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several rare and endangered species, its critical role as wintering habitat for Pacific Flyway waterfowl, and its status as the largest remaining block of wetlands in what was once a vast Central Valley ecosystem. Although Grasslands provides wintering habitat for twenty percent of the Pacific Flyway waterfowl populations, encompasses one of the largest remaining vernal pool complexes, and supports several federally listed or proposed threatened and endangered species including the San Joaquin kit fox, Aleutian Canada goose, Swainson's hawk, and tri-colored blackbird, this area is not even mentioned in the DEIR/S.

In addition, the growth-inducing impacts of stations in Los Banos, Merced, and Gilroy will be enormous for the Grasslands Ecological Area and must be analyzed. We predict that these impacts will be too significant to mitigate. As a result, we recommend no stations be built in these locations. The final alignment may need to avoid this area altogether due to the ecological impacts. Ultimately the goal of the HSR project should be to connect the larger metropolitan centers in the state, not to create more in ecologically sensitive areas.

2. California Burrowing Owl

The California burrowing owl is a California state species of special concern. This species is known to occur (CNDDDB) throughout the entire alignment of the HSR proposal. Records indicate that California burrowing owls have been found within 1800 ft of the following proposed alignments: Sacramento to Stockton (Alignments UP1, UP2, BNC1, BN1, UP5, UP6, BNC2), San Jose to Oakland (west and east alignments), San Jose to Merced (Southern route alignments), Tulare to Bakersfield, LA to Bakersfield (1-5 and UPRR alignments), LA to March ARB (UP/ Colton 1, UP/Riverside line, UP/Colton 2, and UP /Colton 3 alignments), LA to Anaheim, Union Station to LAX, March ARB to Miramar, Oceanside to San Diego, and Miramar to San Diego. Considering the incomplete database that this cursory analysis is based on, it is apparent that the entire alignment must be surveyed for burrowing owls and the potential impacts analyzed.

An example of how lacking the DEIR/EIS analysis is with respect to burrowing owl, the Sacramento to Bakersfield technical evaluation does not even mention impacts to this species, despite the fact that burrowing owls exist in this area. While the Bay Area to Merced technical evaluation does calculate an overlap between the HSR proposal and California burrowing owl occurrences, again no detailed analysis of the quality of this habitat and its importance to the species is presented. Nor is a description of the species biology and behavior presented. This is but one detailed example of the DEIS/R's inadequate analysis of the impacts to species of special concern.

Of particular concern is that burrowing owl often prefers to nest near roads and artificially raised areas (such as berms and levees). Clearly, nesting near the HSR alignments could pose a problem in terms of survival including collision mortality, increased predation risk, and decreased habitat connectivity. We expect a revised DEIS/R to include information on all impacted species such as the following example for burrowing owl:

- Species description
- Distribution
- Seasonal activity

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- Substrate Affinities and Burrow use (or equivalent special habitat needs)
- Home range
- Reproduction
- Dispersal
- Habitat characteristics
- Population status
- Threats
- Conservation status
- Impact of proposed project
- Mitigation
- Justification that mitigation reduces the impacts to a non-significant level

3. Western Mojave Omissions – Desert tortoise

Conspicuously absent from the discussion of impacts to biological resources in the eastern Bakersfield to LA Alignment is any discussion of the impact to the Western Mojave Desert HCP planning effort. This HCP is in the final stages of approval and should be released in the fall of 2004. Most egregiously, the desert tortoise is not listed among the imperiled species that would be impacted by the proposed HSR project. The Mojave Desert population of the desert tortoise has been listed as threatened since 1990 and is at risk due to a combination of several threats which include transportation infrastructure. Clearly, the omission of any discussion of this high profile federally and state threatened species indicates that the DEIS/R is vastly inadequate. The HSR proposes to traverse the Alkali mariposa lily Conservation Area and Bat Conservation Area (for Townsend's big-eared bat, long-legged myotis, California leaf-nosed bat, pallid bat, and Western mastiff bat). The proposed alignment would cross the largest roost known for all six target species – the roost under the Interstate 15 bridge at the Mojave River crossing contains over 10,000 bats. The proposed station in Palmdale would only exacerbate conservation problems and the declining status of species such as the Mohave ground squirrel and the desert tortoise.

Located in an ecotone between the Sierra Nevada range, the Central Valley, and the Mojave Desert, the Tehachapi area is extremely important ecologically. Many species converge here and the impacts of a proposed HSR system here are likely too enormous to allow sufficient mitigation. This is an important area for the recovery of California Condors, an icon for the Endangered Species Act. The eastern alignment through Tehachapi from Merced to LA additionally fails to discuss the impacts on the pronghorn antelope. Habitat fragmentation throughout the West has had a demonstrated negative impact on migratory behavior of pronghorn (Buechner 1950, O'Gara and Yoakum 1992; van Riper and Ockenfels 1998). Van Ripper et al. (2001) found that a fenced railroad right-of-way in Arizona isolated pronghorn into discrete populations. White (1969) reported that fenced highways blocked the movement of pronghorn and resulted in as much as 80% herd mortality. The pronghorn population traversed by the Tehachapi alignment is one of the only known remaining pronghorn herds in the state, and as a wide-ranging species, this population is clearly vulnerable to impacts from the proposed HSR and these impacts must be described and addressed.

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D. Impacts to specific areas by specific alignments

For all the species and habitat impacts, the furthest impacts reported in the DEIS/R are within 0.5 miles of each alignment. This spatial area of analysis is insufficient for all impacts, especially fragmentation and wildlife movement corridor impacts. A biologically defensible impact zone must be determined and analyzed in an improved DEIS/R. In our GIS analysis, we buffered the proposed HSR alignments by 1800 meters on each side, as Forman et al. (2003) indicate that several biological effects of roads (including stream sediment, noise, vibration and light, habitat fragmentation/isolation, disruption of wildlife movement corridors, invasion by non-native species, and increased human access) go well beyond 1000 m.

For the discussion below, we organized our comments to first reflect general issues of concern for each alignment followed by citations to specific wildlife corridors impacted by specific alignments and why each of these corridors is biologically important. The wildlife corridors noted are found in the California Wilderness Coalitions' "Missing Linkages" report. The impacts to these corridors come from the placement of the alignments into these corridors or crossing these corridors. As noted, the alignments will disrupt these areas from construction impacts as well as operational impacts, particularly where the alignment is constructed at grade with fencing. Finally, we also provide an analysis of specific areas of federally designated critical habitat impacted by specific alignments. All of these issues raised reflect issues that were either inadequately discussed in the DEIR/EIS or not discussed at all.

1. Bay Area to Merced Route:

The following comments are in addition to the detailed comments presented by the Loma Prieta Chapter of the Sierra Club:

San Joaquin Kit Fox (SJKF)

The Bay Area to Merced Biological Resources Technical Evaluation acknowledges that SJKF habitat will be impacted, but does not include essential elements of its biology, especially pertaining to movement needs, which make it particularly susceptible to negative impacts from the proposed high speed rail project. Without knowing the characteristics of this impact, it is difficult to impossible to plan to avoid and mitigate them. The revised document must include information such as the dispersal requirements and discuss wildlife crossing structures and how they can best be designed for this species. In particular, we request that information from previous crossings developed in consultation with the US Fish and Wildlife Service and the San Joaquin Kit Fox Planning and Conservation Team be consulted. HSR alignments in San Joaquin kit fox habitat should be equipped with directional fencing, frequent underpasses, and escape dens to prevent high levels of predation by coyotes.

All north and south alignments from Merced to San Jose cross through areas within Stanislaus and/or Merced Counties that are identified as high priority recovery efforts by the US Fish and Wildlife Service Recovery Plan for the San Joaquin Kit Fox. These proposals will directly impact between 2019 and 3122 acres of this species habitat and fence off a major wildlife corridor for this species. The resultant habitat loss and fragmentation can cause decreases in fox

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abundance through changes in social ecology, productivity, spatial use, dispersal, and survival (Bjurlin 2003). San Joaquin kit foxes may range up to 20 miles at night during the breeding season (Girard 2001) and up to 6 miles during the pup-rearing season. Because they move at night, any lights associated with the high-speed rail project will have a negative impact on the ability to survive in the vicinity.

a. SJ to Bay Area Route

i. SJ to SF Alignment

Wildlife movement corridors impacted:

- BA 107: This corridor contains riparian areas as well as bay wetlands. It also provides a linkage for waterfowl, shorebirds, and the harvest mouse.

ii. SJ to Oakland Alignment

Critical habitat impacted:

- California tiger salamander critical habitat is impacted by the west route, Union City to SJ via coastline alignment.
 - Vernal pool species critical habitat is impacted by the west route, Union City to SJ via coastline alignment.

Wildlife movement corridors impacted:

- BA 103: This corridor includes the Alameda Creek Watershed, which is a key linkage and choke point for steelhead, western pond turtle, CA red-legged frog and foothill yellow-legged frog.

-BA 104: This corridor contains Coyote Creek, which is a linkage and choke-point for salmon.

-BA 107: The HSR alignment crosses this corridor twice on the west route. This corridor contains riparian areas and bay wetlands which serve as linkages and stepping stones for waterfowl, shorebirds, and the harvest mouse.

b. SJ to Merced Alignment:

Critical habitat impacted:

- California tiger salamander
- Vernal pool species (South lines alignment)

Wildlife movement corridors impacted:

-BA 104: This corridor contains Coyote Creek, which is a linkage and choke-point for salmon.

i. North Lines – The Diablo Alignment

Wildlife movement corridors impacted:

-CV 8: This corridor is important for San Joaquin kit fox, giant kangaroo rat, blunt-nosed leopard lizard, short-nosed kangaroo rat, and LeConte's thrasher.

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-CV 19: This corridor is important for Riparian brush rabbit, wood rat, W. yellow-billed cuckoo, neotropical migrants, ringtail (riparian habitat major). There is a need to maintain riparian species refugia above flood levels as part of the Recovery Plan for Upland Species of the San Joaquin Valley, USFWS 1998.
 -BA 103: This corridor contains the Alameda Creek Watershed, which is a linkage and choke point for steelhead, western pond turtle, CA red-legged frog and foothill yellow-legged frog. This corridor is impacted by the North Tunnel Alignment Option.
 -BA 104: This corridor contains Coyote Creek, which is a linkage and choke-point for salmon (Minimize Tunnel Option and Tunnel under Henry Coe Option).

ii. South Lines – Pacheco Alignment:

-BA 10: This is the Santa Cruz Mountain – Mt. Hamilton Mountain corridor which is a choke point for mountain lion, bobcat, and coyote.
 -CC 19: This corridor is a population recovery “stepping stone” and/or “migratory stopover” habitat for neotropical migratory bird species. It also provides connectivity for steelhead with headwaters spawning and rearing habitats, as well as a movement linkage for large and small mammals. Least bell’s vireo was recorded here in 1997. This corridor is crossed a second time on Gilroy Bypass Option.
 -CC 22: This is an important corridor for medium/ large-sized carnivores, including mountain lion.
 -CV 18 (two different corridors with similar impacts): The species impacted by the disruption of this corridor include San Joaquin kit fox, blunt-nosed leopard lizard, and kangaroo rat. The important habitats in this corridor include Grassland, Alkali scrub, Alkali sink scrub, and marshland. This area is noted as important to the San Joaquin Recovery Plan.

2. Sacramento to Bakersfield

a. Sacramento to Stockton Corridor

Critical Habitat impacted:

-Significant impact to vernal pool species critical habitat from the BN4 Alignment.

Wildlife movement corridors impacted:

-CV 25: This is a riparian corridor important to birds and Tule Elk. It provides an important linkage to the Sierra Nevada ecoregion.

b. Stockton to Modesto Corridor

Wildlife movement corridors impacted:

-CV 19 (two different corridors with same function): Riparian brush rabbit, wood rat, western yellow-billed cuckoo, neotropical migrants, and ringtail are species found in this area.

c. Modesto to Merced Corridor

Critical Habitat impacted:

- Significant impacts to vernal pool species from BNC3 alignment.

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Wildlife movement corridors impacted:

-CV 19: This corridor is important for riparian brush rabbit, wood rat, western yellow-billed cuckoo, neotropical migrants, and ringtail.
 -CV 18: This corridor is used by San Joaquin kit fox, blunt-nosed leopard lizard, and kangaroo rat.

d. Merced to Fresno Route:

Within the Fresno River and San Joaquin River areas, major issues of concern are impacts to vernal pools and riparian habitat. Public or protected lands in this section include the San Joaquin Valley Ecological Reserve. Construction and operational impacts would likely affect water quality, riparian habitat, and aquatic habitat. Part of the fall-run Chinook salmon Evolutionary Significant Unit is downstream of the San Joaquin River crossing.

Critical Habitat impacted:

- There will be significant impacts to vernal pool species from the UP13, BN15, and BN14 alignments.

Wildlife movement corridors impacted:

-CV 18: This is the Madera-Merced Linkage, which is important to SJKF, blunt-nosed leopard lizard, and kangaroo rat (crosses subsection UP13).

e. Fresno to Tulare Route:

Numerous biodiversity elements are associated with this area, including vernal pools, riparian corridors, and sensitive species. Linkages through this section are riparian linkages and any change in riparian cover or vegetation would be considered a significant impact.

Critical habitat impacted:

- California tiger salamander critical habitat will be impacted from this route.

Wildlife movement corridors impacted:

- CV 12: This is the Kings River corridor which serves as a choke-point for neotropical migratory birds and the Fresno kangaroo rat. This corridor is crossed by subsection UP18 and subsection BN20.
 - CV 14: This is the St Johns River corridor which is important for kangaroo rat, SJKF, and neotropical migratory birds. This alignment crosses the corridor at subsection UP18).

f. Tulare to Bakersfield Route:

Major issues of concern in this section include impacts to riparian habitat, linkages, vernal pools, wetlands, and threatened and endangered species. Allensworth Ecological Reserve and Pixley National Wildlife Refuge provide habitat for numerous threatened and endangered species, such as San Joaquin kit fox and vernal pool fairy shrimp. Deer Creek linkage is a riparian linkage that would be impaired by changes in vegetation composition and structure. Poso Creek drains into

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the Kern National Wildlife Refuge and other wetlands, which may be affected by changes in water quality and surface and groundwater flow due to project construction and operation.

Proposed alignments on existing tracks through this area will limit construction to upgrading of the tracks; however, noise impacts and changes to local habitat due to the speed of the trains will likely occur.

Critical Habitat impacted:

- There will be impacts to vernal pool species from the BN22 alignment.

Wildlife movement corridors impacted:

- CV 5: Highway 43/ Garces Highway is a barrier that fragments habitat for the San Joaquin kit fox, blunt-nosed leopard lizard, Tipton kangaroo rat (crosses subsection BN22 twice).
- CV 6: This is the Deer Creek/ Sand Ridge corridor that is a missing linkage and choke-point for many T&E species, Tulare lake marsh colonial birds as well as neotropical migratory birds. The alignment crosses this corridor at subsection BN22 and subsection UP21.
- CV 10: This is the Tule River corridor that is a landscape linkage and choke-point for pond turtles, neotropical migratory birds, and rare plants. The alignment crosses this corridor at subsection UP21.
- CV 4: This is the Pozo Creek corridor that is a missing linkage for the San Joaquin kit fox. The alignment crosses this corridor subsection BN22 and at subsection UP22.
- CV 1: This is the Kern River corridor that is a choke-point for the San Joaquin kit fox, Tipton kangaroo rat, and Buena Vista lake shrew. The alignment crosses this corridor as subsection UP25 and subsection BN25.

3. Bakersfield to LA Route:

a. Bakersfield to Sylmar (Tehachapi/ Antelope Valley)

Wilderness areas in and adjacent to this section of the alignment include Sierra and Angeles National Forests, as well as Magic Mountain and Pacifico Potential Wilderness areas. Concerns through this section include impacts to linkages, roadless areas, potential wilderness areas, wetlands, and threatened and endangered species. For wide-ranging species such as black bear, mountain lion, deer, and bobcat, habitat fragmentation and death due to train strikes is a major concern in this section. In the Santa Clara River area of the proposed alignment, the Southern California Evolutionary Significant Unit for steelhead is intersected and thus impacted.

Wildlife movement corridors impacted:

- CV 2: The South End San Joaquin Valley corridor is a landscape linkage for the San Joaquin kit fox, blunt-nosed leopard lizard, short-nosed kangaroo rat, and LeConte's thrasher. The alignment crosses this corridor at the SR-58 corridor and I-5 Tehachapi corridor subsections.

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- SN 10: The Southern Sierra Checkerboard corridor is a landscape linkage for deer, bear, mountain lion, and bobcat. The alignment crosses this corridor along the SR-58 corridor subsection in two locations.
- DE 12: The San Gabriels/Tehachapi corridor is a missing linkage for movement of desert wildlife in general. The alignment crosses this corridor along the SR-58 corridor subsection.
- SC 113: The Soledad Canyon/ Mint Canyon corridor is a choke-point for the movement of large mammals, three-spine stickleback, southwest willow flycatcher, and western spadefoot toad. The alignment crosses this corridor at the Soledad Canyon corridor subsection in three locations.
- SC 111: The Highway 5/Newhall Pass corridor is a landscape linkage and choke-point for the movement of mammals in general. The alignment crosses this corridor at the I-5 Tehachapi corridor and Soledad Canyon Corridor subsections.

b. Bakersfield to Sylmar (I-5 route) route:

Wilderness areas in or adjacent to this section of alignment include Los Padres and Angeles National Forests, and Sespe Wilderness. Potential wilderness areas include Antimony, Redrock Mountain, Salt Creek, San Francisquito, Magic Mountain, and Tule. Other undeveloped areas in the vicinity include Wind Wolves Preserve (owned by Wildlands Conservancy) and Tejon Ranch. Major concerns in this section are impacts to linkages and habitat fragmentation. Wide-ranging animals may be affected by fragmentation of habitat and train strikes.

Wildlife movement corridors impacted:

- CV 2: The South End San Joaquin Valley corridor is a landscape linkage for the San Joaquin kit fox, blunt-nosed leopard lizard, short-nosed kangaroo rat, and LeConte's thrasher. The alignment crosses this corridor at the SR-58 corridor and I-5 Tehachapi corridor subsections.
- SN 17: The Southern Sierra corridor is a choke-point for the movement of deer, bear, and mountain lion.
- SC 12: The Castaic Highway 5 corridor undercrossing addresses a choke-point for mammals. The alignment crosses this corridor at the I-5 Tehachapi corridor subsection.
- SC 60: The Santa Clara River corridor is a landscape linkage for fish and birds. The alignment crosses this corridor at the I-5 Tehachapi corridor subsection.
- SC 111: The Highway 5/Newhall Pass corridor is a landscape linkage and choke-point for the movement of mammals in general. The alignment crosses this corridor at the I-5 Tehachapi corridor and Soledad Canyon Corridor subsections.

c. Sylmar to LA Route:

Wildlife movement corridors impacted:

- SC 115: The Griffith Park/Verdugo Hills corridor is a missing linkage for large mammals. The alignment crosses this corridor at the Metrolink/UPRR: Burbank Downtown Si and I-5: Glendale subsections.

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4. LA to San Diego Route:

Major concerns through this section of the state include impacts to linkages, threatened and endangered species, vernal pools, and coastal streams and lagoons. Roadless or wilderness areas include Penasquitos Canyon and Carmel Mountain Preserve. Public or protected lands include state beaches (Doheny, San Clemente, and San Onofre) and the San Diego National Wildlife Refuge. Within the UC Riverside area, there may be a loss of local open space and impacts to species such as Stephens' kangaroo rat and Santa Ana sucker. Extensive consultation with CDFG and FWS would likely be necessary for impacts through this area. In southern Orange County, creek crossings along this alignment could result in impacts to steelhead migration. Construction could affect vernal pools on Camp Pendleton. Within the Inland San Diego County section, there are extensive vernal pool complexes adjacent to I-15 and SR-52 corridors that could be impacted by construction.

Within the coastal San Diego County section the alignments have a high potential to impact all coastal lagoons in the area. In addition, it is important to maintain connectivity between these coastal lagoons and inland open space for predators. Rare southern maritime chaparral communities (e.g., Del Mar manzanita and wart-stemmed ceanothus) are found on sandstone bluffs in this area are could be impacted by the proposed project.

a. LA Union Station to March ARB Alignment

Critical habitat impacted:

- San Bernardino Kangaroo Rat critical habitat will be most impacted by Subsegment 1C1.
- California gnatcatcher critical habitat will be impacted by Segment 1B1 > 1A1.

Wildlife migration corridors impacted:

- SC 201: The San Gabriel River corridor is a missing linkage for the river channel. The alignment crosses this corridor at the UP/Colton 1 and UP/Riverside line subsections.
- SC 203: The Puente/San Jose/San Gabriel corridor is a missing linkage and choke-point for large carnivores, raptors, songbirds, and other furbearers. The alignment crosses this corridor at the UP/Colton 1 and UP/Riverside line subsections.
- SC 206: The Lytle Creek Drainage corridor is a landscape linkage and choke-point for the river channel. The crosses the corridor at the UP/Colton line to San Bernardino subsection.
- SC 207: The Santa Ana River corridor is a landscape linkage for the Santa Ana sucker, least Bell's vireo, southwest willow flycatcher, and San Bernardino kangaroo rat. The alignment crosses this corridor at the UP/Colton 3 and UP/Colton line to San Bernardino subsections.

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b. March ARB to Mira Mesa Alignment:

Critical habitat impacted:

The alignment will impact critical habitat for the following species: Arroyo toad, California gnatcatcher, Quino checkerspot butterfly, Southwestern willow flycatcher, and vernal pool species. These impacts must be analyzed.

Wildlife migration corridors impacted:

- SC 225: The San Jacinto River corridor is a landscape linkage for coyote and rare plants. The alignment crosses this corridor at the San Jacinto to I-5 subsection.
- SC 230: The Tualota Creek corridor is a choke-point for the movement of coastal California gnatcatcher and Los Angeles pocket mouse. The alignment crosses this corridor at the San Jacinto to I-5 subsection.
- SC 228: The Pechanga Corridor is a landscape linkage for mountain lion, deer, and bobcat. The alignment crosses this corridor at the San Jacinto to I-5 subsection.
- SC 4: The San Luis Rey corridor is a choke-point for the movement of large carnivores, deer, and steelhead. The alignment crosses this corridor at the San Jacinto to I-5 subsection.
- SC 3: The San Diequito River corridor is a choke-point and main corridor for large carnivores and deer. The alignment crosses this corridor at the San Jacinto to I-5 subsection.
- SC 1: The Penasquitos Canyon and Carmel Mountain Preserve corridor is a choke-point for the movement of large carnivores and deer. The alignment crosses this corridor at the San Jacinto to I-5 subsection.

c. Mira Mesa to San Diego Alignment:

Critical habitat impacted:

- Riverside fairy shrimp critical habitat will be impacted by the Mira Mesa to Qualcomm stadium alignment.

Wildlife migration corridors impacted:

Miramar Road to San Diego

- SC 2: The San Diego River corridor is a choke-point for the movement of large carnivores, deer, and steelhead. The alignment crosses this corridor at the SR-52 to Santa Fe Depot subsection.

Anaheim to Irvine

- SC 220: The El Toro Linkage corridor is a missing linkage for coyote. The alignment crosses this corridor at the Fullerton to Irvine subsection.

Irvine to Oceanside

- SC 222: The Oso Creek corridor is a choke-point for bobcat, coyote, and songbirds. The alignment crosses this corridor at the San Juan Cap Trench and San Juan Cap I-5 subsections.

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Oceanside to San Diego

- SC 3: The Diequito River corridor is a choke-point and main corridor for the movement of large carnivores and deer. The alignment crosses this corridor at the Encinitas to Solana Beach subsection.
- SC 1: The Penasquitos Canyon and Carmel Mountain Preserve corridor is a choke-point for the movement of large carnivores and deer. The alignment crosses this corridor at the I-5/I-805 split to SR-52 and Miramar Hill Tunnel subsections.
- SC 2: The San Diego River corridor is a choke-point for the movement of large carnivores, deer, and steelhead. The alignment crosses this corridor at the SR-52 to Santa Fe Depot subsection.

II. Adequacy of mitigation measures

A. The DEIR/EIS fails to adequately discuss the adequacy of overpasses and underpasses to facilitate species movement.

Yanes et al. (1995) studied vertebrate movement through 17 culverts under roads and railroads in Central Spain. The results of this study indicate that animal movement was dependent on culvert dimensions, road width, height of boundary fence, the complexity of the vegetation along the route, and the presence of detritus pits at the entrance of culverts. The construction of underpasses and overpasses is a nascent effort. The DEIR/EIS contains only a fleeting discussion of this issue without any citation to scientific literature. This section needs significant expansion and detailed discussion of the issues involved in the siting and construction of overpasses and underpasses.

The following are some additional underpass/overpass issues that should be incorporated in the mitigation discussion:

- To reduce collision, fences should be checked, repaired, and built high enough, and vegetation should be kept down so that wildlife is not attracted to the railway.
- Wildlife crossings should be installed at a frequency of one every 1-3 km in areas where there are large animals, regardless of how many large animals are observed, and one every 5-10 km where there are no large animals but the habitat is favorable for them. Because these animals follow traditional routes, success depends greatly on the location of the passage. The crossing should be built on the exact site of the interrupted path if it is to be really effective. The restoration level should be as near as possible to the natural ground level; however, connecting gradients does not make the structure ineffective.
- Underpasses are effective only if they are large enough and properly landscaped.
- Planting trees along the lines, the tops of which would be at least the same level as the top of the pylons, can reduce the risk of collision for some bird species.
- For amphibians, some of the compacted ballast under the rails should be removed, and prefabricated corridors should be installed under the rails. For tortoises, netting should be buried 10 cm deep alongside a rail to direct them to a passageway.
- Vegetation in edge zones that is attractive to ungulates should be removed. Elimination of vegetation from railway verges makes it easier to see animals alongside the railway and limits their presence by not attracting them.

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- Reflective mirrors, repellents, ultrasound, and road lighting are not effective in reducing collisions.

See COST – European Co-operation in the Field of Scientific and Technical Research. 2000. Habitat fragmentation due to transportation infrastructure. COST 341, French state of the art report

I. San Joaquin Kit Fox:

Underpasses are the preferred crossing structure for SJKF and should be at least 0.5m high and 0.5m wide. Also, in order to maintain normal daily movement patterns, underpasses should be placed every 0.5km. Exclusionary fences should be used to encourage foxes to use the crossing structures (Bjurlin 2003). Fencing should be buried in the ground deep enough that coyotes, foxes, and other digging animals cannot dig under them and enter the tracks. Artificial dens and dens to escape predators should also be incorporated alongside the tracks in San Joaquin kit fox habitat.

B. Numerous reasonable mitigation measures were not even discussed in the DEIR/EIS.

The DEIR/EIS discussion of mitigation was so cursory that it failed to include the following potential mitigation strategies:

- ii. Speed of operation
- iii. The preference to construct rail lines along existing roads only
- iv. The installation of wildlife warning devices
- v. Reduced train speed in wildlife areas or during times in which wildlife are active (e.g., May for bears).
- vi. Carcass removal to decrease attraction for carnivores and scavengers.
- vii. Clean up of any spilled grain or food attractants.
- viii. Reduce vegetation that is attractive to wildlife
- ix. Minimizing fragmentation and/or maximizing the ration of areas of fragments.
- x. Narrowing travel corridors.
- xi. Insulation of catenary suspension wire.
- xii. Oversizing of insulators to discourage perching by birds.

These are just a few of the mitigation options that should be discussed in the DEIR/EIS.

Again, biological impacts of the high speed train will vary considerably based on alignment. Yet, the DEIR/S does not provide the information necessary to evaluate these differences. The analyses suggested above, which are technically feasible, must be performed in advance of alignment decisions.

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Due to the significant inadequacies of the DEIR/EIS, the High Speed Rail Authority must revise the environmental documents to raise the issues raised by ourselves and the other commenters and then recirculate the documents for additional public comment. CEQA requires that a draft EIR is recirculated when the document is so fundamentally inadequate as to preclude meaningful public review and comment. See CEQA Guidelines section 15088.5.

We appreciate the opportunity to provide comments on the DEIR/EIS. Please keep me informed of any upcoming matters related to the High Speed Rail project.

Sincerely,


Kim Delfino
California Program Director

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**Response to Comments of Kim Delfino, California Program Director, Defenders of Wildlife, August 30, 2004
(Letter O034)**

O034-1

The Co-lead Agencies believe that the data used and the level of analysis presented in the PEIR/S is appropriate and sufficient to make a decision on whether or not to proceed with the HST Alternative and to identify various corridor alignments to continue to study at the project level. Please also see standard response 3.15.7, and standard response 3.15.13.

O034-2

More detailed resource data, including that cited in the comment and data collected through field-work, will be used in subsequent studies including review of the northern mountain crossing corridor (Bay Area to Central Valley Corridor) and project-level environmental reviews. The Program EIR/EIS recognizes the limitations of these databases. Please see response to Comment O034-1 and response to Comment O034-3. Please also see response to Comment AF007-3C.

O034-3

The following text (similar to text suggested in the comment) has been added to the PEIR/S in Section 3.15.3: In general, railroad corridors have been found to have the following environmental advantages over highways: 1) Water drains away from the track-bed, maintaining a dry environment that prevents unwanted vegetation from establishing. 2) The track-bed has a porous, stable base that prevents runoff from concentrating, keeps slope erosion to a minimum, and filters out particulates and chemical pollutants. 3) A service road or other narrow access strip running alongside the track-bed prevent spoils from shifting beyond the toe of the track-bed slope. 4) Drainage ditches parallel to the track-bed prevent uncontrolled erosion, act as sediment traps, filter railway runoff, and insulate adjoining land from uncontrolled channel flow. 5) High Speed Rail (HSR) construction usually has a significantly smaller

footprint than road construction, so it has less long-term and short-term impacts. 6) HSR corridors are narrower than roads, so animals are more willing to cross under them. This is a significant advantage. 7) It is more feasible to elevate an HSR system on pile-supported structures than to elevate a road.

"Elevated corridors on bridges or viaducts undoubtedly have the less disruptive impact on wildlife movement and migration passageways." (DeSanto, R.S. and D.G. Smith; Environmental auditing: an introduction to issues of habitat fragmentation relative to transportation corridors with special reference to high-speed rail (HSR); Environmental Management 17:111-114; 1993)

O034-4

Please see standard response 3.15.2 and standard response 3.15.13 for more information on subsequent studies and the project-level, Tier 2 evaluations that would be prepared on HST corridor alignments identified as preferred. The project-level, Tier 2 studies would provide a more detailed evaluation of potential impacts of habitat fragmentation on specific species. The analyses would be prepared as part of these subsequent studies once design has progressed to a point where details regarding fencing, grade separations, aerial section, and culverting are available. The information provided in this comment regarding (among other things) appropriate fencing strategies, will be used in these subsequent studies to consider design options for the proposed rail alignments and appropriate mitigation for project impacts. The Co-lead agencies believe that the PEIR/S provides sufficient information to support selection of a system alternative and identification of various preferred HST corridor alignments, but acknowledge that much additional analysis will be necessary at a project level. Because of the large amount of technical data generated during the preparation of the PEIR/S, the impact analysis sections contained in the PEIR/S are, of necessity, summaries of information found in the

technical reports. The comment is correct that additional details regarding fencing and its effects on habitat fragmentation can be found in those technical studies. Technical Evaluations for Biological Resources for each region are available for review on the California High Speed Rail Authority website (http://www.cahighspeedrail.ca.gov/eir/regional_studies/default.asp) and have been incorporated by reference. The analyses requested in the comment will be conducted at a project-specific level, and will include an analysis of fragmentation impacts on both special-status species and wildlife species such as mountain lions, coyotes, bobcats, and bears. Details of fencing and wildlife movement mitigation will also be developed at the project level. The information provided in the comment regarding appropriate height and design of fences is appreciated. The Final PEIR/S has an expanded description of the overall approach to fencing, culverts, and overpasses as they relate to wildlife movements – Please see standard response 3.15.9 and Section 3.15.5 and Section 3.15.6 of the Final PEIR/S. The comment has provided valuable references to information regarding effects of transportation facilities on habitat fragmentation, and these reference sources will be used in the project-level, Tier 2 evaluation of impacts.

O034-5

Please refer to Response to Comment AS004-45 regarding potential spread of exotic species of plants.

O034-6

Please see response to Comment O034-4. The type of impacts listed in this comment cannot be further evaluated until more detailed project level designs are developed for the alignment options. These potential impacts will be fully evaluated in the project-level, Tier 2 studies. Please see standard response 3.4.1 regarding noise impacts to wildlife. Please see response to Comment AS004 – 49 regarding EMF/EMI levels associated with the HST Alternative. Lighting of the entire length of the HST alignment is not needed or anticipated. Lighting will be provided for station areas and maintenance and storage facilities. Other facilities such as roadways crossing over or

under the HST alignment will also be lit as appropriate for safety and according to Caltrans/FHWA requirements. Please see standard response 3.15.13 regarding intended uses of this PEIR/S.

O034-7

The Authority acknowledges your concerns regarding potential hazards for birds interacting with overhead catenary power supply lines on the HST alignments. In the Final Program EIR/EIS, each environmental section of Chapter 3 has been modified to include mitigation strategies that would be applied in general for the HST system. Each section of Chapter 3 also outlines specific design features that will be applied to the project level studies and implementation of the HST system to avoid, minimize, and mitigate potential impacts. The design and mitigation suggestions in the comment, as well as other measures, will be given full consideration in subsequent project level analysis.

Overall, it can be expected that the HST Alternative would introduce additional EMF exposures or EMI at levels for which there are no established adverse impacts on humans or wildlife. EMF emissions from HST vehicle passby's are very low, and impacts are therefore not expected to be significant. EMF/EMI characteristics will be analyzed in the subsequent project level environmental review, as summarized in the Program EIR/EIS in Section 3.6.4 and 3.6.5.

O034-8

The Co-lead agencies are aware that Section 7 of the Endangered Species requires consultation with the U.S. Fish and Wildlife Service, and this consultation will be conducted as part of the project-level, Tier 2 environmental evaluations. The project-level evaluation (outlined in response to Comment O034-4) will consider both designated and proposed critical habitat in the project area. The project-level studies will consider potential overlap with critical habitat for all species of concern within the project area, including those listed in the comment: arroyo toad, California gnatcatcher, California red-legged frog, Least Bell's vireo, Quino checkerspot butterfly, Riverside fairy shrimp, San Bernardino kangaroo rat,

southwestern willow flycatcher, vernal pools species, California tiger salamander, California red-legged frog, Alameda whipsnake, Valley elderberry longhorn beetle, Central California coast coho salmon, Central Valley steelhead, Central California coast steelhead, southern steelhead, Sacramento river winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley fall/late fall-run Chinook salmon, delta smelt, and tidewater goby.

O034-9

Section 7 Consultation with U.S. Fish and Wildlife will be conducted as part of the project-level environmental evaluation, and will include an evaluation of project impacts on species recovery plans within the project area or affected by the project. The final selection of alignments and the design of facilities will include consideration of design options that would have the least impact on threatened and endangered species. The project-level studies will evaluate consistency of the project with recovery plans.

O034-10

It is agreed that past experience provides considerable information about effects of transportation corridors on ecological systems, and provides guidance on mitigating those effects. A preliminary literature review has been conducted and used to provide further guidance regarding the description of potential impacts and design options for wildlife passages in the final PEIR/S. Please refer to Responses to Comments AS004-47 and AS004-51. Literature reviews will be continued as part of the project-level, Tier-2 environmental evaluation, and as input to the design of mitigation measures.

O034-11

Please see response to Comment AL063 – #1 and #14 regarding review of local and regional plans. Please refer to standard response 3.15.10 regarding evaluation of conservation plans. More detailed review of these plans will be included as part of the project-level environmental documentation. Please see Chapter 6B of the Final

Program EIR/EIS for a discussion of transit-oriented development measures.

O034-12

The Co-lead agencies appreciate this information and understand the importance of possible conflicts and accidents between high-speed trains and wildlife, including costs to the rail system and adverse affects to wildlife.

O034-13

Please refer to standard responses 3.15.3, standard response 3.15.9 and response to Comment AS004-51 regarding evaluation of impacts on movement corridors. Additional analysis will be conducted in project-level environmental reviews which will include consideration of more detailed alignments and facility design information.

O034-14

The Co-lead Agencies believe that the level of analysis presented in the PEIR/S is appropriate and sufficient to make a decision on whether or not to proceed with the HST alternative and to identify preferred corridor alignments for more detailed study at the project level – please see standard response 3.15.13. The project-level studies that would be completed for selected HST alignment options will include detailed field analysis of potential impacts to vernal pools and wetlands. This information will be used at the project level to look for ways to avoid impacts, e.g., through track/alignment adjustments or use of structures), and, if adverse impacts are identified, the Co-lead agencies will pursue other possible mitigation measures. Completing a planning level analysis of corridors using consistent methodology and data (as has been done in the PEIR/S) is an appropriate, reasonable, and practical way of considering decisions on whether to proceed with the HST Alternative and identifying alignment options to study further.

O034-15

Please refer to standard response 3.15.2 regarding the level of detail of habitat analysis. Detailed field surveys will be performed for the project-level, Tier 2 studies, allowing for the evaluation of relative quality of specific habitats. As noted in the comment, impacts to wildlife have been documented to occur at varying levels. To represent the potential for direct impact to water and biological resources for the System Alternatives (Modal and HST) in the Final Program EIR/S (see Section 3.15.2), a GIS analysis was completed for the approximate footprint of the alternative facilities. For the HST Alternative, this analysis identified and quantified potential direct impacts based on the HST alignment options within the broader GIS envelopes used to identify the potentially affected resources. For the Modal Alternative, this analysis identified and quantified potential direct impacts for the highway improvements only. The quantifications are representative of the unmitigated potential for direct impacts that could occur within the corridor. The envelope widths were applied in a uniform basis across the alternatives to allow for an objective and uniform comparison of alternatives and alignments. An evaluation of site-specific impacts at the project-level will take into account relevant findings regarding the physical extent – the appropriate distances from the alignments – within which impacts to wildlife habitat might occur. Please also see standard response 3.15.7 regarding a discussion of analysis envelopes.

O034-16

Please see response AL072-9 regarding the Grasslands Ecological Area. The project-level studies will include a detailed analysis of impacts at each HST station. These impacts will include growth-inducing impacts and impacts on sensitive lands (e.g. biological resources, wetlands, agriculture, etc.). Please also see Section 5 of the PEIR/S regarding economic growth and related impacts. Please note that the Authority has dropped the Los Banos station option from future evaluation. Please see standard response 5.2.6 regarding the anticipated growth inducement potential of each of the system alternatives and the HST station areas, including Merced and

Gilroy. Potential impacts to the GEA will also be reviewed in the future program-level northern mountain crossing studies (Bay Area to Central Valley).

O034-17

As the comment notes, the Modal and HST alternatives would potentially affect numerous species. Please refer to standard response 3.15.2 regarding the level of detail and analysis of species of concern. Additional evaluation will be performed project-level environmental reviews, at which time alignments can be adjusted to minimize impacts to species such as burrowing owl. It should be noted that the detailed alignments prepared for project level environmental reviews can be shifted within the corridor alignments identified in the PEIR/S. Please see standard response 3.15.7 regarding the evaluation “envelopes” (bandwidths) used for analysis in the PEIR/S.

O034-18

The Draft PEIR/S should have listed the desert tortoise as a potentially affected species. The list of sensitive wildlife species on page 3.15-10 of the Draft PEIR/S is revised in the Final PEIR/S as follows: San Diego horned lizard (*Phrynosoma coronotum blainvillii*), desert tortoise (*Gopherus agassizii*), arroyo toad (*Bufo californicus*). However, the Tehachapi alignment option was considered during the screening evaluation and has been dropped from further consideration. The proposed alignment through the Palmdale area will be evaluated in greater detail as part of the project-level, Tier 2 environmental documentation. Potential impacts on desert tortoise and pronghorn antelope will be considered in those future studies should the HST proposal move forward. Please refer to standard response 3.15.2 regarding level of detail of analyses and standard response 3.15.13 regarding the intended uses of this PEIR/S.

O034-19

Please see response to Comment AF008 – 25 and standard response 3.15.9 regarding wildlife corridors. The information provided by the

Defenders of Wildlife is now incorporated in the Final PEIR/S – Section 3.15 and will receive further consideration in future studies.

O034-20 and 21

The information provided by defenders of wildlife has been considered and included, where applicable and appropriate, in discussions of mitigation strategies and design features in Section 3.15.5 and Section 3.15.6 of the Final Program EIR/EIS, and will receive further consideration in future studies.

O034-22

Acknowledged. The Authority and the FRA respectfully disagree with your assessment of the Draft Program EIR/EIS.