and regulations adopted for the purpose of reducing emissions of greenhouse gases (see Threshold B)?

Analysis under Impact Threshold B involved a qualitative analysis of the Project's consistency with the CARB's Scoping Plan and with GHG emission reducing regulations. The Scoping Plan (and its adopted regulations) are considered a statewide plan, policy, or regulation adopted by a public agency to reduce GHG emissions that may be used to assess consistency with AB 32.

The comment also questions why the GHG analysis did not make use of the SCAQMD thresholds. The City further determined that each of the above thresholds is considered to be a separate and independent basis upon which to substantiate the significance of the Project's GHG impact. (DEIR, p. 5.7-31.) Therefore, it is appropriate for the Project to not make use of the SCAQMD draft threshold for its own industrial projects of 10,000 MTCO₂e or the 3,000 MTCO₂e for land use projects, and instead use the City's CAP.

The comment objects to the rejection of the standard adopted in Executive Order B-30-15. As explained in Section 5.7 – Greenhouse Gas Emissions of the DEIR (pp. 5.7-44-45), the executive goals set by EO B-30-15 and EO S-3-05 are presently inappropriate significance criteria in analyzing impacts related to GHG emissions and climate change under CEQA because they do not establish any binding mandates. (DEIR, p. 44) The recent passing of Senate Bill 32 (SB 32) makes EO B-30-15 part of California's overall climate change law by adding a new section to the California Global Warming Solutions Act of 2006. Additional action at the state and subregional level is critical to the City's ability to attain its long-term GHG targets, as the City cannot meet the goals without altering land uses. Additionally, the proposed Project will be operational prior to 2020, and is consistent with the City's CAP and AB 32 reduction targets. Moreover, as buildings, roads, or other components of the Project are updated or replaced over time, they will be subject to the then-existing requirements for GHG emissions reductions, including those set forth to ensure compliance with EOs S-3-05, 05 and B-30-15, and will use then-existing technologies employed to achieve deep reductions in GHG emissions. (DEIR, p. 5.7-44-45.)

Additionally, the comment points out that the DEIR applies CEQA Guideline Section 15083.5, which does not exist. The DEIR inadvertently identified the CEQA Section and has been clarified on page 5.7-35 to read CEQA Guideline Section 15183.5 as follows.

The following from CEQA Guidelines Section 15183.5(b) ~~15083.5(b)~~ lists the requirements for greenhouse gas reduction plans used for this purpose:

The comment asserts that the Project conducted a Business as Usual (BAU) scenario in a manner that the California Supreme Court amended its *Newhall Ranch* decision to specifically reject. However, *Newhall Ranch* provides that a lead agency may assess consistency with AB 32's goal in whole or in part by looking to compliance with regulatory programs designed to reduce GHG emissions from particular activities. (DEIR, p. 5.7-45; *Ctr. for Biological Diversity v. California Dep't of Fish & Wildlife, supra*, 62 Cal.4th at p. 229.) Specifically, the Court advised that, in regards to compliance with GHG Reduction Plans or Climate Action Plans (CAPs), a lead agency may utilize "geographically specific GHG emission reduction plans" such as climate action plans or greenhouse gas emission reduction plans to provide a basis for the tiering or streamlining of project-level CEQA analysis. (DEIR, p. 5.7-30; *Ctr. for Biological Diversity v. California Dep't of Fish & Wildlife, supra*, 62 Cal.4th at p. 230.) The City's CAP is a geographically specific plan that was adopted by the City of Riverside for the purpose of reducing GHG emissions under the control or influence of the City consistent with AB 32 and subsequent state legislation and state agency action to address climate change. Therefore, conducting a BAU analysis consistent with the City's CAP is an appropriate method of assessing the Project's consistency with AB 32's goals and is consistent with the *Newhall Ranch* decision.

The comment also voices concern over the reduction in GHG emissions calculated due to vegetation change. In terms of vegetation change, SCAQMD's Model CalEEMod estimates the GHG emissions associated with the one-time change in vegetation resulting from development and the GHG emissions sequestered as a result of planting new trees on a project site. Planting trees as part of the Project will sequester CO₂ while they are actively growing. (DEIR, p. 5.7-40.) Additionally, according to Section 5.4 of the DEIR, disturbed non-native grassland dominates the site with an ephemeral drainage traversing the site. The Project site also appears to be regularly mowed for weed abatement and fire control purposes. (DEIR, p. 5.4-1.) The existing vegetation community is desiccated for a majority of the year and thereby has limited carbon storage potential. CalEEMod estimates vegetation change from a pre-construction condition within the parameters of forest land, cropland, grassland, and wetlands. The Project's existing land use does not adequately fit into any of these parameters, and therefore land use related vegetation change was not included in the GHG modeling. Any potential impact from including the land use change with the limited carbon storing potential of the existing vegetation community would be negligible, and would not affect the results of the analysis.

A comparison of the Project's estimated GHG emissions in 2020 (23,541.61 MTCO₂E /year) to the estimated BAU GHG emissions (28,778.85 MTCO₂E/year) corresponds to a 18.2 percent reduction, which achieves the 15 percent reduction target to meet the goal of the City's CAP pursuant to AB 32 reduction targets. (DEIR, p. 5.7-43.) Even if the 17.49 MTCO₂E annual net-reduction was not included in the analysis, the Project would continue to meet and exceed the

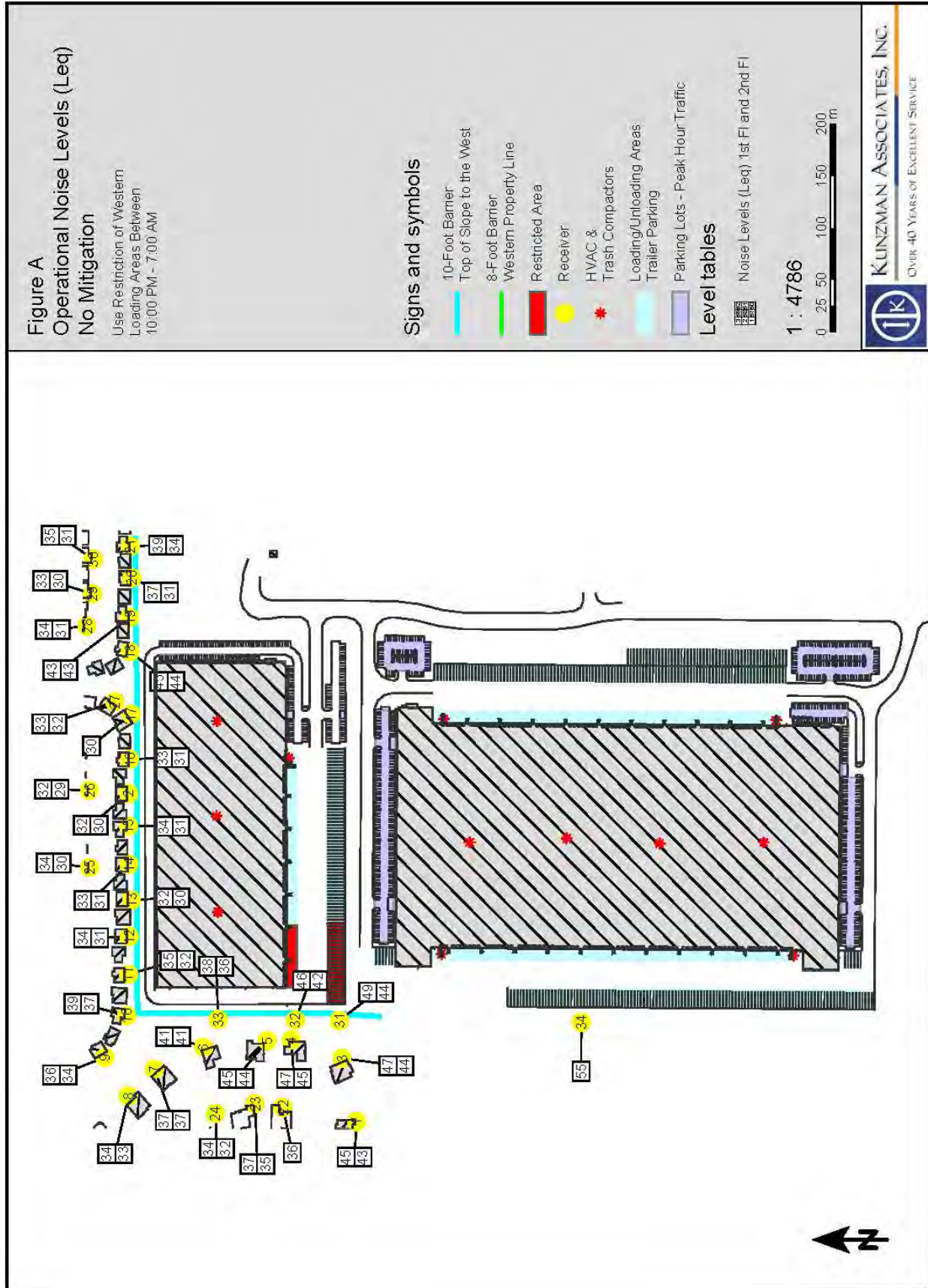
goal of the City's CAP and be consistent with the reduction targets of AB 32 as the sequestration-related reduction is not substantial.

Therefore, this comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.

Response to Comment 34-NNNN:

Comment noted. The public will have an opportunity to comment on the merits of the Project itself at the December 15, 2016, City Planning Commission hearing and the following City Council hearing. Notice of these hearings on this Project will be published at least 10 days prior to the hearing date. The agenda for City Planning Commission and City Council hearings can be found at: <http://riversideca.legistar.com/Calendar.aspx>

This comment does not identify any significant new environmental issues or impacts that were not already addressed in the DEIR.



7. BASIC GROUND-BORNE VIBRATION CONCEPTS

Ground-borne vibration can be a serious concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving and operating heavy earth-moving equipment.

The effects of ground-borne vibration include feelable movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for normal transportation projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for normal buildings.

The basic concepts of ground-borne vibration are illustrated for a rail system in Figure 7-1. The train wheels rolling on the rails create vibration energy that is transmitted through the track support system into the transit structure. The amount of energy that is transmitted into the transit structure is strongly dependent on factors such as how smooth the wheels and rails are and the resonance frequencies of the vehicle suspension system and the track support system. These systems, like all mechanical systems, have resonances which result in increased vibration response at certain frequencies, called natural frequencies.

The vibration of the transit structure excites the adjacent ground, creating vibration waves that propagate through the various soil and rock strata to the foundations of nearby buildings. The vibration propagates from the foundation throughout the remainder of the building structure. The maximum vibration amplitudes of the floors and walls of a building often will be at the resonance frequencies of various components of the building.

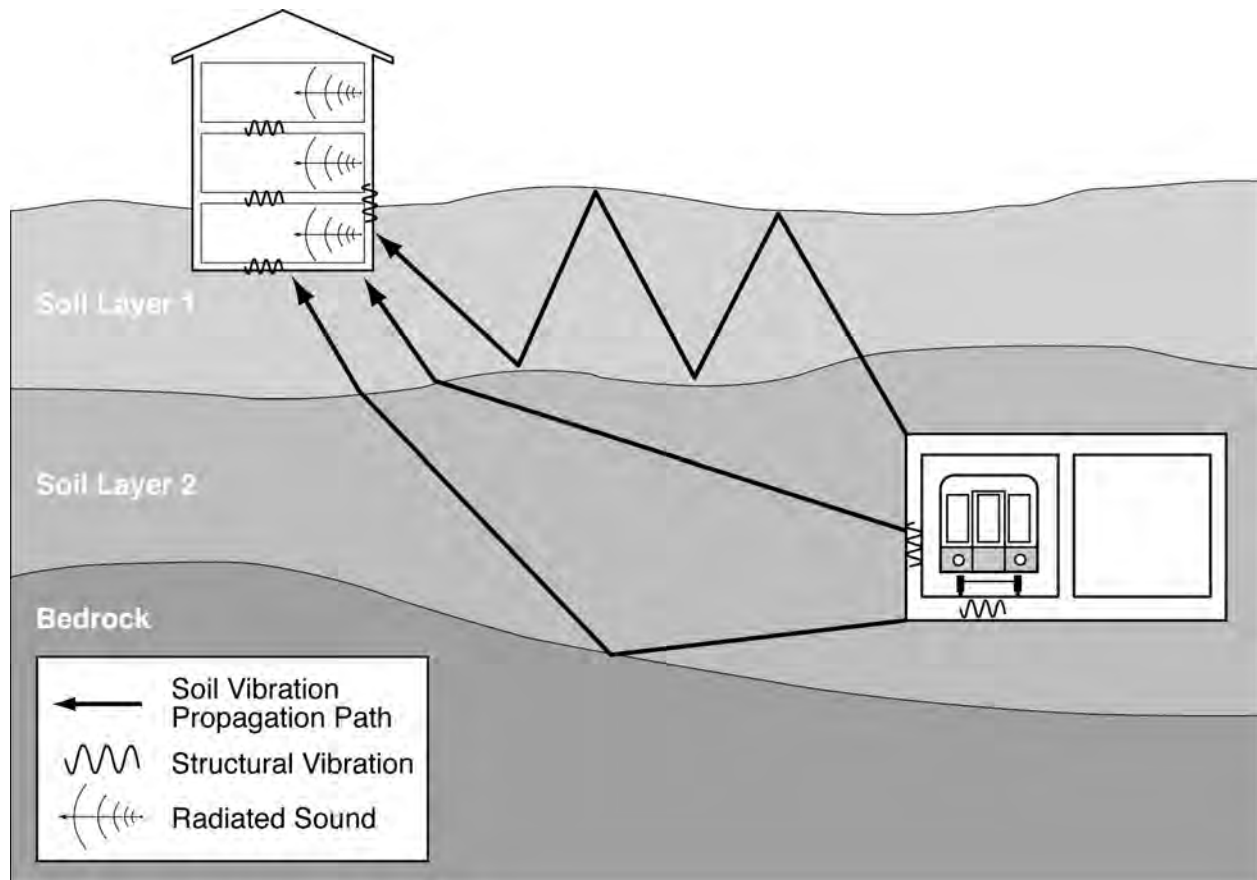


Figure 7-1. Propagation of Ground-Borne Vibration into Buildings

The vibration of floors and walls may cause perceptible vibration, rattling of items such as windows or dishes on shelves, or a rumble noise. The rumble is the noise radiated from the motion of the room surfaces. In essence, the room surfaces act like a giant loudspeaker causing what is called ground-borne noise.

Ground-borne vibration is almost never annoying to people who are outdoors. Although the motion of the ground may be perceived, without the effects associated with the shaking of a building, the motion does not provoke the same adverse human reaction. In addition, the rumble noise that usually accompanies the building vibration is perceptible only inside buildings.

7.1 DESCRIPTORS OF GROUND-BORNE VIBRATION AND NOISE

7.1.1 Vibratory Motion

Vibration is an oscillatory motion which can be described in terms of the displacement, velocity, or acceleration. Because the motion is oscillatory, there is no net movement of the vibration element and the average of any of the motion descriptors is zero. Displacement is the easiest descriptor to understand. For a vibrating floor, the displacement is simply the distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the floor movement and acceleration is the rate of change of the speed.

Although displacement is easier to understand than velocity or acceleration, it is rarely used for describing ground-borne vibration. Most transducers used for measuring ground-borne vibration use either velocity or acceleration. Furthermore, the response of humans, buildings, and equipment to vibration is more accurately described using velocity or acceleration.

7.1.2 Amplitude Descriptors

Vibration consists of rapidly fluctuating motions with an average motion of zero. Several descriptors can be used to quantify vibration amplitude, three of which are shown in Figure 7-2. The raw signal is the lighter-weight curve in the top graph. This curve shows the instantaneous vibration velocity which fluctuates positive and negative about the zero point. The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak of the vibration signal. PPV is often used in monitoring of blasting vibration since it is related to the stresses that are experienced by buildings.

Although peak particle velocity is appropriate for evaluating the potential of building damage, it is not suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to an average vibration amplitude. Because the net average of a vibration signal is zero, the root mean square (rms) amplitude is used to describe the "smoothed" vibration amplitude. The root mean square of a signal is the square root of the average of the squared amplitude of the signal. The average is typically calculated over a one-second period. The rms amplitude is shown superimposed

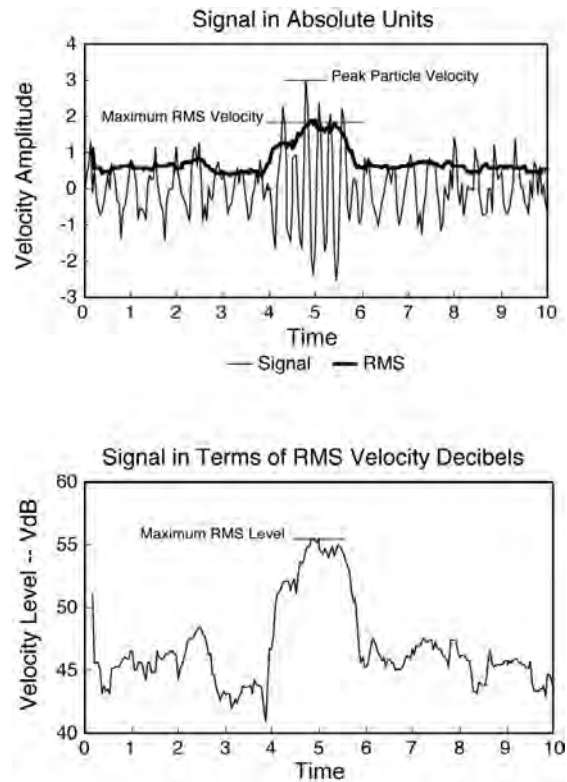


Figure 7-2. Different Methods of Describing a Vibration Signal

on the vibration signal in Figure 7-2. The rms amplitude is always less than the PPV* and is always positive.

The PPV and rms velocity are normally described in inches per second in the USA and meters per second in the rest of the world. Although it is not universally accepted, decibel notation is in common use for vibration.

Decibel notation acts to compress the range of numbers required to describe vibration. The bottom graph in Figure 7-2 shows the rms curve of the top graph expressed in decibels. Vibration velocity level in decibels is defined as:

$$L_v = 20 \times \log_{10} \left(\frac{v}{v_{ref}} \right)$$

where "L_v" is the velocity level in decibels, "v" is the rms velocity amplitude, and "v_{ref}" is the reference velocity amplitude. A reference must always be specified whenever a quantity is expressed in terms of decibels. The accepted reference quantities for vibration velocity are 1x10⁻⁶ inches/second in the USA and either 1x10⁻⁸ meters/second or 5x10⁻⁸ meters/second in the rest of the world. Because of the variations in the reference quantities, it is important to be clear about what reference quantity is being used whenever velocity levels are specified. *All vibration levels in this manual are referenced to 1x10⁻⁶ in./sec.* Although not a universally accepted notation, the abbreviation "VdB" is used in this document for vibration decibels to reduce the potential for confusion with sound decibels.

7.1.3 Ground-Borne Noise

As discussed above, the rumbling sound caused by the vibration of room surfaces is called ground-borne noise. The annoyance potential of ground-borne noise is usually characterized with the A-weighted sound level. Although the A-weighted level is almost the only metric used to characterize community noise, there are potential problems when characterizing low-frequency noise using A-weighting. This is because of the non-linearity of human hearing which causes sounds dominated by low-frequency components to seem louder than broadband sounds that have the same A-weighted level. The result is that ground-borne noise with a level of 40 dBA sounds louder than 40 dBA broadband noise. This is accounted for by setting the limits for ground-borne noise lower than would be the case for broadband noise.

*The ratio of PPV to maximum rms amplitude is defined as the **crest factor** for the signal. The crest factor is always greater than 1.71, although a crest factor of 8 or more is not unusual for impulsive signals. For ground-borne vibration from trains, the crest factor is usually 4 to 5.

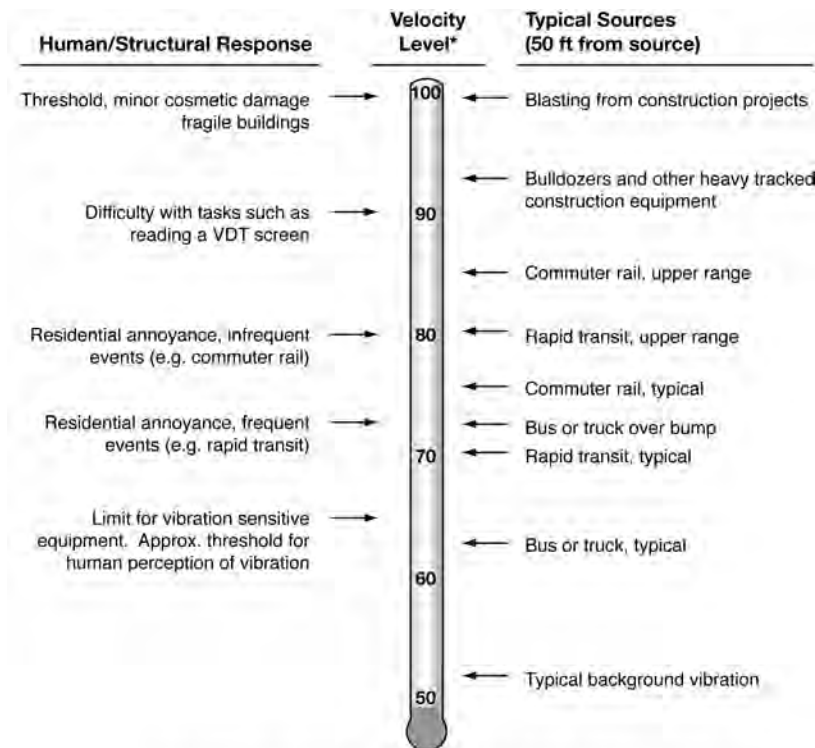
7.2 HUMAN PERCEPTION OF GROUND-BORNE VIBRATION AND NOISE

This section gives some general background on human response to different levels of building vibration, laying the groundwork for the criteria for ground-borne vibration and noise that are presented in Chapter 8.

7.2.1 Typical Levels of Ground-Borne Vibration and Noise

In contrast to airborne noise, ground-borne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 VdB or lower, well below the threshold of perception for humans which is around 65 VdB. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people or slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

Figure 7-3 illustrates common vibration sources and the human and structural response to ground-borne vibration. The range of interest is from approximately 50 VdB to 100 VdB. Background vibration is usually well below the threshold of human perception and is of concern only when the vibration affects very sensitive manufacturing or research equipment. Electron microscopes and high-resolution lithography equipment are typical of equipment that is highly sensitive to vibration.



* RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second

Figure 7-3. Typical Levels of Ground-Borne Vibration

Although the perceptibility threshold is about 65 VdB, human response to vibration is not usually significant unless the vibration exceeds 70 VdB. Rapid transit or light rail systems typically generate vibration levels of 70 VdB or more near their tracks. On the other hand, buses and trucks rarely create vibration that exceeds 70 VdB unless there are bumps in the road. Because of the heavy locomotives on diesel commuter rail systems, the vibration levels average about 5 to 10 decibels higher than rail transit vehicles. If there is unusually rough road or track, wheel flats, geologic conditions that promote efficient propagation of vibration, or vehicles with very stiff suspension systems, the vibration levels from any source can be 10 decibels higher than typical. Hence, at 50 feet, the upper range for rapid transit vibration is around 80 VdB and the high range for commuter rail vibration is 85 VdB. If the vibration level in a residence reaches 85 VdB, most people will be strongly annoyed by the vibration.

The relationship between ground-borne vibration and ground-borne noise depends on the frequency content of the vibration and the acoustical absorption of the receiving room. The more acoustical absorption in the room, the lower will be the noise level. For a room with average acoustical absorption, the unweighted sound pressure level is approximately equal to the average vibration velocity level of the room surfaces.* Hence, the A-weighted level of ground-borne noise can be estimated by applying A-weighting to the vibration velocity spectrum. Since the A-weighting at 31.5 Hz is -39.4 dB, if the vibration spectrum peaks at 30 Hz, the A-weighted sound level will be approximately 40 decibels lower than the velocity level. Correspondingly, if the vibration spectrum peaks at 60 Hz, the A-weighted sound level will be about 25 decibels lower than the velocity level.

7.2.2 Quantifying Human Response to Ground-Borne Vibration and Noise

One of the major problems in developing suitable criteria for ground-borne vibration is that there has been relatively little research into human response to vibration, in particular, human annoyance with building vibration. The American National Standards Institute (ANSI) developed criteria for evaluation of human exposure to vibration in buildings in 1983⁽¹⁾ and the International Organization for Standardization (ISO) adopted similar criteria in 1989⁽²⁾ and revised them in 2003⁽³⁾. The 2003 version of ISO 2361-2 acknowledges that “human response to vibration in buildings is very complex.” It further indicates that the degree of annoyance can not always be explained by the magnitude of the vibration alone. In some cases the complaints are associated with measured vibration that is lower than the perception threshold. Other phenomena such as ground-borne noise, rattling, visual effects such as movement of hanging objects, and time of day (e.g., late at night) all play some role in the response of individuals. To understand and evaluate human response, which is often measured by complaints, all of these related effects need to be considered. The available data documenting real world experience with these phenomena is still relatively sparse. Experience with U.S. rapid transit projects represents a good foundation for developing suitable limits for residential exposure to ground-borne vibration and noise from transit operations.

*The sound level approximately equals the average vibration velocity level *only* when the velocity level is referenced to 1 micro-inch/second. When velocity level is expressed using the international standard of 1×10^{-8} m/sec, the sound level is approximately 8 decibels lower than the average velocity level.

Figure 7-4 illustrates the relationship between the vibration velocity level measured in 22 homes and the general response of the occupants to the vibration. The data shown were assembled from measurements performed for several transit systems along with subjective ratings by the researchers and residents. These data were previously published in the "State-of-the-Art Review of Ground-borne Noise and Vibration."⁽⁴⁾ Both the occupants and the people who performed the measurements agreed that floor vibration in the "Distinctly Perceptible" category was unacceptable for a residence. The data in Figure 7-4 indicate that residential vibration exceeding 75 VdB is unacceptable for a repetitive vibration source such as rapid transit trains that pass every 5 to 15 minutes. Also shown in Figure 7-4 is a curve showing the percent of people annoyed by vibration from high-speed trains in Japan.⁽⁵⁾ The scale for the percent annoyed is on the right-hand axis of the graph. The results of the Japanese study confirm the conclusion that at a vibration velocity level of 75 to 80 VdB, many people will find the vibration annoying.

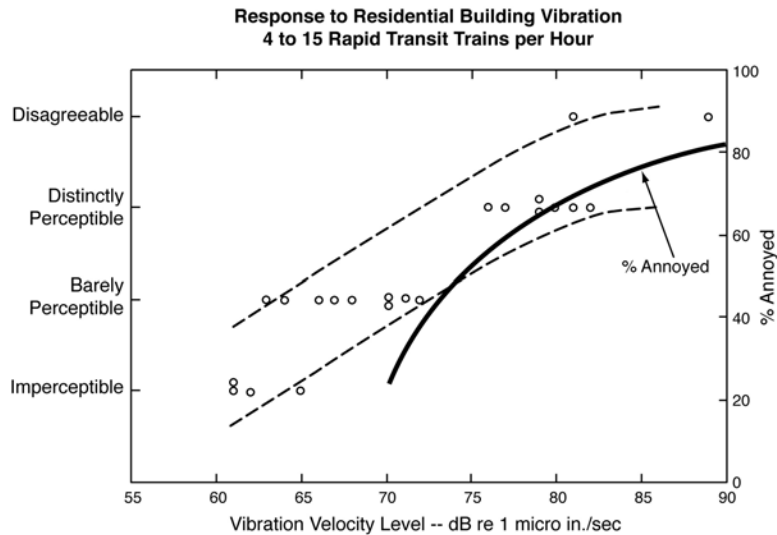


Figure 7-4. Response to Transit-induced Residential Vibration

Table 7-1 describes the human response to different levels of ground-borne noise and vibration. The first column is the vibration velocity level, and the next two columns are for the corresponding noise level assuming that the vibration spectrum peaks at 30 Hz or 60 Hz. As discussed above, the A-weighted noise level will be approximately 40 dB less than the vibration velocity level if the spectrum peak is around 30 Hz, and 25 dB lower if the spectrum peak is around 60 Hz. Table 7-1 illustrates that achieving either the acceptable vibration or acceptable noise levels does not guarantee that the other will be acceptable. For example, the noise caused by vibrating structural components may be very annoying even though the vibration cannot be felt. Alternatively, a low-frequency vibration could be annoying while the ground-borne noise level it generates is acceptable.

Table 7-1. Human Response to Different Levels of Ground-Borne Noise and Vibration			
Vib. Velocity Level	Noise Level		Human Response
	Low Freq1	Mid Freq2	
65 VdB	25 dBA	40 dBA	Approximate threshold of perception for many humans. Low-frequency sound usually inaudible, mid-frequency sound excessive for quiet sleeping areas.
75 VdB	35 dBA	50 dBA	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level annoying. Low-frequency noise acceptable for sleeping areas, mid-frequency noise annoying in most quiet occupied areas.
85 VdB	45 dBA	60 dBA	Vibration acceptable only if there are an infrequent number of events per day. Low-frequency noise annoying for sleeping areas, mid-frequency noise annoying even for infrequent events with institutional land uses such as schools and churches.
Notes:			
1. Approximate noise level when vibration spectrum peak is near 30 Hz.			
2. Approximate noise level when vibration spectrum peak is near 60 Hz.			

7.3 GROUND-BORNE VIBRATION FOR DIFFERENT TRANSIT MODES

This section provides a brief discussion of typical problems with ground-borne vibration and noise for different modes of transit.

- Steel-Wheel Urban Rail Transit:** This category includes both heavy rail transit and light rail transit. Heavy rail is generally defined as electrified rapid transit trains with dedicated guideway, and light rail as electrified transit trains that do not require dedicated guideway. The ground-borne vibration characteristics of heavy and light rail vehicles are very similar since they have similar suspension systems and axle loads. Most of the studies of ground-borne vibration in this country have focused on urban rail transit. Problems with ground-borne vibration and noise are common when there is less than 50 feet between a subway structure and building foundations. Whether the problem will be perceptible vibration or audible noise is strongly dependent on local geology and the structural details of the building. Complaints about ground-borne vibration from surface track are more common than complaints about ground-borne noise. A significant percentage of complaints about both ground-borne vibration and noise can be attributed to the proximity of special trackwork, rough or corrugated track, or wheel flats.

- **Commuter and Intercity Passenger Trains:** This category includes passenger trains powered by either diesel or electric locomotives. In terms of vibration effects at a single location, the major difference between commuter and intercity passenger trains is that the latter are on a less frequent schedule. Both often share track with freight trains, which have quite different vibration characteristics as discussed below. The locomotives usually create the highest vibration levels. There is the potential of vibration-related problems anytime that new commuter or intercity rail passenger service is introduced in an urban or suburban area.
- **High-Speed Passenger Trains:** High-speed passenger trains have the potential of creating high levels of ground-borne vibration. Ground-borne vibration should be anticipated as one of the major environmental impacts of any high-speed train located in an urban or suburban area. The Amtrak trains on the Northeast Corridor between Boston and Washington, D.C., which attain moderate to high speeds in some sections with improved track, fit into this category.
- **Freight Trains:** Local and long-distance freight trains are similar in that they both are diesel-powered and have the same types of cars. They differ in their overall length, number and size of locomotives, and number of heavily loaded cars. Locomotives and rail cars with wheel flats are the sources of the highest vibration levels. Because locomotive suspensions are similar, the maximum vibration levels of local and long-distance freights are similar. It is not uncommon for freight trains to be the source of intrusive ground-borne vibration. Most railroad tracks used for freight lines were in existence for many years before the affected residential areas were developed. Vibration from freight trains can be a consideration for FTA-assisted projects when a new transit line will share an existing freight train right-of-way. Relocating the freight tracks within the right-of-way to make room for the transit tracks must be considered a direct impact of the transit system which must be evaluated as part of the proposed project. However, vibration mitigation is very difficult to implement on tracks where trains with heavy axle loads will be operating.
- **Automated Guideway Transit Systems (AGT):** This transit mode encompasses a wide range of transportation vehicles providing local circulation in downtown areas, airports and theme parks. In general, ground-borne vibration can be expected to be generated by steel-wheel/steel-rail systems even when limited in size. Because AGT systems normally operate at low speeds, have lightweight vehicles, and rarely operate in vibration-sensitive areas, ground-borne vibration problems are very rare.
- **Bus Projects:** Because the rubber tires and suspension systems of buses provide vibration isolation, it is unusual for buses to cause ground-borne noise or vibration problems. When buses cause effects such as rattling of windows, the source is almost always airborne noise. Most problems with bus-related vibration can be directly related to a pothole, bump, expansion joint, or other discontinuity in the road surface. Smoothing the bump or filling the pothole will usually solve the problem. Problems are likely when buses will be operating inside buildings. Intrusive building vibration can be caused by sudden loading of a building slab by a heavy moving vehicle or by vehicles running over lane divider bumps. A bus transfer station with commercial office space in the same building may have annoying vibration within the office space caused by bus operations.

7.4 FACTORS THAT INFLUENCE GROUND-BORNE VIBRATION AND NOISE

One of the major problems in developing accurate estimates of ground-borne vibration is the large number of factors that can influence the levels at the receiver position. This section gives a general appreciation of which factors have significant effects on the levels of ground-borne vibration. Table 7-2 is a summary of some of the many factors that are known to have, or are suspected of having, a significant influence on the levels of ground-borne vibration and noise. As indicated, the physical parameters of the transit facility, the geology, and the receiving building all influence the vibration levels. The important physical parameters can be divided into the following four categories:

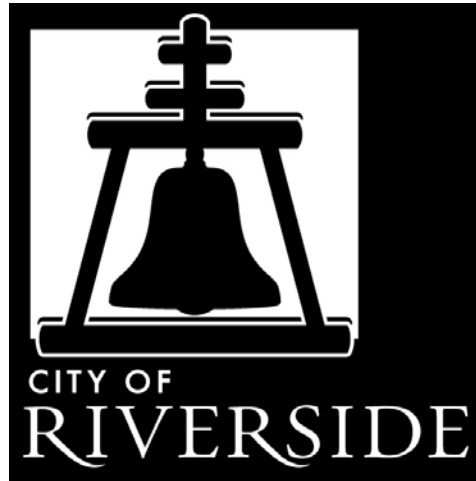
- **Operational and Vehicle Factors:** This category includes all of the parameters that relate to the vehicle and operation of the trains. Factors such as high speed, stiff primary suspensions on the vehicle, and flat or worn wheels will increase the possibility of problems from ground-borne vibration.
- **Guideway:** The type and condition of the rails, the type of guideway, the rail support system, and the mass and stiffness of the guideway structure will all have an influence on the level of ground-borne vibration. Jointed rail, worn rail, and wheel impacts at special trackwork can all cause substantial increases in ground-borne vibration. A rail system guideway will be either subway, at-grade, or elevated. It is rare for ground-borne vibration to be a problem with elevated railways except when guideway supports are located within 50 feet of buildings. For guideways at-grade, directly radiated noise is usually the dominant problem, although vibration can be a problem. For subways, ground-borne vibration is often one of the most important environmental problems. For rubber-tired systems, the smoothness of the roadway/guideway is the critical factor; if the surface is smooth, vibration problems are unlikely.
- **Geology:** Soil and subsurface conditions are known to have a strong influence on the levels of ground-borne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock. Experience with ground-borne vibration is that vibration propagation is more efficient in stiff clay soils, and shallow rock seems to concentrate the vibration energy close to the surface and can result in ground-borne vibration problems at large distances from the track. Factors such as layering of the soil and depth to water table can have significant effects on the propagation of ground-borne vibration.
- **Receiving Building:** The receiving building is a key component in the evaluation of ground-borne vibration since ground-borne vibration problems occur almost exclusively inside buildings. The train vibration may be perceptible to people who are outdoors, but it is very rare for outdoor vibration to cause complaints. The vibration levels inside a building are dependent on the vibration energy that reaches the building foundation, the coupling of the building foundation to the soil, and the propagation of the vibration through the building. The general guideline is that the heavier a building is, the lower the response will be to the incident vibration energy.

Table 7-2. Factors that Influence Levels of Ground-Borne Vibration and Noise	
<i>Factors Related to Vibration Source</i>	
Factors	Influence
Vehicle Suspension	If the suspension is stiff in the vertical direction, the effective vibration forces will be higher. On transit cars, only the primary suspension affects the vibration levels, the secondary suspension that supports the car body has no apparent effect.
Wheel Type and Condition	Use of pneumatic tires is one of the best methods of controlling ground-borne vibration. Normal resilient wheels on rail transit systems are usually too stiff to provide significant vibration reduction. Wheel flats and general wheel roughness are the major cause of vibration from steel wheel/steel rail systems.
Track/Roadway Surface	Rough track or rough roads are often the cause of vibration problems. Maintaining a smooth surface will reduce vibration levels.
Track Support System	On rail systems, the track support system is one of the major components in determining the levels of ground-borne vibration. The highest vibration levels are created by track that is rigidly attached to a concrete trackbed (e.g. track on wood half-ties embedded in the concrete). The vibration levels are much lower when special vibration control track systems such as resilient fasteners, ballast mats and floating slabs are used.
Speed	As intuitively expected, higher speeds result in higher vibration levels. Doubling speed usually results in a vibration level increase of 4 to 6 decibels.
Transit Structure	The general rule-of-thumb is that the heavier the transit structure, the lower the vibration levels. The vibration levels from a lightweight bored tunnel will usually be higher than from a poured concrete box subway.
Depth of Vibration Source	There are significant differences in the vibration characteristics when the source is underground compared to surface level.
<i>Factors Related to Vibration Path</i>	
Factor	Influence
Soil Type	Vibration levels are generally higher in stiff clay-type soils than in loose sandy soils.
Rock Layers	Vibration levels are usually high near at-grade track when the depth to bedrock is 30 feet or less. Subways founded in rock will result in lower vibration amplitudes close to the subway. Because of efficient propagation, the vibration level does not attenuate as rapidly in rock as it does in soil.
Soil Layering	Soil layering will have a substantial, but unpredictable, effect on the vibration levels since each stratum can have significantly different dynamic characteristics.
Depth to Water Table	The presence of the water table may have a significant effect on ground-borne vibration, but a definite relationship has not been established.
<i>Factors Related to Vibration Receiver</i>	
Factor	Influence
Foundation Type	The general rule-of-thumb is that the heavier the building foundation, the greater the coupling loss as the vibration propagates from the ground into the building.
Building Construction	Since ground-borne vibration and noise are almost always evaluated in terms of indoor receivers, the propagation of the vibration through the building must be considered. Each building has different characteristics relative to structureborne vibration, although the general rule-of-thumb is the more massive the building, the lower the levels of ground-borne vibration.
Acoustical Absorption	The amount of acoustical absorption in the receiver room affects the levels of ground-borne noise.

REFERENCES

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2. International Organization for Standardization, "Evaluation of Human exposure to whole body vibration: Part 2 – Continuous and shock-induced vibration in buildings (1 – 80 Hz), ISO 2361-2-1989
3. International Organization for Standardization, "Mechanical Vibration and Shock : Evaluation of human exposure to whole body vibration: Part 2 – Vibration in buildings (1 to 80 Hz), ISO 2631-2-2003.
4. J. T. Nelson, H. J. Saurenman, "State-of-the-Art Review: Prediction and Control of Groundborne Noise and Vibration from Rail Transit Trains," U.S. Department of Transportation, Urban Mass Transportation Administration, Report Number UMTA-MA-06-0049-83-4, DOT-TSC-UMTA-83-3, December 1983.
5. Y. Tokita, "Vibration Pollution Problems in Japan," In Inter-Noise 75, Sendai, Japan, pp. 465-472, 1975.

CITY OF RIVERSIDE GOOD NEIGHBOR GUIDELINES
FOR
SITING NEW AND/OR MODIFIED
WAREHOUSE DISTRIBUTION FACILITIES



CITY OF RIVERSIDE
COMMUNITY DEVELOPMENT DEPARTMENT
PLANNING DIVISION

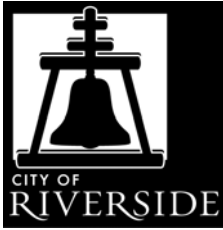
3900 MAIN STREET
RIVERSIDE, CA 92522

ADOPTED OCTOBER 14, 2008
RESOLUTION No. 21734

In September, 2005, the Western Riverside Council of Governments (WRCOG) and the Regional Air Quality Task Force (RAQTF) approved the *Good Neighbor Guidelines For Siting New and/or Modified Warehouse/Distribution Facilities*. The Good Neighbor Guidelines that follow, adopted by the City Council on October 14, 2008, are a modified version of the WRCOG's RAQTF Guidelines, and include goals and strategies tailored to the unique characteristics and specific needs of the City of Riverside.

These "Good Neighbor Guidelines for Siting New and/or Modified Warehouse/Distribution Facilities," (referred to as "Good Neighbor Guidelines") focus on the relationship between land use, permitting, and air quality, highlighting strategies that can help minimize the impacts of diesel emissions associated with warehouse/distribution centers. These Guidelines are intended to assist developers, property owners, elected officials, community organizations, and the general public address some of the complicated choices associated with siting warehouse/distribution facilities and understanding the options available when addressing environmental issues. The Guidelines will help to minimize the impacts of diesel particulate matter (PM) from on-road trucks associated with warehouses and distribution centers on existing communities and sensitive receptors located in the City. Sensitive receptors include residential neighborhoods, schools, parks, playgrounds, day care centers, nursing homes, hospitals, and other public places where residents are most likely to spend time.

For the purpose of these Guidelines, warehouse/distribution center means a building used for the storage, receiving, shipping, or wholesaling of goods and merchandise, and any incidental or accessory activities that is greater than 400,000 square feet. This shall be cumulative to include multiple warehouse buildings exceeding a total combined building area of 400,000 square feet, including phased projects. For the purpose of these Guidelines, a warehouse and distribution center is not intended to include "big box" discount or warehouse stores that sell retail goods, merchandise or equipment, or storage and mini-storage facilities that are offered for rent or lease to the general public.



PURPOSE

The purpose of the Good Neighbor Guidelines is to provide the City and developers with a variety of strategies that can be used to reduce diesel emissions from heavy-duty trucks that are delivering goods to and from warehouse and distribution centers.

In 1998, the South Coast Air Quality Management District (SCAQMD) conducted its second Multiple Air Toxics Emissions Study (MATES II)¹. Considered the nation's most comprehensive study of toxic air pollution to date, the study found that:

- Diesel exhaust is responsible for about 70 percent of the total cancer risk from air pollution;
- Emissions from mobile sources -- including cars and trucks as well as ships, trains and planes -- account for about 90 percent of the cancer risk. Emissions from businesses and industry are responsible for the remaining 10 percent; and
- The highest cancer risk occurs in south Los Angeles County -- including the port area--and along major freeways².

Implementation of the recommended guidance for proposed facilities is technically more feasible than a retroactive application to existing warehouse/distribution centers. However, there is an educational component of these Guidelines aimed at existing facilities. As well, there are mechanisms in the planning process that will encourage developers to incorporate the recommended guidelines upfront in the design phase of a project.

These Guidelines are intended to be considered when issuing permits such as conditional use permits, or zoning permits. In addition, the recommended Guidelines can be used to mitigate potentially significant adverse environmental impacts that are identified under the California Environmental Quality Act (CEQA). The recommended Guidelines are intended to be used for new warehouses and can be incorporated in the design phase of the proposed warehouse or distribution center.

The recommended Guidelines format identifies the overall goal and the recommended strategies that can be implemented to achieve the goal. The Guidelines include a series of strategies that can be implemented in part or whole, or tailored to

¹ For more information on the MATES II Study visit <http://www.aqmd.gov/matesiidf/matestoc.htm>.

² Taken from the MATES II Fact Sheet found at <http://www.aqmd.gov/news1/2005/matesiiifactsheet.html>.

the specific needs of a project. They will provide a general framework for planners and developers regarding how to achieve a specified goal.

It should be noted that the California Air Resources Board (CARB) has adopted two airborne toxic control measures that will reduce diesel particulate materials (PM) emissions associated with warehouse/distribution centers. The first will limit nonessential (or unnecessary) idling of diesel-fueled commercial vehicles, including those entering from other states or countries³. This measure prohibits idling of a vehicle for more than five minutes at any one location. The second measure requires that transport refrigeration units (TRUs) operating in California become cleaner over time⁴. The measure establishes in-use performance standards for existing TRU engines that operate in California, including out-of-state TRUs. The requirements are phased-in beginning in 2004, and extend to 2019.

CARB also operates a smoke inspection program for heavy-duty diesel trucks that focuses on reducing truck emissions in California communities. Areas with large numbers of distributions centers are a high priority.

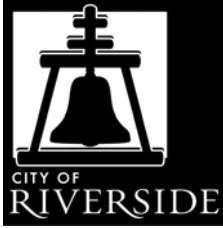
While CARB has these measures in place, local agencies need to acknowledge that the enforcement of these measures is through the California Highway Patrol and do not provide a swift resolve to local air quality issues.

ACRONYMS USED THROUGHOUT THIS DOCUMENT

CARB	California Air Resources Board
CEQA	California Environmental Quality Act
EMFAC	EMission FACtors (EMFAC) Model for On-Road Vehicle Emissions
PM	Particulate Matter
RAQTF	Regional Air Quality Task Force
SCAQMD	South Coast Air Quality Management District
TRU	Transportation Refrigeration Unit
URBEMIS	Urban Emissions Software
WRCOG	Western Riverside Council of Governments

³ For more information visit <http://www.arb.ca.gov/regact/idling/idling.htm>.

⁴ For more information visit <http://www.arb.ca.gov/diesel/tru.htm>.



CITY OF RIVERSIDE GOOD NEIGHBOR GUIDELINES

GOAL 1: Minimize exposure to diesel emissions to neighbors that are situated in close proximity to the warehouse/distribution center.

Recommended Strategies:

- 1a. Design facilities to allow for the queuing of trucks on-site and away from sensitive receptors. Conversely, prevent the queuing of trucks on streets or elsewhere outside of facility in compliance with Title 10 – Vehicles and Traffic – Chapter 10.44 – Stopping, Standing and Parking.
- 1b. To the extent possible, locate driveways, loading docks and internal circulation routes away from residential uses or any other sensitive receptors.
- 1c. In compliance with CEQA, conduct SCAQMD URBEMIS and EMFAC computer models, as appropriate, to initially evaluate warehouse and distribution projects on a case by case basis to determine the significance of air quality impacts and whether air quality thresholds would be exceeded as a result of a project. Where thresholds are exceeded, a more detailed air quality analysis/health risk assessment prepared by an air quality specialist is required to be prepared and submitted by the project applicant. As a general rule, the following guidelines can be used to determine whether a proposed project will be required to prepare additional technical analyses:
 - i. An air quality study for an industrial project is required when the proposed project has the potential to exceed established thresholds as noted by URBEMIS and EMFAC computer models provided by SCAQMD. If these models indicate the project will exceed thresholds due to existing or proposed site conditions, intensity of development, location of nearest sensitive receptor, or any other exceptional circumstance warranting the need for

additional review the preparation of an air quality study will be required.

- ii. A health risk assessment is required when the truck traffic areas of an industrial project are located within 1,000 feet of sensitive receptors, in accordance with SCAQMD guidelines and/or practices.
- 1d. Enforce compliance with Riverside Municipal Code Section 19.880 – “Transportation Demand Management Regulations”. This section of the Code requires trip reduction plans to be submitted for all businesses, including warehouses, with over one hundred employees to reduce work-related vehicle trips by six and one half percent from the number of trips related to the project.

GOAL 2: Eliminate diesel trucks from unnecessarily traversing through residential neighborhoods.

Recommended strategies:

- 2a. Require warehouse/distribution centers to establish a specific truck route between the warehouse/distribution center and the SR-60 and I-215 freeways for City approval as part of the Design Review process. In addition, a haul route plan for construction activities should also be provided as part of the Design Review process.
- 2b. Require warehouse/distribution centers to clearly specify all entrance and exit points on the site plan submitted for City review and approval.
- 2c. Require warehouse/distribution centers to provide on-site signage for directional guidance to trucks entering and exiting the facility
- 2d. Require warehouse/distribution centers to provide signage or flyers that advise truck drivers of the closest restaurants, fueling stations, truck repair facilities, lodging and entertainment.

GOAL 3: Eliminate trucks from using residential areas and repairing vehicles on the streets.

Recommended Strategies:

- 3a. Enforce compliance with Riverside Municipal Code Section 10.44.155 – “Parking of certain commercial vehicles, trailers and semi-trailers prohibited; exceptions”.
- 3b. Enforce compliance with Riverside Municipal Code Section 10.44.160 – “Parking of certain commercial vehicles prohibited in residential districts”.
- 3c. Enforce compliance with Section 10.44.040 Parking for certain purposes prohibited.

GOAL 4: Reduce and/or eliminate diesel idling within the warehouse/distribution center.

Recommended Strategies:

- 4a. Promote the installation of on-site electric hook-ups to eliminate the idling of main and auxiliary engines during loading and unloading of cargo and when trucks are not in use – especially where TRUs are proposed to be used.
- 4b. Implement General Plan 2025 Program Final Program Environmental Impact Report, Mitigation Measure MM Air 12. This Mitigation Measure requires that all new truck terminals, warehouses and other shipping facilities requiring the use of refrigerated trucks and with more than 50 truck trips per day shall provide electrical hookups for the refrigerated units to reduce idling and its associated air quality pollutants. Additionally, future tenant improvements involving conversion of a warehouse for refrigeration storage shall include electrical hookups for refrigerated units.
- 4c. Require signage (posted inside and outside of the warehouse facility) to inform truck drivers of CARB regulations, idling limits, authorized truck routes, and designated truck parking locations. Post signs requesting truck drivers to turn off engines when not in use and restrict idling within facilities to less than 5 minutes.

DEFINITIONS

Buffer Zone:	An area of land separating one parcel or land from another that acts to soften or mitigate the effects of one land use on the other.
DPM - Diesel Particulate Matter:	Refers to the particles found in the exhaust of diesel-fueled CI engines. DPM may agglomerate and absorb other species to form structures of complex physical and chemical properties (identified in 1998 as a toxic air contaminant).
Idling:	The operation of the engine of a vehicle while the vehicle is not in motion.
Mobil Source:	Sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats, trains and airplanes.
PM - Particulate Matter:	Refers to the particles found in the exhaust of CI engines, which may agglomerate and absorb other species to form structures of complex physical and chemical properties.
Risk:	For cancer health effects, risk is expressed as an estimate of the increase chances of getting cancer due to facility emissions over 70-year lifetime. The increase in risk expressed as chances in a million (e.g., 1,400 in a million)
TRU:	A Transport Refrigeration Unit refers to refrigeration systems powered by integral internal combustion engines designed to control the environment of temperature sensitive products that are transported in trucks and refrigerated trailers. TRUs may be capable of both cooling and heating.

Warehouse/Distribution Center: For the purpose of these Guidelines, a warehouse/distribution center means a building used for the storage, receiving, shipping, or wholesaling of goods and merchandise, and any incidental or accessory activities that is greater than 400,000 square feet. This shall be cumulative to include multiple warehouse buildings exceeding a total combined building area of 400,000 square feet including phased projects. For the purpose of these Guidelines, a warehouse and distribution center is not intended to include “big box” discount or warehouse stores that sell retail goods, merchandise or equipment, or storage and mini-storage facilities that are offered for rent or lease to the general public.

WRCOG: Western Riverside Council of Governments

Attachment C1

Prepared in cooperation with the Bureau of Reclamation and the U.S. Fish and Wildlife Service

A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher

Chapter 10 of
Section A, Biological Science
Book 2, Collection of Environmental Data



Techniques and Methods 2A-10

Cover: Southwestern Willow Flycatcher. Photograph taken by Susan Sferra, U.S. Fish and Wildlife Service.

A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher

By Mark K. Sogge, U.S. Geological Survey; Darrell Ahlers, Bureau of Reclamation; and Susan J. Sferra, U.S. Fish and Wildlife Service

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Book 2, Collection of Environmental Data

Prepared in cooperation with the Bureau of Reclamation and the
U.S. Fish and Wildlife Service

Techniques and Methods 2A-10

U.S. Department of the Interior
U.S. Geological Survey

ATTACHMENT 3

U.S. Department of the Interior
KEN SALAZAR, Secretary

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U.S. Geological Survey, Reston, Virginia: 2010

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Suggested citation:

Sogge, M.K., Ahlers, Darrell, and Sferra, S.J., 2010, A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.

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Conversion Factors

Multiply	By	To obtain
centimeter (cm)	0.3937	inch (in.)
gram (g)	0.03527	ounce, avoirdupois (oz)
hectare (ha)	2.471	acre
kilometer (km)	0.6214	mile (mi)
meter (m)	3.281	foot (ft)
millimeter (mm)	0.03937	inch (in.)

Abbreviations and Acronyms

GPS	Global Positioning System
NDVI	Normalized Difference Vegetation Index
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher

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Background

The Southwestern Willow Flycatcher (*Empidonax traillii extimus*) has been the subject of substantial research, monitoring, and management activity since it was listed as an endangered species in 1995. When proposed for listing in 1993, relatively little was known about the flycatcher's natural history, and there were only 30 known breeding sites supporting an estimated 111 territories rangewide (Sogge and others, 2003a). Since that time, thousands of presence/absence surveys have been conducted throughout the historical range of the flycatcher, and many studies of its natural history and ecology have been completed. As a result, the ecology of the flycatcher is much better understood than it was just over a decade ago. In addition, we have learned that the current status of the flycatcher is better than originally thought: as of 2007, the population was estimated at approximately 1,300 territories distributed among approximately 280 breeding sites (Durst and others, 2008a).

Concern about the Southwestern Willow Flycatcher on a rangewide scale was brought to focus by Unitt (1987), who described declines in flycatcher abundance and distribution throughout the Southwest. *E. t. extimus* populations declined during the 20th century, primarily because of habitat loss and modification from activities, such as dam construction and operation, groundwater pumping, water diversions, and flood control. In 1991, the U.S. Fish and Wildlife Service (USFWS) designated the Southwestern Willow Flycatcher as a candidate category 1 species (U.S. Fish and Wildlife Service, 1991). In July 1993, the USFWS proposed to list *E. t. extimus* as an endangered species and to designate critical habitat under the Act (U.S. Fish and Wildlife Service, 1993). A final rule listing *E. t. extimus* as endangered was published in February 1995 (U.S. Fish and Wildlife Service, 1995); critical habitat was designated in 1997 (U.S. Fish and Wildlife Service, 1997). The USFWS Service released a Recovery Plan for the Southwestern Willow Flycatcher in 2002 (U.S. Fish and Wildlife Service, 2002), and re-designated critical habitat in 2005 (U.S. Fish and Wildlife Service, 2005).

In addition to its federal status, the Southwestern Willow Flycatcher is listed as an endangered species or species of concern in Arizona (Arizona Game and Fish Department, 2006), New Mexico (New Mexico Department of Game and Fish, 1996), California (California Department of Fish and Game, 1991), and Utah (Utah Division of Wildlife Resources, 1997).

Sound management and conservation of an endangered species like the Southwestern Willow Flycatcher requires current, detailed information on its abundance and distribution. This requires, among other things, identifying where flycatchers are and are not breeding, and annual monitoring of as many breeding areas as possible. Such efforts require effective, standardized survey protocols and consistent reporting, at both local and regional levels. However, the Willow Flycatcher is a difficult species to identify and survey for. Moreover, inconsistent or ineffective surveys are of limited value, can produce misleading information (including “false positives” and “false negatives”), hinder regional and rangewide analyses, and waste limited resources.

We developed this document to provide a standardized survey protocol and a source of basic ecological and status information on the flycatcher. The first section summarizes the current state of knowledge regarding Southwestern Willow Flycatcher natural history, based on a wide array of published and unpublished literature. Emphasis is given to information relevant to flycatcher conservation and management, and to conducting and interpreting surveys. The second section details a standard survey protocol that provides for consistent data collection, reporting, and interpretation. This protocol document builds on and supersedes previous versions, the most recent of which was Sogge and others (1997a). In this update, we incorporate over a decade of new science and survey results, and refine the survey methodology to clarify key points. Further, we update the standard survey data sheets and provide guidelines on how to fill in the requested information. Amidst these revisions, the basic approach of the survey protocol has remained unchanged—multiple surveys at each survey area within the same breeding season, the use of the call-playback technique using flycatcher vocalizations to increase the probability of detection, and verification of species identity through its diagnostic song.

Section 1. Natural History

Breeding Range and Taxonomy

The Willow Flycatcher is a widespread species that breeds across much of the conterminous United States (Sedgwick, 2000). Four subspecies commonly are recognized in North America, with each occupying a distinct breeding range (fig. 1): *E. t. adastus*, ranging across the northern Rocky Mountains and Great Basin; *E. t. brewsteri*, found west of the Sierra Nevada and Cascade Mountains along the Pacific Slope; *E. t. extimus*, the Southwestern Willow Flycatcher, which breeds across the Southwest; and *E. t. traillii*, ranging east of the northern Rocky Mountains. Although the overall subspecies' ranges are distinct, Sedgwick (2001) and Paxton (2008) noted interbreeding/gradation zones in the boundary area between *E. t. extimus* and *E. t. adastus*.

The breeding range of the Southwestern Willow Flycatcher includes southern California, Arizona, New Mexico, southwestern Colorado, and extreme southern portions of Nevada and Utah: specific range boundaries are delineated in the subspecies' recovery plan (U.S. Fish and Wildlife Service, 2002). Unitt (1987) included western Texas in the subspecies' range, but recent breeding records from western Texas are lacking. Records of probable breeding Southwestern Willow Flycatchers in Mexico are few and restricted to extreme northern Baja California and Sonora (Unitt, 1987; Wilbur, 1987). Although recent data are lacking, the USFWS does include parts of northern Mexico in its description of *E. t. extimus* breeding range (U.S. Fish and Wildlife Service, 2002).

Although they appear very similar to most observers, experienced taxonomist or those using specialized equipment (for example, an electronic colorimeter) can differentiate among the subspecies by subtle differences in color and morphology (for example, Unitt, 1987; Paxton, 2008). Despite the subtle level of differences, the taxonomic status of *E. t. extimus* has been critically reviewed and confirmed multiple times based on morphological, genetic, and song data (Hubbard, 1987; Unitt, 1987; Browning, 1993; Paxton, 2000; Sedgwick, 2001).

The Southwestern Willow Flycatcher was described by Phillips (1948) from a specimen collected along the San Pedro River in southeastern Arizona. The Southwestern Willow Flycatcher generally is paler than other Willow Flycatcher subspecies, although this difference is indistinguishable without considerable experience and training, and study skins as comparative reference material. The southwestern subspecies differs in morphology (primarily wing formula) but not overall size. The plumage and color differences between the Willow Flycatcher subspecies are so subtle that they should not be used to characterize birds observed in the field (Unitt, 1987; Hubbard, 1999; U.S. Fish and Wildlife Service, 2002).

Migration and Winter Range, Habitat, and Ecology

All Willow Flycatcher subspecies breed in North America but winter in the subtropical and tropical regions of southern Mexico, Central America, and northern South America (Sedgwick, 2000; Koronkiewicz, 2002; fig. 1). Most wintering birds are found in the Pacific slope lowlands in Mexico and Central America, and Caribbean slope lowlands in Mexico and Guatemala.

Because all Willow Flycatcher subspecies look very similar, determining specific wintering sites for the southwestern race has been challenging. However, recent genetic analysis of wintering birds (Paxton, 2008) suggests that the four subspecies occupy finite areas of the wintering grounds, but with overlapping ranges. The Southwestern Willow Flycatcher appears to be largely restricted to the center of the winter range (in the vicinity of Costa Rica), although Paxton (2008) suggests more research is needed to address this question.

On the wintering grounds, flycatchers primarily are found in habitats that have four main components: (1) standing or slow moving water and/or saturated soils, (2) patches or stringers of trees, (3) woody shrubs, and (4) open areas (Koronkiewicz and Whitfield, 1999; Koronkiewicz and Sogge, 2000; Lynn and others, 2003; Nishida and Whitfield, 2007; Schuetz and others, 2007). Based on surveys to date, the presence of water or saturated soils is almost universal, although tree heights and configurations, the presence of woody shrubs, and the amount of open space surrounding winter territories can vary considerably (Schuetz and others, 2007).

Male and female flycatchers hold separate, individual non-breeding territories, and defend those territories throughout the winter by using song, calls, and aggression displays. Fidelity to wintering territories and sites is high, as is survivorship over the wintering period (Koronkiewicz and others, 2006b; Sogge and others, 2007).

Willow Flycatchers travel approximately 1,500–8,000 km each way between wintering and breeding areas. During migration, flycatchers use a wider array of forest and shrub habitats than they do for breeding, although riparian vegetation may still be a preferred migration habitat type (Finch and others, 2000). Migration requires high energy expenditures, exposure to predators, and successful foraging in unfamiliar areas. Therefore, migration is the period of highest mortality within the annual cycle of the flycatcher (Paxton and others, 2007). Willow Flycatchers of all subspecies sing during northward migration, perhaps to establish temporary territories for short-term defense of food resources.



Basemap modified from U.S. Geological Survey and other agency digital data, various scales. Projection Mercator, World Geodetic System 1984 datum.

EXPLANATION

Approximate range distribution of the Willow Flycatcher (*Empidonax traillii*)—Adapted from Unitt (1987), Browning (1993), and Paxton (2008)

- Breeding range, including boundaries of the Willow Flycatcher subspecies
- ? Wintering range—Question marks reflect uncertainty of the location of the eastern boundary of the winter range

Figure 1. Approximate ranges of the Willow Flycatcher (*Empidonax traillii*) during breeding and non-breeding seasons.

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Southwestern Willow Flycatchers typically arrive on breeding grounds between early May and early June (Ellis and others, 2008; Moore and Ahlers, 2009). Because arrival dates vary annually and geographically, northbound migrant Willow Flycatchers of multiple subspecies pass through areas where Southwestern Willow Flycatchers have already begun nesting. Similarly, southbound migrants in late July and August may occur where Southwestern Willow Flycatchers are still breeding (Unitt, 1987). This can make it challenging for an observer to differentiate local breeders from migrants. Other than timing, we still know relatively little about Southwestern Willow Flycatcher migratory behavior, pathways, or habitat use.

Breeding Habitat

Breeding Southwestern Willow Flycatchers are riparian obligates, typically nesting in relatively dense riparian vegetation where surface water is present or soil moisture is high enough to maintain the appropriate vegetation characteristics (Sogge and Marshall, 2000; U.S. Fish and Wildlife Service, 2002; Ahlers and Moore, 2009). However, hydrological conditions in the Southwest can be highly variable within a season and between years, so water availability at a site may range from flooded to dry over the course of a breeding season or from year to year.

The Southwestern Willow Flycatcher breeds in dense riparian habitats across a wide elevational range, from near sea level in California to more than 2,600 m in Arizona and southwestern Colorado (Durst and others, 2008a). Vegetation characteristics of Southwestern Willow Flycatcher breeding habitat generally include dense tree or shrub cover that is ≥ 3 m tall (with or without a higher overstory layer), dense twig structure, and high levels of live green foliage (Allison and others, 2003); many patches with tall canopy vegetation also include dense midstory vegetation in the 2–5 m range. Beyond these generalities, the flycatcher shows adaptability in habitat selection, as demonstrated by variability in dominant plant species (both native and exotic), size and shape of breeding patch, and canopy height and structure (U.S. Fish and Wildlife Service, 2002).

Southwestern Willow Flycatcher breeding habitat can be quantified and characterized in a number of ways, depending on the level of detail needed and habitat traits of interest. For many sites, detailed floristic composition, plant structure, patch size, and even characteristics such as Normalized Difference Vegetation Index (NDVI) have been described in agency reports and scientific journal articles (Allison and others, 2003; Hatten and Paradzick, 2003; Koronkiewicz and others, 2006a; Hatten and Sogge, 2007; Moore, 2007; Schuetz and Whitfield, 2007; Ellis and others, 2008). For purposes of this survey protocol, we take a relatively simple approach and broadly describe and classify breeding sites based on plant

species composition and habitat structure. Clearly, these are not the only important components, but they are conspicuous to human perception and easily observed and recorded. Thus, they have proven useful in conceptualizing, selecting and evaluating suitable survey habitat, and in predicting where breeding flycatchers are likely to be found.

Breeding habitat types commonly used by Southwestern Willow Flycatchers are described below. The general categories are based on the composition of the tree/shrub vegetation at the site—native broadleaf, exotic, and mixed native/exotic. In the field, breeding habitats occur along a continuum of plant species composition (from nearly monotypic to mixed species) and vegetation structure (from simple, single stratum patches to complex, multiple strata patches). The images in [figures 2–7](#) illustrate some of the variation in flycatcher breeding habitat, and other examples can be found in numerous publications and agency reports, and on the USGS photo gallery web site (<http://sbsc.wr.usgs.gov/SBSCgallery/>). The intent of the descriptions and photographs is to provide a general guide for identifying suitable habitat in which to conduct surveys.

Native broadleaf.—Southwestern Willow Flycatchers breed across a great elevational range, and the characteristics of their native broadleaf breeding sites varies between high elevation sites and those at low and mid-elevation sites.

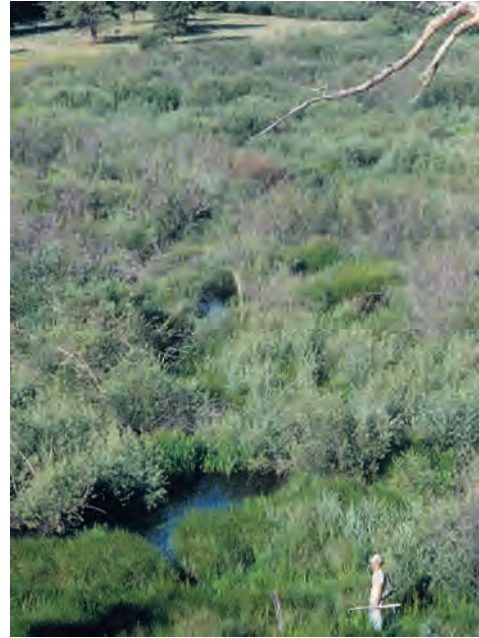
High elevation sites ([fig. 2](#)) range from nearly monotypic dense stands of willow to mixed stands of native broadleaf trees and shrubs, 2–7 m in height with no distinct overstory layer; often associated with sedges, rushes, nettles, and other herbaceous wetland plants; usually very dense structure in lower 2 m; live foliage density is high from the ground to the canopy. Vegetation surrounding the patch can range from open meadow, to agricultural lands, to pines or upland shrub.

At low and mid-elevations ([fig. 3](#)), flycatcher breeding sites can be composed of single species (often Goodding's willow (*Salix gooddingii*), *S. exigua*, or other willow species) or mixtures of native broadleaf trees and shrubs including (but not limited to) cottonwood, willows, boxelder (*Acer negundo*), ash (*Fraxinus* spp.), alder (*Alnus* spp.), and buttonbush (*Cephalanthus* spp.), height from 3 to 15 m; characterized by trees of different size classes; often a distinct overstory of cottonwood, willow or other broadleaf tree, with recognizable subcanopy layers and a dense understory of mixed species; exotic/introduced species may be a rare component, particularly in the understory.

Monotypic exotic.—([fig. 4](#)) Breeding sites also can include nearly monotypic, dense stands of exotics such as saltcedar (*Tamarix* spp.) or Russian olive (*Elaeagnus angustifolia*), 4–10 m in height forming a nearly continuous, closed canopy (with no distinct overstory layer); lower 2 m commonly very difficult to penetrate due to dense branches, however, live foliage density may be relatively low 1–2 m above ground, but increases higher in the canopy; canopy density uniformly high.



Aerial view of Little Colorado River near Greer, Arizona. Photograph by USGS, 1995.



Little Colorado River near Greer, Arizona. Photograph courtesy of Arizona Game and Fish Department, 1996.



Parkview Fish Hatchery, New Mexico. Photograph by USGS, 2000.



Rio Grande State Wildlife Area, Colorado. Photograph by USGS, 2002.



Tierra Azul, New Mexico. Photograph by USGS, 2005.



McIntyre Springs, Colorado. Photograph by USGS, 2002.

Figure 2. Examples of Southwestern Willow Flycatcher breeding habitat in native broadleaf vegetation at high-elevation sites.

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Hassayampa River, Arizona. Photograph by USGS, 2003.



Kern River, California. Photograph by USGS, 1995.



Santa Ynez River, California, Photograph by USGS, 1996.



Bosque del Apache, Rio Grande, New Mexico. Photograph courtesy of Bureau of Reclamation, 2008.



San Luis Rey River, California. Photograph by USGS, 2005.



Kern River, California. Photograph by USGS, 1995.

Figure 3. Examples of Southwestern Willow Flycatcher breeding habitat in native broadleaf vegetation at low and mid-elevation sites.



Aerial view of Topock Marsh, Colorado River, Arizona. Photograph by USGS, 1996.



Topock Marsh, Colorado River, Arizona. Photograph by USGS, 1996.



Rio Grande, New Mexico. Photograph by USGS, 2005.



Salt River, Arizona. Photograph courtesy of Bureau of Reclamation, 1996.



Orrilla Verde, Rio Grande, New Mexico. Photograph by USGS, 2006.



Aerial view of Salt River, Arizona. Photograph by USGS, 1996.

Figure 4. Examples of Southwestern Willow Flycatcher breeding habitat in exotic vegetation.

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Mixed native/exotic—(fig. 5) These sites include dense mixtures of native broadleaf trees and shrubs (such as those listed above) mixed with exotic/introduced species, such as saltcedar or Russian olive; exotics are often primarily in the understory, but may be a component of overstory; the native and exotic components may be dispersed throughout the habitat or concentrated as a distinct patch within a larger matrix of habitat; overall, a particular site may be dominated primarily by natives or exotics, or be a more-or-less equal mixture.

Regardless of the plant species composition or height, occupied sites almost always have dense vegetation in the patch interior (fig. 6). These dense patches are often interspersed with small openings, open water, or shorter/sparser vegetation, creating a mosaic that is not uniformly dense.



Gila River, Arizona. Photograph by USGS, 2002.



Roosevelt Lake, Arizona. Photograph by USGS, 1999.



Verde River, Arizona. Photograph by USGS, 2002.



Virgin River, Utah. Photograph by USGS, 1997.

Figure 5. Examples of Southwestern Willow Flycatcher breeding habitat in mixed native/exotic vegetation.



Gila River, Arizona. Photograph by USGS, 2002.



Kern River, California. Photograph by USGS, 1999.



Rio Grande, New Mexico. Photograph by USGS, 2007.



Salt River, Arizona. Photograph by USGS, 1999.



Rio Grande, New Mexico. Photograph by USGS, 2007.



Rio Grande, New Mexico. Photograph by USGS, 2005.

Figure 6. Examples of dense vegetation structure within breeding habitats of Southwestern Willow Flycatcher.

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Riparian patches used by breeding flycatchers vary in size and shape, ranging from a relatively contiguous stand of uniform vegetation to an irregularly shaped mosaic of dense vegetation with open areas. Southwestern Willow Flycatchers have nested in patches as small as 0.8 ha (for example, in the Grand Canyon) and as large as several hundred hectares (for example, at Roosevelt Lake, Ariz., or Elephant Butte Reservoir, New Mex.). They have only rarely been found nesting in isolated, narrow, linear riparian habitats that are less than 10 m wide, although they will use such linear habitats during migration.

Flycatcher territories and nests typically are adjacent to open water, cienegas, marshy seeps, or saturated soil, and within riparian areas rooted in standing water. However, in the Southwest, hydrological conditions at a site can vary remarkably within a season, between years, and among nearby sites (fig. 7). Surface water or saturated soil may only be

present early in the breeding season (that is, May and part of June), especially in dry years. Similarly, vegetation at a patch may be immersed in standing water during a wet year, but be hundreds of meters from surface water in dry years (Ahlers and Moore, 2009). This is particularly true of reservoir sites, such as the Kern River at Lake Isabella, Calif., Tonto Creek and Salt River at Roosevelt Lake, and the Rio Grande near Elephant Butte Reservoir. Natural or human-caused river channel modifications and altered subsurface flows (for example, from agricultural runoff), can lead to a total absence of water or visibly saturated soil at a site for several years.

Other potentially important aspects of Southwestern Willow Flycatcher habitat include distribution and isolation of vegetation patches, hydrology, food base (arthropods), parasites, predators, environmental factors (for example temperature, humidity), and interspecific competition (U.S. Fish and Wildlife Service, 2002). Population dynamics



Rio Grande at San Marcial, New Mexico, with dry substrate. Photograph by USGS, 2007.



Rio Grande at San Marcial, New Mexico, with flowing water beneath the territories. Photograph by USGS, 2007.



Tonto Creek inflow to Roosevelt Lake, Arizona, during a dry year. Photograph by USGS, 2004.



Tonto Creek inflow to Roosevelt Lake, Arizona, during high-water year. Photograph by USGS, 2005.

Figure 7. Examples of the variable hydrologic conditions at breeding habitats of Southwestern Willow Flycatcher.

factors, such as demography (for example, survivorship rates, fecundity), distribution of breeding groups across the landscape, flycatcher dispersal patterns, migration routes, the tendency for adults and surviving young to return to their previous year breeding site, and conspecific sociality also influence where flycatchers are found and what habitats they use (U.S. Fish and Wildlife Service, 2002).

It is critically important to recognize that the ultimate measure of habitat suitability is not simply whether or not a site is occupied. Habitat suitability occurs along a gradient from high to poor to unsuitable; the best habitats are those in which flycatcher reproductive success and survivorship result in a stable or growing population. Some occupied habitats may be acting as population sources, while others may be functioning as population sinks (Pulliam, 1988). Therefore, it can take extensive research to determine the quality of any given habitat patch. Furthermore, productivity and survival rates can vary widely among years (Paxton and others, 2007; Ellis and others, 2008; Ahlers and Moore, 2009), so conclusions based on short-term datasets or data extrapolated from one area to another may be erroneous. It also is important to note that not all unoccupied habitat is unsuitable; some sites with suitable habitat may be geographically isolated or newly established, such that they are not yet colonized by breeding flycatchers. There also may simply not be enough flycatchers in a given area to fill all available habitat in particular

locations (U.S. Fish and Wildlife Service, 2002). A better understanding of which habitats or sites are sinks or sources can be especially helpful in site conservation and restoration planning.

As described earlier, migrant Willow Flycatchers may occur in riparian habitats that are structurally unsuitable for breeding (for example, too sparse, smaller patch size, etc.), and in non-riparian habitats. Such migration stopover areas, even though not used for breeding, may be critically important resources affecting local and regional flycatcher productivity and survival (U.S. Fish and Wildlife Service, 2002, 2005).

Breeding Chronology and Biology

Unless otherwise noted, the information that follows and upon which the generalized breeding season chronology (fig. 8) is based comes from Unitt (1987), Whitfield (1990), Maynard (1995), Sogge and others (2003b), Paxton and others (2007), Schuetz and Whitfield (2007), and Ellis and others (2008). Extreme or record dates for any stage of the breeding cycle may vary by 1–2 weeks from the dates presented, depending on the geographic area, extreme weather events, yearly variation and other factors. Higher elevation areas, in particular, have delayed chronology (Ahlers and White, 2000).

Generalized Breeding Season Chronology

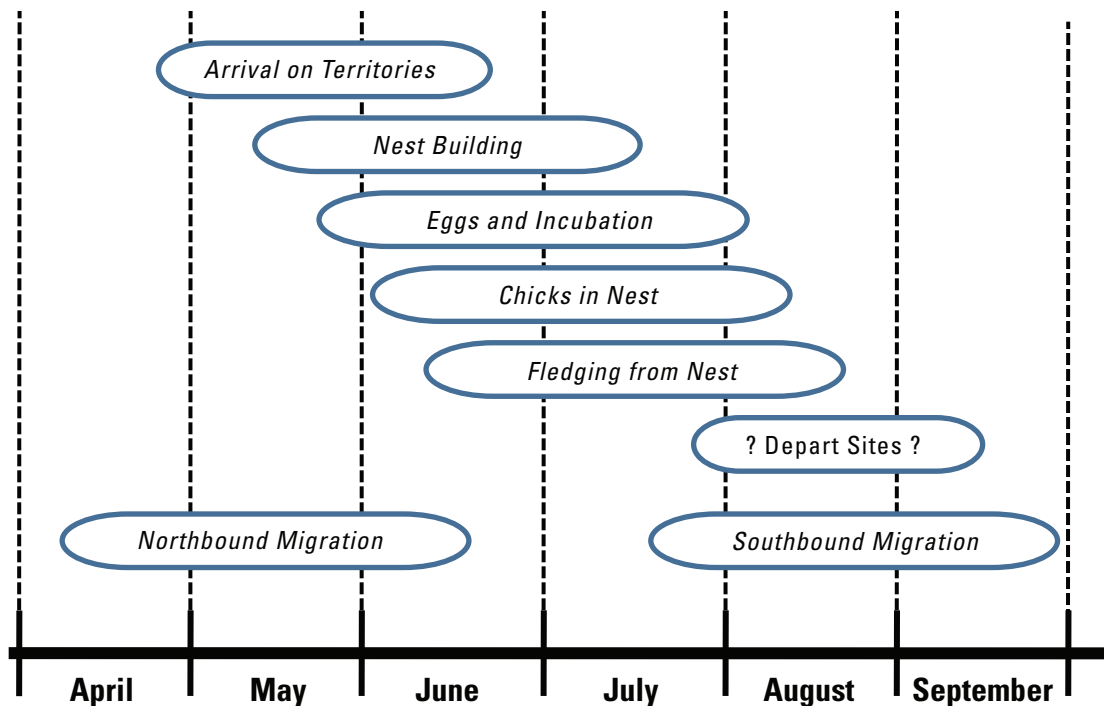


Figure 8. Generalized migration and breeding chronology for the Willow Flycatcher in the Southwest. Extreme or record dates may occur slightly earlier or later than indicated.

Both sexes can breed beginning in their second year. Male Southwestern Willow Flycatchers generally arrive at breeding areas first; older males typically arrive before younger ones. Although females usually arrive a few weeks after males, some older females are present at sites before late-arriving males. Adult flycatchers will sometimes wander extensively through large riparian sites before and after breeding, possibly as a way to evaluate potential breeding habitat (Cardinal and others, 2006).

Males establish and defend their territories through singing and aggressive interactions. Females settle on established territories, and may choose a territory more for its habitat characteristics than for the traits of its territorial male. Territory size tends to be larger when a male first arrives, then gets smaller after a female pairs with the male (Cardinal and others, 2006). Similarly, male song rate is very high early in the season, then declines after pairing (Yard and Brown, 2003). Not all males are successful in attracting mates in a given year, and as a result unpaired territorial males occur at many breeding sites. Unpaired males are usually a small percentage of any local population, but can comprise as much as 15–25 percent of the territories in some populations (Munzer and others, 2005; Ahlers and Moore, 2009).

Although the Willow Flycatcher as a species is considered predominantly monogamous during the breeding season (Sedgwick, 2000), some Southwestern Willow Flycatcher populations have a relatively high degree of polygyny whereby one male can have more than one breeding female in its territory. Polygynous males generally have two females in their territory, but up to four have been recorded (Davidson and Allison, 2003; Pearson and others, 2006). Polygyny rates can vary between sites, and among years at a given site. At some sites, polygynous males have much higher productivity than monogamous males (Paxton and others, 2007).

Nest building within the territory usually begins within a week or two after pair formation. Egg laying begins as early as mid-May, but more often starts in late May to mid-June. Chicks can be present in nests from late May through early August. Young typically fledge from nests from mid-June through mid-August; later fledglings are often products of re-nesting attempts. Breeding adults generally depart from their territories in early to mid-August, but may stay later if they fledged young late in the season. Males that fail to attract or retain mates, and males or pairs that are subject to significant disturbance, such as repeated nest parasitism or predation may leave territories by early July. Fledglings probably leave the breeding areas a week or two after adults, but few details are known.

Southwestern Willow Flycatcher territory size varies widely, probably due to differences in population density, habitat quality (including vegetation density and food availability), and nesting stage. Studies have reported estimated territory sizes ranging from 0.06 to 2.3 ha (Sogge

and others, 1995; Whitfield and Enos, 1996; Bureau of Reclamation, 2009). At Roosevelt Lake, Ariz., measurements of home ranges, which include the defended territory and sometimes adjacent use areas, averaged 0.4 ha for actively breeding males; home range can be much larger for pre- and post-breeding males (Paxton and others, 2007). During incubation and nestling phases territory size, or at least the activity centers of pairs, can be very small. Flycatchers may increase their activity area after young are fledged, and use non-riparian habitats adjacent to the breeding area (Cardinal and others, 2006). This variability among sites, individual territories, and over time illustrates the challenge of defining a minimum habitat patch size for breeding flycatchers, or estimating the number of territories based simply on the size of a given breeding site.

At some breeding sites, non-territorial adult “floaters” will be present among the territorial population. Floaters are quieter and less aggressive than territorial adults, and therefore are harder to detect and frequently overlooked. Most floaters are young males, and float for only a single year. At Roosevelt Lake, floaters typically accounted for 3–8 percent of the known adult population, although the rate was much higher in drought years when habitat quality was lower (Paxton and others, 2007). The presence of floaters in a population may indicate that there is not enough high quality habitat to support all potentially territorial individuals present in a given breeding season.

Nests and Eggs

Historically, 75–80 percent of reported Southwestern Willow Flycatcher nests were placed in willows (Phillips, 1948; Phillips and others, 1964; Hubbard, 1987; Unitt, 1987). Southwestern Willow Flycatchers still commonly place their nests in native plants, but will often build nests in exotics, such as saltcedar and Russian olive (Sogge and Marshall, 2000; Stoleson and Finch, 2003; Durst and others, 2008a). In Arizona, most nests are in saltcedar or willows (Paradzick and Woodward, 2003; McLeod and others, 2007). In a unique situation in San Diego County, Calif., the flycatcher nests in coast live oak (*Quercus agrifolia*) along the San Luis Rey River (Haas, 2003), where oak became the dominant plant species adjacent to the river following willow removal in the 1950s. In another unusual situation, flycatchers in the Cliff-Gila Valley in New Mex. nest in tall boxelder (Stoleson and Finch, 2003). Southwestern Willow Flycatcher nests also have been found in buttonbush, black twinberry (*Lonicera involucrata*), Fremont cottonwood (*Populus fremontii*), alder (*Alnus* spp.), blackberry (*Rubus ursinus*), baccharis (*Baccharis* spp.), and stinging nettle (*Urtica* spp.). Overall, flycatcher nest site selection appears to be driven more by plant structure than by species composition.

Southwestern Willow Flycatchers build open cup nests approximately 8 cm high and 8 cm wide (outside dimensions), exclusive of any dangling material at the bottom. Females build the nest with little or no assistance from the males. Nests typically are placed in the fork of a branch with the nest cup supported by several small-diameter vertical stems. Nest height is highly variable and depends on the available plant structure within the territory; nests have been found from 0.6 m to approximately 20 m above ground. In any given habitat type or nest substrate, nests can be placed wherever suitable twig structure and vegetative cover are present.

Egg laying generally begins from mid-May through mid-June, depending on the geographic area and elevation. Willow Flycatcher eggs are buffy or light tan, approximately 18 mm long and 14 mm wide, with brown markings in a wreath at the blunt end. Clutch size is usually three or four eggs for first nests. Only the female develops a brood patch and incubates the eggs. Incubation lasts 12–13 days from the date the last egg is laid, and all eggs typically hatch within 24–48 hours of each other.

Flycatcher chicks are altricial and weigh only about 1–2 g at hatching, but grow rapidly and are ready to leave the nest at 12–15 days of age (Sedgwick, 2000; Paxton and Owen, 2002). The female provides most or all initial care of the young, although the role of the male increases with the age and size of nestlings. After Willow Flycatchers fledge at 12–15 days of age, they stay close to the nest and each other for 3–5 days, and adults continue feeding the fledged young for approximately 2 weeks. Recently fledged birds may repeatedly return to and leave the nest during this period (Spencer and others, 1996). Both male and female adults feed the fledged young, which give frequent, loud “peep” calls.

Southwestern Willow Flycatchers readily re-nest following an unsuccessful nesting attempt, although rarely more than once (Ellis and others, 2008). They also will sometimes nest again (double brood) following a successful nesting attempt, although this is more uncommon than re-nesting and varies between sites and years. From 2002 to 2008 at Elephant Butte Reservoir, approximately 13 percent of the pairs produced two successful nests per year (Ahlers and Moore, 2009). The productivity gains from pairs having successful second nests are important drivers of positive population growth (Paxton and others, 2007; Moore and Ahlers, 2009).

Replacement nests are built in the same territory, either in the same plant or at a distance of as much as 20 m from the previous nest. Reuse of old nests is uncommon, but does occur (Yard and Brown, 1999; Darrell Ahlers, Bureau of Reclamation, unpub. data, 2009). Replacement nest building and egg laying can occur (uncommonly) as late as the end of July or early August. Pairs may attempt a third nest if the second fails. However, clutch size, and therefore potential productivity, decreases with each nest attempt (Whitfield and Strong, 1995; Ellis and others, 2008).

Food and Foraging

The breeding season diet of Southwestern Willow Flycatchers is relatively well documented (DeLay and others, 2002; Drost and others, 2003; Durst, 2004; Wiesenborn and Heydon, 2007; Durst and others, 2008b). Breeding flycatchers are exclusively insectivorous, and consume a wide range of prey taxa ranging in size from small leafhoppers (Homoptera) to large dragonflies (Odonata). Major prey taxa include bugs (Hemiptera), bees and wasps (Hymenoptera), flies (Diptera), and leafhoppers; however, diet can vary widely between years and among different habitat types. There is no known differences in diet by sex, but there are differences between adult and nestling diet in the proportions of some arthropod groups. Differences in the composition of arthropods in flycatcher diet have been documented between native and exotic habitats, and between years within particular breeding sites; however, flycatchers appear able to tolerate substantial variation in relative prey abundance, except in extreme situations such as severe droughts (Durst and others, 2008b).

Willow Flycatchers of all subspecies forage primarily by sallying from a perch to perform aerial hawking and gleaning (Sedgwick, 2000; Durst, 2004). Males and females forage with similar maneuvers, although males may forage higher in the tree canopy than females. Foraging frequently takes place at external edges or internal openings within a habitat patch, or at the top of the upper canopy.

Site Fidelity and Survivorship

Based on studies of banded birds, most adult Southwestern Willow Flycatchers that survive from one year to the next will return to the same river drainage, often in proximity to the same breeding site (U.S. Fish and Wildlife Service, 2002; McLeod and others, 2007; Paxton and others, 2007). However, it is common for individual flycatchers to return to different sites within a breeding area, and even to move between breeding areas, from one year to the next. Some of this movement may be related to breeding success and habitat quality. At Roosevelt Lake, those birds that moved to different sites within a breeding area had on average higher productivity in the year following the move than in the year before the move (Paxton and others, 2007). At Roosevelt Lake and on the San Pedro and Gila Rivers, movement out of breeding patches also increased with the relative age of a patch, which may indicate a preference for younger riparian vegetation structure.

In addition to movements within a breeding site, long-distance movements within and between drainages have been observed (Paxton and others, 2007), at distances up to approximately 450 km. Dispersal of first-year flycatchers is more extensive than adult birds, as typical for most bird species.

Survivorship within the breeding season can be very high, averaging 97 percent at Roosevelt Lake (Paxton and others, 2007). Between-year survivorship of adults can be highly variable, but appears to be similar to that of most small passerine birds studied, with estimates generally ranging from approximately 55 to 65 percent (Stoleson and others, 2000; McLeod and others, 2007; Paxton and others, 2007; Schuetz and Whitfield, 2007). Males and females have similar survivorship rates.

Estimated survivorship of young birds (from hatching to the next breeding season) is highly variable, depending in part on how the estimates are generated (Stoleson and others, 2000). Generally reported as between 15 and 40 percent, juvenile survivorship typically is lower than adult survivorship (Whitfield and Strong, 1995; Stoleson and others, 2000; McLeod and others, 2007). Early fledging young have higher survivorship than those that leave the nest later in the season (Whitfield and Strong, 1995; Paxton and others, 2007). Most flycatchers survive for only 1–2 adult years, and mean life expectancy in Arizona was estimated to be 1.9 years following fledging. However, some individuals live much longer. The maximum reported ages of banded Southwestern Willow Flycatchers are 9–11 years (Sedgwick, 2000; Paxton and others, 2007).

Overall, the Southwestern Willow Flycatcher population appears to persist as one or more widely dispersed metapopulations (Busch and others, 2000; U.S. Fish and Wildlife Service, 2002), with movement of individuals, and thus genetic exchange, occurring across the landscape. However, the amount of movement and interchange is lower among sites that are farther apart or more isolated. Some sites serve as population sources while others may be sinks; some sites will be ephemeral over periods of years or decades. Flycatcher movement and dispersal among sites is important for initial site colonization and subsequent recolonization.

There are few general predictors for the persistence of breeding sites. Relatively large populations, such as the Kern River Preserve, San Pedro River, Elephant Butte Reservoir, and the Gila River have persisted for 10 or more years. However, such large sites can be subject to major changes in population numbers, and even potential extirpation, due to changes in local hydrology, site inundation, drought, etc. (Moore, 2005; Paxton and others, 2007). Although some small populations may be ephemeral and last only a few years (Durst and others, 2008a), others have remained occupied for much longer periods (Kus and others, 2003). Breeding populations also may reappear at unoccupied sites following 1–5 year absences. Suitable flycatcher habitat also can develop—and poor quality habitat can improve—relatively quickly in some

sites, under favorable hydrological conditions. For example, at Roosevelt Lake and the San Pedro River (AZ), the age of riparian vegetation when first colonized was as young as 3 years (Paxton and others, 2007). In the same study, flycatchers moved back into older habitat patches when nearby younger, occupied habitat was inundated or scoured away.

Overall, the vegetation and flycatcher occupancy of a habitat patch or river drainage are often dynamic; few if any sites remain static over time. The amount of suitable flycatcher habitat can substantially increase or decrease in just a few years, at local and regional scales. Flycatchers can respond quickly to habitat changes, colonizing new sites if available and abandoning others. Therefore, one cannot assume that local, regional, or rangewide flycatcher population numbers will remain stable over time.

Threats to the Flycatcher and Habitat

The greatest historical factor in the decline of the Southwestern Willow Flycatcher is the extensive loss, fragmentation, and modification of riparian breeding habitat (U.S. Fish and Wildlife Service, 2002). Large-scale losses of southwestern wetlands have occurred, particularly the cottonwood-willow riparian habitats historically used by the Southwestern Willow Flycatcher (Unitt, 1987; General Accounting Office, 1988; Dahl, 1990; State of Arizona, 1990). Changes in the riparian plant community have frequently reduced, degraded, and eliminated nesting habitat for the flycatcher, curtailing its distribution and abundance.

Habitat losses and changes have occurred and continue to occur because of urban, recreational, and agricultural development, water diversion and impoundment, channelization, livestock grazing, and replacement of native habitats by introduced plant species (Marshall and Stoleson, 2000; U.S. Fish and Wildlife Service, 2002). Hydrological changes, natural or man-made, can greatly reduce the quality and extent of flycatcher habitat. Although riparian areas are often not considered as fire-prone, several Southwestern Willow Flycatcher breeding sites were destroyed by fire over the past decade (U.S. Fish and Wildlife Service, 2002), and others are at risk to similar catastrophic loss. Fire danger in these riparian systems may be exacerbated by increases in exotic vegetation, such as saltcedar, diversions or reductions of surface water, increased recreational activity, and drawdown of local water tables.

Although the degradation of many river systems and associated riparian habitat is a key cause of their absence, Southwestern Willow Flycatchers do not require free-running rivers or “pristine” riparian habitats. Most of the largest

Southwestern Willow Flycatcher populations in the last decade were found in reservoir drawdown zones, such as at Roosevelt Lake and Elephant Butte Reservoir. Many breeding populations are found on regulated rivers (Graf and others, 2002). In addition, the vegetation at many smaller flycatcher breeding sites is supported by artificial water sources such as irrigation canals, sewage outflow, or agricultural drainages (U.S. Fish and Wildlife Service, 2002). Although rising water levels could be detrimental to breeding flycatchers within a reservoir drawdown zone, reservoir fluctuations can simulate river dynamics with cycles of destruction and establishment of riparian vegetation, depositing rich sediments and flushing salt accumulations in the soil (Paxton and others, 2007). Therefore, managed and manipulated rivers and reservoirs have the potential to play a positive role by providing flycatcher breeding habitat. However, because rivers and reservoirs are not managed solely to create and maintain flycatcher habitat, the persistence of riparian vegetation in these systems—and any flycatchers breeding therein—is not assured.

Although the historic degradation and loss of native riparian negatively affected the Southwestern Willow Flycatcher, this species does not show an inherent preference for native vegetation. Instead, breeding habitat selection is based primarily on vegetation structure, density, size, and other stand characteristics, and presence of water or saturated soils (U.S. Fish and Wildlife Service, 2002). In fact, approximately 25 percent of known territories are found in habitat composed of 50 percent or greater exotic vegetative component—primarily saltcedar (Durst and others, 2008a). Saltcedar also can be an important habitat component in sites dominated by native vegetation (U.S. Fish and Wildlife Service, 2002, 2005). Despite suggestions that flycatchers breeding in saltcedar are suffering negative consequences and that removal of saltcedar is therefore a benefit (DeLoach and others, 2000; Dudley and DeLoach, 2004), there is increasing and substantial evidence that this is not the case. For example, Paxton and others (2007) found that flycatchers did not suffer any detectable negative consequences from breeding in saltcedar. This is consistent with the findings of Owen and others (2005) and Sogge and others (2006). Therefore, the rapid or large-scale loss of saltcedar in occupied flycatcher habitats, without rapid replacement of suitable native vegetation, could result in reduction or degradation of flycatcher habitat (U.S. Fish and Wildlife Service, 2002; Sogge and others, 2008).

In evaluating Southwestern Willow Flycatcher use of either native or exotic habitat, it is important to recognize that throughout the Southwest, there are many saltcedar-dominated and native-dominated habitats in which flycatchers do not breed (U.S. Fish and Wildlife Service, 2002; Sogge and others, 2006). Therefore, the use of any riparian patch—native or exotic—as breeding habitat will be site specific and will depend on the spatial, structural, and ecological characteristics of that particular patch and the potential for flycatchers to colonize and maintain populations within it.

Drought can have substantial negative effects on breeding flycatchers and their breeding habitat by reducing riparian vegetation vigor and density, and reducing prey availability (Durst, 2004; Paxton and others, 2007; Bureau of Reclamation, 2009). For example, the extreme drought of 2002 caused near complete reproductive failure of the large flycatcher population at Roosevelt Lake; among approximately 150 breeding territories, only two nests successfully fledged young in that year (Ellis and others, 2008). If future climate change produces more frequent or more sustained droughts, as predicted by many climate change models (for example, Seager and others, 2007), southwestern riparian habitats could be reduced in extent or quality. This scenario would present a challenge to the long-term sustainability of Southwestern Willow Flycatcher populations.

Brood parasitism by the Brown-headed Cowbird (*Molothrus ater*) was initially considered another significant threat to the Southwestern Willow Flycatcher (Whitfield, 1990; Harris, 1991; U.S. Fish and Wildlife Service, 1993, 1995; Whitfield and Strong, 1995; Sferra and others, 1997). Cowbirds lay their eggs in the nest of other species (the “hosts”), which raise the young cowbirds—often at the expense of reduced survivorship of their own young. Southwestern Willow Flycatchers seldom fledge any flycatcher young from nests that are parasitized by cowbirds (Whitfield and Sogge, 1999). Although parasitism negatively impacts some Southwestern Willow Flycatcher populations, especially at small and isolated breeding sites, it is highly variable and no longer considered among the primary rangewide threats to flycatcher conservation (U.S. Fish and Wildlife Service, 2002). Cowbird abundance, and therefore parasitism, tends to be a function of habitat type and quality, and the availability of suitable hosts, not specific to the flycatcher. Therefore, large-scale cowbirds control may not always be warranted unless certain impact thresholds are met (U.S. Fish and Wildlife Service, 2002; Rothstein and others, 2003; Siegle and Ahlers, 2004).

Section 2. Survey Protocol

The fundamental principles of the methodology described in this version have remained the same since the original Tibbitts and others (1994) and subsequent Sogge and others (1997a) protocols: the use of vocalization play-back, repeated site visits, and confirmation of flycatcher identity via the species-characteristic song. This newest protocol incorporates guidelines of the 2000 USFWS addendum, and includes changes based on our improved understanding of Willow Flycatcher biology and the significance of potential threats, and the availability of new survey technologies.

Several factors work together to make Southwestern Willow Flycatcher surveys challenging. Difficulties include the flycatcher's physical similarities with other species and subspecies; accessing the dense habitat they occupy; time constraints based on their breeding period; and vocalization patterns. Given these challenges, no methodology can assure 100-percent detection rates. However, the survey protocol described herein has proven to be an effective tool for locating flycatchers, and flycatchers generally are detectable when the protocol is carefully followed. Since 1995, hundreds of sites have been surveyed and thousands of flycatchers detected using the two previous versions of the survey protocol.

The Willow Flycatcher is 1 of 10 regularly occurring *Empidonax* flycatchers found in North America, all of which look very much alike. Like all *Empidonax*, Willow Flycatchers are nondescript in appearance, making them difficult to see in dense breeding habitat. Although the Willow Flycatcher has a characteristic *fitz-bew* song that distinguishes it from other birds (including other *Empidonax*), Willow Flycatchers are not equally vocal at all times of the day or during all parts of the breeding season. Because Southwestern Willow Flycatchers are rare and require relatively dense riparian habitat, they may occur only in a small area within a larger riparian system, thus decreasing detectability during general bird surveys. Migrating Willow Flycatchers (of all subspecies) often sing during their migration through the Southwest, and could therefore be confused with local breeders. In addition, Southwestern Willow Flycatchers are in breeding areas for only 3–4 months of the year. Surveys conducted too early or late in the year would fail to find flycatchers even at sites where they breed.

These life history characteristics and demographic factors influence how Southwestern Willow Flycatcher surveys should be conducted and form the basis upon which this protocol was developed. This protocol is based on the use of repeated call-playback surveys during pre-determined periods of the breeding season, to confirm presence or to derive a high degree of confidence regarding their absence at a site. Such species-specific survey techniques are necessary to collect reliable presence/absence information for rare species (Bibby and others, 1992).

The primary objective of this protocol is to provide a standardized survey technique to detect Southwestern Willow Flycatchers, determine breeding status, and facilitate consistent and standardized data reporting. The survey technique will, at a minimum, help determine presence or absence of the species in the surveyed habitat for that breeding season. Ultimately, the quality of the survey that is conducted will depend on the preparation, training, and in-the-field diligence of the individual surveyor.

This protocol is designed for use by persons who are non-specialists with *Empidonax* flycatchers or who are not expert birders. However, surveyors must have sufficient knowledge, training, and experience with bird identification and surveys to distinguish the Willow Flycatcher from other non-*Empidonax* species, and be able to recognize the Willow Flycatcher's primary song. A surveyor's dedication and attitude, willingness to work early hours in dense, rugged and wet habitats, and their ability to remain alert and aware of important cues also are important. Surveys conducted improperly or by unqualified, inexperienced, or complacent personnel may lead to inaccurate results and unwarranted conclusions.

Surveys conducted by qualified personnel in a consistent and standardized manner will enable continued monitoring of general population trends at and between sites, and between years. Annual or periodic surveys in cooperation with State and Federal agencies should aid resource managers in gathering basic information on flycatcher status and distribution at various spatial scales. Identifying occupied and unoccupied sites will assist resource managers in assessing potential impacts of proposed projects, avoiding impacts to occupied habitat, identifying suitable habitat characteristics, developing effective restoration management plans, and assessing species recovery.

The earlier versions of this protocol (Tibbitts and others, 1994; Sogge and others, 1997a) were used extensively and successfully for many years. Hundreds of flycatcher surveys conducted throughout the Southwest since 1994 revealed much about the usefulness and application of this survey technique. Three important lessons were: (1) the call-playback technique works and detects flycatchers that would have otherwise been overlooked; (2) multiple surveys at each site are important; and (3) with appropriate effort, general biologists without extensive experience with *Empidonax* can find and verify Willow Flycatcher breeding sites.

This revised protocol is still based on call-playback techniques and detection of singing individuals. However, it includes changes in the timing and number of surveys to increase the probability of detecting flycatchers and to help determine if they are breeders or migrants. It also incorporates the basic premise of the USFWS 2000 addendum to the 1997 protocol by requiring a minimum of five surveys in all "project-related" sites. A detailed description of surveys and

timing is discussed in section, “[Timing and Number of Visits.](#)” Changes in the survey data sheets make them easier to use and submit, and allow reporting all site visits within a single year on one form. The new survey forms also are formatted such that the data on the respective forms can be easily incorporated into the flycatcher range-wide database.

This protocol is intended to determine if a habitat patch contains territorial Southwestern Willow Flycatchers, and is not designed establish the exact distribution and abundance of flycatchers at a site. Determining precise flycatcher numbers and locations requires many more visits and additional time observing the behavior of individual birds. This survey protocol also does not address issues and techniques associated with nest monitoring or other flycatcher research activities. Those efforts are beyond the scope usually needed for most survey purposes, and require advanced levels of experience and skills to gather useful data and avoid potential negative effects to the flycatcher. If nest monitoring is a required component of your study, refer to Rourke and others (1999) for appropriate nest monitoring techniques (available for download at <http://sbsc.wr.usgs.gov/cprs/research/projects/swwf/reports.asp>).

Biologists who are not expert birders or specialists with regard to *Empidonax* flycatchers can effectively use this protocol. However, users should attend a U.S. Fish and Wildlife Service-approved Southwestern Willow Flycatcher survey training workshop, and have knowledge and experience with bird identification, surveys, and ecology sufficient to effectively apply this protocol.

Permits

Federal endangered species recovery permits are required for surveys in all USFWS regions where the Southwestern Willow Flycatcher breeds (application forms can be downloaded at <http://www.fws.gov/forms/3-200-55.pdf>). State permits also may be required before you can survey within any of the States throughout the Southwestern Willow Flycatcher’s range: be certain to check with the appropriate State wildlife agency in your area. It usually takes several months to receive permits, so apply early to avoid delays in starting your surveys. You also must obtain permission from government agencies and private landowners prior to conducting any surveys on their lands.

Pre-Survey Preparation

The degree of effort invested in pre-survey preparation will have a direct effect on the quality and efficiency of the surveys conducted. Pre-survey preparation is often overlooked, but can prove to be one of the more important aspects in achieving high-quality survey results.

Surveyors should study calls, songs, drawings, photographs, and videos of Willow Flycatchers. Several web sites describe life history requirements, and provide photographs and vocalizations. It is especially critical for surveyors to be familiar with Willow Flycatcher vocalizations before going in the field. Although the *fitz-bew* song is the basis of verifying detections using this protocol, Willow Flycatchers use many other vocalizations that are valuable in locating birds and breeding sites. We strongly encourage that all surveyors learn as many vocalizations as possible and refer to the on-line “Willow Flycatcher Vocalizations; a Guide for Surveyors” (available at <http://sbsc.wr.usgs.gov/cprs/research/projects/swwf/wiflvocl.asp>). Several commercial bird song recordings include Willow Flycatcher vocalizations, but these recordings typically have only a few vocalizations and the dialects may differ from those heard in the Southwest.

If possible, visit known Willow Flycatcher breeding sites to become familiar with flycatcher appearance, behavior, vocalizations, and habitat. Such visits are usually part of the standardized flycatcher survey workshops. All visits should be coordinated with USFWS, State wildlife agencies, and the property manager/owner, and must avoid disturbance to territorial flycatchers. While visiting these sites, carefully observe the habitat characteristics to develop a mental image of the key features of suitable habitat.

Surveyors must be able to identify, by sight and vocalizations, other species likely to be found in survey areas that may be confused with Southwestern Willow Flycatchers. These include Bell’s Vireo (*Vireo bellii*), Western Wood-pewee (*Contopus sordidulus*), young or female Vermillion Flycatchers (*Pyrocephalus rubinus*), and other *Empidonax* flycatchers. At a distance, partial song or call notes of Bell’s Vireo, Ash-throated Flycatchers (*Myiarchus cinerascens*) and some swallows can sound considerably like a *fitz-bew*. Surveyors also should be able to identify Brown-headed Cowbirds by sight and vocalizations. It is worthwhile to make one or more pre-survey trips to the survey sites or other similar areas to become familiar with the local bird fauna. You might consider obtaining a species list relative to your area and become familiar with those species by site and sound.

Prior to conducting any presence/absence surveys in your respective State or USFWS Region, contact the respective flycatcher coordinators to discuss the proposed survey sites and determine if the sites have been surveyed in prior years. If possible, obtain copies of previous survey forms and maintain consistency with naming conventions and site boundaries. Study the forms to determine if flycatchers have been previously detected in the site, record locations of any previous detections, and read the comments provided by prior surveyors. While surveying, be sure to pay special attention to any patches where flycatchers have previously been detected.

Familiarity with the survey site prior to the first surveys is the best way to be prepared for the conditions you will experience. Determine the best access routes to your sites and always have a back-up plan available in the event of unforeseen conditions (for example, locked gates, weather, etc.). Know the local property boundaries and where the potential hazards may be, including deep water, barbed wire fencing, and difficult terrain. Be prepared to work hard and remain focused and diligent in a wide range of physically demanding conditions. At many sites, these include heat, cold, wading through flowing or stagnant water, muddy or swampy conditions, crawling through dense thickets (often on hands and knees), and exposure to snakes, skunks, and biting insects.

It is imperative that all surveyors exercise the adage “safety first.” Be aware of safety hazards and how to avoid them, and do not allow the need to conduct surveys to supersede common sense and safety. Inform your coworkers where you will be surveying and when you anticipate returning. Always take plenty of water and know how to effectively use your equipment, especially compass, Global Positioning System (GPS), and maps.

Equipment

The following equipment is necessary to conduct the surveys:

1. **USGS topographic maps of the area:** A marked copy is required to be attached to survey data sheets submitted at the end of the season. Be sure to always delineate the survey area and clearly mark any flycatcher detections. If the survey area differed between visits; delineate each survey individually.
2. **Standardized survey form:** Always bring more copies than you think you need.
3. **Lightweight audio player:** Be sure the player has adequate volume to carry well; use portable speakers if necessary. Several digital devices, such as CD players and MP3 players, are currently available and can be connected to external amplified speakers for broadcasting the flycatcher vocalizations. However, not all are equally functional or effective in field conditions; durability, reliability, and ease of use are particularly important. Talk to experienced surveyors for recommendations on particular models and useful features.
4. **Extra player and batteries:** In the field, dirt, water, dust, and heat often cause equipment failure, and having backup equipment helps avoid aborting a survey due to equipment loss or failure.
5. **Clipboard and permanent (waterproof) ink pen:** We recommend recording survey results directly on the survey data form, to assure that you collect and record all required data and any field notes of interest.
6. **Aerial photographs:** Aerial photographs can significantly improve your surveys by allowing you to accurately target your efforts, thus saving time and energy in the field. Previously, aerial images were often expensive and difficult to obtain. However, it is now easy to get free or low-cost images from sources, such as Google® Earth. Even moderate resolution images generally are better than none. For higher resolution aerial photographs, check with local planning offices and/or State/Federal land-management agencies for availability. Take color photocopies, not the original aerial photographs, with you in the field. Aerial photographs also are very useful when submitting your survey results but cannot be substituted in lieu of the required topographic map.
7. **Binoculars and bird field guide:** Although this protocol relies primarily on song detections to verify flycatcher presence, good quality binoculars are still a crucial field tool to help distinguish between possible Southwestern Willow Flycatchers and other species. Use a pair with 7–10 power magnification that can provide crisp images in poor lighting conditions. A good field guide also is essential for the same reason.
8. **GPS unit:** A GPS unit is needed for determining survey coordinates and verifying the location of survey plots on topographic maps. All flycatcher detections should be stored as waypoints and coordinates recorded on the survey form. A wide variety of fairly inexpensive GPS units are currently available. Most commercially available units will provide accuracy within 10 m, which is sufficient for navigating and marking locations.
9. **Compass:** Surveyors should carry a compass to help them while navigating larger habitat patches. This is an important safety back-up device, because GPS units can fail or lose power. Most GPS units have a feature to provide an accurate bearing to stored waypoints (for example, previous flycatcher detections, your parked vehicle, etc.); however, many units do not accurately display the direction in which the surveyor is traveling slowly through dense vegetation. A compass set to the proper bearing provides a more reliable method to navigate the survey site and relocate previously marked locations.

The following equipment also is recommended:

10. **Camera:** These are very helpful for habitat photographs, especially at sites where flycatchers are found. Small digital cameras are easily portable and relatively inexpensive.
11. **Survey flagging:** Used for marking survey sites or areas where flycatcher are detected. Check with the local land owner or management agency before flagging sites. Use flagging conservatively so as to not attract people or predators.
12. **Field vest:** A multi-pocket field vest can be very useful for carrying field equipment and personal items. We recommend muted earth-tone colors.

13. **Cell phone and/or portable radio:** In addition to providing an increased level of safety, cell phones or portable radios may be used by surveyors to assist each other in identifying territories and pairs in dense habitats, or where birds are difficult to hear.

In addition to the necessary equipment mentioned above, personal items, such as food, extra water or electrolyte drink, sunscreen, insect repellent, mosquito net, first-aid kit, whistle, and a light jacket, also should be considered. Being prepared for unforeseen difficulties, and remaining as comfortable as conditions allow while surveying are important factors to conducting thorough and effective surveys.

All survey results (both negative and positive) should be recorded directly on data forms when possible. These data forms have been designed to prompt surveyors to record key information that is crucial to interpretation of survey results and characterization of study sites. Even if no flycatchers are detected or habitat appears unsuitable, this is valuable information and should be recorded. Knowing where flycatchers are not breeding can be as important as knowing where they are; therefore, negative data are important. Standardized data forms are provided in [appendix 1](#), or can be downloaded online. Always check for updated forms prior to each year's surveys.

Willow Flycatcher surveys are targeted at this species and require a great deal of focused effort. Surveyors must be constantly alert and concentrate on detecting a variety of flycatcher cues and responses. Therefore, field work, such as generalized bird surveys (for example, point counts or walking transects) or other distracting tasks, should not be conducted in conjunction with Willow Flycatcher surveys. Avoid bringing pets or additional people who are not needed for the survey. Dress in muted earth-tone colors, and avoid wearing bright clothing.

Willow Flycatcher Identification

The Southwestern Willow Flycatcher is a small bird, approximately 15 cm long and weighing about 11–12 g. Sexes look alike and cannot be distinguished by plumage. The upper parts are brownish-olive; a white throat contrasts with the pale olive breast, and the belly is pale yellow. Two white wing bars are visible (juveniles have buffy wing bars) and the eye ring is faint or absent. The upper mandible is dark and the lower mandible light. The tail is not strongly forked. When perched, the Willow Flycatcher often flicks its tail upward. As a group, the *Empidonax* flycatchers are very difficult to distinguish from one another by appearance. The Willow Flycatcher also looks very similar to several other passerine species you may encounter in the field.

Given that Willow Flycatchers look similar to other *Empidonax* flycatchers that may be present at survey sites, the most certain way to verify Willow Flycatchers in the field is by their vocalization. For the purpose of this protocol,

identification of Willow Flycatchers cannot be made by sight alone; vocalizations are a critical identification criterion, and specifically the primary song *fitz-bew*. Willow Flycatchers have a variety of vocalizations (see Stein, 1963; Sedgwick, 2000), but two are most commonly heard during surveys or in response to call-playback:

1. ***Fitz-bew***. This is the Willow Flycatcher's characteristic primary song. Note that *fitz-bews* are not unique to the southwestern subspecies; all Willow Flycatchers sing this characteristic song. Male Willow Flycatchers may sing almost continuously for hours, with song rates as high as one song every few seconds. Song volume, pitch, and frequency may change as the season progresses. During prolonged singing bouts, *fitz-bews* are often separated by short *britt* notes. *Fitz-bews* are most often given by a male, but studies have shown female Willow Flycatchers also sing, sometimes quite loudly and persistently (although generally less than males). Flycatchers often sing from the top of vegetation, but also will vocalize while perched or moving about in dense vegetation.
2. ***Whitt***. This is a call often used by nesting pairs on their territory, and commonly is heard even during periods when the flycatchers are not singing (*fitz-bewing*). The *whitt* call appears to be a contact call between sexes, as well as an alarm call, particularly when responding to disturbance near the nest. *Whitt* calls can be extremely useful for locating Willow Flycatchers later in the season when *fitz-bewing* may be infrequent, but are easily overlooked by inexperienced surveyors. When flycatcher pairs have active nests and particularly once young have hatched, *whitts* may be the most noticeable vocalization. However, many species of birds *whitt*, and a *whitt* is not a diagnostic characteristic for Willow Flycatchers. For example, the “*whitt*” of the Black-headed Grosbeak (*Pheucticus melanocephalus*) and Yellow-breasted Chat (*Icteria virens*) are often confused with that of the flycatcher.

The *fitz-bew* and *whitt* calls are the primary vocalizations used to locate Willow Flycatchers. However, other less common Willow Flycatcher vocalizations can be very useful in alerting surveyors to the presence of flycatchers. These include twittering vocalizations typically given during interactions between flycatchers and sometimes between flycatchers and other birds, bill snapping, *britt*'s, and *wheeo*'s. Because these sounds can be valuable in locating territories (Shook and others, 2003), they should be studied prior to going in the field. Willow Flycatcher vocalization recordings are available from Federal and State agency contacts and online at <http://sbsc.wr.usgs.gov/cprs/research/projects/swwf/>. Standardized recordings of Southwestern Willow Flycatchers also are available online at <http://www.naturesongs.com/tyrcert.html#tyrr>. Specifically, only *fitz-bews* and *britts* should be used for conducting surveys, to provide more robust comparative results among sites and years.

Willow Flycatcher song rates are highest early in the breeding season (late May–early June), and typically decline after eggs hatch. However, in areas with many territorial flycatchers or where an unpaired flycatcher is still trying to attract a mate, or where re-nesting occurs, singing rates may remain high well into July. Isolated pairs can be much quieter and harder to detect than pairs with adjacent territorial flycatchers. At some sites, pre-dawn singing (0330–0500 hours) appears to continue strongly at least through mid-July (Sogge and others, 1995). Singing rates may increase again later in the season, possibly coinciding with re-nesting attempts (Yard and Brown, 2003). The social dynamics of adjacent territories can strongly influence vocalization rates. A single “*fitz-bew*” from one flycatcher may elicit multiple responses from adjacent territories. When these interactions occur, it is a good opportunity to distinguish among territories and provides the surveyor with an estimate of territory numbers in the immediate area.

There are some periods during which Willow Flycatchers do not sing and even the use of call-playback sometimes fails to elicit any response. This can be particularly true late in the breeding season. Early and repeated surveys are the best way to maximize the odds of detecting a singing flycatcher and determining its breeding status.

Timing and Number of Visits

No survey protocol can guarantee that a Southwestern Willow Flycatcher, if present, will be detected on any single visit. However, performing repeated surveys during the early to mid-nesting season increases the likelihood of detecting flycatchers and aids in determining their breeding status. A single survey, or surveys conducted too early or late in the breeding cycle, do not provide definitive data and are of limited value.

For purposes of this survey protocol, we have divided the Southwestern Willow Flycatcher breeding season into three basic survey periods, and specified a minimum number of survey visits for each period (fig. 9). Although the Sogge and others (1997a) protocol recommended a minimum of one survey in each period, we now recommend a differing number of visits for general surveys versus project-related studies.

General surveys are conducted for the sole purpose of determining whether Willow Flycatchers are present or absent from a respective site, when there is no foreseeable direct or indirect impact to their habitat from a known potential project or change in site management. In such cases, a minimum of one survey visit is required in each of the three survey periods.

Project-related surveys are conducted to determine the presence or absence of Willow Flycatchers within a site when there is a potential or foreseeable impact to their habitat due to a potential project or change in site management. Additional surveys are required for project-related studies in order to derive a greater degree of confidence regarding the presence or absence of Willow Flycatchers.

All successive surveys must be at least 5 days apart; surveys conducted more closely are not considered to be separate surveys. Although a minimum of three or five surveys are required for general and project-related purposes, respectively, if the habitat patches are large, contiguous and extremely dense, additional surveys are strongly encouraged to ensure full coverage of the site.

If you are uncertain whether three general surveys or five project-related surveys are required for your respective study, contact your USFWS flycatcher coordinator. As noted earlier, this survey protocol will help determine if territorial flycatchers are present and their approximate locations; if your project requires fine-scale estimates of flycatcher numbers or distribution at a site, you may need to conduct more intensive efforts that include additional surveys, nest searches, and nest monitoring.

Survey Period 1: May 15–31.—For both general and project-related surveys: a minimum of one survey is required. The timing of this survey is intended to coincide with the period of high singing rates in newly arrived males, which tends to begin in early to mid-May. This is one of the most reliable times to detect flycatchers that have established their territories, so there is substantial value to conducting period 1 surveys even though not all territorial males may yet have arrived. Migrant Willow Flycatchers of multiple subspecies will likely be present and singing during this period. Because both migrant and resident Willow Flycatchers are present during this period, and relatively more abundant than in subsequent surveys, it is an excellent opportunity to hone your survey and detection skills and gain confidence in your abilities. Detections of flycatchers during period 1 also provide insight on areas to pay particular attention to during the next survey period.

Survey Period 2: June 1–24.—For general surveys: a minimum of one survey is required. For project-related surveys, a minimum of two surveys are required. Note that this differs from the minimum of one survey that was recommended in this period under the previous protocol (Sogge and others, 1997a). During this period, the earliest arriving males may already be paired and singing less, but later arriving males should still be singing strongly. Period 2 surveys can provide insight about the status of any flycatchers detected during survey period 1. For example, if a flycatcher is detected during survey period 1 but not survey period 2, the first detection may have been a migrant. Conversely, detecting a flycatcher at the same site during periods 1 and 2 increases the likelihood that the bird is not a migrant, although it does not necessarily confirm it. Survey period 2 also is the earliest time during which you are likely to find nesting activity by resident birds at most sites. Special care should be taken during this period to watch for activity that will verify whether the flycatchers that are present are attempting to breed. A little extra time and diligence should be spent at all locations where flycatchers were detected during survey period 1.

Survey Visit Timing, Numbers, and Detection Interpretation

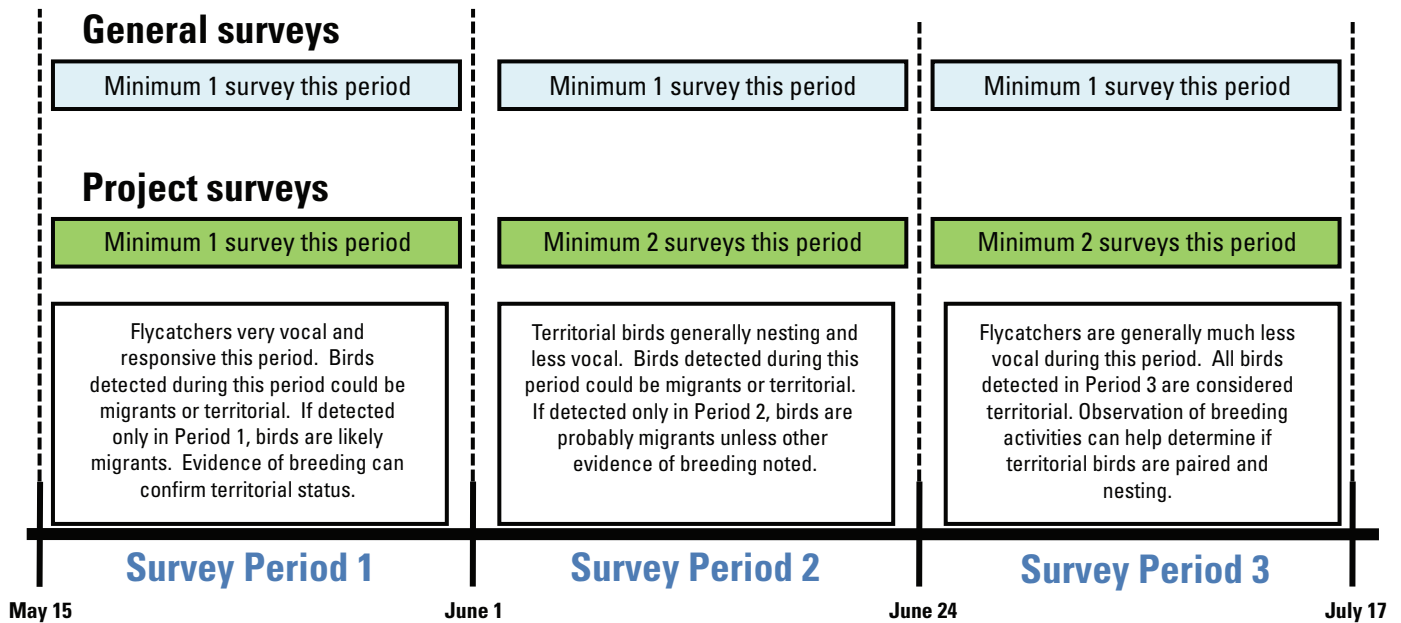


Figure 9. Recommended numbers and timing of visits during each survey period for general surveys and project surveys. General surveys are those conducted when there is no foreseeable direct or indirect impact to their habitat from a known potential project or change in site management. Project-related surveys are conducted when there is a potential or foreseeable impact to their habitat due to a potential project or change in site management.

Survey Period 3: June 25–July 17.—For general surveys, a minimum of one survey is required. For project-related surveys, a minimum of two surveys are required. Virtually all Southwestern Willow Flycatchers should have arrived on their territories by this time. Flycatcher singing rates probably have lessened, and most paired flycatchers will have initiated or even completed their first round of nesting activity. Migrant Willow Flycatchers should no longer be passing through the Southwest; therefore, any flycatchers that you detect are likely to be either territorial or nonbreeding floaters. Surveyors should determine if flycatchers detected during surveys in periods 1 or 2 are still present, and watch closely for nesting activity. Flycatchers that have completed a first nesting attempt may resume vigorous singing during this period. Extra time and diligence should be spent at all locations where flycatchers were detected during survey periods 1 or 2.

At high elevation sites (above 2,000 m), Southwestern Willow Flycatcher arrival and initiation of breeding activities may occur in early June, and possibly later in some years due to weather or migration patterns. Therefore, flycatcher breeding chronology may be delayed by 1 or 2 weeks at such sites, and surveys should be conducted in the latter part of each period.

It may not require multiple surveys to verify Southwestern Willow Flycatcher presence or breeding status. If, for example, Willow Flycatchers are observed carrying nest material during survey periods 1 or 2, this is conclusive verification they are breeders as opposed to migrants, regardless of what is found during period 3. However, it requires a minimum of three surveys for general studies and five surveys for project-related studies to determine with relative confidence that Southwestern Willow Flycatchers probably are not breeding at a site in that year, based on lack of detections.

We strongly encourage additional follow-up surveys to sites where territorial Southwestern Willow Flycatchers are verified or suspected. Extra surveys provide greater confidence about presence or absence of flycatchers at a site, as well as help in estimating the number of breeding territories or pairs, and determining breeding status and the outcome of breeding efforts. Pre-survey visits the evening before the survey or post-survey follow-up later in the morning can help confirm breeding status when surveyors are not under time constraints. However, avoid returning to a site so often as to damage the habitat, establish or enlarge trails, or cause undue disturbance to the flycatchers.

Survey Methods

The survey methods described below fulfill the primary objectives of documenting the presence or absence of Willow Flycatchers, and determining their status as territorial versus migrant. This protocol primarily is a call-playback technique, a proven method for eliciting response from nearby Willow Flycatchers (Seutin, 1987; Craig and others, 1992), both territorial and migrants. The premise of the call-playback technique is to simulate a territorial intrusion by another Willow Flycatcher, which generally will elicit a defensive response by the territorial bird, increasing its detectability. At each site, surveyors should broadcast a series of recorded Willow Flycatcher *fitz-bews* and *britts*, and look and listen for responses. In addition to maximizing the likelihood of detecting nearby flycatchers, this method also allows for positive identification by comparing the responding bird's vocalizations to the known Willow Flycatcher recording.

Documenting Presence/Absence—Begin surveys as soon as there is enough light to safely walk (about 1 hour before sunrise) and end by about 0900–1030 hours, depending on the temperature, wind, rain, background noise, and other environmental factors. Use your best professional judgment whether to conduct surveys that day based on local field conditions. If the detectability of flycatchers is being reduced by environmental factors, surveys planned for that day should be postponed until conditions improve. If observers are camped in or near potential Willow Flycatcher habitat, afternoons and evenings can be spent doing site reconnaissance and planning a survey strategy for the following morning. If camped immediately adjacent to survey sites, surveyors can awaken early and listen for flycatchers singing during the predawn period (0330–0500 hours), when territorial males often sing loudly.

Conduct surveys from within rather than from the perimeter of the sites, while limiting the breaking of vegetation or damaging the habitat. If surveys cannot be conducted from within the habitat, walk along the perimeter and enter the patch at intervals to broadcast the vocalizations and listen for responses. Flycatchers often respond most strongly if the recording is played from within the habitat and territory, rather than from the periphery. In addition, it can be surprisingly difficult to hear singing Willow Flycatchers that are even a short distance away amidst the noise generated by other singing and calling birds, roads, noisy streams, and other extraneous sounds. Therefore, it is preferable to survey from within the habitat, but always move carefully to avoid disturbing habitat or nests. Surveying from the periphery should not be conducted only for the sake of convenience, but is allowable for narrow linear reaches or when absolutely necessary due to safety considerations.

Because flycatchers may be clustered within only a portion of a habitat patch, it is critical to survey all suitable habitat within the patch. Small linear sites may be thoroughly

covered by a single transect through the patch. For larger sites, choose a systematic survey path that assures complete patch coverage throughout the length and breadth of the site. This may require multiple straight transects, serpentine, zig-zag, or criss-cross routes. Aerial photographs and previous survey forms are valuable tools to help plan and conduct surveys, and to assure complete coverage. Always move carefully through the habitat to avoid disturbing vegetation or nests.

Initially approach each site and stand quietly for 1–2 minutes or longer, listening for spontaneously singing flycatchers. A period of quiet listening is important because it helps acclimate surveyors to background noises that can be quite loud due to roads, aircraft, machinery, waterways, and other sounds. It also allows surveyors to recognize and shift attention away from the songs and calls of other bird species, letting them focus on listening for flycatchers. Although it happens rarely, some singing Willow Flycatchers will actually stop vocalizing and approach quietly in response to a broadcast song, perhaps in an effort to locate what they perceive as an intruding male. Therefore, playing a recording before listening for singing individuals has at least some potential of reducing detectability.

If you do not hear singing flycatchers during the initial listening period, broadcast the Willow Flycatcher song recording for 10–15 seconds; then listen for approximately 1 minute for a response. Repeat this procedure (including a 10-second quiet pre-broadcast listening period) every 20–30 m throughout each survey site, more often if background noise is loud. The recording should be played at about the volume of natural bird calls, and not so loud as to cause distortion of the broadcast. We recommend that the playback recording include a series of *fitz-bews* interspersed with several *britts*.

Response to the broadcast call could take several forms. Early in the breeding season (approximately May–mid-June), a responding Willow Flycatcher will usually move toward the observer and *fitz-bew* or *whitt* from within or at the top of vegetation. Territorial Willow Flycatchers almost always vocalize strongly when a recording is played in their territory early in the season. If there are several flycatchers present in an area, some or all may start singing after hearing the recording or the first responding individual. Flycatchers can often hear the recording from far away but will not usually move outside of their territory, so listen for distant responses. Also, stay alert and listen for flycatchers vocalizing behind you that may not have responded when you were first in their territory. Another common flycatcher response is alarm calls (*whitts*) or interaction twitters from within nearby vegetation, particularly once nesting has begun. Willow Flycatchers will often sing after a period of *whitting* in response to a recording, so surveyors hearing *whitts* should remain in the area and quietly listen for *fitz-bews* for several minutes. Because some flycatchers may initially respond by approaching quietly, particularly during periods 2 and 3, it is critical to watch carefully for responding birds.

If you detect flycatchers that appear particularly agitated, it is possible that you are in close proximity to their nest. Agitated flycatchers may swoop down at the surveyor, snap their beaks, and otherwise appear distressed. Exercise extreme caution so as to not accidentally disturb the nest, and move slowly away from the immediate area.

For the purpose of this protocol, detection of a *fitz-bew* song is essential to identify a bird as a Willow Flycatcher. Similar appearing species (including other *Empidonax* flycatchers) occur as migrants, and even breeders, at potential Willow Flycatcher sites. A few of these other species may even approach a broadcast Willow Flycatcher song and respond with vocalizations. In order to standardize interpretation of survey results and assure a high degree of confidence in surveys conducted by biologists of varying experience and skill, positive identification must be based on detection of the Willow Flycatcher's most unique characteristic—its song. It is important to remember that the *whitt* call is not unique to Willow Flycatchers, and therefore cannot serve as the basis of a positive identification. However, *whitts* are extremely useful for locating flycatchers and identifying areas needing follow-up visits. Loud, strong *whitting* may indicate a nearby nest, dictating that surveyors exercise extra caution moving through the area.

Whenever a verified or suspected Willow Flycatcher is detected, be careful not to overplay the song recording. Excessive playing could divert the bird from normal breeding activities or attract the attention of predators and brood parasites. Wildlife management agencies may consider overplaying the recording as “harassment” of the flycatcher, and this is not needed to verify species identification. Although flycatchers usually sing repeatedly once prompted, even a single *fitz-bew* is sufficient for verification. If you have played a recording several times and a bird has approached but has not *fitz-bewed*, do not continue playing the recording. If a potential Willow Flycatcher responds, approaches or *whitts* but does not sing, it is best to carefully back away and wait quietly. If it is a Willow Flycatcher, it probably will sing within a short time (5–10 minutes). Another option is to return to the same site early the following morning to listen for or attempt to elicit singing again. If you are still uncertain, record the location with your GPS, record comments on the survey form, and follow-up on the detection during subsequent surveys. If possible, request the assistance of an experienced surveyor to determine positive identification.

If more habitat remains to be surveyed, continue onward once a flycatcher is detected and verified. In doing so, move 30–40 m past the current detection before again playing the recording, and try to avoid double-counting flycatchers that have already responded. Willow Flycatchers, particularly unpaired males, may follow the broadcast song for 50 m or more.

Looking For and Recording Color Bands.—Several research projects have involved the capture and banding of Willow Flycatchers at breeding sites across the Southwest. In such projects, flycatchers are banded with one or more small colored leg bands, including a federal numbered band. As a result, surveyors may find color-banded individuals at their survey sites, and identification and reporting of the band combination can provide important data on flycatcher movements, survivorship, and site fidelity.

To look for bands, move to get a good view of the flycatcher's legs. This may be difficult in dense vegetation, but flycatchers commonly perch on more exposed branches at the edges of their territory or habitat patch. If bands are seen, carefully note the band colors. If there is more than one band on a leg, differentiate the top (farthest up the leg) from the bottom (closest to the foot), and those on the bird's left leg versus the right leg. If you are unsure of the color, do not guess. Instead, record the color as unknown. Incorrect color-band data are worse than incomplete data, so only record colors of which you are certain. The fact that a banded bird was seen, even without being certain of its color combination, is very important information. Record the color-band information on the survey form, and report the sighting to the appropriate State or Federal contact as soon as you return from the survey that day.

Determining the Number of Territories and Pairs.—Accurately determining the number of breeding territories and pairs can be more difficult than determining simple presence or absence. Flycatcher habitat is usually so dense that visual detections are difficult, and seeing more than one bird at a time is often impossible. Flycatchers sing from multiple song perches within their territories, and may be mistaken for more than one flycatcher. A flycatcher responding to or following a surveyor playing a recording may move considerable distances in a patch and thus be counted more than once. Territorial male flycatchers often sing strongly, but so do many migrants and some females, particularly in response to call-playback (Seutin, 1987; Unitt, 1987; Sogge and others, 1997b). Rangelwide, many territorial male flycatchers are unmated, particularly those in small breeding groups. For these reasons, each singing flycatcher may not represent a territory or a mated pair. Following the established survey protocol and carefully observing flycatcher behavior can help determine if you have detected migrants, territorial birds, breeders, unmated birds, or pairs.

Given sufficient time, effort and observation, it is usually possible to approximate the number of territories and pairs. First, listen carefully for simultaneously singing flycatchers. Note the general location of each bird—especially concurrently singing individuals—on aerial photographs, map, or a site sketch. Spend some time watching each flycatcher to determine approximate boundaries of its territory, and how it interacts with other flycatchers. If one or more singing

birds stay primarily in mutually exclusive areas, they can be considered as separate territories. To determine if a flycatcher is paired, watch for interactions within a territory. Refer to the section, “[Determining Breeding Status](#)” for signs of pairing and breeding activity. Do not report a territorial male as a pair unless you observe one or more of the signs listed below. In some cases, it may be possible only to estimate the number of singing individuals. In other cases, it may take multiple site visits to differentiate territories or pairs.

Determining Breeding Status.—One way to determine if the flycatchers found at a particular site are migrants or territorial is to find out if they are still present during the “non-migrant” period, which generally is from about June 15 to July 20 (Unitt, 1987). A Willow Flycatcher found during this time probably is a territorial bird, although there is a small chance it could be a non-territorial floater (Paxton and others, 2007). If the management question is simply whether the site is a potential breeding area, documenting the presence of a territorial flycatcher during the non-migrant period may meet all survey objectives, and the site may not need to be resurveyed during the remainder of that breeding season.

However, in some cases, surveyors will be interested in knowing not only if territorial Southwestern Willow Flycatchers are present at a site, but also whether breeding or nesting efforts are taking place. Some males maintain territories well into July yet never succeed in attracting a mate, so unpaired males are not uncommon (McLeod and others, 2007; Ellis and others, 2008; Ahlers and Moore, 2009). Thus, an assumption that each singing male represents a breeding pair may not be well founded, especially in small populations. If it is important to determine whether a pair is present and breeding in that territory, move a short distance away from where the bird was sighted, find a good vantage point, and sit or lie quietly to watch for evidence of breeding. Signs of breeding activity include:

- a. observation of another unchallenged Willow Flycatcher in the immediate vicinity (indicates possible pair);
- b. *whitt* calls between nearby flycatchers (indicates possible pair);
- c. interaction twitter calls between nearby flycatchers (indicates possible pair);
- d. countersinging or physical aggression against another flycatcher or bird species (suggests territorial defense);
- e. physical aggression against cowbirds (suggests nest defense);
- f. observation of Willow Flycatchers copulating (verifies attempted breeding);
- g. flycatcher carrying nest material (verifies nesting attempt, but not nest outcome);
- h. flycatcher carrying food or fecal sac (verifies nest with young, but not nest outcome);
- i. locating an active nest (verifies nesting). Recall that general survey permits do not authorize nest searching or monitoring, and see section, “[Special Considerations](#)”;

- j. observation of adult flycatchers feeding fledged young (verifies successful nesting).

You may be able to detect flycatcher nesting activity, especially once the chicks are being fed. Adults feed chicks at rates of as many as 30 times per hour, and the repeated trips to the nest tree or bush are often quite evident. Be sure to note on the flycatcher survey form any breeding activity that is observed, including detailed descriptions of the number of birds, and specific activities observed. Also note the location of breeding activities on an aerial photograph, map, or sketch of the area.

The number of flycatchers found at a site also can provide a clue as to whether they are migrants or territorial birds. Early season detections of single, isolated Willow Flycatchers often turn out to be migrants. However, discovery of a number of Willow Flycatchers at one site usually leads to verification that at least some of them remain as local breeders. This underscores the importance of completing a thorough survey of each site to be confident of the approximate number of flycatchers present.

In some cases, regardless of the time and diligence of your efforts, it will be difficult to determine the actual breeding status of a territorial male. In these instances, use your best professional judgment, or request the assistance of an experienced surveyor or an agency flycatcher coordinator to interpret your observations regarding breeding status.

Reporting Results.—There is little value in conducting formal surveys if the data are not recorded and submitted. Fill in all appropriate information on the Willow Flycatcher survey form while still in the field, and mark the location of detections on a copy of the USGS topographic map. Make a habit of reviewing the form before you leave any site—trying to remember specific information and recording it later can lead to missing and inaccurate data. Note the location of the sighting on an aerial photograph or sketch of the site. Attaching photographs of the habitat also is useful. Whenever a Willow Flycatcher territory or nest site is confirmed, notify the USFWS or appropriate State wildlife agency as soon as you return from the field. The immediate reporting of flycatcher detections or nests may differ among USFWS regions and States—discuss these reporting procedures with your respective State and USFWS flycatcher coordinators.

Complete a survey form ([appendix 1](#)) for each site surveyed, whether or not flycatchers are detected. “Negative data” (that is, a lack of detections) are important to document the absence of Willow Flycatchers and help determine what areas have already been surveyed. Make and retain a copy of each survey form, and submit the original or a legible copy. Electronic copies of the survey forms also are acceptable and are available online (<http://sbsc.wr.usgs.gov/cprs/research/projects/swwf/>). All survey forms must be submitted to the USFWS and the appropriate State wildlife agency by the specified deadline identified in your permits. Timely submission of survey data is a permit requirement, and will ensure the information is included in annual statewide and regional reports.

Special Considerations

To avoid adverse impacts to Willow Flycatchers, follow these guidelines when performing all surveys:

1. Obtain all necessary Federal, State, and agency permits and permissions prior to conducting any surveys. Failure to do so leaves you liable for violation of the Endangered Species Act, various State laws, and prosecution for trespass.
2. Do not play the recording more than necessary or needlessly elicit vocal responses once Willow Flycatchers have been located and verified. This may distract territorial birds from caring for eggs or young, or defending their territory. If flycatchers are vocalizing upon arrival at the site, and your objective is to determine their presence or absence at a particular site—there is no need to play the recording. Excessive playing of the recording also may attract the attention of predators or brood parasites. Stop playing the survey recording as soon as you have confirmed the presence of a Willow Flycatcher, and do not play the recording again until you have moved 30–40 m to the next survey location.
3. Proceed cautiously while moving through Willow Flycatcher habitat. Continuously check the area around you to avoid disturbance to nests of Willow Flycatchers and other species. Do not break understory vegetation, even dead branches, to create a path through the surveyed habitat.
4. Do not approach known or suspected nests. Nest searches and monitoring require specific State and Federal permits, have their own specialized methodologies (Rourke and others, 1999), and are not intended to be a part of this survey protocol.
5. If you find yourself close to a known or suspected nest, move away slowly to avoid startling the birds or force-fledging the young. Avoid physical contact with the nest or nest tree, to prevent physical disturbance and leaving a scent. Do not leave the nest area by the same route that you approached. This leaves a “dead end” trail that could guide a potential predator to the nest/nest tree. If nest monitoring is a component of the study, but you are not specifically permitted to monitor the nest, store a waypoint with your GPS, affix flagging to a nearby tree at least 10 m away, and record the compass bearing to the nest on the flagging. Report your findings to an agency flycatcher coordinator or a biologist who is permitted to monitor nests.
6. If you use flagging to mark an area where flycatchers are found, use it conservatively and make certain the flagging is not near an active nest. Check with the property owner or land-management agency before flagging to be sure that similar flagging is not being used for other purposes in the area. Unless conducting specific and authorized/ permitted nest monitoring, flagging should be placed no closer than 10 m to any nest. Keep flagging inconspicuous from general public view to avoid attracting people or animals to an occupied site, and remove it at the end of the breeding season.
7. Watch for and note the presence of potential nest predators, particularly birds, such as Common Ravens (*Corvus corax*), American Crows (*Corvus brachyrhynchos*), jays, and magpies. If such predators are in the immediate vicinity, wait for them to leave before playing the recording.
8. Although cowbird parasitism is no longer considered among the primary threats to flycatcher conservation it remains useful to note high concentrations of cowbirds in the comment section of the survey form. While conducting surveys, avoid broadcasting the flycatcher vocalizations if cowbirds are nearby, especially if you believe you may be close to an active flycatcher territory. The intent of not broadcasting flycatcher vocalizations is to reduce the potential for attracting cowbirds to a flycatcher territory or making flycatcher nests more detectable to cowbirds.
9. Non-indigenous plants and animals can pose a significant threat to flycatcher habitat and may be unintentionally spread by field personnel, including those conducting flycatcher surveys. Simple avoidance and sanitation measures can help prevent the spread of these organisms to other environments. To avoid being a carrier of non-indigenous plants or animals from one field site to another visually inspect and clean your clothing, gear, and vehicles before moving to a different field site. A detailed description on how to prevent and control the spread of these species is available by visiting the Hazard Analysis and Critical Control Point Planning for Natural Resource Management web site (<http://www.haccp-nrm.org>). One species of particular interest is the tamarisk leaf-beetle (*Diorhabda* spp.). If you observe defoliation of saltcedar while conducting flycatcher surveys and believe that *Diorhabda* beetles may be responsible, notify your USFWS coordinator immediately. Other non-native species of concern in survey locations are the quagga mussel (*Dreissena rostriformis bugensis*), cheatgrass (*Bromus tectorum*), red brome (*Bromus rubens*), giant salvinia (*Salvinia molesta*), water milfoil (*Myriophyllum spicatum*), parrot’s feather (*M. aquaticum*), and amphibian chytrid fungus (*Batrachochytrium dendrobatidis*).

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Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (<http://www.fws.gov/southwest/es/arizona/>) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name _____ State _____ County _____
 USGS Quad Name _____ Elevation _____ (meters)
 Creek, River, Wetland, or Lake Name _____
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes ___ No ___

Survey Coordinates: Start: E _____ N _____ UTM Datum _____ (See instructions)
 Stop: E _____ N _____ UTM Zone _____

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

**** Fill in additional site information on back of this page ****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s)	Date Start Stop Total hrs ____						# Birds	Sex	UTM E	UTM N
Survey # 2 Observer(s)	Date Start Stop Total hrs ____						# Birds	Sex	UTM E	UTM N
Survey # 3 Observer(s)	Date Start Stop Total hrs ____						# Birds	Sex	UTM E	UTM N
Survey # 4 Observer(s)	Date Start Stop Total hrs ____						# Birds	Sex	UTM E	UTM N
Survey # 5 Observer(s)	Date Start Stop Total hrs ____						# Birds	Sex	UTM E	UTM N
Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs _____		Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any Willow Flycatchers color-banded? Yes ___ No ___ If yes, report color combination(s) in the comments section on back of form and report to USFWS.				

Reporting Individual _____ Date Report Completed _____
 US Fish and Wildlife Service Permit # _____ State Wildlife Agency Permit # _____

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

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Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual _____ Phone # _____
 Affiliation _____ E-mail _____
 Site Name _____ Date Report Completed _____

Did you verify that this site name is consistent with that used in previous years? Yes ____ No ____ Not Applicable ____
 If site name is different, what name(s) was used in the past? _____
 If site was surveyed last year, did you survey the same general area this year? Yes ____ No ____ If no, summarize below.
 Did you survey the same general area during each visit to this site this year? Yes ____ No ____ If no, summarize below.

Management Authority for Survey Area : Federal ____ Municipal/County ____ State ____ Tribal ____ Private ____
 Name of Management Entity or Owner (e.g., Tonto National Forest) _____

Length of area surveyed: _____ (meters)

Vegetation Characteristics: Mark the category that best describes the predominant tree/shrub foliar layer at this site (check one):

- _____ Native broadleaf plants (entirely or almost entirely, > 90% native, includes high-elevation willow)
- _____ Mixed native and exotic plants (mostly native, 50 - 90% native)
- _____ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
- _____ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Average height of canopy (Do not include a range): _____ (meters)

Attach copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections. Attach sketch or aerial photo showing site location, patch shape, survey route, location of any WIFLs or WIFL nests detected. Attach photos of the interior of the patch, exterior of the patch, and overall site; describe any unique habitat features.

Comments (attach additional sheets if necessary)

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM N	UTM E	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Appendix 2. Willow Flycatcher Survey Continuation Sheet / Territory Summary Table

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (<http://www.fws.gov/southwest/es/arizona/>) for the most up-to-date version.

Willow Flycatcher Survey Continuation Sheet
(For reporting additional detections and territories; append to Survey and Detection form)

Reporting Individual _____ Phone # _____
 Affiliation _____ E-mail _____
 Site Name _____ Date Report Completed _____

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Comments _____

Appendix 3. Instructions for Completing the Willow Flycatcher Survey and Detection Form and the Survey Continuation Sheet

These instructions are provided as guidance for completing the standard survey form. It is particularly important to provide the correct type and format of information for each field. Complete and submit your survey forms to both the appropriate State Willow Flycatcher coordinator and the U.S. Fish and Wildlife Service (USFWS) by September 1 of the survey year. You also may complete forms digitally (Microsoft® Word or Excel) and submit them via email with attached or embedded topographic maps and photographs.

Page 1 of Survey Form

Site Name. Standardized site names are provided by the flycatcher survey coordinators for each State and should be consistent with the naming of other sites that might be in the area. If the site is new, work with your State or USFWS flycatcher coordinator to determine suitable site names before the beginning of the survey season. If the site was previously surveyed, use the site name from previous years (which can be obtained from the State or USFWS flycatcher coordinator). If you are uncertain if the site was previously surveyed, contact your State or USFWS flycatcher coordinator.

USGS Quad Name. Provide the full quad name, as shown on the appropriate standard 7.5-minute topographic maps.

Creek, River, Wetland, or Lake Name. Give the name of the riparian feature, such as the lake or watercourse, where the survey is being conducted.

Survey Coordinates. Provide the start and end points of the survey, which will indicate the linear, straight-line extent of survey area, based on Universal Transverse Mercator coordinates (UTMs). California surveyors only: provide latitude/longitude geographic coordinates instead of UTMs in the UTM fields and identify them as such. If the start and end points of the survey changed significantly among visits, enter separate coordinates for each survey in the comments section on the back of the survey sheet. Note that we do not need the coordinates for the detailed path taken by the surveyor(s).

Datum. Indicate the datum in which the coordinates are expressed: NAD27, WGS84, or NAD83. The datum can be found in the settings of most GPS units. Note that Arizona prefers NAD27 and New Mexico prefers NAD83.

Zone. Provide the appropriate UTM zone for the site, which is displayed along with the coordinates by most GPS units. Zones for California are 10, 11, or 12. The zone for Arizona is 12. Zones for New Mexico are 12 or 13.

Survey #. Survey 1 – 5. See the protocol for an explanation of the number of required visits for each survey period. **Note:** A survey is defined as a complete protocol-based survey that occurs over no more than 1 day. If a site is so large as to require more than a single day to survey, consider splitting the site into multiple subsites and use separate survey forms for each. Casual site visits, pre-season or supplemental visits, or follow-up visits to check on the status of a territory should not be listed in this column, but should be documented in the Comments section on page 2 or in the survey continuation sheet.

Date. Indicate the date that the survey was conducted, using the format mm/dd/yyyy.

Start and Stop. Start and stop time of the survey, given in 24-hour format (e.g., 1600 hours rather than 4:00 p.m.).

Total hours. The duration of time (in hours) spent surveying the site, rounded to the nearest tenth (0.1) hour. For single-observer surveys, or when multiple observers stay together throughout the survey, total the number of hours from survey start to end. If two or more observers surveyed sections of the site concurrently and independently, sum the number of hours each observer spent surveying the site.

Number of Adult WIFLs. The total number of individual adult Willow Flycatchers detected during this particular survey. Do not count nestlings or recently fledged birds.

Number of Pairs. The number of breeding pairs. Do not assume that any bird is paired; designation of birds as paired should be based only on direct evidence of breeding behaviors described in the protocol. If there is strong evidence that the detected bird is unpaired, enter “0”. If it is unknown whether a territorial bird is paired, enter “-”. Note that the estimated number of pairs can change over the course of a season.

Number of Territories. Provide your best estimate of the number of territories, defined as a discrete area defended by a resident single bird or pair. This is usually evidenced by the presence of a singing male, and possibly one or more mates. Note that the estimated number of territories may change over the course of a season.

Nest(s) Found? Yes or No. If yes, indicate the number of nests. Renests are included in this total.

Comments about this survey. Describe bird behavior, evidence of pairs or breeding, evidence of nest building, evidence of nestlings/fledglings, nesting, vocalizations (e.g., interaction twitter calls, *whitts*, *britts*, *wheos*, *fitz-bews*/countersinging), potential threats (e.g., livestock, cowbirds, saltcedar leaf beetles [*Diorhabda* spp.] etc.). If *Diorhabda* beetles are observed, contact your USFWS and State flycatcher coordinator immediately. Please be aware that permits are needed for nest monitoring.

GPS Coordinates for WIFL Detections. Provide the number of birds (e.g., unpaired, paired, or groups of birds) and corresponding UTMs. If known, provide the sex of individuals.

Overall Site Summary. For each of these columns, provide your best estimate of the overall total for the season. Do not simply total the numbers in each column. In some cases where consistent numbers were detected on each survey, the overall summary is easy to determine. In cases where numbers varied substantially among the different surveys, use professional judgment and logic to estimate the most likely number of adults, pairs, and territories that were consistently present. Be careful not to double count individuals. Record only territorial adult Southwestern Willow Flycatchers, do not include migrants, nestlings, or fledglings in the overall summary. In complex cases, consult with your State or USFWS flycatcher coordinator.

Total Survey Hours. The sum of all hours spent surveying the site.

Were any WIFLs color-banded? Circle or highlight “Yes” or “No”. If yes, report the sighting and color combination (if known) in the comments section on back of form, and contact your USFWS coordinator within 48 hours after returning from the survey. Note that identifying colors of bands is difficult and might require follow-up visits by experienced surveyors.

Reporting Individual. Indicate the full first and last name of the reporting individual.

Date Report Completed. Provide the date the form was completed in mm/dd/yyyy format.

U.S. Fish and Wildlife Service Permit #. List the full number of the required federal permit under which the survey was completed.

State Wildlife Agency Permit #. If a State permit is required by the State in which the survey was completed, provide the full number of the State permit. State permits are required for Arizona and California. State permits are recommended for New Mexico.

Page 2 of Survey Form

Affiliation. Provide the full name of the agency or other affiliation (which is usually the employer) of the reporting individual.

Phone Number. Self-explanatory; include the area code.

E-mail. Self-explanatory.

Was this site surveyed in a previous year? Indicate “Yes”, “No”, or “Unknown.”

Did you verify that this site name is consistent with that used in previous years? Indicate “Yes” or “No”. This can be determined by checking survey forms from previous years or consulting with agency flycatcher coordinators.

If site name is different, what name(s) was used in the past? Enter the full site name that was used in previous years.

If site was surveyed last year, did you survey the same general area this year? Indicate “Yes” or “No”. If no, indicate the reason and how the survey varied in the Comments section.

Did you survey the same general area during each visit to this site this year? If no, indicate the reason in the Comments section and delineate the differing route of each survey on the topographical map.

Management Authority for Survey Area. Mark the appropriate management authority.

Name of Management Entity or Owner (e.g., Tonto National Forest). Provide the name of the organization or person(s) responsible for management of the survey site.

Length of area surveyed. Estimate the linear straight-line distance of the length of the area surveyed, in kilometers. This is not an estimate of the total distance walked throughout the survey site. Do not provide a range of distances.

Vegetation Characteristics: Mark only one of the categories that best describes the predominant tree/shrub foliar layer at the site.

Native broadleaf habitat is composed of entirely or almost entirely (i.e., > 90%) native broadleaf plants.

Mostly native habitat is composed of 50–90% native plants with some (i.e., 10–50%) non-native plants.

Mostly exotic habitat is composed of 50–90% non-native plants with some (i.e., 10–50%) native plants.

Exotic/introduced habitat is composed entirely or almost entirely (i.e., > 90%) of non-native plants.

Identify the 2–3 predominant tree/shrub species in order of dominance. Identify by scientific name.

Average height of canopy. Provide the best estimate of the average height of the top of the canopy throughout the patch. Although canopy height can vary, give only a single (not a range) overall height estimate.

Attach the following: (1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; (2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; (3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments. Include the flycatcher territory number and GPS location. You also may include a compact disc of photographs.

Comments. Include any information that supports estimates of total territory numbers and breeding status. You may provide additional information on bird behavior, banded birds, evidence of pairs or breeding, nesting, potential threats (e.g., livestock, cowbirds, saltcedar leaf beetles [*Diorhabda* spp.] etc.), and changes in survey length and route throughout the season. Attach additional pages or use the continuation sheet if needed.

Table. If Willow Flycatchers are detected, complete the table at the bottom of the form. Identify flycatchers by territory number and include the dates detected, UTM coordinates, whether or not pairs were detected, and whether or not nests were located. Also describe the observation. For example, the surveyor might have observed and heard a bird *fitz-bew* from an exposed perch, heard and observed two birds interacting and eliciting a twitter call, heard a bird *fitz-bew* while observing another carrying nesting material, heard birds from territory 1 and 2 countersinging, etc. This information provides supporting information for territory and breeding status. Use the continuation sheet if needed.

Appendix 4. Example of a Completed Willow Flycatcher Survey and Detection Form (with map)

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: DL-08 State: New Mexico County: Socorro
 USGS Quad Name: Paraje Well Elevation: 1,356 (meters)
 Creek, River, or Lake Name: Rio Grande
 Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes X No
 Survey Coordinates: Start: E 306,009 N 3,715,506 UTM Datum: NAD 83 (See instructions)
 Stop: E 304,339 N 3,711,922 UTM Zone: 13

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

****Fill in additional site information on back of this page****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s): D. Savage	Date: 5/24/2009	5	0	5	N	Suitable breeding habitat dispersed throughout site. WIFLs were very vocal, and covering large areas. No obvious signs of pairing were observed. Approximately 10 head of cattle were found within this site.	# Birds	Sex	UTM E	UTM N
	Start: 5:45						1	M	305,276	3,714,926
	Stop: 10:15						1	M	305,131	3,714,628
	Total hrs: 4.5						1	M	305,191	3,714,778
							1	M	305,394	3,715,009
Survey # 2 Observer(s): S. Kennedy	Date: 6/10/2009	11	4	7	Y (3)	Portions of site are flooded, 1-2 ft deep. Two males found during 1st survey appear unpaired. Three pairs confirmed based on nesting, and another pair suspected based on vocal interactions and nonaggressive behavior with another flycatcher. Two additional territories (1 pair and 1 unpaired male) found during this survey.	# Birds	Sex	UTM E	UTM N
	Start: 6:00						1	M	305,276	3,714,926
	Stop: 10:15						1	M	305,131	3,714,628
	Total hrs: 4.3						2	M/F	305,191	714,778
							2	M/F	305,394	3,715,009
Survey # 3 Observer(s): S. Kennedy	Date: 6/21/2009	12	5	7	Y (4)	Portions of site still flooded. All territories found in Survey 2 are still active. The two males found during Surveys #1 and #2, still believed to be unpaired. All other territories are believed to be paired. Several cows observed in vicinity of active territories.	# Birds	Sex	UTM E	UTM N
	Start: 5:30						1	M	305,276	3,714,926
	Stop: 10:00						1	M	305,131	3,714,628
	Total hrs: 4.5						2	M/F	305,191	3,714,778
							2	M/F	305,394	3,715,009
Survey # 4 Observer(s): D. Moore	Date: 7/1/2009	12	5	7	Y (4)	Site is no longer flooded, but saturated soils persist throughout most of site. No change in territory numbers or status. All SWFL pairs very quiet - only a few whits and fitz-bews. Light rain over night, vegetation was saturated early in the morning. Lots of mosquitos!	# Birds	Sex	UTM E	UTM N
	Start: 6:00						1	M	305,276	3,714,926
	Stop: 10:00						1	M	305,131	3,714,628
	Total hrs: 4.0						2	M/F	305,191	3,714,778
							2	M/F	305,394	3,715,009
Survey # 5 Observer(s): D. Moore	Date: 7/10/2009	11	5	6	Y (4)	Site beginning to dry out, some portions still muddy. One of the unpaired males could not be detected. It was hard to hear SWFLs due to breezy conditions early in the morning.	# Birds	Sex	UTM E	UTM N
	Start: 5:30						1	M	305,131	3,714,628
	Stop: 10:00						2	M/F	305,191	3,714,778
	Total hrs: 4.5						2	M/F	305,394	3,715,009
							2	M/F	305,084	3,714,732
Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total survey hrs: 21.8		Total Adult Residents: 12	Total Pairs: 5	Total Territories: 7	Total Nests: 4	Were any WIFLs color-banded? Yes <u> </u> No <u>X</u>	If yes, report color combination(s) in the comments section on back of form and report to USFWS.			

Reporting Individual: Darrell Ahlers Date Report Completed: 8/20/2009
 US Fish & Wildlife Service Permit #: TE819475-2 State Wildlife Agency Permit #: N/A

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Darrell Ahlers Phone # (303) 445-2233
 Affiliation Bureau of Reclamation E-mail dahlers@usbr.gov
 Site Name DL-08 Date report Completed 8/20/2009
 Was this site surveyed in a previous year? Yes x No Unknown
 Did you verify that this site name is consistent with that used in previous yrs? Yes x No Not Applicable
 If name is different, what name(s) was used in the past? Not applicable
 If site was surveyed last year, did you survey the same general area this year? Yes x No If no, summarize below.
 Did you survey the same general area during each visit to this site this year? Yes x No If no, summarize below.
 Management Authority for Survey Area: Federal X Municipal/County State Tribal Private
 Name of Management Entity or Owner (e.g., Tonto National Forest) Bureau of Reclamation

Length of area surveyed: 2.5 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

- Native broadleaf plants (entirely or almost entirely, > 90% native)
- X Mixed native and exotic plants (mostly native, 50 - 90% native)
- Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
- Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Salix Gooddingii, Populus spp., Tamarix spp.

Average height of canopy (Do not include a range): 6 (meters)

- Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

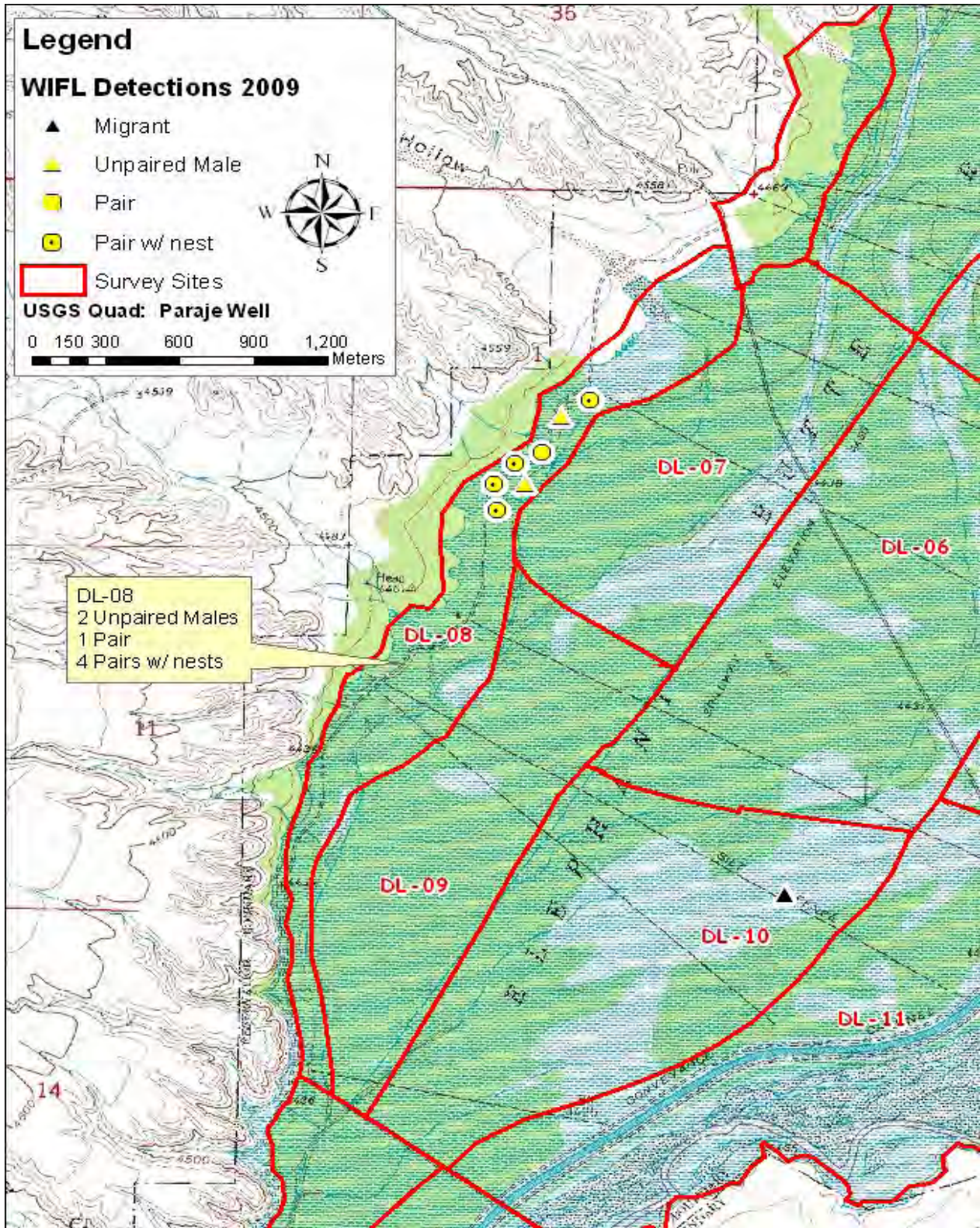
Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features).
Attach additional sheets if necessary.

Great habitat with saturated or flooded soils throughout most of the site on 1st survey. Site began to dry by the end of the breeding season. SWFL territories are dominated by Gooddings willow, however Tamarix spp. tends to be increasing in density compared to previous years. Site is supported by flows from the Low Flow Conveyance Channel.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
1 (Unpaired male)	5/24, 6/10,6/21,7/1	305,276	3,714,926	N	N	extended presence at site from 5/24 through 7/1, no evidence of pairing
2 (Unpaired male)	5/24, 6/10,6/21,7/1, 7/10	305,131	3,714,628	N	N	extended presence at site from 5/24 through 7/10, no evidence of pairing
3 (Pair)	5/24, 6/10,6/21,7/1, 7/10	305,191	3,714,778	Y	Y	Pair confirmed based on vocalizations and observation of unchallenged WIFL
4 (Pair w/nest)	5/24, 6/10,6/21,7/1, 7/10	305,394	3,715,009	Y	Y	Confirmed breeding status with nest
5 (Pair w/nest)	5/24, 6/10,6/21,7/1, 7/10	305,084	3,714,732	Y	Y	Confirmed breeding status with nest
6 (Pair w/nest)	6/10,6/21,7/1, 7/10	305,001	3,714,640	Y	Y	Confirmed breeding status with nest
7 (Pair w/nest)	6/10,6/21,7/1, 7/10	305,010	3,714,524	Y	N	Confirmed breeding status with nest

Attach additional sheets if necessary



Publishing support provided by the U.S. Geological Survey
Publishing Network, Tacoma Publishing Service Center

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Final Report - NCCP/MSCP Raptor Monitoring
Project (January 1, 2001 – December 31, 2003)

for

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by

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March 31, 2005

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BACKGROUND

The Natural Communities Conservation Planning (NCCP) Raptor Monitoring Project is part of the urgent implementation tasks associated with the Multiple Species Conservation Program (MSCP). The MSCP is the local representation of the State's NCCP Program of which the City of San Diego is a participating member and the lead agency. The County of San Diego is also an active participant (County of San Diego 1997). The city adopted the MSCP on March 18, 1997 and entered into a binding contract on July 16, 1997 with the State of California Department of Fish and Game and the United States Fish and Wildlife Service to implement the MSCP.

Each habitat conservation plan (HCP) requires a monitoring program to determine the efficacy of that plan. The "Biological Monitoring Plan for the Multiple Species Conservation Program" (Ogden 1996) recommended monitoring for certain plant species, coastal sage scrub (Coastal California Gnatcatcher and Cactus Wren), herpetofauna, and grasslands (specifically, using raptors).

THE PROJECT AND ITS OBJECTIVES

Monitoring of raptors is a critical component of the MSCP. This project, specifically, addresses monitoring the raptor species identified as target species for MSCP monitoring with one exception--the Burrowing Owl (BO; *Athene cunicularia hypugaea*). In addition to the Burrowing Owl, the MSCP Biological Monitoring Plan (Ogden, 1996) identified the following raptor species (hereafter referred to as the "target" species) to be monitored: Golden Eagle (GE; *Aquila chrysaetos*), Bald Eagle (BE; *Haliaeetus leucocephalus*), Peregrine Falcon (PF; *Falco peregrinus*), Northern Harrier (NH; *Circus cyaneus*), Ferruginous Hawk (FH; *Buteo regalis*), Swainson's Hawk (SH; *Buteo swainsoni*), and Cooper's Hawk (CH; *Accipiter cooperii*). Prior to the subject work, no comprehensive study had been conducted for any of these species, within the geographical limits of the MSCP.

The Wildlife Research Institute, Inc. (WRI), a non-profit organization, has been working with all MSCP participants to identify appropriate long-term raptor monitoring locations (based on the results of the current WRI raptor surveys), develop a scientifically-based monitoring program (including survey locations and protocols), test the monitoring methods, and identify opportunities for population enhancements.

The original project objectives (taken from the contract's scope of work) are as follows:

- Determine where breeding and wintering individuals (of the target species) are located within the study areas.
- Wherever possible, document the breeding success of active pairs.
- Characterize situations of both successful and less successful or unsuccessful habitat.
- Identify, modify, or create, if necessary, survey raptor monitoring methods, based on scientific principles that would be appropriate to meet the objectives of the MSCP Monitoring Plan.
- Identify management, including research, needs and enhancement opportunities.

THIS REPORT

Constraints. This report covers WRI's raptor surveying activity for the three years of this project (January 1, 2001 through December 31, 2003), focusing on the breeding and wintering seasons. For the record, our work did not, officially, include the BO. Therefore, with few exceptions, surveys were not conducted during what would normally have been the most productive time for this species (i.e., early morning and early evening). Fieldwork was conducted during the daylight hours to maximize chances for seeing the diurnal raptors that were the focus of the contracted scope. Although nocturnal owls can be expected to nest and winter in many of the study sites, they would be expected to often escape observation under this temporal survey regime. However, our methods required documenting any raptor, regardless of whether or not it was a target species and, when a BO or any other owl was observed, it was noted.

A natural phenomenon created a situation that could be considered a constraint. This was the extreme drought that the region experienced for several years (1999-2004). Therefore, 2001 through 2003 may not have been the best of raptor breeding years. Drought clearly plays a significant factor in the density and reproductive success of raptors. This study was conducted during the worst drought for San Diego in over 160 years. This fact should be noted for future researchers and resource managers/planners. This kind of extreme drought has the potential effect of reducing the available prey biomass, which, in turn, can have at least two effects. First, it likely reduces the "attractiveness" of a habitat complex, partly because of low prey densities, and may encourage raptors and other predators to look elsewhere. Second, for those individuals that choose to stay in a less-than-ideal environment, the lack of prey often results in lowered reproductive success or even total nest failure (see Discussion, below). If a nest site is not successful, the birds are more likely to disperse, which leaves the historically active territories apparently, or actually, vacant.

Intent. It is the intent that this, the Final Report, will not only serve to (1) provide data analysis and interpretation but, importantly, it strives to (2) provide an initial baseline of information on many of the breeding and wintering raptors within the MSCP and environs, (3) identify resource management challenges and opportunities, and (4) recommend needed research and management, including what areas should be considered for the MSCP Long-term Raptor Monitoring Program (LRMP).

METHODS

LITERATURE REVIEW, INTERVIEWS, DATA SEARCHES, ETC.

We first contacted other professional biologists, regarding available literature and monitoring programs already in place. We acquired relevant literature, which we did not already have, and met with and/or phone-interviewed members of the outdoor-oriented public as well as key professionals in the San Diego ornithologist community (including Mr. John Oakley, Mr. David Mayer, Mr. Phil Unitt, Dr. Jim Hannan, and others listed in the Acknowledgements section) to inquire about raptor sightings. Using existing published and gray literature, the Natural Communities Data Base, museum collections, raw data from the San Diego County Bird Atlas (then in prep.), MSCP vegetation and sensitive species GIS data, and discussions with knowledgeable experts, a project bibliography, relevant to the MSCP and the target species, was produced (Appendix A).

STUDY SITES

The choice of *study sites* (i.e., those which would be the focus of the 2001-2003 field observations) began with the raptor monitoring locations proposed by the “Biological Monitoring Plan for the Multiple Species Conservation Program” (Ogden 1996). Through consultations with CDFG staff and other knowledgeable biologists, we initially identified 22 sites. After some consolidation and the addition of several sites, including control sites and five sites recently acquired by the state or federal government (numbers 34, and 39 through 43), this number was, ultimately, increased to 45 locations within, and juxtaposed to, the MSCP (hereafter referred to as “study sites”; Figure 1 and Table 1). These became the sites, which were surveyed and considered as *potential* sites, or components of sites, for the Long-term *Monitoring Plan*. The basis for choosing the study sites included that they (1) could be expected to support raptors, (2) were part of an area which was managed by a public or private organization or, alternatively, could serve as a control site over time, (3) were accessible by vehicle and could be safely surveyed with repeatability, (4) contained grassland and/or other relevant habitat which was representative of the MSCP area, and (5) were within or immediately juxtaposed to the MSCP area. We considered all ten sites recommended by the Ogden (1996) report. Of those ten sites, we believe all are covered by one or more of the above 45 locations unless they did not meet the above criteria.

MONITORING SITES

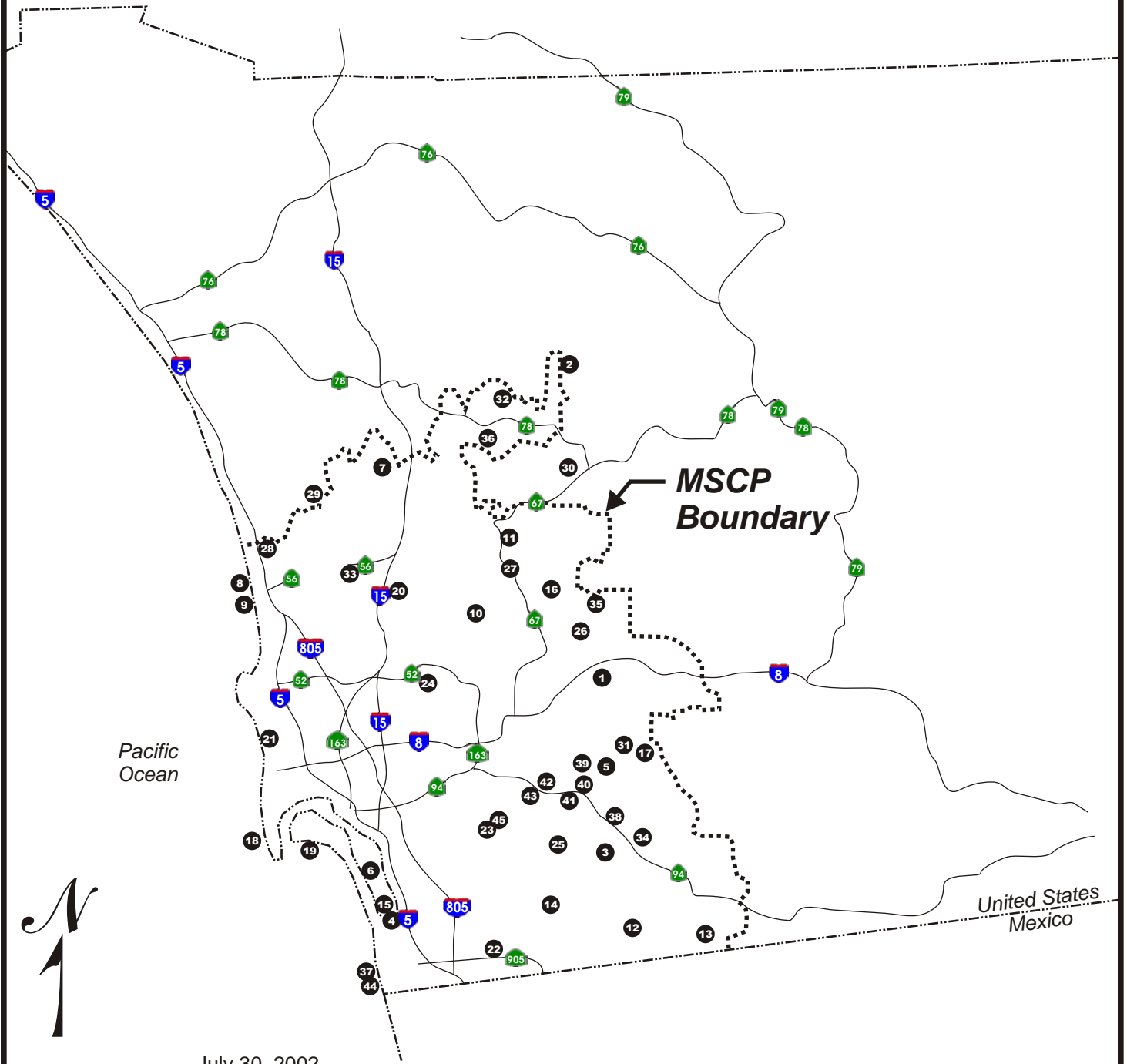
The parameters considered in order to make the recommendations for monitoring sites (i.e., those which would be used in the MSCP Long-term Monitoring Program; LRMP) were discussed at a meeting with representatives of CDFG, USFWS, the City of San Diego and the County of San Diego, on January 27, 2002, at the CDFG San Diego office. It was agreed that the following were important when reviewing each study site as a potential MSCP LRMP site:

- Number of individual raptors documented at a site
- Number of raptor species
- Number of target raptor species
- Diversity of raptors and/or target raptor species
- Number of raptor territories
- Number of crows and/or ravens
- Incidence and/or expectation of management/enforcement problems
- Likely changes in habitat and disturbance over time

In order to identify which sites are the most appropriate for the MSCP LRMP during the breeding season, each site was examined, based on two species diversity parameters (number of total raptors and number of target raptors, both of which were normalized by level of effort) and a third parameter for evenness (Probability of an Interspecific Encounter or PIE; Hurlburt, 1971). The analysis for evenness provided a logical break between the top 19th and 20th sites. All sites were then arranged in descending order for each of these three parameters. If any site came out in the top 19 for any two of the three parameters, it was considered a candidate for the MSCP LRMP. Seventeen sites met this requirement. Each site was reviewed, based on our biological knowledge of that site and how it fit into the geographic distribution of recommended monitoring sites. Finally, juxtaposed sites were combined and sites and site boundaries were adjusted based on historic raptor numbers and improved geographic coverage.

LEGEND

- SITE LOCATIONS
- 🛣 INTERSTATES
- 🛣 STATE HIGHWAYS



Source: County of San Diego, DPLU GIS

MSCP RAPTOR STUDY SITE LOCATIONS

Table 1. Raptor Study Sites (2001-2003)

NOTE TO READER: In order to facilitate the reader's access to the following topographic maps, they are listed below alphabetically and by site number.

<u>Number</u>	<u>Name</u>	<u>Name</u>	<u>Number</u>
1	Crestridge	Boden Canyon	2
2	Boden Canyon	Border Fields	44
3	Jamul Ranch	Brown Field Complex	22
4	SDNWR*/Salt Works/Egger Ghio	Crestridge	1
5	McGinty Mountain Complex	Grasslands/Route 67	30
6	San Diego Bay NWR (winter only)	Hollenbeck Canyon	34
7	Lake Hodges	Immenschuh	39
8	Penasquitos Lagoon	Iron Mountain	11
9	Torrey Pines	Jamul Ranch	3
10	Sycamore Canyon	Lake Hodges	7
11	Iron Mountain	Los Montanas (North)	40
12	Otay Mountain	Los Montanas (South)	41
13	Marron Valley	Marron Valley	13
14	Otay Lakes	McGinty Mountain Complex	5
15	SDNWR* Sweetwater Marsh	Miramar Reservoir	20
16	San Vicente	Mission Bay	21
17	Sycuan Peak	Mission Trails	24
18	Point Loma	North Island	19
19	North Island	Otay Lakes	14
20	Miramar Reservoir	Otay Mountain	12
21	Mission Bay	Penasquitos Canyon	33
22	Brown Field Complex	Penasquitos Lagoon	8
23	SDNWR*/San Miguel Mountain	Point Loma	18
24	Mission Trails	Proctor Valley	25
25	Proctor Valley	Rancho San Diego (East)	42
26	San Diego River	Rancho San Diego (West)	43
27	Route 67 South	Rock Mountain	35
28	San Dieguito Lagoon	Rockwood Canyon	32
29	Route S-6 (deleted/safety issue)	Route 67 South	27
30	Grasslands/Route 67	Route 94 (North and South)	38
31	Sloan Canyon	Route S-6	29
32	Rockwood Canyon	San Diego Bay NWR (winter only)	6
33	Penasquitos Canyon	San Diego River	26
34	Hollenbeck Canyon	San Dieguito Lagoon	28
35	Rock Mountain	San Pasqual	36
36	San Pasqual	San Vicente	16
37	SDNWR*Tijuana Slough	SDNWR* Sweetwater Marsh	15
38	Route 94 (North and South)	SDNWR*/Salt Works/Egger Ghio	4
39	Immenschuh	SDNWR*/San Miguel Mountain	23
40	Los Montanas (North)	SDNWR*Tijuana Slough	37
41	Los Montanas (South)	Sloan Canyon	31
42	Rancho San Diego (East)	Sweetwater Reservoir	45
43	Rancho San Diego (West)	Sycamore Canyon	10
44	Border Fields	Sycuan Peak	17
45	Sweetwater Reservoir	Torrey Pines	9

*San Diego National Wildlife Refuge

After completing the above analysis, it became clear that the coastal portions of the MSCP were excluded from the proposed breeding season monitoring because the vast majority and greatest diversity of raptor species breed somewhat inland of the coast. In addition, our data showed that the MSCP area supported a sizable wintering PF population, most of which would be excluded without a coastal component to the MSCP LRMP. Therefore, a winter monitoring route was established that included a good sampling of the coastal wintering raptor habitat that could be driven safely and consistently.

FIELD SURVEYS

By way of clarification, we will be discussing two kinds of raptor searching and documentation. The first is the *survey*—the approach we took to investigate each of the 45 study sites, some of which we are recommending for the MSCP LRMP. This approach utilized several techniques in order to capture a maximum amount of raptor data on sites of considerable environmental variation. The second kind of raptor searching and documentation is the *monitoring protocol*, which will be recommended for MSCP LRMP. This was based on which *survey* techniques were most useful, what has become standardized for raptors, and what will meet the objectives of a monitoring program (discussed below).

Based on a review of the MSCP Biological Monitoring Plan, discussions with the Contract Manager, and our knowledge of survey techniques that are widely accepted, we established guidelines for WRI biologists to follow for the breeding and wintering surveys (WRI 2004, Appendices A and B). As discussed in the Year 1 and 2 reports (WRI 2002, 2004), because of latitude, and the resulting mild climate of the MSCP area, raptor nesting activities can start as early as December and run into August. However, wintering raptors are commonly observed in this region December through February, with some remaining (or migrating through) into mid-March. Therefore, we have, somewhat arbitrarily, called field observations made December through February “winter” survey data. However, “breeding” season data are not limited to a specific timeframe, often overlap with the “winter” observation, and are based on observed behavior (e.g., copulation, nest building, incubation, bringing food to the nest, presence of young).

Table 1 provides a reminder of all the sites that were in the original list of those to be examined. One of the objectives of the 2003 fieldwork was to fill in some data gaps. We had difficulty gaining access to one site (San Diego National Wildlife Refuge/San Miguel Mountain, Site 23) because it involved the use of an access across private property. Table 1 does not reflect surveys that were conducted for the GE or numerous surveys conducted by WRI volunteers and cooperators. During this last year of study, we also continued our coordination with individuals responsible for managing the study sites to keep them apprised of project progress, maintain a point of contact, enlist their input, coordinate access, etc.

Although most of the fieldwork was conducted by vehicle and on foot, as described in WRI (2004, Appendices A and B), some observations, which were focused on the GE, were conducted by helicopter (WRI 2005).

RESULTS

LITERATURE REVIEW

The Project Bibliography has been completed (Appendix A); although, we would welcome any additions from those who review it. This bibliography is not intended to be comprehensive but is intended to provide the reader and local resource manager with important references that relate to: (1) relevant natural history of the target raptors; (2) the presence or distribution of the target raptors within the MSCP, and/or (3) survey or monitoring techniques that could be applied to the target raptor resources by land and wildlife managers within the MSCP. It is arranged by sections for each raptor target species, followed by a section on general raptor literature, with a focus on raptor management.

FIELD SURVEYS

The GE and the PF are addressed separately below because they are unique in both their biological status and their potential for being disturbed. The PF was only recently removed from the listing category and the GE has shown a marked (approximately 50 percent), and well-documented, decline in San Diego County.

Golden Eagle

The GE has been reported on separately (WRI 2005) for a number of reasons relating to resource protection. The detailed site-specific maps are provided in that document so that CDFG has the option of distributing those data separate from the other, less sensitive, raptor data depending on the recipient's need to know.

As an overview, however, after 16 years of consistent monitoring, we estimate that thirty one (31) pairs formerly occupied the San Diego MSCP. Today, fifteen (15) pairs are still active and sixteen (16) pairs have been extirpated. Most of these extirpations occurred in the last 35 years. The fifteen (15) breeding pairs of Golden Eagles remaining in the SD MSCP represent 30 percent of all the breeding Golden Eagles in San Diego County. Seven (7) of the fifteen (15) remaining active pairs within the SD MSCP are in serious jeopardy of being extirpated in the next 5-10 years. Three (3) of the seven (7) pairs predicted to become extirpated may, in fact, already be lost.

The first changes of significance that affected the SD MSCP Golden Eagle population were from intensive agriculture such as avocado and citrus groves. This agriculture replaced cattle grazing and grasslands. Some extirpations were documented to occur in San Diego County in the 1950s and 1960s, after the build-up of military personnel post-WWII, but most disappeared after the 1970s, when major freeways opened land for development that was formerly cattle ranches. Interstate and local freeways made access easy and allowed development to proceed.

Extirpated Golden Eagle territories were primarily located on private land (56 percent). Currently only three (20 percent) of the remaining pairs of Golden Eagles core nesting areas remain on private lands. Twelve (80 percent) of the currently active Golden Eagles within the SD MSCP nest on public land. *This is a significant and valuable opportunity for the future management and survival of Golden Eagles within the SD MSCP.*

In order to properly manage this far-ranging species, specific information about their ecological needs is required, including the limits of the core area around the nest, the primary foraging areas, and the limits of the defendable territory. These are provided in the Golden Eagle report (WRI 2005).

Peregrine Falcon

Breeding Season Results

Of the 12 current and/or historic PF territories known for the county, nine were (and, in five cases, are) located within the MSCP boundaries. Of the five territories located within the MSCP, only one territory is located at one of the study sites (Point Loma, Site 18; see Table 2). The status of that territory and others that we are aware of, within the MSCP, is as follows: Point Loma—active (likely produced young, 2002; was active, 2003); downtown San Diego—active (nest success not known, 2001-2003); La Jolla Cove—active (thought to have produced young, 2002); La Jolla Cliffs—active (nest success not known, 2001-2003); Downtown El Cajon—active (2002) but nest success not known.

Winter Results

A total of 14 PFs were documented during the winter months of 2002 and we believe this was typical for the study period (2001-2003). These were observed at ten study sites (Table 3). One individual was observed at each of nine sites, 2 at one site, and 3 were noted at, or near, another site (Point Loma; site 18). Most birds were observed along the coast or associated with large bodies of water, where shorebirds and other water-associated birds were abundant. Based on other observations, and input from knowledgeable raptor biologists, it is likely that there were roughly 20 PFs wintering in San Diego County during each of the period 2001-2003.

Other Raptors

Breeding Raptors

The raptor breeding season data, by study site, presented in Table 2 and Appendix B provides a picture of what each of the study sites can be expected to support under conditions of average-to-poor precipitation. Maps of all 45 study sites are provided. In cases where no data were collected, or data were combined between two sites, a note on the map provides that explanation. During the period 2001-2003, we examined 44 out of 45 sites (land access was not possible at SDNWR/San Miguel Mountain, Site 23 although we were able to survey a nearby GE nest by helicopter). We documented a total of 15 raptor species and 539 raptor breeding territories (excluding the CR but including 78 stick nests, which we could not positively identify as to raptor species). Of the 539 raptor breeding territories, 96 were target species (all but the BE, SH, and FH, which do not, currently, breed in the MSCP area). Sites varied greatly in their ability to support breeding raptors. Some sites didn't support more than one or two territories, while, others, like the Ramona Grasslands, supported almost 90 territories. Four sites supported no breeding raptors (see those with note "NBR"), while one site (Ramona Grasslands) supported 9 raptor species, including three target species.

The RT was the most commonly documented nesting raptor species, with a total of 177 nests and/or territories located on 34 sites. The next most commonly documented raptor

TABLE 2. Number of Raptor Nests and/or Territories by Site (2001-2003)

	SITE	SPECIES**																	Stick Nest	Target Spp.	Total Spp.	Notes	Site No.				
		AK	BE	BR	BO	CH	CR	FH	GE	GO	LO	NH	OS	PF	RS	RT	SO	SH						TV	WK		
1	Crestridge	1				1	2								3	2						1	9			1	
2	Boden Canyon					2									2	2							2	6			2
3	Jamul Ranch					2	2		1						1	13					2	15	2	36		3	
4	SDNWR*/Salt Works/Egger Ghio																						0	0			4
5	McGinty Mountain Complex					1									1	5							1	7			5
6	San Diego Bay NWR		1			2	1		1	2		1	1		5	8					2	0	5			6	
7	Lake Hodges	1																		1		3	23			7	
8	Penasquitos Lagoon																						0	0			8
9	Torrey Pines						6								1								0	7			9
10	Sycamore Canyon			1						3					1	1	1						0	7			10
11	Iron Mountain			2				4	1	1		1			11	13				1	2		5	37			11
12	Otay Mountain							2	2		2				1	5						1	2	11			12
13	Marron Valley							2	2		1				6							10	1	19			13
14	Otay Lakes		1					2	2	1	2				4					1	4		4	17			14
15	SDNWR* Sweetwater Marsh										2				1								2	3			15
16	San Vicente											3			2								1	8			16
17	Sycuan Peak																						0	0			17
18	Point Loma																						1	2			18
19	North Island					6						1			1						1	6	9			19	
20	Miramar Reservoir					1						1			1								1	3			20
21	Mission Bay																						0	0			21
22	Brown Field Complex							4	1						5							1	5	13			22
23	SDNWR*/San Miguel Mountain	1									1												1	1			23
24	Mission Trails								1												1	1	6				24
25	Proctor Valley								1														1	8			25
26	San Diego River							3	1						3	9							4	19			26
27	Route 67 South/Iron Mtn #11																						0	0			27
28	San Dieguito Lagoon																						1	6			28
29	Route S-6																						0	0			29
30	Grasslands/Route 67					1				6					25	41				1	3		3	90			30
31	Sloan Canyon								7						2	4						2	1	17			31
32	Rockwood Canyon								1						1	4							2	8			32
33	Penasquitos Canyon			2				7	1		2				9	4				1	6		9	37			33
34	Hollenbeck Canyon								1	4					2	4					1	4	3	22			34
35	Rock Mountain								1						1	2							1	5			35
36	San Pasqual			4				2	2						9	16				1	2	7	2	47			36
37	SDNWR*Tijuana Slough	1								3													2	3			37
38	Route 94 (North and South)																						0	0			38
39	Immenschuh							1															1	2			39
40	Los Montanas (North)														1	1						1	0	3			40

TABLE 2. Number of Raptor Nests and/or Territories by Site (2001-2003)

SITE	SPECIES**																				Stick Nest	Target Spp.	Total Spp.	Notes	Site No.	
	AK	BE	BR	BO	CH	CR	FH	GE	GO	LO	NH	OS	PF	RS	RT	SO	SH	TV	WK							
41 Los Montanas (South)															2								0	2		41
42 Rancho San Diego (East)	1				1										3				1				1	11		42
43 Rancho San Diego (West)					2								1										2	11		43
44 Border Fields	1	2			6			1		13				2	1				2				19	40		44
45 Sweetwater Reservoir					5	3		2						1	5				1				5	19		45
Total	29	0	14	11	47	41	0	12	20	3	25	6	1	83	177	1	0	6	25	78	96	579				

* San Diego National Wildlife Refuge.

NBR No breeding raptors observed.

NSC No formal raptor surveys conducted (see notes on topo report maps).

(1) Breeding raptors and ravens observed in residential areas to east of study area.

(2) Data for Route 67 South (# 27) and Iron Mountain (#11) were combined. See Iron Mountain (#11).

(3) The Route 94 transect overlaps other study sites. Data from this transect were assigned to other appropriate sites.

(4) No data collected due to safety and access issues.

(5) Data for Penasquitos Canyon (#8) combined with Torrey Pines (#9). See Torrey Pines (#9).

**Species:

AC American Crow	CR Common Raven	NH Northern Harrier	SO Screech Owl
AK American Kestrel	FH Ferruginous Hawk	OS Osprey	SS Sharp-shinned Hawk
BE Bald Eagle	GE Golden Eagle	PF Peregrine Falcon	SH Swainson's Hawk
BH Black Hawk	GO Great-horned Owl	PR Prairie Falcon	TV Turkey Vulture
BR Barn Owl	HH Harris' Hawk	RS Red-shouldered Hawk	WK White-tailed Kite
BO Burrowing Owl	LO Long-eared Owl	RT Red-tailed Hawk	
CH Cooper's Hawk	MR Merlin		

Table 3. Number* of raptors observed during the winter (primarily January, February, and December) surveys--2001-2003.

SITE	SPECIES***																			Total Target Spp.	Total Raptors	Notes	Site No.				
	AK	BE	BR	BO	CH	CR	FH	GE	GO	LO	MR	NH	OS	PF	PR	RS	RT	SO	SS					SH	TV	WK	
1					1	19										3	4					1		1	28		1
2					2			2								2	6					3			15		2
3	5					6					1					7								19		3	
4	2				1	2	1			1	4	3	1			4						1		20		4	
5						2										2	5							9		5	
6	3					1	1			1	1	1	1										3	8		6	
7	5	4			3	2	2	2	2	1	2	1	1			8	36				2	3	7	71		7	
8																							0	0		Note 1	8
9						12							2			2							2	16		Note 1	9
10			2						6					2	2	2							0	14			10
11			4		8	2	1	1	2		2		2		22	18					2	4	9	65		Note 2	11
12	2					18	1				1				5								2	27			12
13	1				1	14									1	6					1		1	24			13
14	5				3	10					2	2	1		1	5					1		6	30			14
15	2				1	1				1	3	1			5						1	1	4	15			15
16															4						2		0	6			16
17																							0	0		Note 3	17
18	1				1	3								3									4	11		Note 4	18
19	2		3			6					2		2		3								3	16		Notes 3 & 5	19
20					2								2		2							2	2	8			20
21	2					2									2								0	6			21
22	4				3	1	8				4				7						2		8	29			22
23																							0	0		NWC	23
24	1				2	6									3	3					1	2	2	18			24
25	3				1	132								1		8							2	145			25
26	5				6	2			2		1	1	1		7	22					2		7	48			26
27																							0	0		Note 2	27
28											2				8						2		2	12			28
29	2														2								0	4		Note 4	29
30	7				2	1	3	9	3	6	1		1	1	4	12	1				40		16	91			30
31						5		1							2	1							1	9		Note 3	31
32					2	2		2							6								4	12			32
33	6		4		14	2	4	4			4	2			18	8					2	12	22	76			33
34	7				1	13		2			3				3	5							6	35			34
35								3															3	3			35
36	11		7		2	6	2	6		6	1		1	1	16	57	1				3	8	6	121			36
37	3				1	4	1	1			1	2	1	1	4								5	18			37
38																							0	0		Note 6	38
39					1																		1	1			39
40															3								0	3			40
41						4									3								0	7			41
42	2				3	6									4						1		3	16			42
43						3										1							0	4			43
44	8										6				1	13						3	6	31			44

Table 3. Number* of raptors observed during the winter (primarily January, February, and December) surveys--2001-2003.

45	Sweetwater Reservoir	9	2		3	38	2	1	1				5			1	1	1	64		45					
Total		98	2	21	8	61	334	11	24	20	6	5	36	21	14	1	95	291	2	2	0	59	44	6	156	1155

* Numbers refer to maximum number of birds observed.
 ** San Diego National Wildlife Refuge.
 (1) Data for Penasquitos Lagoon (#8) and Torrey Pines (#9) combined. See Torrey Pines (#9).
 (2) Data for Route 67 South (#27) and Iron Mountain (#11) were combined. See Iron Mountain (#11).
 (3) Includes March survey.
 (4) Two PFs were observed to the north of this site, near the S.D. Airport.
 (5) Seven widely-spaced active burrows suggested that there were at least seven BOs on this study site.
 (6) The Route 94 transect overlaps other study sites. Data from this transect were assigned to other appropriate sites.

***Species
 AK American Kestrel CR Common Raven MR Merlin RS Red-shouldered Hawk TV Turkey Vulture
 BE Bald Eagle FH Ferruginous Hawk NH Northern Harrier RT Red-tailed Hawk WK White-tailed Kite
 BR Barn Owl GE Golden Eagle OS Osprey SO Screech Owl
 BO Burrowing Owl GO Great-horned Owl PF Peregrine Falcon SS Sharp-shinned Hawk
 CH Cooper's Hawk LO Long-eared Owl PR Prairie Falcon SH Swainson's Hawk

nests/territories were those of the RS with 83 and the CH with 47. The CR (a non-raptor, but a species that can have an impact on raptors) was fourth in frequency with 41 nests/territories. The next level of frequency was shared by AK (29), NH (25), WK (25), and GO (20). To a great extent, this frequency distribution is a function of site size, amount of appropriate habitat, and sometimes local conditions on the respective sites.

Of the eight project target species, nesting was documented for five—CH, NH, GE, BO, and, PF. CH nesting was observed at the highest number of study sites, with nests and/or territories documented at 21 sites (48 percent of the 44 sites surveyed). GE was observed nesting at 11 sites (25 percent); while NH was documented at only 8 sites (18 percent) with 13 of the 25 territories found at Border Fields. BO were found nesting at only 3 (7 percent) of the sites and PF at only 1 (0.23 percent) of the sites.

The CH nested, primarily, at those sites that contain healthy riparian habitat; however, this species has become somewhat of a generalist and also nests elsewhere (see Discussion). GEs limited their nesting to sites with sheer cliffs away from human activity and close to nearby grasslands for hunting (see below). The NH and the PF were concentrated primarily along the coast. However, one PF pair attempted nesting in downtown El Cajon and a few scattered NHs were observed nesting at more inland sites. NHs nested in mostly coastal marsh and open field habitat; although we have observed NHs nesting in ruderal areas (J. Oakley, pers. comm.). PFs utilized mostly man-made structures, along the coast, with nearby sources of shorebirds and other prey. Most of BOs, located on the study sites, were found in sandy soil with low grass and open areas (see also WRI 2003, Lincer and Bloom 2003, in prep.). BE and FH winter within the MSCP but are not known to breed there. SHs only pass through during migration, are infrequently documented, and when they are, they are usually not within the MSCP. Some of the SH migrants seen are in the Ramona area and large numbers (over 5,200) have been recently documented migrating along the desert front to the east of the MSCP during the spring (Unitt 2004).

Based on the number of *all* nesting raptor species (plus the CR) and all the sites surveyed during the 2001-2003 breeding seasons, Site 30 (Ramona Grasslands/Route 67) contained the most nests/territories of all sites surveyed. Eighty-nine nests/territories were documented, representing nine raptor species (and 1 CR). The site to show the next highest number of territories was San Pasqual (Site 36) with 47 territories (including two CR and 7 unidentified stick nests that were not duplications of known territories). Border Fields State Park (Site 44) showed the next highest number of territories with 40 territories (including 12 non-duplicative unidentified stick nests).

Site 44 (Border Fields) contained the highest number of *target* species nests/territories of all sites surveyed (19). Penasquitos Canyon (Site 33) supported 9 target species territories while North Island (Site 19) supported 6 and Brown Field Complex (Site 22) and Iron Mountain (Site 11) tied, with both supporting 5 nests of the target raptor species.

Wintering Raptors

A total of 20 raptor species were documented on our study sites during the winter months (January, February, and December) of 2001-2003 (Table 3). Of course, at San Diego's latitude, a number of the resident breeders are actively nesting while many of the wintering birds are still on site. All target raptors, but the SH, were documented during the winter observation period (December-February). Numbers ranged from 0 to 22 individual target raptors per site for a total of 154 individuals for all study sites. Comparable numbers for all raptors (plus the Common Raven) were 0 to 145 as a range. A total of 1,153 wintering individuals were documented (or 819, without the ravens).

The CR was, clearly, the most common wintering bird of those surveyed for. The three most commonly documented wintering raptors were the RT, AK, and RS, with totals of 291, 98, and 95, respectively. Of those sites surveyed in this study, the following held the highest number of wintering individuals (raptors and ravens): Site 25 (Proctor Valley) – 145, Site 36 (San Pasqual) – 121, Site 30 (Ramona Grasslands) – 91 (which included 9-16 FHs; with 20 documented in 2005), Site 33 (Penasquitos Canyon) – 76, and Site 7 (Lake Hodges) – 71.

DISCUSSION

Weather as a Factor

In reviewing any body of data, it is important to consider how typical the sampling period was. So just how "typical" were 2001 through 2003? Drought plays a significant factor in the density and reproductive success of raptors and other predators. During the El Nino of 1998/99, NHs were breeding in areas where they have not bred since and in lower numbers in other locations. The demonstrable impacts of drought on GEs and Prairie Falcons, throughout southern California, were presented by Bittner et al. (2003). This study was conducted during the worst drought for San Diego in 160 years. This should be noted for future researchers.

Management and Enforcement Issues

Table 4 is a summary of management and enforcement issues by site. Clearly, some study sites are substantially impacted, either directly or indirectly, by human activities. Some sites are currently without major impacts. Unfortunately, many of the more diverse and potentially productive sites are the same ones that are experiencing multiple management and enforcement challenges. Of those that are obviously impacted, the following activities are the most common: humans walking or hiking (36 out of 45 sites or 80%) and pets, primarily dogs being allowed to run free, (26 out of 45 sites or 57 %).

Table 4. Management Enforcement Issues Identified by Raptor Study Site

Site No.	Name	Humans Walking/Hiking	Rock Climbing	Off-road Vehicle Use	Pets	Disking, etc. Agricultural Activities	Rodent/Ground Squirrel Poisoning	Construction/Development	Newly-developed Access Road(s)	Other
1	Crestridge	X								
2	Boden Canyon	X		X	X				X	6
3	Jamul Ranch									6?
4	SDNWR*/Salt Works	X								
5	McGinty Mountain Complex			X	X					
6	San Diego Bay NWR	X			X					
7	Lake Hodges	X	X	X	X			X	X	6
8	Penasquitos Lagoon	X			X					
9	Torrey Pines	X			X					7
10	Sycamore Canyon	X		X	X				X	
11	Iron Mountain	X	X	X	X				X	
12	Otay Mountain	?	X	X						1
13	Marron Valley	X	X	X	X					1
14	Otay Lakes	X			?				X	8
15	SDNWR* Sweetwater Marsh	X		X	X					
16	San Vicente	X	X		X				X	
17	Sycuan Peak									
18	Point Loma	X								
19	North Island	X								2
20	Miramar Reservoir	X						X		
21	Mission Bay	X		X	X			X		
22	Brown Field Complex	X		X	X			X		1,3,4
23	SDNWR*/San Miguel Mountain	X		X	X				X	
24	Mission Trails	X	X		X					
25	Proctor Valley	X		X	X		X	X		
26	San Diego River	X	X		X		X			7
27	Route 67 South	X		X				X	X	
28	San Dieguito Lagoon	X				X		X		
29	Route S-6	X						X		
30	Grasslands/Route 67	X	X		X	X	X	X	X	
31	Sloan Canyon	X			X					
32	Rockwood Canyon	X	X					X		
33	Penasquitos Canyon	X		X	X				X	
34	Hollenbeck Canyon									6
35	Rock Mountain	X	X							5
36	San Pasqual	X		X	X	X	X	X		5
37	SDNWR*Tijuana Slough	X		X	X	X	?			

Table 4. Management Enforcement Issues Identified by Raptor Study Site

38	Route 94 (North and South)									
39	Immenschuh									
40	Los Montanas (North)									
41	Los Montanas (South)									
42	Rancho San Diego (East)	X			X					
43	Rancho San Diego (West)	X			X					
44	Border Fields	X			X					1
45	Sweetwater Reservoir									

*San Diego National Wildlife Refuge

- (1) Border Patrol and illegal alien activities.
- (2) Conflicts with Navy goals and endangered species recovery program.
- (3) Potential conflict with future Navy goals at Satellite Surveillance Station.
- (4) Heavy predation by Coyotes and Barn owls.
- (5) Future threats from proposed trail construction and associated access to rock climbers, ORVs, etc. activities.
- (6) Shooting (legal and illegal).
- (7) Paragliding.
- (8) Cattle grazing.

Management Conflicts

The following are observed management conflicts, which lead to our recommended management and research (see Recommendations):

- As indicated above, human uses [rock-climbing, hiking, jogging, walking dogs (often without leashes), vehicular use, etc.] impact the normal behavior of raptors (and other wildlife).
- In many cases, the size of protected parcels is substantially smaller than that required by a raptor's functional territory, including foraging areas.
- The public/political pressure to create new trails into MSCP preserve lands provides a path for, and encourages, increased disturbance to raptors (and other wildlife).
- The public/political perception that MSCP preserve lands have been created primarily for active, and in some cases, consumptive, recreation, sets up an obvious conflict for managing raptors (and other wildlife).
- The constraint of using fire as a management tool in proximity to human habitation limits habitat management tools.
- Inadequate funding to both acquire important lands and properly manage MSCP lands which are acquired.

Raptor Monitoring

The following is a reiteration of considerations, regarding the MSCP Long-term Raptor Monitoring Program, that were presented previously (WRI 2004) and discussed elsewhere (Lincer and Bittner 2002; Lincer et al. 2003). For further reading, relevant issues are proposed and discussed by Oakley, Thomas, and Fancy (2003).

Sample Design

The ideal sample design should be:

1. Representative of the study area and the issues at hand. (e.g., habitat loss, disturbance, etc.) ;
2. Representative of the habitats of interest and the seasons during which those habitat support the monitored species (e.g., the MSCP not only provides important breeding habitat for numerous raptor but it is also a significant habitat for several wintering raptors, including some that are considered target raptors, like the PF, BE, FH, and BO);
3. Inclusive of all focus species or represent them in some functional way;
4. Sensitive to the objectives of the MSCP monitoring requirements;
5. Sensitive to logistics;
6. Statistically appropriate (which may be compromised by above logistics);
7. Able to predict, and take into consideration, *detectability* (i.e., how counts relate to the actual number of raptors in the sampled area; one approach is to use a "double count" approach). This objective may also be compromised by above logistics.

Questions to be Answered and Objectives to be Met

How will the data be used by the various management entities? When do they need what? An example of a clear monitoring objective would be, "Be able to detect a 25% change in population (individual species or overall raptor group?), in each chosen habitat, in 10 years." This is the approach that is being attempted by NARMS (North American Monitoring Strategy) but some of the best raptor monitoring minds are having a serious challenge addressing these objectives. It is entirely possible that we won't have enough observations for some species to detect a significant change in a timely manner.

Possible Monitoring Approaches

Levels of effort and *agency commitment* are, integrally tied. For instance, the MSCP program could adopt a:

1. Highly rigorous, scientific approach that would be costly but could withstand the most challenging statistical/legal tests, or
2. More practical, less expensive approach that would be more likely to be funded, and therefore carried out, but would stand the chance of being successfully, challenged at some time in the future.

As to *which, and how many, species* should be involved, the program could use a:

1. Multiple species approach, using selective target species only,
2. Multiple species approach, using selective target species, but recording all raptors (and ravens) observed,
3. Single species approach, using a keystone species, like the Golden Eagle or
4. Combination of the above.

Target Species and Other Multiple Species Approaches

A monitoring approach that focuses on one or more so-called "target" species has the appeal of apparent simplicity and the implication that these target species will, somehow, reflect a broader suite of species and be sensitive to whatever perturbations are experienced. Having surveyed raptors for many years, it is apparent that each species often responds to similar impacts differently. Although GOs and RTs might show similar population changes in response to small mammal population changes, and most raptors will show some response to a record-breaking drought, such as we have just experienced, there are likely more differences than similarities between species. Those differences are not only in *degree* but also in *direction*. For instance, GEs and PRs responded to the recent drought to different degrees (Bittner et al. 2003), with the PR being less impacted by presumed small mammal population decreases because it takes a wider range of prey species than the GE, which is heavily dependent on jackrabbit and ground squirrel populations. In addition, some raptors (e.g., GE) are far more negatively responsive to human activity than others (e.g., AKs, RTs, RSs, and some CHs). There are also differences in response, both within and between species, depending on the time of year (e.g., during the

breeding season vs. the wintering season) and where a disturbance occurs (e.g., on the hunting grounds or within the nest territory).

Regarding raptors responding in a different direction, one only needs to recognize that many different raptors require different habitats and, although not many species will persist if usable habitat is replaced with a development (although some CHs and RSs may defy this simplification), a conversion from one habitat/land use to another will often affect different species in different ways. For instance, if an extensive riparian habitat were to be replaced by an agricultural land use, and some hedge rows were to be left/created, we could expect that there would be a decrease in RSs, CHs, and several owl species. But, at the same time, there would likely be an increase in AKs, RTs, and perhaps WKs.

The point to the above exercise is that, if an arbitrary few species are chosen as “target” species, and the other raptors are not monitored, there will be a good chance that only some kinds of impacts will be reflected in the population trends of those raptors monitored. In our opinion, the MSCP Long-term Monitoring Program should include a broad-based approach, which documents all raptors observed and uses observed changes/trends to identify appropriate adaptive management strategies.

Single Species Monitoring Approach

Having sung the praises of a multiple raptor species approach (above), there is at least one raptor species in the western United States that has the ability to reflect regional trends in environmental health. This is the Golden Eagle. The attraction of using the GE, as a regional “miner’s canary,” is that (1) it requires a reasonably large and intact territory, and (2) there exists, in San Diego County, a unique and relevant historical regional database for this species. The Wildlife Research Institute has a long history of investigating the historical presence of GE in southern California, which includes the MSCP and environs (Bittner and Oakley 1999; WRI 2005). This collection of records has been compiled to reflect past documentation of GE pairs, their nesting success, hunting territories, and numbers of egg and /or young. The WRI database includes both active and extirpated territories beginning with records as early as 1864. WRI became involved in 1987 with the start of the San Diego GE Project (see Discussion in WRI 2005). *This project, in total, represents the longest such study of any eagle population in the Western Hemisphere, and is the second to longest in the world, next to one study in Switzerland.*

Providing this historical information, in conjunction with current trend data, is critical to managing the GE into the future. Only if we understand the extant population (within the context of the historical variation) can we properly evaluate the population and meet the needs of the species under current and future changing environmental and land-use conditions. If this is accomplished, it will reflect the success of the MSCP program.

RECOMMENDATIONS

Long-term MSCP Raptor Monitoring

Long-term monitoring is recommended under three categories: (1) Breeding Season, (2) Winter Season, and (3) Single Species Monitoring Program.

Breeding Season Monitoring Program

Twelve areas are recommended for breeding season portion of a Long-term Raptor Monitoring Program (Figure 2 and Table 5). Each Raptor Monitoring Area (RMA) consists of one to four of the individual raptor study sites that were surveyed during the period 2001-2003, the analysis of which led up to these recommendations. The choices of RMAs were based on a number of biological parameters (e.g., raptor diversity and population parameters, known history of raptor use), logistical considerations (how a monitor would move efficiently through a monitoring area), and a reasonable geographic coverage of the MSCP study area (see Methods). The Breeding Season Monitoring Program should, initially, be conducted every two years and encompass all 12 RMAs each time (i.e., don't conduct different portions of the total every other year). After a maximum of 5 monitoring events (i.e., 10 years), a statistical trend analysis should be conducted to determine if the frequency of every two years is adequate or, perhaps, unnecessarily frequent. Depending on the data, it may make sense to conduct this analysis earlier.

Raptor monitoring for the Breeding Season Monitoring Program should follow the protocol provided in Appendix C. This monitoring should be conducted by qualified raptor biologists with several years of relevant regional experience with the raptors found in the MSCP and proper training in the specific techniques necessary to conduct this monitoring.

Thanks to a grant from the San Diego Foundation, for post- (2003) fire studies, WRI was able to test this monitoring program on seven RMAs, representing varying degrees of being burned:

- B. Ramona Grasslands (Control Area)
- D. Iron Mountain (Burned)
- E. San Diego River (Burned)
- F. Sloan Canyon (Burned)
- H. Proctor Valley (Partially Burned)
- I. Rancho Jamul (Partially Burned)
- L. Otay Mountain (Burned)

The results of this monitoring effort were reported to the San Diego Natural History Museum (Lincer 2005).

Winter Season Monitoring Program

Because (1) the MSCP provides important wintering grounds for many raptors (some of which are *only* here during the winter), (2) coastal portions of the MSCP are not captured by the above breeding season monitoring approach, and (3) it is important to track at least three raptor species, that are primarily coastal in the MSCP, which have proven to be ideal bioindicators (PF, NH, and Osprey), we recommend conducting a winter monitoring program that focuses on the coastal portions of the MSCP (Figure 3). This, like the Breeding Season Monitoring program, should be conducted every two years (alternating years with the breeding season monitoring would be acceptable). After a maximum of 5 monitoring events (i.e., 10 years), a statistical trend analysis

should be conducted to determine if the frequency of every two years is adequate or, perhaps, unnecessarily frequent. Depending on the data, it may make sense to conduct this analysis earlier.

TABLE 5. Proposed MSCP Areas for Long-term Raptor Monitoring (Breeding Season)

<u>Area</u>	<u>Name</u>	<u>Study Sites* (original number(s))</u>
A	San Pasqual	San Pasqual (36), Lk. Hodges (7), Boden Cyn. (2), Rockwood (32)
B	Ramona Grasslands	Ramona Grasslands (30)
C	Penasquitos Canyon	Penasquitos Canyon (33)
D	Iron Mountain Complex	Iron Mountain**(11), San Vicente (16), Route 67 (27)
E	San Diego River	San Diego River (26)
F	Sloan Canyon	Sloan Canyon (31), McGinty Mtn. North (5), Sycuan Mtn. North (17)
G	Sweetwater River	Sweetwater Reservoir (45), Rcho. S.D. East (42), Rcho. S.D. West (43), San Miguel Mtn. North (23)
H	Proctor Valley	Proctor Valley (25), San Miguel Mtn. South (23), Upper Otay Lk.(14)
I	Rancho Jamul	Jamul Ranch (3), Hollenbeck Canyon (34)
J	Border Fields	Border Fields (44), Tijuana River (part)
K	Brown Field Complex	Brown Field (22), Otay River, Spring Cyn. (part), Dennery Cyn. (part)
L	Otay Mountain	Otay Mountain (12), Marron Valley (13), Lower Otay Lake (14)

* In some cases, only a portion of a study site is included because of access, visibility, or some other reason (see detailed maps, Appendix C, for details).

** Including Monte Vista Ranch.

Raptor monitoring for the Winter Season Monitoring Program should follow the protocol provided in Appendix C. This monitoring should be conducted from a vehicle, following the route depicted by Figure 3, and be conducted by qualified raptor biologists with several years of relevant regional experience with the raptors found in the MSCP.

Single Species Program

For the reasons covered in the Discussion section, we recommend that the GE (breeding season only) be used for the Single Species Program. Because of the dynamic nature of the GE pairs and the use of their territory, including their primary foraging area, these surveys should be conducted *every year* as they have been by WRI's biologists for the last 16 years. GE monitoring should follow the protocol that has been used for the San Diego GE Study for the last 16 years (Bittner and Oakley 1999, WRI 2005). WRI (2005) provides the details of both the breeding history of the GEs in the MSCP and recommendations on monitoring and future research. WRI (2005) is provided as a separate report for the protection and proper management of the GE. As an overview, observations must begin in December and go through June of each year. GEs begin courtship and nest building in December and January. They lay eggs in February and early March, hatch young in late March and April and fledge young in May and June. Therefore, it is essential that monitoring biologists be in the field for critical portions of the entire season (six months) to obtain all the data needed to monitor the GE population properly.

Aerial surveys have been a crucial part of the current study providing new insight into once-difficult areas to investigate potential territories. Patagial tags (and soon radio transmitters) placed on the GE's wings are now also an integral part of the eagle tracking process. Territory

Fig. 2. Prop'd RMAs (breeding)

Contact WRI for maps

integrity is fairly well documented in the San Diego MSCP and is being refined. See MSCP (2005) for more details.

Consistency in Monitoring

If data to be collected for this, or *any* monitoring program, are to have any utility in showing trends, they must be collected in a consistent fashion. As discussed above, the areas and routes to be monitored should be monitored frequently enough to reveal a complete picture of what is breeding and wintering on those respective areas and routes but these data are only a *sampling* of the entire MSCP. Therefore, it is extremely important that monitoring protocol is consistent both between sites/areas and over time (i.e., between years). To do this, a significant effort will have to go into selecting qualified raptor biologists, making sure that they are familiar with the required protocol, geography and species, and ensuring consistency between sites and years.

Other Recommendations

Management Needs and Enhancement Opportunities

- Restriction of inappropriate human activities where they are in conflict with, especially nesting, raptors.
- Apply the lessons learned in the development of the MSCP to the North and East County MSCPs and other HCPs.
- Develop a comprehensive management plan for the dwindling Burrowing Owl population within the MSCP.
- Selectively install artificial burrows, for BOs, and nest boxes for AKs, BRs, and Screech Owls (SOs). Keep in mind that BRs are an effective predator on not only small mammals but also medium size raptors, like the BO.
- Consider the use of grazing and/or fire as appropriate management tools to maintain grasslands, maintain/improve biological diversity, and manage fire fuel loading.

Recommended Research

- Transmitter study to better define the use of MSCP lands by GEs (initial studies in progress).
- Investigate the feasibility of reintroducing SHs into historical sites within the MSCP.
- Investigate the most efficient approaches to captive rearing and hacking BOs into appropriate habitat (either as is or as it can be modified and managed) within the MSCP.
- In order to prioritize the management of raptors that winter within the MSCP, but breed elsewhere (e.g., FH, MR, OS, BE, and some of the WK), determine the natal areas for these birds. If the natal areas have substantial threats, then no amount of MSCP management will have substantial positive impact.
- Document the growing OS population and determine emigration and immigration.
- Document the presence of, and habitat use by, crepuscular (BO) and nocturnal raptors (e.g., BR, SO, GO, Long-eared Owl).
- Document the recovery of raptors after the November 2003 fires and apply findings to future management strategies.

Fig. 3. Prop'd Winter Monit. Areas.

Contact WRI for Maps

ACKNOWLEDGEMENTS

We would like to thank and the CDFG NCCP Local Assistance Program for funding this project and the City of San Diego for funding Burrowing Owl work, upon which we drew to provide relevant data. David Mayer was a helpful and supportive Project Manager for CDFG. Holly Cheong (City of San Diego) was especially helpful in the set-up, management, and support of our Burrowing Owl efforts. Thanks go to WRI's Dave Bittner and Dr. Jim Hannan for reviewing an earlier version of this report and Dr. Richard Clark for his assistance in the literature search task. Phil Unitt (San Diego Natural History Museum) was very helpful by providing the database on raptor observations and associated maps from the ongoing County Bird Atlas Project. Many individuals, in numerous agencies and organizations provided assistance: Brian Collins, Monica Alfaro, Lorena Warner, Kate Shampaine, Clark Winchell (U.S. Fish and Wildlife Service); David Mayer, David Lawhead, Terri Stewart (State of California Department of Fish and Game); Robert Fisher, Mark Mendelsohn, Dr. Mark Fuller and Mike Kochert (USGS); Jeff Wells (U.S. Forest Service); Joe Caruso, Joe Weber (Otay Lakes City Water Supply); Dr. Joe Jehl (formerly with Hubbs-Sea World Research Institute); Charles Gailband (Chula Vista Nature Center); Pete Famolaro (Sweetwater Authority); Russell T. Donalson (Chugach Telecommunications & Computers, Inc.); Tamy Johniken, Dawn Larson, Steve Barnhill, Tammy Conkle (U.S. Navy); Brian R. Bonesteel, Billy Stewart (USDA-APHIS-Wildlife Services); Dr. Geoff Holroyd, Dr Troy Wellicome, Ms. Helen Trefry (Canadian Wildlife Service); Richard Barber, Robert Jones (Palomar Audubon Society); Dieter Bothe (Pardee Homes); Jack Barclay (Albion Environmental); Scott Taylor (HELIX Environmental Planning); Christina Schaefer (EDAW); Pete Bloom (Western Foundation for Vertebrate Zoology); Dr. Tom Scott, Kristine Preston (U.C. Riverside); Dr. Jon Bart (Boise State University); Dr. Noel Snyder; Mary Ann McLeod.; Dr. Dan Varland; and Richard Glinski. We would like to thank the following individuals for sharing their historic data on the GE and their nest sites: John Oakley, Co-Director, WRI Eagle Project; J. B. Dixon, A.M. Ingersoll, Harry L. Heaton, Raymond Quigley, E.E. SeChrist, Maurice Burns, N. K. & B.P. Carpenter, Craig Culver, and Ed N. Harrison. Many thanks also go to the volunteers of the WRI Eagle Project and WRI's Hawk Watch. Finally, we recognize and appreciate that the following individuals have volunteered endless hour of field time: Dave Bittner, John Oakley, Jeff Wells, John Colton, Jeff Lincer, Tom Scott, Chris Meador, Jim Hannan, Nick Muscolino, Randy West, Dave Seals, Kate Shampaine, Geoff Rodgers, Jim Bryan, Craig Culver, Paul Jorgenson, and many others.

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APPENDIX A

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APPENDIX B

BREEDING SEASON RAPTOR NESTS AND TERRITORIES BY SITE (2001-2003)

The following pages reflect raptor breeding territories which were typical of the below study sites for the period 2001-2003. To facilitate the reader's access to the following topographic maps, they are listed below alphabetically and by site number.

<u>Number</u>	<u>Name</u>	<u>Name</u>	<u>Number</u>
1	Crestridge	Boden Canyon	2
2	Boden Canyon	Border Fields	44
3	Jamul Ranch	Brown Field Complex	22
4	SDNWR*/Salt Works/Egger Ghio	Crestridge	1
5	McGinty Mountain Complex	Grasslands/Route 67	30
6	San Diego Bay NWR (winter only)	Hollenbeck Canyon	34
7	Lake Hodges	Immenschuh	39
8	Penasquitos Lagoon	Iron Mountain	11
9	Torrey Pines	Jamul Ranch	3
10	Sycamore Canyon	Lake Hodges	7
11	Iron Mountain	Los Montanas (North)	40
12	Otay Mountain	Los Montanas (South)	41
13	Marron Valley	Marron Valley	13
14	Otay Lakes	McGinty Mountain Complex	5
15	SDNWR* Sweetwater Marsh	Miramar Reservoir	20
16	San Vicente	Mission Bay	21
17	Sycuan Peak	Mission Trails	24
18	Point Loma	North Island	19
19	North Island	Otay Lakes	14
20	Miramar Reservoir	Otay Mountain	12
21	Mission Bay	Penasquitos Canyon	33
22	Brown Field Complex	Penasquitos Lagoon	8
23	SDNWR*/San Miguel Mountain	Point Loma	18
24	Mission Trails	Proctor Valley	25
25	Proctor Valley	Rancho San Diego (East)	42
26	San Diego River	Rancho San Diego (West)	43
27	Route 67 South	Rock Mountain	35
28	San Dieguito Lagoon	Rockwood Canyon	32
29	Route S-6 (deleted/safety issue)	Route 67 South	27
30	Grasslands/Route 67	Route 94 (North and South)	38
31	Sloan Canyon	Route S-6 (deleted/safety issue)	29
32	Rockwood Canyon	San Diego Bay NWR (winter only)	6
33	Penasquitos Canyon	San Diego River	26
34	Hollenbeck Canyon	San Dieguito Lagoon	28
35	Rock Mountain	San Pasqual	36
36	San Pasqual	San Vicente	16
37	SDNWR*Tijuana Slough	SDNWR* Sweetwater Marsh	15
38	Route 94 (North and South)	SDNWR*/Salt Works/Egger Ghio	4
39	Immenschuh	SDNWR*/San Miguel Mountain	23
40	Los Montanas (North)	SDNWR*Tijuana Slough	37
41	Los Montanas (South)	Sloan Canyon	31
42	Rancho San Diego (East)	Sweetwater Reservoir	45
43	Rancho San Diego (West)	Sycamore Canyon	10
44	Border Fields	Sycuan Peak	17
45	Sweetwater Reservoir	Torrey Pines	9

*San Diego National Wildlife Refuge

LEGEND

Symbols

Center of raptor/corvid territory or assumed or documented nest site.

Note: Above symbol without an acronym following it indicates that a stick nest was documented but species was not determinable. If species was known for the nest or territory, the above symbol is followed by the appropriate acronym (see below).

Acronyms for Raptor and Corvid Species

AC	American crow
AK	American kestrel
BE*	BALD EAGLE
BH	Black hawk
BR	Barn owl
BO*	BURROWING OWL
CH*	COOPER'S HAWK
CR	Common raven
FH*	FERRUGINOUS HAWK
GE*	GOLDEN EAGLE
GO	Great-horned owl
HH	Harris' hawk
LO	Long-eared owl
MR	Merlin
NH*	NORTHERN HARRIER
OS	Osprey
PF*	PEREGRINE FALCON
PR	Prairie falcon
RS	Red-shouldered hawk
RT	Red-tailed hawk
SE	Short-eared owl
SO	Screech owl
SS	Sharp-shinned hawk
SH*	SWAINSON'S HAWK
TV	Turkey vulture
UA	Unidentifiable accipiter
UB	Unidentifiable buteo
UF	Unidentifiable falcon
UR	Unidentifiable raptor
WK	White-tailed kite
WH	White-tailed hawk
ZH	Zone-tailed hawk

* MSCP target species.

APPENDIX C

LONG -TERM RAPTOR MONITORING PROTOCOL

BACKGROUND

The Multiple Species Conservation Program (MSCP) is a comprehensive, long-term habitat conservation plan that addresses the needs of multiple species and the preservation of natural vegetation in San Diego County (County of San Diego 1997). The size and configuration of the preserve network is continually evolving but it may ultimately encompass approximately 172,000 acres. In order to determine if the MSCP or any management area, for that matter, is functioning correctly, a meaningful monitoring plan must be in place. A vast area, such as the MSCP, cannot be comprehensively monitored for any but a few species with very limited and specific habitat requirements. Raptor species will, therefore, be monitored using a reproducible sampling approach. Details of this approach are described below after reminding the reader of the ultimate monitoring objectives.

OBJECTIVES

The overall goal of the MSCP monitoring is to detect changes in habitat quality and population trends in those habitats and species covered by the MSCP (Ogden 1996). Specific objectives, as they relate to raptors, are as follows:

1. Document the protection of target species as specified in subarea plans and implementing agreements.
2. Document changes in preserved populations of covered species.
3. Describe new biological data collected.
4. Evaluate impacts of land uses and construction activities in and adjacent to the preserve.
5. Evaluate management activities and identify enforcement difficulties.

The purpose of this document is to provide guidance for consistency in the approach to surveying for raptors *during the breeding season and during the wintering period*. The below protocol is generic in nature but site-specific details, as to route, viewshed locations, and other important site features, are provided for each Raptor Monitoring Area (RMA) in Appendix C-1.

APPROACH

The following provides methodological details for the professional, with adequate raptor expertise, to conduct the breeding season and wintering period raptor monitoring in a consistent manner. The ability to detect trends (e.g., in raptor numbers, distribution, diversity, etc.) will be extremely important in order that adaptive management decisions be made in a timely manner. If trend analyses are to be interpretable, it is essential that the same locations within the preserve be monitored in a consistent manner. This would best be accomplished if the same individual or team monitored all locations, for all surveys.

ACRONYMS AND DEFINITIONS

Acronyms and definitions are attached (Appendix C-2). Use them consistently in order that there be continuity and clarity in all observations and record keeping.

SPECIES

Although all raptor species will be noted, there are eight MSCP, so-called “target,” raptor species: Bald Eagle (BE), Burrowing Owl (BO), Cooper’s Hawk (CH), Ferruginous Hawk (FH), Golden Eagle (GE), Northern Harrier (NH), American Peregrine Falcon (PF), and the Swainson’s Hawk (SH). Although you will not, necessarily, be searching for the BO at the most desirable time of day (early morning/early evening), any observations of BO or any other raptor species should be documented. Raptors will be the focus of the surveys but any observed sensitive species (regardless of taxa), interesting road kill, unusual biological observation, breeding colony, bird roost site, or other unique resource should also be noted on the WRI “Field Datasheet” (Appendix C-3).

TIMING AND FREQUENCY OF SURVEYS

Although it is common for ornithologists to identify a specific time of year as the “breeding season,” it is not possible to specify a timeframe, for our local raptors, that does not overlap with what is considered the wintering period. Because of the latitude of the MSCP, raptors are not restricted to a brief portion of the spring within which to breed. Many of our local raptors start breeding while other wintering and migrating raptors are still in the MSCP study area and environs. Therefore, the time of year that we call the “breeding season” could span December through August but varies considerably by species. Some GEs, for instance, can start nest building as early as December and still have nestlings in that nest as late as June. BOs, on the other hand, can start laying eggs in early April but fledge some young as late as August.

EQUIPMENT/SUPPLIES

Field vehicles should have 4WD capability if terrain requires. Binoculars, a camera, and a spotting scope of sufficient power for raptor observations are required. A magnification of 10X for binoculars and a range of approximately 20-60X for scopes are recommended. A cell phone may be very helpful in some locations, as could a set of “walkie-talkies” if more than one investigator will be in the field at the same time. Bring these survey guidelines, a copy of any authorization letters from resource agencies, any windshield placards (that indicates that you are under contract to conduct these surveys), local and project-generated site maps, and an adequate supply of “Transect Data Sheets” (Appendix C-3). To this, add your standard field equipment and supplies (field guides, hat, water, snacks, etc.). Although observers should be thoroughly familiar with all the local raptors, field guides that should be helpful include the Peterson guide, *Hawks* (Clark and Wheeler 1987) and the accompanying photographic guide (Wheeler and Clark 1999).

WEATHER

Monitoring should be conducted only during certain desirable weather conditions to maximize chances of documenting raptors. Inclement weather (rain, fog, winds greater than 20 mph, etc.) should be avoided. Occasional drizzle and winds up to 20 mph will not normally affect most raptor behavior. Observation in cold or wet weather should be done very carefully or completely discouraged. If an incubating bird is accidentally flushed during surveys, total nest failure could result for that season.

TIME OF DAY

The time of day, during which observations are made, is more important during the breeding season surveys than for the winter surveys (for most raptor species). Monitoring should take place from dawn through 1200, although professional experience may allow for some flexibility. Although BOs are not, necessarily, most active during this timeframe, you may note them and they should be documented as indicated below, as you would any raptor species. Since this is a crepuscular species, however, schedule sites that may support BOs for the early morning and/or early evening, whenever possible, to maximize chances of seeing this crepuscular species.

TWO TYPES OF OBSERVATIONS

Observations will be made two ways: (1) in vehicles, along established routes, and (2) at designated viewshed (i.e., observation) points. In addition, all reliable reports provided by interested individuals and cooperators will be verified and included in the data set but noted as “personal communications” with the appropriate documentation.

Vehicular Transects

Many of the breeding season raptor observations, and all those for the winter period, will be conducted from a vehicle. Therefore, vehicle speed will be an important variable. Speed will vary between road transects, depending on the road conditions, including traffic, and weather. That speed, however, should be consistent (year-to-year) for a particular transect in order that meaningful data comparisons can be made over time. Speed on a busy highway will have to be adequate to safely keep up with traffic. Some highway transects, that were deemed too dangerous, were removed from consideration. On a backcountry road, however, 10 mph may be the right speed. Safety should be the highest priority, and for that reason, an assistant to the driver is recommended to make observations and take notes, especially on busy roads.

Point/View shed Observations

Observation points have been established along some vehicle routes and at other desirable view shed locations for breeding season monitoring (see Appendix C-1). These will be especially important for riparian areas and inaccessible mountainous, and other, areas, where limited vehicle access prevents a reasonable survey of a RMA. At observation points along vehicle routes, a minimum of 10 minutes of actual observation is required. This means allowing whatever time is necessary to stop the vehicle in a safe, repeatable location, get out of the vehicle, and set up equipment (spotting scope, etc.) before starting the formal ten-minute observation (i.e., watching *and* listening). In situations where the observer is driving *through* the relevant habitat, a 5-minute observation period may be adequate. At some viewshed locations (like the top of a mountain), the observation time will be longer (perhaps 30 minutes). The most important issue here is that, once a viewing time period has been established for a particular RMA, it is maintained for consistency each year.

WHAT TO NOTE

All relevant data must be documented (see Transect Data Sheet, Appendix C-3). Sightings for *all* raptors will be documented. Note specific location of the raptor species *the first time it is observed* on each day of observation. Note age, sex, and any unusual plumage (if relevant) and

describe location(s) of any band(s) (metal right or metal left and sequence and numbers of any color bands), transmitter, or patagial wing markers. Avoid duplicate counts by noting unique characteristics of an individual and, when a bird is moving, its direction and relative speed. Record courtship and nesting behavior. If a nest is observed during the “winter” surveys, note its location on the topo map, what species of tree its in, height, size of nest, composition, and whether you consider it active. Indicate the basis for assumed activity (for instance, presence of an adult or pair near the nest, young, recent whitewash or greenery in /around nest).

CONTROL NUMBERING

Each control number for a study site and day of observation will be alphanumeric. For each species observed, the control number will start with the acronym for that species (see Appendix C-2) and be followed by “01.” The following control numbers, for that species, will end with 02, 03, etc., in the sequence in which the observations take place. This number is entered on the field data sheet (with all of its associated observations) and on the topo survey map, on which is always placed the survey date and the name(s) of the biologist(s). For instance, if the first observation of the day, at Mission Trails Regional Park, is a RT (Red-tailed Hawk), the control number will be “RT01.” The second RT will receive the control number “RT02.” If the next observation were a Cooper’s Hawk, it would be “CH01.” It will simplify records if each Transect Data Sheet and topo map is only used for one day’s observation at each site. However, there may be situations (such as when it takes more than one day to adequately survey a site or when it may lead to duplication or confusion later) when it makes sense to enter more than one day’s information on the same data sheet/map. It may also be beneficial to have all the breeding data on one map which keeps the picture in front of the observer at all times. This allows the observer to see gaps for certain species and explore areas not previously covered. The most important objective is to make sure the record is clear as to the date of each observation/set of observations and the name of the investigator so that clarification can be sought, if necessary.

Raptor, and other, nests are often less visible later in the breeding season, when deciduous trees have regained their foliage. However, note any stick nests in the area as “SN” followed by the appropriate observation number. Indicate on the data sheet if you know or suspect what species it belongs to and why. When summarizing yearly data, it will be important to determine which nests are alternate nests of the same pair and which represent additional pairs/territories. Do not get close enough to potentially disturb any nests, without approval from the Project Manager (PM) and Management Unit administrator.

Keep careful track of miles driven and times spent during vehicle transects and point location observations. Deduct any miles/time not spent on monitoring. These details are very important in order to allow data to be normalized over both time and distance to properly analyze for trends. There may be situations when you will not be able to track mileage or the miles you track are complicated by circling back through a study area to recheck a nest to confirm nesting, etc. Just keep good records that can be interpreted by someone else.

ENFORCEMENT/MANAGEMENT ISSUES

Note any enforcement or management problems or opportunities. Suggest corrective action or adaptive management, as appropriate, to the PM. Report any significant enforcement problems to the PM as soon as possible, but no later than within 24 hours of the observation.

RECORDS MANAGEMENT

Management of records is extremely important. Two-hole punched field forms and computer-generated project topo maps must be kept in Study Site folders (in a hard plastic or other secure file box provided) unless being copied. Field forms and topo maps must be attached to the inside of the Study Site folders using the two-hole clips at the end of each field day. Unless other provisions are made, field record copying should be done no less frequently than once a week, during the active field season, with copies placed in the appropriate administration project file for security.

THE SURVEYS

Breeding Season

In some management units, where a fulltime knowledgeable biologist is on staff, daily observations may be made, thereby providing greater potential for trend detection. However, the objective of these guidelines is to conduct up to 6 surveys at each of 12 RMAs (Figure C-1) for the breeding season raptor monitoring, where the assemblage of species dictates the actual number of replicates. Many stick nests will be located during the winter when the deciduous trees have lost their leaves. The next best opportunity to survey will often be early in the breeding season (December through April) when the adult raptors are establishing their territories and courting. Note that each species has a chronology for these behaviors. Some (like the GE, RT, and RS) will start breeding-related behaviors in December or January, while others (like the CH) may not display until April. At this time, they are obvious and concentrating their activities around the likely, and alternative, nest sites. In order to adequately characterize the raptor species present throughout the breeding season, the initial surveys at each site should be separated by 10-14 days, if possible. Subsequent surveys should be scheduled based on the raptor species present and where they are in their reproductive cycle. There will be a period, during which one of the adults will be incubating eggs or sheltering young, while the other adult is off hunting. During this time, it will be difficult to document many raptors and fieldwork may not be the best use of your time for that RMA. The next logical time to concentrate on conducting breeding season surveys will be when the young have fledged but are still dependent on the adults for food. At this time, there is a lot of activity and an increased chance of spotting a family unit because of the increased number of individuals per territory and, in some cases, the young will call attention to themselves by begging and/or calling to the parents.

The following times are recommended for the (breeding season) Raptor Monitoring Program:

- Late-December
- Mid-January
- Mid-February
- March
- Mid-April
- Mid-May

There are 12 RMAs that will be surveyed (Table C-1).

TABLE C-1. MSCP Raptor Monitoring Areas (Breeding Season)

<u>Area</u>	<u>Name</u>	<u>Study Sites* (original number(s))</u>
A	San Pasqual	San Pasqual (36), Lk. Hodges (7), Boden Cyn. (2), Rockwood (32)
B	Ramona Grasslands	Ramona Grasslands (30)
C	Penasquitos Canyon	Penasquitos Canyon (33)
D	Iron Mountain Complex	Iron Mountain** (11), San Vicente ((16), Route 67 (27)
E	San Diego River	San Diego River (26)
F	Sloan Canyon	Sloan Canyon (31), McGinty Mtn. North (5), Sycuan Mtn. North (17)
G	Sweetwater River	Sweetwater Reservoir (45), Rcho. S.D. East (42), Rcho. S.D. West (43), San Miguel Mtn. North (23)
H	Proctor Valley	Proctor Valley (25), San Miguel Mtn. South (23), Upper Otay Lk.(14)
I	Rancho Jamul	Jamul Ranch (3), Hollenbeck Canyon (34)
J	Border Fields	Border Fields (44), Tijuana River (part)
K	Brown Field Complex	Brown Field (22), Otay River, Spring Cyn. (part), Dennery Cyn. (part)
L	Otay Mountain	Otay Mountain (12), Marron Valley (13), Lower Otay Lake (14)

* In some cases, only a portion of a study site is included because of access, visibility, or some other reason (see detailed maps, Appendix C-1, for details).

** Including Monte Vista Ranch.

Each study site is followed by a number, which corresponds to the original study site number that was assigned to it (WRI 2002, 2004).

Winter Surveys

In keeping with the timing of many “winter” surveys (e.g., County Bird Atlas), the MSCP winter raptor surveys will occur primarily from *mid-December through February*, with possible changes in response to changes in weather conditions (i.e., global warming, cycles, etc.). This “winter” time period is somewhat arbitrary and we are not suggesting that raptors observed during this period are, necessarily, only birds that have migrated in and are wintering within the MSCP and environs. Similarly, the winter visit by some species may extend before and/or after this timeframe. The FH, for instance, can arrive on its MSCP wintering grounds by mid-September and not leave until mid-March. Many of the birds that you observe will be the same ones that you document during the “breeding season” surveys. The objective is to conduct three (3) vehicle-based surveys, along the coastal route depicted by Figure C-2. In order to adequately characterize the raptor species present throughout the winter season, the three surveys should be conducted according to the following schedule:

- Late December
- Mid-to-late January
- Mid-to-late February

Raptor, and other, nests are often more visible in the winter, when deciduous trees have lost their foliage. Knowledge about nest and breeding pair locations will help the monitor separate wintering birds from resident pairs. When summarizing yearly data, it will also be important to determine which nests are alternate nests of the same pair and which represent additional pairs/territories. Note any raptor nests in the area and/or if any nesting behavior is observed. Do not approach any nests, without approval from the PM and Management Unit administrator.

LITERATURE CITED

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- County of San Diego. 1997. “Multiple Species Conservation Program”, County of San Diego; Subarea Plan. Adopted by the Board of Supervisors October 22, 1997.
- Ogden. 1996. “Biological Monitoring for the Multiple Species Conservation Program.” Prepared for the City of San Diego, California Department of Fish and Game, and U.S. Fish and Wildlife Service. Revised April 25.
- Wheeler, B.K and W.S. Clark 1999. A Photographic Guide to North American Raptors. Academic Press. San Diego.

APPENDIX C-2

ACRONYMS AND DEFINITIONS

Raptor and Corvid Species

AC	American crow
AK	American kestrel
BE*	BALD EAGLE
BH	Black hawk
BR	Barn owl
BO*	BURROWING OWL
CH*	COOPER'S HAWK
CR	Common raven
FH*	FERRUGINOUS HAWK
GE*	GOLDEN EAGLE
GO	Great-horned owl
HH	Harris' hawk
LO	Long-eared owl
MR	Merlin
NH*	NORTHERN HARRIER
OS	Osprey
PF*	PEREGRINE FALCON
PR	Prairie falcon
RS	Red-shouldered hawk
RT	Red-tailed hawk
SE	Short-eared owl
SO	Screech owl
SS	Sharp-shinned hawk
SH*	SWAINSON'S HAWK
TV	Turkey vulture
UA	Unidentifiable accipiter
UB	Unidentifiable buteo
UF	Unidentifiable falcon
UR	Unidentifiable raptor
WK	White-tailed kite
WH	White-tailed hawk
ZH	Zone-tailed hawk

Other Abbreviations

AB	Active burrow
Ad	Adult
CDFG	California Department of Fish and Game
CN	Cavity nest
F	Female
HY	Hatching year (when a bird is in its first year; i.e., the same calendar year as hatched).
Imm	Immature (a non-specific term that means "not adult").
M	Male
Mel	Melanistic (black/dark)
Ruf	Rufous/reddish
Sa	Sub adult (plumage that precedes adult plumage and appears much like it but with some characters that are not in adult plumage; used only for species, like the Golden Eagle, that can be distinguished at this age).
SN	Stick nest.
U	Unknown (e.g., unknown species, age, or sex).
USFWS	U.S. Fish and Wildlife Service

* MSCP target species.

APPENDIX C-3

TRANSECT DATA SHEET												
Wildlife Research Institute, Inc.						BIOLOGIST(S):						
		TIME (24hr)	Start	Finish	(minus time out) = TOTAL TIME:							
		TEMP (F):			OTHER WEATHER INFO.:							
DATE:	PAGE ___ OF ___	CLOUD CVR (%):			TRANSECT MILEAGE BEGIN:							
TRANSECT NAME & NUMBER:		WIND (mph):			TRANSECT MILEAGE END:							
		VISIBILITY (mi):			SUBTRACT MILEAGE:							
#		PRECIP:			TRANSECT TOTAL MILEAGE:							
WAYPOINTS (Start/End Points of Transects, Road Names.etc.)	SPECIES	TIME DURATION	SEX	AGE	PAIR	PERCHING	HUNTING	FEEDING	COURTSHIP	SOAPING	NESTING	COMMENTS, MILEAGE, TIME, ETC.
1												
2												
3												
4												
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COMMENTS: (USE REVERSE FOR DRAWINGS OR ADDITIONAL NOTES)												

LEAST BELL'S VIREO

Vireo bellii pusillus

Author: Michael A. Patten, Department of Biology, University of California, Riverside, California 92521

Management Status: Federal: Endangered
California: Endangered (CDFG, 1998)

General Distribution:

The Least Bell's Vireo is a subspecies of the Bell's Vireo. The Bell's Vireo breeds in the southwestern United States and northwestern Mexico, northward through the Great Plains of the central United States to the southwestern fringe of the Great Lakes (Brown, 1993). This species winters in southern Baja California, on the Pacific slope of mainland Mexico from Sonora south through northern Nicaragua (Brown, 1993), and on the Atlantic slope from Veracruz south to Honduras (AOU, 1998).

Distribution in the West Mojave Planning Area:

The Least Bell's Vireo breeds in southwestern California and adjacent northwestern Baja California (Wilbur, 1980, Garrett and Dunn, 1981); it largely occurs in cismontane southern California, but it does extend into transmontane areas along the western flank of the Anza-Borrego Desert (San Diego County; Unitt, 1984), in the vicinity of Palm Springs (Riverside County; C. McGaugh pers. comm.), at Leona Valley (Los Angeles County; summering, breeding not proven; K.L. Garrett in litt.), and in San Bernardino County at Morongo Valley and along the Mojave River (Patten, 1995; S. J. Myers in litt.). There are breeding records for this subspecies just north of the WMPA in the southern Owens Valley of Inyo County and it regularly breeds just northwest of the WMPA at the South Fork of the Kern River Preserve (Kern County; M.T. Heindel pers. comm.). Elsewhere within the WMPA, the Bell's Vireo is an occasional migrant.

The eastern limit of the range of the Least Bell's Vireo in California is contentious, in that the ranges of the Least Bell's Vireo and the Arizona Bell's Vireo (*V. b. arizonae*) in California are based more on supposition than on direct evidence. It is generally believed that the Arizona Bell's Vireo is confined to the Lower Colorado River Valley, whereas the Least Bell's Vireo occurs in cismontane southern California and on the western edge of the deserts, extending north up the Mojave River into the Owens Valley, and eastward into Death Valley National Park, along the Amargosa River (Inyo County) and at Fort Piute in the East Mojave Desert (Goldwasser, 1978; Goldwasser et al., 1980; Garrett and Dunn, 1981; Regional Environmental Consultants, 1986; Franzreb, 1987a, 1987b, 1989; Brown, 1993; Small, 1994). Considering the biogeography of similarly-distributed cismontane and transmontane species pairs (Grinnell and Miller, 1944; Garrett and Dunn, 1981), such as California (*Callipepla californica*) and Gambel's quail (*C. gambelii*), Nuttall's (*Picoides nuttallii*) and Ladder-backed woodpeckers (*P. scalaris*), and California (*Toxostoma redivivum*) and Crissal thrashers (*T. crissale*), it is probable that Arizona Bell's Vireo is in fact the subspecies occurring in the East Mojave Desert (including Fort Piute and the Amargosa River) northward through Death Valley, and this subspecies may occasionally occur in the extreme eastern portion of the WMPA. Data to support this contention is provided

by the observations that spring birds in Death Valley and at Fort Piute are more brightly-colored (i.e., they have a greener back and yellower flanks), and thus more like *V. b. arizonae*, than are birds along the Mojave River or at Morongo Valley, which are grayer and thus more like *V. b. pusillus* (M.A. Patten pers. obs.). Also, there is a late February specimen of the Arizona Bell's Vireo taken in the Anza-Borrego Desert (Unitt, 1985; Phillips, 1991), showing that this subspecies can occur well west of its described range.

Natural History:

The Bell's Vireo is a conspicuous member of riparian habitats where it occurs because of its lively, complex song. However, given its penchant for dense vegetation, it is far more often heard than seen. Its song belies its rather subtle, drab plumage: this small passerine is basically olive-gray (with emphasis on the latter in *V. b. pusillus*) above with a single faint wingbar, a thick bill, thin but distinct "spectacles," and a long tail that is flipped expressively from side-to-side. In overall plumage and behavior, this species most closely resembles a Gray Vireo (*V. vicinor*), a species with a very different song that occurs in pinyon-juniper and redshank-chaparral associations.

The Least Bell's Vireo and the Arizona Bell's Vireo differ slightly in size and subtlety of color, with the latter being slightly smaller and more brightly colored (Ridgway, 1904; Phillips, 1991). Specimens of Bell's Vireo from eastern California (e.g., Death Valley) were identified as Least Bell's Vireo (Ridgway, 1904; Grinnell, 1923). However, these specimens were taken in spring (Fisher, 1893; Grinnell, 1923), when the plumage of a Bell's Vireo can be quite worn (Unitt, 1985), thus confounding subspecific identification. An examination of specimens at the Natural History Museum of Los Angeles County, the Museum of Vertebrate Zoology, University of California, Berkeley, and elsewhere indicates that evidence for defining the eastern extent of the range of Least Bell's Vireo is weak (M.A. Patten unpubl. data; A.R. Phillips in litt.; N.K. Johnson in litt.). Seven external characters have proven useful in distinguishing these subspecies (Ridgway, 1904; Phillips, 1991): exposed culmen length, wing chord, tail length, rump color, flank color, mantle color, and undertail covert color. These subspecies may also have slight differences in song (L.R. Hays pers. comm.), and they apparently differ in habitat choice (see below).

The Least Bell's Vireo arrives on its breeding grounds in mid-March (Brown, 1993), with males arriving slightly before females (Nolan, 1960; Barlow, 1962). This vireo shows a high degree of nest site tenacity (Greaves, 1987). Most individuals depart by September (Brown, 1993), although some individuals remain on their breeding grounds into late November (Rosenberg et al., 1991). This subspecies winters primarily in Baja California, with occasional individuals remaining through the winter in cismontane southern California (there is also a record for the Sonoran Desert at this season, although the subspecies is not known). Nesting takes place from early April through the end of July, with two broods usually being attempted. Nests are suspended from forks in dense bushes or small trees; over 60 species of plants have been used by Bell's Vireos for nest sites (Brown, 1993), but the Least Bell's Vireo predominantly uses willows (*Salix* spp.). The Bell's Vireo feeds almost exclusively on arthropods, with insects and spiders comprising over 99% of their diet (Brown, 1993).

Habitat Requirements:

The Bell's Vireo occurs in riparian habitats. The Least Bell's Vireo typically breeds in willow riparian forest supporting a dense, shrubby understory of mulefat (*Baccharis salicifolius*) and other mesic species (Goldwasser, 1981; Gray and Greaves, 1984; Franzreb, 1989). Oak woodland with a willow riparian understory is also used in some areas (Gray and Greaves, 1984), and individuals sometimes enter adjacent chaparral, coastal sage scrub, or desert scrub habitats to forage (Brown 1993; L.R. Hays pers. comm.). The Least Bell's Vireo and the Arizona Bell's Vireo probably have different habitat requirements. Least Bell's Vireos in cismontane California occur in riparian forest dominated by willows (Goldwasser, 1981; Gray and Greaves, 1984), whereas Arizona Bell's Vireos tend to occur in riparian woodland dominated by mesquite (*Prosopis* sp.; Rosenberg et al., 1991; Brown, 1993; L.R. Hays pers. comm.; M.A. Patten pers. obs.). Similar habitats are used during the winter months. Although the Arizona Bell's Vireo will use non-native salt cedar (*Tamarix* spp.) in parts of its range (Brown, 1993), the Least Bell's Vireo avoids riparian areas dominated by these plants.

Population Status:

The most recent published population censuses for the Least Bell's Vireo indicated that this subspecies was critically endangered, with a total population estimated to be only a few hundred pairs (Goldwasser, 1978; Goldwasser et al., 1980; Wilbur 1980). Primarily as a result of extensive efforts to restore riparian habitat and to remove Brown-headed Cowbirds (*Molothrus ater*) from breeding areas, populations of the Least Bell's Vireo have increased dramatically at several locations in cismontane southern California (L.R. Hays pers. comm.; Brown, 1993), particularly at the two core population sites of the Santa Margarita River, San Diego County (± 400 pairs) and the Prado Basin, Riverside County (± 150 pairs). The total population breeding within the WMPA is much smaller, with only a 1-3 pairs at Morongo Valley and 1-2 pairs along the Mojave River (M.A. Patten pers. obs.; S.J. Myers in litt.).

Threats Analysis:

Loss of habitat, combined with increased brood parasite pressure from Brown-headed Cowbirds (Goldwasser, 1978; Beezley and Rieger, 1987), has led to the two breeding subspecies in California, Least Bell's Vireo and Arizona Bell's Vireo, being listed as Endangered by the State of California and, for *V. b. pusillus*, by the federal government (Franzreb, 1989; Franzreb et al., 1992; Salata, 1992; U.S. Fish and Wildlife Service, 1992). Losses of habitat similarly have affected the Bell's Vireo throughout its range (Brown, 1993). Habitat loss within the WMPA probably most often results from flood control efforts (e.g., stream channelization or vegetation clearing along the Mojave River). Conversion of occupied habitat to parks or golf courses is generally less of a problem, if only because it occurs more rarely.

Although Brown-headed Cowbirds are perhaps less prevalent in transmontane sites occupied by this vireo, cowbirds nevertheless can have a huge negative impact on the breeding success of the Least Bell's Vireo (Goldwasser, 1978; Beezley and Rieger, 1987; Clark, 1988), and they have increased dramatically in California in the past century (Laymon, 1987; Rothstein, 1994). Populations of the Least Bell's Vireo have responded dramatically to efforts to remove cowbirds from breeding areas (see above), underscoring the severe impact of brood parasitism. The recent, albeit slow, northwesterly range expansion of the Bronzed Cowbird (*M. aeneus*), could present this vireo with yet another brood parasite (M.A. Patten unpubl. data).

Biological Standards:

Much effort has been expended to maintain minimum viable populations of the Least Bell's Vireo at certain core population sites in cismontane southern California (e.g., the Santa Margarita River, the Prado Basin, and the Santa Ynez drainage in Santa Barbara County). Recovery efforts have generally been extremely successful; prospects for the long-term survival of the Least Bell's Vireo are much better now than they were 15-20 years ago when recovery was initiated (L.R. Hays pers. comm.). However, even historically this vireo has occurred only in low numbers within the WMPA, and in few locations, so management of vireo habitat within its boundary likely will not have a substantial effect on the subspecies as a whole. Nevertheless, conservation and sustainable management of the small breeding populations at Morongo Valley and along the Mojave River could be accomplished through (1) limiting the destruction of riparian habitat in these areas, including less invasive flood control management activities, (2) eradication of non-native salt cedar, giant reed (*Arundo donax*), and Russian olive (*Elaeagnus angustifolius*) from sites occupied by the vireo, with willows and mulefat planted in their place, (3) extensive trapping and removal of Brown-headed Cowbirds from breeding areas, and (4) restoration of riparian habitats, because cowbird parasitism is reduced woodland habitats with lower edge to area ratios (Laymon 1987). An additional measure could be the limiting access of both cattle and humans (hikers and off-highway vehicle users) to prime nesting areas.

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