

DRAFT MEMORANDUM

To: Colin Drukker, PlaceWorks
From: Mike Howard, Linda Archer, Mikael Romich
Subject: San Bernardino Countywide Plan
Supplemental Summary Tables for the Draft Biological Constraints Layer
Date: December 8, 2016

As part of the development process for the San Bernardino CWP, land use scenario models are being developed and analyzed. In an effort to synthesize the biological data for the purposes of providing biological input into the scenario models, a countywide biological constraints data layer was prepared. The countywide biological constraints layer was created by combining the following data layers:

- **Habitat linkages:** Modeled habitat linkages in the County from multiple sources¹ were considered a potential biological constraint.
- **Vegetation communities:** Vegetation communities² of conservation interest were considered a potential biological constraint, including the following types: dune communities, playa communities, coastal sage scrub, Joshua tree woodland, riparian and wash communities, Riversidian alluvial scrub communities, wetland communities and waterways.
- **Wildlife and plant species:** Special-status species occurrences³ were considered a potential biological constraint. Special-status species include those that are federally and state endangered, threatened, or candidate species; state fully protected species; state species of special concern; and California Rare Plant Rank List 1 or List 2 species.

¹ Data sources for the modeled habitat linkages in the County include California Essential Habitat Connectivity Project, South Coast Wildlands Desert Linkage Network, South Coast Wildlands Joshua Tree Twenty Nine Palms Wildlife Corridors, South Coast Wildlands Missing Linkages Wildlife Corridors, and Desert Tortoise Conservation Areas and Linkages.

² Data sources of the vegetation layer for the County is National Vegetation Classification Standard (NVCS)-Based Mapping from the Mojave Desert Ecosystem Project (CDFG 2012), Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) (USFS 2014), and SANBAG existing land-use layer (SANBAG 2012).

³ The data source for species occurrences in the County is a standardized species occurrence dataset created for San Bernardino County from data from CNDDDB, US Fish and Wildlife Service, US Forest Service, US Bureau of Land Management, San Bernardino County Museum, San Bernardino County Department of Public Works, Upper Santa Ana River HCP, VertNET (post-1990 records), and California Consortium of Herbaria (post-1990 records).

Occurrence point locations from current (post-1990) records were buffered by 400 feet for the purposes of preparing the constraints layer.

These three components were combined to create an indicator of potential biological constraints for the purposes of land use scenario modeling.

- **No constraints:** The least biologically constrained lands are where none of the 3 component occur (i.e., 0 factors).
- **Low constraint but measure only:** Areas with the habitat linkage factor only were considered potentially constrained but not likely to preclude or prevent land use development. Development that overlaps with habitat linkages could be measured to understand potential implications or to compare scenario alternatives.
- **Low biological constraints:** Areas with the vegetation or special-status species factor only were considered to have low levels of biological constraints.
- **Moderate biological constraints:** Areas were considered constrained for development where more two factors occurred: vegetation and habitat linkage, species and habitat linkage, or vegetation and species).
- **High biological constraints.** Where habitat linkages, vegetation communities of conservation concern, and special-status species all overlap (all three factors), the area was considered to have high levels of biological constraints.

Resource protection status overlays would also be a constraint in the scenario models and should be used in combination with these values.

The following tables provide acreage summaries for the draft biological constraints data layer being prepared to support land use scenario modeling for the San Bernardino Countywide Plan (CWP). These summary tables for draft for discussion purposes only.

The first table (Table 1) highlights key statistics about areas of the county or land use districts most heavily impacted by biological resources. The next set of tables provides high level acreage summaries of the biological constraint classes by region within the County's land use control (Table 2a) and all unincorporated lands (Table 2b).

The third set of tables provides acreage summaries of the biological constraint classes by land use districts within the County's land use control and within all unincorporated lands in total (Tables 3a and 3b) and by region (Tables 3c and 3d).

Draft Biological Constraints Layer Summary Tables

Note: This table excludes the following land use districts as they are not considered constrained by biological resources for purposes of the scenario model: Open Space, Floodways, Resource Conservation, and Specific Plan.

**Table 1
Key Statistics for Land Potentially Impacted by Moderate or High Biological Constraints**

Geography/Category	Under County Control	All Unincorporated
Countywide/Region		
Countywide	7%	9%
East Desert	11%	5%
North Desert	5%	10%
Mountains	8%	8%
Valley	18%	18%
General Land Use Category		
Commercial	< 5%	< 5%
Industrial	< 5%	< 5%
Residential (excluding SP)	6%	6%
Special Development	15%	15%
Notable Land Use Districts		
COUNTYWIDE		
Highway Commercial	10%	9.9%
Single Residential (RS-10M)	17%	18%
Special Development	15%	15%
EAST DESERT		
General Commercial	11%	11%
Neighborhood Commercial	17%	17%
Rural Commercial	61%	60%
Rural Living (RL/RL-5)	12%	10%
Single Residential (RS-1)	11%	11%
Single Residential (RS-10M)	45%	45%
Single Residential (RS-14M)	42%	42%
Multiple Residential	19%	19%
NORTH DESERT		
Highway Commercial	10%	9.9%
Special Development	24%	25%
MOUNTAINS		
Neighborhood Commercial	15%	9.5%
Community Industrial	16%	17%
Single Residential (RS-1)	11%	10%
Special Development	11%	10%
VALLEY		
Rural Living (RL/RL-5)	13%	13%
Special Development	11%	11%

Note: Light color shading indicates when moderate or high biologically-constrained land area (individually or combined) exceeds 10 percent of the respective total. Dark color shading indicates when the percentage exceeds 30 percent. Purple coloring is for countywide tables. Pink or red coloring indicates land suitable for conventional development land use districts while light or dark blue coloring indicates land designated as Open Space, Floodways, or Resource Conservation.

Table 2a
Biological Constraints within County Land Use Control by Region (Acres)

Region	Least Biologically Constrained Lands (0 factors)	Low Biological Constraints (Habitat Linkages Only)	Low Biological Constraints (Vegetation or Species)	Moderate Biological Constraints (2 factors)	High Biological Constraints (3 Factors)	Total
East Desert	43,217	181,650	9,355	28,026	115	262,363
North Desert	349,497	663,939	52,724	63,791	625	1,130,577
Mountains	18,084	44,766	5,109	5,842	296	74,097
Valley	24,291	9,960	3,322	6,879	1,503	45,956
Total	435,090 29%	900,315 60%	70,511 5%	104,538 7%	2,539 0%	1,512,993 100%

Note: Table does not sum due to rounding and boundary alignment inconsistencies between data sources.

Table 2b
Biological Constraints within All Unincorporated Lands by Region (Acres)

Region	Least Biologically Constrained Lands (0 factors)	Low Biological Constraints (Habitat Linkages Only)	Low Biological Constraints (Vegetation or Species)	Moderate Biological Constraints (2 factors)	High Biological Constraints (3 Factors)	Total
East Desert	467,736	1,398,138	75,774	110,451	413	2,052,511
North Desert	1,948,383	6,450,950	259,267	1,004,795	6,122	9,669,517
Mountains	99,048	375,104	20,169	39,321	1,137	534,780
Valley	24,667	10,430	3,349	7,211	1,515	47,173
Total	2,539,834 21%	8,234,622 67%	358,560 3%	1,161,778 9%	9,188 0%	12,303,981 100%

Note: Table does not sum due to rounding and boundary alignment inconsistencies between data sources.

Table 3a
Biological Constraints by Land Use Designation within County Land Use Control (Acres)

Land Use Designation	Least Biologically Constrained Lands (0 factors)	Low Biological Constraints (Habitat Linkages Only)	Low Biological Constraints (Vegetation or Species)	Moderate Biological Constraints (2 factors)	High Biological Constraints (3 Factors)	Total
AG	17,212	23,789	402	1,399	53	42,855
CG	1,956	618	164	97	4	2,840
CH	287	1,184	24	155	12	1,661
CN	487	328	78	45		937
CO	20	120	8	3		151
CR	858	3,173	31	364	10	4,435
CS	420	180	23	6		628
FW	949	3,056	4,262	10,180	966	19,413
IC	3,188	1,549	238	116	8	5,099
IN	3,293	3,284	673	135	7	7,392
IR	6,770	7,185	454	478	12	14,900
OS	761	1,849	32	958	216	3,816
RC	139,118	531,797	28,330	52,548	565	752,358
RL/RL-5	199,594	261,193	29,741	26,562	127	517,217
RL-10/20/40	19,153	20,643	2,383	2,075	44	44,298
RM	2,261	1,259	401	247		4,168
RS	8,809	6,585	361	998	64	16,818
RS-1	14,853	8,501	1,580	1,377	30	26,342
RS-10M	2,623	1,638	46	883	9	5,198
RS-14M	2,609	7,785	167	1,113	2	11,676
RS-20M	2,902	638	283	85	13	3,922
SD	4,793	10,781	585	2,637	165	18,960
SP	1,934	2,682	199	1,190	214	6,219
Grand Total	435,090	900,315	70,511	104,538	2,539	1,512,993

Note: Table does not sum due to rounding and boundary/parcel alignment inconsistencies between data sources.

Table 3b
Biological Constraints by Land Use Designation within All Unincorporated Lands (Acres)

Land Use Designation	Least Biologically Constrained Lands	Low Biological Constraints	Low Biological Constraints	Moderate Biological Constraints	High Biological Constraints	Total
	(0 factors)	(Habitat Linkages Only)	(Vegetation or Species)	(2 factors)	(3 Factors)	
AG	17,683	24,166	410	1,445	53	43,757
CG	1,977	622	165	97	4	2,866
CH	294	1,272	25	163	12	1,764
CN	487	335	78	54		954
CO	21	123	8	3		155
CR	957	3,414	31	423	11	4,837
CS	420	183	23	6		632
FW	1,153	4,114	5,682	13,833	988	25,771
IC	3,239	1,844	238	168	8	5,497
IN	4,119	4,064	1,166	164	7	9,520
IR	7,413	7,840	454	756	12	16,476
OS	2,239	4,557	37	2,130	341	9,304
RC	2,227,147	7,799,270	313,116	1,098,187	7,000	11,444,720
RL/RL-5	210,185	304,202	30,876	29,041	136	574,440
RL-10/20/40	20,984	29,246	2,468	2,756	44	55,498
RM	2,280	1,305	401	248		4,233
RS	8,913	6,643	363	1,002	64	16,985
RS-1	15,081	9,015	1,595	1,412	30	27,134
RS-10M	2,623	1,664	46	919	9	5,259
RS-14M	2,670	7,899	168	1,116	2	11,856
RS-20M	2,922	646	284	86	13	3,951
SD	4,800	11,163	587	2,815	166	19,532
SP	1,934	2,731	199	1,194	214	6,272
Grand Total	2,539,834	8,234,622	358,560	1,161,778	9,188	12,303,981

Note: Table does not sum due to rounding and boundary/parcel alignment inconsistencies between data sources.

Table 3c
Biological Constraints by Land Use Designation within County Land Use Control by Region (Acres)

Region	Least Biologically Constrained Lands	Low Biological Constraints	Low Biological Constraints	Moderate Biological Constraints	High Biological Constraints	Total
	(0 factors)	(Habitat Linkages Only)	(Vegetation or Species)	(2 factors)	(3 Factors)	
East Desert	43,217	181,650	9,355	28,026	115	262,363
AG	7,178		22			7,199
CG	189	234	18	57		498
CN	23	63		18		103
CO	6	62	7			76
CR	0	100		145	10	256
CS	16	110		1		126
FW	28	238	31	320	3	620
IC	20	376	0	18		413
IN	258	998	48	44		1,348
IR	116		55			171
OS		576		34		609
RC	14,259	68,515	6,739	8,841	40	98,393
RL/RL-5	17,807	103,032	2,167	16,300	53	139,359
RL-10/20/40	891	2,669	0	51		3,611
RM	273	531	2	195		1,002
RS	388	184		23		595
RS-1	752	1,059	107	248		2,166
RS-10M	492	527	8	838	9	1,875
RS-14M	399	516	150	764		1,828
RS-20M	86	325				411
SD	32	1,520	0	126		1,678

Table 3c
Biological Constraints by Land Use Designation within County Land Use Control by Region (Acres)

Region	Least Biologically Constrained Lands	Low Biological Constraints	Low Biological Constraints	Moderate Biological Constraints	High Biological Constraints	Total
	(0 factors)	(Habitat Linkages Only)	(Vegetation or Species)	(2 factors)	(3 Factors)	
North Desert	349,497	663,939	52,724	63,791	625	1,130,577
AG	9,074	23,789	115	1,386	53	34,418
CG	1,091	88	115	1		1,294
CH	287	1,184	24	155	12	1,661
CN	288	144	70	2		504
CO	11		0			11
CR	858	3,072	31	218	0	4,179
CS	179					179
FW	486	2,137	908	6,668	155	10,354
IC	1,954	1,117	211	83	8	3,374
IN	2,561	2,156	265	50	4	5,036
IR	4,760	7,185	114	433	12	12,504
OS	761	751	32	29	7	1,580
RC	121,156	441,232	20,889	40,376	333	623,986
RL/RL-5	177,153	151,988	27,031	9,236	10	365,419
RL-10/20/40	10,947	16,167	764	1,812	3	29,691
RM	547	222	361	22		1,153
RS	1,375	3,123	6	360	9	4,873
RS-1	10,378	5,456	1,111	470	4	17,419
RS-10M	1,313	131	10	12		1,467
RS-14M	683	582	14	1		1,279
RS-20M	800	170	17			986
SD	2,222	2,215	459	1,510	0	6,405
SP	549	601	138	138		1,427

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Biological Constraints by Land Use Designation within County Land Use Control by Region (Acres)

Region	Least Biologically Constrained Lands	Low Biological Constraints	Low Biological Constraints	Moderate Biological Constraints	High Biological Constraints	Total
	(0 factors)	(Habitat Linkages Only)	(Vegetation or Species)	(2 factors)	(3 Factors)	
Mountains	18,084	44,766	5,109	5,842	296	74,097
AG	283	0	29			312
CG	177	292	11	32	1	513
CN	8	95	2	11		116
CO	2	57		3		62
CS	22	71	22	5		120
FW	232	23	2,971	559	15	3,800
IC	25	56		16		97
IN	136	128	103	20		387
OS		279		89	28	396
RC	3,596	21,489	648	3,086	184	29,004
RL/RL-5	2,403	5,349	261	571	29	8,613
RL-10/20/40	5,941	1,361	361	100	6	7,768
RM	143	484	6	23		657
RS	2,472	3,050	240	302	2	6,067
RS-1	625	1,024	177	215	13	2,054
RS-10M	190	896	14	27		1,128
RS-14M	1,285	6,143	4	304	0	7,735
RS-20M	406	133	187	11		737
SD	125	3,813	71	458	16	4,484
SP		12		6		19

Table 3c
Biological Constraints by Land Use Designation within County Land Use Control by Region (Acres)

Region	Least Biologically Constrained Lands	Low Biological Constraints	Low Biological Constraints	Moderate Biological Constraints	High Biological Constraints	Total
	(0 factors)	(Habitat Linkages Only)	(Vegetation or Species)	(2 factors)	(3 Factors)	
Valley	24,291	9,960	3,322	6,879	1,503	45,956
AG	677		236	12		926
CG	500	5	20	7	4	535
CN	168	26	6	14		214
CO	2	1				2
CS	203		1			204
FW	203	658	352	2,633	793	4,639
IC	1,188		26	0		1,215
IN	338	1	258	21	3	621
IR	1,895		284	45		2,224
OS	0	243		807	180	1,230
RC	107	562	53	245	8	975
RL/RL-5	2,230	824	282	455	35	3,826
RL-10/20/40	1,375	447	1,258	113	35	3,228
RM	1,297	22	32	6		1,357
RS	4,574	228	115	313	53	5,282
RS-1	3,098	962	185	443	13	4,702
RS-10M	627	84	13	5		728
RS-14M	243	544		44	2	834
RS-20M	1,611	10	80	75	13	1,788
SD	2,415	3,233	55	543	148	6,394
SP	1,384	2,068	60	1,046	214	4,773
Total	435,090	900,315	70,511	104,538	2,539	1,512,993

Note: Table does not sum due to rounding and boundary/parcel alignment inconsistencies between data sources.

Table 3d
Biological Constraints by Land Use Designation within All Unincorporated Lands by Region (Acres)

Region	Least Biologically Constrained Lands	Low Biological Constraints	Low Biological Constraints	Moderate Biological Constraints	High Biological Constraints	Total
	(0 factors)	(Habitat Linkages Only)	(Vegetation or Species)	(2 factors)	(3 Factors)	
East Desert	467,736	1,398,138	75,774	110,451	413	2,052,511
AG	7,180		22			7,202
CG	189	234	19	57		499
CN	23	63		18		103
CO	6	64	7			78
CR	0	106		146	11	263
CS	16	110		1		126
FW	30	358	35	533	3	960
IC	20	376	0	18		413
IN	305	1,126	48	45		1,524
IR	116		55			171
OS	1,204	1,058	4	42		2,308
RC	432,251	1,255,015	72,698	89,045	327	1,849,337
RL/RL-5	23,068	131,904	2,617	18,261	62	175,912
RL-10/20/40	893	3,014	0	62		3,969
RM	273	542	2	195		1,012
RS	388	184		23		596
RS-1	752	1,059	107	248		2,166
RS-10M	492	527	8	838	9	1,875
RS-14M	399	517	150	764		1,830
RS-20M	86	325				411
SD	32	1,528	0	150		1,709

Table 3d
Biological Constraints by Land Use Designation within All Unincorporated Lands by Region (Acres)

Region	Least Biologically Constrained Lands	Low Biological Constraints	Low Biological Constraints	Moderate Biological Constraints	High Biological Constraints	Total
	(0 factors)	(Habitat Linkages Only)	(Vegetation or Species)	(2 factors)	(3 Factors)	
North Desert	1,948,383	6,450,950	259,267	1,004,795	6,122	9,669,517
AG	9,541	24,166	124	1,433	53	35,316
CG	1,110	89	115	1		1,315
CH	294	1,272	25	163	12	1,764
CN	288	144	70	2		504
CO	11		0			11
CR	957	3,308	31	278	0	4,574
CS	179					179
FW	528	3,018	1,782	9,058	156	14,542
IC	1,995	1,413	211	134	8	3,761
IN	3,101	2,639	713	68	4	6,524
IR	5,403	7,840	114	711	12	14,081
OS	1,035	2,782	32	1,127	126	5,102
RC	1,712,032	6,193,193	225,292	973,235	5,654	9,109,406
RL/RL-5	182,447	165,722	27,685	9,743	10	385,607
RL-10/20/40	11,327	24,293	823	2,480	3	38,926
RM	548	222	361	22		1,153
RS	1,418	3,127	6	360	9	4,920
RS-1	10,514	5,682	1,112	485	4	17,797
RS-10M	1,313	131	10	12		1,467
RS-14M	695	616	14	1		1,325
RS-20M	800	172	17			988
SD	2,226	2,304	460	1,647	2	6,638
SP	550	610	138	139		1,436

Table 3d
Biological Constraints by Land Use Designation within All Unincorporated Lands by Region (Acres)

Region	Least Biologically Constrained Lands	Low Biological Constraints	Low Biological Constraints	Moderate Biological Constraints	High Biological Constraints	Total
	(0 factors)	(Habitat Linkages Only)	(Vegetation or Species)	(2 factors)	(3 Factors)	
Mountains	99,048	375,104	20,169	39,321	1,137	534,780
AG	285	0	29			313
CG	178	296	11	32	1	518
CN	8	102	2	20		132
CO	3	58		3		64
CS	22	74	22	5		123
FW	391	79	3,514	1,606	37	5,627
IC	25	56		17		98
IN	198	298	137	31		664
OS	0	473		155	35	663
RC	82,757	350,144	15,073	35,377	998	484,349
RL/RL-5	2,420	5,732	293	581	29	9,055
RL-10/20/40	7,387	1,488	369	101	6	9,351
RM	143	519	6	24		692
RS	2,486	3,104	243	305	3	6,140
RS-1	633	1,300	191	233	13	2,370
RS-10M	190	898	14	27		1,130
RS-14M	1,333	6,222	4	306	0	7,865
RS-20M	412	140	187	12		751
SD	128	4,057	73	474	17	4,748
SP		43		8		51

Table 3d
Biological Constraints by Land Use Designation within All Unincorporated Lands by Region (Acres)

Region	Least Biologically Constrained Lands	Low Biological Constraints	Low Biological Constraints	Moderate Biological Constraints	High Biological Constraints	Total
	(0 factors)	(Habitat Linkages Only)	(Vegetation or Species)	(2 factors)	(3 Factors)	
Valley	24,667	10,430	3,349	7,211	1,515	47,173
AG	677		236	12		926
CG	500	5	20	7	4	535
CN	168	26	6	14		214
CO	2	1				2
CS	203		1			204
FW	203	659	352	2,636	793	4,643
IC	1,198		26	0		1,225
IN	515	2	267	21	3	808
IR	1,895		284	45		2,224
OS	0	243		807	180	1,230
RC	107	918	53	530	21	1,628
RL/RL-5	2,249	844	282	457	35	3,866
RL-10/20/40	1,378	451	1,275	113	35	3,252
RM	1,316	22	32	6		1,375
RS	4,620	229	115	313	53	5,330
RS-1	3,182	974	185	445	13	4,800
RS-10M	627	107	13	41		788
RS-14M	243	544		46	2	836
RS-20M	1,624	10	80	75	13	1,802
SD	2,415	3,274	55	545	148	6,436
SP	1,384	2,079	60	1,048	214	4,785
Total	2,539,834	8,234,622	358,560	1,161,778	9,188	12,303,981

Note: Table does not sum due to rounding and boundary/parcel alignment inconsistencies between data sources.