EXHIBIT 21

Technical Appendix
Methodology for the Selection of
Wildlife Crossing Structures

Summary:

Wildlife Crossings (hereafter "crossings") include culverts, bridges, underpasses etc. designed and built by Ventura County Public Works Agency Transportation Division and the California Department of Transportation (Caltrans) primarily to convey water off and through their respective roadways. In addition to their intended purposes, numerous wildlife movement studies have shown that crossings allow wildlife to bypass barriers and provide safe passage to other areas with needed resources that may otherwise discourage wildlife from traversing.

In conjunction with the preparation of the amendments to the Ventura County Non-Coastal Zoning Ordinance to establish a Habitat Connectivity and Wildlife Corridors overlay zone, Planning Division staff classified wildlife crossings in Ventura County based on their potential for wildlife use and habitat connectivity value. Approximately 400 crossings were evaluated with respect to features that would facilitate their use for wildlife passage. Of these crossings, a total of 100 were classified as being highly functional and, thereby, potentially important components of the Habitat Connectivity and Wildlife Corridors overlay zones.

Purpose and Need:

Roads can act both as a source of mortality and as a barrier to wildlife affecting small mammals, large mammals, birds, and herpetofauna (Coffin, 2006). The extent of the effect is determined by the characteristics and behaviors of the focal species, the physical qualities of the road and road-related infrastructure, the characteristics of the road traffic, and the spatial configuration of the road relative to the adjacent landscape (Coffin). The division and isolation of populations resulting from the presence of roads can result in less genetic exchange and, in turn, can weaken populations. Although the majority of roadkill observed in Ventura County are small species (Anderson pers communication with Whitney Wilkinson Ventura County RMA Planning Division), this loss can have repercussions for larger species, especially during times of stress such as drought or fire.

Multiple studies of wildlife movement through freeways and highways, including US 101, SR-23, SR-126, and SR-118 in Ventura County, conclude that culverts and underpasses are used by a variety of wildlife to bypass these barriers (LSA, 2004; Brown and Riley, 2003; Sikich and Riley, 2012; Moriarty and Riley 2016a and 2016b). Culverts under smaller roadways are also important for wildlife passage since roadways can create increased potential for mortality from vehicle collisions due to the increased willingness of animals to cross them (Riley 2006, Brown and Riley 2013, Riley et al. 2015).

Studies have shown that wildlife of all sizes utilize crossings and that different species have different preferences for crossings with different features which may increase or decrease their use of a given crossing (Clevenger et al. 2001, McDonald and St Clair 2004). These features can include position in the landscape, the crossing's "openness" as defined by its height, width, and length, and proximity to high quality habitat. Wildlife most susceptible to landscape-scale connectivity issues are those that generally avoid roads, have multiple resource needs, require

large geographic areas, occur at low densities, and have low reproductive rates. Medium and larger animals tend to utilize crossings with a larger openness ratio (defined as the cross sectional area of a crossing divided by the length) which often means it has a larger diameter. However, many wildlife species that occur in Ventura County (e.g. bobcat, coyote) tend to be opportunistic users of crossings, making many existing crossings capable of facilitating wildlife movement (Kintsch et al, 2015). Crossings with vegetation located near the entrances were more likely to be used by wildlife because they provided visual cover (Clevenger and Waltho, 2004; WDOT, 2006). If vegetation is allowed to persist and regenerate in areas near crossing entrances, there is higher potential for wildlife use and habitat connectivity.

Data for this project includes County-maintained culverts managed by the County's Public Works Agency, Transportation Division. This includes an inventory of the County's culverts located within the County's right-of-way and maintained by the Public Works Agency. Approximately 385 culverts were assessed and classified for this project located within the County's mapped regional wildlife corridors. Thirty-five County-maintained bridges were also assessed for their functional value in much the same way. Both data sources can be viewed on the Public Works Transportation GIS portal, found here: www.gis.ventura.org/PWA-Transportation/. The third data source includes Caltrans crossings consisting of approximately 60 bridges and culverts within the Caltrans right of way. This data was obtained from Caltrans, National Park Service (NPS) wildlife biologists who study these crossings, and studies conducted by NPS on Caltrans crossings.

Methods:

Each crossing was evaluated with respect to a set of exclusionary features and functional features. Exclusionary features make a crossing uninviting or impractical for wildlife to utilize to overcome a roadway or other barrier. If a crossing had any one or more of the exclusionary features, it resulted in the removal of the crossing from the selection and no regulations are applied to this crossing.

Exclusionary Features:

1. A vertical pipe serves as an entrance or exit to a crossing.
2. A covering or grate over the entrance or exist may occur that would prevent all but the smallest wildlife species from accessing the entrances.
3. The crossing does not entirely traverse a barrier and instead leads from the road to adjacent areas, for instance, a road may contain culverts to divert drainage.
4. A crossing entrance with a diameter less than 24 inches, or with a cross sectional area less than 6 square feet.
5. A crossing entrance immediately adjacent to extremely steep slopes, defined as slopes with an angle of approximately 65 degrees or higher, or areas with extremely steep slopes that a majority of wildlife are likely incapable, or unwilling to scale to get to the surrounding landscape.
6. Crossings directly adjacent to Federal Lands as the Planning Division would have no land use authority in applying development setbacks on these lands.
7. Crossings on roads with extremely low traffic volumes were excluded with 200 vehicle trips per day or less.

The County culverts, County bridges, and Caltrans crossings were also evaluated based on approximately ten functional features that assessed their potential to provide connectivity for wildlife. The number of features for culverts and bridges are slightly different because some are not applicable to either based on its characteristics. For example, the exclusionary feature of a vertical pipe inlet was excluded from the bridge analysis. A list of these functional features along with a description of how they contribute to wildlife use is provided in Table 1. A table ranking each of the culverts and bridges according to the functional features is included in Appendix A.

Table 1 Functional Features and their Support of Functional Connectivity:

Feature	**Feature Description**	**Feature's Contribution to Functional Connectivity**
Vegetation	The presence of vegetation within approximately 130 feet (40 meters) of crossing entrances. Vegetation can be any plant material, native, non-native, ornamental landscaping, etc. It can include orchards and row crops. It should not include lawns, or grasses less than 12 inches high.	Scientific literature has shown that vegetation located near entrances to crossings leads to higher use by wildlife (Clevenger and Waltho 2004)
Light Visibility	Light or a view of the other side of a crossing is visible at the crossing entrance based on one of two factors being present. Either the inspection photos demonstrated light was visible from one entrance, or all of the three conditions must exist: the openness ratio of the crossing is greater than 0.20 feet, there is no bend in the crossing based on the culvert inventory specifications, and the slope of the crossing is not more than 10 percent.	Input from National Park Service wildlife biologists that study wildlife movement have stated that crossings in which light is visible at entrances appears to result in higher use by wildlife. The presence of light can indicate that a crossing will allow an individual to safely bypass a barrier.
Openness Ratio	The openness ratio is defined as the cross sectional area of a crossing (height*width) divided by the length or distance an individual must travel to get to the other end.	Larger, more open crossings tend to get more use, especially among medium to large mammals (Beier et al., 2008).. As a result, a crossing with an openness ratio of 0.20 feet or greater was counted as a functional feature.
Barrier Capacity	A road's capacity to be a barrier to wildlife was determined by a number of factors including traffic volumes, road width, and posted road speeds. Roads determined to be a barrier to wildlife movement includes Caltrans jurisdictional roads and wide County roads such as Tierra Rejada Road east of the SR-118 and west of Madera Road.	Roads can create a major barrier to wildlife movement. Road width and vehicle traffic levels and speed affect roadkill rates (Forman and Alexander, 1998). Even two lane roads with low to moderate traffic levels, and roads with high speeds have been shown to result in wildlife mortality (Forman and Alexander, 1998).

Feature	Feature Description	Feature's Contribution to Functional Connectivity
Suitable Habitat	The presence of suitable habitat within approximately 0.5 mile. Suitable habitat was defined broadly as areas that likely support native vegetation or provide habitat for a variety of fauna within Ventura County.	Nearby suitable habitat was shown to be a factor that strongly correlated with crossing use in a study conducted monitoring wildlife movement in Ventura and Los Angeles Counties (Ng et al. 2004).
Fencing	Fencing that is specifically designed to direct wildlife to a crossing, or fencing that excludes wildlife from roadways can increase the use of nearby crossings by wildlife.	Fencing or other barriers can lead to preferential use of the crossing structure instead of crossing over the road (Ng et al 2004).
Crossing Potential	Crossing is at grade with the surrounding terrain, while the barrier (road) is below or above grade.	This feature attempts to determine the likelihood that wildlife will find and utilize the crossing instead of attempt to traverse the barrier e.g. cross the road. More specifically, the feature is counted if the crossing entrance is at grade with the surrounding terrain along the barrier, while the barrier is above or below grade. This is supported by the findings of a study that found vertebrates were 93% less susceptible to road-kills on sections of road raised on embankments, compared to road segments at the natural grade of the surrounding terrain (Clevenger and Waltho 2004).
Landscape Context Crossing Potential	Landscape features near the entrances support the use of the crossing by wildlife e.g. absence of extremely steep terrain, absence of development within a corridor, drainage or wash lead wildlife to entrance, etc.	This feature attempts to determine whether wildlife will come across a crossing entrance, or would instead likely just cross the road to overcome the barrier. This feature determines whether the terrain surrounding, or leading up to, crossing entrances may lead wildlife along a favorable path through the landscape that may be otherwise be a less than desirable to pass. Drainages and riparian zones are commonly used as wildlife corridors.
Natural Substrate	The presence of natural substrate through a crossing e.g. soil, rock, vegetation.	Providing specific substrate leading up to a culvert can enhance the possibility of use (Meese et al. 2007). If the floor of a crossing contains soil, sediment, or vegetation, it can provide a seamless path for wildlife to continue to move

Feature	Feature Description	Feature's Contribution to Functional Connectivity
		through a barrier uninhibited by a change in surroundings. NPS biologists have evidence to suggest that this can be a substantial factor in crossing use. This feature was applied only if natural substrate was present during the maintained state of the crossing, e.g. if a crossing was silted in during the time culvert inventory photos were taken, contains a metal bottom, this feature was not counted.
Proximity to Other Suitable Crossings	Lack of nearby culverts that could also provide passage. This factor was assessed by determining if suitable crossings were located within 0.5 miles of the crossing.	This factor was determined to be relevant in studies performed by NPS biologists.

Vetting of the crossing classifications was conducted by convening and corresponding with a group of agency biologists from Caltrans and the National Park Service (Santa Monica Mountains). Vetting included discussion of the features that are relevant to evaluate a crossing's functionality and a review of the preliminary crossings selected as functional by the group of biologists to gain concurrence. In addition, a site visit was made to examine the conditions at crossing locations for a small subset of crossings in order to better understand on the ground conditions.

Method Assumptions:

- Crossings with an entrance perched above grade with more than a two foot drop to ground level were typically removed.
- The Ventura County Public Works Agency performs annual maintenance on its infrastructure, including wildlife crossings within the County's right of way. However, not all crossings are maintained every year. Crossing conditions were evaluated based on a well-maintained baseline crossing condition. Further, the condition of a crossing captured in photos taken at the time of inventory did not necessarily dictate how the crossing was classified. For example, if a crossing was largely obstructed due to siltation or excessive vegetation, the crossing was evaluated based on its maintained condition e.g. unsilted and cleared out, not on the condition at the time the photo was taken e.g. silted bottom. This established a consistent baseline to evaluate the crossings.
- Diameter values were obtained from the PWA's Culvert Inventory Sheets. These provided the best available data to determine culvert diameter dimensions; however, actual dimensions in the field may be different.

For the "natural substrate" feature, this was counted as a feature that contributed to crossing functionality if the bottom material of a crossing was not made of a constructed material and not if

it consisted of a silted-in CMP. The crossing condition was assessed as if the crossing has been maintained by PWA.

Attachment **Appendix A: Ranking of Culverts and Bridges According to their Functional Features**

FINAL COUNTY CULVERTS WITH CLASSIFICATIONS AND FACTORS EVALUATED														
											Exclusionary Factors			
OBJECTID	CulvertID	RoadName	Area	RoadNo	CulvertNo	CulvertCou	LogMile	LogMileORe	Sum of Functional Factors (Must be >=4)	Sum of Exclusionary Features	Vertical Pipe present at entrance? (Y=1, N=0)	Grate or covering at entrance? (Y=1, N=0)	Both entrances do not clearly connect to sides of road (Y=1, N=0)	Steep Slope: Either entrance must not be immediately adjacent or on a slope of 35% (20 deg) or higher (Y=1, N=0)
10	50822-5-7	LOCKWOOD VALLEY ROAD	LWD	50822	5	7	6.10	S.R. 33, MARICOPA RD.	5	0	0	0	0	0
60	50825-4-14	LOCKWOOD VALLEY ROAD	LWD	50825	4	14	18.67	S.R. 33, MARICOPA HWY.	6	0	0	0	0	0
208	51313-1-7	POTRERO ROAD WEST	HVL	51313	1	7	3.80	HUENEME RD.	5	0	0	0	0	0
667a	66041-14-14	CREEK ROAD	CRK	66041	14	14	unk	S.R. 34	8	0	0	0	0	0
4	50821-3-4	LOCKWOOD VALLEY ROAD	LWD	50821	3	4	0.80	S.R. 33, MARICOPA HWY.	4	0	0	0	0	0
59	50825-3-14	LOCKWOOD VALLEY ROAD	LWD	50825	3	14	18.60	S.R. 33, MARICOPA HWY.	4	0	0	0	0	0
1403	64262-10-24	SANTA ANA ROAD	CAS	64262	10	24	2.01	CASITAS VISTA RD.	4	0	0	0	0	0
1407	64262-6-24	SANTA ANA ROAD	CAS	64262	6	24	1.57	CASITAS VISTA RD.	4	0	0	0	0	0
671	66042-4-16	CREEK ROAD	CRK	66042	4	16	2.20	S.R.33	4	0	0	0	0	0
672	66042-5-16	CREEK ROAD	CRK	66042	5	16	2.30	S.R.33	4	0	0	0	0	0
691	66061-1-2	HERMOSA ROAD	CRK	66061	1	2	0.05	CREEK RD.	4	0	0	0	0	0
778	69112-1-1	GRIDLEY ROAD	EOJ	69112	1	1	1.06	GRAND AVE.	4	0	0	0	0	0
1032	75081-3-18	BOX CANYON ROAD	SSA	75081	3	18	0.62	LA COUNTY LINE	4	0	0	0	0	0
1072	75363-1-14	SUNSET VALLEY ROAD	MPK	75363	1	14	0.06	READ RD.	4	0	0	0	0	0
1080	75363-9-14	SUNSET VALLEY ROAD	MPK	75363	9	14	0.82	READ RD.	4	0	0	0	0	0
1115	75461-7-7	TIERRA REJADA ROAD	MPK	75461	7	7	1.48	760' E/O SR 23, MOORPARK FWY.	4	0	0	0	0	0
1354	77311-10-12	PIRU CANYON ROAD	PIU	77311	10	12	0.92	970' N/O ORCHARD ST.	4	0	0	0	0	0
1356	77311-12-12	PIRU CANYON ROAD	PIU	77311	12	12	1.72	970' N/O ORCHARD ST.	4	0	0	0	0	0
1363	77312-7-7	PIRU CANYON ROAD	PIU	77312	7	7	2.67	970' N/O ORCHARD ST.	4	0	0	0	0	0
1367	77313-4-23	PIRU CANYON ROAD	PIU	77313	4	23	3.67	970' N/O ORCHARD ST.	4	0	0	0	0	0

Y CULVERTS WITI							
CulvertID	Suitable Habitat within 0.5 miles of each entrance? (Y=1, N=0)	Fencing or other barriers lead wildlife to crossing (Y=1, N=0)	Crossing is at grade with the surrounding terrain along the barrier, while barrier is above or below grade (Y=1, N=0)	Terrain, drainage, or wash leads wildlife to crossing entrances (Y=1, N=0)	Natural substrate through the crossing (Y=1, N=0)	Lack of Suitable Nearby Culverts that could provide passage (~0.5 miles) based on those included in this analysis	Notes: Please include any notes that clarify something that should be described or if you feel a selection needs to be justified). Also, include a description of a factor not considered in the previous columns but relevant in the classification
50822-5-7	1	0	0	1	0	0	Large opening subgrade along dry wash, unobstructed.
50825-4-14	1	0	0	1	1	0	wash leads to it, large, diameter measurement appropriate.
51313-1-7	1	0	0	1	0	0	large, drainage may funnel wildlife
66041-14-14	1	1	1	1	1	0	New culvert, square box culvert. Formerly numbered 13-13.
50821-3-4	1	0	0	0	0	0	inlet is subgrade, outlet contains concrete rip rap then native vegetation. Round culvert
50825-3-14	1	0	0	0	0	0	flat terrain nothing leads wildlife to entrances
64262-10-24	1	0	0	0	0	0	large, fencing assists use
64262-6-24	1	0	0	0	0	0	
66042-4-16	1	0	0	0	0	0	openness ratio calculated based on square opening, wxh/d
66042-5-16	1	0	0	0	0	0	openness ratio calculated based on square opening, wxh/d
66061-1-2	1	0	0	0	0	0	
69112-1-1	1	0	0	0	0	0	
75081-3-18	1	0	0	0	0	0	
75363-1-14	1	0	0	0	0	0	
75363-9-14	0	0	0	0	1	0	square box culvert
75461-7-7	1	0	0	0	0	1	
77311-10-12	1	0	0	0	0	0	
77311-12-12	1	0	0	0	0	0	square box culvert
77312-7-7	1	0	0	0	0	0	square box culvert
77313-4-23	1	0	0	0	0	0	square box culvert

	COUNTY BRIDGES CLASSIFICATION			
BRIDGENO	ROADNo	ROADName	CHANNEL NAME	LOCATION
335	69051	Boardman Rd	Thacher Creek	0.29 mi. S. of State Hwy. 150
322	69112	Gridley Rd	Crooked Creek	1.27 mi. N. of Ojai Avenue
320	68431	Camino Cielo	Matilija Creek	0.06 mi. S. of State Hwy. 33
311	64265	Santa Ana Rd	Santa Ana Creek	0.27 mi. N. of Baldwin Road
315	66043	Creek Rd	San Antonio Creek	4.60 mi. NE of State Rte. 33
336	69251	Koenigstein Rd	Bear Creek	0.49 mi. E. of State Hwy. 150
326	69251	Koenigstein Rd	Sisar Creek	0.01 mi. E. of State Hwy.150
426	76181	Goodenough Rd	drainage ditch	2.49 mi. N. of Fifth Street
487	76241	Old Telegraph Rd	Sespe W. Fork	1.76 mi. NE of State Rte. 126
485	76241	Old Telegraph Rd	Sespe E. Fork	1.92 mi. E. of State Rte. 126
437	77212	Center St	Piru Creek	0.33 mi.E. of Main Street
413	77311	Piru Canyon Rd	creek	1.30 mi. N. of Orchard Street
435	77361	Torrey Rd	Santa Clara River	0.45 mi. S. of Howe Road
307	64241	Casitas Vista Rd	Ventura River	0.15 mi. W. of Ventura Avenue
394	64561	Santa Ana Blvd	Ventura River	0.65 mi. W. of State Hwy. 33
398	64561	Santa Ana Blvd	Live Oak Canyon Creek	0.88 mi. W. of State Hwy. 33
367	64511	Chaparral Rd	Live Oak Creek	0.03 mi. E. of Burnham Road
312	64501	Burnham Rd	Live Oak Creek	0.40 mi. E&N of Santa Ana Road
314	66043	Creek Rd	San Antonio Creek	4.17 mi. NE of State Rte. 33
417	77312	Piru Canyon Rd	Piru Creek	3.00 mi. N. of State Rte. 126
412 UPSTREAM	77031	Guiberson Rd	Calumet Canyon	2.54 mi. E. of State Hwy. 23
469	77031	Guiberson Rd	Frey Canyon Wash	3.36 mi. E. of State Hwy. 23
448	76022	South Mountain Rd	Santa Clara River	0.22 mi. S. of Harvard Blvd.
235	75442	Tapo Canyon Rd	Tapo Creek	3.27 mi. N. of Cochran Street
270	75081	Box Canyon Rd	side canyon	1.78 mi. S. of Santa Susana Pass Road
550	62042	Harbor Blvd	Santa Clara River	0.69 mi. s/o Olivas Park Dr.
442	76111	Bridge Rd	Santa Paula Creek	Santa Paula 0.02 mi. E of S.H. 150
415	77313	Piru Canyon Rd	Sisar Creek	2.89 mi. N. of Orchard Street
421	77312	Piru Canyon Rd	Piru Creek	3.70 mi. N. of State Rte. 126
121	62073	Victoria Ave	Santa Clara River	1.30 mi. S. of State Hwy. 101
443	76221	Mupu Rd	Santa Paula Creek	0.25 mi. E. of State Hwy. 150
255	75364	Moorpark Rd	Arroyo Santa Rosa	0.84 mi. S. of Tierra Rejada Road
392	66081	Old Creek Rd	San Antonio Creek	0.01 mi. E/O Rte 33

BRIDGENO	CTLOCATION			Exclusionary Features		
		Sum of Functional Features (Must be >=4)	Sum of Exclusionary Features	Grate or covering at entrance that would prevent most wildlife from passing? (Y=1, N=0)	Steep Slope: Either entrance must not be immediately adjacent or on a slope of 65 degrees or higher (Y=1, N=0)	Are there other obstructions at bridge entrances (e.g. 10+ ft drop at entrance) (Y=1, N=0)
335	0.3 mi. S of S.R. 150	6	0	0	0	0
322	1.27 mi. N of Ojai Avenue	6	0	0	0	0
320	0.1 mi. W of SR 33	7	0	0	0	0
311	0.3 mi. N. of SR 150	7	0	0	0	0
315	W of Country Club Dr.	7	0	0	0	0
336	0.5 mi. NE of SR 150	7	0	0	0	0
326	0.01 mi. N. of State RT 150	7	0	0	0	0
426	2.39 mi. N. of Fifth Street	6	0	0	0	0
487	1.1 mi. NW of "A" St.	6	0	0	0	0
485	1.0 mi N/W of "A" St.	7	0	0	0	0
437	0.7 mi N. of RTE 126	8	0	0	0	0
413	1.3 mi. N of Orchard Street	6	0	0	0	0
435	1.1 mi. S of SR 126	6	0	0	0	0
307	0.1 mi. W of RTE 33	7	0	0	0	0
394	0.5 mi. W. of SR 33	7	0	0	0	0
398	0.7 mi. W.of SR 33	5	0	0	0	0
367	0.03 mi. E of Burnham Road	6	0	0	0	0
312		5	0	0	0	0
314	0.1 mi. NE of Hermosa Road	7	0	0	0	0
417	2.4 mi. N. of Center Street	7	0	0	0	0
412 UPSTREAM	2.54 mi. E. Of SH.23	7	0	0	0	0
469	3.45 mi. E. of SH 23	4	0	0	0	0
448	0.2 mi. S. of SR 126	7	0	0	0	0
235	3.27 mi. N. of Cochran Street	6	0	0	0	0
270	1.78 mi. S of Sta. Susana Pass Rd.	5	0	0	0	0
550	0.5 mi. S. of Olivas Park Dr.	8	0	0	0	0
442	East of SR 150	7	0	0	0	0
415	3.0 mi. N. of Orchard Street	6	0	0	0	0
421	3.0 mi. N. of Center Street	6	0	0	0	0
121	1.3 mi. S. of Route 101	8	0	0	0	0
443	0.2 mi. E. of SR 150	7	0	0	0	0
255	0.84 mi. S. of Tierra Rejada Road	5	0	0	0	0
392	0.01 mi. E/O Rte 33	8	0	0	0	0

BRIDGENO	Functional Features						
	Vegetation present within 130 feet of both entrances? (Y=1, N=0)	Light/view of other side is visible at entrance based on photo and lack of bend based on specs/plans (Y=1, N=0)	Crossing Length (from entrance to exit in feet)	Opening height (if rectangular) (feet)	Opening width (if rectangular in Feet)	**Use this column if it's a round culvert to calculate openness ratio (cross sectional area divided by length)	Openness Ratio (Calculates automatically)
335	1	1	48	10	12.1		2.622
322	1	1	18	5	41		11.250
320	1	1	16	5	10		2.996
311	1	1	35	9	88		21.178
315	1	1	38	12	119		37.200
336	1	1	39	12	88		26.951
326	1	1	27	10	51		18.588
426	1	1	42	4	10		0.843
487	1	1	43	12	118		33.293
485	1	1	43	22	120		63.158
437	1	2	38	18	89		40.627
413	1	1	57	10	10		1.754
435	1	1	33	11	30		10.096
307	1	1	32	19	92		55.758
394	1	1	31	15	57		27.446
398	1	1	59	4	8		0.504
367	1	1	38	8	9		1.813
312	1	1	61	18	9		2.508
314	1	1	35	12	120		39.273
417	1	1	35	19	68		36.604
412 UPSTREAM	1	1	85			95.0	1.117
469	1	1	34	5	12		1.791
448	1	1	36	18	78		38.688
235	1	1	34	8	12		2.824
270	1	1	70	5	10		0.714
550	1	1	32	13	68		26.361
442	1	1	20	14	129		93.472
415	1	1	57	10	10		1.748
421	1	1	48	12	14		3.500
121	1	1	92	15	85		13.630
443	1	1	31	17	25		13.773
255	1	1	192			683.1	3.558
392	1	1	24	22	106		96.740

BRIDGENO	Higher Openness Ratio? (>0.80) Calculates automatically	Major Barrier e.g. SR 33, 118, 126, 101, Tierra Rejada Rd (Y=1, N=0)	Drainage contains fairly high quality Habitat (Y=1, N=0)	Drainage (not bridge) is mostly natural substrate (Y=1, N=0)	Natural substrate through the crossing (Y=1, N=0)	Drainage provides desirable path through landscape that may otherwise be difficult to pass (Y=1, N=0) *Y=Creates desireable pathway through landscape* *N=Creates Undesireable pathway through landscape*
335	1	0	1	1	0	1
322	1	0	1	1	0	1
320	1	0	1	1	1	1
311	1	0	1	1	1	1
315	1	0	1	1	1	1
336	1	0	1	1	1	1
326	1	0	1	1	1	1
426	1	0	0	1	1	1
487	1	0	0	1	1	1
485	1	0	1	1	1	1
437	1	0	1	1	1	1
413	1	1	0	1	0	1
435	1	0	0	1	1	1
307	1	0	1	1	1	1
394	1	0	1	1	1	1
398	0	0	0	1	1	1
367	1	0	0	1	1	1
312	1	0	0	1	0	1
314	1	0	1	1	1	1
417	1	0	1	1	1	1
412 UPSTREAM	1	0	1	1	1	1
469	1	0	0	0	0	1
448	1	0	1	1	1	1
235	1	0	1	1	0	1
270	0	0	1	1	0	1
550	1	1	1	1	1	1
442	1	0	1	1	1	1
415	1	0	1	1	0	1
421	1	0	1	1	0	1
121	1	1	1	1	1	1
443	1	0	1	1	1	1
255	1	0	0	1	0	1
392	1	1	1	1	1	1

BRIDGENO	
	Notes: Please include any notes that clarify something that should be described or if you feel a selection needs to be justified). Also, include a description of a factor not considered in the previous columns but relevant in the classification
335	
322	
320	
311	
315	
336	*Vertical clearance estimated based on bridge cross section measurements taken from top of top of deck to channel bottom rather than bottom of span to channel bottom.
326	
426	
487	*Vertical clearance estimated based on bridge cross section measurements taken from top of top of deck to channel bottom rather than bottom of span to channel bottom.
485	
437	
413	Gate across upstream entrance, premable to majority of wildlife.
435	
307	*Vertical clearance estimated based on bridge cross section measurements taken from top of top of deck to channel bottom (~9 m depending on measurement location) rather than bottom of span to channel bottom.
394	*Vertical clearance estimated based on bridge cross section measurements taken from top of top of deck to channel bottom (~9 m depending on measurement location) rather than bottom of span to channel bottom.
398	
367	
312	
314	*Vertical clearance estimated based on bridge cross section measurements taken from top of top of deck to channel bottom rather than bottom of span to channel bottom.
417	*Vertical clearance estimated based on bridge cross section measurements taken from top of top of deck to channel bottom rather than bottom of span to channel bottom.
412 UPSTREAM	Upstream contains circular openings, downstream is rectangular.
469	
448	*Vertical clearance estimated based on bridge cross section measurements taken from top of top of deck to channel bottom rather than bottom of span to channel bottom.
235	
270	
550	
442	
415	Gate across upstream entrance, premable to majority of wildlife. Grouted rip rap floor.
421	
121	*Vertical clearance estimated based on bridge cross section measurements taken from top of top of deck to channel bottom rather than bottom of span to channel bottom.
443	
255	Entrance elliptical at 34' in width and 24.5' in height, calculated as circular with dimension at median of actual measurements; 29.25' in diameter.
392	*Vertical clearance estimated based on bridge cross section measurements taken from top of top of deck to channel bottom rather than bottom of span to channel bottom.

CALTRANS CROSSING CLASSIFICATION

ST_BR_	ST_BR_ID	RTE	PostMile	BRIDGE NO	LAT	LONG	NAME	LOC	FAC
4668	4669	0	R32.43	52 0283	341606	1183806	ROCKY PEAK ROAD OC	07-VEN-118-R32.43	ROCKY PEAK RD OC
4761	4762	0	R21.86	52 0355L	341712	1184742	ALAMOS CYN RD UC	07-VEN-118-R21.86	STATE ROUTE 118
4762	4763	0	R21.86	52 0355R	341712	1184742	ALAMOS CYN RD UC	07-VEN-118-R21.86	STATE ROUTE 118
4741	4742	0	T18.68	52 0331L	341712	1185154	ARROYO SIMI OH	07-VEN-118-T18.68	STATE ROUTE 118
4500	4501	0	28.82	52 0037	342436	1184712	PIRU CREEK	07-VEN-126-28.82	STATE ROUTE 126
4652	4653	0	R12.71	52 0267L	342118	1190248	SANTA PAULA CREEK	07-VEN-126-R12.71-SP	STATE ROUTE 126
4653	4654	0	R12.7	52 0267R	342118	1190248	SANTA PAULA CREEK	07-VEN-126-R12.70-SP	STATE ROUTE 126
4568	4569	0	19.26	52 0183	342336	1185654	SESPE CREEK	07-VEN-126-19.26	STATE ROUTE 126
4567	4568	0	19.73	52 0182	342336	1185624	SESPE CREEK OVERFLOWW	07-VEN-126-19.73	STATE ROUTE 126
NA	UNK	0	UNK	UNK	344066	1187383	NEWHALL RANCH ROAD		STATE ROUTE 126
NA	UNK	0	UNK	UNK	343953	1188831	FISH HATCHERY		STATE ROUTE 126
4750	4751	0	R13.84	52 0345	342536	1191742	HAPPY VAL DRN	07-VEN-150-R13.84	STATE ROUTE 150
4538	4539	0	21.7	52 0099	342600	1191200	LION CANYON CREEK	07-VEN-150-21.70	STATE ROUTE 150
4626	4627	0	10.98	52 0244	342512	1192024	SANTA ANA CREEK	07-VEN-150-10.98	STATE ROUTE 150
4541	4542	0	28.53	52 0104	342536	1190524	SANTA PAULA CREEK	07-VEN-150-28.53	STATE ROUTE 150
4542	4543	0	28.61	52 0105	342536	1190518	SANTA PAULA CREEK	07-VEN-150-28.61	STATE ROUTE 150
4540	4541	0	28.48	52 0103	342536	1190536	SISAR CREEK	07-VEN-150-28.48	STATE ROUTE 150
4763	4764	0	R13.42	52 0358	342530	1191806	VENTURA RIVER	07-VEN-150-R13.42	STATE ROUTE 150
4768	4769	23	R9.84	52 0368	341548	1185048	TIERRA REJADA CHANNEL	07-VEN-023-R9.84	STATE ROUTE 23
NA	NA	23	NA	NA	342520	1188408	DAY FARMS CULVERT		STATE ROUTE 23
4519	4520	33	19.36	52 0074	343048	1191618	BEAR CREEK	07-VEN-033-19.36	STATE ROUTE 33
4521	4522	33	20.76	52 0076	343012	1191648	CANON CREEK	07-VEN-033-20.76	STATE ROUTE 33
4560	4561	33	20.48	52 0170	343000	1191636	CANON CREEK	07-VEN-033-20.48	STATE ROUTE 33
4535	4536	33	50.7	52 0092	344236	1192236	CASTLE CREEK	07-VEN-033-50.70	STATE ROUTE 33
4532	4533	33	51.78	52 0088	344318	1192300	CORRAL CANYON CREEK	07-VEN-033-51.78	STATE ROUTE 33
4530	4531	33	48.69	52 0086	344118	1192130	CUYAMA RIVER	07-VEN-033-48.69	STATE ROUTE 33
4504	4505	33	15.52	52 0043	342912	1191812	N FORK MATILIJA CREEK	07-VEN-033-15.52	STATE ROUTE 33
4505	4506	33	15.82	52 0044	342918	1191818	N FORK MATILIJA CREEK	07-VEN-033-15.82	STATE ROUTE 33
4511	4512	33	17.41	52 0066	343024	1191736	NORTH FORK MATILIJA CR	07-VEN-033-17.41	STATE ROUTE 33
4512	4513	33	17.84	52 0067	343036	1191712	NORTH FORK MATILIJA CR	07-VEN-033-17.84	STATE ROUTE 33
4563	4564	33	16.13	52 0173	342930	1191818	NORTH FORK MATILIJA CR	07-VEN-033-16.13	STATE ROUTE 33
4548	4549	33	52.09	52 0120	344342	1192318	OAK CREEK	07-VEN-033-52.09	STATE ROUTE 33
4531	4532	33	50.91	52 0087	344248	1192248	ROUND SPRINGS CREEK	07-VEN-033-50.91	STATE ROUTE 33
4510	4511	33	7.58	52 0065	342248	1191812	SAN ANTONIO CREEK	07-VEN-033-7.58	STATE ROUTE 33
4503	4504	33	14.58	52 0042	342806	1191706	SHELDON CANYON	07-VEN-033-14.58	STATE ROUTE 33
4549	4550	33	52.59	52 0121	344406	1192348	TIMBA CREEK	07-VEN-033-52.59	STATE ROUTE 33
4522	4523	33	29.65	52 0077	343336	1191600	TULE CREEK	07-VEN-033-29.65	STATE ROUTE 33
NA	NA	0	NA	NA	34	1189775	CONEJO GRADE BOX CULVERT		U.S. HIGHWAY 101
4624	4625	0	30.94	52 0241L	341654	1191830	VENTURA RIVER	07-VEN-101-30.94-VEN	U.S. HIGHWAY 101
4625	4626	0	30.94	52 0241R	341654	1191830	VENTURA RIVER	07-VEN-101-30.94-VEN	U.S. HIGHWAY 101
NA	UNK	0	UNK	UNK	344032	1187038	CAMINO DEL REMEDIO		STATE ROUTE 126
4709	4710	23	R8.19	52 0312L	341436	1185012	OLSEN ROAD UC	07-VEN-023-R8.19-THC	STATE ROUTE 23
4710	4711	23	R8.21	52 0312R	341436	1185012	OLSEN ROAD UC	07-VEN-023-R8.21-THC	STATE ROUTE 23
4711	4712	23	R8.21	52 0312S	341436	1185012	OLSEN ROAD UC	07-VEN-023-R8.21-THC	STATE ROUTE 23
4720	4721	23	R10.16	52 0319L	341600	1185100	TIERRA REJADA ROAD UC	07-VEN-023-R10.16-MF	STATE ROUTE 23
4721	4722	23	R10.16	52 0319R	341600	1185100	TIERRA REJADA ROAD UC	07-VEN-023-R10.16-MF	STATE ROUTE 23
4719	4720	23	R10.16	52 0319K	341600	1185100	TIERRA REJADA ROAD UC	07-VEN-023-R10.16-MF	RAMP/CONNECTOR 23

		Exclusionary Features				Functional Features	
BRIDGE NO	Sum of Functional Features (>=4 is needed to be included)	Sum of Exclusionary Features	Grate or covering at entrance? (Y=1, N=0)	Steep Slope: Either entrance must not be immediately adjacent or on a slope of 65 degrees or higher (Y=1, N=0)	Other obstructions at bridge entrances (e.g. 10+ ft drop at entrance) (Y=1, N=0)	Vegetation present within 130 feet of both entrances? (Y=1, N=0)	Light/view of other side is visible at entrance based on photo and lack of bend based on specs/plans (Y=1, N=0)
52 0283	5	0	0	0	0	1	1
52 0355L	6	0	0	0	0	1	1
52 0355R	6	0	0	0	0	1	1
52 0331L	8	0	0	0	0	1	1
52 0037	8	0	0	0	0	1	1
52 0267L	5	0	0	0	0	1	1
52 0267R	5	0	0	0	0	1	1
52 0183	8	0	0	0	0	1	1
52 0182	8	0	0	0	0	1	1
UNK	5	0	0	0	0	0	1
UNK	5	0	0	0	0	1	1
52 0345	7	0	0	0	0	1	1
52 0099	8	0	0	0	0	1	1
52 0244	7	0	0	0	0	1	1
52 0104	8	0	0	0	0	1	1
52 0105	8	0	0	0	0	1	1
52 0103	8	0	0	0	0	1	1
52 0358	7	0	0	0	0	1	1
52 0368	5	0	0	0	0	1	1
NA	5	0	0	0	0	1	1
52 0074	7	0	0	0	0	1	1
52 0076	6	0	0	0	0	1	1
52 0170	6	0	0	0	0	1	1
52 0092	7	0	0	0	0	1	1
52 0088	7	0	0	0	0	1	1
52 0086	7	0	0	0	0	1	1
52 0043	8	0	0	0	0	1	1
52 0044	8	0	0	0	0	1	1
52 0066	8	0	0	0	0	1	1
52 0067	8	0	0	0	0	1	1
52 0173	7	0	0	0	0	1	1
52 0120	7	0	0	0	0	1	1
52 0087	7	0	0	0	0	1	1
52 0065	7	0	0	0	0	1	1
52 0042	7	0	0	0	0	1	1
52 0121	7	0	0	0	0	1	1
52 0077	8	0	0	0	0	1	1
NA	5	0	0	0	0	1	1
52 0241L	8	0	0	0	0	1	1
52 0241R	8	0		0	0	1	1
UNK	4	0	0	0	0	1	0
52 0312L	4	0	0	0	0	1	1
52 0312R	4	0	0	0	0	1	1
52 0312S	4	0	0	0	0	1	1
52 0319L	4	0	0	0	0	1	1
52 0319R	4	0	0	0	0	1	1
52 0319K	4	0	0	0	0	1	1

BRIDGE NO	Crossing Length (from entrance to exit in feet)	Opening height (if rectangular) (feet)	Opening width (if rectangular in Feet)	**Use this column if it's a round culvert to calculate openness ratio (cross sectional area divided by length)	Openness Ratio (Calculates automatically)	Higher Openness Ratio? (>0.80) Calculates automatically	Major Barrier e.g. SR 33, 118, 126, 101, Tierra Rejada Rd (Y=1, N=0)
52 0283	41	18	88		38.672	1	1
52 0355L	41	16	72		27.780	1	1
52 0355R	41	16	72		27.780	1	1
52 0331L	46	24	177		94.317	1	1
52 0037	84	9	120		12.931	1	1
52 0267L	39	25	68		43.027	1	1
52 0267R	39	25	68		43.027	1	1
52 0183	79	16	45.76		9.263	1	1
52 0182	79	10	57		6.879	1	1
UNK	147	15	91		9.088	1	1
UNK	104	2	7		0.144	0	1
52 0345	28	11	23		9.108	1	1
52 0099	23			2542.4	111.903	1	1
52 0244	50	10	11		2.106	1	1
52 0104	33	28	170		143.508	1	1
52 0105	32	13	65		26.376	1	1
52 0103	32	15	55		26.531	1	1
52 0358	46	13	107		31.110	1	0
52 0368	267	6	10		0.207	0	1
NA	448	9	10	91.8	0.205	0	1
52 0074	35	12	71		24.778	1	0
52 0076	51	5	10		0.911	1	0
52 0170	42	5	8		0.879	1	0
52 0092	31	9	20		5.398	1	0
52 0088	32	2	19		1.331	1	0
52 0086	35	33	146		138.522	1	0
52 0043	33	18	140		76.065	1	1
52 0044	28	21	59		44.192	1	1
52 0066	35	15	95		39.741	1	1
52 0067	35	16	144		66.815	1	1
52 0173	28	10	52		18.409	1	
52 0120	32	7	19		4.247	1	0
52 0087	32	5	16		2.525	1	0
52 0065	43	13	55		16.707	1	0
52 0042	31	7	74		17.221	1	0
52 0121	31	6	20		3.579	1	0
52 0077	34	11	130		39.939	1	1
NA	135	10	10		0.741	0	1
52 0241L	52	26	79		39.374	1	1
52 0241R	44	27	79		47.596	1	1
UNK	229	1	5		0.022	0	1
52 0312L	56	18	134		43.842	1	1
52 0312R	40	18	124		56.502	1	1
52 0312S	34	17	25		12.398	1	1
52 0319L	40	16	89		35.811	1	1
52 0319R	55	16	89		26.177	1	1
52 0319K	25	16	82		52.367	1	1

BRIDGE NO	Drainage or path near entrances contains fairly high quality Habitat (Y=1, N=0)	Drainage or path near entrance (not bridge) is mostly natural substrate (Y=1, N=0)	Natural substrate through the crossing (Y=1, N=0)	Does the path that leads to crossing entrances provides desirable path through landscape that is otherwise difficult to pass (Y=1, N=0)	Is the crossing structure used as a bridge more than a tunnel (Y=1, N=0)	Crossing apart of an Agency or Academic Study
52 0283	0	0	0	1	1	
52 0355L	0	0	1	1		
52 0355R	0	0	1	1		
52 0331L	1	1	1	1		
52 0037	1	1	1	1		
52 0267L	0	0	0	1		
52 0267R	0	0	0	1		
52 0183	1	1	1	1		
52 0182	1	1	1	1		
UNK	0	1	1	0	0	1
UNK	0	1	1	0	0	1
52 0345	1	1	0	1	0	
52 0099	1	1	1	1		
52 0244	1	1	0	1		
52 0104	1	1	1	1		
52 0105	1	1	1	1		
52 0103	1	1	1	1		
52 0358	1	1	1	1		
52 0368	0	1	0	1	0	1
NA	0	1	1	0	0	1
52 0074	1	1	1	1		
52 0076	1	1	0	1		
52 0170	1	1	0	1		
52 0092	1	1	1	1		
52 0088	1	1	1	1		
52 0086	1	1	1	1		
52 0043	1	1	1	1		
52 0044	1	1	1	1		
52 0066	1	1	1	1		
52 0067	1	1	1	1		
52 0173	1	1	1	1		
52 0120	1	1	1	1		
52 0087	1	1	1	1	0	0
52 0065	1	1	1	1		
52 0042	1	1	1	1		
52 0121	1	1	1	1		
52 0077	1	1	1	1		
NA	0	1	1	0	0	1
52 0241L	1	1	1	1		
52 0241R	1	1	1	1		
UNK	0	1	0	1	0	1
52 0312L	0	0	0	0	0	0
52 0312R	0	0	0	0	0	0
52 0312S	0	0	0	0	0	0
52 0319L	0	0	0	0		
52 0319R	0	0	0	0		
52 0319K	0	0	0	0		

BRIDGE NO	**Notes:** Please include any notes that clarify something that should be described or if you feel a selection needs to be justified). Also, include a description of a factor not considered in the previous columns but relevant in the classification
52 0283	This is meant as a bridge instead of an overpass, so criteria were evaluated in light of this difference.
52 0355L	
52 0355R	
52 0331L	
52 0037	
52 0267L	
52 0267R	
52 0183	
52 0182	
UNK	Data input from NPS kmz file authored by Joanne Moriarty, Justin Brown, and Seth Riley
UNK	Data input from NPS kmz file authored by Joanne Moriarty, Justin Brown, and Seth Riley
52 0345	
52 0099	Opening is tall arch (i.e., semi circular) in shape, and spans a v-shaped drainage.
52 0244	Bridge over 2 box culverts (3 m x 3 m) and 1 trapezoidal rulvert box of slightly smaller dimensions.
52 0104	*Opening height estimated from channel cross section which listed the height from top of bridge deck to channel bottom rather than bottom of bridge span to channel bottom.
52 0105	*Opening height estimated from channel cross section which listed the height from top of bridge deck to channel bottom rather than bottom of bridge span to channel bottom.
52 0103	
52 0358	Includes 7 independent bridge spans across the Ventura River, measurements provided for largest single span.
52 0368	
NA	Data from NPS Study of SR-23 (Riley and Brown 2012)
52 0074	
52 0076	
52 0170	
52 0092	*Opening height estimated from channel cross section which listed the height from top of bridge deck to channel bottom rather than bottom of bridge span to channel bottom.
52 0088	
52 0086	*Opening height estimated from channel cross section which listed the height from top of bridge deck to channel bottom rather than bottom of bridge span to channel bottom.
52 0043	Bridge number 52 0043
52 0044	Bridge number 52 0044
52 0066	Bridge number 52 0066
52 0067	Bridge number 52 0067
52 0173	Bridge number 52 0173
52 0120	
52 0087	Internal area of bridge underway not visible in reports or GIS. Substrate assumed to be natural as described in report but not visually verified.
52 0065	52 0065
52 0042	52 0042
52 0121	51 0121;
52 0077	52 0442;
NA	Height, width, and length measurements are approximated from photographs. Crossing was apart of Ng et al 2004 study
52 0241L	52 0241L
52 0241R	52 0241R
UNK	Data input from NPS kmz file authored by Joanne Moriarty, Justin Brown, and Seth Riley
52 0312L	52 0312L: Bridge spans cross over Olsen Road to provide crossing for Hwy 23.
52 0312R	52 0312R: Bridge spans cross over Olsen Road to provide crossing for Hwy 23.
52 0312S	52 0312S: Bridge spans cross over Olsen Road to provide crossing for Hwy 23. Part of offramp
52 0319L	53 0319L: Bridge spans cross over Tierra Rejada Road to provide crossing for Hwy 23.
52 0319R	53 0319R: Bridge spans cross over Tierra Rejada Road to provide crossing for Hwy 23.
52 0319K	53 0319K: Bridge spans cross over Tierra Rejada Road to provide crossing for Hwy 23.