



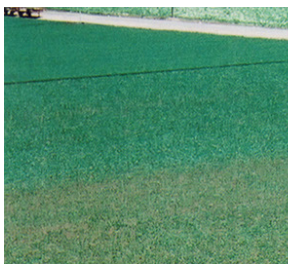
CALIFORNIA DEPARTMENT OF
FOOD & AGRICULTURE

Statewide Plant Pest Prevention and Management Program Environmental Impact Report

Volume 4 - Appendices H through P

December 2014

SCH # 2011062057



Volume 4 – Appendices H through P

FINAL PROGRAM ENVIRONMENTAL IMPACT REPORT

**CALIFORNIA DEPARTMENT OF FOOD AND
AGRICULTURE**

**Statewide Plant Pest Prevention and
Management Program**

SCH #2011062057

Prepared for:

California Department of Food and Agriculture

1220 N Street, Room 221

Sacramento, CA 95814

Contact: Laura Petro, Senior Environmental Scientist (Supervisory)

lpetro@cdfa.ca.gov

Prepared by:

Horizon Water and Environment, LLC

180 Grand Avenue, Suite 1405

Oakland, California 94612

Contact: Michael Stevenson

(510) 986-1852

December 2014

Horizon Water and Environment. 2014.
*Statewide Plant Pest Prevention and Management Program –
Final Program Environmental Impact Report.* December.
(HWE 11.001) Oakland, CA.

CONTENTS – VOLUME 4 – APPENDICES H-P

Appendix H	Air Quality and Greenhouse Gas Technical Report
Appendix I	Special Status Species in California
Appendix J	Sensitive Natural Communities in California
Appendix K	Potential Effects of Pesticide Use and Other Stressors on Pollinators and Associated Biological Resources
Appendix L	Crosswalk Between Surrogate Species and Californian Native Wildlife Species Federally or State Listed as Threatened or Endangered
Appendix M	List of Chemicals and Synonyms of Chemical Names
Appendix N	Noise Technical Report
Appendix O	Regulatory Setting
Appendix P	Mitigation Reporting Program

CONTENTS – OTHER VOLUMES

Volume 1 – Final PEIR Main Body

Executive Summary	
Chapter 1	Introduction
Chapter 2	Proposed Program Description
Chapter 3	Proposed Program Activities
Chapter 4	Prior CEQA Coverage
Chapter 5	Cumulative Scenario
Chapter 6	Environmental Setting and Impacts Analysis
Chapter 7	Alternatives Analysis
Chapter 8	Other Statutory Considerations
Chapter 9	Glossary
Chapter 10	Report Preparation
Chapter 11	References

Volume 2 – Appendix A

Appendix A	Ecological Risk Assessment
------------	----------------------------

Volume 3 – Appendices B-G

Appendix B	Human Health Risk Assessment
Appendix C	CEQA Tiering Strategy
Appendix D	Program Scoping Report
Appendix E	CDFA’s Statewide General NPDES Pesticide Permit
Appendix F	Pest Profiles
Appendix G	2003 Pierce’s Disease Control Program Environmental Impact Report Court of Appeal Decision

Volume 5 – Comments and Responses to Comments on the Draft PEIR

Chapter 1	Introduction
Chapter 2	Master Responses
Chapter 3	Individual Responses to Comments
Chapter 4	List of Letters Addressed Entirely by Master Responses
Chapter 5	Form Letters
Chapter 6	Revisions to the Draft PEIR
Chapter 7	Report Preparation
Chapter 8	References
Chapter 9	Glossary and Acronyms
Attachment A	Draft PEIR Notices and Mailing List
Attachment B	Draft PEIR Meeting Materials
Attachment C	Copies of Letters Addressed Entirely by Master Responses
Attachment D	Copies of Form Letters

Appendix H

Air Quality and Greenhouse Gas Technical Report

Contents

Introduction..... H-1

Emissions Calculation Methodology..... H-1

 Off-Road Equipment Emissions H-2

CEQA Significance Comparison..... H-17

Program Activity Emissions..... H-19

References H-43

Tables

Table H-1. Fuel-Based Application Equipment Types for the Statewide Program H-2

Table H-2. Applicant Equipment Assigned to Active Ingredients for the Statewide Program H-3

Table H-3. Active Ingredients Estimated Usage for the Statewide Program (2010) H-7

Table H-4. Aircraft and Other Equipment Activity Usage for the Statewide Program Sterile
 Insect Release H-9

Table H-5. Average Vehicle Miles Traveled for the Statewide Program, 2008-2010..... H-11

Table H-6. Vehicle Classes Assigned to the Statewide Program Vehicle Miles Traveled..... H-15

Table H-7. Ratio of County Acreage in California Air Basins H-17

Table H-8. CEQA Mass Emission Significance Thresholds..... H-19

Table H-9. Application Equipment Emissions by County H-21

Table H-10. Sterile Insect Release Emissions by County H-27

Table H-11. On-Road Vehicle Emissions by County H-29

Table H-12. Fuel Consumption for the Statewide Program H-37

Table H-13. Total Baseline and Estimated Future Statewide Program Emissions by Air Basin..... H-39

Attachments

Attachment 1 Emission Factors

Acronyms and Abbreviations

BAAQMD	Bay Area Air Quality Management District
BCA	biological control agent
CARB	California Air Resources Board
CDFA	California Department of Food and Agriculture
CDPR	California Department of Pesticide Regulation
GHG	greenhouse gas
LDA	light-duty auto
LDT1	light-duty truck type 1
LDT2	light-duty truck type 2
LHDT1	light-heavy-duty truck type 1
LHDT2	light-heavy-duty truck type 2
MDV	medium-duty vehicles
NO _x	mono-nitrogen oxides
OFFROAD2007	In-Use Off-Road Equipment Inventory Model 2007
OFFROAD2011	In-Use Off-Road Equipment Inventory Model 2011
PEIR	Program Environmental Impact Report
PM	particulate matter
PM _{2.5}	particulate matter with aerodynamic radius of 2.5 micrometers or less
PM ₁₀	particulate matter with aerodynamic radius of 10 micrometers or less
ROGs	reactive organic gases
Statewide Program	Statewide Plant Pest Prevention and Management Program
VMT	vehicle miles traveled
VOCs	volatile organic compounds

Introduction

This section describes the methodology and assumptions used to estimate criteria air pollutant, greenhouse gas (GHG) emissions and petroleum-based fuel use associated with the California Department of Food and Agriculture's (CDFA) Statewide Plant Pest Prevention and Management Program (Statewide Program) activities. Details for various data sources are also presented. The resulting estimates for air emissions and fuel use inventory are given for the baseline condition (i.e., average amounts generated by activities currently being conducted under the Statewide Program) and for the Proposed Program (i.e., anticipated amounts expected to be generated by future activities under the Statewide Program). Note that the emissions estimates include both activities conducted by CDFA and its contractors, as well as activities conducted by other parties (e.g., growers) in response to quarantines. Due to the methodology used, it was not possible to show these two categories of emissions separately.

These estimates have been used in making significance determinations in Section 6.2, Air Quality, and Section 6.4, Global Climate Change of the Final Program Environmental Impact Report (PEIR). Environmental settings for air quality and greenhouse gases also are discussed in those sections, respectively, and regulatory settings are provided in Appendix O, Regulatory Setting.

Emissions Calculation Methodology

Air pollutant emissions from a given source or source category generally are calculated as the product of an emission rate, expressed as the amount of a pollutant emitted per some unit of source activity, and a measure of that source's activity. The following formula illustrates the basic relationship between the emissions rate (known as an emission factor) and source activity used to calculate emissions:

$$\text{Emissions} = \text{Emission Factor} \times \text{Source Activity}$$

This formula can be applied to calculate emissions from different source categories. For this analysis, emissions were calculated for activities that would use off-road equipment (e.g., tractors used for pesticide applications on farms), aircraft (infrequently used for activities such as sterile insect release), and on-road vehicles. A description of the methods, assumptions, and sources used to calculate the emissions for each of these source categories is provided below. The specific emission factors used for each source category are provided in Attachment G-1.

Emission factors were obtained for calendar years 2010, 2014, 2020, 2030 and 2035. To establish baseline conditions for CEQA analysis, 2010 represents the year in which the Notice of Preparation of the Draft PEIR was circulated, and 2014 represents the year that the Draft PEIR is to be publically circulated. Several future dates also were evaluated to represent regulatory effects on emissions in the future.

Baseline conditions were calculated by averaging readily available information from the period 2008 through 2010. Multiple years were chosen because activities have varied under

the Statewide Program in different years. Therefore, the average of these 3 years was considered to better represent a typical year under baseline conditions, as opposed to selecting one single year. It is possible that these particular years may have involved an unusually high or low amount of Statewide Program activities in a particular air basin. However, the location and intensity of Statewide Program activities is inherently highly variable from year to year, based on the locations of pest infestations and quarantines. For this reason, earlier years were considered for use in the analysis, but it was determined that they would not provide more representative data. In addition, the use of different years for the analysis would not change the overall impact conclusions for the Proposed Program.

If information was not readily available for 2008 and 2009, data from 2010 was used. Where information was not available for a given year, the average value between years that had activity was used since it was not always known if lack of information meant no activity or unavailable information.

Emissions have been estimated both for activities conducted by CDFA and its contractors, as well as activities conducted by other parties (e.g., growers) in response to quarantines. Off-road emissions are primarily related to quarantines.

Off-Road Equipment Emissions

Off-road equipment is used in host removal activities and pesticide applications. Host removal primarily is conducted with hand tools and by other non-mechanized approaches. Several different types of equipment can be used to apply pesticides. This includes airblast sprayers, backpack sprayers, bait stations, fumigation sprayer, irrigation pumps, mechanically pressurized sprayers, STATIC, and tank sprayers. Equipment which uses manual mechanisms to operate (e.g., backpack sprayers, STATIC) does not have any off-road equipment emissions associated with it, and so has not been included in this analysis.

Emissions were estimated for the fuel-based off-road equipment used in different management activities that are listed in Table H-1. Emissions from tractor-mounted sprayers that are powered by a tractor engine were not calculated separately because these emissions were assumed to be included in tractor operation emissions. Additional sprayers and injectors, powered by electricity or compressed air tanks, also may be used during Statewide Program activities; however, emissions from such equipment likely are minor and thus were not considered in the emissions calculations.

Table H-1. Fuel-Based Application Equipment Types for the Statewide Program

Application Equipment	Horsepower	Load Factor
Agricultural Tractors	120	0.70
Off-Highway Trucks	372	0.38
Pumps	10	0.74
Sprayers	4	0.50
Aircraft	--	--

Note: Horsepower data were provided by CDFA; otherwise, they were assigned the default from OFFROAD2011. Load factors are from OFFROAD2011 defaults. Horsepower and load factor for aircraft is blank because this information is not required to calculate aircraft emissions.

Off-Road Equipment Emission Factors

Off-road diesel equipment emission factors were calculated using emission factor and fuel consumption data from the California Air Resources Board's (CARB) In-Use Off-Road Equipment Inventory Model 2011 (commonly known as OFFROAD2011) and In-Use Off-Road Equipment Inventory Model 2007 (OFFROAD2007) models (CARB 2007, 2011). OFFROAD2007 was used for those equipment types that have not been updated by CARB in newer models, including agriculture equipment and small gasoline powered equipment.

Off-Road Equipment Activity

The majority of off-road activity is associated with pesticide application. Various types of pesticide application methods exist for any given active ingredient. Many of the pesticide applications under the Statewide Program are conducted by individual growers; information is not available regarding the specific distribution of application methods used by these growers. Therefore, out of the range of application methods available for a given active ingredient contained in a pesticide, the application method with the highest emission intensity per pound of active ingredient was conservatively selected for each active ingredient. Furthermore, more than one type of pest may be controlled by a given active ingredient, and the application method with the highest emission intensity was used across pest control programs. The application rate of pounds of active ingredient per acre is consistent with the information used in Appendices A and B (Ecological Risk Assessment and Human Health Risk Assessment, respectively) and primarily is based on product labeling information.

Because most emission factors for off-road equipment are reported in units of grams per horsepower per hour, the amount of time off-road equipment would need to operate per acre treated was necessary to estimate emissions. Mobile off-road equipment was assumed to move at a rate of 3 miles per hour, at a width of 10 feet for sprayers and 20 feet for equipment moved with a tractor. From the equipment speed and width, the amount of time required to cover an acre was calculated. Drip irrigation pumps were assumed to operate for 7 hours per acre. Table H-2 shows the off-road equipment that was used to represent each active ingredient. In some instances, the application method with the highest emission intensity was aircraft. Aircraft emissions are detailed in the subsequent section. If the most intense application method varied by pollutant, the application method that had the most pollutants for a given active ingredient was selected.

Table H-2. Applicant Equipment Assigned to Active Ingredients for the Statewide Program

Active Ingredient	Equipment Type	Activity Rate	Units
1,2,4-Trimethylbenzene	Agricultural Tractors	16.67	hr/lb AI
1,2-propanediol	Sprayers	16.67	hr/lb AI
acetamiprid	Agricultural Tractors	2.38	hr/lb AI
Aliphatic hydrocarbons C9-C16	Agricultural Tractors	3.36	hr/lb AI
Alkyl biphenyl mixture	Agricultural Tractors	1.52	hr/lb AI

Active Ingredient	Equipment Type	Activity Rate	Units
carbaryl	Agricultural Tractors	0.20	hr/lb AI
Cumene	Sprayers	107.14	hr/lb AI
Cyclohexanone	Agricultural Tractors	5.00	hr/lb AI
cyfluthrin	Agricultural Tractors	8.00	hr/lb AI
Diatomaceous earth	Sprayers	2.45	hr/lb AI
diazinon	Sprayers	0.06	hr/lb AI
dinotefuran	Pumps	0.69	hr/lb AI
Fenpropathrin	Agricultural Tractors	0.50	hr/lb AI
Glycerin	Pumps	0.65	hr/lb AI
Glyphosate	Sprayers	0.96	hr/lb AI
Imidacloprid	Sprayers	11.28	hr/lb AI
kaolin clay	Agricultural Tractors	10.53	hr/lb AI
lambda-cyhalothrin	Sprayers	8.72	hr/lb AI
malathion	Aircraft-spray	5.71	Acres/lb AI
methoxyfenozide	Sprayers	2.01	hr/lb AI
Naphthalene	Agricultural Tractors	28.57	hr/lb AI
Naphthalene sulfonic acid polymer	Agricultural Tractors	3.55	hr/lb AI
permethrin	Agricultural Tractors	1.00	hr/lb AI
pyrethrins	Agricultural Tractors	4.08	hr/lb AI
Quartz	Agricultural Tractors	20.00	hr/lb AI
silica gel	Agricultural Tractors	20.00	hr/lb AI
Solvent naphtha	Agricultural Tractors	1.81	hr/lb AI
Spinosad	Aircraft-spray	3,205.13	Acres/lb AI
Starch	Sprayers	2.45	hr/lb AI
Thiamethoxam	Sprayers	2.45	hr/lb AI
Xylenes	Sprayers	107.14	hr/lb AI

Notes:

hr = hour; lb = pound; AI - Active Ingredient

1. Activity rate is based on the application rate as specified by product information and consistent with the human health risk assessment prepared for this Final PEIR. It was assumed that mobile off-road equipment moved at a rate of 3 miles per hour and width of 10 feet for sprayers, 20 feet for equipment moved with a tractor. From the equipment speed and width, the amount of time required to cover an acre was calculated. Drip irrigation pumps were assumed to operate for 7 hours per acre.

The emission intensity per pound of active ingredient was combined with the total active ingredient pounds reported per county by the California Department of Pesticide

Regulation (CDPR) in its 2010 annual pesticide use report (CDPR 2011). CDPR's annual reports do not distinguish between use of an active ingredient under the Statewide Program versus use of that same active ingredient for other purposes, and no other readily available source exists for such information. Therefore, CDPR reports may include use of an active ingredient to control pests that are not part of the Statewide Program, or other activities which were not conducted under the Statewide Program. To help address this issue, this evaluation was restricted to the total pounds of active ingredient used in counties where Statewide Program-focused pests and/or host plants were known to exist in 2010, and those areas that had active quarantines or eradication activities conducted under the Statewide Program in 2010. The total pounds of active ingredients used to estimate emissions are shown in Table H-3.

For Proposed Program activities using off-road equipment, a similar intensity of activity initially was assumed to occur. The differences in final emissions in future years is a reflection of anticipated equipment fleet emission reductions that is expected to occur based on existing federal and state regulations. Although the analysis used various conservative assumptions to estimate emissions when specific values were unknown, these do not affect the conclusions based on the incremental change between the future and the baseline conditions because the same methodologies were used in both the baseline and future conditions estimates. Thus, any over- or under-estimation of emissions of the baseline condition resulting from the activities assumptions would be the same order of magnitude in the future.

Aircraft Emissions

Emissions were calculated for aircraft that are used in aerial release of biological control agents (BCAs) and for aerial spraying in nursery and agricultural (not residential) settings. For release of BCAs, a Beechcraft King Air 90A aircraft was selected as representative of the type of aircraft that may be used. A Robinson R44 helicopter was evaluated as an alternative. Aerial spraying in compliance with quarantines is generally infrequent, but has occurred in the past on a periodic basis under the Statewide Program. In the event that a grower might opt to spray his commodity by air to meet quarantine requirements, he would use a licensed pest control business. For the purposes of this analysis, use of a Fletcher FU-24A was assumed for such activities.

Aircraft Emission Factors

CARB has developed weighted average emission factors from several types of aircraft and helicopters typically used in agricultural settings. This analysis used these weighted values in pounds per gallon of fuel (CARB 1990). Hydrocarbon emissions were assumed to be equal to reactive organic gases (ROGs). In addition, it was conservatively assumed that particulate matter (PM) represented both particulate matter with aerodynamic radius of 10 micrometers or less (PM₁₀) and particulate matter with aerodynamic radius of 2.5 micrometers or less (PM_{2.5}). GHG emissions were estimated based on the jet fuel emission factor from the Local Governments Operation Protocol (CARB 2010). To convert from acres of land sprayed to fuel consumption, a factor of 0.1053 gallons of fuel per acre was used, as recommended by the Bay Area Air Quality Management District (BAAQMD) to reflect the average fuel consumption during aerial spraying (BAAQMD 1999). It was conservatively assumed that aircraft emission factors would not change over time.

This page left intentionally blank.

Table H-3. Active Ingredients Estimated Usage for the Statewide Program (2010)

County	Active Ingredients Pounds																				Total			
	Acephate	Acetamiprid	<i>B. thuringiensis, Kurstaki</i>	Bifenthrin	Carbaryl	Chlorantraniliprole	Chlorpyrifos	Cyfluthrin	Diazinon	Dinotefuran	Fenpropathrin	Imidacloprid	Lambda-cyhalothrin	Malathion	Methoxyfenozide	Methyl Bromide	Neem Oil	Permethrin	Pyrethrins	Spinosad		Spirotetramat	tau-Fluvalinate	Thiamethoxam
Alameda			0			21						8			0					0				29
Contra Costa			0			18						113			424					1				556
Fresno	29,163	2,638		1,855	2,722	478	110,163	35,688		2,208	17,221			12,050		2,048	6,409	51	735			1		223,430
Imperial	5,902	140		378	0		122	12		0	53	6,382			141	4,464	3,993	100		17		0	0	21,703
Kern	5,746	2,645		7,900	4,225		112,253	1,116	274		3,271	35,134	13,282		138,814	11,898	16,210	173	2,546			2		355,488
Lake						0									0					0				0
Los Angeles	999	35		98	186		276	5	48	24	1,117				72,597	221	33	3		1	73	2	75,718	
Marin			0			0						0			0					0				0
Mendocino						16									260					8				283
Merced						0									1,438					134				1,572
Monterey			3,549			810						252		25,704						2,010				32,325
Napa			27			2,811						0		8,769						210				11,816
Orange	901	45		216	586		405	16	71	67	59				0	304	105	6		3	74	19	2,876	
Riverside	366	261		178	159		3,603	199	39	110	4,378				2,751	6,916	456	28		1	93	59	19,598	
Sacramento	304	105		15	5,688		3,117	13		109	3,777					0	0	29,163				110,163		152,453
San Benito			492			102						71		411						174				1,251
San Bernardino	430	22		0	34		2,290	0	3	0	74				48	0	3	1		0	0	0		2,904
San Diego	1,507	78		447	276		1,498	23	218	54	686				2,378	156	362	58		21	95	44	7,900	
San Francisco			0			0						0		0						0				0
San Joaquin			377			579						2,711		8,569						39				12,275
San Mateo			2			1						0		8						40				52
Santa Barbara	8,339	85		24	0		2,807	158	121	1	6,391				4,307	2,566	5,244	37		8	44	0	30,133	
Santa Clara	2,438	28	1	144	2	87	281	9		7	538	40		158		0	233	1	203			6		4,177
Santa Cruz			2,448			3						7		97						326				2,881
Solano	8	34	69	176	372	56	6,674	35		3	146	720		453		0	93	2	8			0		8,849
Sonoma			16			719						0		2,494						41				3,270
Tulare	2,185	2,836		942	24,415		130,959	726		4,568	19,239					367	2,119	319				0		188,674
Ventura	1,086	99		32	127,297		25,035	12	141	280	1,508				182,954	643	718	349		3	123	13	340,293	
Total	59,373	9,051	6,981	12,405	165,961	5,701	399,483	38,011	274	640	10,755	96,648	3,923	13,282	60,835	403,989	29,584	35,979	30,293	6,476	54	110,674	137	1,500,508

Notes:

ACP = Asian Citrus Psyllid; CDFA = California Department of Food and Agriculture; EGVM = European Grape Vine Moth; FF = fruit fly; GWSS = Glassy Winged Sharp Shooter; LBAM = Light Brown Apple Moth

1. Values designated as 0 represent less than 1 pound of active ingredient reported. Empty cells indicate that no active ingredients were used under the Statewide Program in 2010.

2. Counties not shown had no Statewide Program activities in 2010.

3. Pesticide use by county was obtained from CDPR's Pesticide Use database for 2010.

4. CDFA had quarantines in 2010 as follows:

GWSS quarantines: Fresno, Imperial, Kern, Los Angeles, Orange, Riverside, Sacramento, San Bernardino, San Diego, Santa Barbara, Santa Clara, Solano, Tulare, Ventura

ACP quarantines: Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Santa Barbara, Ventura

Melon FF)quarantines: Kern

LBAM quarantines: Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma

EGVM quarantines: Fresno, Lake, Mendocino, Merced, Napa, San Joaquin, Santa Clara, Solano, Sonoma

5. CDFA indicated the following host plants (listed in CDPR's pesticide use database) should be selected for each of the following pest programs:

ACP: greenhouse-grown flowers, greens and container plants; outdoor container and field grown plants; regulatory pest control; unspecified outdoor containers and greenhouses; soil application, preplant-outdoor; all citrus; all ornamentals; commodity fumigation (for ACP-16); flavoring and/or spice crops; and uncultivated agricultural areas.

GWSS: greenhouse-grown container plants; outdoor grown transplant/propagative material; regulatory pest control; unspecified outdoor containers/greenhouses; soil application, preplant-outdoor; all citrus; all ornamentals; apply; asparagus; avocado; flavoring and/or spice crops; grape; leafy vegetables; lettuce; mango; olive; orchards; pea; pepper; persimmon; pistachio; plum; potting soil; sage; sorghum; sunflower; vegetables; and walnut.

LBAM: greenhouse-grown flowers, greens and container plants; outdoor container and field grown plants; outdoor grown transplant propagative material; regulatory pest control; unspecified outdoor containers/greenhouses; soil application, preplant-outdoor; alfalfa; almond; apple; apricot; bean; blackberry; blueberry; broad bean; broccoli; cabbage; carrot; celery; Chinese cabbage; common bean; corn; cucumber; grapes; mustard; olive pea; peach; pear; pepper; plum; potato; pumpkin; radish; raspberry; sage; strawberry; tomato; and walnut.

Melon FF: greenhouse-grown cut flowers, greens and plants in containers; outdoor container/field grown plants; outdoor grown transplant/propagative material; regulatory pest control; unspecified outdoor containers/greenhouses; all melon; apple; cantaloupe; cauliflower; commodity fumigation; eggplant; fumigation; mustard; orange; peppers; pumpkin; tomato.

Mediterranean FF: greenhouse-grown cut flowers, greens and plants in containers; outdoor container/field grown plants; outdoor grown transplant/propagative material; regulatory pest control; unspecified outdoor containers/greenhouses; apple; apricot; avocado; bell pepper; carambola (starfruit); coffee; dates; fig; grape; grapefruit; guava; lemon; lime; loquat; lychee; mango; nectarine; orange; papaya; peach; pear; persimmon; plum; pomegranate; pummelo (pomelo); quince; sapote; tangerine; tomato; and walnut.

EGVM: greenhouse-grown cut flowers, greens and plants in containers; outdoor grown container/field grown plants; outdoor grown transplant/propagative material; regulatory pest control; unspecified outdoor containers/greenhouses; grape; olive; pomegranate; stone fruit.

Aircraft Activity

Aerial spraying is one potential application method for particular active ingredients in nursery and agricultural settings in response to quarantines under the Statewide Program. Similar to the estimation methods for activities involving off-road equipment, the emission intensity per pound of active ingredient was determined for the aircraft used in aerial spraying. If aircraft was the most intense emission application method, the application rate of pounds of active ingredient per acre, along with the pounds of active ingredient used based on the total active ingredient pounds reported in CDPR's 2010 annual pesticide use report (CDPR 2011), was used to estimate fuel consumption. This is likely to overestimate emissions, as typically less emission intense application methods would be used, but was selected as a conservative (i.e., worst-case) estimate of emissions. See Table H-2 for active ingredients that assumed aerial spraying as the most intense emission application method.

Aerial release of sterile insects occurred for fruit flies and pink bollworm in the baseline. Data tracked by CDFA for Mediterranean fruit fly (Medfly) sterile insect releases included both fuel consumption and total flight hours. This was used to estimate the average fuel consumption per hour of flight—59.7 gallons of fuel per hour of flight. In contrast, CDFA only tracked the number of hours of flight for the pink bollworm, but this was assumed to have the same fuel consumption as the Medfly sterile insect release aircraft. When information was available for multiple years (2008 through 2010), a 3-year average was used to represent the baseline. In addition, various ground-based diesel support equipment (such as refrigerated trucks) was used for the Medfly sterile insect program. It was assumed that this was represented by the off-highway truck category in CARB's OFFROAD2011 model, discussed above. Table H-4 shows the aircraft activity information.

Table H-4. Aircraft and Other Equipment Activity Usage for the Statewide Program Sterile Insect Release

County	Fuel in Gallons	Equipment Type
Orange	472,637	Aircraft
Orange	5,902	Off-Highway Trucks
Imperial	2,515	Aircraft
Riverside	5,029	Aircraft

Notes:

IPC = Integrated Pest Control; Medfly = Mediterranean fruit fly; PBW = pink bollworm

1. Activity represents the average for 2008 through 2010, as provided by CDFA.
2. PBW data was provided in terms of hours of flight time. To convert to gallons of fuel, the average fuel consumption per hour from the Medfly program data was used: 59.7 gallons per hour.

For the purposes of developing an initial estimate of future Proposed Program emissions, a similar intensity of activity was assumed to occur. Although the analysis used various conservative assumptions to estimate emissions when specific values were unknown, these do not affect the conclusions based on the incremental change between the future and baseline conditions because the same methodologies were used in both the baseline and

future estimates. Thus, any over- or under-estimation of emissions of the baseline condition resulting from the activity assumptions would be the same order of magnitude in the future.

On-Road Vehicle Emissions

On-road vehicle emissions were estimated for survey, detection, and eradication activities and for other travel conducted by CDFA in administering the Statewide Program. This included CDFA staff or contractors traveling to residential areas to apply pesticides or set traps. Agricultural operations were assumed to generate no additional on-road vehicle miles beyond their normal activities in response to Statewide Program quarantines (off-road activity is addressed separately).

On-Road Vehicle Emission Factors

On-road vehicle emission factors were calculated using emission factor and fuel consumption data from the CARB EMFAC 2011 model (CARB 2013). Emission factors were obtained for calendar years 2010, 2014, 2020, 2030 and 2035. Emission factors were estimated on a statewide basis only and aggregated over all models and speeds for a given calendar year. Emission factors were used based on specific vehicle classes listed in EMFAC 2011, such as light-duty auto (LDA), light-duty trucks type 1 and 2 (LDT1 and LDT2), medium-duty vehicles (MDV), and light-heavy-duty trucks type 1 and 2 (LHDT1 and LHDT2).

On-Road Vehicle Activity

CDFA has estimates of vehicle miles traveled (VMT) for Statewide Program activities. For counties where multiple years were estimated by CDFA, an average of non-zero values was used for each county to represent the baseline condition. Multiple years were chosen because different activities occur under the Statewide Program in any given year. Therefore, the average of these 3 years was considered to better represent a typical year under baseline conditions, as opposed to selecting one single year. If information was given for combined counties, the VMT were allocated based on the ratio of total county acreage.

The vehicle classes associated with the VMT estimates for Statewide Program activities were provided in some cases, but not all. Table H-5 shows the VMT estimated for each county. In general, non-chemical spraying activities (e.g., detection surveys and use of traps) tended to use smaller vehicles, such as LDA, LDT1, LDT2, and MDVs. In general, chemical spraying activities used in residential eradication programs tended to use larger vehicles, such as MDV, LHDT1, and LHDT2. If a specific percentage breakdown of vehicle classes was available, this was used. If no specific breakdown was provided, the vehicle mix it was assumed to be 47.5 percent LDT1, 47.5 percent LDT2, and 5 percent MDV, with the exception of chemical spraying activities, for which the vehicle mix was assumed to be 33.3 percent MDV, 33.3 percent LHDT1, and 33.3 percent LHDT2 based on CDFA recommendations. The percentage of diesel versus gasoline vehicles was assumed to be the same as the EMFAC 2011 statewide distribution of fuel types for a specific vehicle class based on total VMT. Table H-6 shows the vehicle class assignments.

Table H-5. Average Vehicle Miles Traveled for the Statewide Program, 2008-2010

County	Vehicle Miles Traveled by Program												Total	
	ACP	EGVM	FF-E	FF-T	IPC-D	LBAM	PDCP	PDCP-D	PDEP-DTr	PDEP-E	PDEP-Etr	SODP		
Alameda	0	0	0	0	0	0	0	0	70,935	135,184	0	509	1,469	208,097
Alpine	0	0	0	0	0	0	0	0	7,258	1,072	0	0	0	8,330
Amador	0	0	0	0	0	0	0	0	2,982	3,575	0	0	0	6,557
Butte	0	0	0	0	0	0	0	0	15,420	37,448	0	0	0	52,868
Calaveras	0	0	0	0	0	0	0	0	8,245	8,280	0	0	0	16,525
Colusa	0	0	0	0	558	0	0	0	2,217	3,695	0	0	0	6,470
Contra Costa	0	0	0	0	0	0	0	0	74,949	141,721	0	0	3,014	219,684
Del Norte	0	0	0	0	0	0	0	0	0	3,778	0	0	0	3,778
El Dorado	0	0	0	0	0	0	0	0	17,537	2,590	0	0	0	20,127
Fresno	0	0	0	0	13,622	0	14,724	205,284	418,414	514	0	0	0	652,558
Glenn	0	0	0	0	528	0	0	0	3,034	3,911	0	0	0	7,474
Humboldt	0	0	0	0	0	0	0	0	4,385	2,509	0	0	8,344	15,238
Imperial	480,480	0	0	0	0	0	0	0	56,102	129,371	14,399	0	0	680,352
Inyo	0	0	0	0	0	0	0	0	0	1,177	0	0	0	1,177
Kern	0	0	0	123,552	11,254	0	0	0	31,401	102,105	100,232	0	0	368,544
Kings	0	0	0	0	16,280	0	0	0	55,351	34,029	0	0	0	105,661
Lake	0	0	0	0	0	0	0	0	9,660	9,503	0	0	1,017	20,179
Lassen	0	0	0	0	0	0	0	0	0	3,540	0	0	0	3,540
Los Angeles	480,480	0	172,800	0	0	845,520	0	0	156,709	1,486,820	114,293	27,310	0	3,283,931
Madera	0	0	0	0	1,414	0	0	0	37,201	46,583	0	0	0	85,198
Marin	0	0	0	0	0	0	0	0	13,815	36,592	0	0	1,929	52,336
Mariposa	0	0	0	0	0	0	0	0	2,455	9,960	0	0	0	12,415
Mendocino	0	0	0	0	0	0	0	0	6,128	22,667	4,061	0	4,620	37,476
Merced	0	0	0	0	13,627	0	0	0	32,241	38,980	1,374	0	0	86,222

County	Vehicle Miles Traveled by Program											Total	
	ACP	EGVM	FF-E	FF-T	IPC-D	LBAM	PDCP	PDCP-D	PDEP-DTr	PDEP-E	PDEP-Etr		SODP
Modoc	0	0	0	0	0	0	0	0	2,828	0	0	0	2,828
Mono	0	0	0	0	0	0	0	0	361	0	0	0	361
Monterey	0	0	0	0	0	0	0	49,239	36,948	0	0	1,391	87,579
Napa	0	196,560	0	0	0	0	0	19,906	19,507	0	0	266	236,239
Nevada	0	393,120	0	0	0	0	0	1,201	5,570	0	0	0	399,891
Orange	480,480	0	0	0	0	0	0	27,696	655,460	10,785	18,206	0	1,192,627
Placer	0	0	0	0	0	0	0	17,013	30,000	0	0	0	47,013
Plumas	0	0	0	0	0	0	0	0	2,417	0	0	0	2,417
Riverside	480,480	0	0	0	0	0	0	63,039	519,959	1,654	0	0	1,065,132
Sacramento	0	0	43,200	0	0	1,268,280	0	97,649	248,968	4,596	0	0	1,662,693
San Benito	0	0	0	0	0	0	0	4,438	10,710	0	0	0	15,148
San Bernardino	480,480	0	43,200	0	0	0	0	1,248	198,160	7,527	0	0	730,615
San Diego	480,480	0	43,200	370,656	0	0	0	115,949	781,300	43,294	0	0	1,834,879
San Francisco	0	0	0	0	0	0	0	4,532	4,818	0	0	8	9,358
San Joaquin	0	0	0	0	0	2,113,800	0	91,400	97,643	970	2,453	0	2,306,266
San Luis Obispo	0	0	0	0	0	845,520	0	42,393	33,600	0	0	0	921,513
San Mateo	0	0	0	0	0	0	0	46,051	350,667	0	0	2,778	399,495
Santa Barbara	480,480	0	0	0	0	845,520	0	5,830	180,172	0	0	0	1,512,002
Santa Clara	0	196,560	0	0	0	0	10,933	71,998	370,776	1,905	0	6,173	658,345
Santa Cruz	0	196,560	0	0	0	0	0	30,555	18,898	0	0	600	246,613
Shasta	0	0	0	0	0	0	0	12,355	16,837	0	0	0	29,192
Sierra	0	0	0	0	0	0	0	0	889	0	0	0	889
Siskiyou	0	0	0	0	0	0	0	0	12,500	0	0	0	12,500
Solano	0	196,560	0	0	0	1,268,280	0	45,926	29,396	13,326	0	4,856	1,558,343
Sonoma	0	393,120	0	0	0	422,760	0	52,904	44,857	0	0	644	914,284

County	Vehicle Miles Traveled by Program											Total	
	ACP	EGVM	FF-E	FF-T	IPC-D	LBAM	PDCP	PDCP-D	PDEP-DTr	PDEP-E	PDEP-Etr		SODP
Stanislaus	0	0	0	0	0	0	0	77,912	129,333	0	0	0	207,244
Sutter	0	0	0	0	192	0	0	4,872	10,133	0	0	0	15,197
Tehama	0	0	0	0	0	0	0	9,381	6,966	0	0	0	16,347
Trinity	0	0	0	0	0	0	0	4,982	3,257	0	0	0	8,240
Tulare	0	0	0	0	5,888	0	21,654	174,122	113,989	0	0	0	315,653
Tuolumne	0	0	0	0	0	0	0	9,170	7,514	0	0	0	16,684
Ventura	480,480	0	0	0	0	422,760	0	138,983	117,428	50,500	0	0	1,210,151
Yolo	0	0	0	0	42	422,760	0	10,552	15,010	0	0	0	448,363
Yuba	0	0	0	0	0	0	0	1,258	14,299	0	0	0	15,556
Total	3,843,840	1,572,480	302,400	494,208	63,406	8,455,200	47,311	2,045,860	6,774,673	369,428	48,478	37,109	24,054,393

Notes:

ACP = Asian Citrus Psyllid; EGVM = European Grape Vine Moth; FF-E = fruit fly eradication; FF-T = fruit fly treatment; IPC-D = Integrated Pest Control Detection; LBAM = Light Brown Apple Moth; PD/EP-DTr = Pest Detection/Eradiation Program-Detection Trapping; PD/EP-E = Pest Detection/Eradiation Program-Eradication; PD/EP-Etr = Pest Detection/Eradiation Program -Eradiation Trapping; PDCP = Pierce's Disease Control Program; PDCP-D = Pierce's Disease Control Program-Detection; SODP = Sudden Oak Death Program

1. Vehicle miles traveled information was provided by CDFA. Information was average for 2008 through 2010 time frame. If information was not available for a given year, the average value between non-zero years was used.

Page left intentionally blank.

Table H-6. Vehicle Classes Assigned to the Statewide Program Vehicle Miles Traveled

Program Type	Vehicle Class	Ratio
ACP	LDT1	0.10
ACP	LDT2	0.10
ACP	MDV	0.80
EGVM	LDA	0.70
EGVM	MDV	0.30
FF-E	LDA	0.90
FF-E	LDT1	0.05
FF-E	LDT2	0.05
FF-T	LDA	0.10
FF-T	LDT1	0.25
FF-T	LDT2	0.25
FF-T	MDV	0.40
IPC-D	LDT1	0.48
IPC-D	LDT2	0.48
IPC-D	MDV	0.05
LBAM	LDT1	0.40
LBAM	LDT2	0.40
LBAM	MDV	0.20
PD/EP-DTr	LDT1	0.48
PD/EP-DTr	LDT2	0.48
PD/EP-DTr	MDV	0.05
PD/EP-E	LHDT1	0.33
PD/EP-E	LHDT2	0.33
PD/EP-E	MDV	0.33
PD/EP-Etr	LDT1	0.48
PD/EP-Etr	LDT2	0.48
PD/EP-Etr	MDV	0.05
PDCP	LHDT1	0.33
PDCP	LHDT2	0.33
PDCP	MDV	0.33
PDCP-D	LDT1	0.48
PDCP-D	LDT2	0.48
PDCP-D	MDV	0.05
SODP	LDT1	0.48
SODP	LDT2	0.48
SODP	MDV	0.05

Notes:

ACP = Asian Citrus Psyllid; EGVM = European Grape Vine Moth; FF-E = fruit fly eradication; FF-T = fruit fly treatment; IPC-D = Integrated Pest Control Detection; LBAM = Light Brown Apple Moth; LDA = light duty auto; LDT1 = light duty truck 1; LDT2 = light duty truck 2; LHDT1 = light heavy duty truck 1; LHDT2 = light heavy duty truck 2; MDV = medium duty truck; PD/EP-DTr = Pest Detection/Eradication Program-Detection Trapping; PD/EP-E = Pest Detection/Eradication Program-Eradication; PD/EP-Etr = Pest Detection/Eradication Program-Eradication Trapping; PDCP = Pierce's Disease Control Program; PDCP-D = Pierce's Disease Control Program-Detection; SODP = Sudden Oak Death Program

1. Ratios are based on information provided by CDFA. If no specific breakdown was provided, the vehicle mix was assumed to be 47.5% LDT1, 47.5% LDT2, and 5% MDV, with the exception of chemical spraying activities, for which the vehicle mix was assumed to be 33.3% MDV, 33.3% LHDT1, and 33.3% LHDT2.

Because information was generated in terms of total VMT rather than a specific number of trips and trip length, no value was available for the number of vehicle starts or number of vehicles. For the purposes of estimating starting and evaporative emissions, two starts per vehicle per day and a vehicle travel of 40 miles per day were assumed. This is a typical default value used for trips by workers or hauling equipment in rural areas (i.e., similar to highest value in CalEEMod (CAPCOA 2013)). A larger VMT traveled per vehicle per day would result in lower emissions since less starting emissions would occur.

For Proposed Program activities that use on-road vehicles, a similar intensity of activity initially was assumed to occur. The differences in final emissions in future years is a reflection of anticipated vehicle fleet emission reductions that would occur based on existing federal and state regulations.

Fugitive Emissions

Fugitive dust emissions from travel on roads and generated by other equipment used in the Statewide Program has not been estimated because it is indistinguishable from normal operations on roads and in agricultural areas. In addition, many thresholds used in CEQA significance determinations only consider exhaust emissions from vehicles and not fugitive dust. Pesticides can contain a large quantity of volatile organic compounds (VOCs), some of which are ROG. ROG in the atmosphere can react and form ozone. The amount of VOCs released into the atmosphere depends on the specific pesticide and the specific application method. CDPR has developed sophisticated methods to estimate the ROG from pesticide use at the statewide level, based on CDPR's annual pesticide use data. The emission potential for each pesticide is not readily available from this data, and the specific application methods used for the majority of applications (including applications conducted under both the Statewide Program and otherwise) are not known. Therefore, it would be difficult and speculative to estimate the ROG associated with pesticide use under the Statewide Program only. Furthermore, these emissions already are included in CDPR's emission estimates, and CDPR has implemented several emission reduction programs and policies to reduce VOCs from pesticides. CDPR is responsible for ensuring that VOCs from pesticide use is consistent with the State Implementation Plan for Pesticide Use.

CEQA Significance Comparison

Because Statewide Program activities could increase in the future, an upper bound limit to future increases in activity and related emissions was developed. First, a baseline emission and future emission inventory was developed using the same activity assumptions if no specific change in activity was anticipated. This involved combining county-level information into air basin-specific emission totals. If a county was in multiple air basins, the county emissions were allocated based on the total area within a specific air basin, as shown in Table H-7.

Table H-7. Ratio of County Acreage in California Air Basins

County	Air Basin	Ratio
Alameda	San Francisco Bay Area Basin	1.00
Alpine	Great Basin Valleys Basin	1.00
Amador	Mountain Counties Air Basin	1.00
Butte	Sacramento Valley Basin	1.00
Calaveras	Mountain Counties Air Basin	1.00
Contra Costa	San Francisco Bay Area Basin	1.00
Colusa	Sacramento Valley Basin	1.00
Del Norte	North Coast Basin	1.00
El Dorado	Mountain Counties Air Basin	0.88
El Dorado	Lake Tahoe Air Basin	0.12
Fresno	San Joaquin Valley Basin	1.00
Glenn	Sacramento Valley Basin	1.00
Humboldt	North Coast Basin	1.00
Imperial	Salton Sea Air Basin	1.00
Inyo	Great Basin Valleys Basin	1.00
Kern	San Joaquin Valley Basin	0.53
Kern	Mojave Desert Air Basin	0.47
Kings	San Joaquin Valley Basin	1.00
Lake	Lake County Air Basin	1.00
Lassen	Northeast Plateau Basin	1.00
Los Angeles	South Coast Air Basin	0.68
Los Angeles	Mojave Desert Air Basin	0.32
Madera	San Joaquin Valley Basin	1.00
Marin	San Francisco Bay Area Basin	1.00
Mariposa	Mountain Counties Air Basin	1.00
Mendocino	North Coast Basin	1.00
Merced	San Joaquin Valley Basin	1.00
Modoc	Northeast Plateau Basin	1.00
Mono	Great Basin Valleys Basin	1.00
Monterey	North Central Coast Basin	1.00

County	Air Basin	Ratio
Napa	San Francisco Bay Area Basin	1.00
Nevada	Mountain Counties Air Basin	1.00
Orange	South Coast Air Basin	1.00
Placer	Sacramento Valley Basin	0.29
Placer	Mountain Counties Air Basin	0.61
Placer	Lake Tahoe Air Basin	0.10
Plumas	Mountain Counties Air Basin	1.00
Riverside	South Coast Air Basin	0.28
Riverside	Mojave Desert Air Basin	0.42
Riverside	Salton Sea Air Basin	0.30
Sacramento	Sacramento Valley Basin	1.00
San Benito	North Central Coast Basin	1.00
San Bernardino	South Coast Air Basin	0.06
San Bernardino	Mojave Desert Air Basin	0.94
San Diego	San Diego Air Basin	1.00
San Francisco	San Francisco Bay Area Basin	1.00
San Joaquin	San Joaquin Valley Basin	1.00
San Luis Obispo	South Central Coast Basin	1.00
San Mateo	San Francisco Bay Area Basin	1.00
Santa Barbara	South Central Coast Basin	1.00
Santa Clara	San Francisco Bay Area Basin	1.00
Santa Cruz	North Central Coast Basin	1.00
Shasta	Sacramento Valley Basin	1.00
Sierra	Mountain Counties Air Basin	1.00
Siskiyou	Northeast Plateau Basin	1.00
Solano	San Francisco Bay Area Basin	0.48
Solano	Sacramento Valley Basin	0.52
Sonoma	North Coast Basin	0.61
Sonoma	San Francisco Bay Area Basin	0.39
Stanislaus	San Joaquin Valley Basin	1.00
Sutter	Sacramento Valley Basin	1.00
Tehama	Sacramento Valley Basin	1.00
Trinity	North Coast Basin	1.00
Tulare	San Joaquin Valley Basin	1.00
Tuolumne	Mountain Counties Air Basin	1.00
Ventura	South Central Coast Basin	1.00
Yolo	Sacramento Valley Basin	1.00
Yuba	Sacramento Valley Basin	1.00

Note:

1. Acreage is based on GIS shapefiles, available at State of California Geoportal

County	Air Basin	Ratio
(http://portal.gis.ca.gov/geoportal/catalog/main/home.page).		

Next, a mass emission significance threshold was developed for each pollutant that was based on the most conservative values used by any air district. Significance thresholds are most important for those criteria pollutants and their precursors (ROGs and nitrogen oxides [NO_x]) that have areas of non-attainment. Non-attainment areas in California occur most commonly for PM₁₀, PM_{2.5}, and ozone precursors (ROGs and NO_x). Several air districts in California have established significance threshold for operational emissions for CEQA projects (i.e., SJVAPCD 2012, BAAQMD 2010, SMAQMD 2009, and SCAQMD 2011). If the incremental increase in emissions for an activity compared to the baseline was below these annual thresholds, the impact of the activity would be less than significant. For this Final PEIR, the lowest annual emission threshold from several air districts was selected to apply to all air basins, as shown in Table H-8.

Table H-8. CEQA Mass Emission Significance Thresholds

Pollutant	Annual Operational Threshold	Units
CO	100	tons/year
NO _x	10	tons/year
ROGs	10	tons/year
PM ₁₀	15	tons/year
PM _{2.5}	10	tons/year
SO _x	27	tons/year

This formed the basis for the significance conclusions and, if applicable, the mitigation measures.

No mass emission threshold was developed for GHG emissions. The GHG emissions thresholds was based on best performance standards.

Program Activity Emissions

Tables H-9 through H-11 show the results of the emissions inventory by county for application equipment, aircraft and equipment used for sterile insect release, and on-road vehicles used to conduct the Statewide Program. Table H-12 shows the total gallons of fuel used statewide for each emission category. Table H-13 shows the emissions by air basin. This likely is an overestimation of the GHG emissions because no change occurs in GHG emission factors for off-road equipment and aircraft accounted at this time that make up the majority of the GHG emissions. The emissions in general decrease in future years if activity remains the same. This is due to existing regulations on vehicle equipment emission improvements and general equipment fleet turnover.

As previously described, future estimates are based on data from 2008 through 2010. It is possible that these particular years may have involved an unusually high or low amount of Statewide Program activities in a particular air basin. The location and intensity of Statewide Program activities is inherently highly variable from year to year, based on the locations of pest infestations and quarantines. For this reason, earlier years were considered for use in the analysis, but it was determined that they would not provide more representative data. In addition, the extent to which Proposed Program activities may result in increased emissions in the future compared to baseline Statewide Program activities is unknown. New pest infestations may occur in air basins where few infestations and related management activities have occurred in the past, or may occur in areas which have traditionally been the location of more pest infestations. In addition, shifts in the types of activities within an air basin could lead to shifts in emissions, where the activities have different emissions intensities (e.g., use of aircraft as opposed to trucks).

Table H-9. Application Equipment Emissions by County

Calendar Year	County	Tons of Pollutants						Metric Tons of Emissions			
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂	CH ₄	N ₂ O	CO ₂ e
2010	Alameda	0.04	0.001	0.001	0.00004	0.00004	0.0002	0.40	0.00001	0.00001	0.41
2010	Contra Costa	1.55	0.02	0.05	0.01	0.01	0.002	6.20	0.002	0.0002	6.30
2010	Fresno	645.07	229.04	50.01	20.95	20.95	1.38	19,117.05	3.40	0.08	19,224.98
2010	Imperial	88.44	4.71	3.77	1.20	1.20	0.01	373.03	0.21		378.28
2010	Kern	1,403.01	47.17	41.30	7.96	7.96	4.11	10,941.16	1.46	0.27	11,057.88
2010	Lake	0	0	0	0	0	0	0	0	0	0
2010	Los Angeles	15.23	0.36	0.59	0.17	0.17	0.00	30.92	0.03	0	31.69
2010	Marin	0.01	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.12
2010	Mendocino	3.56	0.06	0.09	0.01	0.01	0.01	27.94	0.00	0.00	28.25
2010	Merced	51.07	0.85	1.15	0.08	0.08	0.21	445.28	0.02	0.01	449.93
2010	Monterey	775.98	12.87	17.65	1.35	1.35	3.18	6,691.85	0.30	0.21	6,762.03
2010	Napa	95.59	1.53	2.39	0.29	0.29	0.33	716.14	0.06	0.02	724.15
2010	Orange	1.06	0.40	0.09	0.04	0.04	0.00	29.67	0.01	0	29.84
2010	Riverside	60.66	2.90	2.54	0.80	0.80	0.00	231.34	0.14	0	234.84
2010	Sacramento	99.98	89.56	15.82	7.75	7.75	0.09	6,641.90	1.24	0	6,672.82
2010	San Benito	62.95	1.06	1.37	0.07	0.07	0.28	575.23	0.02	0.02	581.11
2010	San Bernardino	1.03	0.06	0.05	0.01	0.01	0.00	4.87	0.00	0	4.93
2010	San Diego	9.86	0.91	0.47	0.16	0.16	0.00	69.85	0.03	0	70.55
2010	San Francisco	0	0	0	0	0	0	0	0	0	0
2010	San Joaquin	34.39	0.50	1.06	0.23	0.23	0.06	153.08	0.04	0.00	155.35
2010	San Mateo	14.38	0.24	0.31	0.01	0.01	0.06	133.07	0.00	0.00	134.42
2010	Santa Barbara	89.38	6.20	4.01	1.32	1.32	0.01	483.06	0.23	0	488.79
2010	Santa Clara	79.86	1.60	1.88	0.17	0.17	0.32	697.65	0.04	0.02	704.89
2010	Santa Cruz	115.88	1.96	2.49	0.12	0.12	0.51	1,071.60	0.03	0.03	1,082.50
2010	Solano	6.13	0.48	0.24	0.07	0.07	0.01	59.51	0.01	0.00	60.05
2010	Sonoma	20.49	0.32	0.53	0.08	0.08	0.06	141.59	0.02	0.00	143.24
2010	Tulare	270.06	20.47	12.35	4.12	4.12	0.03	1,589.05	0.71	0	1,606.87
2010	Ventura	31.84	20.97	4.00	1.89	1.89	0.02	1,557.75	0.30	0	1,565.35

Calendar Year	County	Tons of Pollutants						Metric Tons of Emissions			
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂	CH ₄	N ₂ O	CO ₂ e
Total 2010		3,977.51	444.23	164.21	48.86	48.86	10.70	51,789.33	8.30	0.68	52,199.58
2014	Alameda	0.04	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.41
2014	Contra Costa	1.48	0.02	0.04	0.01	0.01	0.00	6.20	0.00	0.00	6.29
2014	Fresno	620.19	177.30	38.05	16.35	16.35	1.38	19,117.05	2.48	0.08	19,201.85
2014	Imperial	82.02	3.94	3.03	1.18	1.18	0.01	373.03	0.17	0	377.20
2014	Kern	1,367.53	41.58	36.95	7.74	7.74	4.11	10,941.16	1.20	0.27	11,051.41
2014	Lake	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
2014	Los Angeles	14.11	0.33	0.48	0.18	0.18	0.00	30.92	0.02	0	31.54
2014	Marin	0.01	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.12
2014	Mendocino	3.51	0.06	0.08	0.01	0.01	0.01	27.94	0.00	0.00	28.24
2014	Merced	50.81	0.85	1.13	0.09	0.09	0.21	445.28	0.02	0.01	449.90
2014	Monterey	771.44	12.92	17.23	1.39	1.39	3.18	6,691.85	0.28	0.21	6,761.51
2014	Napa	94.05	1.55	2.24	0.31	0.31	0.33	716.14	0.05	0.02	723.97
2014	Orange	0.99	0.31	0.07	0.03	0.03	0.00	29.67	0.00	0	29.79
2014	Riverside	56.25	2.45	2.05	0.79	0.79	0.00	231.34	0.11	0	234.13
2014	Sacramento	93.95	68.72	11.38	5.86	5.86	0.09	6,641.90	0.88	0	6,663.98
2014	San Benito	62.88	1.06	1.36	0.07	0.07	0.28	575.23	0.02	0.02	581.11
2014	San Bernardino	0.96	0.05	0.04	0.01	0.01	0.00	4.87	0.00	0	4.92
2014	San Diego	9.15	0.73	0.37	0.15	0.15	0.00	69.85	0.02	0	70.40
2014	San Francisco	0	0	0	0	0	0	0	0	0	0
2014	San Joaquin	32.88	0.52	0.92	0.24	0.24	0.06	153.08	0.04	0.00	155.18
2014	San Mateo	14.38	0.24	0.31	0.01	0.01	0.06	133.07	0.00	0.00	134.42
2014	Santa Barbara	82.92	5.08	3.20	1.27	1.27	0.01	483.06	0.18	0	487.57
2014	Santa Clara	79.30	1.54	1.81	0.17	0.17	0.32	697.65	0.03	0.02	704.80
2014	Santa Cruz	115.86	1.96	2.49	0.12	0.12	0.51	1,071.60	0.03	0.03	1,082.50
2014	Solano	5.90	0.39	0.20	0.06	0.06	0.01	59.51	0.01	0.00	59.98
2014	Sonoma	20.05	0.33	0.49	0.08	0.08	0.06	141.59	0.01	0.00	143.19
2014	Tulare	250.55	16.69	9.83	3.94	3.94	0.03	1,589.05	0.56	0	1,603.04
2014	Ventura	29.81	16.13	2.91	1.46	1.46	0.02	1,557.74	0.22	0	1,563.22
Total 2014		3,861.01	354.75	136.67	41.54	41.54	10.70	51,789.32	6.35	0.68	52,150.68

Calendar Year	County	Tons of Pollutants						Metric Tons of Emissions			
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂	CH ₄	N ₂ O	CO ₂ e
2020	Alameda	0.04	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.41
2020	Contra Costa	0.85	0.02	0.03	0.00	0.00	0.00	5.66	0.00	0.00	5.73
2020	Fresno	454.20	113.34	23.85	6.80	6.80	1.38	18,964.75	1.41	0.08	19,022.85
2020	Imperial	28.77	2.46	1.86	0.13	0.13	0.01	326.42	0.10	0	328.95
2020	Kern	1,074.25	31.79	30.19	1.76	1.76	4.10	10,684.24	0.82	0.27	10,784.87
2020	Lake	0	0	0	0	0	0	0	0	0	0
2020	Los Angeles	4.80	0.21	0.30	0.01	0.01	0.001	22.78	0.02	0	23.17
2020	Marin	0.01	0.0002	0.0003	0.00001	0.00001	0.0001	0.12	0.000003	0.000004	0.12
2020	Mendocino	3.13	0.05	0.07	0.003	0.003	0.01	27.60	0.001	0.001	27.90
2020	Merced	48.68	0.83	1.09	0.05	0.05	0.21	443.42	0.02	0.01	447.99
2020	Monterey	733.34	12.59	16.52	0.71	0.71	3.18	6,658.58	0.24	0.21	6,727.33
2020	Napa	81.05	1.44	2.00	0.08	0.08	0.33	704.79	0.04	0.02	712.31
2020	Orange	0.46	0.19	0.04	0.01	0.01	0.0004	29.20	0.003	0	29.27
2020	Riverside	19.62	1.53	1.26	0.08	0.08	0.004	199.29	0.07	0	200.99
2020	Sacramento	60.62	43.31	6.30	2.61	2.61	0.09	6,609.84	0.49	0	6,621.99
2020	San Benito	62.27	1.06	1.35	0.06	0.06	0.28	574.70	0.02	0.02	580.56
2020	San Bernardino	0.34	0.03	0.02	0.002	0.002	0.0001	4.33	0.001	0	4.36
2020	San Diego	3.33	0.46	0.23	0.03	0.03	0.001	64.75	0.01	0	65.08
2020	San Francisco	0	0	0	0	0	0	0	0	0	0
2020	San Joaquin	20.18	0.41	0.69	0.02	0.02	0.06	141.99	0.02	0.004	143.78
2020	San Mateo	14.37	0.24	0.31	0.01	0.01	0.06	133.06	0.004	0.004	134.41
2020	Santa Barbara	29.56	3.18	1.95	0.17	0.17	0.01	436.31	0.11	0	439.02
2020	Santa Clara	74.57	1.42	1.71	0.08	0.08	0.32	693.52	0.03	0.02	700.53
2020	Santa Cruz	115.72	1.96	2.49	0.11	0.11	0.51	1,071.47	0.03	0.03	1,082.37
2020	Solano	4.01	0.27	0.14	0.02	0.02	0.01	57.84	0.01	0.001	58.23
2020	Sonoma	16.35	0.30	0.43	0.02	0.02	0.06	138.36	0.01	0.004	139.87
2020	Tulare	89.89	10.46	5.97	0.57	0.57	0.02	1,448.21	0.34	0	1,456.61
2020	Ventura	16.79	10.16	1.63	0.61	0.61	0.02	1,545.69	0.12	0	1,548.72
Total 2020		2,957.22	237.70	100.42	13.92	13.92	10.69	50,987.31	3.90	0.68	51,287.41

Calendar Year	County	Tons of Pollutants						Metric Tons of Emissions			
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂	CH ₄	N ₂ O	CO ₂ e
2030	Alameda	0.04	0.0007	0.0009	0.00004	0.00004	0.0002	0.40	0.00001	0.00001	0.41
2030	Contra Costa	1.38	0.03	0.03	0.01	0.01	0.002	6.20	0.001	0.0002	6.28
2030	Fresno	586.82	62.89	17.98	4.59	4.59	1.38	19,117.04	0.91	0.08	19,162.61
2030	Imperial	73.18	2.24	1.95	1.02	1.02	0.01	373.03	0.10	0	375.60
2030	Kern	1,318.67	29.18	30.55	6.54	6.54	4.11	10,941.16	0.81	0.27	11,041.66
2030	Lake	0	0	0	0	0	0	0	0	0	0
2030	Los Angeles	12.58	0.28	0.33	0.18	0.18	0.001	30.92	0.02	0	31.34
2030	Marin	0.01	0.0002	0.0003	0.00001	0.00001	0.00006	0.12	0.000003	0.000004	0.12
2030	Mendocino	3.45	0.06	0.08	0.01	0.01	0.01	27.94	0.001	0.0009	28.23
2030	Merced	50.46	0.86	1.10	0.09	0.09	0.21	445.28	0.02	0.01	449.86
2030	Monterey	765.19	13.04	16.67	1.41	1.41	3.18	6,691.85	0.25	0.21	6,760.78
2030	Napa	91.91	1.59	2.05	0.32	0.32	0.33	716.14	0.04	0.02	723.73
2030	Orange	0.89	0.11	0.03	0.01	0.01	0.0004	29.67	0.002	0	29.72
2030	Riverside	50.18	1.46	1.33	0.70	0.70	0.004	231.34	0.07	0	233.09
2030	Sacramento	86.03	22.64	3.81	1.11	1.11	0.09	6,641.90	0.28	0	6,648.85
2030	San Benito	62.78	1.06	1.35	0.07	0.07	0.28	575.23	0.02	0.02	581.09
2030	San Bernardino	0.85	0.03	0.02	0.01	0.01	0.000	4.87	0.001	0	4.90
2030	San Diego	8.17	0.34	0.23	0.11	0.11	0.001	69.85	0.01	0	70.16
2030	San Francisco	0	0	0	0	0	0	0	0	0	0
2030	San Joaquin	30.80	0.56	0.74	0.25	0.25	0.06	153.08	0.03	0.004	154.93
2030	San Mateo	14.38	0.24	0.31	0.01	0.01	0.06	133.07	0.004	0.004	134.42
2030	Santa Barbara	74.01	2.61	2.00	1.03	1.03	0.01	483.06	0.11	0	485.73
2030	Santa Clara	78.51	1.41	1.72	0.16	0.16	0.32	697.65	0.03	0.02	704.67
2030	Santa Cruz	115.84	1.96	2.49	0.12	0.12	0.51	1,071.60	0.03	0.03	1,082.49
2030	Solano	5.58	0.19	0.14	0.04	0.04	0.01	59.51	0.01	0.001	59.88
2030	Sonoma	19.44	0.34	0.44	0.08	0.08	0.06	141.59	0.01	0.004	143.12
2030	Tulare	223.70	8.29	6.08	3.11	3.11	0.03	1,589.05	0.33	0	1,597.19
2030	Ventura	27.10	5.41	1.07	0.36	0.36	0.02	1,557.74	0.07	0	1,559.60
Total 2030		3,701.95	156.81	92.50	21.35	21.35	10.70	51,789.32	3.14	0.68	52,070.47

Calendar Year	County	Tons of Pollutants						Metric Tons of Emissions			
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂	CH ₄	N ₂ O	CO ₂ e
2035	Alameda	0.04	0.001	0.0009	0.00004	0.00004	0.0002	0.40	0.00001	0.00001	0.41
2035	Contra Costa	1.38	0.03	0.03	0.01	0.01	0.002	6.20	0.001	0.0002	6.28
2035	Fresno	586.68	56.22	17.19	3.91	3.91	1.38	19,117.04	0.84	0.08	19,161.01
2035	Imperial	73.17	2.13	1.94	1.01	1.01	0.01	373.03	0.10	0	375.57
2035	Kern	1,318.64	28.42	30.45	6.46	6.46	4.11	10,941.16	0.81	0.27	11,041.45
2035	Lake	0	0	0	0	0	0	0	0	0	0
2035	Los Angeles	12.58	0.27	0.33	0.18	0.18	0.001	30.92	0.02	0	31.34
2035	Marin	0.01	0.0002	0.0003	0.00001	0.00001	0.00006	0.12	0.000003	0.000004	0.12
2035	Mendocino	3.45	0.06	0.08	0.01	0.01	0.01	27.94	0.001	0.001	28.23
2035	Merced	50.46	0.86	1.10	0.09	0.09	0.21	445.28	0.02	0.01	449.86
2035	Monterey	765.18	13.04	16.67	1.41	1.41	3.18	6,691.85	0.25	0.21	6,760.78
2035	Napa	91.91	1.59	2.05	0.32	0.32	0.33	716.14	0.04	0.02	723.72
2035	Orange	0.89	0.10	0.03	0.01	0.01	0.0004	29.67	0.002	0	29.72
2035	Riverside	50.18	1.39	1.32	0.69	0.69	0.004	231.34	0.07	0	233.07
2035	Sacramento	85.97	19.96	3.50	0.84	0.84	0.09	6,641.90	0.25	0	6,648.21
2035	San Benito	62.78	1.06	1.35	0.07	0.07	0.28	575.23	0.02	0.02	581.09
2035	San Bernardino	0.85	0.03	0.02	0.01	0.01	0.0001	4.87	0.001	0	4.90
2035	San Diego	8.17	0.32	0.22	0.11	0.11	0.001	69.85	0.01	0	70.15
2035	San Francisco	0	0	0	0	0	0	0	0	0	0
2035	San Joaquin	30.80	0.56	0.74	0.25	0.25	0.06	153.08	0.03	0.004	154.93
2035	San Mateo	14.38	0.24	0.31	0.01	0.01	0.06	133.07	0.004	0.004	134.42
2035	Santa Barbara	74.01	2.46	1.98	1.02	1.02	0.01	483.06	0.11	0	485.69
2035	Santa Clara	78.51	1.40	1.72	0.16	0.16	0.32	697.65	0.03	0.02	704.66
2035	Santa Cruz	115.84	1.96	2.49	0.12	0.12	0.51	1,071.60	0.03	0.03	1,082.49
2035	Solano	5.58	0.18	0.14	0.04	0.04	0.01	59.51	0.005	0.001	59.88
2035	Sonoma	19.44	0.34	0.44	0.08	0.08	0.06	141.59	0.01	0.004	143.11
2035	Tulare	223.68	7.79	6.01	3.06	3.06	0.03	1,589.05	0.32	0	1,597.05
2035	Ventura	27.08	4.79	1.00	0.30	0.30	0.02	1,557.74	0.07	0	1,559.45
Total 2035		3,701.67	145.19	91.10	20.18	20.18	10.70	51,789.32	3.03	0.68	52,067.62

Notes:

CH₄ = methane; CO = carbon monoxide; CO₂ = carbon dioxide; CO₂e = carbon dioxide equivalent; NO_x = nitrogen oxides;

N₂O = nitrous oxide; PM₁₀ = particulate matter with aerodynamic radius 10 micrometers or less;

PM_{2.5} = particulate matter with aerodynamic radius 2.5 micrometers or less; ROGs = reactive organic gases; SO_x = sulfur oxides

1. To convert individual greenhouse gases to the carbon dioxide equivalent, the global warming potential from Table A-1 of 40 CFR Part 98 was used. For methane this is 25 and for nitrous oxide this is 298.

2. A zero with no decimal places means there were no emissions calculated for this county/pollutant. Counties not shown did not have CDFA Statewide Program quarantine or eradication activities in the baseline year.

Table H-10. Sterile Insect Release Emissions by County

Calendar Year	County	Tons of Pollutants						Metric Tons of Emissions			
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂	CH ₄	N ₂ O	CO ₂ e
2010	Imperial	2.65	0.04	0.06	0.003	0.003	0.01	24.52	0.001	0.001	24.77
2010	Orange	497.75	9.12	10.75	0.51	0.51	2.21	4,670.90	0.15	0.15	4,718.21
2010	Riverside	5.29	0.09	0.11	0.01	0.01	0.02	49.03	0.001	0.002	49.53
	Total 2010	505.69	9.26	10.92	0.52	0.52	2.25	4,744.45	0.15	0.15	4,792.51
2014	Imperial	2.65	0.04	0.06	0.00	0.00	0.01	24.52	0.001	0.001	24.77
2014	Orange	497.72	9.02	10.74	0.51	0.51	2.21	4,669.98	0.15	0.15	4,717.29
2014	Riverside	5.29	0.09	0.11	0.01	0.01	0.02	49.03	0.001	0.002	49.53
	Total 2014	505.66	9.15	10.91	0.52	0.51	2.25	4,743.53	0.15	0.15	4,791.59
2020	Imperial	2.65	0.04	0.06	0.003	0.003	0.01	24.52	0.001	0.001	24.77
2020	Orange	497.64	8.71	10.72	0.50	0.49	2.21	4,664.47	0.15	0.15	4,711.78
2020	Riverside	5.29	0.09	0.11	0.01	0.01	0.02	49.03	0.001	0.002	49.53
	Total 2020	505.58	8.84	10.90	0.50	0.50	2.25	4,738.02	0.15	0.15	4,786.08
2030	Imperial	2.65	0.04	0.06	0.00	0.00	0.01	24.52	0.001	0.001	24.77
2030	Orange	497.59	8.46	10.72	0.49	0.49	2.21	4,675.58	0.13	0.15	4,722.49
2030	Riverside	5.29	0.09	0.11	0.01	0.01	0.02	49.03	0.001	0.002	49.53
	Total 2030	505.53	8.60	10.89	0.49	0.49	2.25	4,749.13	0.13	0.15	4,796.79
2035	Imperial	2.65	0.04	0.06	0.003	0.003	0.01	24.52	0.001	0.001	24.77
2035	Orange	497.59	8.45	10.72	0.49	0.49	2.21	4,675.58	0.13	0.15	4,722.48
2035	Riverside	5.29	0.09	0.11	0.01	0.01	0.02	49.03	0.001	0.002	49.53
	Total 2035	505.53	8.58	10.89	0.49	0.49	2.25	4,749.13	0.13	0.15	4,796.78

Notes:

CH₄ = methane; CO = carbon monoxide; CO₂ = carbon dioxide; CO₂e = carbon dioxide equivalent; NO_x = nitrogen oxides; N₂O = nitrous oxide; PM₁₀ = particulate matter with aerodynamic radius 10 micrometers or less; PM_{2.5} = particulate matter with aerodynamic radius 2.5 micrometers or less; ROGs = reactive organic gases; SO_x = sulfur oxides

1. Emissions are based on activity data provided by CDFA and emission factors from CARB.

Page left intentionally blank.

Table H-11. On-Road Vehicle Emissions by County

Calendar Year	County	Tons of Pollutants						Metric Tons of Pollutants
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂
2010	Alameda	0.4602	0.0480	0.0448	0.0041	0.0019	0.00037	33.2
2010	Alpine	0.0461	0.0048	0.0045	0.0004	0.0002	0.00004	3.3
2010	Amador	0.0190	0.0020	0.0018	0.0002	0.0001	0.00002	1.4
2010	Butte	0.0980	0.0102	0.0095	0.0009	0.0004	0.00008	7.1
2010	Calaveras	0.0524	0.0055	0.0051	0.0005	0.0002	0.00004	3.8
2010	Colusa	0.0176	0.0018	0.0017	0.0002	0.0001	0.00001	1.3
2010	Contra Costa	0.4955	0.0517	0.0483	0.0044	0.0020	0.00040	35.8
2010	Del Norte	0	0	0	0	0	0	0
2010	El Dorado	0.1115	0.0116	0.0109	0.0010	0.0005	0.00009	8.0
2010	Fresno	1.4173	0.1487	0.1375	0.0126	0.0058	0.00117	103.4
2010	Glenn	0.0226	0.0024	0.0022	0.0002	0.0001	0.00002	1.6
2010	Humboldt	0.0809	0.0084	0.0079	0.0007	0.0003	0.00007	5.8
2010	Imperial	3.0007	0.3773	0.2543	0.0291	0.0129	0.00343	306.2
2010	Inyo	0	0	0	0	0	0	0
2010	Kern	0.9732	0.1087	0.0905	0.0092	0.0042	0.00093	82.3
2010	Kings	0.4553	0.0475	0.0443	0.0040	0.0019	0.00037	32.8
2010	Lake	0.0679	0.0071	0.0066	0.0006	0.0003	0.00006	4.9
2010	Lassen	0	0	0	0	0	0	0
2010	Los Angeles	9.5502	1.0746	0.8830	0.0914	0.0412	0.00927	824.7
2010	Madera	0.2454	0.0256	0.0239	0.0022	0.0010	0.00020	17.7
2010	Marin	0.1001	0.0104	0.0097	0.0009	0.0004	0.00008	7.2
2010	Mariposa	0.0156	0.0016	0.0015	0.0001	0.0001	0.00001	1.1
2010	Mendocino	0.0683	0.0071	0.0067	0.0006	0.0003	0.00006	4.9
2010	Merced	0.2915	0.0304	0.0284	0.0026	0.0012	0.00024	21.0
2010	Modoc	0	0	0	0	0	0	0
2010	Mono	0	0	0	0	0	0	0
2010	Monterey	0.3218	0.0336	0.0313	0.0028	0.0013	0.00026	23.2
2010	Napa	0.9430	0.1009	0.0896	0.0118	0.0052	0.00106	94.9
2010	Nevada	1.6373	0.1758	0.1551	0.0213	0.0094	0.00193	171.9
2010	Orange	2.8202	0.3585	0.2368	0.0275	0.0122	0.00328	293.2
2010	Placer	0.1081	0.0113	0.0105	0.0010	0.0004	0.00009	7.8
2010	Plumas	0	0	0	0	0	0	0
2010	Riverside	3.0448	0.3819	0.2586	0.0295	0.0131	0.00347	309.4
2010	Sacramento	8.6355	0.9327	0.8219	0.0787	0.0358	0.00760	674.0
2010	San Benito	0.0282	0.0029	0.0027	0.0002	0.0001	0.00002	2.0
2010	San Bernardino	2.8221	0.3565	0.2380	0.0284	0.0126	0.00333	296.9

Calendar Year	County	Tons of Pollutants						Metric Tons of Pollutants
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂
2010	San Diego	5.6575	0.6738	0.5013	0.0553	0.0247	0.00603	537.7
2010	San Francisco	0.0289	0.0030	0.0028	0.0003	0.0001	0.00002	2.1
2010	San Joaquin	13.6556	1.4812	1.2964	0.1232	0.0562	0.01199	1064.2
2010	San Luis Obispo	5.4993	0.5964	0.5222	0.0496	0.0226	0.00483	428.3
2010	San Mateo	0.3104	0.0324	0.0302	0.0027	0.0013	0.00025	22.4
2010	Santa Barbara	7.9111	0.9122	0.7191	0.0735	0.0331	0.00778	692.1
2010	Santa Clara	1.3309	0.1420	0.1271	0.0152	0.0068	0.00139	123.8
2010	Santa Cruz	1.0128	0.1082	0.0964	0.0124	0.0055	0.00112	100.0
2010	Shasta	0.0785	0.0082	0.0076	0.0007	0.0003	0.00006	5.7
2010	Sierra	0	0	0	0	0	0	0
2010	Siskiyou	0	0	0	0	0	0	0
2010	Solano	8.9824	0.9736	0.8525	0.0843	0.0383	0.00813	722.3
2010	Sonoma	4.5849	0.4947	0.4354	0.0479	0.0215	0.00450	400.4
2010	Stanislaus	0.4952	0.0517	0.0482	0.0044	0.0020	0.00040	35.7
2010	Sutter	0.0322	0.0034	0.0031	0.0003	0.0001	0.00003	2.3
2010	Tehama	0.0596	0.0062	0.0058	0.0005	0.0002	0.00005	4.3
2010	Trinity	0.0317	0.0033	0.0031	0.0003	0.0001	0.00003	2.3
2010	Tulare	1.1822	0.1246	0.1144	0.0105	0.0048	0.00098	87.0
2010	Tuolumne	0.0583	0.0061	0.0057	0.0005	0.0002	0.00005	4.2
2010	Ventura	6.1425	0.7164	0.5536	0.0574	0.0258	0.00616	548.7
2010	Yolo	2.6823	0.2911	0.2545	0.0242	0.0110	0.00236	209.3
2010	Yuba	0.0080	0.0008	0.0008	0.0001	0.0000	0.00001	0.6
Total 2010		97.7	11.0	9.0	0.9	0.4	0.1	8374.3
2014	Alameda	0.2987	0.0308	0.0309	0.0039	0.0017	0.00037	30.6
2014	Alpine	0.0299	0.0031	0.0031	0.0004	0.0002	0.00004	3.1
2014	Amador	0.0123	0.0013	0.0013	0.0002	0.0001	0.00002	1.3
2014	Butte	0.0636	0.0066	0.0066	0.0008	0.0004	0.00008	6.5
2014	Calaveras	0.0340	0.0035	0.0035	0.0004	0.0002	0.00004	3.5
2014	Colusa	0.0114	0.0012	0.0012	0.0001	0.0001	0.00001	1.2
2014	Contra Costa	0.3216	0.0332	0.0333	0.0042	0.0019	0.00040	32.9
2014	Del Norte	0	0	0	0	0	0	0
2014	El Dorado	0.0723	0.0075	0.0075	0.0009	0.0004	0.00009	7.4
2014	Fresno	0.9240	0.0960	0.0953	0.0121	0.0053	0.00116	95.2
2014	Glenn	0.0147	0.0015	0.0015	0.0002	0.0001	0.00002	1.5
2014	Humboldt	0.0525	0.0054	0.0054	0.0007	0.0003	0.00007	5.4
2014	Imperial	2.2620	0.2796	0.2099	0.0284	0.0123	0.00343	288.3
2014	Inyo	0	0	0	0	0	0	0
2014	Kern	0.6673	0.0741	0.0661	0.0089	0.0039	0.00092	76.4
2014	Kings	0.2955	0.0305	0.0306	0.0039	0.0017	0.00037	30.2

Calendar Year	County	Tons of Pollutants						Metric Tons of Pollutants
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂
2014	Lake	0.0440	0.0045	0.0046	0.0006	0.0003	0.00005	4.5
2014	Lassen	0	0	0	0	0	0	0
2014	Los Angeles	6.5894	0.7375	0.6486	0.0883	0.0385	0.00924	766.2
2014	Madera	0.1593	0.0164	0.0165	0.0021	0.0009	0.00020	16.3
2014	Marin	0.0650	0.0067	0.0067	0.0008	0.0004	0.00008	6.6
2014	Mariposa	0.0101	0.0010	0.0010	0.0001	0.0001	0.00001	1.0
2014	Mendocino	0.0443	0.0046	0.0046	0.0006	0.0003	0.00006	4.5
2014	Merced	0.1892	0.0195	0.0196	0.0025	0.0011	0.00024	19.4
2014	Modoc	0	0	0	0	0	0	0
2014	Mono	0	0	0	0	0	0	0
2014	Monterey	0.2089	0.0216	0.0216	0.0027	0.0012	0.00026	21.4
2014	Napa	0.6313	0.0680	0.0610	0.0114	0.0049	0.00106	87.0
2014	Nevada	1.1011	0.1193	0.1053	0.0206	0.0088	0.00192	157.5
2014	Orange	2.1448	0.2675	0.1978	0.0269	0.0116	0.00328	276.3
2014	Placer	0.0702	0.0072	0.0073	0.0009	0.0004	0.00009	7.2
2014	Plumas	0	0	0	0	0	0	0
2014	Riverside	2.2906	0.2825	0.2129	0.0288	0.0125	0.00347	291.2
2014	Sacramento	5.7625	0.6180	0.5834	0.0756	0.0332	0.00756	623.3
2014	San Benito	0.0183	0.0019	0.0019	0.0002	0.0001	0.00002	1.9
2014	San Bernardino	2.1375	0.2655	0.1969	0.0277	0.0120	0.00332	279.4
2014	San Diego	4.0846	0.4821	0.3894	0.0537	0.0233	0.00602	503.0
2014	San Francisco	0.0187	0.0019	0.0019	0.0002	0.0001	0.00002	1.9
2014	San Joaquin	9.1401	0.9841	0.9245	0.1185	0.0520	0.01194	985.0
2014	San Luis Obispo	3.6801	0.3961	0.3723	0.0477	0.0209	0.00480	396.5
2014	San Mateo	0.2014	0.0208	0.0208	0.0026	0.0012	0.00025	20.6
2014	Santa Barbara	5.5598	0.6363	0.5426	0.0711	0.0310	0.00776	645.6
2014	Santa Clara	0.8861	0.0947	0.0871	0.0147	0.0063	0.00139	113.6
2014	Santa Cruz	0.6766	0.0727	0.0657	0.0120	0.0051	0.00112	91.7
2014	Shasta	0.0510	0.0053	0.0053	0.0007	0.0003	0.00006	5.2
2014	Sierra	0	0	0	0	0	0	0
2014	Siskiyou	0	0	0	0	0	0	0
2014	Solano	6.0154	0.6482	0.6054	0.0811	0.0355	0.00810	667.8
2014	Sonoma	3.0696	0.3307	0.3048	0.0462	0.0200	0.00449	368.9
2014	Stanislaus	0.3214	0.0332	0.0333	0.0042	0.0018	0.00040	32.9
2014	Sutter	0.0209	0.0022	0.0022	0.0003	0.0001	0.00003	2.1
2014	Tehama	0.0387	0.0040	0.0040	0.0005	0.0002	0.00005	4.0
2014	Trinity	0.0206	0.0021	0.0021	0.0003	0.0001	0.00003	2.1
2014	Tulare	0.7733	0.0807	0.0796	0.0101	0.0044	0.00098	80.2
2014	Tuolumne	0.0378	0.0039	0.0039	0.0005	0.0002	0.00005	3.9

Calendar Year	County	Tons of Pollutants						Metric Tons of Pollutants
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂
2014	Ventura	4.3565	0.5039	0.4224	0.0556	0.0242	0.00615	512.5
2014	Yolo	1.7963	0.1936	0.1816	0.0233	0.0102	0.00235	193.8
2014	Yuba	0.0052	0.0005	0.0005	0.0001	0.0000	0.00001	0.5
Total 2014		67.3	7.5	6.6	0.9	0.4	0.1	7778.8
2020	Alameda	0.1623	0.0166	0.0189	0.0038	0.0017	0.00037	24.9
2020	Alpine	0.0163	0.0017	0.0019	0.0004	0.0002	0.00004	2.5
2020	Amador	0.0067	0.0007	0.0008	0.0002	0.0001	0.00002	1.0
2020	Butte	0.0346	0.0035	0.0040	0.0008	0.0004	0.00008	5.3
2020	Calaveras	0.0185	0.0019	0.0021	0.0004	0.0002	0.00004	2.8
2020	Colusa	0.0062	0.0006	0.0007	0.0001	0.0001	0.00001	1.0
2020	Contra Costa	0.1747	0.0179	0.0203	0.0041	0.0018	0.00040	26.8
2020	Del Norte	0	0	0	0	0	0	0
2020	El Dorado	0.0393	0.0040	0.0046	0.0009	0.0004	0.00009	6.0
2020	Fresno	0.5043	0.0520	0.0585	0.0118	0.0051	0.00115	77.6
2020	Glenn	0.0080	0.0008	0.0009	0.0002	0.0001	0.00002	1.2
2020	Humboldt	0.0285	0.0029	0.0033	0.0007	0.0003	0.00007	4.4
2020	Imperial	1.4128	0.1682	0.1541	0.0281	0.0120	0.00343	240.3
2020	Inyo	0	0	0	0	0	0	0
2020	Kern	0.3847	0.0421	0.0432	0.0087	0.0038	0.00092	62.7
2020	Kings	0.1605	0.0165	0.0187	0.0038	0.0016	0.00037	24.6
2020	Lake	0.0239	0.0025	0.0028	0.0006	0.0002	0.00005	3.7
2020	Lassen	0	0	0	0	0	0	0.0
2020	Los Angeles	3.8256	0.4219	0.4273	0.0870	0.0374	0.00922	629.5
2020	Madera	0.0865	0.0089	0.0101	0.0020	0.0009	0.00020	13.3
2020	Marin	0.0353	0.0036	0.0041	0.0008	0.0004	0.00008	5.4
2020	Mariposa	0.0055	0.0006	0.0006	0.0001	0.0001	0.00001	0.8
2020	Mendocino	0.0241	0.0025	0.0028	0.0006	0.0002	0.00006	3.7
2020	Merced	0.1028	0.0105	0.0120	0.0024	0.0010	0.00023	15.8
2020	Modoc	0	0	0	0	0	0	0
2020	Mono	0	0	0	0	0	0	0
2020	Monterey	0.1135	0.0116	0.0132	0.0027	0.0012	0.00026	17.4
2020	Napa	0.3696	0.0398	0.0380	0.0113	0.0048	0.00106	70.1
2020	Nevada	0.6515	0.0706	0.0658	0.0205	0.0087	0.00192	126.7
2020	Orange	1.3491	0.1616	0.1466	0.0266	0.0114	0.00328	230.5
2020	Placer	0.0381	0.0039	0.0044	0.0009	0.0004	0.00009	5.8
2020	Plumas	0	0	0	0	0	0	0
2020	Riverside	1.4283	0.1698	0.1559	0.0285	0.0122	0.00346	242.6
2020	Sacramento	3.2266	0.3428	0.3690	0.0743	0.0320	0.00753	509.9
2020	San Benito	0.0099	0.0010	0.0012	0.0002	0.0001	0.00002	1.5

Calendar Year	County	Tons of Pollutants						Metric Tons of Pollutants
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂
2020	San Bernardino	1.3445	0.1607	0.1452	0.0275	0.0118	0.00332	232.5
2020	San Diego	2.4689	0.2841	0.2713	0.0530	0.0227	0.00601	416.2
2020	San Francisco	0.0102	0.0010	0.0012	0.0002	0.0001	0.00002	1.6
2020	San Joaquin	5.1267	0.5465	0.5874	0.1163	0.0501	0.01189	806.9
2020	San Luis Obispo	2.0638	0.2199	0.2365	0.0468	0.0202	0.00478	324.7
2020	San Mateo	0.1094	0.0112	0.0127	0.0026	0.0011	0.00025	16.8
2020	Santa Barbara	3.2689	0.3668	0.3664	0.0701	0.0301	0.00774	533.2
2020	Santa Clara	0.5098	0.0544	0.0542	0.0146	0.0062	0.00138	91.8
2020	Santa Cruz	0.3942	0.0423	0.0409	0.0119	0.0051	0.00112	73.9
2020	Shasta	0.0277	0.0028	0.0032	0.0007	0.0003	0.00006	4.2
2020	Sierra	0	0	0	0	0	0	0
2020	Siskiyou	0	0	0	0	0	0	0
2020	Solano	3.3914	0.3621	0.3841	0.0798	0.0343	0.00807	545.9
2020	Sonoma	1.7532	0.1878	0.1922	0.0456	0.0195	0.00447	299.8
2020	Stanislaus	0.1746	0.0179	0.0203	0.0041	0.0018	0.00040	26.8
2020	Sutter	0.0113	0.0012	0.0013	0.0003	0.0001	0.00003	1.7
2020	Tehama	0.0210	0.0022	0.0024	0.0005	0.0002	0.00005	3.2
2020	Trinity	0.0112	0.0011	0.0013	0.0003	0.0001	0.00003	1.7
2020	Tulare	0.4236	0.0439	0.0491	0.0099	0.0043	0.00097	65.4
2020	Tuolumne	0.0205	0.0021	0.0024	0.0005	0.0002	0.00005	3.2
2020	Ventura	2.5829	0.2923	0.2884	0.0548	0.0235	0.00613	423.8
2020	Yolo	1.0081	0.1075	0.1155	0.0229	0.0098	0.00234	158.7
2020	Yuba	0.0028	0.0003	0.0003	0.0001	0.0000	0.00001	0.4
Total 2020		39.0	4.3	4.4	0.9	0.4	0.1	6390.3
2030	Alameda	0.0881	0.0086	0.0115	0.0038	0.0016	0.00037	22.5
2030	Alpine	0.0088	0.0009	0.0012	0.0004	0.0002	0.00004	2.3
2030	Amador	0.0036	0.0004	0.0005	0.0002	0.0001	0.00002	0.9
2030	Butte	0.0188	0.0018	0.0025	0.0008	0.0003	0.00008	4.8
2030	Calaveras	0.0100	0.0010	0.0013	0.0004	0.0002	0.00004	2.6
2030	Colusa	0.0034	0.0003	0.0004	0.0001	0.0001	0.00001	0.9
2030	Contra Costa	0.0948	0.0092	0.0124	0.0041	0.0018	0.00040	24.2
2030	Del Norte	0	0	0	0	0	0	0
2030	El Dorado	0.0213	0.0021	0.0028	0.0009	0.0004	0.00009	5.4
2030	Fresno	0.2741	0.0268	0.0359	0.0118	0.0051	0.00116	70.2
2030	Glenn	0.0043	0.0004	0.0006	0.0002	0.0001	0.00002	1.1
2030	Humboldt	0.0155	0.0015	0.0020	0.0007	0.0003	0.00007	4.0
2030	Imperial	0.7982	0.0863	0.1056	0.0281	0.0120	0.00344	219.3
2030	Inyo	0	0	0	0	0	0	0.0
2030	Kern	0.2157	0.0220	0.0279	0.0087	0.0037	0.00092	56.9

Calendar Year	County	Tons of Pollutants						Metric Tons of Pollutants
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂
2030	Kings	0.0871	0.0085	0.0114	0.0038	0.0016	0.00037	22.2
2030	Lake	0.0130	0.0013	0.0017	0.0006	0.0002	0.00005	3.3
2030	Lassen	0	0	0	0	0	0	0.0
2030	Los Angeles	2.1579	0.2214	0.2781	0.0870	0.0373	0.00924	570.9
2030	Madera	0.0470	0.0046	0.0061	0.0020	0.0009	0.00020	12.0
2030	Marin	0.0191	0.0019	0.0025	0.0008	0.0004	0.00008	4.9
2030	Mariposa	0.0030	0.0003	0.0004	0.0001	0.0001	0.00001	0.8
2030	Mendocino	0.0131	0.0013	0.0017	0.0006	0.0002	0.00006	3.3
2030	Merced	0.0558	0.0054	0.0073	0.0024	0.0010	0.00024	14.2
2030	Modoc	0	0	0	0	0	0	0
2030	Mono	0	0	0	0	0	0	0
2030	Monterey	0.0616	0.0060	0.0081	0.0027	0.0011	0.00026	15.7
2030	Napa	0.2400	0.0244	0.0264	0.0114	0.0049	0.00106	62.9
2030	Nevada	0.4325	0.0442	0.0465	0.0207	0.0089	0.00192	113.6
2030	Orange	0.7637	0.0830	0.1011	0.0266	0.0114	0.00329	210.4
2030	Placer	0.0207	0.0020	0.0027	0.0009	0.0004	0.00009	5.3
2030	Plumas	0	0	0	0	0	0	0
2030	Riverside	0.8067	0.0872	0.1067	0.0285	0.0122	0.00347	221.4
2030	Sacramento	1.7776	0.1776	0.2318	0.0741	0.0318	0.00754	461.8
2030	San Benito	0.0054	0.0005	0.0007	0.0002	0.0001	0.00002	1.4
2030	San Bernardino	0.7709	0.0836	0.1006	0.0275	0.0118	0.00333	212.0
2030	San Diego	1.4020	0.1481	0.1822	0.0530	0.0227	0.00603	378.6
2030	San Francisco	0.0055	0.0005	0.0007	0.0002	0.0001	0.00002	1.4
2030	San Joaquin	2.8103	0.2812	0.3689	0.1159	0.0498	0.01191	731.1
2030	San Luis Obispo	1.1312	0.1132	0.1485	0.0467	0.0200	0.00479	294.3
2030	San Mateo	0.0594	0.0058	0.0078	0.0026	0.0011	0.00025	15.2
2030	Santa Barbara	1.8167	0.1885	0.2394	0.0699	0.0300	0.00775	484.7
2030	Santa Clara	0.3164	0.0319	0.0364	0.0146	0.0063	0.00139	82.5
2030	Santa Cruz	0.2534	0.0257	0.0281	0.0120	0.0051	0.00112	66.3
2030	Shasta	0.0150	0.0015	0.0020	0.0006	0.0003	0.00006	3.8
2030	Sierra	0	0	0	0	0	0	0
2030	Siskiyou	0	0	0	0	0	0	0
2030	Solano	1.8967	0.1903	0.2438	0.0797	0.0342	0.00808	494.0
2030	Sonoma	1.0360	0.1045	0.1257	0.0457	0.0196	0.00448	270.4
2030	Stanislaus	0.0948	0.0092	0.0124	0.0041	0.0018	0.00040	24.2
2030	Sutter	0.0062	0.0006	0.0008	0.0003	0.0001	0.00003	1.6
2030	Tehama	0.0114	0.0011	0.0015	0.0005	0.0002	0.00005	2.9
2030	Trinity	0.0061	0.0006	0.0008	0.0003	0.0001	0.00003	1.5
2030	Tulare	0.2305	0.0226	0.0302	0.0098	0.0042	0.00097	59.1

Calendar Year	County	Tons of Pollutants						Metric Tons of Pollutants
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂
2030	Tuolumne	0.0112	0.0011	0.0015	0.0005	0.0002	0.00005	2.8
2030	Ventura	1.4389	0.1502	0.1897	0.0547	0.0235	0.00615	385.5
2030	Yolo	0.5527	0.0553	0.0725	0.0228	0.0098	0.00234	143.8
2030	Yuba	0.0015	0.0001	0.0002	0.0001	0.0000	0.00001	0.4
Total 2030		21.9	2.2	2.8	0.9	0.4	0.1	5795.5
2035	Alameda	0.0732	0.0069	0.0092	0.0038	0.0016	0.00037	22.0
2035	Alpine	0.0073	0.0007	0.0009	0.0004	0.0002	0.00004	2.2
2035	Amador	0.0030	0.0003	0.0004	0.0002	0.0001	0.00002	0.9
2035	Butte	0.0156	0.0015	0.0020	0.0008	0.0003	0.00008	4.7
2035	Calaveras	0.0083	0.0008	0.0010	0.0004	0.0002	0.00004	2.5
2035	Colusa	0.0028	0.0003	0.0004	0.0001	0.0001	0.00001	0.8
2035	Contra Costa	0.0789	0.0074	0.0099	0.0041	0.0018	0.00040	23.7
2035	Del Norte	0	0	0	0	0	0	0
2035	El Dorado	0.0177	0.0017	0.0022	0.0009	0.0004	0.00009	5.3
2035	Fresno	0.2280	0.0214	0.0286	0.0118	0.0050	0.00116	68.8
2035	Glenn	0.0036	0.0003	0.0005	0.0002	0.0001	0.00002	1.1
2035	Humboldt	0.0129	0.0012	0.0016	0.0007	0.0003	0.00007	3.9
2035	Imperial	0.6685	0.0663	0.0906	0.0281	0.0121	0.00344	214.7
2035	Inyo	0	0	0	0	0	0	0
2035	Kern	0.1815	0.0175	0.0231	0.0087	0.0037	0.00092	55.7
2035	Kings	0.0725	0.0068	0.0091	0.0038	0.0016	0.00037	21.8
2035	Lake	0.0108	0.0010	0.0014	0.0006	0.0002	0.00005	3.2
2035	Lassen	0	0	0	0	0	0	0
2035	Los Angeles	1.8194	0.1756	0.2315	0.0869	0.0373	0.00925	559.4
2035	Madera	0.0391	0.0037	0.0049	0.0020	0.0009	0.00020	11.7
2035	Marin	0.0159	0.0015	0.0020	0.0008	0.0004	0.00008	4.8
2035	Mariposa	0.0025	0.0002	0.0003	0.0001	0.0001	0.00001	0.7
2035	Mendocino	0.0109	0.0010	0.0014	0.0006	0.0002	0.00006	3.3
2035	Merced	0.0464	0.0044	0.0058	0.0024	0.0010	0.00024	14.0
2035	Modoc	0	0	0	0	0	0	0
2035	Mono	0	0	0	0	0	0	0
2035	Monterey	0.0512	0.0048	0.0064	0.0027	0.0011	0.00026	15.4
2035	Napa	0.2168	0.0210	0.0233	0.0114	0.0049	0.00106	61.8
2035	Nevada	0.3939	0.0382	0.0417	0.0207	0.0089	0.00193	111.7
2035	Orange	0.6397	0.0637	0.0870	0.0267	0.0114	0.00329	206.1
2035	Placer	0.0172	0.0016	0.0022	0.0009	0.0004	0.00009	5.2
2035	Plumas	0	0	0	0	0	0	0
2035	Riverside	0.6755	0.0670	0.0915	0.0285	0.0122	0.00348	216.8
2035	Sacramento	1.4856	0.1413	0.1881	0.0740	0.0318	0.00755	452.4

Calendar Year	County	Tons of Pollutants						Metric Tons of Pollutants
		CO	NO _x	ROGs	PM ₁₀	PM _{2.5}	SO _x	CO ₂
2035	San Benito	0.0045	0.0004	0.0006	0.0002	0.0001	0.00002	1.4
2035	San Bernardino	0.6504	0.0647	0.0870	0.0275	0.0118	0.00334	207.7
2035	San Diego	1.1813	0.1158	0.1546	0.0530	0.0227	0.00604	370.9
2035	San Francisco	0.0046	0.0004	0.0006	0.0002	0.0001	0.00002	1.4
2035	San Joaquin	2.3414	0.2228	0.2990	0.1158	0.0497	0.01192	716.2
2035	San Luis Obispo	0.9425	0.0897	0.1203	0.0466	0.0200	0.00480	288.2
2035	San Mateo	0.0494	0.0046	0.0062	0.0026	0.0011	0.00025	14.9
2035	Santa Barbara	1.5172	0.1472	0.1992	0.0699	0.0300	0.00776	474.8
2035	Santa Clara	0.2803	0.0270	0.0313	0.0146	0.0063	0.00139	81.0
2035	Santa Cruz	0.2279	0.0220	0.0247	0.0120	0.0051	0.00112	65.1
2035	Shasta	0.0125	0.0012	0.0016	0.0006	0.0003	0.00006	3.8
2035	Sierra	0	0	0	0	0	0	0
2035	Siskiyou	0	0	0	0	0	0	0
2035	Solano	1.5971	0.1523	0.1996	0.0796	0.0342	0.00809	484.1
2035	Sonoma	0.8967	0.0860	0.1058	0.0457	0.0196	0.00448	265.3
2035	Stanislaus	0.0788	0.0074	0.0099	0.0041	0.0018	0.00040	23.7
2035	Sutter	0.0051	0.0005	0.0006	0.0003	0.0001	0.00003	1.5
2035	Tehama	0.0095	0.0009	0.0012	0.0005	0.0002	0.00005	2.9
2035	Trinity	0.0050	0.0005	0.0006	0.0003	0.0001	0.00003	1.5
2035	Tulare	0.1918	0.0181	0.0241	0.0098	0.0042	0.00097	57.9
2035	Tuolumne	0.0093	0.0009	0.0012	0.0005	0.0002	0.00005	2.8
2035	Ventura	1.2021	0.1170	0.1586	0.0547	0.0235	0.00616	377.6
2035	Yolo	0.4605	0.0438	0.0588	0.0228	0.0098	0.00234	140.9
2035	Yuba	0.0013	0.0001	0.0002	0.0001	0.0000	0.00001	0.4
Total 2035		18.5	1.8	2.4	0.9	0.4	0.1	5678.7

Notes:

CO = carbon monoxide; CO₂ = carbon dioxide; NO_x = nitrogen oxides; N₂O = nitrous oxide;

PM₁₀ = particulate matter with aerodynamic radius 10 micrometers or less;

PM_{2.5} = particulate matter with aerodynamic radius 2.5 micrometers or less;

ROGs = reactive organic gases; SO_x = sulfur oxides

1. Emissions are based on activity data provided by CDFA and emission factors from CARB EMFAC2011.

Table H-12. Fuel Consumption for the Statewide Program

Activity	Fuel Type	Gallons of Fuel Consumed				
		2010	2014	2020	2030	2035
Pesticide Application	Diesel	2,889,589	2,881,476	2,873,520	2,868,160	2,867,622
	Gasoline	465,578	445,516	424,355	416,311	416,285
	Jet	2,193,615	2,193,615	2,193,615	2,193,615	2,193,615
Sterile Insect Release	Diesel	5,902	5,902	5,902	5,902	5,902
	Gasoline					
	Jet	480,181	480,181	480,181	480,181	480,181
On-Road Vehicles	Diesel	617	678	690	691	670
	Gasoline	1,006,145	999,676	999,676	1,001,761	1,002,735
	Jet					
Total	Diesel	2,896,109	2,888,057	2,880,112	2,874,753	2,874,195
	Gasoline	1,471,723	1,445,192	1,424,031	1,418,072	1,419,020
	Jet	2,673,796	2,673,796	2,673,796	2,673,796	2,673,796

Page left intentionally blank.

Table H-13. Total Baseline and Estimated Future Statewide Program Emissions by Air Basin

Calendar Year	Air Basin	Total Emissions									
		Tons of Pollutants					Metric Tons of Emissions				
		CO	NOx	ROG	PM ₁₀	PM _{2.5}	SOx	CO ₂	CH ₄	N ₂ O	CO ₂ e
2010	Great Basin Valleys Basin	0.05	0.00	0.00	0.00	0.00	0.00	3.33	-	-	3.33
2010	Lake County Air Basin	0.07	0.01	0.01	0.00	0.00	0.00	4.90	-	-	4.90
2010	Lake Tahoe Air Basin	0.02	0.00	0.00	0.00	0.00	0.00	1.77	-	-	1.77
2010	Mojave Desert Air Basin	693.90	24.27	21.23	4.18	4.14	1.93	5,938.75	0.75	0.13	5,995.03
2010	Mountain Counties Air Basin	1.95	0.21	0.19	0.02	0.01	0.00	194.21	-	-	194.21
2010	North Central Coast Basin	956.17	16.03	21.64	1.55	1.54	3.97	8,463.89	0.35	0.26	8,550.87
2010	North Coast Basin	18.94	0.57	0.69	0.09	0.07	0.06	369.69	0.01	0.00	370.99
2010	Northeast Plateau Basin	-	-	-	-	-	-	-	-	-	-
2010	Sacramento Valley Basin	119.48	91.57	17.50	7.93	7.85	0.11	7,955.30	1.24	0.00	7,986.49
2010	Salton Sea Air Basin	114.47	6.13	4.94	1.48	1.45	0.03	878.01	0.25	0.00	884.68
2010	San Diego Air Basin	15.51	1.58	0.97	0.22	0.19	0.01	607.60	0.03	-	608.30
2010	San Francisco Bay Area Basin	212.27	4.81	5.88	0.65	0.60	0.76	2,463.00	0.11	0.05	2,480.61
2010	San Joaquin Valley Basin	1,769.31	278.06	88.40	29.80	29.71	3.90	28,562.74	4.96	0.24	28,757.85
2010	South Central Coast Basin	140.77	29.39	9.81	3.39	3.29	0.05	3,709.88	0.53	-	3,723.21
2010	South Coast Air Basin	537.68	11.10	12.85	0.97	0.91	2.23	5,692.56	0.19	0.15	5,741.22
2014	Great Basin Valleys Basin	0.03	0.00	0.00	0.00	0.00	0.00	3.06	-	-	3.06
2014	Lake County Air Basin	0.04	0.00	0.00	0.00	0.00	0.00	4.51	-	-	4.51
2014	Lake Tahoe Air Basin	0.02	0.00	0.00	0.00	0.00	0.00	1.63	-	-	1.63
2014	Mojave Desert Air Basin	673.03	21.21	18.81	4.08	4.04	1.93	5,892.77	0.62	0.13	5,945.69
2014	Mountain Counties Air Basin	1.30	0.14	0.13	0.02	0.01	0.00	178.05	-	-	178.05
2014	North Central Coast Basin	951.09	16.04	21.18	1.59	1.58	3.97	8,453.57	0.33	0.26	8,540.00
2014	North Coast Basin	17.65	0.47	0.58	0.09	0.07	0.06	349.57	0.01	0.00	350.84
2014	Northeast Plateau Basin	-	-	-	-	-	-	-	-	-	-
2014	Sacramento Valley Basin	107.91	70.09	12.58	6.03	5.95	0.11	7,858.77	0.89	0.00	7,881.10
2014	Salton Sea Air Basin	105.79	5.10	4.00	1.46	1.44	0.03	854.71	0.20	0.00	860.10
2014	San Diego Air Basin	13.23	1.21	0.76	0.21	0.18	0.01	572.83	0.02	-	573.37
2014	San Francisco Bay Area Basin	206.52	4.37	5.35	0.66	0.61	0.76	2,398.26	0.10	0.05	2,415.54
2014	San Joaquin Valley Basin	1,698.07	218.89	70.93	24.91	24.82	3.90	28,456.86	3.73	0.24	28,621.34
2014	South Central Coast Basin	126.32	22.74	7.45	2.91	2.81	0.05	3,595.45	0.40	-	3,605.43
2014	South Coast Air Basin	532.69	10.52	12.40	0.96	0.90	2.23	5,629.98	0.18	0.15	5,678.30
2020	Great Basin Valleys Basin	0.02	0.00	0.00	0.00	0.00	0.00	2.49	-	-	2.49
2020	Lake County Air Basin	0.02	0.00	0.00	0.00	0.00	0.00	3.67	-	-	3.67
2020	Lake Tahoe Air Basin	0.01	0.00	0.00	0.00	0.00	0.00	1.33	-	-	1.33
2020	Mojave Desert Air Basin	515.37	15.95	15.10	0.93	0.89	1.93	5,641.15	0.42	0.13	5,689.04
2020	Mountain Counties Air Basin	0.76	0.08	0.08	0.02	0.01	0.00	143.44	-	-	143.44

Calendar Year	Air Basin	Total Emissions									
		Tons of Pollutants					Metric Tons of Emissions				
		CO	NOx	ROG	PM ₁₀	PM _{2.5}	SOx	CO ₂	CH ₄	N ₂ O	CO ₂ e
2020	North Central Coast Basin	911.85	15.66	20.42	0.90	0.89	3.97	8,397.53	0.29	0.26	8,483.04
2020	North Coast Basin	14.17	0.35	0.46	0.04	0.02	0.06	303.14	0.01	0.00	304.34
2020	Northeast Plateau Basin	-	-	-	-	-	-	-	-	-	-
2020	Sacramento Valley Basin	68.81	44.10	7.07	2.76	2.68	0.11	7,610.05	0.49	0.00	7,622.40
2020	Salton Sea Air Basin	40.62	3.21	2.52	0.19	0.17	0.03	736.24	0.12	0.00	739.67
2020	San Diego Air Basin	5.80	0.74	0.50	0.08	0.05	0.01	480.93	0.01	-	481.25
2020	San Francisco Bay Area Basin	182.95	3.75	4.70	0.28	0.23	0.76	2,238.24	0.08	0.05	2,254.99
2020	San Joaquin Valley Basin	1,194.36	142.76	48.52	8.52	8.43	3.89	27,777.16	2.22	0.24	27,903.85
2020	South Central Coast Basin	54.26	14.22	4.47	0.95	0.86	0.05	3,263.73	0.23	-	3,269.48
2020	South Coast Air Basin	512.59	9.70	11.81	0.62	0.57	2.23	5,460.40	0.16	0.15	5,508.20
2030	Great Basin Valleys Basin	0.01	0.00	0.00	0.00	0.00	0.00	2.25	-	-	2.25
2030	Lake County Air Basin	0.01	0.00	0.00	0.00	0.00	0.00	3.32	-	-	3.32
2030	Lake Tahoe Air Basin	0.00	0.00	0.00	0.00	0.00	0.00	1.20	-	-	1.20
2030	Mojave Desert Air Basin	643.58	14.54	15.19	3.48	3.44	1.93	5,727.36	0.42	0.13	5,775.22
2030	Mountain Counties Air Basin	0.49	0.05	0.05	0.02	0.01	0.00	128.71	-	-	128.71
2030	North Central Coast Basin	944.13	16.09	20.55	1.61	1.61	3.97	8,422.07	0.30	0.26	8,507.76
2030	North Coast Basin	15.90	0.33	0.42	0.09	0.07	0.06	286.66	0.01	0.00	287.88
2030	Northeast Plateau Basin	-	-	-	-	-	-	-	-	-	-
2030	Sacramento Valley Basin	92.29	23.08	4.32	1.28	1.19	0.11	7,551.28	0.28	0.00	7,558.43
2030	Salton Sea Air Basin	93.25	2.85	2.57	1.27	1.25	0.03	765.05	0.12	0.00	768.53
2030	San Diego Air Basin	9.57	0.49	0.41	0.17	0.14	0.01	448.44	0.01	-	448.74
2030	San Francisco Bay Area Basin	198.72	3.71	4.62	0.65	0.60	0.76	2,196.07	0.08	0.05	2,212.88
2030	San Joaquin Valley Basin	1,600.85	88.57	42.72	11.69	11.60	3.90	28,120.41	1.71	0.24	28,234.30
2030	South Central Coast Basin	105.50	8.47	3.65	1.56	1.46	0.05	3,205.35	0.18	-	3,209.87
2030	South Coast Air Basin	524.97	9.40	11.68	0.91	0.86	2.23	5,408.63	0.16	0.15	5,456.44
2035	Great Basin Valleys Basin	0.01	0.00	0.00	0.00	0.00	0.00	2.21	-	-	2.21
2035	Lake County Air Basin	0.01	0.00	0.00	0.00	0.00	0.00	3.25	-	-	3.25
2035	Lake Tahoe Air Basin	0.00	0.00	0.00	0.00	0.00	0.00	1.17	-	-	1.17
2035	Mojave Desert Air Basin	643.26	14.12	15.11	3.44	3.40	1.93	5,717.10	0.41	0.13	5,764.85
2035	Mountain Counties Air Basin	0.44	0.04	0.05	0.02	0.01	0.00	126.47	-	-	126.47
2035	North Central Coast Basin	944.09	16.08	20.54	1.61	1.61	3.97	8,420.56	0.30	0.26	8,506.25
2035	North Coast Basin	15.81	0.32	0.41	0.09	0.07	0.06	283.36	0.01	0.00	284.58
2035	Northeast Plateau Basin	-	-	-	-	-	-	-	-	-	-
2035	Sacramento Valley Basin	91.69	20.33	3.93	1.00	0.92	0.11	7,533.46	0.26	0.00	7,539.97
2035	Salton Sea Air Basin	93.08	2.70	2.54	1.26	1.23	0.03	759.17	0.12	0.00	762.62
2035	San Diego Air Basin	9.35	0.44	0.38	0.16	0.13	0.01	440.75	0.01	-	441.05

Calendar Year	Air Basin	Total Emissions									
		Tons of Pollutants					Metric Tons of Emissions				
		CO	NOx	ROG	PM ₁₀	PM _{2.5}	SOx	CO ₂	CH ₄	N ₂ O	CO ₂ e
2035	San Francisco Bay Area Basin	198.41	3.65	4.57	0.65	0.60	0.76	2,185.29	0.08	0.05	2,202.10
2035	San Joaquin Valley Basin	1,600.05	80.91	41.72	10.93	10.84	3.90	28,100.71	1.63	0.24	28,212.76
2035	South Central Coast Basin	104.75	7.60	3.46	1.48	1.38	0.05	3,181.45	0.17	-	3,185.78
2035	South Coast Air Basin	524.57	9.31	11.62	0.91	0.85	2.23	5,394.99	0.16	0.15	5,442.79

Page intentionally left blank.

References

- Bay Area Air Quality Management District (BAAQMD). 1999. *Source Inventory Category #711 Agricultural Aircraft 1999 Emissions*. Available: <http://www.arb.ca.gov/ei/areasrc/districtmeth/BayArea/C711.pdf>. Accessed February 17, 2014.
- . 2010 (May). *California Environmental Quality Act Air Quality Guidelines*. Available: http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx?la=en. Accessed February 17, 2014.
- California Air Pollution Control Officers Association (CAPCOA). 2013. California Emissions Estimator Model (CalEEMod) version 2.2.1.
- California Air Resources Board (CARB). 1990. *Agricultural Aircraft*. Available: <http://www.arb.ca.gov/ei/areasrc/fullpdf/full8-1.pdf>. Accessed February 17, 2014.
- . 2007. *OFFROAD2007 Model*. Available: http://www.arb.ca.gov/msei/offroad/downloads/models/offroad2007_1215_exe.zip. Accessed February 17, 2014.
- . 2010 (May). *Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories*. Version 1.1. Available: http://www.arb.ca.gov/cc/protocols/localgov/pubs/lgo_protocol_v1_1_2010-05-03.pdf. Accessed February 17, 2014.
- . 2011. *In-Use Off-Road Equipment Inventory Model*. Available: <http://www.arb.ca.gov/msei/off-road-emissions-inventory-v3-scenpop-and-hp.mdb>. Accessed February 17, 2014.
- . 2013 (January). *Mobile Source Emission Inventory—Current Methods and Data: EMFAC 2011*. Available: <http://www.arb.ca.gov/msei/modeling.htm>. Accessed February 17, 2014.
- California Department of Pesticide Regulation (CDPR). 2011. *Summary of Pesticide Use Report Data—2010*. Available: <http://www.cdpr.ca.gov/docs/pur/purmain.htm>. Accessed February 17, 2014.
- Petro, Laura. 2011. Personal Communication. Email to Ryan Jolley on September 29, 2011.
- South Coast Air Quality Management District (SCAQMD). 2011 (March). *SCAQMD Air Quality Significance Thresholds*. Available: <http://www.aqmd.gov/ceqa/handbook/signthres.pdf>. Accessed February 17, 2014.
- Sacramento Metropolitan Air Quality Management District (SMAQMD). 2009 (December). *Guide to Air Quality Assessment in Sacramento County*. Available: <http://www.airquality.org/ceqa/ceqaguideupdate.shtml>. Accessed February 17, 2014.

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2012 (May). *Draft Guidance for Assessing and Mitigating Air Quality Impacts—2012*. Available: <http://www.valleyair.org/transportation/GAMAQIDRAFT-2012/GAMAQI-2012-Draft-May312012.pdf>. Accessed February 17, 2014.

Attachment 1. Emission Factors

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
Agricultural Tractors	2010	ROGs		1.247057514	g/bhp-hr
Agricultural Tractors	2010	CO		4.3714275	g/bhp-hr
Agricultural Tractors	2010	NO _x		7.96148718	g/bhp-hr
Agricultural Tractors	2010	SO _x		0.007618419	g/bhp-hr
Agricultural Tractors	2010	PM ₁₀		0.645666265	g/bhp-hr
Agricultural Tractors	2010	PM _{2.5}		0.645666265	g/bhp-hr
Agricultural Tractors	2010	CO ₂		649.4532643	g/bhp-hr
Agricultural Tractors	2010	CH ₄		0.112519992	g/bhp-hr
Agricultural Tractors	2010	Diesel gal/bhp-hr	diesel	0.065665202	gal/bhp-hr
Agricultural Tractors	2014	ROGs		0.879613022	g/bhp-hr
Agricultural Tractors	2014	CO		4.166978585	g/bhp-hr
Agricultural Tractors	2014	NO _x		6.091224278	g/bhp-hr
Agricultural Tractors	2014	SO _x		0.007618418	g/bhp-hr
Agricultural Tractors	2014	PM ₁₀		0.47333498	g/bhp-hr
Agricultural Tractors	2014	PM _{2.5}		0.47333498	g/bhp-hr
Agricultural Tractors	2014	CO ₂		649.4530688	g/bhp-hr
Agricultural Tractors	2014	CH ₄		0.079366067	g/bhp-hr
Agricultural Tractors	2014	Diesel gal/bhp-hr	diesel	0.065480823	gal/bhp-hr
Agricultural Tractors	2020	ROGs		0.477	g/bhp-hr
Agricultural Tractors	2020	CO		4	g/bhp-hr
Agricultural Tractors	2020	NO _x		3.84	g/bhp-hr
Agricultural Tractors	2020	SO _x		0.00762	g/bhp-hr
Agricultural Tractors	2020	PM ₁₀		0.233	g/bhp-hr
Agricultural Tractors	2020	PM _{2.5}		0.233	g/bhp-hr
Agricultural Tractors	2020	CO ₂		649	g/bhp-hr
Agricultural Tractors	2020	CH ₄		0.0431	g/bhp-hr
Agricultural Tractors	2020	Diesel gal/bhp-hr	diesel	0.0653	gal/bhp-hr
Agricultural Tractors	2030	ROGs		0.243543183	g/bhp-hr
Agricultural Tractors	2030	CO		3.919562919	g/bhp-hr
Agricultural Tractors	2030	NO _x		1.956184402	g/bhp-hr
Agricultural Tractors	2030	SO _x		0.007618419	g/bhp-hr
Agricultural Tractors	2030	PM ₁₀		0.046715715	g/bhp-hr
Agricultural Tractors	2030	PM _{2.5}		0.046715715	g/bhp-hr
Agricultural Tractors	2030	CO ₂		649.4529931	g/bhp-hr
Agricultural Tractors	2030	CH ₄		0.021974519	g/bhp-hr
Agricultural Tractors	2030	Diesel gal/bhp-hr		0.065178191	gal/bhp-hr
Agricultural Tractors	2035	ROGs		0.215705044	g/bhp-hr
Agricultural Tractors	2035	CO		3.914847671	g/bhp-hr

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
Agricultural Tractors	2035	NO _x		1.715796575	g/bhp-hr
Agricultural Tractors	2035	SO _x		0.007618418	g/bhp-hr
Agricultural Tractors	2035	PM ₁₀		0.022491032	g/bhp-hr
Agricultural Tractors	2035	PM _{2.5}		0.022491032	g/bhp-hr
Agricultural Tractors	2035	CO ₂		649.4530479	g/bhp-hr
Agricultural Tractors	2035	CH ₄		0.019462715	g/bhp-hr
Agricultural Tractors	2035	Diesel gal/bhp-hr		0.065165967	gal/bhp-hr
Aircraft-insect		Jet Fuel	jet fuel	1	unitless
Aircraft-insect		Jet Fuel	jet fuel	1	unitless
Aircraft-spray	2020	N ₂ O	N ₂ O	0.000683434	lb/gallon
Aircraft-spray	2030	N ₂ O	N ₂ O	0.000683434	lb/gallon
Aircraft-spray	2035	N ₂ O	N ₂ O	0.000683434	lb/gallon
Aircraft-spray	2010	N ₂ O	N ₂ O	0.000683434	lb/gallon
Aircraft-spray	2014	CO	CO	2.105	lb/gallon
Aircraft-spray	2014	ROGs	ROGs	0.045245	lb/gallon
Aircraft-spray	2014	NO _x	NO _x	0.03556	lb/gallon
Aircraft-spray	2014	PM ₁₀	PM ₁₀	0.00205	lb/gallon
Aircraft-spray	2014	SO _x	SO _x	0.00937	lb/gallon
Aircraft-spray	2014	CO ₂	CO ₂	21.4951	lb/gallon
Aircraft-spray	2014	PM _{2.5}	PM _{2.5}	0.00205	lb/gallon
Aircraft-spray	2020	CO	CO	2.105	lb/gallon
Aircraft-spray	2020	ROGs	ROGs	0.045245	lb/gallon
Aircraft-spray	2020	NO _x	NO _x	0.03556	lb/gallon
Aircraft-spray	2020	PM ₁₀	PM ₁₀	0.00205	lb/gallon
Aircraft-spray	2020	SO _x	SO _x	0.00937	lb/gallon
Aircraft-spray	2020	CO ₂	CO ₂	21.4951	lb/gallon
Aircraft-spray	2020	PM _{2.5}	PM _{2.5}	0.00205	lb/gallon
Aircraft-spray	2030	CO	CO	2.105	lb/gallon
Aircraft-spray	2030	ROGs	ROGs	0.045245	lb/gallon
Aircraft-spray	2030	NO _x	NO _x	0.03556	lb/gallon
Aircraft-spray	2030	PM ₁₀	PM ₁₀	0.00205	lb/gallon
Aircraft-spray	2030	SO _x	SO _x	0.00937	lb/gallon
Aircraft-spray	2030	CO ₂	CO ₂	21.4951	lb/gallon
Aircraft-spray	2030	PM _{2.5}	PM _{2.5}	0.00205	lb/gallon
Aircraft-spray	2035	CO	CO	2.105	lb/gallon
Aircraft-spray	2035	ROGs	ROGs	0.045245	lb/gallon
Aircraft-spray	2035	NO _x	NO _x	0.03556	lb/gallon
Aircraft-spray	2035	PM ₁₀	PM ₁₀	0.00205	lb/gallon
Aircraft-spray	2035	SO _x	SO _x	0.00937	lb/gallon
Aircraft-spray	2035	CO ₂	CO ₂	21.4951	lb/gallon

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
Aircraft-spray	2035	PM _{2.5}	PM _{2.5}	0.00205	lb/gallon
Aircraft-spray	2014	Jet Fuel	jet fuel	1	unitless
Aircraft-spray	2020	Jet Fuel	jet fuel	1	unitless
Aircraft-spray	2030	Jet Fuel	jet fuel	1	unitless
Aircraft-spray	2035	Jet Fuel	jet fuel	1	unitless
Aircraft-spray	2014	CH ₄	CH ₄	0.000595249	lb/gallon
Aircraft-spray	2020	CH ₄	CH ₄	0.000595249	lb/gallon
Aircraft-spray	2030	CH ₄	CH ₄	0.000595249	lb/gallon
Aircraft-spray	2035	CH ₄	CH ₄	0.000595249	lb/gallon
Aircraft-spray	2010	CH ₄	CH ₄	0.000595249	lb/gallon
Aircraft-spray	2014	N ₂ O	N ₂ O	0.000683434	lb/gallon
Aircraft-spray	2010	Jet Fuel	jet fuel	1	unitless
Aircraft-spray	2010	CO	CO	2.105	lb/gallon
Aircraft-spray	2010	ROGs	ROGs	0.045245	lb/gallon
Aircraft-spray	2010	NO _x	NO _x	0.03556	lb/gallon
Aircraft-spray	2010	PM ₁₀	PM ₁₀	0.00205	lb/gallon
Aircraft-spray	2010	SO _x	SO _x	0.00937	lb/gallon
Aircraft-spray	2010	CO ₂	CO ₂	21.4951	lb/gallon
Aircraft-spray	2010	PM _{2.5}	PM _{2.5}	0.00205	lb/gallon
Chainsaws	2010	ROGs		87.84418389	g/bhp-hr
Chainsaws	2010	CO		158.8797763	g/bhp-hr
Chainsaws	2010	NO _x		1.379383543	g/bhp-hr
Chainsaws	2010	SO _x		0.017686485	g/bhp-hr
Chainsaws	2010	PM ₁₀		0.249999785	g/bhp-hr
Chainsaws	2010	PM _{2.5}		0.249999785	g/bhp-hr
Chainsaws	2010	CO ₂		429.4395468	g/bhp-hr
Chainsaws	2010	CH ₄		5.459940026	g/bhp-hr
Chainsaws	2010	gasoline gal/bhp-hr	gasoline	0.115796234	gal/bhp-hr
Chainsaws	2014	ROGs		87.84395818	g/bhp-hr
Chainsaws	2014	CO		158.8798514	g/bhp-hr
Chainsaws	2014	NO _x		1.379399335	g/bhp-hr
Chainsaws	2014	SO _x		0.017686484	g/bhp-hr
Chainsaws	2014	PM ₁₀		0.249999703	g/bhp-hr
Chainsaws	2014	PM _{2.5}		0.249999703	g/bhp-hr
Chainsaws	2014	CO ₂		429.4396012	g/bhp-hr
Chainsaws	2014	CH ₄		5.459923826	g/bhp-hr
Chainsaws	2014	gasoline gal/bhp-hr	gasoline	0.115796153	gal/bhp-hr
Chainsaws	2020	ROGs		87.8	g/bhp-hr
Chainsaws	2020	CO		159	g/bhp-hr
Chainsaws	2020	NO _x		1.38	g/bhp-hr

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
Chainsaws	2020	SO _x		0.0177	g/bhp-hr
Chainsaws	2020	PM ₁₀		0.25	g/bhp-hr
Chainsaws	2020	PM _{2.5}		0.25	g/bhp-hr
Chainsaws	2020	CO ₂		429	g/bhp-hr
Chainsaws	2020	CH ₄		5.46	g/bhp-hr
Chainsaws	2020	gasoline gal/bhp-hr	gasoline	0.116	gal/bhp-hr
Chainsaws	2030	ROGs		87.8435187	g/bhp-hr
Chainsaws	2030	CO		158.8797423	g/bhp-hr
Chainsaws	2030	NO _x		1.379388505	g/bhp-hr
Chainsaws	2030	SO _x		0.017686473	g/bhp-hr
Chainsaws	2030	PM ₁₀		0.2499996	g/bhp-hr
Chainsaws	2030	PM _{2.5}		0.2499996	g/bhp-hr
Chainsaws	2030	CO ₂		429.4394111	g/bhp-hr
Chainsaws	2030	CH ₄		5.459898498	g/bhp-hr
Chainsaws	2030	gasoline gal/bhp-hr		0.115795898	gal/bhp-hr
Chainsaws	2035	ROGs		87.8434572	g/bhp-hr
Chainsaws	2035	CO		158.8798306	g/bhp-hr
Chainsaws	2035	NO _x		1.379401241	g/bhp-hr
Chainsaws	2035	SO _x		0.017686478	g/bhp-hr
Chainsaws	2035	PM ₁₀		0.249999619	g/bhp-hr
Chainsaws	2035	PM _{2.5}		0.249999619	g/bhp-hr
Chainsaws	2035	CO ₂		429.4394985	g/bhp-hr
Chainsaws	2035	CH ₄		5.459894452	g/bhp-hr
Chainsaws	2035	gasoline gal/bhp-hr		0.115795958	gal/bhp-hr
Chippers/Stump Grinders	2010	ROGs		7.106204876	g/bhp-hr
Chippers/Stump Grinders	2010	CO		261.6498162	g/bhp-hr
Chippers/Stump Grinders	2010	NO _x		5.194572922	g/bhp-hr
Chippers/Stump Grinders	2010	SO _x		0.012244482	g/bhp-hr
Chippers/Stump Grinders	2010	PM ₁₀		3.599995771	g/bhp-hr
Chippers/Stump Grinders	2010	PM _{2.5}		3.599995771	g/bhp-hr
Chippers/Stump Grinders	2010	CO ₂		429.4393551	g/bhp-hr
Chippers/Stump Grinders	2010	CH ₄		0.392885453	g/bhp-hr
Chippers/Stump Grinders	2010	gasoline gal/bhp-hr	gasoline	0.099108776	gal/bhp-hr
Chippers/Stump Grinders	2014	ROGs		7.103444451	g/bhp-hr
Chippers/Stump Grinders	2014	CO		261.5246998	g/bhp-hr
Chippers/Stump Grinders	2014	NO _x		5.193557225	g/bhp-hr
Chippers/Stump Grinders	2014	SO _x		0.012244486	g/bhp-hr
Chippers/Stump Grinders	2014	PM ₁₀		3.59999485	g/bhp-hr
Chippers/Stump Grinders	2014	PM _{2.5}		3.59999485	g/bhp-hr
Chippers/Stump Grinders	2014	CO ₂		429.4395185	g/bhp-hr

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
Chippers/Stump Grinders	2014	CH ₄		0.392885781	g/bhp-hr
Chippers/Stump Grinders	2014	gasoline gal/bhp-hr	gasoline	0.0990851	gal/bhp-hr
Chippers/Stump Grinders	2020	ROGs		7.1	g/bhp-hr
Chippers/Stump Grinders	2020	CO		261	g/bhp-hr
Chippers/Stump Grinders	2020	NO _x		5.19	g/bhp-hr
Chippers/Stump Grinders	2020	SO _x		0.0122	g/bhp-hr
Chippers/Stump Grinders	2020	PM ₁₀		3.6	g/bhp-hr
Chippers/Stump Grinders	2020	PM _{2.5}		3.6	g/bhp-hr
Chippers/Stump Grinders	2020	CO ₂		429	g/bhp-hr
Chippers/Stump Grinders	2020	CH ₄		0.393	g/bhp-hr
Chippers/Stump Grinders	2020	gasoline gal/bhp-hr	gasoline	0.099	gal/bhp-hr
Chippers/Stump Grinders	2030	ROGs		7.090884216	g/bhp-hr
Chippers/Stump Grinders	2030	CO		260.9533416	g/bhp-hr
Chippers/Stump Grinders	2030	NO _x		5.188683531	g/bhp-hr
Chippers/Stump Grinders	2030	SO _x		0.012244484	g/bhp-hr
Chippers/Stump Grinders	2030	PM ₁₀		3.599994792	g/bhp-hr
Chippers/Stump Grinders	2030	PM _{2.5}		3.599994792	g/bhp-hr
Chippers/Stump Grinders	2030	CO ₂		429.4394972	g/bhp-hr
Chippers/Stump Grinders	2030	CH ₄		0.392885483	g/bhp-hr
Chippers/Stump Grinders	2030	gasoline gal/bhp-hr		0.09897708	gal/bhp-hr
Chippers/Stump Grinders	2035	ROGs		7.086528465	g/bhp-hr
Chippers/Stump Grinders	2035	CO		260.7561821	g/bhp-hr
Chippers/Stump Grinders	2035	NO _x		5.187056866	g/bhp-hr
Chippers/Stump Grinders	2035	SO _x		0.012244482	g/bhp-hr
Chippers/Stump Grinders	2035	PM ₁₀		3.599996306	g/bhp-hr
Chippers/Stump Grinders	2035	PM _{2.5}		3.599996306	g/bhp-hr
Chippers/Stump Grinders	2035	CO ₂		429.4392909	g/bhp-hr
Chippers/Stump Grinders	2035	CH ₄		0.392885572	g/bhp-hr
Chippers/Stump Grinders	2035	gasoline gal/bhp-hr		0.098939803	gal/bhp-hr
Fan		electric		0	none
LDA	2035	CO	RUNEX	0.610534209	gms/mile
LDA	2035	CO	STREX	6.478631164	gms/vehicle/day
LDA	2035	CO ₂	IDLEX	0	gms/vehicle/day
LDA	2035	CO	IDLEX	0	gms/vehicle/day
LDA	2035	NO _x	IDLEX	0	gms/vehicle/day
LDA	2035	NO _x	STREX	0.384244709	gms/vehicle/day
LDA	2035	PM ₁₀	PMBW	0.036749815	gms/mile
LDA	2035	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDA	2035	PM _{2.5}	PMBW	0.01574992	gms/mile
LDA	2035	PM _{2.5}	PMTW	0.00199999	gms/mile

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDA	2035	PM _{2.5}	RUNEX	0.002008769	gms/mile
LDA	2035	PM _{2.5}	STREX	0.030955395	gms/vehicle/day
LDA	2035	Population	Population	15995382.27	population
LDA	2035	ROGs	DIURN	0.119382149	gms/vehicle/day
LDA	2035	ROGs	RUNLS	0.028155551	gms/mile
LDA	2035	SO _x	RUNEX	0.003508836	gms/mile
LDA	2035	TOGs	DIURN	0.119382149	gms/vehicle/day
LDA	2035	TOGs	IDLEX	0	gms/vehicle/day
LDA	2035	TOGs	RUNEX	0.020558615	gms/mile
LDA	2020	CO ₂	IDLEX	0	gms/vehicle/day
LDA	2020	CO ₂	RUNEX	240.3503974	gms/mile
LDA	2020	NO _x	IDLEX	0	gms/vehicle/day
LDA	2020	NO _x	STREX	0.610388737	gms/vehicle/day
LDA	2020	PM ₁₀	PMBW	0.036749815	gms/mile
LDA	2020	PM ₁₀	RUNEX	0.001836319	gms/mile
LDA	2020	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDA	2020	PM _{2.5}	PMTW	0.001999999	gms/mile
LDA	2020	PM _{2.5}	STREX	0.020243552	gms/vehicle/day
LDA	2020	ROGs	HTSK	0.597657976	gms/vehicle/day
LDA	2020	ROGs	IDLEX	0	gms/vehicle/day
LDA	2020	ROGs	RUNEX	0.017280128	gms/mile
LDA	2020	ROGs	STREX	0.707517198	gms/vehicle/day
LDA	2020	SO _x	RUNEX	0.003500985	gms/mile
LDA	2020	TOGs	DIURN	0.242466556	gms/vehicle/day
LDA	2020	TOGs	HTSK	0.597657976	gms/vehicle/day
LDA	2020	TOGs	IDLEX	0	gms/vehicle/day
LDA	2020	TOGs	RUNEX	0.027572456	gms/mile
LDA	2020	TOGs	STREX	0.755442195	gms/vehicle/day
LDA	2014	CO ₂	IDLEX	0	gms/vehicle/day
LDA	2014	CO ₂	RUNEX	309.3466455	gms/mile
LDA	2014	NO _x	IDLEX	0	gms/vehicle/day
LDA	2014	NO _x	STREX	1.292718193	gms/vehicle/day
LDA	2014	PM ₁₀	PMBW	0.036749815	gms/mile
LDA	2014	PM ₁₀	RUNEX	0.002166911	gms/mile
LDA	2014	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDA	2014	PM _{2.5}	PMTW	0.001999999	gms/mile
LDA	2014	PM _{2.5}	STREX	0.017414511	gms/vehicle/day
LDA	2014	ROGs	HTSK	1.030217655	gms/vehicle/day
LDA	2014	ROGs	IDLEX	0	gms/vehicle/day
LDA	2014	ROGs	RUNEX	0.046964379	gms/mile

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDA	2014	ROGs	STREX	1.607651972	gms/vehicle/day
LDA	2014	SO _x	RUNEX	0.003508307	gms/mile
LDA	2014	TOGs	DIURN	0.447644858	gms/vehicle/day
LDA	2014	TOGs	HTSK	1.030217655	gms/vehicle/day
LDA	2014	TOGs	IDLEX	0	gms/vehicle/day
LDA	2014	TOGs	RUNEX	0.063340904	gms/mile
LDA	2014	TOGs	STREX	1.718684322	gms/vehicle/day
LDA	2014	VMT	VMT	490272073.4	miles/day
LDA	2010	CO ₂	IDLEX	0	gms/vehicle/day
LDA	2010	CO ₂	RUNEX	346.7367396	gms/mile
LDA	2010	NO _x	IDLEX	0	gms/vehicle/day
LDA	2010	NO _x	STREX	2.173651609	gms/vehicle/day
LDA	2010	PM ₁₀	PMBW	0.036749815	gms/mile
LDA	2010	PM ₁₀	RUNEX	0.003825254	gms/mile
LDA	2010	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDA	2010	PM _{2.5}	PMTW	0.001999999	gms/mile
LDA	2010	PM _{2.5}	STREX	0.027002653	gms/vehicle/day
LDA	2010	ROGs	HTSK	1.432808019	gms/vehicle/day
LDA	2010	ROGs	IDLEX	0	gms/vehicle/day
LDA	2010	ROGs	RUNEX	0.095041189	gms/mile
LDA	2010	ROGs	STREX	3.006503239	gms/vehicle/day
LDA	2010	SO _x	RUNEX	0.003519052	gms/mile
LDA	2010	TOGs	DIURN	0.719190992	gms/vehicle/day
LDA	2010	TOGs	HTSK	1.432808019	gms/vehicle/day
LDA	2010	TOGs	IDLEX	0	gms/vehicle/day
LDA	2010	TOGs	RUNEX	0.121631431	gms/mile
LDA	2010	TOGs	STREX	3.21528234	gms/vehicle/day
LDA	2010	VMT	VMT	465641101.1	miles/day
LDA	2030	VMT	VMT	572755929.9	miles/day
LDA	2030	ROGs	IDLEX	0	gms/vehicle/day
LDA	2030	ROGs	HTSK	0.381723975	gms/vehicle/day
LDA	2030	TOGs	IDLEX	0	gms/vehicle/day
LDA	2030	TOGs	HTSK	0.381723975	gms/vehicle/day
LDA	2030	TOGs	RESTL	0.133707801	gms/vehicle/day
LDA	2030	CO	RUNEX	0.626767532	gms/mile
LDA	2030	CO	STREX	6.881198685	gms/vehicle/day
LDA	2030	NO _x	IDLEX	0	gms/vehicle/day
LDA	2030	CO ₂	RUNEX	211.8247431	gms/mile
LDA	2030	CO ₂	STREX	284.4597074	gms/vehicle/day
LDA	2030	PM ₁₀	RUNEX	0.002139169	gms/mile

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDA	2030	PM ₁₀	STREX	0.031817608	gms/vehicle/day
LDA	2030	PM ₁₀	PMTW	0.007999959	gms/mile
LDA	2030	PM ₁₀	PMBW	0.036749815	gms/mile
LDA	2030	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDA	2030	PM _{2.5}	STREX	0.029521491	gms/vehicle/day
LDA	2030	PM _{2.5}	PMTW	0.001999999	gms/mile
LDA	2030	SO _x	RUNEX	0.003507942	gms/mile
LDA	2030	SO _x	STREX	0.004779175	gms/vehicle/day
LDA	2020	CO	IDLEX	0	gms/vehicle/day
LDA	2020	CO	RUNEX	0.796768188	gms/mile
LDA	2020	CO	STREX	10.21439122	gms/vehicle/day
LDA	2020	CO ₂	STREX	330.9371463	gms/vehicle/day
LDA	2020	NO _x	RUNEX	0.081394205	gms/mile
LDA	2020	PM ₁₀	IDLEX	0	gms/vehicle/day
LDA	2020	PM ₁₀	PMTW	0.007999958	gms/mile
LDA	2020	PM ₁₀	STREX	0.021827766	gms/vehicle/day
LDA	2020	PM _{2.5}	PMBW	0.01574992	gms/mile
LDA	2020	PM _{2.5}	RUNEX	0.001702411	gms/mile
LDA	2020	Population	Population	14214919.12	population
LDA	2020	ROGs	DIURN	0.242466556	gms/vehicle/day
LDA	2020	ROGs	RESTL	0.213023625	gms/vehicle/day
LDA	2020	ROGs	RUNLS	0.038672677	gms/mile
LDA	2020	SO _x	IDLEX	0	gms/vehicle/day
LDA	2020	SO _x	STREX	0.004826965	gms/vehicle/day
LDA	2020	TOGs	RESTL	0.213023625	gms/vehicle/day
LDA	2020	TOGs	RUNLS	0.038672677	gms/mile
LDA	2020	Trips	Trips	89783250.12	trips/day
LDA	2020	VMT	VMT	523815313.2	miles/day
LDA	2014	CO	IDLEX	0	gms/vehicle/day
LDA	2014	CO	RUNEX	1.472405864	gms/mile
LDA	2014	CO	STREX	19.50639691	gms/vehicle/day
LDA	2014	CO ₂	STREX	420.1143263	gms/vehicle/day
LDA	2014	NO _x	RUNEX	0.141440038	gms/mile
LDA	2014	PM ₁₀	IDLEX	0	gms/vehicle/day
LDA	2014	PM ₁₀	PMTW	0.007999958	gms/mile
LDA	2014	PM ₁₀	STREX	0.019134162	gms/vehicle/day
LDA	2014	PM _{2.5}	PMBW	0.015749919	gms/mile
LDA	2014	PM _{2.5}	RUNEX	0.001973171	gms/mile
LDA	2014	Population	Population	13412881.91	population
LDA	2014	ROGs	DIURN	0.447644858	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDA	2014	ROGs	RESTL	0.345500687	gms/vehicle/day
LDA	2014	ROGs	RUNLS	0.066420551	gms/mile
LDA	2014	SO _x	IDLEX	0	gms/vehicle/day
LDA	2014	SO _x	STREX	0.004966828	gms/vehicle/day
LDA	2014	TOGs	RESTL	0.345500687	gms/vehicle/day
LDA	2014	TOGs	RUNLS	0.066420551	gms/mile
LDA	2014	Trips	Trips	84506459.58	trips/day
LDA	2010	CO	IDLEX	0	gms/vehicle/day
LDA	2010	CO	RUNEX	2.510638843	gms/mile
LDA	2010	CO	STREX	32.42010809	gms/vehicle/day
LDA	2010	CO ₂	STREX	458.0101783	gms/vehicle/day
LDA	2010	NO _x	RUNEX	0.242873669	gms/mile
LDA	2010	PM ₁₀	IDLEX	0	gms/vehicle/day
LDA	2010	PM ₁₀	PMTW	0.007999959	gms/mile
LDA	2010	PM ₁₀	STREX	0.029951472	gms/vehicle/day
LDA	2010	PM _{2.5}	PMBW	0.01574992	gms/mile
LDA	2010	PM _{2.5}	RUNEX	0.003461031	gms/mile
LDA	2010	Population	Population	13006201.68	population
LDA	2010	ROGs	DIURN	0.719190992	gms/vehicle/day
LDA	2010	ROGs	RESTL	0.479609059	gms/vehicle/day
LDA	2010	ROGs	RUNLS	0.11183603	gms/mile
LDA	2010	SO _x	IDLEX	0	gms/vehicle/day
LDA	2010	SO _x	STREX	0.005189242	gms/vehicle/day
LDA	2010	TOGs	RESTL	0.479609059	gms/vehicle/day
LDA	2010	TOGs	RUNLS	0.11183603	gms/mile
LDA	2010	Trips	Trips	81622301.68	trips/day
LDA	2030	WGAS	gasoline	0.042620015	gallons/mile
LDA	2030	WDSL	diesel	0.000129885	gallons/mile
LDA	2020	WGAS	gasoline	0.042552383	gallons/mile
LDA	2020	WDSL	diesel	0.000134082	gallons/mile
LDA	2035	WGAS	gasoline	0.04262833	gallons/mile
LDA	2035	WDSL	diesel	0.000128275	gallons/mile
LDA	2014	WGAS	gasoline	0.042695848	gallons/mile
LDA	2014	WDSL	diesel	0.000134207	gallons/mile
LDA	2010	WGAS	gasoline	0.042943407	gallons/mile
LDA	2010	WDSL	diesel	0.000121245	gallons/mile
LDA	2035	CO ₂	RUNEX	208.9424485	gms/mile
LDA	2035	CO ₂	STREX	279.1638366	gms/vehicle/day
LDA	2035	NO _x	RUNEX	0.063325388	gms/mile
LDA	2035	PM ₁₀	IDLEX	0	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDA	2035	PM ₁₀	PMTW	0.007999959	gms/mile
LDA	2035	PM ₁₀	RUNEX	0.002165168	gms/mile
LDA	2035	PM ₁₀	STREX	0.033363038	gms/vehicle/day
LDA	2035	ROGs	HTSK	0.32909085	gms/vehicle/day
LDA	2035	ROGs	IDLEX	0	gms/vehicle/day
LDA	2035	ROGs	RESTL	0.111501616	gms/vehicle/day
LDA	2035	ROGs	RUNEX	0.012008977	gms/mile
LDA	2035	ROGs	STREX	0.409492127	gms/vehicle/day
LDA	2035	SO _x	IDLEX	0	gms/vehicle/day
LDA	2035	SO _x	STREX	0.004774904	gms/vehicle/day
LDA	2035	TOGs	HTSK	0.32909085	gms/vehicle/day
LDA	2035	TOGs	RESTL	0.111501616	gms/vehicle/day
LDA	2035	TOGs	RUNLS	0.028155551	gms/mile
LDA	2035	TOGs	STREX	0.437211313	gms/vehicle/day
LDA	2035	Trips	Trips	100997885.8	trips/day
LDA	2035	VMT	VMT	593293082.7	miles/day
LDA	2030	Population	Population	15505628.36	population
LDA	2030	Trips	Trips	97864895	trips/day
LDA	2030	ROGs	RUNEX	0.01264084	gms/mile
LDA	2030	ROGs	STREX	0.447879794	gms/vehicle/day
LDA	2030	ROGs	DIURN	0.147115075	gms/vehicle/day
LDA	2030	ROGs	RUNLS	0.029586858	gms/mile
LDA	2030	ROGs	RESTL	0.133707801	gms/vehicle/day
LDA	2030	TOGs	RUNEX	0.021407908	gms/mile
LDA	2030	TOGs	STREX	0.478197503	gms/vehicle/day
LDA	2030	TOGs	DIURN	0.147115075	gms/vehicle/day
LDA	2030	TOGs	RUNLS	0.029586858	gms/mile
LDA	2030	CO	IDLEX	0	gms/vehicle/day
LDA	2030	NO _x	RUNEX	0.065680005	gms/mile
LDA	2030	NO _x	STREX	0.406143382	gms/vehicle/day
LDA	2030	CO ₂	IDLEX	0	gms/vehicle/day
LDA	2030	PM ₁₀	IDLEX	0	gms/vehicle/day
LDA	2030	PM _{2.5}	RUNEX	0.001984632	gms/mile
LDA	2030	PM _{2.5}	PMBW	0.01574992	gms/mile
LDA	2030	SO _x	IDLEX	0	gms/vehicle/day
LDT1	2035	CO ₂	IDLEX	0	gms/vehicle/day
LDT1	2035	CO ₂	STREX	326.4668861	gms/vehicle/day
LDT1	2035	NO _x	IDLEX	0	gms/vehicle/day
LDT1	2035	NO _x	STREX	0.483513804	gms/vehicle/day
LDT1	2035	PM ₁₀	PMBW	0.036749815	gms/mile

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDT1	2035	PM _{2.5}	PMBW	0.01574992	gms/mile
LDT1	2035	PM _{2.5}	STREX	0.028323344	gms/vehicle/day
LDT1	2035	ROGs	IDLEX	0	gms/vehicle/day
LDT1	2035	ROGs	RUNEX	0.012684346	gms/mile
LDT1	2035	ROGs	STREX	0.489428066	gms/vehicle/day
LDT1	2035	SO _x	IDLEX	0	gms/vehicle/day
LDT1	2035	SO _x	RUNEX	0.004075004	gms/mile
LDT1	2035	TOGs	DIURN	0.279689987	gms/vehicle/day
LDT1	2020	CO ₂	IDLEX	0	gms/vehicle/day
LDT1	2020	CO ₂	RUNEX	292.3781524	gms/mile
LDT1	2020	NO _x	IDLEX	0	gms/vehicle/day
LDT1	2020	NO _x	STREX	1.386025228	gms/vehicle/day
LDT1	2020	PM ₁₀	PMBW	0.036749815	gms/mile
LDT1	2020	PM ₁₀	RUNEX	0.003266661	gms/mile
LDT1	2020	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDT1	2020	PM _{2.5}	PMTW	0.001999999	gms/mile
LDT1	2020	PM _{2.5}	STREX	0.026669587	gms/vehicle/day
LDT1	2020	ROGs	HTSK	1.557274839	gms/vehicle/day
LDT1	2020	ROGs	IDLEX	0	gms/vehicle/day
LDT1	2020	ROGs	RUNEX	0.045844145	gms/mile
LDT1	2020	ROGs	STREX	1.802521042	gms/vehicle/day
LDT1	2020	SO _x	RUNEX	0.004056325	gms/mile
LDT1	2020	TOGs	DIURN	0.809491181	gms/vehicle/day
LDT1	2020	TOGs	HTSK	1.557274839	gms/vehicle/day
LDT1	2020	TOGs	IDLEX	0	gms/vehicle/day
LDT1	2020	TOGs	RUNEX	0.066084658	gms/mile
LDT1	2020	TOGs	STREX	1.924579229	gms/vehicle/day
LDT1	2020	VMT	VMT	67594005.09	miles/day
LDT1	2014	CO	RUNEX	3.663004329	gms/mile
LDT1	2014	CO	STREX	42.67092551	gms/vehicle/day
LDT1	2014	CO ₂	RUNEX	362.9491081	gms/mile
LDT1	2014	NO _x	IDLEX	0	gms/vehicle/day
LDT1	2014	NO _x	STREX	2.31420737	gms/vehicle/day
LDT1	2014	PM ₁₀	PMBW	0.036749815	gms/mile
LDT1	2014	PM ₁₀	PMTW	0.007999958	gms/mile
LDT1	2014	PM ₁₀	STREX	0.035907292	gms/vehicle/day
LDT1	2014	PM _{2.5}	PMTW	0.001999999	gms/mile
LDT1	2014	ROGs	DIURN	1.110431054	gms/vehicle/day
LDT1	2014	ROGs	HTSK	2.056469354	gms/vehicle/day
LDT1	2014	ROGs	RESTL	0.768397766	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDT1	2014	ROGs	STREX	3.383016024	gms/vehicle/day
LDT1	2014	SO _x	IDLEX	0	gms/vehicle/day
LDT1	2014	TOGs	DIURN	1.110431054	gms/vehicle/day
LDT1	2014	TOGs	HTSK	2.056469354	gms/vehicle/day
LDT1	2014	TOGs	IDLEX	0	gms/vehicle/day
LDT1	2014	TOGs	RESTL	0.768397766	gms/vehicle/day
LDT1	2014	TOGs	RUNEX	0.159530542	gms/mile
LDT1	2014	TOGs	STREX	3.616299847	gms/vehicle/day
LDT1	2010	CO	RUNEX	5.924625262	gms/mile
LDT1	2010	CO ₂	RUNEX	398.2747884	gms/mile
LDT1	2010	NO _x	RUNEX	0.583410103	gms/mile
LDT1	2010	PM ₁₀	PMBW	0.036749815	gms/mile
LDT1	2010	PM ₁₀	RUNEX	0.007464017	gms/mile
LDT1	2010	PM _{2.5}	PMBW	0.01574992	gms/mile
LDT1	2010	PM _{2.5}	RUNEX	0.006709088	gms/mile
LDT1	2010	ROGs	HTSK	2.510711708	gms/vehicle/day
LDT1	2010	ROGs	RESTL	0.89943711	gms/vehicle/day
LDT1	2010	ROGs	RUNLS	0.2777914	gms/mile
LDT1	2010	SO _x	RUNEX	0.004092361	gms/mile
LDT1	2010	TOGs	HTSK	2.510711708	gms/vehicle/day
LDT1	2010	TOGs	RESTL	0.89943711	gms/vehicle/day
LDT1	2010	TOGs	RUNLS	0.2777914	gms/mile
LDT1	2010	Trips	Trips	10259455.59	trips/day
LDT1	2035	TOGs	IDLEX	0	gms/vehicle/day
LDT1	2035	TOGs	RESTL	0.265812721	gms/vehicle/day
LDT1	2035	TOGs	RUNEX	0.022632087	gms/mile
LDT1	2035	TOGs	STREX	0.522558238	gms/vehicle/day
LDT1	2035	Trips	Trips	13279920.32	trips/day
LDT1	2030	VMT	VMT	76163610.96	miles/day
LDT1	2030	ROGs	IDLEX	0	gms/vehicle/day
LDT1	2030	ROGs	HTSK	0.938190735	gms/vehicle/day
LDT1	2030	TOGs	IDLEX	0	gms/vehicle/day
LDT1	2030	TOGs	HTSK	0.938190735	gms/vehicle/day
LDT1	2030	TOGs	RESTL	0.383165664	gms/vehicle/day
LDT1	2030	CO	RUNEX	0.944330742	gms/mile
LDT1	2030	CO	STREX	11.12012329	gms/vehicle/day
LDT1	2030	NO _x	IDLEX	0	gms/vehicle/day
LDT1	2030	CO ₂	RUNEX	258.719214	gms/mile
LDT1	2030	CO ₂	STREX	336.7502886	gms/vehicle/day
LDT1	2030	PM ₁₀	RUNEX	0.002355286	gms/mile

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDT1	2030	PM ₁₀	STREX	0.029465918	gms/vehicle/day
LDT1	2030	PM ₁₀	PMTW	0.007999958	gms/mile
LDT1	2030	PM ₁₀	PMBW	0.036749815	gms/mile
LDT1	2030	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDT1	2030	PM _{2.5}	STREX	0.027339511	gms/vehicle/day
LDT1	2030	PM _{2.5}	PMTW	0.001999999	gms/mile
LDT1	2030	SO _x	RUNEX	0.004068745	gms/mile
LDT1	2030	SO _x	STREX	0.005393244	gms/vehicle/day
LDT1	2020	CO	IDLEX	0	gms/vehicle/day
LDT1	2020	CO	RUNEX	1.932708339	gms/mile
LDT1	2020	CO	STREX	24.93119089	gms/vehicle/day
LDT1	2020	CO ₂	STREX	384.340321	gms/vehicle/day
LDT1	2020	NO _x	RUNEX	0.20972742	gms/mile
LDT1	2020	PM ₁₀	IDLEX	0	gms/vehicle/day
LDT1	2020	PM ₁₀	PMTW	0.007999958	gms/mile
LDT1	2020	PM ₁₀	STREX	0.028760364	gms/vehicle/day
LDT1	2020	PM _{2.5}	PMBW	0.01574992	gms/mile
LDT1	2020	PM _{2.5}	RUNEX	0.003028607	gms/mile
LDT1	2020	Population	Population	1846014.848	population
LDT1	2020	ROGs	DIURN	0.809491181	gms/vehicle/day
LDT1	2020	ROGs	RESTL	0.622348077	gms/vehicle/day
LDT1	2020	ROGs	RUNLS	0.147968693	gms/mile
LDT1	2020	SO _x	IDLEX	0	gms/vehicle/day
LDT1	2020	SO _x	STREX	0.005578655	gms/vehicle/day
LDT1	2020	TOGs	RESTL	0.622348077	gms/vehicle/day
LDT1	2020	TOGs	RUNLS	0.147968693	gms/mile
LDT1	2020	Trips	Trips	11200091.75	trips/day
LDT1	2014	CO	IDLEX	0	gms/vehicle/day
LDT1	2014	CO ₂	IDLEX	0	gms/vehicle/day
LDT1	2014	CO ₂	STREX	474.7565362	gms/vehicle/day
LDT1	2014	NO _x	RUNEX	0.373665301	gms/mile
LDT1	2014	PM ₁₀	IDLEX	0	gms/vehicle/day
LDT1	2014	PM ₁₀	RUNEX	0.00485411	gms/mile
LDT1	2014	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDT1	2014	PM _{2.5}	PMBW	0.01574992	gms/mile
LDT1	2014	PM _{2.5}	RUNEX	0.004418505	gms/mile
LDT1	2014	PM _{2.5}	STREX	0.032683856	gms/vehicle/day
LDT1	2014	Population	Population	1738813.989	population
LDT1	2014	ROGs	IDLEX	0	gms/vehicle/day
LDT1	2014	ROGs	RUNEX	0.126127416	gms/mile

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDT1	2014	ROGs	RUNLS	0.206187741	gms/mile
LDT1	2014	SO _x	RUNEX	0.004071625	gms/mile
LDT1	2014	SO _x	STREX	0.005905722	gms/vehicle/day
LDT1	2014	TOGs	RUNLS	0.206187741	gms/mile
LDT1	2014	Trips	Trips	10580310.36	trips/day
LDT1	2014	VMT	VMT	63053878.99	miles/day
LDT1	2010	CO	IDLEX	0	gms/vehicle/day
LDT1	2010	CO	STREX	61.07157063	gms/vehicle/day
LDT1	2010	CO ₂	IDLEX	0	gms/vehicle/day
LDT1	2010	CO ₂	STREX	515.4582054	gms/vehicle/day
LDT1	2010	NO _x	IDLEX	0	gms/vehicle/day
LDT1	2010	NO _x	STREX	3.229547069	gms/vehicle/day
LDT1	2010	PM ₁₀	IDLEX	0	gms/vehicle/day
LDT1	2010	PM ₁₀	PMTW	0.007999959	gms/mile
LDT1	2010	PM ₁₀	STREX	0.051899063	gms/vehicle/day
LDT1	2010	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDT1	2010	PM _{2.5}	PMTW	0.001999999	gms/mile
LDT1	2010	PM _{2.5}	STREX	0.046581806	gms/vehicle/day
LDT1	2010	Population	Population	1686237.287	population
LDT1	2010	ROGs	DIURN	1.395457943	gms/vehicle/day
LDT1	2010	ROGs	IDLEX	0	gms/vehicle/day
LDT1	2010	ROGs	RUNEX	0.238848545	gms/mile
LDT1	2010	ROGs	STREX	5.1196685	gms/vehicle/day
LDT1	2010	SO _x	IDLEX	0	gms/vehicle/day
LDT1	2010	SO _x	STREX	0.006278839	gms/vehicle/day
LDT1	2010	TOGs	DIURN	1.395457943	gms/vehicle/day
LDT1	2010	TOGs	IDLEX	0	gms/vehicle/day
LDT1	2010	TOGs	RUNEX	0.288991344	gms/mile
LDT1	2010	TOGs	STREX	5.477038405	gms/vehicle/day
LDT1	2010	VMT	VMT	59580853.98	miles/day
LDT1	2030	WGAS	gasoline	0.049500205	gallons/mile
LDT1	2030	WDSL	diesel	4.9924E-05	gallons/mile
LDT1	2020	WGAS	gasoline	0.049430533	gallons/mile
LDT1	2020	WDSL	diesel	4.80284E-05	gallons/mile
LDT1	2035	WGAS	gasoline	0.049557359	gallons/mile
LDT1	2035	WDSL	diesel	4.72292E-05	gallons/mile
LDT1	2014	WGAS	gasoline	0.049737658	gallons/mile
LDT1	2014	WDSL	diesel	4.47435E-05	gallons/mile
LDT1	2010	WGAS	gasoline	0.050162574	gallons/mile
LDT1	2010	WDSL	diesel	3.89122E-05	gallons/mile

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDT1	2035	CO	IDLEX	0	gms/vehicle/day
LDT1	2035	CO	RUNEX	0.721879141	gms/mile
LDT1	2035	CO	STREX	7.920498693	gms/vehicle/day
LDT1	2035	CO ₂	RUNEX	250.6314339	gms/mile
LDT1	2035	NO _x	RUNEX	0.07012489	gms/mile
LDT1	2035	PM ₁₀	IDLEX	0	gms/vehicle/day
LDT1	2035	PM ₁₀	PMTW	0.007999959	gms/mile
LDT1	2035	PM ₁₀	RUNEX	0.002146518	gms/mile
LDT1	2035	PM ₁₀	STREX	0.030526272	gms/vehicle/day
LDT1	2035	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDT1	2035	PM _{2.5}	PMTW	0.001999999	gms/mile
LDT1	2035	PM _{2.5}	RUNEX	0.001991562	gms/mile
LDT1	2035	Population	Population	2173897.869	population
LDT1	2035	ROGs	DIURN	0.279689987	gms/vehicle/day
LDT1	2035	ROGs	HTSK	0.653218461	gms/vehicle/day
LDT1	2035	ROGs	RESTL	0.265812721	gms/vehicle/day
LDT1	2035	ROGs	RUNLS	0.059870347	gms/mile
LDT1	2035	SO _x	STREX	0.005389038	gms/vehicle/day
LDT1	2035	TOGs	HTSK	0.653218461	gms/vehicle/day
LDT1	2035	TOGs	RUNLS	0.059870347	gms/mile
LDT1	2035	VMT	VMT	81215702.32	miles/day
LDT1	2030	Population	Population	2062426.054	population
LDT1	2030	Trips	Trips	12515082.62	trips/day
LDT1	2030	ROGs	RUNEX	0.01869741	gms/mile
LDT1	2030	ROGs	STREX	0.744428076	gms/vehicle/day
LDT1	2030	ROGs	DIURN	0.438233108	gms/vehicle/day
LDT1	2030	ROGs	RUNLS	0.086003573	gms/mile
LDT1	2030	ROGs	RESTL	0.383165664	gms/vehicle/day
LDT1	2030	TOGs	RUNEX	0.030771442	gms/mile
LDT1	2030	TOGs	STREX	0.794819621	gms/vehicle/day
LDT1	2030	TOGs	DIURN	0.438233108	gms/vehicle/day
LDT1	2030	TOGs	RUNLS	0.086003573	gms/mile
LDT1	2030	CO	IDLEX	0	gms/vehicle/day
LDT1	2030	NO _x	RUNEX	0.097068505	gms/mile
LDT1	2030	NO _x	STREX	0.665189775	gms/vehicle/day
LDT1	2030	CO ₂	IDLEX	0	gms/vehicle/day
LDT1	2030	PM ₁₀	IDLEX	0	gms/vehicle/day
LDT1	2030	PM _{2.5}	RUNEX	0.002185262	gms/mile
LDT1	2030	PM _{2.5}	PMBW	0.01574992	gms/mile
LDT1	2030	SO _x	IDLEX	0	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDT2	2020	CO ₂	IDLEX	0	gms/vehicle/day
LDT2	2020	CO ₂	RUNEX	357.5337375	gms/mile
LDT2	2020	NO _x	IDLEX	0	gms/vehicle/day
LDT2	2020	NO _x	STREX	1.238056344	gms/vehicle/day
LDT2	2020	PM ₁₀	PMBW	0.036749815	gms/mile
LDT2	2020	PM ₁₀	RUNEX	0.001841022	gms/mile
LDT2	2020	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDT2	2020	PM _{2.5}	PMTW	0.001999999	gms/mile
LDT2	2020	PM _{2.5}	STREX	0.020184236	gms/vehicle/day
LDT2	2020	ROGs	HTSK	0.848568439	gms/vehicle/day
LDT2	2020	ROGs	IDLEX	0	gms/vehicle/day
LDT2	2020	ROGs	RUNEX	0.022110284	gms/mile
LDT2	2020	ROGs	STREX	1.009009292	gms/vehicle/day
LDT2	2020	SO _x	RUNEX	0.004757525	gms/mile
LDT2	2020	TOGs	DIURN	0.369680151	gms/vehicle/day
LDT2	2020	TOGs	HTSK	0.848568439	gms/vehicle/day
LDT2	2020	TOGs	IDLEX	0	gms/vehicle/day
LDT2	2020	TOGs	RUNEX	0.035886395	gms/mile
LDT2	2020	TOGs	STREX	1.077331242	gms/vehicle/day
LDT2	2020	VMT	VMT	192930900	miles/day
LDT2	2014	CO ₂	IDLEX	0	gms/vehicle/day
LDT2	2014	CO ₂	RUNEX	437.2808219	gms/mile
LDT2	2014	NO _x	IDLEX	0	gms/vehicle/day
LDT2	2014	NO _x	STREX	2.616261286	gms/vehicle/day
LDT2	2014	PM ₁₀	PMBW	0.036749816	gms/mile
LDT2	2014	PM ₁₀	RUNEX	0.002204043	gms/mile
LDT2	2014	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDT2	2014	PM _{2.5}	PMTW	0.001999999	gms/mile
LDT2	2014	PM _{2.5}	STREX	0.017670576	gms/vehicle/day
LDT2	2014	ROGs	HTSK	1.141386513	gms/vehicle/day
LDT2	2014	ROGs	IDLEX	0	gms/vehicle/day
LDT2	2014	ROGs	RUNEX	0.058179191	gms/mile
LDT2	2014	ROGs	STREX	2.14971276	gms/vehicle/day
LDT2	2014	SO _x	RUNEX	0.004780481	gms/mile
LDT2	2014	TOGs	DIURN	0.510202127	gms/vehicle/day
LDT2	2014	TOGs	HTSK	1.141386513	gms/vehicle/day
LDT2	2014	TOGs	IDLEX	0	gms/vehicle/day
LDT2	2014	TOGs	RUNEX	0.080621864	gms/mile
LDT2	2014	TOGs	STREX	2.29689462	gms/vehicle/day
LDT2	2014	VMT	VMT	178528077.9	miles/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDT2	2010	CO ₂	IDLEX	0	gms/vehicle/day
LDT2	2010	CO ₂	RUNEX	473.6112981	gms/mile
LDT2	2010	NO _x	IDLEX	0	gms/vehicle/day
LDT2	2010	NO _x	STREX	4.006612468	gms/vehicle/day
LDT2	2010	PM ₁₀	PMBW	0.036749815	gms/mile
LDT2	2010	PM ₁₀	RUNEX	0.003431738	gms/mile
LDT2	2010	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDT2	2010	PM _{2.5}	PMTW	0.001999999	gms/mile
LDT2	2010	PM _{2.5}	STREX	0.024867399	gms/vehicle/day
LDT2	2010	ROGs	HTSK	1.272851323	gms/vehicle/day
LDT2	2010	ROGs	IDLEX	0	gms/vehicle/day
LDT2	2010	ROGs	RUNEX	0.101592562	gms/mile
LDT2	2010	ROGs	STREX	3.460799053	gms/vehicle/day
LDT2	2010	SO _x	RUNEX	0.004804336	gms/mile
LDT2	2010	TOGs	DIURN	0.645004383	gms/vehicle/day
LDT2	2010	TOGs	HTSK	1.272851323	gms/vehicle/day
LDT2	2010	TOGs	IDLEX	0	gms/vehicle/day
LDT2	2010	TOGs	RUNEX	0.134402361	gms/mile
LDT2	2010	TOGs	STREX	3.698487192	gms/vehicle/day
LDT2	2010	VMT	VMT	170807541.7	miles/day
LDT2	2035	CO ₂	IDLEX	0	gms/vehicle/day
LDT2	2035	CO ₂	STREX	431.8085681	gms/vehicle/day
LDT2	2035	NO _x	IDLEX	0	gms/vehicle/day
LDT2	2035	NO _x	STREX	0.510039305	gms/vehicle/day
LDT2	2035	PM ₁₀	PMBW	0.036749815	gms/mile
LDT2	2035	PM _{2.5}	PMBW	0.01574992	gms/mile
LDT2	2035	PM _{2.5}	STREX	0.030274107	gms/vehicle/day
LDT2	2035	ROGs	IDLEX	0	gms/vehicle/day
LDT2	2035	ROGs	RUNEX	0.012447655	gms/mile
LDT2	2035	ROGs	STREX	0.464111297	gms/vehicle/day
LDT2	2035	SO _x	IDLEX	0	gms/vehicle/day
LDT2	2035	SO _x	RUNEX	0.004767809	gms/mile
LDT2	2035	TOGs	DIURN	0.301454118	gms/vehicle/day
LDT2	2035	TOGs	IDLEX	0	gms/vehicle/day
LDT2	2035	TOGs	RESTL	0.314421793	gms/vehicle/day
LDT2	2035	TOGs	RUNEX	0.022673867	gms/mile
LDT2	2035	TOGs	STREX	0.49552774	gms/vehicle/day
LDT2	2035	Trips	Trips	36461206.81	trips/day
LDT2	2030	VMT	VMT	215920309.6	miles/day
LDT2	2030	ROGs	IDLEX	0	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDT2	2030	ROGs	HTSK	0.655805601	gms/vehicle/day
LDT2	2030	TOGs	IDLEX	0	gms/vehicle/day
LDT2	2030	TOGs	HTSK	0.655805601	gms/vehicle/day
LDT2	2030	TOGs	RESTL	0.319370367	gms/vehicle/day
LDT2	2030	CO	RUNEX	0.741452128	gms/mile
LDT2	2030	CO	STREX	8.253889262	gms/vehicle/day
LDT2	2030	NO _x	IDLEX	0	gms/vehicle/day
LDT2	2030	CO ₂	RUNEX	328.3935866	gms/mile
LDT2	2030	CO ₂	STREX	439.1405152	gms/vehicle/day
LDT2	2030	PM ₁₀	RUNEX	0.002091636	gms/mile
LDT2	2030	PM ₁₀	STREX	0.030808247	gms/vehicle/day
LDT2	2030	PM ₁₀	PMTW	0.007999958	gms/mile
LDT2	2030	PM ₁₀	PMBW	0.036749816	gms/mile
LDT2	2030	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDT2	2030	PM _{2.5}	STREX	0.028584971	gms/vehicle/day
LDT2	2030	PM _{2.5}	PMTW	0.001999999	gms/mile
LDT2	2030	SO _x	RUNEX	0.004765006	gms/mile
LDT2	2030	SO _x	STREX	0.006463472	gms/vehicle/day
LDT2	2020	CO	IDLEX	0	gms/vehicle/day
LDT2	2020	CO	RUNEX	1.088571017	gms/mile
LDT2	2020	CO	STREX	14.732531	gms/vehicle/day
LDT2	2020	CO ₂	STREX	485.6935217	gms/vehicle/day
LDT2	2020	NO _x	RUNEX	0.130599624	gms/mile
LDT2	2020	PM ₁₀	IDLEX	0	gms/vehicle/day
LDT2	2020	PM ₁₀	PMTW	0.007999959	gms/mile
LDT2	2020	PM ₁₀	STREX	0.021761013	gms/vehicle/day
LDT2	2020	PM _{2.5}	PMBW	0.01574992	gms/mile
LDT2	2020	PM _{2.5}	RUNEX	0.001707303	gms/mile
LDT2	2020	Population	Population	4932054.099	population
LDT2	2020	ROGs	DIURN	0.369680151	gms/vehicle/day
LDT2	2020	ROGs	RESTL	0.343883914	gms/vehicle/day
LDT2	2020	ROGs	RUNLS	0.069531272	gms/mile
LDT2	2020	SO _x	IDLEX	0	gms/vehicle/day
LDT2	2020	SO _x	STREX	0.006573921	gms/vehicle/day
LDT2	2020	TOGs	RESTL	0.343883914	gms/vehicle/day
LDT2	2020	TOGs	RUNLS	0.069531272	gms/mile
LDT2	2020	Trips	Trips	31022768.31	trips/day
LDT2	2014	CO	IDLEX	0	gms/vehicle/day
LDT2	2014	CO	RUNEX	2.040605235	gms/mile
LDT2	2014	CO	STREX	28.10708533	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDT2	2014	CO ₂	STREX	587.3406857	gms/vehicle/day
LDT2	2014	NO _x	RUNEX	0.263005285	gms/mile
LDT2	2014	PM ₁₀	IDLEX	0	gms/vehicle/day
LDT2	2014	PM ₁₀	PMTW	0.007999958	gms/mile
LDT2	2014	PM ₁₀	STREX	0.019315575	gms/vehicle/day
LDT2	2014	PM _{2.5}	PMBW	0.01574992	gms/mile
LDT2	2014	PM _{2.5}	RUNEX	0.002012755	gms/mile
LDT2	2014	Population	Population	4629245.114	population
LDT2	2014	ROGs	DIURN	0.510202127	gms/vehicle/day
LDT2	2014	ROGs	RESTL	0.40224169	gms/vehicle/day
LDT2	2014	ROGs	RUNLS	0.100813173	gms/mile
LDT2	2014	SO _x	IDLEX	0	gms/vehicle/day
LDT2	2014	SO _x	STREX	0.006787385	gms/vehicle/day
LDT2	2014	TOGs	RESTL	0.40224169	gms/vehicle/day
LDT2	2014	TOGs	RUNLS	0.100813173	gms/mile
LDT2	2014	Trips	Trips	29114782.54	trips/day
LDT2	2010	CO	IDLEX	0	gms/vehicle/day
LDT2	2010	CO	RUNEX	3.132549942	gms/mile
LDT2	2010	CO	STREX	42.05083924	gms/vehicle/day
LDT2	2010	CO ₂	STREX	626.0988861	gms/vehicle/day
LDT2	2010	NO _x	RUNEX	0.433376477	gms/mile
LDT2	2010	PM ₁₀	IDLEX	0	gms/vehicle/day
LDT2	2010	PM ₁₀	PMTW	0.007999958	gms/mile
LDT2	2010	PM ₁₀	STREX	0.02734988	gms/vehicle/day
LDT2	2010	PM _{2.5}	PMBW	0.01574992	gms/mile
LDT2	2010	PM _{2.5}	RUNEX	0.003118697	gms/mile
LDT2	2010	Population	Population	4463925.735	population
LDT2	2010	ROGs	DIURN	0.645004383	gms/vehicle/day
LDT2	2010	ROGs	RESTL	0.436625753	gms/vehicle/day
LDT2	2010	ROGs	RUNLS	0.130727002	gms/mile
LDT2	2010	SO _x	IDLEX	0	gms/vehicle/day
LDT2	2010	SO _x	STREX	0.007040872	gms/vehicle/day
LDT2	2010	TOGs	RESTL	0.436625753	gms/vehicle/day
LDT2	2010	TOGs	RUNLS	0.130727002	gms/mile
LDT2	2010	Trips	Trips	28139030.17	trips/day
LDT2	2030	WGAS	gasoline	0.057951375	gallons/mile
LDT2	2030	WDSL	diesel	1.51126E-05	gallons/mile
LDT2	2020	WGAS	gasoline	0.057896349	gallons/mile
LDT2	2020	WDSL	diesel	1.564E-05	gallons/mile
LDT2	2035	WGAS	gasoline	0.057976417	gallons/mile

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDT2	2035	WDSL	diesel	1.4859E-05	gallons/mile
LDT2	2014	WGAS	gasoline	0.058259346	gallons/mile
LDT2	2014	WDSL	diesel	1.59129E-05	gallons/mile
LDT2	2010	WGAS	gasoline	0.058636745	gallons/mile
LDT2	2010	WDSL	diesel	1.34953E-05	gallons/mile
LDT2	2035	CO	IDLEX	0	gms/vehicle/day
LDT2	2035	CO	RUNEX	0.697846608	gms/mile
LDT2	2035	CO	STREX	7.446588693	gms/vehicle/day
LDT2	2035	CO ₂	RUNEX	324.5640104	gms/mile
LDT2	2035	NO _x	RUNEX	0.073274193	gms/mile
LDT2	2035	PM ₁₀	IDLEX	0	gms/vehicle/day
LDT2	2035	PM ₁₀	PMTW	0.007999959	gms/mile
LDT2	2035	PM ₁₀	RUNEX	0.002138112	gms/mile
LDT2	2035	PM ₁₀	STREX	0.032628761	gms/vehicle/day
LDT2	2035	PM _{2.5}	IDLEX	0	gms/vehicle/day
LDT2	2035	PM _{2.5}	PMTW	0.001999999	gms/mile
LDT2	2035	PM _{2.5}	RUNEX	0.001983796	gms/mile
LDT2	2035	Population	Population	5821558.576	population
LDT2	2035	ROGs	DIURN	0.301454118	gms/vehicle/day
LDT2	2035	ROGs	HTSK	0.618368708	gms/vehicle/day
LDT2	2035	ROGs	RESTL	0.314421793	gms/vehicle/day
LDT2	2035	ROGs	RUNLS	0.054146606	gms/mile
LDT2	2035	SO _x	STREX	0.006444103	gms/vehicle/day
LDT2	2035	TOGs	HTSK	0.618368708	gms/vehicle/day
LDT2	2035	TOGs	RUNLS	0.054146606	gms/mile
LDT2	2035	VMT	VMT	150038632	miles/day
LDT2	2030	Population	Population	5518811.139	population
LDT2	2030	Trips	Trips	34602430.3	trips/day
LDT2	2030	ROGs	RUNEX	0.013761567	gms/mile
LDT2	2030	ROGs	STREX	0.529510792	gms/vehicle/day
LDT2	2030	ROGs	DIURN	0.314396998	gms/vehicle/day
LDT2	2030	ROGs	RUNLS	0.057225524	gms/mile
LDT2	2030	ROGs	RESTL	0.319370367	gms/vehicle/day
LDT2	2030	TOGs	RUNEX	0.024403181	gms/mile
LDT2	2030	TOGs	STREX	0.565354234	gms/vehicle/day
LDT2	2030	TOGs	DIURN	0.314396998	gms/vehicle/day
LDT2	2030	TOGs	RUNLS	0.057225524	gms/mile
LDT2	2030	CO	IDLEX	0	gms/vehicle/day
LDT2	2030	NO _x	RUNEX	0.080862059	gms/mile
LDT2	2030	NO _x	STREX	0.584147106	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LDT2	2030	CO ₂	IDLEX	0	gms/vehicle/day
LDT2	2030	PM ₁₀	IDLEX	0	gms/vehicle/day
LDT2	2030	PM _{2.5}	RUNEX	0.001940672	gms/mile
LDT2	2030	PM _{2.5}	PMBW	0.01574992	gms/mile
LDT2	2030	SO _x	IDLEX	0	gms/vehicle/day
LHD1	2010	PM ₁₀	STREX	0.0275947	gms/vehicle/day
LHD1	2020	CO ₂	IDLEX	112.5225668	gms/vehicle/day
LHD1	2020	CO ₂	RUNEX	626.5522067	gms/mile
LHD1	2020	NO _x	IDLEX	0.907699226	gms/vehicle/day
LHD1	2020	NO _x	STREX	16.78513219	gms/vehicle/day
LHD1	2020	PM ₁₀	PMBW	0.050288698	gms/mile
LHD1	2020	PM ₁₀	RUNEX	0.012950546	gms/mile
LHD1	2020	PM _{2.5}	IDLEX	0.008905257	gms/vehicle/day
LHD1	2020	PM _{2.5}	PMTW	0.002341105	gms/mile
LHD1	2020	PM _{2.5}	STREX	0.01127219	gms/vehicle/day
LHD1	2020	ROGs	HTSK	0.982769585	gms/vehicle/day
LHD1	2020	ROGs	IDLEX	0.386568862	gms/vehicle/day
LHD1	2020	ROGs	RUNEX	0.120383116	gms/mile
LHD1	2020	ROGs	STREX	5.009311393	gms/vehicle/day
LHD1	2020	SO _x	RUNEX	0.006889664	gms/mile
LHD1	2020	TOGs	DIURN	0.033621498	gms/vehicle/day
LHD1	2020	TOGs	HTSK	0.982769585	gms/vehicle/day
LHD1	2020	TOGs	IDLEX	0.41193981	gms/vehicle/day
LHD1	2020	TOGs	RUNEX	0.141179016	gms/mile
LHD1	2020	TOGs	STREX	5.348714303	gms/vehicle/day
LHD1	2020	VMT	VMT	27157925.28	miles/day
LHD1	2014	CO ₂	IDLEX	123.139623	gms/vehicle/day
LHD1	2014	CO ₂	RUNEX	689.5623139	gms/mile
LHD1	2014	NO _x	IDLEX	0.907617067	gms/vehicle/day
LHD1	2014	NO _x	STREX	19.04180974	gms/vehicle/day
LHD1	2014	PM ₁₀	PMBW	0.050272706	gms/mile
LHD1	2014	PM ₁₀	RUNEX	0.01784459	gms/mile
LHD1	2014	PM _{2.5}	IDLEX	0.009368384	gms/vehicle/day
LHD1	2014	PM _{2.5}	PMTW	0.002340703	gms/mile
LHD1	2014	PM _{2.5}	STREX	0.018564383	gms/vehicle/day
LHD1	2014	ROGs	HTSK	1.071370015	gms/vehicle/day
LHD1	2014	ROGs	IDLEX	0.397376286	gms/vehicle/day
LHD1	2014	ROGs	RUNEX	0.200774753	gms/mile
LHD1	2014	ROGs	STREX	6.939782692	gms/vehicle/day
LHD1	2014	SO _x	RUNEX	0.006944723	gms/mile

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LHD1	2014	TOGs	DIURN	0.039806238	gms/vehicle/day
LHD1	2014	TOGs	HTSK	1.071370015	gms/vehicle/day
LHD1	2014	TOGs	IDLEX	0.423311898	gms/vehicle/day
LHD1	2014	TOGs	RUNEX	0.231556701	gms/mile
LHD1	2014	TOGs	STREX	7.412157018	gms/vehicle/day
LHD1	2014	VMT	VMT	25122467.13	miles/day
LHD1	2010	CO ₂	IDLEX	125.1293113	gms/vehicle/day
LHD1	2010	CO ₂	RUNEX	701.6754944	gms/mile
LHD1	2010	NO _x	IDLEX	0.920287793	gms/vehicle/day
LHD1	2010	NO _x	STREX	19.50788131	gms/vehicle/day
LHD1	2010	PM ₁₀	PMBW	0.05045165	gms/mile
LHD1	2010	PM ₁₀	RUNEX	0.021333622	gms/mile
LHD1	2010	PM _{2.5}	PMBW	0.021622134	gms/mile
LHD1	2010	PM _{2.5}	RUNEX	0.019629422	gms/mile
LHD1	2010	Population	Population	557934.7215	population
LHD1	2010	ROGs	DIURN	0.044225124	gms/vehicle/day
LHD1	2010	ROGs	RESTL	0.020503939	gms/vehicle/day
LHD1	2010	ROGs	RUNLS	0.157675316	gms/mile
LHD1	2010	SO _x	IDLEX	0.001274395	gms/vehicle/day
LHD1	2010	SO _x	STREX	0.007370297	gms/vehicle/day
LHD1	2010	TOGs	RESTL	0.020503939	gms/vehicle/day
LHD1	2010	TOGs	RUNLS	0.157675316	gms/mile
LHD1	2010	Trips	Trips	8031165.319	trips/day
LHD1	2035	CO ₂	IDLEX	112.5542526	gms/vehicle/day
LHD1	2035	CO ₂	STREX	531.7426454	gms/vehicle/day
LHD1	2035	NO _x	IDLEX	0.912148996	gms/vehicle/day
LHD1	2035	NO _x	STREX	12.72927277	gms/vehicle/day
LHD1	2035	PM ₁₀	PMBW	0.050343738	gms/mile
LHD1	2035	PM _{2.5}	PMBW	0.021575887	gms/mile
LHD1	2035	PM _{2.5}	STREX	0.00319171	gms/vehicle/day
LHD1	2035	ROGs	IDLEX	0.375097954	gms/vehicle/day
LHD1	2035	ROGs	RUNEX	0.036117211	gms/mile
LHD1	2035	ROGs	STREX	2.491097418	gms/vehicle/day
LHD1	2035	SO _x	IDLEX	0.001270492	gms/vehicle/day
LHD1	2035	SO _x	RUNEX	0.006875553	gms/mile
LHD1	2035	TOGs	DIURN	0.021772293	gms/vehicle/day
LHD1	2035	TOGs	IDLEX	0.399875887	gms/vehicle/day
LHD1	2035	TOGs	RESTL	0.015211708	gms/vehicle/day
LHD1	2035	TOGs	RUNEX	0.045446824	gms/mile
LHD1	2035	TOGs	STREX	2.659723812	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LHD1	2035	Trips	Trips	10926209.23	trips/day
LHD1	2030	VMT	VMT	30751509.53	miles/day
LHD1	2030	ROGs	IDLEX	0.368433518	gms/vehicle/day
LHD1	2030	ROGs	HTSK	0.792208091	gms/vehicle/day
LHD1	2030	TOGs	IDLEX	0.392861245	gms/vehicle/day
LHD1	2030	TOGs	HTSK	0.792208091	gms/vehicle/day
LHD1	2030	TOGs	RESTL	0.016099928	gms/vehicle/day
LHD1	2030	CO	RUNEX	0.555169669	gms/mile
LHD1	2030	CO	STREX	37.51319342	gms/vehicle/day
LHD1	2030	NO _x	IDLEX	0.911216181	gms/vehicle/day
LHD1	2030	CO ₂	RUNEX	626.1592222	gms/mile
LHD1	2030	CO ₂	STREX	528.5500396	gms/vehicle/day
LHD1	2030	PM ₁₀	RUNEX	0.008586114	gms/mile
LHD1	2030	PM ₁₀	STREX	0.005250256	gms/vehicle/day
LHD1	2030	PM ₁₀	PMTW	0.009369768	gms/mile
LHD1	2030	PM ₁₀	PMBW	0.050341744	gms/mile
LHD1	2030	PM _{2.5}	IDLEX	0.008650806	gms/vehicle/day
LHD1	2030	PM _{2.5}	STREX	0.004871371	gms/vehicle/day
LHD1	2030	PM _{2.5}	PMTW	0.002342442	gms/mile
LHD1	2030	SO _x	RUNEX	0.006872371	gms/mile
LHD1	2030	SO _x	STREX	0.006543024	gms/vehicle/day
LHD1	2020	CO	IDLEX	2.443761705	gms/vehicle/day
LHD1	2020	CO	RUNEX	1.318555318	gms/mile
LHD1	2020	CO	STREX	57.89182249	gms/vehicle/day
LHD1	2020	CO ₂	STREX	518.3784361	gms/vehicle/day
LHD1	2020	NO _x	RUNEX	1.252222718	gms/mile
LHD1	2020	PM ₁₀	IDLEX	0.009679626	gms/vehicle/day
LHD1	2020	PM ₁₀	PMTW	0.009364422	gms/mile
LHD1	2020	PM ₁₀	STREX	0.012182323	gms/vehicle/day
LHD1	2020	PM _{2.5}	PMBW	0.021552298	gms/mile
LHD1	2020	PM _{2.5}	RUNEX	0.011921239	gms/mile
LHD1	2020	Population	Population	637569.8387	population
LHD1	2020	ROGs	DIURN	0.033621498	gms/vehicle/day
LHD1	2020	ROGs	RESTL	0.018828474	gms/vehicle/day
LHD1	2020	ROGs	RUNLS	0.14783203	gms/mile
LHD1	2020	SO _x	IDLEX	0.001271431	gms/vehicle/day
LHD1	2020	SO _x	STREX	0.006816483	gms/vehicle/day
LHD1	2020	TOGs	RESTL	0.018828474	gms/vehicle/day
LHD1	2020	TOGs	RUNLS	0.14783203	gms/mile
LHD1	2020	Trips	Trips	9182285.674	trips/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LHD1	2014	CO	IDLEX	2.506810907	gms/vehicle/day
LHD1	2014	CO	RUNEX	2.284177777	gms/mile
LHD1	2014	CO	STREX	79.80657357	gms/vehicle/day
LHD1	2014	CO ₂	STREX	557.6164818	gms/vehicle/day
LHD1	2014	NO _x	RUNEX	1.965807344	gms/mile
LHD1	2014	PM ₁₀	IDLEX	0.010183025	gms/vehicle/day
LHD1	2014	PM ₁₀	PMTW	0.00936281	gms/mile
LHD1	2014	PM ₁₀	STREX	0.020272811	gms/vehicle/day
LHD1	2014	PM _{2.5}	PMBW	0.021545444	gms/mile
LHD1	2014	PM _{2.5}	RUNEX	0.016422173	gms/mile
LHD1	2014	Population	Population	586181.5388	population
LHD1	2014	ROGs	DIURN	0.039806238	gms/vehicle/day
LHD1	2014	ROGs	RESTL	0.019906903	gms/vehicle/day
LHD1	2014	ROGs	RUNLS	0.159793747	gms/mile
LHD1	2014	SO _x	IDLEX	0.00127269	gms/vehicle/day
LHD1	2014	SO _x	STREX	0.007123122	gms/vehicle/day
LHD1	2014	TOGs	RESTL	0.019906903	gms/vehicle/day
LHD1	2014	TOGs	RUNLS	0.159793747	gms/mile
LHD1	2014	Trips	Trips	8443223.158	trips/day
LHD1	2010	CO	IDLEX	2.552207974	gms/vehicle/day
LHD1	2010	CO	RUNEX	3.167391406	gms/mile
LHD1	2010	CO	STREX	99.78761696	gms/vehicle/day
LHD1	2010	CO ₂	STREX	555.4624472	gms/vehicle/day
LHD1	2010	NO _x	RUNEX	2.513263645	gms/mile
LHD1	2010	PM ₁₀	IDLEX	0.010791108	gms/vehicle/day
LHD1	2010	PM ₁₀	PMTW	0.009380844	gms/mile
LHD1	2010	PM _{2.5}	IDLEX	0.00992782	gms/vehicle/day
LHD1	2010	PM _{2.5}	PMTW	0.002345211	gms/mile
LHD1	2010	PM _{2.5}	STREX	0.02513524	gms/vehicle/day
LHD1	2010	ROGs	HTSK	1.103678802	gms/vehicle/day
LHD1	2010	ROGs	IDLEX	0.404008368	gms/vehicle/day
LHD1	2010	ROGs	RUNEX	0.264884104	gms/mile
LHD1	2010	ROGs	STREX	8.197385802	gms/vehicle/day
LHD1	2010	SO _x	RUNEX	0.006974884	gms/mile
LHD1	2010	TOGs	DIURN	0.044225124	gms/vehicle/day
LHD1	2010	TOGs	HTSK	1.103678802	gms/vehicle/day
LHD1	2010	TOGs	IDLEX	0.43032189	gms/vehicle/day
LHD1	2010	TOGs	RUNEX	0.303026692	gms/mile
LHD1	2010	TOGs	STREX	8.757450219	gms/vehicle/day
LHD1	2010	VMT	VMT	24658003.48	miles/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LHD1	2030	WGAS	gasoline	0.062862373	gallons/mile
LHD1	2030	WDSL	diesel	0.017757672	gallons/mile
LHD1	2020	WGAS	gasoline	0.063139629	gallons/mile
LHD1	2020	WDSL	diesel	0.017760547	gallons/mile
LHD1	2035	WGAS	gasoline	0.062901338	gallons/mile
LHD1	2035	WDSL	diesel	0.01775128	gallons/mile
LHD1	2014	WGAS	gasoline	0.063775168	gallons/mile
LHD1	2014	WDSL	diesel	0.017833696	gallons/mile
LHD1	2010	WGAS	gasoline	0.06377534	gallons/mile
LHD1	2010	WDSL	diesel	0.018149094	gallons/mile
LHD1	2035	CO	IDLEX	2.391489603	gms/vehicle/day
LHD1	2035	CO	RUNEX	0.425166241	gms/mile
LHD1	2035	CO	STREX	33.77389911	gms/vehicle/day
LHD1	2035	CO ₂	RUNEX	626.6386768	gms/mile
LHD1	2035	NO _x	RUNEX	0.463203366	gms/mile
LHD1	2035	PM ₁₀	IDLEX	0.009418526	gms/vehicle/day
LHD1	2035	PM ₁₀	PMTW	0.009369969	gms/mile
LHD1	2035	PM ₁₀	RUNEX	0.00777472	gms/mile
LHD1	2035	PM ₁₀	STREX	0.003439954	gms/vehicle/day
LHD1	2035	PM _{2.5}	IDLEX	0.008665046	gms/vehicle/day
LHD1	2035	PM _{2.5}	PMTW	0.002342492	gms/mile
LHD1	2035	PM _{2.5}	RUNEX	0.007154625	gms/mile
LHD1	2035	Population	Population	758854.6385	population
LHD1	2035	ROGs	DIURN	0.021772293	gms/vehicle/day
LHD1	2035	ROGs	HTSK	0.694437161	gms/vehicle/day
LHD1	2035	ROGs	RESTL	0.015211708	gms/vehicle/day
LHD1	2035	ROGs	RUNLS	0.085902594	gms/mile
LHD1	2035	SO _x	STREX	0.006506385	gms/vehicle/day
LHD1	2035	TOGs	HTSK	0.694437161	gms/vehicle/day
LHD1	2035	TOGs	RUNLS	0.085902594	gms/mile
LHD1	2035	VMT	VMT	27583136.4	miles/day
LHD1	2030	Population	Population	721079.964	population
LHD1	2030	Trips	Trips	10382535.66	trips/day
LHD1	2030	ROGs	RUNEX	0.048737089	gms/mile
LHD1	2030	ROGs	STREX	2.912698737	gms/vehicle/day
LHD1	2030	ROGs	DIURN	0.024640375	gms/vehicle/day
LHD1	2030	ROGs	RUNLS	0.111020388	gms/mile
LHD1	2030	ROGs	RESTL	0.016099928	gms/vehicle/day
LHD1	2030	TOGs	RUNEX	0.059944737	gms/mile
LHD1	2030	TOGs	STREX	3.109863996	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LHD1	2030	TOGs	DIURN	0.024640375	gms/vehicle/day
LHD1	2030	TOGs	RUNLS	0.111020388	gms/mile
LHD1	2030	CO	IDLEX	2.373252267	gms/vehicle/day
LHD1	2030	NO _x	RUNEX	0.607669767	gms/mile
LHD1	2030	NO _x	STREX	13.35622806	gms/vehicle/day
LHD1	2030	CO ₂	IDLEX	112.5531066	gms/vehicle/day
LHD1	2030	PM ₁₀	IDLEX	0.009403048	gms/vehicle/day
LHD1	2030	PM _{2.5}	RUNEX	0.007902211	gms/mile
LHD1	2030	PM _{2.5}	PMBW	0.021575032	gms/mile
LHD1	2030	SO _x	IDLEX	0.001269987	gms/vehicle/day
LHD2	2020	CO	IDLEX	1.854740313	gms/vehicle/day
LHD2	2020	CO ₂	STREX	321.1433948	gms/vehicle/day
LHD2	2020	NO _x	RUNEX	1.780729234	gms/mile
LHD2	2020	PM ₁₀	IDLEX	0.016633569	gms/vehicle/day
LHD2	2020	PM ₁₀	STREX	0.005372628	gms/vehicle/day
LHD2	2020	PM _{2.5}	PMBW	0.029101543	gms/mile
LHD2	2020	Population	Population	89600.74043	population
LHD2	2020	ROGs	DIURN	0.016140837	gms/vehicle/day
LHD2	2020	ROGs	RESTL	0.009726603	gms/vehicle/day
LHD2	2020	ROGs	RUNEX	0.103092555	gms/mile
LHD2	2020	ROGs	STREX	2.539588027	gms/vehicle/day
LHD2	2020	SO _x	IDLEX	0.00130287	gms/vehicle/day
LHD2	2020	SO _x	RUNEX	0.006072081	gms/mile
LHD2	2020	TOGs	HTSK	0.504795511	gms/vehicle/day
LHD2	2020	TOGs	RESTL	0.009726603	gms/vehicle/day
LHD2	2020	TOGs	RUNEX	0.120567605	gms/mile
LHD2	2014	CO ₂	IDLEX	129.5599374	gms/vehicle/day
LHD2	2014	CO ₂	RUNEX	613.6234472	gms/mile
LHD2	2014	NO _x	IDLEX	1.565144312	gms/vehicle/day
LHD2	2014	NO _x	STREX	11.20715757	gms/vehicle/day
LHD2	2014	PM ₁₀	PMBW	0.06807363	gms/mile
LHD2	2014	PM ₁₀	RUNEX	0.026520286	gms/mile
LHD2	2014	PM _{2.5}	IDLEX	0.015857489	gms/vehicle/day
LHD2	2014	PM _{2.5}	PMTW	0.00259743	gms/mile
LHD2	2014	PM _{2.5}	STREX	0.011522276	gms/vehicle/day
LHD2	2014	ROGs	HTSK	0.663762551	gms/vehicle/day
LHD2	2014	ROGs	IDLEX	0.285788224	gms/vehicle/day
LHD2	2014	ROGs	RUNEX	0.172781969	gms/mile
LHD2	2014	ROGs	STREX	4.069463623	gms/vehicle/day
LHD2	2014	SO _x	RUNEX	0.006100911	gms/mile

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LHD2	2014	TOGs	DIURN	0.022895408	gms/vehicle/day
LHD2	2014	TOGs	HTSK	0.663762551	gms/vehicle/day
LHD2	2014	TOGs	IDLEX	0.307562729	gms/vehicle/day
LHD2	2014	TOGs	RUNEX	0.199097563	gms/mile
LHD2	2014	TOGs	STREX	4.351376197	gms/vehicle/day
LHD2	2010	CO ₂	IDLEX	131.8480469	gms/vehicle/day
LHD2	2010	CO ₂	RUNEX	621.354233	gms/mile
LHD2	2010	NO _x	IDLEX	1.597564857	gms/vehicle/day
LHD2	2010	NO _x	STREX	11.3539193	gms/vehicle/day
LHD2	2010	PM ₁₀	IDLEX	0.018318585	gms/vehicle/day
LHD2	2010	PM ₁₀	PMTW	0.010439368	gms/mile
LHD2	2010	PM ₁₀	STREX	0.022732008	gms/vehicle/day
LHD2	2010	PM _{2.5}	PMBW	0.029453297	gms/mile
LHD2	2010	PM _{2.5}	RUNEX	0.029135947	gms/mile
LHD2	2010	Population	Population	79802.68606	population
LHD2	2010	ROGs	DIURN	0.029838995	gms/vehicle/day
LHD2	2010	ROGs	RESTL	0.014255749	gms/vehicle/day
LHD2	2010	ROGs	RUNLS	0.103950263	gms/mile
LHD2	2010	SO _x	IDLEX	0.001306264	gms/vehicle/day
LHD2	2010	SO _x	STREX	0.004704784	gms/vehicle/day
LHD2	2010	TOGs	RESTL	0.014255749	gms/vehicle/day
LHD2	2010	TOGs	RUNLS	0.103950263	gms/mile
LHD2	2010	Trips	Trips	1059326.395	trips/day
LHD2	2035	CO ₂	IDLEX	118.3728485	gms/vehicle/day
LHD2	2035	CO ₂	STREX	327.4677884	gms/vehicle/day
LHD2	2035	NO _x	IDLEX	1.564321102	gms/vehicle/day
LHD2	2035	NO _x	STREX	7.074810686	gms/vehicle/day
LHD2	2035	PM ₁₀	PMBW	0.068058051	gms/mile
LHD2	2035	PM _{2.5}	PMBW	0.029167733	gms/mile
LHD2	2035	PM _{2.5}	STREX	0.001477057	gms/vehicle/day
LHD2	2035	ROGs	IDLEX	0.272334241	gms/vehicle/day
LHD2	2035	ROGs	RUNEX	0.047010894	gms/mile
LHD2	2035	ROGs	STREX	1.261710369	gms/vehicle/day
LHD2	2035	SO _x	IDLEX	0.001302549	gms/vehicle/day
LHD2	2035	SO _x	RUNEX	0.006056022	gms/mile
LHD2	2035	TOGs	DIURN	0.011041247	gms/vehicle/day
LHD2	2035	TOGs	IDLEX	0.293400515	gms/vehicle/day
LHD2	2035	TOGs	RESTL	0.00803778	gms/vehicle/day
LHD2	2035	TOGs	RUNEX	0.055917766	gms/mile
LHD2	2035	TOGs	STREX	1.347117577	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LHD2	2035	Trips	Trips	1429922.259	trips/day
LHD2	2030	Population	Population	102425.6022	population
LHD2	2030	Trips	Trips	1361430.741	trips/day
LHD2	2030	ROGs	RUNEX	0.054350912	gms/mile
LHD2	2030	ROGs	IDLEX	0.268700553	gms/vehicle/day
LHD2	2030	ROGs	STREX	1.423384176	gms/vehicle/day
LHD2	2030	ROGs	DIURN	0.011535315	gms/vehicle/day
LHD2	2030	ROGs	RUNLS	0.042768698	gms/mile
LHD2	2030	ROGs	RESTL	0.008150129	gms/vehicle/day
LHD2	2030	TOGs	RUNEX	0.064382682	gms/mile
LHD2	2030	TOGs	STREX	1.519735351	gms/vehicle/day
LHD2	2030	TOGs	DIURN	0.011535315	gms/vehicle/day
LHD2	2030	TOGs	RUNLS	0.042768698	gms/mile
LHD2	2030	CO	IDLEX	1.807981632	gms/vehicle/day
LHD2	2030	NO _x	IDLEX	1.565051014	gms/vehicle/day
LHD2	2030	CO ₂	IDLEX	118.3833915	gms/vehicle/day
LHD2	2030	PM ₁₀	RUNEX	0.013172853	gms/mile
LHD2	2030	PM _{2.5}	RUNEX	0.012120102	gms/mile
LHD2	2030	PM _{2.5}	IDLEX	0.015278729	gms/vehicle/day
LHD2	2030	PM _{2.5}	PMTW	0.002597595	gms/mile
LHD2	2030	SO _x	IDLEX	0.001302364	gms/vehicle/day
LHD2	2020	CO	RUNEX	0.84206313	gms/mile
LHD2	2020	CO	STREX	28.31016829	gms/vehicle/day
LHD2	2020	CO ₂	IDLEX	118.3055345	gms/vehicle/day
LHD2	2020	CO ₂	RUNEX	559.1123753	gms/mile
LHD2	2020	NO _x	IDLEX	1.556227432	gms/vehicle/day
LHD2	2020	NO _x	STREX	9.788017577	gms/vehicle/day
LHD2	2020	PM ₁₀	PMBW	0.067903608	gms/mile
LHD2	2020	PM ₁₀	PMTW	0.010376751	gms/mile
LHD2	2020	PM ₁₀	RUNEX	0.01976133	gms/mile
LHD2	2020	PM _{2.5}	IDLEX	0.015302886	gms/vehicle/day
LHD2	2020	PM _{2.5}	PMTW	0.002594188	gms/mile
LHD2	2020	PM _{2.5}	RUNEX	0.018183183	gms/mile
LHD2	2020	PM _{2.5}	STREX	0.004971715	gms/vehicle/day
LHD2	2020	ROGs	HTSK	0.504795511	gms/vehicle/day
LHD2	2020	ROGs	IDLEX	0.280294591	gms/vehicle/day
LHD2	2020	ROGs	RUNLS	0.067890291	gms/mile
LHD2	2020	SO _x	STREX	0.004086503	gms/vehicle/day
LHD2	2020	TOGs	DIURN	0.016140837	gms/vehicle/day
LHD2	2020	TOGs	IDLEX	0.301759284	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LHD2	2020	TOGs	RUNLS	0.067890291	gms/mile
LHD2	2020	TOGs	STREX	2.711637751	gms/vehicle/day
LHD2	2020	Trips	Trips	1191901.596	trips/day
LHD2	2020	VMT	VMT	3770433.84	miles/day
LHD2	2014	CO	IDLEX	1.886510324	gms/vehicle/day
LHD2	2014	CO	RUNEX	1.641391307	gms/mile
LHD2	2014	CO	STREX	44.59098045	gms/vehicle/day
LHD2	2014	CO ₂	STREX	350.4836545	gms/vehicle/day
LHD2	2014	NO _x	RUNEX	2.804728512	gms/mile
LHD2	2014	PM ₁₀	IDLEX	0.017236399	gms/vehicle/day
LHD2	2014	PM ₁₀	PMTW	0.010389722	gms/mile
LHD2	2014	PM ₁₀	STREX	0.013062652	gms/vehicle/day
LHD2	2014	PM _{2.5}	PMBW	0.029174409	gms/mile
LHD2	2014	PM _{2.5}	RUNEX	0.024386317	gms/mile
LHD2	2014	Population	Population	82701.05374	population
LHD2	2014	ROGs	DIURN	0.022895408	gms/vehicle/day
LHD2	2014	ROGs	RESTL	0.011737206	gms/vehicle/day
LHD2	2014	ROGs	RUNLS	0.089725373	gms/mile
LHD2	2014	SO _x	IDLEX	0.001304105	gms/vehicle/day
LHD2	2014	SO _x	STREX	0.004380616	gms/vehicle/day
LHD2	2014	TOGs	RESTL	0.011737206	gms/vehicle/day
LHD2	2014	TOGs	RUNLS	0.089725373	gms/mile
LHD2	2014	Trips	Trips	1099833.899	trips/day
LHD2	2014	VMT	VMT	3531134.182	miles/day
LHD2	2010	CO	IDLEX	1.888112522	gms/vehicle/day
LHD2	2010	CO	RUNEX	2.695051365	gms/mile
LHD2	2010	CO	STREX	61.83278551	gms/vehicle/day
LHD2	2010	CO ₂	STREX	356.452482	gms/vehicle/day
LHD2	2010	NO _x	RUNEX	3.617149364	gms/mile
LHD2	2010	PM ₁₀	PMBW	0.068724367	gms/mile
LHD2	2010	PM ₁₀	RUNEX	0.031715402	gms/mile
LHD2	2010	PM _{2.5}	IDLEX	0.0168531	gms/vehicle/day
LHD2	2010	PM _{2.5}	PMTW	0.002609842	gms/mile
LHD2	2010	PM _{2.5}	STREX	0.019521902	gms/vehicle/day
LHD2	2010	ROGs	HTSK	0.849315094	gms/vehicle/day
LHD2	2010	ROGs	IDLEX	0.285006691	gms/vehicle/day
LHD2	2010	ROGs	RUNEX	0.243870232	gms/mile
LHD2	2010	ROGs	STREX	5.552745468	gms/vehicle/day
LHD2	2010	SO _x	RUNEX	0.006099339	gms/mile
LHD2	2010	TOGs	DIURN	0.029838995	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LHD2	2010	TOGs	HTSK	0.849315094	gms/vehicle/day
LHD2	2010	TOGs	IDLEX	0.306822178	gms/vehicle/day
LHD2	2010	TOGs	RUNEX	0.277549851	gms/mile
LHD2	2010	TOGs	STREX	5.946154872	gms/vehicle/day
LHD2	2010	VMT	VMT	3564428.987	miles/day
LHD2	2030	WGAS	gasoline	0.037538963	gallons/mile
LHD2	2030	WDSL	diesel	0.031000792	gallons/mile
LHD2	2020	WGAS	gasoline	0.037887522	gallons/mile
LHD2	2020	WDSL	diesel	0.030925593	gallons/mile
LHD2	2035	WGAS	gasoline	0.03763178	gallons/mile
LHD2	2035	WDSL	diesel	0.030953277	gallons/mile
LHD2	2014	WGAS	gasoline	0.037954197	gallons/mile
LHD2	2014	WDSL	diesel	0.03123261	gallons/mile
LHD2	2010	WGAS	gasoline	0.037096393	gallons/mile
LHD2	2010	WDSL	diesel	0.032032377	gallons/mile
LHD2	2035	CO	IDLEX	1.817619616	gms/vehicle/day
LHD2	2035	CO	RUNEX	0.494184968	gms/mile
LHD2	2035	CO	STREX	19.25953853	gms/vehicle/day
LHD2	2035	CO ₂	RUNEX	558.083511	gms/mile
LHD2	2035	NO _x	RUNEX	0.641780874	gms/mile
LHD2	2035	PM ₁₀	IDLEX	0.016469898	gms/vehicle/day
LHD2	2035	PM ₁₀	PMTW	0.010388533	gms/mile
LHD2	2035	PM ₁₀	RUNEX	0.01213329	gms/mile
LHD2	2035	PM ₁₀	STREX	0.001591939	gms/vehicle/day
LHD2	2035	PM _{2.5}	IDLEX	0.015152309	gms/vehicle/day
LHD2	2035	PM _{2.5}	PMTW	0.002597133	gms/mile
LHD2	2035	PM _{2.5}	RUNEX	0.011163451	gms/mile
LHD2	2035	Population	Population	107571.997	population
LHD2	2035	ROGs	DIURN	0.011041247	gms/vehicle/day
LHD2	2035	ROGs	HTSK	0.320252459	gms/vehicle/day
LHD2	2035	ROGs	RESTL	0.00803778	gms/vehicle/day
LHD2	2035	ROGs	RUNLS	0.03849372	gms/mile
LHD2	2035	SO _x	STREX	0.003974078	gms/vehicle/day
LHD2	2035	TOGs	HTSK	0.320252459	gms/vehicle/day
LHD2	2035	TOGs	RUNLS	0.03849372	gms/mile
LHD2	2035	VMT	VMT	3534911.217	miles/day
LHD2	2030	VMT	VMT	4370058.211	miles/day
LHD2	2030	ROGs	HTSK	0.356454771	gms/vehicle/day
LHD2	2030	TOGs	IDLEX	0.289579106	gms/vehicle/day
LHD2	2030	TOGs	HTSK	0.356454771	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
LHD2	2030	TOGs	RESTL	0.008150129	gms/vehicle/day
LHD2	2030	CO	RUNEX	0.518905442	gms/mile
LHD2	2030	CO	STREX	19.85181793	gms/vehicle/day
LHD2	2030	NO _x	RUNEX	0.814451259	gms/mile
LHD2	2030	NO _x	STREX	7.468091098	gms/vehicle/day
LHD2	2030	CO ₂	RUNEX	557.8625054	gms/mile
LHD2	2030	CO ₂	STREX	325.6482243	gms/vehicle/day
LHD2	2030	PM ₁₀	IDLEX	0.016607311	gms/vehicle/day
LHD2	2030	PM ₁₀	STREX	0.00206476	gms/vehicle/day
LHD2	2030	PM ₁₀	PMTW	0.010390379	gms/mile
LHD2	2030	PM ₁₀	PMBW	0.068082244	gms/mile
LHD2	2030	PM _{2.5}	STREX	0.001915757	gms/vehicle/day
LHD2	2030	PM _{2.5}	PMBW	0.029178102	gms/mile
LHD2	2030	SO _x	RUNEX	0.006053678	gms/mile
LHD2	2030	SO _x	STREX	0.003968325	gms/vehicle/day
Manual		none		0	none
Manual		none		0	none
Manual		none		0	none
Manual		none		0	none
Manual		none		0	none
Manual		none		0	none
Manual		none		0	none
Manual		none		0	none
Manual		none		0	none
Manual		none		0	none
Manual		none		0	none
Manual		none		0	none
MDV	2020	CO ₂	IDLEX	0	gms/vehicle/day
MDV	2020	CO ₂	RUNEX	475.115388	gms/mile
MDV	2020	NO _x	IDLEX	0	gms/vehicle/day
MDV	2020	NO _x	STREX	2.488723293	gms/vehicle/day
MDV	2020	PM ₁₀	PMBW	0.036749815	gms/mile
MDV	2020	PM ₁₀	RUNEX	0.002124619	gms/mile
MDV	2020	PM _{2.5}	IDLEX	0	gms/vehicle/day
MDV	2020	PM _{2.5}	PMTW	0.00199999	gms/mile
MDV	2020	PM _{2.5}	STREX	0.02113845	gms/vehicle/day
MDV	2020	ROGs	HTSK	1.287175893	gms/vehicle/day
MDV	2020	ROGs	IDLEX	0	gms/vehicle/day
MDV	2020	ROGs	RUNEX	0.048838829	gms/mile
MDV	2020	ROGs	STREX	2.228363848	gms/vehicle/day
MDV	2020	SO _x	RUNEX	0.006060827	gms/mile

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
MDV	2020	TOGs	DIURN	0.551578619	gms/vehicle/day
MDV	2020	TOGs	HTSK	1.287175893	gms/vehicle/day
MDV	2020	TOGs	IDLEX	0	gms/vehicle/day
MDV	2020	TOGs	RUNEX	0.072311778	gms/mile
MDV	2020	TOGs	STREX	2.379647824	gms/vehicle/day
MDV	2020	VMT	VMT	155362330.5	miles/day
MDV	2014	CO ₂	IDLEX	0	gms/vehicle/day
MDV	2014	CO ₂	RUNEX	566.3118842	gms/mile
MDV	2014	NO _x	IDLEX	0	gms/vehicle/day
MDV	2014	NO _x	STREX	3.892232794	gms/vehicle/day
MDV	2014	PM ₁₀	PMBW	0.036749815	gms/mile
MDV	2014	PM ₁₀	RUNEX	0.002434189	gms/mile
MDV	2014	PM _{2.5}	IDLEX	0	gms/vehicle/day
MDV	2014	PM _{2.5}	PMTW	0.001999999	gms/mile
MDV	2014	PM _{2.5}	STREX	0.020685783	gms/vehicle/day
MDV	2014	ROGs	HTSK	1.238888079	gms/vehicle/day
MDV	2014	ROGs	IDLEX	0	gms/vehicle/day
MDV	2014	ROGs	RUNEX	0.085406183	gms/mile
MDV	2014	ROGs	STREX	3.541955409	gms/vehicle/day
MDV	2014	SO _x	RUNEX	0.006050772	gms/mile
MDV	2014	TOGs	DIURN	0.558162128	gms/vehicle/day
MDV	2014	TOGs	HTSK	1.238888079	gms/vehicle/day
MDV	2014	TOGs	IDLEX	0	gms/vehicle/day
MDV	2014	TOGs	RUNEX	0.119544257	gms/mile
MDV	2014	TOGs	STREX	3.783231474	gms/vehicle/day
MDV	2014	VMT	VMT	145639750	miles/day
MDV	2010	CO ₂	IDLEX	0	gms/vehicle/day
MDV	2010	CO ₂	RUNEX	597.4145358	gms/mile
MDV	2010	NO _x	IDLEX	0	gms/vehicle/day
MDV	2010	NO _x	STREX	4.763731793	gms/vehicle/day
MDV	2010	PM ₁₀	PMBW	0.036749814	gms/mile
MDV	2010	PM ₁₀	RUNEX	0.003073338	gms/mile
MDV	2010	PM _{2.5}	IDLEX	0	gms/vehicle/day
MDV	2010	PM _{2.5}	PMTW	0.001999999	gms/mile
MDV	2010	PM _{2.5}	STREX	0.025673877	gms/vehicle/day
MDV	2010	ROGs	HTSK	1.046666145	gms/vehicle/day
MDV	2010	ROGs	IDLEX	0	gms/vehicle/day
MDV	2010	ROGs	RUNEX	0.114974086	gms/mile
MDV	2010	ROGs	STREX	4.476831005	gms/vehicle/day
MDV	2010	SO _x	RUNEX	0.006039225	gms/mile

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
MDV	2010	TOGs	DIURN	0.542803303	gms/vehicle/day
MDV	2010	TOGs	HTSK	1.046666145	gms/vehicle/day
MDV	2010	TOGs	IDLEX	0	gms/vehicle/day
MDV	2010	TOGs	RUNEX	0.156349116	gms/mile
MDV	2010	TOGs	STREX	4.782604292	gms/vehicle/day
MDV	2010	VMT	VMT	145890288.8	miles/day
MDV	2035	CO ₂	IDLEX	0	gms/vehicle/day
MDV	2035	CO ₂	STREX	547.4436672	gms/vehicle/day
MDV	2035	NO _x	IDLEX	0	gms/vehicle/day
MDV	2035	NO _x	STREX	0.836965867	gms/vehicle/day
MDV	2035	PM ₁₀	PMBW	0.036749815	gms/mile
MDV	2035	PM _{2.5}	PMBW	0.01574992	gms/mile
MDV	2035	PM _{2.5}	STREX	0.027117922	gms/vehicle/day
MDV	2035	ROGs	IDLEX	0	gms/vehicle/day
MDV	2035	ROGs	RUNEX	0.017702641	gms/mile
MDV	2035	ROGs	STREX	0.748301866	gms/vehicle/day
MDV	2035	SO _x	IDLEX	0	gms/vehicle/day
MDV	2035	SO _x	RUNEX	0.006099588	gms/mile
MDV	2035	TOGs	DIURN	0.491908683	gms/vehicle/day
MDV	2035	TOGs	IDLEX	0	gms/vehicle/day
MDV	2035	TOGs	RESTL	0.521400036	gms/vehicle/day
MDV	2035	TOGs	RUNEX	0.030872466	gms/mile
MDV	2035	TOGs	STREX	0.798955631	gms/vehicle/day
MDV	2035	Trips	Trips	30186774.17	trips/day
MDV	2030	VMT	VMT	174035707.7	miles/day
MDV	2030	ROGs	IDLEX	0	gms/vehicle/day
MDV	2030	ROGs	HTSK	1.087248875	gms/vehicle/day
MDV	2030	TOGs	IDLEX	0	gms/vehicle/day
MDV	2030	TOGs	HTSK	1.087248875	gms/vehicle/day
MDV	2030	TOGs	RESTL	0.52176155	gms/vehicle/day
MDV	2030	CO	RUNEX	1.094357189	gms/mile
MDV	2030	CO	STREX	14.2911591	gms/vehicle/day
MDV	2030	NO _x	IDLEX	0	gms/vehicle/day
MDV	2030	CO ₂	RUNEX	435.1187647	gms/mile
MDV	2030	CO ₂	STREX	565.5324791	gms/vehicle/day
MDV	2030	PM ₁₀	RUNEX	0.002074551	gms/mile
MDV	2030	PM ₁₀	STREX	0.0276531	gms/vehicle/day
MDV	2030	PM ₁₀	PMTW	0.007999959	gms/mile
MDV	2030	PM ₁₀	PMBW	0.036749815	gms/mile
MDV	2030	PM _{2.5}	IDLEX	0	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
MDV	2030	PM _{2.5}	STREX	0.025657514	gms/vehicle/day
MDV	2030	PM _{2.5}	PMTW	0.00199999	gms/mile
MDV	2030	SO _x	RUNEX	0.006088656	gms/mile
MDV	2030	SO _x	STREX	0.008042855	gms/vehicle/day
MDV	2020	CO	IDLEX	0	gms/vehicle/day
MDV	2020	CO	RUNEX	1.853818786	gms/mile
MDV	2020	CO	STREX	27.28774765	gms/vehicle/day
MDV	2020	CO ₂	STREX	632.765411	gms/vehicle/day
MDV	2020	NO _x	RUNEX	0.253506492	gms/mile
MDV	2020	PM ₁₀	IDLEX	0	gms/vehicle/day
MDV	2020	PM ₁₀	PMTW	0.007999959	gms/mile
MDV	2020	PM ₁₀	STREX	0.022834979	gms/vehicle/day
MDV	2020	PM _{2.5}	PMBW	0.01574992	gms/mile
MDV	2020	PM _{2.5}	RUNEX	0.001964572	gms/mile
MDV	2020	Population	Population	4186464.528	population
MDV	2020	ROGs	DIURN	0.551578619	gms/vehicle/day
MDV	2020	ROGs	RESTL	0.509590635	gms/vehicle/day
MDV	2020	ROGs	RUNLS	0.107116749	gms/mile
MDV	2020	SO _x	IDLEX	0	gms/vehicle/day
MDV	2020	SO _x	STREX	0.00834378	gms/vehicle/day
MDV	2020	TOGs	RESTL	0.509590635	gms/vehicle/day
MDV	2020	TOGs	RUNLS	0.107116749	gms/mile
MDV	2020	Trips	Trips	25844477.4	trips/day
MDV	2014	CO	IDLEX	0	gms/vehicle/day
MDV	2014	CO	RUNEX	2.830306243	gms/mile
MDV	2014	CO	STREX	41.11318802	gms/vehicle/day
MDV	2014	CO ₂	STREX	750.3704368	gms/vehicle/day
MDV	2014	NO _x	RUNEX	0.411133284	gms/mile
MDV	2014	PM ₁₀	IDLEX	0	gms/vehicle/day
MDV	2014	PM ₁₀	PMTW	0.007999958	gms/mile
MDV	2014	PM ₁₀	STREX	0.022488605	gms/vehicle/day
MDV	2014	PM _{2.5}	PMBW	0.01574992	gms/mile
MDV	2014	PM _{2.5}	RUNEX	0.002234355	gms/mile
MDV	2014	Population	Population	3895678.628	population
MDV	2014	ROGs	DIURN	0.558162128	gms/vehicle/day
MDV	2014	ROGs	RESTL	0.458083965	gms/vehicle/day
MDV	2014	ROGs	RUNLS	0.111086327	gms/mile
MDV	2014	SO _x	IDLEX	0	gms/vehicle/day
MDV	2014	SO _x	STREX	0.008617245	gms/vehicle/day
MDV	2014	TOGs	RESTL	0.458083965	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
MDV	2014	TOGs	RUNLS	0.111086327	gms/mile
MDV	2014	Trips	Trips	24370483.67	trips/day
MDV	2010	CO	IDLEX	0	gms/vehicle/day
MDV	2010	CO	RUNEX	3.530594768	gms/mile
MDV	2010	CO	STREX	50.21703832	gms/vehicle/day
MDV	2010	CO ₂	STREX	790.0319551	gms/vehicle/day
MDV	2010	NO _x	RUNEX	0.533930706	gms/mile
MDV	2010	PM ₁₀	IDLEX	0	gms/vehicle/day
MDV	2010	PM ₁₀	PMTW	0.007999959	gms/mile
MDV	2010	PM ₁₀	STREX	0.02802478	gms/vehicle/day
MDV	2010	PM _{2.5}	PMBW	0.015749919	gms/mile
MDV	2010	PM _{2.5}	RUNEX	0.00280967	gms/mile
MDV	2010	Population	Population	3733499.047	population
MDV	2010	ROGs	DIURN	0.542803303	gms/vehicle/day
MDV	2010	ROGs	RESTL	0.392560905	gms/vehicle/day
MDV	2010	ROGs	RUNLS	0.099046121	gms/mile
MDV	2010	SO _x	IDLEX	0	gms/vehicle/day
MDV	2010	SO _x	STREX	0.008830373	gms/vehicle/day
MDV	2010	TOGs	RESTL	0.392560905	gms/vehicle/day
MDV	2010	TOGs	RUNLS	0.099046121	gms/mile
MDV	2010	Trips	Trips	23642731.66	trips/day
MDV	2030	WGAS	gasoline	0.074115245	gallons/mile
MDV	2030	WDSL	diesel	3.33832E-05	gallons/mile
MDV	2020	WGAS	gasoline	0.073867899	gallons/mile
MDV	2020	WDSL	diesel	3.33547E-05	gallons/mile
MDV	2035	WGAS	gasoline	0.074215501	gallons/mile
MDV	2035	WDSL	diesel	3.27158E-05	gallons/mile
MDV	2014	WGAS	gasoline	0.073815635	gallons/mile
MDV	2014	WDSL	diesel	3.39274E-05	gallons/mile
MDV	2010	WGAS	gasoline	0.073627132	gallons/mile
MDV	2010	WDSL	diesel	3.35563E-05	gallons/mile
MDV	2035	CO	IDLEX	0	gms/vehicle/day
MDV	2035	CO	RUNEX	0.941345024	gms/mile
MDV	2035	CO	STREX	11.07328297	gms/vehicle/day
MDV	2035	CO ₂	RUNEX	426.271574	gms/mile
MDV	2035	NO _x	RUNEX	0.102068492	gms/mile
MDV	2035	PM ₁₀	IDLEX	0	gms/vehicle/day
MDV	2035	PM ₁₀	PMTW	0.007999959	gms/mile
MDV	2035	PM ₁₀	RUNEX	0.00207159	gms/mile
MDV	2035	PM ₁₀	STREX	0.029227094	gms/vehicle/day

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
MDV	2035	PM _{2.5}	IDLEX	0	gms/vehicle/day
MDV	2035	PM _{2.5}	PMTW	0.00199999	gms/mile
MDV	2035	PM _{2.5}	RUNEX	0.001922054	gms/mile
MDV	2035	Population	Population	5013171.844	population
MDV	2035	ROGs	DIURN	0.491908683	gms/vehicle/day
MDV	2035	ROGs	HTSK	0.974366287	gms/vehicle/day
MDV	2035	ROGs	RESTL	0.521400036	gms/vehicle/day
MDV	2035	ROGs	RUNLS	0.083004442	gms/mile
MDV	2035	SO _x	STREX	0.007956078	gms/vehicle/day
MDV	2035	TOGs	HTSK	0.974366287	gms/vehicle/day
MDV	2035	TOGs	RUNLS	0.083004442	gms/mile
MDV	2035	VMT	VMT	156970555.5	miles/day
MDV	2030	Population	Population	4718189.182	population
MDV	2030	Trips	Trips	28601925.24	trips/day
MDV	2030	ROGs	RUNEX	0.022741516	gms/mile
MDV	2030	ROGs	STREX	1.043856555	gms/vehicle/day
MDV	2030	ROGs	DIURN	0.511138182	gms/vehicle/day
MDV	2030	ROGs	RUNLS	0.090929548	gms/mile
MDV	2030	ROGs	RESTL	0.52176155	gms/vehicle/day
MDV	2030	TOGs	RUNEX	0.0379406	gms/mile
MDV	2030	TOGs	STREX	1.114516897	gms/vehicle/day
MDV	2030	TOGs	DIURN	0.511138182	gms/vehicle/day
MDV	2030	TOGs	RUNLS	0.090929548	gms/mile
MDV	2030	CO	IDLEX	0	gms/vehicle/day
MDV	2030	NO _x	RUNEX	0.132552689	gms/mile
MDV	2030	NO _x	STREX	1.175338222	gms/vehicle/day
MDV	2030	CO ₂	IDLEX	0	gms/vehicle/day
MDV	2030	PM ₁₀	IDLEX	0	gms/vehicle/day
MDV	2030	PM _{2.5}	RUNEX	0.001924801	gms/mile
MDV	2030	PM _{2.5}	PMBW	0.01574992	gms/mile
MDV	2030	SO _x	IDLEX	0	gms/vehicle/day
Off-Highway Trucks	2020	PM ₁₀		0.0855	g/bhp-hr
Off-Highway Trucks	2020	PM _{2.5}		0.0787	g/bhp-hr
Off-Highway Trucks	2020	CO ₂		474.5787	g/bhp-hr
Off-Highway Trucks	2020	CH ₄		0.1535	g/bhp-hr
Off-Highway Trucks	2020	Diesel gal/bhp-hr	diesel	0.049796472	gal/bhp-hr
Off-Highway Trucks	2030	ROGs		0.216	g/bhp-hr
Off-Highway Trucks	2030	CO		1.104	g/bhp-hr
Off-Highway Trucks	2030	NO _x		0.458	g/bhp-hr
Off-Highway Trucks	2030	SO _x		0.005	g/bhp-hr

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
Off-Highway Trucks	2030	PM ₁₀		0.017	g/bhp-hr
Off-Highway Trucks	2030	PM _{2.5}		0.017	g/bhp-hr
Off-Highway Trucks	2030	CO ₂		568.299	g/bhp-hr
Off-Highway Trucks	2030	CH ₄		0.019	g/bhp-hr
Off-Highway Trucks	2030	Diesel gal/bhp-hr	diesel	0.049796472	gal/bhp-hr
Off-Highway Trucks	2035	ROGs		0.208	g/bhp-hr
Off-Highway Trucks	2035	CO		1.105	g/bhp-hr
Off-Highway Trucks	2035	NO _x		0.348	g/bhp-hr
Off-Highway Trucks	2035	SO _x		0.005	g/bhp-hr
Off-Highway Trucks	2035	PM ₁₀		0.013	g/bhp-hr
Off-Highway Trucks	2035	PM _{2.5}		0.013	g/bhp-hr
Off-Highway Trucks	2035	CO ₂		568.299	g/bhp-hr
Off-Highway Trucks	2035	CH ₄		0.018	g/bhp-hr
Off-Highway Trucks	2035	Diesel gal/bhp-hr	diesel	0.049796472	gal/bhp-hr
Off-Highway Trucks	2010	ROGs		0.4301	g/bhp-hr
Off-Highway Trucks	2010	CO		2.32222	g/bhp-hr
Off-Highway Trucks	2010	NO _x		5.52051	g/bhp-hr
Off-Highway Trucks	2010	SO _x		0.0049	g/bhp-hr
Off-Highway Trucks	2010	PM ₁₀		0.2133	g/bhp-hr
Off-Highway Trucks	2010	PM _{2.5}		0.1962	g/bhp-hr
Off-Highway Trucks	2010	CO ₂		528.8078	g/bhp-hr
Off-Highway Trucks	2010	CH ₄		0.1539	g/bhp-hr
Off-Highway Trucks	2010	Diesel gal/bhp-hr		0.049796472	gal/bhp-hr
Off-Highway Trucks	2014	ROGs		0.3934	g/bhp-hr
Off-Highway Trucks	2014	CO		2.07518	g/bhp-hr
Off-Highway Trucks	2014	NO _x		4.68575	g/bhp-hr
Off-Highway Trucks	2014	SO _x		0.0049	g/bhp-hr
Off-Highway Trucks	2014	PM ₁₀		0.1795	g/bhp-hr
Off-Highway Trucks	2014	PM _{2.5}		0.1652	g/bhp-hr
Off-Highway Trucks	2014	CO ₂		521.0573	g/bhp-hr
Off-Highway Trucks	2014	CH ₄		0.154	g/bhp-hr
Off-Highway Trucks	2014	Diesel gal/bhp-hr		0.049796472	gal/bhp-hr
Off-Highway Trucks	2020	ROGs		0.2461	g/bhp-hr
Off-Highway Trucks	2020	CO		1.41417	g/bhp-hr
Off-Highway Trucks	2020	NO _x		2.34677	g/bhp-hr
Off-Highway Trucks	2020	SO _x		0.0049	g/bhp-hr
Pumps	2010	ROGs		1.124	g/bhp-hr
Pumps	2010	CO		4.027	g/bhp-hr
Pumps	2010	NO _x		6.554	g/bhp-hr
Pumps	2010	SO _x		0.008	g/bhp-hr

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
Pumps	2010	PM ₁₀		0.473	g/bhp-hr
Pumps	2010	PM _{2.5}		0.473	g/bhp-hr
Pumps	2010	CO ₂		568.299	g/bhp-hr
Pumps	2010	CH ₄		0.101	g/bhp-hr
Pumps	2010	Diesel gal/bhp-hr	diesel	0.055359566	gal/bhp-hr
Pumps	2014	ROGs		0.891	g/bhp-hr
Pumps	2014	CO		3.723	g/bhp-hr
Pumps	2014	NO _x		5.445	g/bhp-hr
Pumps	2014	SO _x		0.008	g/bhp-hr
Pumps	2014	PM ₁₀		0.341	g/bhp-hr
Pumps	2014	PM _{2.5}		0.341	g/bhp-hr
Pumps	2014	CO ₂		568.299	g/bhp-hr
Pumps	2014	CH ₄		0.08	g/bhp-hr
Pumps	2014	Diesel gal/bhp-hr	diesel	0.055359566	gal/bhp-hr
Pumps	2020	ROGs		0.731	g/bhp-hr
Pumps	2020	CO		3.546	g/bhp-hr
Pumps	2020	NO _x		4.542	g/bhp-hr
Pumps	2020	SO _x		0.008	g/bhp-hr
Pumps	2020	PM ₁₀		0.227	g/bhp-hr
Pumps	2020	PM _{2.5}		0.227	g/bhp-hr
Pumps	2020	CO ₂		568.299	g/bhp-hr
Pumps	2020	CH ₄		0.066	g/bhp-hr
Pumps	2020	Diesel gal/bhp-hr	diesel	0.055359566	gal/bhp-hr
Pumps	2030	ROGs		0.663	g/bhp-hr
Pumps	2030	CO		3.47	g/bhp-hr
Pumps	2030	NO _x		4.164	g/bhp-hr
Pumps	2030	SO _x		0.008	g/bhp-hr
Pumps	2030	PM ₁₀		0.166	g/bhp-hr
Pumps	2030	PM _{2.5}		0.166	g/bhp-hr
Pumps	2030	CO ₂		568.299	g/bhp-hr
Pumps	2030	CH ₄		0.059	g/bhp-hr
Pumps	2030	Diesel gal/bhp-hr	diesel	0.055359566	gal/bhp-hr
Pumps	2035	ROGs		0.661	g/bhp-hr
Pumps	2035	CO		3.469	g/bhp-hr
Pumps	2035	NO _x		4.143	g/bhp-hr
Pumps	2035	SO _x		0.008	g/bhp-hr
Pumps	2035	PM ₁₀		0.162	g/bhp-hr
Pumps	2035	PM _{2.5}		0.162	g/bhp-hr
Pumps	2035	CO ₂		568.299	g/bhp-hr
Pumps	2035	CH ₄		0.059	g/bhp-hr

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
Pumps	2035	Diesel gal/bhp-hr	diesel	0.055359566	gal/bhp-hr
Rubber Tired Dozers	2010	ROGs		0.9433	g/bhp-hr
Rubber Tired Dozers	2010	CO		4.17063	g/bhp-hr
Rubber Tired Dozers	2010	NO _x		9.78349	g/bhp-hr
Rubber Tired Dozers	2010	SO _x		0.0049	g/bhp-hr
Rubber Tired Dozers	2010	PM ₁₀		0.555	g/bhp-hr
Rubber Tired Dozers	2010	PM _{2.5}		0.5106	g/bhp-hr
Rubber Tired Dozers	2010	CO ₂		526.3128	g/bhp-hr
Rubber Tired Dozers	2010	CH ₄		0.1532	g/bhp-hr
Rubber Tired Dozers	2010	Diesel gal/bhp-hr	diesel	0.049796472	gal/bhp-hr
Rubber Tired Dozers	2014	ROGs		0.9608	g/bhp-hr
Rubber Tired Dozers	2014	CO		4.22564	g/bhp-hr
Rubber Tired Dozers	2014	NO _x		9.83401	g/bhp-hr
Rubber Tired Dozers	2014	SO _x		0.0049	g/bhp-hr
Rubber Tired Dozers	2014	PM ₁₀		0.5627	g/bhp-hr
Rubber Tired Dozers	2014	PM _{2.5}		0.5177	g/bhp-hr
Rubber Tired Dozers	2014	CO ₂		518.335	g/bhp-hr
Rubber Tired Dozers	2014	CH ₄		0.1532	g/bhp-hr
Rubber Tired Dozers	2014	Diesel gal/bhp-hr	diesel	0.049796472	gal/bhp-hr
Rubber Tired Dozers	2020	ROGs		0.7264	g/bhp-hr
Rubber Tired Dozers	2020	CO		3.89288	g/bhp-hr
Rubber Tired Dozers	2020	NO _x		7.18525	g/bhp-hr
Rubber Tired Dozers	2020	SO _x		0.0049	g/bhp-hr
Rubber Tired Dozers	2020	PM ₁₀		0.4107	g/bhp-hr
Rubber Tired Dozers	2020	PM _{2.5}		0.3778	g/bhp-hr
Rubber Tired Dozers	2020	CO ₂		473.0116	g/bhp-hr
Rubber Tired Dozers	2020	CH ₄		0.153	g/bhp-hr
Rubber Tired Dozers	2020	Diesel gal/bhp-hr	diesel	0.049796472	gal/bhp-hr
Rubber Tired Dozers	2030	ROGs		0.398	g/bhp-hr
Rubber Tired Dozers	2030	CO		3.496	g/bhp-hr
Rubber Tired Dozers	2030	NO _x		2.034	g/bhp-hr
Rubber Tired Dozers	2030	SO _x		0.006	g/bhp-hr
Rubber Tired Dozers	2030	PM ₁₀		0.111	g/bhp-hr
Rubber Tired Dozers	2030	PM _{2.5}		0.111	g/bhp-hr
Rubber Tired Dozers	2030	CO ₂		568.299	g/bhp-hr
Rubber Tired Dozers	2030	CH ₄		0.035	g/bhp-hr
Rubber Tired Dozers	2030	Diesel gal/bhp-hr	diesel	0.049796472	gal/bhp-hr
Rubber Tired Dozers	2035	ROGs		0.322	g/bhp-hr
Rubber Tired Dozers	2035	CO		3.481	g/bhp-hr
Rubber Tired Dozers	2035	NO _x		1.345	g/bhp-hr

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
Rubber Tired Dozers	2035	SO _x		0.006	g/bhp-hr
Rubber Tired Dozers	2035	PM ₁₀		0.071	g/bhp-hr
Rubber Tired Dozers	2035	PM _{2.5}		0.071	g/bhp-hr
Rubber Tired Dozers	2035	CO ₂		568.299	g/bhp-hr
Rubber Tired Dozers	2035	CH ₄		0.029	g/bhp-hr
Rubber Tired Dozers	2035	Diesel gal/bhp-hr	diesel	0.049796472	gal/bhp-hr
Sprayers	2010	ROGs		20.23616118	g/bhp-hr
Sprayers	2010	CO		544.9645025	g/bhp-hr
Sprayers	2010	NO _x		7.123637931	g/bhp-hr
Sprayers	2010	SO _x		0.02142785	g/bhp-hr
Sprayers	2010	PM ₁₀		5.720039958	g/bhp-hr
Sprayers	2010	PM _{2.5}		5.720039958	g/bhp-hr
Sprayers	2010	CO ₂		751.5191553	g/bhp-hr
Sprayers	2010	CH ₄		1.138301571	g/bhp-hr
Sprayers	2010	gasoline gal/bhp-hr	gasoline	0.192	gal/bhp-hr
Sprayers	2014	ROGs		16.60321465	g/bhp-hr
Sprayers	2014	CO		505.0918484	g/bhp-hr
Sprayers	2014	NO _x		7.58718671	g/bhp-hr
Sprayers	2014	SO _x		0.021427847	g/bhp-hr
Sprayers	2014	PM ₁₀		6.108176774	g/bhp-hr
Sprayers	2014	PM _{2.5}		6.108176774	g/bhp-hr
Sprayers	2014	CO ₂		751.5190835	g/bhp-hr
Sprayers	2014	CH ₄		0.93347263	g/bhp-hr
Sprayers	2014	gasoline gal/bhp-hr	gasoline	0.183726832	gal/bhp-hr
Sprayers	2020	ROGs		10.34565325	g/bhp-hr
Sprayers	2020	CO		170	g/bhp-hr
Sprayers	2020	NO _x		4.65	g/bhp-hr
Sprayers	2020	SO _x		0.0148	g/bhp-hr
Sprayers	2020	PM ₁₀		0.14	g/bhp-hr
Sprayers	2020	PM _{2.5}		0.14	g/bhp-hr
Sprayers	2020	CO ₂		429	g/bhp-hr
Sprayers	2020	CH ₄		0.581	g/bhp-hr
Sprayers	2020	gasoline gal/bhp-hr	gasoline	0.175	gal/bhp-hr
Sprayers	2030	ROGs		11.61900546	g/bhp-hr
Sprayers	2030	CO		450.0751828	g/bhp-hr
Sprayers	2030	NO _x		8.569446023	g/bhp-hr
Sprayers	2030	SO _x		0.021427851	g/bhp-hr
Sprayers	2030	PM ₁₀		6.299993563	g/bhp-hr
Sprayers	2030	PM _{2.5}		6.299993563	g/bhp-hr
Sprayers	2030	CO ₂		751.5192194	g/bhp-hr

Equipment Type	Calendar Year	Pollutant	Emission Type	EF	Units
Sprayers	2030	CH ₄		0.65183096	g/bhp-hr
Sprayers	2030	gasoline gal/bhp-hr	gasoline	0.171682824	gal/bhp-hr
Sprayers	2035	ROGs		11.60170538	g/bhp-hr
Sprayers	2035	CO		450.056414	g/bhp-hr
Sprayers	2035	NO _x		8.585890058	g/bhp-hr
Sprayers	2035	SO _x		0.021427848	g/bhp-hr
Sprayers	2035	PM ₁₀		6.299992937	g/bhp-hr
Sprayers	2035	PM _{2.5}		6.299992937	g/bhp-hr
Sprayers	2035	CO ₂		751.5191084	g/bhp-hr
Sprayers	2035	CH ₄		0.65049722	g/bhp-hr
Sprayers	2035	gasoline gal/bhp-hr		0.171671924	gal/bhp-hr

Page left intentionally blank.

Appendix I

List of Special Status Species in California

Animals

State of California
The Natural Resources Agency
DEPARTMENT OF FISH AND GAME
Biogeographic Data Branch
California Natural Diversity Database

SPECIAL ANIMALS (898 taxa)

January 2011

The California Natural Diversity Database (CNDDDB) is a continually refined and updated, computerized inventory of location information on the most rare animals, plants, and natural communities in California. The blueprint used to set up the CNDDDB was developed by The Nature Conservancy (TNC) in the early 1970's. The California program was started in 1979. TNC has helped to set up similar programs in all 50 states and a number of foreign countries. Collectively these programs are known as the Natural Heritage Network. The "Heritage Methodology" used by all of these programs sets the standards for the information we gather and the procedures we use. In 1999 TNC and the Natural Heritage Network jointly established an independent organization, the Association for Biodiversity Information (ABI), to achieve their mutual goal of using the wealth of biodiversity information in the Heritage Network to support conservation efforts. In November 2001 ABI changed its name to NatureServe. More information the Natural Heritage Network is available on the NatureServe web site: <http://www.natureserve.org>.

"Special Animals" is a general term that refers to all of the taxa the CNDDDB is interested in tracking, regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special status species". The Department of Fish and Game considers the taxa on this list to be those of greatest conservation need. The species on this list in 2005 were used in the development of California's Wildlife Action Plan (available at: <http://www.dfg.ca.gov/wildlife/WAP>)

The species on this list generally fall into one or more of the following categories:

- Officially listed or proposed for listing under the State and/or Federal Endangered Species Acts.
- State or Federal candidate for possible listing.
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act Guidelines. (More information on CEQA is available at http://ceres.ca.gov/topic/env_law/ceqa/guidelines/)
- Taxa considered by the Department to be a Species of Special Concern (SSC)
- Taxa that are biologically rare, very restricted in distribution, declining throughout their range, or have a critical, vulnerable stage in their life cycle that warrants monitoring. There may be taxa that fall into this category but are not included on this list because their status has not been called to our attention.
- Populations in California that may be on the periphery of a taxon's range, but are threatened with extirpation in California.

- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands, vernal pools, etc.)
- Taxa designated as a special status, sensitive, or declining species by other state or federal agencies, or non-governmental organization (NGO).

Taxa marked with a “+” to the left of the scientific name are those for which there is location information in the CNDDDB Geographic Information System (GIS), as of the date of this list.

Taxa with a “Yes” in the “Notes” column have more information in an end note at the back of the list.

Additional information on the CNDDDB is available on the Department of Fish and Game web site at: <http://www.dfg.ca.gov/biogeodata/cnddb> .

Additional information on other Department resource management programs is available at: <http://www.dfg.ca.gov/about/resource-mgmt.html> . The Species Conservation & Recovery Program page at: <http://www.dfg.ca.gov/wildlife/nongame> is a particularly rich source of information including such topics as “Survey Standards and Guidelines”, “Threats to Wildlife”, “Habitats”, and “Plant and Animal Pictures”.

What is an Element Occurrence?

An element Occurrence (EO) is a location where the element (species) has been documented to occur. **An EO is not a population**, but it may indicate that a population is present in that area; and a single population may be represented by more than one EO. An EO is based upon the source documents available to us at the time it was mapped. Both the mapped feature and the text portion of EO's are updated as new information becomes available.

Element Occurrence (EO) Definition:

The EO definition refers to the types of information we map. For most animal taxa, the CNDDDB is interested in information that indicates the presence of a resident population. For many birds, however, the CNDDDB tracks only nesting locations, (those species are so indicated on the list). Detailed information about avian detections is available at: <http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=25731> . For other taxa where we track only a certain part of their range or life history, the area or life stage is indicated on the list.

Mapping Conventions:

Our information is mapped as precisely as possible, based upon the source materials used to map the element occurrence (EO). More vague location information is mapped with the larger circular features and more precise location information is mapped with 80m radius circles or polygon features. Generally, observations/collections within ¼ mile, within continuous habitat, are combined into a single element occurrence (EO). However, there are exceptions such as nest trees for Swainson's hawk, where each known nest tree is mapped.

Taxonomic References and Sources of Additional Information:

We follow the most current published taxonomy.

For butterflies we followed the taxonomy used by NatureServe:

<http://www.natureserve.org/explorer/>

For fish we used:

Moyle, P. B. 2002. Inland Fishes of California. University of California Press.

Nelson, J.S., E.J. Crossman, H. Espinosa-Perea, L.T. Findley, C.R. Gilbert, R. N. Lea, and J. D. Williams. 2004. Common and scientific names of fishes from the United States, Canada, and Mexico. American Fisheries Society, Special Publication 29, Bethesda, Maryland. 386 pp.

Jelks, H.L., S.J. Walsh, N.M. Burkhead, S. Contreras-Balderas, E. Díaz-Pardo, D.A. Hendrickson, J. Lyons, N.E. Mandrak, F. McCormick, J.S. Nelson, S.P. Platania, B.A. Porter, C.B. Renaud, J. J. Schmitter-Soto, E.B. Taylor, and M.L. Warren, Jr. 2008. Conservation status of imperiled North American freshwater and diadromous fishes. Fisheries 33(8):372-407. Available at:
http://www.fisheries.org/afs/docs/fisheries/fisheries_3308.pdf

For reptiles and amphibians, most changes are explained and referenced on the Center for North American Herpetology web site: <http://www.cnah.org>. In addition, we made taxonomic changes based on the following papers:

Collins, Joseph T. and Travis W. Taggart. 2009. Standard Common & Current Scientific Names for North American Amphibians, Turtles, Reptiles, and Corcodilians. Sixth Edition. Publication of the Center for North American Herpetology, Lawrence. iv + 44 pp. Available at: <http://www.cnah.org/index.asp>

Feldman, C. R. & J. F. Parham. 2002. Molecular phylogenetics of emydine turtles: Taxonomic revision and the evolution of shell kinesis. Molecular Phylogenetics and Evolution 22(3): 388-398. Available at: http://www.cnah.org/cnah_pdf.asp

Frost, Grant, Faivovich, Bain, Haas, Haddad, De Sá, Channing, Wilkinson, Donnellan, Raxworthy, Campbell, Blotto, Moler, Drewes, Nussbaum, Lynch, Green & Wheeler. 2006. The Amphibian Tree of Life. Bulletin of the American Museum of Natural History 297: 1-370. Available at:
<http://digitallibrary.amnh.org/dspace/bitstream/2246/5781/1/B297.pdf>

Frost, Darrel, Joseph Mendelson, III, and Jennifer Pramuk. 2009 Further Notes on the Nomenclature of Middle American Toads (Bufonidae). Copeia 2009, No. 2, 418. Available at: http://www.cnah.org/cnah_pdf.asp

Goebel, A. M., T. A. Ranker, P. S. Corn, & R. G. Olmstead. 2009. Mitochondrial DNA evolution in the *Anaxyrus boreas* species group. *Molecular Phylogenetics and Evolution* 50(2009) 209-225. Available at: http://www.cnah.org/cnah_pdf.asp

Hollingsworth, B. D. 1998. The systematics of chuckwallas (SAUROMALUS) with a phylogenetic analysis of other iguanid lizards. *Herpetological Monographs* (12):38-191.

Holman, J.A. & U. Fritz. 2001. A new emydine species from the Medial Miocene (Barstovian) of Nebraska, USA with a new generic arrangement for the species of *Clemmys* sensu McDowell (1964) (Reptilia: Testudines: Emydidae). *Zoologische Abhandlungen Staatliches Museum fur Tiekunde Dresden* 51(19)321-344. Available at: http://www.cnah.org/cnah_pdf.asp

Leache, Adam, D, Michelle S. Koo, Carol L. Spencer, Theodore J. Papenfuss, Robert N. Fisher & Jimmy A. McGuire. 2009. Quantifying Ecological, Morphological, and Genetic Variation to Delimit Species in the Coast Horned Lizard Species Complex (*Phrynosoma*). *PNAS*. 106(30):12418-12423. Available at: <http://www.pnas.org/content/106/30/12418.full>

Mead, Louise S., David R. Clayton, Richard S. Nauman, Deanna H. Olsen, & Michael E. Pfrender. 2005. Newly discovered populations of salamanders from Siskiyou County, California, represent a species distinct from *Plethodon stormi*. *Herpetologica* 61(2): 158-77. Available at: http://www.cnah.org/cnah_pdf.asp

Reeder, T., C. J Cole & H. C. Dessauer. 2002. Phylogenetic Relationships of Whiptail Lizards of the Genus *Cnemidophorus* (Squamata: Teiidae): A Test of monophyly, reevaluation of karyotypic evolution, and review of hybrid origins. *American Museum Novitates* No. 3365. 61pp. Available at: http://www.cnah.org/cnah_pdf.asp

Shaffer, H. Bradley, G. M. Fellers, S. Randal Voss, J. C. Oliver & Gregory B. Pauly. 2004. Species boundaries, phylogeography and conservation genetics of the red-legged frog (*Rana aurora/draytonii*) complex. *Molecular Ecology* (2004) 13, 2667-2677. Available at: http://www.cnah.org/cnah_pdf.asp

Spinks, Phillip Q. & H. Bradley Shaffer. 2005. Range-wide molecular analysis of the western pond turtle (*Emys marmorata*): cryptic variation, isolation by distance, and their conservation implications. *Molecular Ecology* (2005) 14, 2047-2064. Available at: <http://www2.eve.ucdavis.edu/shafferlab/pubs/SpinksMolEcol2005.pdf>

Spinks, Phillip Q. & H. Bradley Shaffer. 2009. Conflicting mitochondrial and nuclear phylogenies for the widely disjunct *Emys* (Testudines: Emydidae) species complex, and what they tell us about biogeography and hybridization. *Systematic Biology*. 58(1):pp 1-20. Available at: <http://www.eve.ucdavis.edu/shafferlab/pubs/SpinksSysBio2009.pdf>

Stephens, Patrick R. and John J. Wiens. 2003, Ecological Diversification and Phylogeny of Emydid Turtles. *Biological Journal of the Linnean Society* 79: 577-610. Available at: http://www.cnah.org/cnah_pdf.asp

Vredenburg, V.T., R. Bingham, R. Knapp, J.A.T. Morgan, C. Moritz & D. Wake. 2007. Concordant molecular and phenotypic data delineate new taxonomy and conservation priorities for the endangered mountain yellow-legged frog. *Journal of Zoology* 271 (2007) 361-374. Available at: http://www.cnah.org/cnah_pdf.asp

For birds we made taxonomic changes based on the following papers:

American Ornithologists' Union (AOU). 1998. Check-list of North American birds. Seventh edition. American Ornithologists' Union, Washington, D.C. 829 pp. Available at: <http://www.aou.org/checklist/north/index.php>

Banks, R. C. , R. T. Chesser, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen Jr., J. D. Rising, D. F. Stotz, & K. Winker. 2008. Forty-ninth Supplement to the American Ornithologists' Union *Check-list of North American Birds*. *The Auk* 125(3):758-768. Available at: <http://www.aou.org/checklist/north/print.php>

Barrowclough, George F., Jeff G. Groth, Lisa A. Mertz and R. J. Gutierrez. 2004. Phylogeographic structure, gene flow and species status in blue grouse (*Dendragapus obscurus*). *Molecular Ecology* (2004) 13, 1911-1922. Available at: <http://fwcb.cfans.umn.edu/research/owls/lit%20folder/barrowclough%20et%20al.%202004.pdf>

Bridge, E. S., A. W. Jones, and A. J. Baker. 2005. A Phylogenetic Framework for the Terns (Sternini) Inferred from mtDNA sequences: Implications for Taxonomy and Plumage Evolution. *Molecular Phylogenetics and Evolution* 35:459-469. Available at: <http://www.cmnh.org/site/Files/Ornithology/MPETerns.pdf>

Chesser, R. Terry, Richard C. Banks, F. Keith Barker, Carla Cicero, Jon L. Dunn, Andrew W. Kratter, Irby J. Lovette, Pamela C. Rasmussen, J. V. Remsen, James D. Rising, Douglas F. Stotz, Kevin Winker. 2010. Fifty-first supplement to the American Ornithologists' Union Check-List of North American Birds. *Auk* 127(3):726-744. Available at: <http://www.aou.org/checklist/north/suppl/51.php>

Patten, M. A. 2001. The roles of habitat and signaling in speciation: Evidence from a contact zone of two song sparrow (*Melospiza melodia*) subspecies. Ph.D. dissertation, Univ. Calif., Riverside.

For mammals we made taxonomic changes based on the following papers:

Baker, R. J., L. C. Bradley, R. D. Bradley, J. W. Drago, M. D. Engstrom, R. Hoffman, C. A. Jones, F. Reid, D. W. Rice, & C. Jones. 2003. Revised Checklist of North American Mammals North of Mexico, 2003. Museum of Texas Tech University Occasional Papers 229:1-23. Available at: <http://www.nsr.ttu.edu/publications/opapers/ops/op229.pdf>

Bean, C. 2003. An Assessment of the Endangerment Status of the Santa Cruz Kangaroo Rat. MS Thesis, San Jose State University.

Best, T. L., R. K. Chesser, D. A. McCullough, & G. D. Baumgardner. 1996. Genic and Morphometric Variation in Kangaroo Rats, Genus *Dipodomys*, from Coastal California. *Journal of Mammalogy* 77(3):785-800. Available at: http://htmlscript.auburn.edu/academic/science_math/cosam/departments/biology/faculty/webpages/best/PDFs/1996BestEtAl.pdf

Hafner, David J. & Andrew T. Smith. 2010. Revision of the subspecies of the American pika, *Ochotona princeps* (Lagomorpha: Ochotonidae). *Journal of Mammalogy* 91(2):401-417.

Helgen, K.M., F.R. Cole, L.E. Helgen & D.E. Wilson. 2009. Generic Revision in the Holarctic Ground Squirrel Genus *Spermophilus*. *Journal of Mammalogy* 90(2):270-305. Available at: http://www.mammalogy.org/pubjom/OpenAccess/Helgen_etal_2009.pdf

Jones, C. A. & C. N. Baxter. 2004. *Thomomys bottae*. *Mammalian Species* 742:1-14. Available at: http://www.science.smith.edu/departments/Biology/VHAYSEN/msi/pdf/742_Thomomys_bottae.pdf

Matocq, M. D. 2002. Morphological and Molecular Analysis of a Contact Zone in the *Neotoma fuscipes* complex. *Journal of Mammalogy* 83(3):866-883. Available at: <http://www.cabnr.unr.edu/matocq/Matocqjm02%20copy.pdf>

Patton, J. L. & M. A. Smith. 1990. The Evolutionary Dynamics of the Pocket Gopher *Thomomys bottae*, with Emphasis on California Populations. University of California Publications in Zoology 123:1-161.

Wehausen, John D., Bleich, Vernon C., and Ramey Rob R. II. 2005. Correct Nomenclature for Sierra Nevada Bighorn Sheep. *Calif Fish and Game* 91(3):216-218. Available at: <http://www.wmrs.edu/people/bios/john%20wehausen/bighorn%20nomenclature.pdf>

CNDDDB CONSERVATION STATUS RANKS:

The CNDDDB ranking codes are part of the "Heritage Methodology". It is a shorthand formula that provides information about the status of a taxon, both throughout its entire range and within California. We use the best information available to assign these ranks and they are changed and refined as new information becomes available. More detailed information about the conservation status ranking system can be found at:

http://www.natureserve.org/publications/ConsStatusAssess_StatusFactors.pdf

CALIFORNIA ENDANGERED SPECIES ACT (CESA) LISTING CODES: The listing status of each species is current as of the date of this list. The most current changes in listing status will be found in the list of “Endangered and Threatened Animals of California”, which the CNDDDB updates and issues quarterly (January, April, July, & October).

SE	State-listed as Endangered
ST	State-listed as Threatened
SCE	State candidate for listing as Endangered
SCT	State candidate for listing as Threatened
SCD	State candidate for delisting

FEDERAL ENDANGERED SPECIES ACT (ESA) LISTING CODES: The listing status is current as of the date of this list. The most current changes in listing status will be found in the list of “Endangered and Threatened Animals of California”, which the CNDDDB updates and issues quarterly (January, April, July, & October). Federal listing actions contained in the Federal Register are also available at:

<http://www.regulations.gov/search/Regs/home.html#home>.

FE	Federally listed as Endangered
FT	Federally listed as Threatened
FPE	Federally proposed for listing as Endangered
FPT	Federally proposed for listing as Threatened
FPD	Federally proposed for delisting
FC	Federal candidate species (former Category 1 candidates)

Section 4(c)(2)(A) of the Act requires that we conduct a review of listed species at least once every five years. Five year reviews for the Pacific Southwest Region are available at:

http://www.fws.gov/cnoes/five_year_review_lists.html

OTHER STATUS CODES:

IUCN - The World Conservation Union, through its Species Survival Commission (SSC) assess, on a global scale, the conservation status of species, subspecies, varieties and even selected subpopulations in order to highlight taxa threatened with extinction, and therefore promote their conservation. The SSC is firmly committed to providing the world with the most objective, scientifically-based information on the current status of globally threatened biodiversity. The taxa assessed for the IUCN Red List have been evaluated using the IUCN Red List Categories and Criteria <http://www.iucnredlist.org/technical-documents/categories-and-criteria> . Detailed information on the IUCN and the Red List is available at: <http://www.redlist.org/>.

American Bird Conservancy: United States WatchList of Birds of Conservation

Concern: The United States *WatchList* is a joint project between the American Bird Conservancy and the National Audubon Society. It reflects a comprehensive analysis of all the bird species in the United States. It reveals those in greatest need of immediate conservation

attention to survive a convergence of environmental challenges, including habitat loss, invasive species, and global warming. The list builds on the species assessments conducted for many years by Partners in Flight (PIF) for land birds. It uses those same PIF standards but it is expanded to cover all bird species, not just land birds. The list is based on the latest available research and assessments from the bird conservation community, along with data from the Christmas Bird Count and Breeding Bird Survey. More information is available at:

<http://www.abcbirds.org/abcprograms/science/watchlist/index.html>

AFS: Designations for freshwater and diadromous species were taken from the paper: Jelks, H.L., S.J. Walsh, N.M. Burkhead, S. Contreras-Balderas, E. Díaz-Pardo, D.A. Hendrickson, J. Lyons, N.E. Mandrak, F. McCormick, J.S. Nelson, S.P. Platania, B.A. Porter, C.B. Renaud, J. J. Schmitter-Soto, E.B. Taylor, and M.L. Warren, Jr. 2008. Conservation status of imperiled North American freshwater and diadromous fishes. *Fisheries* 33(8):372-407. Available at:

http://www.fisheries.org/afs/docs/fisheries/fisheries_3308.pdf .

Designations for marine and estuarine species were taken from the paper: Musick, J.T. et al. 2000. "Marine, Estuarine, and Diadromous Fish Stocks at Risk of Extinction in North America (Exclusive of Pacific Salmonids). *Fisheries* 25(11):6-30. Available at:

<http://www.flmnh.ufl.edu/fish/sharks/sawfish/Reprint1390.pdf>

Audubon: WatchList: The Audubon WatchList has been incorporated into the **American Bird Conservancy United States WatchList of Birds of Conservation Concern** and no longer has a separate designation.

BLM: Sensitive: Bureau of Land Management. BLM Manual §6840 defines sensitive species as "...those species that are (1) under status review by the FWS/NMFS; or (2) whose numbers are declining so rapidly that Federal listing may become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats." Existing California-BLM policy concerning the designation of sensitive species identifies two conditions that must be met before a species may be considered as BLM sensitive: (1) a significant population of the species must occur on BLM-administered lands, and (2) the potential must exist for improvement of the species' condition through BLM management. The "Sensitive Species" designation is not meant to include federally listed species, proposed species, candidate species or State-listed species. It is BLM policy to provide sensitive species with the same level of protection that is given federal candidate species. The list is available at:

http://www.blm.gov/ca/pdfs/pa_pdfs/biology_pdfs/SensitiveAnimals.pdf

CDF: Sensitive: California Department of Forestry and Fire Protection. The Board of Forestry classifies as "sensitive species" those species that warrant special protection during timber operations. The list of "sensitive species" is given in §895.1 (Definitions) of the California Forest Practice Rules. The 2010 Forest Practice Rules are available at:

http://www.fire.ca.gov/resource_mgt/downloads/2010_FP_Rulebook_w-Diagrams_wo-TechRule_No1.pdf

DFG: SSC: California Species of Special Concern. It is the goal and responsibility of the Department of Fish and Game to maintain viable populations of all native species. To this end, the Department has designated certain vertebrate species as “Species of Special Concern” because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. The goal of designating species as “Species of Special Concern” is to halt or reverse their decline by calling attention to their plight and addressing the issues of concern early enough to secure their long term viability. Not all “Species of Special Concern” have declined equally; some species may be just starting to decline, while others may have already reached the point where they meet the criteria for listing as a “Threatened” or “Endangered” species under the State and/or Federal Endangered Species Acts. More information is available at:

<http://www.nrm.dfg.ca.gov/fileHandler.ashx?DocumentID=3778>

The 1995 report for fish, the 1994 report for amphibians and reptiles and the 1986 & 1998 reports for mammals are available on-line.

Fish: http://www.dfg.ca.gov/wildlife/nongame/publications/docs/fish_ssc.pdf

Amphibians & Reptiles:

http://www.dfg.ca.gov/wildlife/nongame/publications/docs/herp_ssc.pdf

Mammals:

http://www.dfg.ca.gov/wildlife/nongame/publications/bm_research/docs/86_27.pdf

<http://www.dfg.ca.gov/wildlife/nongame/ssc/1998mssc.html>

Updates of all three reports are in preparation. Information on the Amphibian and Reptile Species of Special Concern report is available at: <http://arssc.ucdavis.edu>. Information on the mammal report is available at:

<http://www.dfg.ca.gov/wildlife/nongame/ssc/mammals.html> and

<http://www.dfg.ca.gov/wildlife/nongame/ssc/docs/mammal/MSSCProjectTimeline.pdf>

A new *California Bird Species of Special Concern* report was completed in 2008. More information is available at: <http://www.dfg.ca.gov/wildlife/species/ssc/birds.html>. A new category of “**Taxa to Watch**” was created in the new *California Bird Species of Special Concern* report. The birds on this **Watch List** are 1) not on the current Special Concern list but were on previous lists and they have not been state listed under CESA; 2) were previously state or federally listed and now are on neither list; or 3) are on the list of “Fully Protected” species. More information and brief accounts for each species is available in the report.

DFG: Fully Protected: The classification of Fully Protected was the State's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds and mammals. Most of the species on these lists have subsequently been listed under the state and/or federal endangered species acts; white-tailed kite, golden eagle, trumpeter swan, northern elephant seal and ring-tailed cat are the exceptions. The white-tailed kite and the golden eagle are tracked in the CNDDDB; the trumpeter swan, northern elephant seal and ring-tailed cat are not.

The Fish and Game Code sections dealing with Fully Protected species state that these species "...may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected" species, although take may be authorized for necessary scientific research. This language arguably makes the "Fully Protected" designation the strongest and most restrictive regarding the "take" of these species. In 2003 the code sections dealing with fully protected species were amended to allow the Department to authorize take resulting from recovery activities for state-listed species.

More information on Fully Protected species and the take provisions can be found in the Fish and Game Code, (birds at §3511, mammals at §4700, reptiles and amphibians at §5050, and fish at §5515). Additional information on Fully Protected fish can be found in the California Code of Regulations, Title 14, Division 1, Subdivision 1, Chapter 2, Article 4, §5.93. The category of Protected Amphibians and Reptiles in Title 14 has been repealed. The Fish and Game Code is available online at: <http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=fgc&codebody=&hits=20> . Title 14 of the California Code of Regulations is available at: <http://ccr.oal.ca.gov/linkedslice/default.asp?SP=CCR-1000&Action=Welcome>

FS: Sensitive: USDA Forest Service defines sensitive species as those plant and animal species identified by a regional forester that are not listed or proposed for listing under the federal Endangered Species Act for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. Regional Foresters shall identify sensitive species occurring within the region. California is the Pacific Southwest Region (Region 5). The list of sensitive animals for Region 5 is undergoing revision. The anticipated completion date was spring 2009, however it still has not been updated in spring 2010. The sensitive designation on this list is based on the previous list. More information is available at:

<http://www.fs.fed.us/r5/projects/sensitive-species/>

FWS: BCC: Fish and Wildlife Service: Birds of Conservation Concern: The goal of the *Birds of Conservation Concern 2008* report is to accurately identify the migratory and nonmigratory bird species (beyond those already designated as Federally threatened or endangered) that represent our highest conservation priorities and draw attention to species in need of conservation action. We hope that by focusing attention on these highest priority species, this report will promote greater study and protection of the habitats and ecological communities upon which these species depend, thereby ensuring the future of healthy avian populations and communities. This report is available at:

http://library.fws.gov/Bird_Publications/BCC2008.pdf

Marine Mammal Commission: Marine Mammal Species of Special Concern: Section 202 of the Marine Mammal Protection Act directs the Marine Mammal Commission, in consultation with its Committee of Scientific Advisors, to make recommendations to the Department of Commerce, the Department of the Interior, and other federal agencies on research and management actions needed to conserve species of marine mammals. To meet this charge,

the Commission devotes special attention to particular species and populations that are vulnerable to various types of human-related activities, impacts, and contaminants. Such species may include marine mammals listed as endangered or threatened under the Endangered Species Act or as depleted under the Marine Mammal Protection Act. In addition, the Commission often directs special attention to other species or populations of marine mammals not so listed whenever special conservation challenges arise that may affect them. More information on the Marine Mammal Protection Act and the Species of Special Concern list is available at: <http://www.mmc.gov/species>

National Oceanic and Atmospheric Administration (NOAA): The Office of Protected Resources (OPR) is a headquarters program office of NOAA's National Marine Fisheries Service (NOAA Fisheries Service, or NMFS), under the U.S. Department of Commerce, with responsibility for protecting marine mammals and endangered marine life.

NOAA's Office of Protected Resources works to conserve, protect, and recover species under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA) in conjunction with our Regional offices, Science Centers, and various partners. The category **Species of Concern** was established by the National Marine Fisheries Service (NMFS) effective 15 April 2004. **Species of Concern** are those species about which NOAA's National Marine Fisheries Service (NMFS) has some concerns regarding status and threats, but for which insufficient information is available to indicate a need to list the species under the Endangered Species Act (ESA). We wish to draw proactive attention and conservation action to these species. "Species of concern" status does not carry any procedural or substantive protections under the ESA. More information is available at: <http://www.nmfs.noaa.gov/pr/species/concern>

WBWG: High Priority: The Western Bat Working Group is comprised of agencies, organizations and individuals interested in bat research, management and conservation from the 13 western states and provinces. The goals are (1) to facilitate communication among interested parties and reduce risks of species decline or extinction; (2) to provide a mechanism by which current information on bat ecology, distribution and research techniques can be readily accessed; and (3) to develop a forum to discuss conservation strategies, provide technical assistance and encourage education programs. Species designated as "High Priority" are imperiled or are at high risk of imperilment based on available information on distribution, status, ecology and known threats. More information is available at: <http://www.wbwg.org>.

Xerces Society: Red list: The Xerces Society is an international non-profit organization dedicated to protecting biological diversity through invertebrate conservation. The Society advocates for invertebrates and their habitats by working with scientists, land managers, educators, and citizens on conservation and education projects. Their core programs focus on endangered species, native pollinators, and watershed health. More information on the Red list is available at: <http://www.xerces.org/>

Table of status code abbreviations

Organization	Abbreviation
American Bird Conservancy - U. S. WatchList of Birds of Conservation Concern	ABC_WLBCC
American Fisheries Society - Endangered	AFS_EN
American Fisheries Society - Threatened	AFS_TH
American Fisheries Society - Vulnerable	AFS_VU
Bureau of Land Management - Sensitive	BLM_S
Calif Dept of Forestry & Fire Protection - Sensitive	CDF_S
Calif Dept of Fish & Game - Fully Protected	DFG_FP
Calif Dept of Fish & Game - Species of Special Concern	DFG_SSC
Calif Dept of Fish & Game - Watch List	DFG_WL
IUCN - Conservation Dependent	IUCN_CD
IUCN - Critically Endangered	IUCN_CR
IUCN - Data Deficient	IUCN_DD
IUCN - Endangered	IUCN_EN
IUCN - Least Concern	IUCN_LC
IUCN - Near Threatened	IUCN_NT
IUCN - Vulnerable	IUCN_VU
Marine Mammal Commission - Species of Special Concern	MMC_SSC
National Marine Fisheries Service - Species of Concern	NMFS_SC
U. S. Forest Service - Sensitive	USFS_S
U. S. Fish & Wildlife Service Birds of Conservation Concern	USFWS_BCC
Western Bat Working Group - High Priority	WBWG_H
Western Bat Working Group - Low-Medium Priority	WBWG_LM
Western Bat Working Group - Medium Priority	WBWG_M
Western Bat Working Group - Medium-High Priority	WBWG_MH
Xerces Society - Critically Imperiled	XERCES_CI
Xerces Society - Data Deficient	XERCES_DD
Xerces Society - Imperiled	XERCES_IM
Xerces Society - Vulnerable	XERCES_VU

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
PELECYPODA (clams and mussels)						
+ <i>Anodonta californiensis</i> California floater		G3Q S2?	None	None	USFS:S	
<i>Anodonta oregonensis</i> Oregon floater		G5Q S2?	None	None		
+ <i>Gonidea angulata</i> western ridged mussel		G3 S1S2	None	None		
+ <i>Margaritifera falcata</i> western pearlshell		G4 S2S3?	None	None		
<i>Pisidium ultramontanum</i> fingernail clam		G1 S1	None	None	USFS:S	
GASTROPODA (Snails, slugs and abalone)						
<i>Algamorda newcombiana</i> Newcomb's littorine snail		G1G2 S1S2	None	None		
+ <i>Ammonitella yatesii</i> tight coin (=Yates' snail)		G1 S1	None	None	IUCN:VU	
+ <i>Ancotrema voyanum</i> hooded lancetooth		G1G2 S1S2	None	None	BLM:S	
+ <i>Assiminea infima</i> Badwater snail		G1 S1	None	None	IUCN:VU	
+ <i>Binneya notabilis</i> Santa Barbara shelled slug		G1 S1	None	None	IUCN:DD	
+ <i>Colligyrus convexus</i> canary dusksnail		G1G2 S1S2	None	None		
+ <i>Eremarionta immaculata</i> white desertsnailed		G1 S1	None	None	IUCN:VU	
<i>Eremarionta millepalmarum</i> Thousand Palms desertsnailed		G1 S1	None	None	IUCN:VU	
+ <i>Eremarionta morongoana</i> Morongo (=Colorado) desertsnailed		G1G3 S1	None	None	IUCN:NT	
+ <i>Eremarionta rowelli bakerensis</i> Baker's desertsnailed		G1T1 S1	None	None	IUCN:DD	
+ <i>Eremarionta rowelli mccoiana</i> California Mcco snail		G1T1 S1	None	None	IUCN:DD	
+ <i>Fluminicola seminalis</i> nugget pebblesnailed		G2 S1S2	None	None	USFS:S	
+ <i>Fontelicella sp.</i> Deep Springs fontelicella		G1 S1	None	None		
<i>Glyptostoma gabrielense</i> San Gabriel chestnut		G2 S2	None	None		
<i>Haliotis corrugata</i> pink abalone		G3? S2?	None	None	NMFS:SC	
+ <i>Haliotis cracherodii</i> black abalone		G3G4 S3	Endangered	None	IUCN:CR	
<i>Haliotis fulgens</i> green abalone		G3G4 S3	None	None	NMFS:SC	
<i>Haliotis kamtschatkana</i> pinto abalone		G3G4 S1S3	None	None	IUCN:EN NMFS:SC	
<i>Haliotis sorenseni</i> white abalone		G1 S1	Endangered	None		
+ <i>Haplotrema catalinense</i> Santa Catalina lancetooth		G1 S1	None	None		
+ <i>Haplotrema durantei</i> Durant's snail		G2G3 S2S3	None	None		
+ <i>Helisoma newberryi</i> Great Basin rams-horn		G1Q S1	None	None	USFS:S	
+ <i>Helminthoglypta allynsmithi</i> Merced Canyon shoulderband		G1 S1	None	None	IUCN:VU	
+ <i>Helminthoglypta arrosa monticola</i> mountain shoulderband		G2G3T1 S1	None	None		

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
GASTROPODA (Snails, slugs and abalone)						
+ <i>Helminthoglypta arrosa pomoensis</i> Pomo bronze shoulderband		G2G3T1 S1	None	None	IUCN:DD	
+ <i>Helminthoglypta ayresiana sanctaerucis</i> Ayer's snail		G1G2T1T2 S1S2	None	None		
+ <i>Helminthoglypta callistoderma</i> Kern shoulderband		G1 S1	None	None	IUCN:EN	
+ <i>Helminthoglypta coelata</i> mesa shoulderband		G1 S1	None	None	IUCN:VU	
+ <i>Helminthoglypta concolor</i> whitefir shoulderband		G1G3 S1S3	None	None		
<i>Helminthoglypta fontiphila</i> Soledad shoulderband		G1 S1	None	None		
+ <i>Helminthoglypta hertleini</i> Oregon shoulderband		G1 S1	None	None	BLM:S	
+ <i>Helminthoglypta milleri</i> peak shoulderband		G1 S1	None	None		
+ <i>Helminthoglypta mohaveana</i> Victorville shoulderband		G1 S1	None	None	IUCN:NT	
+ <i>Helminthoglypta nickliniana awania</i> Peninsula coast range shoulderband		G1T1 S1	None	None	IUCN:DD	
+ <i>Helminthoglypta nickliniana bridgesi</i> Bridges' coast range shoulderband		G2T1 S1	None	None	IUCN:DD	
+ <i>Helminthoglypta sequoicola consors</i> redwood shoulderband		G1G2T1 S1	None	None	IUCN:DD	
+ <i>Helminthoglypta stiversiana williamsi</i> Williams' bronze shoulderband		G2G3T1 S1	None	None	IUCN:DD	
+ <i>Helminthoglypta talmadgei</i> Trinity shoulderband		G1G3 S1S3	None	None	BLM:S	
+ <i>Helminthoglypta taylori</i> westfork shoulderband		G1 S1	None	None		
<i>Helminthoglypta traskii pacoimensis</i> Pacoima shoulderband		G1T1 S1	None	None		
+ <i>Helminthoglypta traskii traskii</i> Trask shoulderband		G1G2T1 S1	None	None		
<i>Helminthoglypta uvasana</i> Grapevine shoulderband		G1 S1	None	None		
<i>Helminthoglypta vasquezi</i> Vasquez shoulderband		G1 S1	None	None		
+ <i>Helminthoglypta walkeriana</i> Morro shoulderband (=banded dune) snail		G1 S1	Endangered	None	IUCN:CR	
<i>Herpeteros angelus</i> Soledad desertsnailed slug		G1 S1	None	None		
+ <i>Hesperarion plumbeus</i> leaden slug		G1G3 S1S3	None	None		
+ <i>Ipnobius robustus</i> robust tryonia		G1G2 S1	None	None		
+ <i>Juga acutifilosa</i> topaz juga		G2 S2	None	None	USFS:S	
+ <i>Juga chacei</i> Chace juga		G1 S1	None	None		
+ <i>Juga occata</i> scalloped juga		G1 S1	None	None	USFS:S	
+ <i>Juga orickensis</i> redwood juga		G2 S1S2	None	None		
<i>Lanx alta</i> highcap lanx		G2 S1S2	None	None		
<i>Lanx klamathensis</i> scale lanx		G1 S1	None	None		

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
GASTROPODA (Snails, slugs and abalone)						
+ <i>Lanx patelloides</i> kneecap lanx		G2 S2	None	None		
+ <i>Megomphix californicus</i> Natural Bridge megomphix		G1G2 S1S2	None	None		
+ <i>Micrarionta facta</i> Santa Barbara islandsnail		G1G2 S1S2	None	None	IUCN:VU	
+ <i>Micrarionta feralis</i> San Nicolas islandsnail		G1 S1	None	None	IUCN:CR	
+ <i>Micrarionta gabbi</i> San Clemente islandsnail		G1 S1	None	None	IUCN:VU	
+ <i>Micrarionta opuntia</i> pricklypear islandsnail		G1 S1	None	None	IUCN:VU	
+ <i>Monadenia callipeplus</i> downy sideband		G1G2 S1S2	None	None		
+ <i>Monadenia chaceana</i> Siskiyou shoulderband		G2 S2	None	None	BLM:S	
+ <i>Monadenia churchi</i> Klamath sideband		G2 S2	None	None		
+ <i>Monadenia circumcarinata</i> keeled sideband		G1 S1	None	None	BLM:S IUCN:VU	
+ <i>Monadenia cristulata</i> crested sideband		G1G2 S1S2	None	None		
+ <i>Monadenia fidelis leonina</i> A terrestrial snail		G4G5T1T2 S1S2	None	None		
+ <i>Monadenia fidelis pronotis</i> rocky coast Pacific sideband		G4G5T1 S1	None	None		
+ <i>Monadenia infumata ochromphalus</i> yellow-based sideband		G2T1 S1	None	None		
+ <i>Monadenia infumata setosa</i> Trinity bristle snail		G2T2 S2	None	Threatened	IUCN:VU	
<i>Monadenia marmarotis</i> marble sideband		G1 S1	None	None		
+ <i>Monadenia mormonum buttoni</i> Button's Sierra sideband		G1G2T1 S1	None	None		
+ <i>Monadenia mormonum hirsuta</i> hirsute Sierra sideband		G1G2T1 S1	None	None	BLM:S	
+ <i>Monadenia troglodytes troglodytes</i> Shasta sideband		G1G2T1T2 S1S2	None	None	IUCN:DD USFS:S	
<i>Monadenia troglodytes wintu</i> Wintu sideband		G1G2T1T2 S1S2	None	None	IUCN:DD USFS:S	
+ <i>Monadenia tuolumneana</i> Tuolumne sideband		G1 S1	None	None	BLM:S	
+ <i>Monadenia yosemitensis</i> Yosemite Mariposa sideband		G1 S1	None	None		
+ <i>Noyo intersessa</i> Ten Mile shoulderband		G2 S2	None	None		
+ <i>Pomatiopsis binneyi</i> robust walker		G1 S1	None	None		
<i>Pomatiopsis californica</i> Pacific walker		G1 S1	None	None		
<i>Pomatiopsis chacei</i> marsh walker		G1 S1	None	None		
+ <i>Pristiloma shepardae</i> Shepard's snail		G1 S1	None	None		
+ <i>Pristinicola hemphilli</i> pristine pyrg		G3 S1	None	None		
<i>Prophysaon coeruleum</i> Blue-gray taildropper slug	(May be a species complex.)	G3G4 S1S2	None	None	USFS:S	

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
GASTROPODA (Snails, slugs and abalone)						
+ <i>Punctum hannai</i>	Trinity Spot	G1 S1S3	None	None		
+ <i>Pyrgulopsis aardahli</i>	Benton Valley (=Aahrdahl's) springsnail	G1 S1	None	None		
+ <i>Pyrgulopsis archimedis</i>	Archimedes pyrg	G1 S1	None	None		
+ <i>Pyrgulopsis cinerana</i>	Ash Valley pyrg	G1G2 S1S2	None	None		
+ <i>Pyrgulopsis diablensis</i>	Diablo Range pyrg	G1 S1	None	None		
+ <i>Pyrgulopsis eremica</i>	Smoke Creek pyrg	G2 S2	None	None		
+ <i>Pyrgulopsis falciglans</i>	Likely pyrg	G1G2 S1	None	None		
+ <i>Pyrgulopsis gibba</i>	Surprise Valley pyrg	G3 S2?	None	None		
+ <i>Pyrgulopsis greggi</i>	Kern River pyrg	G1 S1	None	None		
+ <i>Pyrgulopsis lasseni</i>	Willow Creek pyrg	G1G2 S1S2	None	None		
+ <i>Pyrgulopsis longae</i>	Long Valley pyrg	G1 S1	None	None		
+ <i>Pyrgulopsis owensensis</i>	Owens Valley springsnail	G1G2 S1S2	None	None	USFS:S	
+ <i>Pyrgulopsis perturbata</i>	Fish Slough springsnail	G1G2 S1S2	None	None		
+ <i>Pyrgulopsis rupinicola</i>	Sucker Springs pyrg	G1G2 S1	None	None		
+ <i>Pyrgulopsis taylori</i>	San Luis Obispo pyrg	G1 S1	None	None		
<i>Pyrgulopsis ventricosa</i>	Clear Lake pyrg	G1 S1	None	None		
+ <i>Pyrgulopsis wongii</i>	Wong's springsnail	G2 S1S2	None	None	USFS:S	
+ <i>Radiocentrum avalonense</i>	Catalina mountainsnail	G1 S1	None	None	IUCN:CR	
+ <i>Rothelix warnerfontis</i>	Warner Springs shoulderband	G1 S1	None	None		
+ <i>Sterkia clementina</i>	San Clemente Island blunt-top snail	G1 S1	None	None	IUCN:NT	
+ <i>Trilobopsis roperi</i>	Shasta chaparral	G1 S1	None	None	USFS:S	
<i>Trilobopsis tehamana</i>	Tehama chaparral	G1 S1	None	None	BLM:S USFS:S	
+ <i>Tryonia imitator</i>	mimic tryonia (=California brackishwater snail)	G2G3 S2S3	None	None	IUCN:DD	
+ <i>Tryonia margae</i>	Grapevine Springs elongate tryonia	G1 S1	None	None		
+ <i>Tryonia rowlandsi</i>	Grapevine Springs squat tryonia	G1 S1	None	None		
+ <i>Vespericola karokorum</i>	Karok hesperian	G2G3 S2S3	None	None	IUCN:DD	
+ <i>Vespericola marinensis</i>	Marin hesperian	G2G3 S2S3	None	None		
+ <i>Vespericola pressleyi</i>	Big Bar hesperian	G1 S1	None	None	BLM:S USFS:S	

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
GASTROPODA (Snails, slugs and abalone)						
<i>Vespericola scotti</i> Benson Gulch hesperian	(Known only from the type locality, Benson Gulch, Trinity Co.)	G1 S1	None	None		
+ <i>Vespericola shasta</i> Shasta hesperian		G1 S1	None	None	USFS:S	
+ <i>Vespericola sierranus</i> Siskiyou hesperian		G2 S1S2	None	None		
+ <i>Xerarionta intercisa</i> horseshoe snail		G1 S1	None	None	IUCN:VU	
+ <i>Xerarionta redimita</i> wreathed cactusnail		G1 S1	None	None	IUCN:VU	
<i>Xerarionta tryoni</i> Bicolor cactusnail		G1 S1	None	None	IUCN:VU	
ARACHNIDA (Spiders and relatives)						
+ <i>Aphrastochthonius grubbsi</i> Grubbs' Cave pseudoscorpion		G1G2 S1S2	None	None		
<i>Aphrastochthonius similis</i> Carlow's Cave pseudoscorpion		G1G2 S1S2	None	None		
<i>Archeolarca aalbui</i> Aalbu's Cave pseudoscorpion		G1G2 S1S2	None	None		
+ <i>Banksula californica</i> Alabaster Cave harvestman		GH SH	None	None		
+ <i>Banksula galilei</i> Galile's cave harvestman		G1 S1	None	None		
+ <i>Banksula grubbsi</i> Grubbs' cave harvestman		G1 S1	None	None		
+ <i>Banksula incredula</i> incredible harvestman		G1 S1	None	None		
+ <i>Banksula martinorum</i> Martins' cave harvestman		G1 S1	None	None		
+ <i>Banksula melones</i> Melones Cave harvestman		G2G3 S2S3	None	None	IUCN:VU	
+ <i>Banksula rudolphi</i> Rudolph's cave harvestman		G1 S1	None	None		
+ <i>Banksula tuolumne</i> Tuolumne cave harvestman		G1 S1	None	None		
+ <i>Banksula tutankhamen</i> King Tut Cave harvestman		G1 S1	None	None		
+ <i>Calicina arida</i> San Benito harvestman		G1 S1	None	None		
+ <i>Calicina breva</i> Stanislaus harvestman		G1 S1	None	None		
+ <i>Calicina cloughensis</i> Clough Cave harvestman		G1 S1	None	None		
+ <i>Calicina conifera</i> Crane Flat harvestman		G1 S1	None	None		
+ <i>Calicina diminua</i> Marin blind harvestman		G1 S1	None	None		
+ <i>Calicina dimorphica</i> Watts Valley harvestman		G1 S1	None	None		
+ <i>Calicina macula</i> marbled harvestman		G1 S1	None	None		
+ <i>Calicina mesaensis</i> Table Mountain harvestman		G1 S1	None	None		
+ <i>Calicina minor</i> Edgewood blind harvestman		G1 S1	None	None		
+ <i>Calicina piedra</i> Piedra harvestman		G1 S1	None	None		

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
ARACHNIDA (Spiders and relatives)						
+ <i>Calileptoneta briggsi</i>		G1 S1	None	None		
	Briggs' leptonetid spider					
+ <i>Calileptoneta oasa</i>		G1 S1	None	None		
	Andreas Canyon leptonetid spider					
+ <i>Calileptoneta ubicki</i>		G1 S1	None	None		
	Ubick's leptonetid spider					
+ <i>Calileptoneta wapiti</i>		G1 S1	None	None		
	Mendocino leptonetid spider					
+ <i>Fissilicreagris imperialis</i>		G1 S1	None	None	IUCN:VU	
	Empire Cave pseudoscorpion					
+ <i>Hubbardia idria</i>		G1 S1	None	None		
	Idria short-tailed whipscorpion					
+ <i>Hubbardia secoensis</i>		G1 S1	None	None		
	Arroyo Seco short-tailed whipscorpion					
+ <i>Hubbardia shoshonensis</i>		G1 S1	None	None	BLM:S	
	Shoshone Cave whip-scorpion					
+ <i>Larca laceyi</i>		G1G2 S1	None	None		
	Lacey's Cave pseudoscorpion					
+ <i>Meta dolloff</i>		G1 S1	None	None	IUCN:VU	
	Dolloff Cave spider					
+ <i>Microcina edgewoodensis</i>		G1 S1	None	None		
	Edgewood Park micro-blind harvestman					
+ <i>Microcina homi</i>		G1 S1	None	None		
	Hom's micro-blind harvestman					
+ <i>Microcina jungi</i>		G1 S1	None	None		
	Jung's micro-blind harvestman					
+ <i>Microcina leei</i>		G1 S1	None	None		
	Lee's micro-blind harvestman					
+ <i>Microcina lumi</i>		G1 S1	None	None		
	Lum's micro-blind harvestman					
+ <i>Microcina tiburona</i>		G1 S1	None	None		
	Tiburon micro-blind harvestman					
+ <i>Neochthonius imperialis</i>		G1 S1	None	None		
	Empire Cave pseudoscorpion					
<i>Pauroctonus maritimus</i>		GNR SNR	None	None		
	Monterey dunes scorpion					
+ <i>Pseudogarypus orpheus</i>		G1G2 S1	None	None		
	Music Hall Cave pseudoscorpion					
+ <i>Socalchemmis gertschi</i>		G1 S1	None	None		
	Gertsch's socalchemmis spider					
+ <i>Socalchemmis icenoglei</i>		G1 S1	None	None		
	Icenogle's socalchemmis spider					
+ <i>Socalchemmis monterey</i>		G1 S1	None	None		
	Monterey socalchemmis spider					
+ <i>Talanites moodyae</i>		G1G2 S1S2	None	None		
	Moody's gnaphosid spider					
+ <i>Talanites ubicki</i>		G1 S1	None	None		
	Ubick's gnaphosid spider					
<i>Telema sp.</i>		G1G2 S1S2	None	None		
	Santa Cruz telemid spider					
<i>Texella deserticola</i>		G1 S1	None	None		
	Whitewater Canyon harvestman					
+ <i>Texella kokoweef</i>		G1 S1	None	None		
	Kokoweef Crystal Cave harvestman					
+ <i>Texella shoshone</i>		G1 S1	None	None		
	Shoshone Cave harvestman					

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
CRUSTACEA, Order Anostraca (fairy shrimp)						
+ <i>Artemia monica</i> Mono brine shrimp		G1 S1	None	None	IUCN:CD	
+ <i>Branchinecta campestris</i> pocket pouch fairy shrimp		G4 S1	None	None		
+ <i>Branchinecta conservatio</i> Conservancy fairy shrimp		G1 S1	Endangered	None	IUCN:EN	
+ <i>Branchinecta longiantenna</i> longhorn fairy shrimp		G1 S1	Endangered	None	IUCN:EN	
+ <i>Branchinecta lynchi</i> vernal pool fairy shrimp		G3 S2S3	Threatened	None	IUCN:VU	
+ <i>Branchinecta mesovallensis</i> midvalley fairy shrimp		G2 S2	None	None		
+ <i>Branchinecta sandiegonensis</i> San Diego fairy shrimp		G1 S1	Endangered	None	IUCN:EN	
+ <i>Linderiella occidentalis</i> California linderiella		G3 S2S3	None	None	IUCN:NT	
+ <i>Linderiella santarosae</i> Santa Rosa Plateau fairy shrimp		G1G2 S1	None	None		
+ <i>Streptocephalus woottoni</i> Riverside fairy shrimp		G1 S1	Endangered	None	IUCN:EN	
CRUSTACEA, Order Notostraca (tadpole shrimp)						
+ <i>Lepidurus packardii</i> vernal pool tadpole shrimp		G3 S2S3	Endangered	None	IUCN:EN	
CRUSTACEA, Order Anomopoda (water fleas)						
+ <i>Dumontia oregonensis</i> hairy water flea		G1G3 S1	None	None		
CRUSTACEA, Order Isopoda (isopods)						
+ <i>Bowmanasellus sequoiae</i> Sequoia cave isopod		G1 S1	None	None		
+ <i>Caecidotea tomalensis</i> Tomales isopod		G2 S2	None	None		
+ <i>Calasellus californicus</i> An isopod		G2 S2	None	None		
+ <i>Calasellus longus</i> An isopod		G1 S1	None	None		
CRUSTACEA, Order Amphipoda (amphipods)						
<i>Hyalella muerta</i> Texas Spring amphipod		G1 S1	None	None		
<i>Hyalella sandra</i> Death Valley amphipod		G1 S1	None	None		
<i>Stygobromus cherylae</i> Barr's amphipod		G1 S1	None	None		
<i>Stygobromus cowani</i> Cowan's amphipod		G1 S1	None	None		
<i>Stygobromus gallawayae</i> Gallaway's amphipod		G1 S1	None	None		
+ <i>Stygobromus gradyi</i> Grady's Cave amphipod		G1 S1	None	None	IUCN:VU	
<i>Stygobromus grahami</i> Graham's Cave Amphipod		G2 S2	None	None		
+ <i>Stygobromus harai</i> Hara's Cave amphipod		G1G2 S1S2	None	None	IUCN:VU	
<i>Stygobromus hyporheicus</i> Hypoheic amphipod		G1 S1	None	None		
<i>Stygobromus imperialis</i> Empire Cave amphipod		G1 S1	None	None		
<i>Stygobromus lacicolus</i> Lake Tahoe amphipod		G1 S1	None	None		

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
CRUSTACEA, Order Amphipoda (amphipods)						
+ <i>Stygobromus mackenziei</i> Mackenzie's Cave amphipod		G1 S1	None	None	IUCN:VU	
<i>Stygobromus myersae</i> Myer's amphipod		G1G2? S1S2?	None	None		
<i>Stygobromus mysticus</i> Secret Cave amphipod		G1 S1	None	None		
<i>Stygobromus rudolphi</i> Rudolph's amphipod		G1 S1	None	None		
<i>Stygobromus sheldoni</i> Sheldon's amphipod		G1 S1	None	None		
<i>Stygobromus sierrensis</i> Sierra amphipod		G1 S1	None	None		
<i>Stygobromus tahoensis</i> Lake Tahoe stygobromid		G1 S1	None	None		
<i>Stygobromus trinus</i> Trinity County Amphipod		G1 S1	None	None		
+ <i>Stygobromus wengerorum</i> Wengerors' Cave amphipod		G1 S1	None	None	IUCN:VU	
CRUSTACEA, Order Decapoda (crayfish & shrimp)						
+ <i>Pacifastacus fortis</i> Shasta crayfish		G1 S1	Endangered	Endangered	IUCN:CR	
<i>Pacifastacus leniusculus klamathensis</i> Klamath crayfish		G5T5 S3	None	None		
+ <i>Syncaris pacifica</i> California freshwater shrimp		G1 S1	Endangered	Endangered	IUCN:EN	
INSECTA, Order Odonata (dragonflies & damselflies)						
+ <i>Ischnura gemina</i> San Francisco forktail damselfly		G2 S2	None	None	IUCN:VU	
INSECTA, Order Plecoptera (stoneflies)						
+ <i>Capnia lacustra</i> Lake Tahoe benthic stonefly		G1 S1	None	None		
+ <i>Cosumnoperla hypocrena</i> Cosumnes spring stonefly		G1 S1	None	None		
+ <i>Megaleuctra sierra</i> Shirrtail Creek stonefly		G2Q S1?	None	None		
INSECTA, Order Orthoptera (grasshoppers, katydids, and crickets)						
+ <i>Aglaothorax longipennis</i> Santa Monica shieldback katydid		G1G2 S1S2	None	None	IUCN:CR	
+ <i>Ammopelmatus kelsoensis</i> Kelso jerusalem cricket		G1 S1	None	None	IUCN:VU	
+ <i>Ammopelmatus muwu</i> Point Conception jerusalem cricket		G1 S1	None	None	IUCN:VU	
+ <i>Idiostatus kathleenae</i> Pinnacles shieldback katydid		G1G2 S1S2	None	None		
+ <i>Idiostatus middlekauffi</i> Middlekauff's shieldback katydid		G1G2 S1	None	None	IUCN:CR	
<i>Macrobaenetes algodonensis</i> Algodones sand treader cricket		G1G2 S1S2	None	None		
+ <i>Macrobaenetes kelsoensis</i> Kelso giant sand treader cricket		G1 S1	None	None	IUCN:VU	
+ <i>Macrobaenetes valgum</i> Coachella giant sand treader cricket		G1G2 S1S2	None	None	IUCN:VU	
<i>Pristoceuthophilus sp.</i> Samwell Cave cricket		G1G3 S1S3	None	None	IUCN:VU	
+ <i>Psychomastax deserticola</i> desert monkey grasshopper		G1G2 S1S2	None	None	IUCN:VU	
+ <i>Stenopelmatus calhounensis</i> Coachella Valley jerusalem cricket		G1G2 S1S2	None	None	IUCN:VU	

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
INSECTA, Order Orthoptera (grasshoppers, katydids, and crickets)						
+ <i>Tetrix sierrana</i>	Sierra pygmy grasshopper	G1G2 S1S2	None	None	IUCN:VU	
+ <i>Trimerotropis infantilis</i>	Zayante band-winged grasshopper	G1 S1	Endangered	None	IUCN:EN	
+ <i>Trimerotropis occidentiloides</i>	Santa Monica grasshopper	G1G2 S1S2	None	None	IUCN:EN	
+ <i>Trimerotropis occulens</i>	Lompoc grasshopper	GH SH	None	None	IUCN:EN	
INSECTA, Order Heteroptera (true bugs)						
+ <i>Ambrysus funebris</i>	Nevares Spring naucorid bug	G1 S1	Candidate	None		
+ <i>Belostoma saratogae</i>	Saratoga Springs belostoman bug	G1 S1	None	None		
+ <i>Oravelia pege</i>	Dry Creek cliff strider bug	G1 S1	None	None		
+ <i>Pelocoris shoshone</i>	Amargosa naucorid bug	G1G3 S1S2	None	None		
+ <i>Saldula usingeri</i>	Wilbur Springs shorebug	G1 S1	None	None		
INSECTA, Order Neuroptera (lacewings)						
+ <i>Oliarces clara</i>	cheeseweed owlfly (cheeseweed moth lacewing)	G1G3 S1S3	None	None		
INSECTA, Order Coleoptera (beetles)						
+ <i>Aegialia concinna</i>	Ciervo aegilian scarab beetle	G1 S1	None	None	BLM:S IUCN:VU	
+ <i>Agabus rumpfi</i>	Death Valley agabus diving beetle	G1G3 S1	None	None		
<i>Agrilus harenus</i>	Narenus jewel beetle	G1G2 S1S2	None	None		
+ <i>Anomala carlsoni</i>	Carlson's dune beetle	G2 S2	None	None		
+ <i>Anomala hardyorum</i>	Hardy's dune beetle	G2 S2	None	None		
+ <i>Anthicus antiochensis</i>	Antioch Dunes anthicid beetle	G1 S1	None	None		
+ <i>Anthicus sacramento</i>	Sacramento anthicid beetle	G1 S1	None	None	IUCN:EN	
+ <i>Atractelmis wawona</i>	Wawona riffle beetle	G1G3 S1S2	None	None		
+ <i>Chaetarthria leechi</i>	Leech's chaetarthrian water scavenger beetle	G1? S1?	None	None		
+ <i>Cicindela gabbii</i>	western tidal-flat tiger beetle	G4 S1	None	None		
+ <i>Cicindela hirticollis abrupta</i>	Sacramento Valley tiger beetle	G5TH SH	None	None		
+ <i>Cicindela hirticollis gravida</i>	sandy beach tiger beetle	G5T2 S1	None	None		
+ <i>Cicindela latesignata latesignata</i>	western beach tiger beetle	G4T1T2 S1	None	None		
+ <i>Cicindela ohlone</i>	Ohlone tiger beetle	G1 S1	Endangered	None		
+ <i>Cicindela senilis frosti</i>	senile tiger beetle	G4T1 S1	None	None		
+ <i>Cicindela tranquebarica ssp.</i>	San Joaquin tiger beetle	G5T1 S1	None	None		
+ <i>Cicindela tranquebarica viridissima</i>	greenest tiger beetle	G5T1 S1	None	None		

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
INSECTA, Order Coleoptera (beetles)						
+ <i>Coelus globosus</i> globose dune beetle		G1 S1	None	None	IUCN:VU	
+ <i>Coelus gracilis</i> San Joaquin dune beetle		G1 S1	None	None	BLM:S IUCN:VU	
<i>Coenonycha clementina</i> San Clemente Island coenonycha beetle		G1? S1?	None	None		
<i>Cyclocephala wandae</i> Wandae dune beetle		G1G2 S1S2	None	None		
<i>Deltaspis ivae</i> marsh-elder long-horned beetle		G1 S1	None	None		
+ <i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle		G3T2 S2	Threatened	None		
+ <i>Dinacoma caseyi</i> Casey's June beetle		G1 S1	Proposed Endangered	None		
+ <i>Dubiraphia brunnescens</i> brownish dubiraphian riffle beetle		G1G3 S1S3	None	None		
+ <i>Dubiraphia giulianii</i> Giuliani's dubiraphian riffle beetle		G1G3 S1S3	None	None		
+ <i>Elaphrus viridis</i> Delta green ground beetle		G1 S1	Threatened	None	IUCN:CR	
+ <i>Glaresis arenata</i> Kelso Dunes scarab glaresis beetle		G1G3 S1S3	None	None		
+ <i>Hydrochara rickseckeri</i> Ricksecker's water scavenger beetle		G1G2 S1S2	None	None		
+ <i>Hydroporus hirsutus</i> wooly hydroporus diving beetle		G1G3 S1S3	None	None		
+ <i>Hydroporus leechi</i> Leech's skyline diving beetle		G1? S1?	None	None		
+ <i>Hydroporus simplex</i> simple hydroporus diving beetle		G1? S1?	None	None		
+ <i>Hygrotus curvipes</i> curved-foot hygrotus diving beetle		G1 S1	None	None		
+ <i>Hygrotus fontinalis</i> travertine band-thigh diving beetle		G1 S1	None	None		
<i>Juniperella mirabilis</i> juniper metallic wood-boring beetle		G1 S1	None	None		
+ <i>Lepismadora algodones</i> Algodones sand jewel beetle		G1 S1	None	None		
+ <i>Lichnanthe albipilosa</i> white sand bear scarab beetle		G1 S1	None	None		
+ <i>Lichnanthe ursina</i> bumblebee scarab beetle		G2 S2	None	None		
+ <i>Lytta hoppingi</i> Hopping's blister beetle		G1G2 S1S2	None	None		
<i>Lytta insperata</i> Mojave Desert blister beetle		G1G2 S1S2	None	None		
+ <i>Lytta moesta</i> moestan blister beetle		G2 S2	None	None		
+ <i>Lytta molesta</i> molestan blister beetle		G2 S2	None	None		
+ <i>Lytta morrisoni</i> Morrison's blister beetle		G1G2 S1S2	None	None		
+ <i>Microcylloepus formicoideus</i> Furnace Creek riffle beetle		G1 S1	None	None		
+ <i>Miloderes nelsoni</i> Nelson's miloderes weevil		G1G3 S1S3	None	None		
+ <i>Nebria darlingtoni</i> South Forks ground beetle		G1 S1	None	None		

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
INSECTA, Order Coleoptera (beetles)						
+ <i>Nebria gebleri siskiyouensis</i> Siskiyou ground beetle		G4G5T4 S1S3	None	None		
+ <i>Nebria sahlbergii triad</i> Tinity Alps ground beetle		G1G3T1T3 S1S3	None	None		
<i>Ochthebius crassalus</i> wing shoulder minute moss beetle		G1G3 S1S3	None	None		
+ <i>Ochthebius recticulus</i> Wilbur Springs minute moss beetle		G1 S1	None	None		
+ <i>Onychobaris langei</i> Lange's El Segundo Dune weevil		G1 S1	None	None		
+ <i>Optioservus canus</i> Pinnacles optioservus riffle beetle		G1 S1	None	None		
<i>Paleoxenus dohrni</i> Dohrn's elegant eucnemid beetle		G3? S3?	None	None		
+ <i>Polyphylla anteronivea</i> Saline Valley snow-front June beetle		G1 S1	None	None		
+ <i>Polyphylla barbata</i> Mount Hermon (=barbate) June beetle		G1 S1	Endangered	None		
+ <i>Polyphylla erratica</i> Death Valley June beetle		G1 S1	None	None		
+ <i>Polyphylla nubila</i> Atascadero June beetle		G1 S1	None	None		
<i>Prasinalia imperialis</i> Algodones white wax jewel beetle		G1G2 S1S2	None	None		
+ <i>Pseudocotalpa andrewsi</i> Andrew's dune scarab beetle		G2G3 S2S3	None	None		
<i>Scaphinotus behrensi</i> Behrens' snail-eating beetle		G2G4 S2S4	None	None		
+ <i>Trachykele hartmani</i> serpentine cypress wood-boring beetle		G1 S1	None	None		
<i>Trichinorhipis knulli</i> A metallic wood-boring beetle		G1 S1	None	None		
+ <i>Trigonoscuta brunnotesselata</i> brown tassel trigonoscuta weevil		G1G2 S1S2	None	None		
+ <i>Trigonoscuta dorothea dorothea</i> Dorothy's El Segundo Dune weevil		G1T1 S1	None	None		
<i>Trigonoscuta rothi algodones</i> Algodones dune weevil		G1G2 S1S2	None	None		
<i>Trigonoscuta rothi imperialis</i> Imperial dune weevil		G1G2 S1S2	None	None		
<i>Trigonoscuta rothi punctata</i> Punctate dune weevil		G1G2 S1S2	None	None		
<i>Trigonoscuta rothi rothi</i> Roth's dune weevil		G1G2 S1S2	None	None		
+ <i>Trigonoscuta sp.</i> Doyen's trigonoscuta dune weevil		G1 S1	None	None		Yes
+ <i>Trigonoscuta stantoni</i> Santa Cruz Island shore weevil		G1? S1?	None	None		
+ <i>Vandykea tuberculata</i> serpentine cypress long-horned beetle		G1 S1	None	None		
INSECTA, Order Mecoptera (scorpionflies)						
+ <i>Orobittacus obscurus</i> gold rush hanging scorpionfly		G1 S1	None	None		
INSECTA, Order Diptera (flies)						
+ <i>Ablautus schlingeri</i> Oso Flaco robber fly		G1 S1	None	None		

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
INSECTA, Order Diptera (flies)						
<i>Apiocera wameri</i>		G1G2 S1S2	None	None		
Glamis sand fly						
+ <i>Brennania belkini</i>		G1G2 S1S2	None	None	IUCN:VU	
Belkin's dune tabanid fly						
+ <i>Efferia antiochi</i>		G1G3 S1S3	None	None		
Antioch efferian robberfly						
<i>Efferia macroxipha</i>		G1G2 S1S2	None	None		
Glamis robberfly						
+ <i>Metapogon hurdi</i>		G1G3 S1S3	None	None		
Hurd's metapogon robberfly						
+ <i>Paracoenia calida</i>		G1 S1	None	None		
Wilber Springs shore fly						
+ <i>Rhaphiomidas terminatus abdominalis</i>		G1T1 S1	Endangered	None		
Delhi Sands flower-loving fly						
+ <i>Rhaphiomidas terminatus terminatus</i>		G1T1 S1	None	None		
El Segundo flower-loving fly						
<i>Rhaphiomidas trochilus</i>		G1 S1	None	None		
Valley mydas fly						
INSECTA, Order Lepidoptera (butterflies & moths)						
+ <i>Adela oplerella</i>		G2G3 S2S3	None	None		
Opler's longhorn moth						
+ <i>Apodemia mormo langei</i>		G5T1 S1	Endangered	None	XERCES:CI	
Lange's metalmark butterfly						
+ <i>Areniscythis brachypteris</i>		G1 S1	None	None		
Oso Flaco flightless moth						
<i>Callophrys comstocki</i>		G2G3 S1S2	None	None	XERCES:IM	
desert green hairstreak						
+ <i>Callophrys mossii bayensis</i>		G4T1 S1	Endangered	None	XERCES:CI	
San Bruno elfin butterfly						
+ <i>Callophrys mossii hidakupa</i>		G4T1T2 S1S2	None	None		
San Gabriel Mountains elfin butterfly						
+ <i>Callophrys mossii marinensis</i>		G4T1 S1	None	None		
Marin elfin butterfly						
+ <i>Callophrys thornei</i>		G1 S1	None	None	BLM:S	
Thorne's hairstreak						
+ <i>Carolella busckana</i>		G1G3 SH	None	None		
Busck's gallmoth						
+ <i>Carterocephalus palaemon magnus</i>		G5T1 S1	None	None		
Sonoma arctic skipper						
<i>Cercyonis pegala carsonensis</i>		G5T1T2 S1S2	None	None		
Carson Valley wood nymph						
+ <i>Chlosyne leanira elegans</i>		G4G5T1T2 S1S2	None	None		
Oso Flaco patch butterfly						
+ <i>Coenonympha tullia yontockett</i>		G5T1T2 S1	None	None		
Yontocket satyr						
+ <i>Danaus plexippus</i>		G5 S3	None	None		
monarch butterfly						
+ <i>Euchloe hyantis andrewsi</i>		G3G4T1 S1	None	None		
Andrew's marble butterfly						
+ <i>Eucosma hennei</i>		G1 S1	None	None		
Henne's eucosman moth						
+ <i>Euphilotes battoides allyni</i>		G5T1 S1	Endangered	None	XERCES:CI	
El Segundo blue butterfly						
+ <i>Euphilotes battoides comstocki</i>		G5T1T3 S1S3	None	None		
Comstock's blue butterfly						
<i>Euphilotes baueri</i>		G2G4 S1S2	None	None	XERCES:IM	
Bauer's dotted-blue						
+ <i>Euphilotes enoptes smithi</i>		G5T1T2 S1S2	Endangered	None	XERCES:CI	
Smith's blue butterfly						

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
INSECTA, Order Lepidoptera (butterflies & moths)						
<i>Euphilotes mojave</i> Mojave dotted-blue		G2G3 S1S2	None	None	XERCES:IM	
+ <i>Euphydryas editha bayensis</i> Bay checkerspot butterfly		G5T1 S1	Threatened	None	XERCES:CI	
+ <i>Euphydryas editha monoensis</i> Mono checkerspot butterfly		G5T3? S1S2	None	None		
+ <i>Euphydryas editha quino</i> quino checkerspot butterfly		G5T1 S1	Endangered	None	XERCES:CI	
<i>Euphyes vestris harbisoni</i> dun skipper		G5T1 S1?	None	None		
+ <i>Euproserpinus euterpe</i> Kern primrose sphinx moth		G1 S1	Threatened	None	XERCES:CI	
+ <i>Glaucopteryx lygdamus palosverdesensis</i> Palos Verdes blue butterfly		G5T1 S1	Endangered	None	XERCES:CI	
+ <i>Hesperia miriamae longaevicola</i> White Mountains skipper		G2G3T1 S1	None	None		
<i>Hesperopsis graciellae</i> Macneill's sooty wing skipper		G2G3 S2S3	None	None	XERCES:VU	
+ <i>Lycaena hermes</i> Hermes copper butterfly		G1G2 S1S2	None	None	IUCN:VU	
<i>Lycaena rubidus incana</i> White Mountains copper		G5T1 S1	None	None		
+ <i>Panoquina errans</i> wandering (=saltmarsh) skipper		G4G5 S1	None	None	IUCN:NT	
+ <i>Philotiella speciosa bohartorum</i> Boharts' blue butterfly		G3G4T1 S1	None	None		
+ <i>Plebejus icarioides albihalos</i> White Mountains icarioides blue butterfly		G5T2T3 S2?	None	None		
+ <i>Plebejus icarioides missionensis</i> Mission blue butterfly		G5T1 S1	Endangered	None	XERCES:CI	
+ <i>Plebejus icarioides moroensis</i> Morro Bay blue butterfly		G5T1T3 S1S3	None	None		
+ <i>Plebejus icarioides parapheres</i> Point Reyes blue butterfly		G5T1T2 S1S2	None	None		
+ <i>Plebejus idas lotis</i> lotis blue butterfly		G5TH SH	Endangered	None	XERCES:CI	
+ <i>Plebejus saepiolus albomontanus</i> White Mountains saepiolus blue butterfly		G5T2 S1S2	None	None		
+ <i>Plebejus saepiolus aureolus</i> San Gabriel Mountains blue butterfly		G5T1 S1	None	None		
+ <i>Plebulina emigdionis</i> San Emigdio blue butterfly		G2G3 S2S3	None	None		
+ <i>Polites mardon</i> mardon skipper		G2G3 S1	Candidate	None	XERCES:IM	
<i>Polites sabuleti albamontana</i> White Mountains sandhill skipper		G5T2 S2	None	None		
<i>Psammobotys fordii</i> Ford's sand dune moth		GNR SNR	None	None		
<i>Pseudocopaesodes eunus eunus</i> alkali skipper		G3G4T1T3 S1S3	None	None		
+ <i>Pseudocopaesodes eunus obscurus</i> Carson wandering skipper		G3G4T1 S1	Endangered	None	XERCES:CI	
+ <i>Pyrgus ruralis lagunae</i> Laguna Mountains skipper		G5T1 S1	Endangered	None	XERCES:CI	
+ <i>Speyeria adiate adiate</i> unsilvered fritillary		G1G2T1 S1	None	None		

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
INSECTA, Order Lepidoptera (butterflies & moths)						
+ <i>Speyeria callippe callippe</i> callippe silverspot butterfly		G5T1 S1	Endangered	None	XERCES:CI	
<i>Speyeria egleis tehachapina</i> Tehachapi Mountain silverspot butterfly		G5T2T3 S2S3	None	None		
+ <i>Speyeria nokomis carsonensis</i> Carson Valley silverspot		G3T1 S1	None	None		
+ <i>Speyeria zerene behrensii</i> Behren's silverspot butterfly		G5T1 S1	Endangered	None	XERCES:CI	
+ <i>Speyeria zerene hippolyta</i> Hippolyta fritillary		G5T1 S1	Threatened	None	XERCES:CI	
+ <i>Speyeria zerene myrtleae</i> Myrtle's silverspot		G5T1 S1	Endangered	None	XERCES:CI	
INSECTA, Order Trichoptera (caddisflies)						
+ <i>Cryptochia denningi</i> Denning's cryptic caddisfly		G1G2 S1S2	None	None		
+ <i>Cryptochia excella</i> Kings Canyon cryptochian caddisfly		G1G2 S1S2	None	None		
+ <i>Cryptochia shasta</i> confusion caddisfly		G1G2 S1S2	None	None		
+ <i>Desmona bethula</i> amphibious caddisfly		G2G3 S2S3	None	None		
+ <i>Diplectrona californica</i> California diplectronan caddisfly		G1G2 S1S2	None	None		
+ <i>Ecclisomyia bilera</i> Kings Creek ecclisomyian caddisfly		G1G2 S1S2	None	None		
+ <i>Farula praelonga</i> long-tailed caddisfly		G1G2 S1S2	None	None		
+ <i>Goeracea oregona</i> Sagehen Creek goeracean caddisfly		G2 S1S2	None	None		
+ <i>Lepidostoma ermanae</i> Cold Spring caddisfly		G1G2 S1S2	None	None		
+ <i>Limnephilus atercus</i> Fort Dick limnephilus caddisfly		G4 S1	None	None		
+ <i>Neothremma genella</i> golden-horned caddisfly		G1G2 S1S2	None	None		
<i>Neothremma siskiyou</i> Siskiyou caddisfly		G1G2 S1S2	None	None		
+ <i>Parapsyche extensa</i> King's Creek parapsyche caddisfly		GH SH	None	None		
+ <i>Rhyacophila lineata</i> Castle Crags rhyacophilan caddisfly		G1G3 S1S2	None	None		
+ <i>Rhyacophila mosana</i> bilobed rhyacophilan caddisfly		G1G2Q S1S2	None	None		
+ <i>Rhyacophila spinata</i> spiny rhyacophilan caddisfly		G1G2 S1S2	None	None		
INSECTA, Order Hymenoptera (ants, bees, & wasps)						
+ <i>Andrena blennospermatis</i> Blennosperma vernal pool andrenid bee		G2 S2	None	None		
+ <i>Andrena macswaini</i> An andrenid bee		G1G3 S1S3	None	None		
+ <i>Andrena subapasta</i> A vernal pool andrenid bee		G1G3 S1S3	None	None		
+ <i>Argochrysis lassena</i> Lassen cuckoo wasp		G1 S1	None	None		
+ <i>Ashmeadiella chumashae</i> Channel Islands leaf-cutter bee		G2? S2?	None	None		

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
INSECTA, Order Hymenoptera (ants, bees, & wasps)						
<i>Bombus franklini</i> Franklin's bumble bee		G1 S1	None	None	IUCN:CR XERCES:CI	
<i>Bombus occidentalis</i> western bumble bee		GU S1	None	None	XERCES:IM	
+ <i>Ceratochrysis bradleyi</i> Bradley's cuckoo wasp		G1 S1	None	None		
+ <i>Ceratochrysis gracilis</i> Piute Mountains cuckoo wasp		G1 S1	None	None		
<i>Ceratochrysis grisselli</i> A cuckoo wasp		GNR SNR	None	None		
+ <i>Ceratochrysis longimala</i> A cuckoo wasp		G1 S1	None	None		
+ <i>Ceratochrysis menkei</i> Menke's cuckoo wasp		G1 S1	None	None		
+ <i>Chrysis tularensis</i> Tulare cuckoo wasp		G1G2 S1S2	None	None		
<i>Cleptes humboldti</i> A cuckoo wasp		G1G2 S1S2	None	None		
+ <i>Dufourea stagei</i> Stage's dufourine bee		G1? S1?	None	None		
+ <i>Eucerceris ruficeps</i> redheaded sphecid wasp		G1G3 S1S2	None	None		
<i>Euparagia unidentata</i> Algodones euparagia		G1G2 S1S2	None	None		
<i>Habropoda pallida</i> white faced bee		G1G2 S1S2	None	None		
+ <i>Halictus harmonius</i> haromonius halictid bee		G1 S1	None	None	XERCES:CI	
+ <i>Hedychridium argenteum</i> Riverside cuckoo wasp		G1? S1?	None	None		
+ <i>Hedychridium milleri</i> Borax Lake cuckoo wasp		G1? S1?	None	None		
+ <i>Lasioglossum channelense</i> Channel Island sweat bee		G1 S1	None	None		
+ <i>Melitta californica</i> A mellitid bee		G4? S2?	None	None		
<i>Microbembex elegans</i> Algodones elegant sand wasp		G1G2 S1S2	None	None		
+ <i>Minymischa ventura</i> Ventura cuckoo wasp		G1G3 S1S3	None	None		
+ <i>Myrmosula pacifica</i> Antioch multilid wasp		GH SH	None	None		
<i>Neolarra alba</i> a cuckoo bee		GH SH	None	None		
+ <i>Paranomada californica</i> a cuckoo bee		G1 S1	None	None		
+ <i>Parnopes borregoensis</i> Borrego parnopes cuckoo wasp		G1? S1?	None	None		
<i>Perdita algodones</i> Algodones perdita		G1G2 S1S2	None	None		
<i>Perdita frontalis</i> Imperial Perdita		G1G2 S1S2	None	None		
<i>Perdita glamis</i> Glamis perdita		G1G2 S1S2	None	None		
+ <i>Perdita scitula antiochensis</i> Antioch andrenid bee		G1T1 S1	None	None		
+ <i>Philanthus nasalis</i> Antioch specid wasp		G1 S1	None	None		

Special Animals List - January 2011

Invertebrates

Species	Comment	Rank	ESA	CESA	Other Status	Notes
INSECTA, Order Hymenoptera (ants, bees, & wasps)						
+ <i>Protodufourea wasbaueri</i> Wasbauer's protodufourea bee		G1 S1	None	None	XERCES:DD	
+ <i>Protodufourea zavortinki</i> Zavortink's protodufourea bee		G1 S1	None	None		
+ <i>Rhopalolemma robertsi</i> Roberts' rhopalolemma bee		G1 S1	None	None		
<i>Sedomaya glamisensis</i> Glamis night tiphiid		G1G2 S1S2	None	None		
+ <i>Sphecodogastra antiochensis</i> Antioch Dunes halcitid bee		G1 S1	None	None	XERCES:CI	
<i>Spherophthalma ecarinata</i> Glamis night mutillid		G1G2 S1S2	None	None		
<i>Stictiella villegasi</i> Algodones sand wasp		G1G2 S1S2	None	None		
+ <i>Trachusa gummifera</i> A leaf-cutter bee		G1 S1	None	None		

Special Animals List - January 2011

Fishes						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
PETROMYZONTIDAE (lampreys)						
+ <i>Entosphenus hubbsi</i> Kern brook lamprey		G1G2 S1S2	None	None	AFS:TH DFG:SSC IUCN:NT	
<i>Entosphenus lethophagus</i> Pit-Klamath brook lamprey		G3G4 S3	None	None	AFS:VU	
<i>Entosphenus similis</i> Klamath River lamprey		G3G4Q S3S4	None	None	AFS:TH DFG:SSC	
<i>Entosphenus tridentatus</i> Pacific lamprey		G5 S4	None	None	AFS:VU	
+ <i>Entosphenus tridentatus ssp. 1</i> Goose Lake lamprey		G5T1 S1	None	None	AFS:VU DFG:SSC USFS:S	
<i>Lampetra ayresii</i> river lamprey		G4 S4	None	None	AFS:VU DFG:SSC	
ACIPENSERIDAE (sturgeon)						
+ <i>Acipenser medirostris</i> green sturgeon	(southern DPS)	G3 S1S2	Threatened	None	AFS:VU DFG:SSC IUCN:NT NMFS:SC	Yes
<i>Acipenser transmontanus</i> white sturgeon		G4 S2	None	None	AFS:EN IUCN:LC	
SALMONIDAE (trout & salmon)						
+ <i>Oncorhynchus clarkii clarkii</i> coast cutthroat trout		G4T4 S3	None	None	AFS:VU DFG:SSC USFS:S	
+ <i>Oncorhynchus clarkii henshawi</i> Lahontan cutthroat trout		G4T3 S2	Threatened	None	AFS:TH	
+ <i>Oncorhynchus clarkii seleniris</i> Paiute cutthroat trout		G4T1T2 S1S2	Threatened	None	AFS:EN	
+ <i>Oncorhynchus gorbuscha</i> pink salmon		G5 S1	None	None	DFG:SSC	
<i>Oncorhynchus keta</i> chum salmon		G5 S1?	None	None	DFG:SSC	
+ <i>Oncorhynchus kisutch</i> coho salmon - southern Oregon / northern California ESU		G4T2Q S2?	Threatened	Threatened	AFS:TH DFG:SSC	Yes
+ <i>Oncorhynchus kisutch</i> coho salmon - central California coast ESU		G4 S2?	Endangered	Endangered	AFS:EN	Yes
+ <i>Oncorhynchus mykiss aguabonita</i> Volcano Creek golden trout		G5T1 S1	None	None	AFS:TH DFG:SSC USFS:S	
+ <i>Oncorhynchus mykiss aquilarum</i> Eagle Lake rainbow trout		G5T1 S1	None	None	AFS:TH DFG:SSC USFS:S	
<i>Oncorhynchus mykiss gilberti</i> Kern River rainbow trout		G5T1Q S1S2	None	None	AFS:TH DFG:SSC	
<i>Oncorhynchus mykiss irideus</i> steelhead - Klamath Mountains Province DPS		G5T3Q S2	None	None	DFG:SSC USFS:S	Yes
+ <i>Oncorhynchus mykiss irideus</i> steelhead - central California coast DPS		G5T2Q S2	Threatened	None	AFS:TH	Yes
+ <i>Oncorhynchus mykiss irideus</i> steelhead - south/central California coast DPS		G5T2Q S2	Threatened	None	AFS:TH DFG:SSC	Yes
+ <i>Oncorhynchus mykiss irideus</i> southern steelhead - southern California DPS		G5T2Q S2	Endangered	None	AFS:EN DFG:SSC	Yes

Special Animals List - January 2011

Fishes						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
SALMONIDAE (trout & salmon)						
<i>Oncorhynchus mykiss irideus</i> steelhead - Central Valley DPS		G5T2 S2	Threatened	None	AFS:TH	Yes
+ <i>Oncorhynchus mykiss irideus</i> steelhead - northern California DPS		G5T2Q S2	Threatened	None	AFS:TH DFG:SSC	Yes
+ <i>Oncorhynchus mykiss irideus</i> summer-run steelhead trout		G5T4Q S2	None	None	DFG:SSC	Yes
+ <i>Oncorhynchus mykiss ssp. 1</i> Goose Lake redband trout		G5T2Q S1	None	None	AFS:VU DFG:SSC USFS:S	
+ <i>Oncorhynchus mykiss ssp. 2</i> McCloud River redband trout		G5T1T2Q S1S2	None	None	AFS:VU DFG:SSC USFS:S	
<i>Oncorhynchus mykiss ssp. 3</i> Warner Valley redband trout		G5T2Q S1?	None	None	AFS:VU USFS:S	
+ <i>Oncorhynchus mykiss whitei</i> Little Kern golden trout		G5T2 S2	Threatened	None	AFS:EN	
+ <i>Oncorhynchus tshawytscha</i> chinook salmon - spring-run Klamath-Trinity Rivers pop.		G5 S1S2	None	None	DFG:SSC USFS:S	
+ <i>Oncorhynchus tshawytscha</i> chinook salmon - Central Valley spring-run ESU		G5 S1	Threatened	Threatened	AFS:TH	Yes
+ <i>Oncorhynchus tshawytscha</i> chinook salmon - Sacramento River winter-run ESU		G5 S1	Endangered	Endangered	AFS:EN	
<i>Oncorhynchus tshawytscha</i> chinook salmon - Central Valley fall / late fall-run ESU		G5 S2?	None	None	AFS:VU DFG:SSC NMFS:SC USFS:S	Yes
+ <i>Oncorhynchus tshawytscha</i> chinook salmon - California coastal ESU		G5 S1	Threatened	None	AFS:TH	Yes
<i>Prosopium williamsoni</i> mountain whitefish		G5 S3	None	None		
+ <i>Salvelinus confluentus</i> bull trout		G3 SX	Threatened	Endangered	IUCN:VU	
OSMERIDAE (smelt)						
+ <i>Hypomesus transpacificus</i> Delta smelt		G1 S1	Threatened	Endangered	AFS:TH IUCN:EN	
<i>Spirinchus thaleichthys</i> longfin smelt		G5 S1	None	Threatened	DFG:SSC	Yes
<i>Thaleichthys pacificus</i> eulachon		G5 S3	Threatened	None	DFG:SSC	
CYPRINIDAE (minnows and carp)						
+ <i>Gila coerulea</i> blue chub		G3 S2S3	None	None	DFG:SSC	
+ <i>Gila elegans</i> bonytail		G1 S1	Endangered	Endangered	AFS:EN IUCN:EN	
+ <i>Gila orcuttii</i> arroyo chub		G2 S2	None	None	AFS:VU DFG:SSC USFS:S	
+ <i>Lavinia exilicauda chi</i> Clear Lake hitch		G5T2 S2	None	None	AFS:VU DFG:SSC USFS:S	
<i>Lavinia exilicauda exilicauda</i> Central Valley hitch		G5T2T4 S2S4	None	None		
<i>Lavinia exilicauda harengus</i> Pajaro/Salinas hitch		G5T2T4 S2S4	None	None		
+ <i>Lavinia symmetricus mitrulus</i> Pit roach		G5T3 S2	None	None	AFS:VU DFG:SSC	

Special Animals List - January 2011

Fishes						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
CYPRINIDAE (minnows and carp)						
+ <i>Lavinia symmetricus navarroensis</i> Navarro roach		G5T1T2 S1S2	None	None	DFG:SSC	
+ <i>Lavinia symmetricus parvipinnis</i> Gualala roach		G5T1T2 S1S2	None	None	DFG:SSC	
+ <i>Lavinia symmetricus</i> ssp. 1 San Joaquin roach		G5T3Q S3	None	None	DFG:SSC	Yes
+ <i>Lavinia symmetricus</i> ssp. 2 Tomales roach		G5T2T3 S2S3	None	None	DFG:SSC	
+ <i>Lavinia symmetricus</i> ssp. 3 Red Hills roach		G5T1 S1	None	None	AFS:VU BLM:S DFG:SSC	
<i>Lavinia symmetricus</i> ssp. 4 Clear Lake - Russian River roach		G5T2T3 S2S3	None	None		
<i>Lavinia symmetricus subditus</i> Monterey roach		G5T2T3 S2S3	None	None	DFG:SSC	
+ <i>Mylopharodon conocephalus</i> hardhead		G3 S3	None	None	DFG:SSC USFS:S	
+ <i>Pogonichthys macrolepidotus</i> Sacramento splittail		G2 S2	None	None	AFS:VU DFG:SSC IUCN:EN	
+ <i>Ptychocheilus lucius</i> Colorado pikeminnow		G1 SX	Endangered	Endangered	DFG:FP IUCN:VU	
+ <i>Rhinichthys osculus</i> ssp. 1 Amargosa Canyon speckled dace		G5T1Q S1	None	None	AFS:TH BLM:S DFG:SSC	Yes
+ <i>Rhinichthys osculus</i> ssp. 2 Owens speckled dace		G5T1T2Q S1S2	None	None	AFS:TH DFG:SSC	Yes
+ <i>Rhinichthys osculus</i> ssp. 3 Santa Ana speckled dace		G5T1 S1	None	None	AFS:TH DFG:SSC USFS:S	
<i>Rhinichthys osculus</i> ssp. 5 Long Valley speckled dace		G5T1 S1	None	None	AFS:EN	
+ <i>Siphateles bicolor mohavensis</i> Mohave tui chub		G4T1 S1	Endangered	Endangered	AFS:EN DFG:FP	
<i>Siphateles bicolor pectinifer</i> Lahontan Lake tui chub		G4T3 S1S2	None	None	DFG:SSC USFS:S	
+ <i>Siphateles bicolor snyderi</i> Owens tui chub		G4T1 S1	Endangered	Endangered	AFS:EN	
+ <i>Siphateles bicolor</i> ssp. 1 Eagle Lake tui chub		G4T1 S1	None	None	DFG:SSC	
+ <i>Siphateles bicolor</i> ssp. 2 High Rock Spring tui chub		G4TX SX	None	None	DFG:SSC	
<i>Siphateles bicolor</i> ssp. 3 Pit River tui chub		G4T1T3 S1S3	None	None		
+ <i>Siphateles bicolor thalassina</i> Goose Lake tui chub		G4T2 S1	None	None	AFS:TH DFG:SSC USFS:S	
+ <i>Siphateles bicolor vaccaiceps</i> Cow Head tui chub		G4T1 S1	None	None	AFS:EN DFG:SSC	
CATOSTOMIDAE (suckers)						
+ <i>Catostomus fumeiventris</i> Owens sucker		G3 S3	None	None	DFG:SSC	
+ <i>Catostomus latipinnis</i> flannelmouth sucker		G3G4 S1	None	None		
+ <i>Catostomus microps</i> Modoc sucker		G1 S1	Endangered	Endangered	AFS:EN DFG:FP IUCN:EN	

Special Animals List - January 2011

Fishes						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
CATOSTOMIDAE (suckers)						
+ <i>Catostomus occidentalis lacusanserinus</i> Goose Lake sucker		G5T2T3Q S1	None	None	AFS:VU DFG:SSC USFS:S	
<i>Catostomus platyrhynchus</i> mountain sucker		G5 S2S3	None	None	DFG:SSC	
<i>Catostomus rimiculus</i> ssp. 1 Jenny Creek sucker		G5T2Q S1	None	None	AFS:VU	
+ <i>Catostomus santaanae</i> Santa Ana sucker		G1 S1	Threatened	None	AFS:TH DFG:SSC IUCN:VU	
+ <i>Catostomus snyderi</i> Klamath largescale sucker		G3 S2	None	None	AFS:TH DFG:SSC IUCN:NT	
+ <i>Chasmistes brevirostris</i> shortnose sucker		G1 S1	Endangered	Endangered	AFS:EN DFG:FP IUCN:EN	
+ <i>Deltistes luxatus</i> Lost River sucker		G1 S1	Endangered	Endangered	AFS:EN DFG:FP IUCN:EN	
+ <i>Xyrauchen texanus</i> razorback sucker		G1 S1	Endangered	Endangered	AFS:EN DFG:FP IUCN:EN	
CYPRINODONTIDAE (killifishes)						
+ <i>Cyprinodon macularius</i> desert pupfish		G1 S1	Endangered	Endangered	AFS:EN	
+ <i>Cyprinodon nevadensis amargosae</i> Amargosa pupfish		G2T1 S1	None	None	AFS:VU BLM:S DFG:SSC	
+ <i>Cyprinodon nevadensis nevadensis</i> Saratoga Springs pupfish		G2T1 S1	None	None	AFS:TH DFG:SSC	
+ <i>Cyprinodon nevadensis shoshone</i> Shoshone pupfish		G2T1 S1	None	None	AFS:EN DFG:SSC	
+ <i>Cyprinodon radiosus</i> Owens pupfish		G1 S1	Endangered	Endangered	AFS:EN DFG:FP IUCN:EN	
+ <i>Cyprinodon salinus milleri</i> Cottonball Marsh pupfish		G1QT1 S1	None	Threatened	AFS:TH	
+ <i>Cyprinodon salinus salinus</i> Salt Creek pupfish		G1T1 S1	None	None	AFS:VU DFG:SSC	
GASTEROSTEIDAE (sticklebacks)						
<i>Gasterosteus aculeatus microcephalus</i> resident threespine stickleback	(South of Pt. Conception only)	G5T2T3 S2S3	None	None	USFS:S	Yes
<i>Gasterosteus aculeatus santaanae</i> Santa Ana (=Shay Creek) threespine stickleback		G5T1Q S1	None	None	AFS:EN	Yes
+ <i>Gasterosteus aculeatus williamsoni</i> unarmored threespine stickleback		G5T1 S1	Endangered	Endangered	AFS:EN DFG:FP	Yes
POLYPRIONIDAE (wreckfishes)						
<i>Stereolepis gigas</i> giant sea bass		G3 S1S2	None	None	AFS:VU IUCN:CR	Yes
CENTRARCHIDAE (sunfishes)						
+ <i>Archoplites interruptus</i> Sacramento perch	(Within native range only)	G3 S1	None	None	AFS:TH DFG:SSC	
EMBIOTOCIDAE (surfperches)						
<i>Hysteroecarpus traski lagunae</i> Clear Lake tule perch		G5T2T3 S2S3	None	None		
+ <i>Hysteroecarpus traski pomo</i> Russian River tule perch		G5T2 S2	None	None	AFS:VU DFG:SSC	

Special Animals List - January 2011

Fishes						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
EMBIOTOCIDAE (surfperches)						
<i>Hysterothorax traski traski</i> Sacramento-San Joaquin tule perch		G5T2T3 S2S3	None	None		
GOBIIDAE (gobies)						
+ <i>Eucyclogobius newberryi</i> tidewater goby		G3 S2S3	Endangered	None	AFS:EN DFG:SSC IUCN:VU	
COTTIDAE (sculpins)						
+ <i>Cottus asperimus</i> rough sculpin		G2 S2	None	Threatened	AFS:VU DFG:FP IUCN:VU	
<i>Cottus gulosus</i> riffle sculpin		G5 S3S4	None	None		
<i>Cottus klamathensis klamathensis</i> Upper Klamath marbled sculpin		G4T1T2 S1S2	None	None		
+ <i>Cottus klamathensis macrops</i> bigeye marbled sculpin		G4T3 S3	None	None	AFS:VU DFG:SSC	
<i>Cottus klamathensis polyporus</i> Lower Klamath marbled sculpin		G4T2T4 S2S4	None	None		
<i>Cottus perplexus</i> reticulate sculpin		G4 S2S3	None	None	DFG:SSC	

Special Animals List - January 2011

Amphibians

Species	Comment	Rank	ESA	CESA	Other Status	Notes
AMBYSTOMATIDAE (mole salamanders)						
+ <i>Ambystoma californiense</i> California tiger salamander		G2G3 S2S3	Threatened	Threatened	DFG:SSC IUCN:VU	
+ <i>Ambystoma macrodactylum croceum</i> Santa Cruz long-toed salamander		G5T1 S1	Endangered	Endangered	DFG:FP	
RHYACOTRITONIDAE (Olympic salamanders)						
+ <i>Rhyacotriton variegatus</i> southern torrent salamander		G3G4 S2S3	None	None	DFG:SSC IUCN:LC USFS:S	
SALAMANDRIDAE (newts)						
+ <i>Taricha torosa</i> Coast Range newt	(Monterey Co. south only)	G5T4 S4	None	None	DFG:SSC	
PLETHODONTIDAE (lungless salamanders)						
+ <i>Batrachoseps campi</i> Inyo Mountains slender salamander		G2 S2	None	None	BLM:S DFG:SSC IUCN:EN USFS:S	
<i>Batrachoseps diabolicus</i> Hell Hollow slender salamander		G2 S2	None	None	IUCN:DD	
+ <i>Batrachoseps gabrieli</i> San Gabriel slender salamander		G2 S2	None	None	IUCN:DD USFS:S	
<i>Batrachoseps gregarius</i> gregarious slender salamander		G2G3 S2S3	None	None	IUCN:LC	
<i>Batrachoseps incognitus</i> San Simeon slender salamander		G2G3 S2S3	None	None	IUCN:DD	
<i>Batrachoseps kawia</i> Sequoia slender salamander		G1G2 S1S2	None	None	IUCN:DD	
<i>Batrachoseps luciae</i> Santa Lucia slender salamander		G2G3 S2S3	None	None	IUCN:LC	
+ <i>Batrachoseps major aridus</i> desert slender salamander		G4T1 S1	Endangered	Endangered		
<i>Batrachoseps minor</i> lesser slender salamander		G1G2 S1S2	None	None	IUCN:DD	
+ <i>Batrachoseps pacificus</i> Channel Islands slender salamander		G3QT2 S2	None	None	IUCN:LC	
+ <i>Batrachoseps regius</i> Kings River slender salamander		G1 S1	None	None	IUCN:VU	
+ <i>Batrachoseps relictus</i> relictual slender salamander		G2 S2	None	None	DFG:SSC IUCN:DD USFS:S	
+ <i>Batrachoseps robustus</i> Kern Plateau salamander		G2 S2	None	None	IUCN:NT USFS:S	
+ <i>Batrachoseps simatus</i> Kern Canyon slender salamander		G2 S2	None	Threatened	IUCN:VU USFS:S	
+ <i>Batrachoseps sp. 1</i> Breckenridge Mountain slender salamander		G1Q S1	None	None	DFG:SSC USFS:S	
+ <i>Batrachoseps stebbinsi</i> Tehachapi slender salamander		G2 S2	None	Threatened	BLM:S IUCN:VU USFS:S	
+ <i>Ensatina eschscholtzii croceator</i> yellow-blotched salamander		G5T2T3 S2S3	None	None	BLM:S DFG:SSC USFS:S	
+ <i>Ensatina klauberi</i> large-blotched salamander		G5 S2S3	None	None	DFG:SSC USFS:S	
+ <i>Hydromantes brunus</i> limestone salamander		G1 S1	None	Threatened	DFG:FP IUCN:VU USFS:S	
+ <i>Hydromantes platycephalus</i> Mount Lyell salamander		G3 S3	None	None	DFG:SSC IUCN:LC	

Special Animals List - January 2011

Amphibians

Species	Comment	Rank	ESA	CESA	Other Status	Notes
PLETHODONTIDAE (lungless salamanders)						
+ <i>Hydromantes shastae</i> Shasta salamander		G1G2 S1S2	None	Threatened	BLM:S IUCN:VU USFS:S	
+ <i>Hydromantes sp. 1</i> Owens Valley web-toed salamander (AKA Oak Creek salamander)		G1Q S1	None	None	DFG:SSC	
+ <i>Plethodon asupak</i> Scott Bar salamander		G1G2 S1S2	None	Threatened	IUCN:VU	Yes
+ <i>Plethodon elongatus</i> Del Norte salamander		G4 S3	None	None	DFG:SSC IUCN:NT	
+ <i>Plethodon stormi</i> Siskiyou Mountains salamander		G2G3 S1S2	None	Threatened	IUCN:EN USFS:S	
ASCAPHIDAE (tailed frogs)						
+ <i>Ascaphus truei</i> Pacific tailed frog		G4 S2S3	None	None	DFG:SSC IUCN:LC	
SCAPHIOPODIDAE (spadefoot toads)						
+ <i>Scaphiopus couchii</i> Couch's spadefoot		G5 S2S3	None	None	BLM:S DFG:SSC IUCN:LC	
+ <i>Spea hammondi</i> western spadefoot		G3 S3	None	None	BLM:S DFG:SSC IUCN:NT	
BUFONIDAE (true toads)						
+ <i>Anaxyrus californicus</i> arroyo toad		G2G3 S2S3	Endangered	None	DFG:SSC IUCN:EN	Yes
+ <i>Anaxyrus canorus</i> Yosemite toad		G2 S2	Candidate	None	DFG:SSC IUCN:EN USFS:S	Yes
+ <i>Anaxyrus exsul</i> black toad		G1Q S1	None	Threatened	DFG:FP IUCN:VU	Yes
+ <i>Incilius alvarius</i> Sonoran desert toad		G5 SH	None	None	DFG:SSC IUCN:LC	Yes
RANIDAE						
+ <i>Lithobates pipiens</i> northern leopard frog	(Native populations only)	G5 S2	None	None	DFG:SSC IUCN:LC USFS:S	Yes
+ <i>Lithobates yavapaiensis</i> lowland (=Yavapai, San Sebastian & San Felipe) leopard frog		G4 SX	None	None	BLM:S DFG:SSC IUCN:LC	Yes
+ <i>Rana aurora</i> northern red-legged frog		G4T4 S2?	None	None	DFG:SSC USFS:S	Yes
+ <i>Rana boylei</i> foothill yellow-legged frog		G3 S2S3	None	None	BLM:S DFG:SSC IUCN:NT USFS:S	
+ <i>Rana cascadae</i> Cascades frog		G3G4 S3	None	None	DFG:SSC IUCN:NT USFS:S	
+ <i>Rana draytonii</i> California red-legged frog		G4T2T3 S2S3	Threatened	None	DFG:SSC IUCN:VU	Yes
+ <i>Rana muscosa</i> Sierra Madre yellow-legged frog		G1 S1	Endangered	Candidate Endangered	DFG:SSC IUCN:EN USFS:S	Yes
+ <i>Rana pretiosa</i> Oregon spotted frog		G2 S1	Candidate	None	DFG:SSC IUCN:VU USFS:S	

Special Animals List - January 2011

Amphibians

Species	Comment	Rank	ESA	CESA	Other Status	Notes
RANIDAE						
+ <i>Rana sierrae</i> Sierra Nevada yellow-legged frog		G1 S1	Candidate	Candidate Endangered	DFG:SSC IUCN:EN USFS:S	Yes

Special Animals List - January 2011

Reptiles

Species	Comment	Rank	ESA	CESA	Other Status	Notes
CHELONIIDAE (sea turtles)						
+ <i>Chelonia mydas</i> green turtle		G3 S1	Threatened	None	IUCN:EN	
KINOSTERNIDAE (musk and mud turtles)						
<i>Kinosternon sonoriense</i> Sonoran mud turtle		G4 SH	None	None	DFG:SSC IUCN:VU	
EMYDIDAE (box and water turtles)						
+ <i>Emys marmorata</i> western pond turtle		G3G4 S3	None	None	BLM:S DFG:SSC IUCN:VU USFS:S	Yes
TESTUDINIDAE (land tortoises)						
+ <i>Gopherus agassizii</i> desert tortoise		G4 S2	Threatened	Threatened	IUCN:VU	
GEKKONIDAE (geckos)						
+ <i>Coleonyx switaki</i> barefoot gecko		G4 S1	None	Threatened	IUCN:LC	
+ <i>Coleonyx variegatus abboti</i> San Diego banded gecko		G5T3T4 S2S3	None	None		
CROTAPHYTIDAE (collared & leopard lizards)						
+ <i>Gambelia sila</i> blunt-nosed leopard lizard		G1 S1	Endangered	Endangered	DFG:FP IUCN:EN	
PHRYNOSOMATIDAE (spiny lizards)						
+ <i>Phrynosoma blainvillii</i> coast horned lizard		G4G5 S3S4	None	None	BLM:S DFG:SSC IUCN:LC USFS:S	
+ <i>Phrynosoma mcallii</i> flat-tailed horned lizard		G3 S2	None	None	BLM:S DFG:SSC IUCN:NT	
+ <i>Sceloporus graciosus graciosus</i> northern sagebrush lizard		G5T5 S3	None	None	BLM:S	
+ <i>Uma inornata</i> Coachella Valley fringe-toed lizard		G1Q S1	Threatened	Endangered	IUCN:EN	
+ <i>Uma notata</i> Colorado Desert fringe-toed lizard		G3 S2?	None	None	BLM:S DFG:SSC IUCN:NT	
+ <i>Uma scoparia</i> Mojave fringe-toed lizard		G3G4 S3S4	None	None	BLM:S DFG:SSC IUCN:LC	
XANTUSIIDAE (night lizards)						
+ <i>Xantusia gracilis</i> sandstone night lizard		G1 S1	None	None	DFG:SSC IUCN:VU	
+ <i>Xantusia riversiana</i> island night lizard		G1 S1	Threatened	None	IUCN:LC	
<i>Xantusia sierrae</i> Sierra night lizard		G5T1 S1	None	None	DFG:SSC USFS:S	
SCINCIDAE (skinks)						
+ <i>Plestiodon skiltonianus interparietalis</i> Coronado Island skink		G5T2T3Q S1S2	None	None	BLM:S DFG:SSC	
TEIIDAE (whiptails and relatives)						
+ <i>Aspidoscelis hyperythra</i> orangethroat whiptail		G5 S2	None	None	DFG:SSC IUCN:LC	
+ <i>Aspidoscelis tigris stejnegeri</i> coastal whiptail		G5T3T4 S2S3	None	None		

Special Animals List - January 2011

Reptiles

Species	Comment	Rank	ESA	CESA	Other Status	Notes
ANGUIDAE (alligator lizards)						
+ <i>Elgaria panamintina</i> Panamint alligator lizard		G1G2 S1S2	None	None	BLM:S DFG:SSC IUCN:VU USFS:S	
ANNIELLIDAE (Legless lizards)						
+ <i>Anniella pulchra nigra</i> black legless lizard		G3G4T2T3Q S2	None	None	DFG:SSC USFS:S	
+ <i>Anniella pulchra pulchra</i> silvery legless lizard		G3G4T3T4Q S3	None	None	DFG:SSC USFS:S	
HELODERMATIDAE (venomous lizards)						
+ <i>Heloderma suspectum cinctum</i> banded gila monster		G4T4 S1	None	None	BLM:S DFG:SSC IUCN:NT	Yes
BOIDAE (boas)						
+ <i>Charina trivirgata</i> rosy boa		G4G5 S3S4	None	None	IUCN:LC USFS:S	Yes
+ <i>Charina umbratica</i> southern rubber boa		G5T2T3 S2S3	None	Threatened	USFS:S	
COLUBRIDAE (egg-laying snakes)						
<i>Bogertophis rosaliae</i> Baja California rat snake		G4 S1	None	None	DFG:SSC IUCN:LC	
+ <i>Diadophis punctatus modestus</i> San Bernardino ringneck snake		G5T2T3 S2?	None	None	USFS:S	
+ <i>Diadophis punctatus similis</i> San Diego ringneck snake		G5T2T3 S2?	None	None	USFS:S	
+ <i>Lampropeltis zonata (parvirubra)</i> California mountain kingsnake (San Bernardino population)		G4G5 S2?	None	None	DFG:SSC IUCN:LC USFS:S	
+ <i>Lampropeltis zonata (pulchra)</i> California mountain kingsnake (San Diego population)		G4G5 S1S2	None	None	DFG:SSC IUCN:LC USFS:S	
+ <i>Masticophis flagellum ruddocki</i> San Joaquin whipsnake		G5T2T3 S2?	None	None	DFG:SSC	
+ <i>Masticophis lateralis euryxanthus</i> Alameda whipsnake		G4T2 S2	Threatened	Threatened		
<i>Pituophis catenifer pumilus</i> Santa Cruz Island gopher snake		G5T1T2 S1?	None	None	DFG:SSC	
+ <i>Salvadora hexalepis virgulata</i> coast patch-nosed snake		G5T3 S2S3	None	None	DFG:SSC	
NATRICIDAE (live-bearing snakes)						
+ <i>Thamnophis gigas</i> giant garter snake		G2G3 S2S3	Threatened	Threatened	IUCN:VU	
+ <i>Thamnophis hammondi</i> two-striped garter snake		G3 S2	None	None	BLM:S DFG:SSC IUCN:LC USFS:S	
+ <i>Thamnophis hammondi</i> ssp. Santa Catalina garter snake		G3T1? S1	None	None		
+ <i>Thamnophis sirtalis</i> ssp. south coast garter snake	(Coastal plain from Ventura Co. to San Diego Co., from sea level to about 850 m.)	G5T1T2 S1S2	None	None	DFG:SSC	
+ <i>Thamnophis sirtalis tetrataenia</i> San Francisco garter snake		G5T2 S2	Endangered	Endangered	DFG:FP	
VIPERIIDAE (vipers)						
+ <i>Crotalus ruber</i> red-diamond rattlesnake		G4 S2?	None	None	DFG:SSC	

Special Animals List - January 2011

Birds						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
ANATIDAE (ducks, geese, and swans)						
<i>Anser albifrons elgasi</i> tule greater white-fronted goose	(Wintering)	G5T2T3 S2S3	None	None	DFG:SSC	
<i>Aythya americana</i> redhead	(Nesting)	G5 S3?	None	None	DFG:SSC IUCN:LC	
<i>Aythya valisineria</i> canvasback	(Nesting)	G5 S2?	None	None	IUCN:LC	
<i>Branta bernicla</i> brant	(Wintering & staging)	G5 S2?	None	None	DFG:SSC IUCN:LC	
+ <i>Branta hutchinsii leucopareia</i> cackling (=Aleutian Canada) goose	(Wintering)	G5T4 S2	Delisted	None		
<i>Bucephala islandica</i> Barrow's goldeneye	(Nesting)	G5 S1	None	None	DFG:SSC IUCN:LC	
+ <i>Dendrocygna bicolor</i> fulvous whistling-duck	(Nesting)	G5 S1	None	None	DFG:SSC IUCN:LC	
+ <i>Histrionicus histrionicus</i> harlequin duck	(Nesting)	G4 S2	None	None	DFG:SSC IUCN:LC	
PHASIANIDAE (grouse and ptarmigan)						
+ <i>Bonasa umbellus</i> ruffed grouse		G5 S4	None	None	DFG:WL IUCN:LC	
+ <i>Centrocercus urophasianus</i> greater sage-grouse	(Nesting & leks)	G4 S3	Candidate	None	ABC:WLBCC BLM:S DFG:SSC IUCN:NT USFS:S	
+ <i>Dendragapus fuliginosus howardi</i> Mount Pinos sooty grouse		G5T1T2 S1S2	None	None	ABC:WLBCC DFG:SSC	Yes
<i>Tympanuchus phasianellus columbianus</i> Columbian sharp-tailed grouse		G4T3 SX	None	None	DFG:SSC	
ODONTOPHORIDAE (partridge and quail)						
<i>Callipepla californica catalinensis</i> Catalina California quail		G5T2 S2	None	None	DFG:SSC	
GAVIIDAE (loons)						
<i>Gavia immer</i> common loon	(Nesting)	G5 S1	None	None	DFG:SSC IUCN:LC	
DIOMEDEIDAE (albatross)						
<i>Phoebastria albatrus</i> short-tailed albatross		G1 S1	Endangered	None	ABC:WLBCC DFG:SSC IUCN:VU	
HYDROBATIDAE (storm petrels)						
+ <i>Oceanodroma furcata</i> fork-tailed storm-petrel	(Nesting colony)	G5 S1	None	None	DFG:SSC IUCN:LC	
+ <i>Oceanodroma homochroa</i> ashy storm-petrel	(Nesting colony)	G2 S2	None	None	ABC:WLBCC DFG:SSC IUCN:EN USFWS:BCC	
+ <i>Oceanodroma melania</i> black storm-petrel	(Nesting colony)	G2 S1	None	None	ABC:WLBCC DFG:SSC IUCN:LC	
PELECANIIDAE (pelicans)						
+ <i>Pelecanus erythrorhynchos</i> American white pelican	(Nesting colony)	G3 S1	None	None	DFG:SSC IUCN:LC	
+ <i>Pelecanus occidentalis californicus</i> California brown pelican	(Nesting colony & communal roosts)	G4T3 S1S2	Delisted	Delisted	DFG:FP	
PHALACROCORACIDAE (cormorants)						
+ <i>Phalacrocorax auritus</i> double-crested cormorant	(Nesting colony)	G5 S3	None	None	DFG:WL IUCN:LC	

Special Animals List - January 2011

Birds						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
ARDEIDAE (herons, egrets, and bitterns)						
+ <i>Ardea alba</i> great egret	(Nesting colony)	G5 S4	None	None	CDF:S IUCN:LC	
+ <i>Ardea herodias</i> great blue heron	(Nesting colony)	G5 S4	None	None	CDF:S IUCN:LC	
<i>Botaurus lentiginosus</i> American bittern		G4 S3	None	None	IUCN:LC	
+ <i>Egretta thula</i> snowy egret	(Nesting colony)	G5 S4	None	None	IUCN:LC	
+ <i>Ixobrychus exilis</i> least bittern	(Nesting)	G5 S1	None	None	DFG:SSC IUCN:LC USFWS:BCC	
+ <i>Nycticorax nycticorax</i> black-crowned night heron	(Nesting colony)	G5 S3	None	None	IUCN:LC	
THRESKIORNITHIDAE (ibises and spoonbills)						
+ <i>Plegadis chihi</i> white-faced ibis	(Nesting colony)	G5 S1	None	None	DFG:WL IUCN:LC	
CICONIIDAE (storks)						
<i>Mycteria americana</i> wood stork		G4 S2?	None	None	DFG:SSC IUCN:LC	
CATHARTIDAE (New World vultures)						
+ <i>Gymnogyps californianus</i> California condor		G1 S1	Endangered	Endangered	ABC:WLBCC CDF:S IUCN:CR	
ACCIPITRIDAE (hawks, kites, harriers, & eagles)						
+ <i>Accipiter cooperii</i> Cooper's hawk	(Nesting)	G5 S3	None	None	DFG:WL IUCN:LC	
+ <i>Accipiter gentilis</i> northern goshawk	(Nesting)	G5 S3	None	None	BLM:S CDF:S DFG:SSC IUCN:LC USFS:S	
+ <i>Accipiter striatus</i> sharp-shinned hawk	(Nesting)	G5 S3	None	None	DFG:WL	
+ <i>Aquila chrysaetos</i> golden eagle	(Nesting & wintering)	G5 S3	None	None	CDF:S DFG:FP DFG:WL IUCN:LC USFWS:BCC	
+ <i>Buteo regalis</i> ferruginous hawk	(Wintering)	G4 S3S4	None	None	DFG:WL IUCN:LC USFWS:BCC	
+ <i>Buteo swainsoni</i> Swainson's hawk	(Nesting)	G5 S2	None	Threatened	ABC:WLBCC IUCN:LC USFS:S USFWS:BCC	
+ <i>Circus cyaneus</i> northern harrier	(Nesting)	G5 S3	None	None	DFG:SSC IUCN:LC	
+ <i>Elanus leucurus</i> white-tailed kite	(Nesting)	G5 S3	None	None	DFG:FP IUCN:LC	
+ <i>Haliaeetus leucocephalus</i> bald eagle	(Nesting & wintering)	G5 S2	Delisted	Endangered	CDF:S DFG:FP IUCN:LC USFS:S USFWS:BCC	
+ <i>Pandion haliaetus</i> osprey	(Nesting)	G5 S3	None	None	CDF:S DFG:WL IUCN:LC	

Special Animals List - January 2011

Birds						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
ACCIPITRIDAE (hawks, kites, harriers, & eagles)						
<i>Parabuteo unicinctus</i> Harris' hawk	(Nesting)	G5 SH	None	None	DFG:WL IUCN:LC	
FALCONIDAE (falcons)						
+ <i>Falco columbarius</i> merlin	(Wintering)	G5 S3	None	None	DFG:WL IUCN:LC	
+ <i>Falco mexicanus</i> prairie falcon	(Nesting)	G5 S3	None	None	DFG:WL IUCN:LC USFWS:BCC	
+ <i>Falco peregrinus anatum</i> American peregrine falcon	(Nesting)	G4T3 S2	Delisted	Delisted	CDF:S DFG:FP USFWS:BCC	
RALLIDAE (rails, coots, and gallinules)						
+ <i>Coturnicops noveboracensis</i> yellow rail		G4 S1S2	None	None	ABC:WLBCC DFG:SSC IUCN:LC USFWS:BCC	
+ <i>Laterallus jamaicensis coturniculus</i> California black rail		G4T1 S1	None	Threatened	ABC:WLBCC DFG:FP IUCN:NT USFWS:BCC	Yes
+ <i>Rallus longirostris levipes</i> light-footed clapper rail		G5T1T2 S1	Endangered	Endangered	ABC:WLBCC DFG:FP	Yes
+ <i>Rallus longirostris obsoletus</i> California clapper rail		G5T1 S1	Endangered	Endangered	ABC:WLBCC DFG:FP	Yes
+ <i>Rallus longirostris yumanensis</i> Yuma clapper rail		G5T3 S1	Endangered	Threatened	ABC:WLBCC DFG:FP	Yes
GRUIDAE (cranes)						
<i>Grus canadensis canadensis</i> lesser sandhill crane	(Wintering)	G5T4 S3S4	None	None	DFG:SSC	
+ <i>Grus canadensis tabida</i> greater sandhill crane	(Nesting & wintering)	G5T4 S2	None	Threatened	DFG:FP USFS:S	
CHARADRIIDAE (plovers and relatives)						
+ <i>Charadrius alexandrinus nivosus</i> western snowy plover	(Nesting)	G4T3 S2	Threatened	None	ABC:WLBCC DFG:SSC USFWS:BCC	Yes
+ <i>Charadrius montanus</i> mountain plover	(Wintering)	G2 S2?	Proposed Threatened	None	ABC:WLBCC BLM:S DFG:SSC IUCN:NT USFWS:BCC	Yes
HAEMATOPODIDAE (oystercatchers)						
<i>Haematopus bachmani</i> black oystercatcher	(Nesting)	G5 S2	None	None	IUCN:LC USFWS:BCC	
SCOLOPACIDAE (sandpipers and relatives)						
<i>Numenius americanus</i> long-billed curlew	(Nesting)	G5 S2	None	None	ABC:WLBCC DFG:WL IUCN:LC USFWS:BCC	
LARIDAE (gulls and terns)						
+ <i>Chlidonias niger</i> black tern	(Nesting colony)	G4 S2	None	None	DFG:SSC IUCN:LC	
+ <i>Gelochelidon nilotica</i> gull-billed tern	(Nesting colony)	G5 S1	None	None	ABC:WLBCC DFG:SSC IUCN:LC USFWS:BCC	Yes
+ <i>Hydroprogne caspia</i> Caspian tern	(Nesting colony)	G5 S4	None	None	IUCN:LC USFWS:BCC	Yes

Special Animals List - January 2011

Birds						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
LARIDAE (gulls and terns)						
+ <i>Larus californicus</i> California gull	(Nesting colony)	G5 S2	None	None	DFG:WL IUCN:LC	
<i>Leucophaeus atricilla</i> laughing gull	(Nesting colony)	G5 SH	None	None	DFG:WL IUCN:LC	
+ <i>Rynchops niger</i> black skimmer	(Nesting colony)	G5 S1S3	None	None	ABC:WLBC DFG:SSC IUCN:LC USFWS:BCC	
<i>Sterna forsteri</i> Forster's tern	(Nesting colony)	G5 S4	None	None	IUCN:LC	
+ <i>Sterna antillarum browni</i> California least tern	(Nesting colony)	G4T2T3Q S2S3	Endangered	Endangered	ABC:WLBC DFG:FP	Yes
<i>Thalasseus elegans</i> elegant tern	(Nesting colony)	G2 S1	None	None	ABC:WLBC DFG:WL IUCN:NT	Yes
ALCIDAE (auklets, puffins, and relatives)						
+ <i>Brachyramphus marmoratus</i> marbled murrelet	(Nesting)	G3G4 S1	Threatened	Endangered	ABC:WLBC CDF:S IUCN:EN	
+ <i>Cerorhinca monocerata</i> rhinoceros auklet	(Nesting colony)	G5 S3	None	None	DFG:WL IUCN:LC	
+ <i>Fratercula cirrhata</i> tufted puffin	(Nesting colony)	G5 S2	None	None	DFG:SSC IUCN:LC	
<i>Ptychoramphus aleuticus</i> Cassin's auklet	(Nesting colony)	G4 S2S4	None	None	DFG:SSC IUCN:LC USFWS:BCC	
+ <i>Synthliboramphus hypoleucus</i> Xantus' murrelet	(Nesting colony)	G3G4 S3	Candidate	Threatened	ABC:WLBC IUCN:VU USFWS:BCC	
CUCULIDAE (cuckoos and relatives)						
+ <i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo	(Nesting)	G5T3Q S1	Candidate	Endangered	USFS:S USFWS:BCC	
STRIGIDAE (owls)						
+ <i>Asio flammeus</i> short-eared owl	(Nesting)	G5 S3	None	None	ABC:WLBC DFG:SSC IUCN:LC	
+ <i>Asio otus</i> long-eared owl	(Nesting)	G5 S3	None	None	DFG:SSC IUCN:LC	
+ <i>Athene cunicularia</i> burrowing owl	(Burrow sites & some wintering sites)	G4 S2	None	None	BLM:S DFG:SSC IUCN:LC USFWS:BCC	Yes
+ <i>Micrathene whitneyi</i> elf owl	(Nesting)	G5 S1	None	Endangered	ABC:WLBC IUCN:LC USFWS:BCC	
<i>Otus flammeolus</i> flamulated owl	(Nesting)	G4 S2S4	None	None	ABC:WLBC IUCN:LC USFWS:BCC	
+ <i>Strix nebulosa</i> great gray owl	(Nesting)	G5 S1	None	Endangered	CDF:S IUCN:LC USFS:S	
<i>Strix occidentalis caurina</i> northern spotted owl		G3T3 S2S3	Threatened	None	ABC:WLBC CDF:S DFG:SSC IUCN:NT	Yes

Special Animals List - January 2011

Birds						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
STRIGIDAE (owls)						
<i>Strix occidentalis occidentalis</i> California spotted owl		G3T3 S3	None	None	ABC:WLBCCC BLM:S DFG:SSC IUCN:NT USFS:S USFWS:BCC	Yes
APODIDAE (swifts)						
<i>Chaetura vauxi</i> Vaux's swift	(Nesting)	G5 S3	None	None	DFG:SSC IUCN:LC	
+ <i>Cypseloides niger</i> black swift	(Nesting)	G4 S2	None	None	ABC:WLBCCC DFG:SSC IUCN:LC USFWS:BCC	
TROCHILIDAE (hummingbirds)						
+ <i>Calypte costae</i> Costa's hummingbird	(Nesting)	G5 S3?	None	None	ABC:WLBCCC IUCN:LC	
<i>Selasphorus rufus</i> rufous hummingbird	(Nesting)	G5 S1S2	None	None	IUCN:LC USFWS:BCC	
<i>Selasphorus sasin</i> Allen's hummingbird	(Nesting)	G5 SNR	None	None	ABC:WLBCCC IUCN:LC USFWS:BCC	
PICIDAE (woodpeckers)						
+ <i>Colaptes chrysoides</i> gilded flicker		G5 S1	None	Endangered	ABC:WLBCCC IUCN:LC USFWS:BCC	
<i>Melanerpes lewis</i> Lewis' woodpecker	(Nesting)	G4 SNR	None	None	ABC:WLBCCC IUCN:LC USFWS:BCC	
+ <i>Melanerpes uropygialis</i> Gila woodpecker		G5 S1S2	None	Endangered	IUCN:LC USFWS:BCC	
<i>Picoides albolarvatus</i> White-headed woodpecker	(Nesting)	G4 SNR	None	None	ABC:WLBCCC IUCN:LC USFWS:BCC	
<i>Picoides nuttallii</i> Nuttall's woodpecker	(Nesting)	G5 SNR	None	None	ABC:WLBCCC IUCN:LC USFWS:BCC	
<i>Sphyrapicus ruber</i> red-breasted sapsucker	(Nesting)	G5 SNR	None	None		
TYRANNIDAE (tyrant flycatchers)						
<i>Contopus cooperi</i> olive-sided flycatcher	(Nesting)	G4 S4	None	None	ABC:WLBCCC DFG:SSC IUCN:NT USFWS:BCC	
+ <i>Empidonax traillii</i> willow flycatcher	(Nesting)	G5 S1S2	None	Endangered	ABC:WLBCCC IUCN:LC USFS:S USFWS:BCC	Yes
+ <i>Empidonax traillii brewsteri</i> little willow flycatcher	(Nesting)	G5T3T4 S1S2	None	Endangered	ABC:WLBCCC USFWS:BCC	Yes
+ <i>Empidonax traillii extimus</i> southwestern willow flycatcher	(Nesting)	G5T1T2 S1	Endangered	Endangered	ABC:WLBCCC	Yes
+ <i>Myiarchus tyrannulus</i> brown-crested flycatcher	(Nesting)	G5 S2S3	None	None	DFG:WL IUCN:LC	
+ <i>Pyrocephalus rubinus</i> vermillion flycatcher	(Nesting)	G5 S2S3	None	None	DFG:SSC IUCN:LC	

Special Animals List - January 2011

Birds						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
LANIIDAE (shrikes)						
+ <i>Lanius ludovicianus</i> loggerhead shrike	(Nesting)	G4 S4	None	None	DFG:SSC IUCN:LC USFWS:BCC	
<i>Lanius ludovicianus anthonyi</i> Island loggerhead shrike		G4T1 S1	None	None	DFG:SSC	
+ <i>Lanius ludovicianus meamsi</i> San Clemente loggerhead shrike		G4T1Q S1	Endangered	None	DFG:SSC	Yes
VIREONIDAE (vireos)						
+ <i>Vireo bellii arizonae</i> Arizona bell's vireo	(Nesting)	G5T4 S1	None	Endangered	ABC:WLBC IUCN:NT USFWS:BCC	Yes
+ <i>Vireo bellii pusillus</i> least Bell's vireo	(Nesting)	G5T2 S2	Endangered	Endangered	ABC:WLBC IUCN:NT	Yes
<i>Vireo huttoni unitti</i> Catalina Hutton's vireo		G5T2? S2?	None	None	DFG:SSC	
+ <i>Vireo vicinior</i> gray vireo	(Nesting)	G4 S2	None	None	ABC:WLBC BLM:S DFG:SSC IUCN:LC USFWS:BCC	
CORVIDAE (jays, crows, and magpies)						
<i>Aphelocoma californica cana</i> Eagle Mountain scrub-jay		G5T1T2 S1S2	None	None	DFG:WL	
<i>Aphelocoma insularis</i> Island scrub-jay		G1 S1	None	None	ABC:WLBC IUCN:NT USFWS:BCC	
<i>Pica nuttalli</i> yellow-billed magpie	(Nesting & communal roosts)	G3G4 S3S4	None	None	ABC:WLBC IUCN:LC USFWS:BCC	
ALAUDIDAE (larks)						
+ <i>Eremophila alpestris actia</i> California horned lark		G5T3Q S3	None	None	DFG:WL IUCN:LC	
HIRUNDINIDAE (swallows)						
+ <i>Progne subis</i> purple martin	(Nesting)	G5 S3	None	None	DFG:SSC IUCN:LC	
+ <i>Riparia riparia</i> bank swallow	(Nesting)	G5 S2S3	None	Threatened	IUCN:LC	
PARIDAE (titmice and relatives)						
+ <i>Baeolophus inornatus</i> oak titmouse	(Nesting)	G5 S3?	None	None	ABC:WLBC IUCN:LC USFWS:BCC	
<i>Poecile atricapillus</i> black-capped chickadee		G5 S3	None	None	DFG:WL IUCN:LC	
TROGLODYTIDAE (wrens)						
+ <i>Campylorhynchus brunneicapillus sandiegensis</i> coastal cactus wren	(San Diego & Orange Counties only)	G5T3Q S3	None	None	DFG:SSC USFS:S USFWS:BCC	Yes
<i>Cistothorus palustris clarkae</i> Clark's marsh wren		G5T2T3 S2S3	None	None	DFG:SSC	
<i>Thryomanes bewickii leucophrys</i> San Clemente Bewick's wren		G5TX SX	None	None	DFG:SSC	
SYLVIIDAE (gnatcatchers)						
+ <i>Poliotila californica californica</i> coastal California gnatcatcher		G3T2 S2	Threatened	None	ABC:WLBC DFG:SSC	Yes
+ <i>Poliotila melanura</i> black-tailed gnatcatcher		G5 S4	None	None	IUCN:LC	

Special Animals List - January 2011

Birds						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
MIMIDAE (mockingbirds and thrashers)						
+ <i>Toxostoma bendirei</i> Bendire's thrasher		G4G5 S3	None	None	ABC:WLBCC BLM:S DFG:SSC IUCN:VU USFWS:BCC	
+ <i>Toxostoma crissale</i> Crissal thrasher		G5 S3	None	None	DFG:SSC IUCN:LC	
+ <i>Toxostoma lecontei</i> Le Conte's thrasher		G3 S3	None	None	ABC:WLBCC DFG:SSC IUCN:LC USFWS:BCC	Yes
PARULIDAE (wood-warblers)						
<i>Dendroica occidentalis</i> hermit warbler	(Nesting)	G4G5 S3?	None	None	ABC:WLBCC IUCN:LC	
+ <i>Dendroica petechia brewsteri</i> yellow warbler	(Nesting)	G5T3? S2	None	None	DFG:SSC USFWS:BCC	
+ <i>Dendroica petechia sonorana</i> Sonoran yellow warbler	(Nesting)	G5T2T3 S1	None	None	DFG:SSC USFWS:BCC	
+ <i>Geothlypis trichas sinuosa</i> saltmarsh common yellowthroat		G5T2 S2	None	None	DFG:SSC USFWS:BCC	Yes
+ <i>Icteria virens</i> yellow-breasted chat	(Nesting)	G5 S3	None	None	DFG:SSC IUCN:LC	
+ <i>Oreothlypis luciae</i> Lucy's warbler	(Nesting)	G5 S2S3	None	None	ABC:WLBCC DFG:SSC IUCN:LC USFWS:BCC	
+ <i>Oreothlypis virginiae</i> Virginia's warbler	(Nesting)	G5 S2S3	None	None	ABC:WLBCC DFG:WL IUCN:LC USFWS:BCC	
EMBERIZIDAE (sparrows, buntings, warblers, & relatives)						
+ <i>Aimophila ruficeps canescens</i> southern California rufous-crowned sparrow		G5T2T4 S2S3	None	None	DFG:WL	
<i>Aimophila ruficeps obscura</i> Santa Cruz Island rufous-crowned sparrow		G5T2T3 S2S3	None	None	DFG:SSC	
+ <i>Ammodramus savannarum</i> grasshopper sparrow	(Nesting)	G5 S2	None	None	DFG:SSC IUCN:LC	
+ <i>Amphispiza belli belli</i> Bell's sage sparrow		G5T2T4 S2?	None	None	ABC:WLBCC DFG:WL USFWS:BCC	Yes
+ <i>Amphispiza belli clementeae</i> San Clemente sage sparrow		G5T1Q S1	Threatened	None	ABC:WLBCC DFG:SSC USFWS:BCC	Yes
+ <i>Chondestes grammacus</i> lark sparrow	(Nesting)	G5 SNR	None	None	IUCN:LC	
+ <i>Junco hyemalis caniceps</i> gray-headed junco	(Nesting)	G5T5 S1	None	None	DFG:WL	
<i>Melospiza melodia</i> song sparrow ("Modesto" population)		G5 S3?	None	None	DFG:SSC	
<i>Melospiza melodia graminea</i> Channel Island song sparrow		G5T1 S1	None	None	DFG:SSC USFWS:BCC	Yes
+ <i>Melospiza melodia maxillaris</i> Suisun song sparrow		G5T2 S2	None	None	DFG:SSC USFWS:BCC	
+ <i>Melospiza melodia pusillula</i> Alameda song sparrow		G5T2? S2?	None	None	DFG:SSC USFWS:BCC	

Special Animals List - January 2011

Birds						
Species	Comment	Rank	ESA	CESA	Other Status	Notes
EMBERIZIDAE (sparrows, buntings, warblers, & relatives)						
+ <i>Melospiza melodia samuelis</i> San Pablo song sparrow		G5T2? S2?	None	None	DFG:SSC USFWS:BCC	
<i>Melozona aberti</i> Abert's towhee		G3G4 S2?	None	None	ABC:WLBCCC IUCN:LC	
+ <i>Melozona crissalis eremophilus</i> Inyo California towhee		G4G5T1 S1	Threatened	Endangered		
<i>Passerculus sandwichensis alaudinus</i> Bryant's savannah sparrow		G5T2T3 S2S3	None	None	DFG:SSC	
+ <i>Passerculus sandwichensis beldingi</i> Belding's savannah sparrow		G5T3 S3	None	Endangered		
<i>Passerculus sandwichensis rostratus</i> large-billed savannah sparrow	(Wintering)	G5T2T3 S2?	None	None	DFG:SSC	
<i>Pipilo maculatus clementae</i> San Clemente spotted towhee		G5T1 S1	None	None	DFG:SSC USFWS:BCC	
+ <i>Piranga flava</i> hepatic tanager	(Nesting)	G5 S1	None	None	DFG:WL IUCN:LC	Yes
+ <i>Piranga rubra</i> summer tanager	(Nesting)	G5 S2	None	None	DFG:SSC IUCN:LC	Yes
<i>Poocetes gramineus affinis</i> Oregon vesper sparrow	(Wintering)	G5T3? S3?	None	None	DFG:SSC USFWS:BCC	
<i>Spizella atrogularis</i> black-chinned sparrow	(Nesting)	G5 S3	None	None	ABC:WLBCCC IUCN:LC USFWS:BCC	
+ <i>Spizella breweri</i> Brewer's sparrow	(Nesting)	G5 S3	None	None	ABC:WLBCCC IUCN:LC USFWS:BCC	
<i>Spizella passerina</i> chipping sparrow	(Nesting)	G5 S3S4	None	None	IUCN:LC	
CARDINALIDAE (cardinals)						
+ <i>Cardinalis cardinalis</i> northern cardinal		G5 S1	None	None	DFG:WL IUCN:LC	
ICTERIDAE (blackbirds)						
<i>Agelaius phoeniceus aciculatus</i> Kern red-winged blackbird		G5T1T2 S1S2	None	None	DFG:SSC	
+ <i>Agelaius tricolor</i> tricolored blackbird	(Nesting colony)	G2G3 S2	None	None	ABC:WLBCCC BLM:S DFG:SSC IUCN:EN USFWS:BCC	
+ <i>Xanthocephalus xanthocephalus</i> yellow-headed blackbird	(Nesting)	G5 S3S4	None	None	DFG:SSC IUCN:LC	
FRINGILLIDAE (finches and relatives)						
+ <i>Spinus lawrencei</i> Lawrence's goldfinch	(Nesting)	G3G4 S3	None	None	ABC:WLBCCC IUCN:LC USFWS:BCC	

Special Animals List - January 2011

Mammals

Species	Comment	Rank	ESA	CESA	Other Status	Notes
TALPIDAE (moles)						
+ <i>Scapanus latimanus insularis</i> Angel Island mole		G5T1 S1	None	None		
+ <i>Scapanus latimanus parvus</i> Alameda Island mole		G5T1Q S1	None	None	DFG:SSC	
SORICIDAE (shrews)						
+ <i>Sorex lyelli</i> Mount Lyell shrew		G2G3 S2S3	None	None	DFG:SSC IUCN:LC	
+ <i>Sorex ornatus relictus</i> Buena Vista Lake shrew		G5T1 S1	Endangered	None	DFG:SSC	
<i>Sorex ornatus salarius</i> Monterey shrew		G5T1T2 S1S2	None	None	DFG:SSC	
+ <i>Sorex ornatus salicornicus</i> southern California saltmarsh shrew		G5T1? S1	None	None	DFG:SSC	
+ <i>Sorex ornatus sinuosus</i> Suisun shrew		G5T1 S1	None	None	DFG:SSC	
+ <i>Sorex ornatus willetti</i> Santa Catalina shrew		G5T1 S1	None	None	DFG:SSC	
+ <i>Sorex vagrans halicoetes</i> salt-marsh wandering shrew		G5T1 S1	None	None	DFG:SSC	
<i>Sorex vagrans paludivagus</i> Monterey vagrant shrew		G5T1 S1	None	None		
PHYLLOSTOMIDAE (leaf-nosed bats)						
+ <i>Choeronycteris mexicana</i> Mexican long-tongued bat		G4 S1	None	None	DFG:SSC IUCN:NT WBWG:H	
<i>Leptonycteris yerbabuena</i> lesser long-nosed bat		G4 S1	Endangered	None	IUCN:VU	Yes
+ <i>Macrotus californicus</i> California leaf-nosed bat		G4 S2S3	None	None	BLM:S DFG:SSC IUCN:LC USFS:S WBWG:H	
VESPERTILIONIDAE (evening bats)						
+ <i>Antrozous pallidus</i> pallid bat		G5 S3	None	None	BLM:S DFG:SSC IUCN:LC USFS:S WBWG:H	
+ <i>Corynorhinus townsendii</i> Townsend's big-eared bat		G4 S2S3	None	None	BLM:S DFG:SSC IUCN:LC USFS:S WBWG:H	
+ <i>Euderma maculatum</i> spotted bat		G4 S2S3	None	None	BLM:S DFG:SSC IUCN:LC WBWG:H	
+ <i>Lasionycteris noctivagans</i> silver-haired bat		G5 S3S4	None	None	IUCN:LC WBWG:M	
+ <i>Lasiurus blossevillii</i> western red bat		G5 S3?	None	None	DFG:SSC IUCN:LC USFS:S WBWG:H	Yes
+ <i>Lasiurus cinereus</i> hoary bat		G5 S4?	None	None	IUCN:LC WBWG:M	
+ <i>Lasiurus xanthinus</i> western yellow bat		G5 S3	None	None	DFG:SSC IUCN:LC WBWG:H	Yes

Special Animals List - January 2011

Mammals

Species	Comment	Rank	ESA	CESA	Other Status	Notes
VESPERTILIONIDAE (evening bats)						
+ <i>Myotis ciliolabrum</i> western small-footed myotis		G5 S2S3	None	None	BLM:S IUCN:LC WBWG:M	
+ <i>Myotis evotis</i> long-eared myotis		G5 S4?	None	None	BLM:S IUCN:LC WBWG:M	
<i>Myotis lucifugus</i> little brown bat	(San Bernardino Mts population)	G5 S2S3	None	None	IUCN:LC WBWG:M	
+ <i>Myotis occultus</i> Arizona Myotis		G3G4 S2S3	None	None	DFG:SSC IUCN:LC WBWG:M	
+ <i>Myotis thysanodes</i> fringed myotis		G4G5 S4	None	None	BLM:S IUCN:LC WBWG:H	
+ <i>Myotis velifer</i> cave myotis		G5 S1	None	None	BLM:S DFG:SSC IUCN:LC WBWG:M	
+ <i>Myotis volans</i> long-legged myotis		G5 S4?	None	None	IUCN:LC WBWG:H	
+ <i>Myotis yumanensis</i> Yuma myotis		G5 S4?	None	None	BLM:S IUCN:LC WBWG:LM	
MOLOSSIDAE (free-tailed bats)						
+ <i>Eumops perotis californicus</i> western mastiff bat		G5T4 S3?	None	None	BLM:S DFG:SSC WBWG:H	
+ <i>Nyctinomops femorosaccus</i> pocketed free-tailed bat		G4 S2S3	None	None	DFG:SSC IUCN:LC WBWG:M	
+ <i>Nyctinomops macrotis</i> big free-tailed bat		G5 S2	None	None	DFG:SSC IUCN:LC WBWG:MH	
OCHOTONIDAE (pikas)						
+ <i>Ochotona princeps schisticeps</i> gray-headed pika		G5T2T4 S2S4	None	None	IUCN:NT	Yes
LEPORIDAE (rabbits and hares)						
+ <i>Brachylagus idahoensis</i> pygmy rabbit		G4 S3	None	None	BLM:S DFG:SSC IUCN:LC	
+ <i>Lepus americanus klamathensis</i> Oregon snowshoe hare		G5T3T4Q S2?	None	None	DFG:SSC	
+ <i>Lepus americanus tahoensis</i> Sierra Nevada snowshoe hare		G5T3T4Q S2?	None	None	DFG:SSC	
+ <i>Lepus californicus bennettii</i> San Diego black-tailed jackrabbit		G5T3? S3?	None	None	DFG:SSC	
+ <i>Lepus townsendii townsendii</i> western white-tailed jackrabbit		G5T5 S3?	None	None	DFG:SSC	
+ <i>Sylvilagus bachmani riparius</i> riparian brush rabbit		G5T1 S1	Endangered	Endangered		
APLodontidae (mountain beavers)						
+ <i>Aplodontia rufa californica</i> Sierra Nevada mountain beaver		G5T3T4 S2S3	None	None	DFG:SSC IUCN:LC	Yes
+ <i>Aplodontia rufa nigra</i> Point Arena mountain beaver		G5T1 S1	Endangered	None	DFG:SSC IUCN:LC	Yes
+ <i>Aplodontia rufa phaea</i> Point Reyes mountain beaver		G5T2 S2	None	None	DFG:SSC IUCN:LC	Yes

Special Animals List - January 2011

Mammals

Species	Comment	Rank	ESA	CESA	Other Status	Notes
SCIURIDAE (squirrels and relatives)						
+ <i>Ammospermophilus nelsoni</i> Nelson's antelope squirrel		G2 S2	None	Threatened	IUCN:EN	
<i>Callospermophilus lateralis bernardinus</i> San Bernardino ground squirrel		G5T1 S1	None	None		
+ <i>Glaucomys sabrinus californicus</i> San Bernardino flying squirrel		G5T2T3 S2S3	None	None	DFG:SSC USFS:S	
+ <i>Neotamias panamintinus acrus</i> Kingston Mountain chipmunk		G4T1T2 S1S2	None	None		
+ <i>Neotamias speciosus callipeplus</i> Mount Pinos chipmunk		G4T1T2 S1S2	None	None	USFS:S	
+ <i>Neotamias speciosus speciosus</i> lodgepole chipmunk		G4T2T3 S2S3	None	None		
+ <i>Xerospermophilus mohavensis</i> Mohave ground squirrel		G2G3 S2S3	None	Threatened	IUCN:VU	
+ <i>Xerospermophilus tereticaudus chlorus</i> Palm Springs round-tailed ground squirrel		G5T1T2 S1S2	None	None	DFG:SSC	
GEOMYIDAE (pocket gophers)						
<i>Thomomys bottae operarius</i> Owens Lake pocket gopher		G5T1? S1?	None	None		
HETEROMYIDAE (kangaroo rats, pockets mice, & kangaroo mice)						
+ <i>Chaetodipus californicus femoralis</i> Dulzura pocket mouse		G5T3 S2?	None	None	DFG:SSC	
+ <i>Chaetodipus fallax fallax</i> northwestern San Diego pocket mouse		G5T3 S2S3	None	None	DFG:SSC	Yes
+ <i>Chaetodipus fallax pallidus</i> pallid San Diego pocket mouse		G5T3 S3	None	None	DFG:SSC	Yes
+ <i>Dipodomys californicus eximius</i> Marysville California kangaroo rat		G4T1 S1	None	None	BLM:S DFG:SSC	
+ <i>Dipodomys heermanni berkeleyensis</i> Berkeley kangaroo rat		G3G4T1 S1	None	None		
+ <i>Dipodomys heermanni dixonii</i> Merced kangaroo rat		G3G4T2T3 S2S3	None	None		
+ <i>Dipodomys heermanni morroensis</i> Morro Bay kangaroo rat		G3G4T1 S1	Endangered	Endangered	DFG:FP	
+ <i>Dipodomys ingens</i> giant kangaroo rat		G2 S2	Endangered	Endangered	IUCN:EN	
+ <i>Dipodomys merriami collinus</i> Earthquake Merriam's kangaroo rat		G5T1T2 S1S2	None	None		
+ <i>Dipodomys merriami parvus</i> San Bernardino kangaroo rat		G5T1 S1	Endangered	None	DFG:SSC	
+ <i>Dipodomys nitratooides brevinasus</i> short-nosed kangaroo rat		G3T1T2 S1S2	None	None	BLM:S DFG:SSC IUCN:VU	
+ <i>Dipodomys nitratooides exilis</i> Fresno kangaroo rat		G3T1 S1	Endangered	Endangered	IUCN:VU	
+ <i>Dipodomys nitratooides nitratooides</i> Tipton kangaroo rat		G3T1 S1	Endangered	Endangered	IUCN:VU	
+ <i>Dipodomys panamintinus argusensis</i> Argus Mountains kangaroo rat		G5T1T3 S1S3	None	None		
+ <i>Dipodomys panamintinus panamintinus</i> Panamint kangaroo rat		G5T3 S3	None	None		
+ <i>Dipodomys stephensi</i> Stephens' kangaroo rat		G2 S2	Endangered	Threatened	IUCN:EN	
+ <i>Dipodomys venustus elephantinus</i> big-eared kangaroo rat		G3G4T2 S2	None	None	DFG:SSC	

Special Animals List - January 2011

Mammals

Species	Comment	Rank	ESA	CESA	Other Status	Notes
HETEROMYIDAE (kangaroo rats, pockets mice, & kangaroo mice)						
+ <i>Dipodomys venustus venustus</i> Santa Cruz kangaroo rat		G4T1 S1	None	None		
+ <i>Perognathus alticolus alticolus</i> white-eared pocket mouse		G1G2TH SH	None	None	BLM:S DFG:SSC IUCN:EN USFS:S	Yes
+ <i>Perognathus alticolus inexpectatus</i> Tehachapi pocket mouse		G1G2T1T2 S1S2	None	None	DFG:SSC IUCN:EN USFS:S	Yes
+ <i>Perognathus inornatus inornatus</i> San Joaquin pocket mouse		G4T2T3 S2S3	None	None	BLM:S	
<i>Perognathus inornatus neglectus</i> McKittrick pocket mouse		G4T2T3 S2S3	None	None		
+ <i>Perognathus inornatus psammophilus</i> Salinas pocket mouse		G4T2? S2?	None	None	DFG:SSC	
+ <i>Perognathus longimembris bangsi</i> Palm Springs pocket mouse		G5T2T3 S2S3	None	None	BLM:S DFG:SSC	
+ <i>Perognathus longimembris brevinasus</i> Los Angeles pocket mouse		G5T1T2 S1S2	None	None	DFG:SSC USFS:S	
+ <i>Perognathus longimembris internationalis</i> Jacumba pocket mouse		G5T2T3 S1S2	None	None	DFG:SSC	
+ <i>Perognathus longimembris pacificus</i> Pacific pocket mouse		G5T1 S1	Endangered	None	DFG:SSC	
<i>Perognathus longimembris salinensis</i> Saline Valley pocket mouse		G5T1 S1	None	None		
<i>Perognathus longimembris tularensis</i> Tulare pocket mouse		G5T1 S1	None	None		
+ <i>Perognathus parvus xanthonotus</i> yellow-eared pocket mouse		G5T2T3 S1S2	None	None	BLM:S	
MURIDAE (mice, rats, and voles)						
+ <i>Arborimus albipes</i> white-footed vole		G3G4 S2S3	None	None	DFG:SSC IUCN:LC	
+ <i>Arborimus pomo</i> Sonoma tree vole		G3 S3	None	None	DFG:SSC IUCN:NT	
<i>Microtus californicus halophilus</i> Monterey vole		G5T1 S1	None	None		
+ <i>Microtus californicus mohavensis</i> Mohave river vole		G5T1 S1	None	None	DFG:SSC	
+ <i>Microtus californicus sanpabloensis</i> San Pablo vole		G5T1T2 S1S2	None	None	DFG:SSC	
+ <i>Microtus californicus scirpensis</i> Amargosa vole		G5T1 S1	Endangered	Endangered		
+ <i>Microtus californicus stephensi</i> south coast marsh vole		G5T1T2 S1S2	None	None	DFG:SSC	
+ <i>Microtus californicus vallicola</i> Owens Valley vole		G5T1 S1	None	None	BLM:S DFG:SSC	
+ <i>Neotoma albigula venusta</i> Colorado Valley woodrat		G5T3T4 S1S2	None	None		
+ <i>Neotoma fuscipes annectens</i> San Francisco dusky-footed woodrat		G5T2T3 S2S3	None	None	DFG:SSC	
+ <i>Neotoma fuscipes riparia</i> riparian (=San Joaquin Valley) woodrat		G5T1Q S1	Endangered	None	DFG:SSC	Yes
+ <i>Neotoma lepida intermedia</i> San Diego desert woodrat		G5T3? S3?	None	None	DFG:SSC	
+ <i>Neotoma macrotis luciana</i> Monterey dusky-footed woodrat		G5T3? S3?	None	None	DFG:SSC IUCN:DD	

Special Animals List - January 2011

Mammals

Species	Comment	Rank	ESA	CESA	Other Status	Notes
MURIDAE (mice, rats, and voles)						
+ <i>Onychomys torridus ramona</i> southern grasshopper mouse		G5T3? S3?	None	None	DFG:SSC	
+ <i>Onychomys torridus tularensis</i> Tulare grasshopper mouse		G5T1T2 S1S2	None	None	BLM:S DFG:SSC	
+ <i>Peromyscus maniculatus anacapae</i> Anacapa Island deer mouse		G5T1T2 S1S2	None	None	DFG:SSC	
<i>Peromyscus maniculatus clementis</i> San Clemente deer mouse		G5T1T2 S1S2	None	None	DFG:SSC	
+ <i>Reithrodontomys megalotis distichlis</i> Salinas harvest mouse		G5T1 S1	None	None		
+ <i>Reithrodontomys megalotis santacruzae</i> Santa Cruz harvest mouse		G5T1Q S1	None	None		Yes
+ <i>Reithrodontomys raviventris</i> salt-marsh harvest mouse		G1G2 S1S2	Endangered	Endangered	DFG:FP IUCN:EN	
+ <i>Sigmodon arizonae plenus</i> Colorado River cotton rat		G5T2T3 SH	None	None	DFG:SSC	
+ <i>Sigmodon hispidus eremicus</i> Yuma hispid cotton rat		G5T2T3 S2	None	None	DFG:SSC	
DIPODIDAE (jumping mice)						
+ <i>Zapus trinotatus orarius</i> Point Reyes jumping mouse		G5T1T3Q S1S3	None	None	DFG:SSC	
CANIDAE (foxes, wolves, and coyotes)						
<i>Urocyon littoralis</i> island fox	(Mapped by subspecies)	G1 S1	None	Threatened	IUCN:CR	Yes
+ <i>Urocyon littoralis catalinae</i> Santa Catalina Island fox		G1T1 S1	Endangered	Threatened	IUCN:CR	Yes
+ <i>Urocyon littoralis clementae</i> San Clemente Island fox		G1T1 S1	None	Threatened	IUCN:CR	Yes
+ <i>Urocyon littoralis dickeyi</i> San Nicolas Island fox		G1T1 S1	None	Threatened	IUCN:CR	Yes
+ <i>Urocyon littoralis littoralis</i> San Miguel Island fox		G1T1 S1	Endangered	Threatened	IUCN:CR	Yes
+ <i>Urocyon littoralis santacruzae</i> Santa Cruz Island fox		G1T1 S1	Endangered	Threatened	IUCN:CR	Yes
+ <i>Urocyon littoralis santarosae</i> Santa Rosa Island fox		G1T1 S1	Endangered	Threatened	IUCN:CR	Yes
+ <i>Vulpes macrotis mutica</i> San Joaquin kit fox		G4T2T3 S2S3	Endangered	Threatened		
+ <i>Vulpes vulpes necator</i> Sierra Nevada red fox		G5T3 S1	None	Threatened	USFS:S	
MUSTELIDAE (weasels and relatives)						
+ <i>Enhydra lutris nereis</i> southern sea otter		G4T2 S2	Threatened	None	DFG:FP IUCN:EN MMC:SSC	Yes
+ <i>Gulo gulo</i> California wolverine		G4 S1	Candidate	Threatened	DFG:FP IUCN:NT USFS:S	
+ <i>Lontra canadensis sonora</i> southwestern river otter		G5T1 S1	None	None	DFG:SSC	
+ <i>Martes americana</i> American (=pine) marten		G5 S3S4	None	None	IUCN:LC USFS:S	
+ <i>Martes americana humboldtensis</i> Humboldt marten		G5T2T3 S2S3	None	None	DFG:SSC USFS:S	
+ <i>Martes americana sierrae</i> Sierra marten		G5T3T4 S3S4	None	None	USFS:S	
+ <i>Martes pennanti (pacifica) DPS</i> Pacific fisher		G5 S2S3	Candidate	None	BLM:S DFG:SSC USFS:S	Yes

Special Animals List - January 2011

Mammals

Species	Comment	Rank	ESA	CESA	Other Status	Notes
MUSTELIDAE (weasels and relatives)						
+ <i>Taxidea taxus</i> American badger		G5 S4	None	None	DFG:SSC IUCN:LC	
MEPHITIDAE (skunks)						
+ <i>Spilogale gracilis amphiala</i> Channel Islands spotted skunk		G5T3 S3	None	None	DFG:SSC	
FELIDAE (cats and relatives)						
<i>Lynx rufus pallescens</i> pallid bobcat		G5T3? S3?	None	None		
+ <i>Puma concolor browni</i> Yuma mountain lion		G5T1T2Q S1	None	None	DFG:SSC	
OTARIIDAE (sea lions and fur seals)						
+ <i>Arctocephalus townsendi</i> Guadalupe fur-seal		G1 S1	Threatened	Threatened	DFG:FP IUCN:NT	
+ <i>Callorhinus ursinus</i> northern fur-seal		G3 S1	None	None	IUCN:VU	
+ <i>Eumetopias jubatus</i> Steller (=northern) sea-lion		G3 S2	Threatened	None	IUCN:EN MMC:SSC	
BOVIDAE (sheep and relatives)						
+ <i>Ovis canadensis nelsoni</i> Nelson's bighorn sheep		G4T4 S3	None	None	BLM:S USFS:S	
+ <i>Ovis canadensis nelsoni</i> DPS peninsular bighorn sheep		G4T3Q S1	Endangered	Threatened	DFG:FP	Yes
+ <i>Ovis canadensis sierrae</i> Sierra Nevada bighorn sheep		G4T1 S1	Endangered	Endangered	DFG:FP	

Special Animals List - January 2011

End Notes**Invertebrates****INSECTA, Order Coleoptera (beetles)***Trigonoscuta* sp.

Doyen's trigonoscuta dune weevil

- 1) Sometimes referred to as "Trigonoscuta doyeri" which is an unpublished manuscript name.

Fishes**ACIPENSERIDAE (sturgeon)***Acipenser medirostris*

green sturgeon

- 1) Federal listing includes all spawning populations south of the Eel River.
- 2) The NMFS "Special Concern" designation refers to the northern DPS which includes spawning populations north of the Eel River (inclusive).

SALMONIDAE (trout & salmon)*Oncorhynchus kisutch*

coho salmon - central California coast ESU

- 1) The federal listing is limited to naturally spawning populations in streams between Punta Gorda, Humboldt Co. and the San Lorenzo River, Santa Cruz Co.
- 2) The state listing is limited to Coho south of Punta Gorda, Humboldt Co.

coho salmon - southern Oregon / northern California ESU

- 1) Federal listing refers to populations between Cape Blanco, Oregon & Punta Gorda, Humboldt Co. California.
- 2) State listing refers to populations between the Oregon border & Punta Gorda, Humboldt Co. California.

Oncorhynchus mykiss irideus

southern steelhead - southern California DPS

- 1) The federal designation refers to fish in the coastal basins from the Santa Maria River (inclusive), south to the U.S. - Mexico Border.
- 2) The DFG "Species of Special Concern" designation refers to southern steelhead trout.

steelhead - central California coast DPS

- 1) Federal listing includes all runs in coastal basins from the Russian River in Sonoma County, south to Soquel Creek in Santa Cruz County, inclusive. It includes the San Francisco and San Pablo Bay basins, but excludes the Sacramento-San Joaquin River basins.

steelhead - Central Valley DPS

- 1) Federal listing includes all runs in the Sacramento & San Joaquin Rivers and their tributaries.

steelhead - Klamath Mountains Province DPS

- 1) This ESU includes all naturally spawned populations residing in streams between the Elk River in Oregon and the Klamath River in California, inclusive.
- 2) The SSC designation refers only to the California portion of the ESU and refers only to the summer-run.

steelhead - northern California DPS

- 1) The federal designation refers to naturally spawned populations residing below impassable barriers in coastal basins from Redwood Creek in Humboldt Co. to, and including, the Gualala River in Mendocino Co.
- 2) The DFG "Species of Special Concern" designation refers only to the summer-run.

steelhead - south/central California coast DPS

- 1) Federal listing includes all runs in coastal basins from the Pajaro River south to, but not including, the Santa Maria River.
- 2) The DFG "Species of Special Concern" designation refers to southern steelhead trout.

summer-run steelhead trout

- 1) Summer-run steelhead are part of both the Klamath Mountains Province DPS and the Northern California DPS.

Oncorhynchus tshawytscha

chinook salmon - California coastal ESU

- 1) Originally proposed as part of a larger Southern Oregon & California Coastal ESU. This new ESU was revised to include only naturally spawned coastal spring & fall-run chinook salmon between Redwood Creek in Humboldt Co & the Russian River in Sonoma Co.

chinook salmon - Central Valley fall / late fall-run ESU

- 1) The Central Valley fall/late fall-run ESU refers to populations spawning in the Sacramento & San Joaquin Rivers and their tributaries.
- 2) The DFG "Species of Special Concern" designation refers only to the fall-run.

Special Animals List - January 2011

Fishes**SALMONIDAE (trout & salmon)***Oncorhynchus tshawytscha*

chinook salmon - Central Valley spring-run ESU

- 1) Federal listing refers to the Central Valley Spring-run ESU. It includes populations spawning in the Sacramento River & its tributaries.

OSMERIDAE (smelt)*Spirinchus thaleichthys*

longfin smelt

- 1) AFS Threatened designation take from: Musick, J.T. et al. 2000. "Marine, Estuarine, and Diadromous Fish Stocks at Risk of Extinction in North America (Exclusive of Pacific Salmonids). Fisheries 25(11):6-30.

CYPRINIDAE (minnows and carp)*Lavinia symmetricus ssp. 1*

San Joaquin roach

- 1) Current taxonomy considers this taxon to be a population of *Lavinia symmetricus symmetricus*, the Sacramento-San Joaquin roach.

Rhinichthys osculus ssp. 1

Amargosa Canyon speckled dace

- 1) Current taxonomy considers this taxon to be a distinct population of *Rhinichthys osculus nevadensis*.

Rhinichthys osculus ssp. 2

Owens speckled dace

- 1) Current taxonomy includes the Benton Valley speckled dace (formerly ssp 4) with the Owens speckled dace.

GASTEROSTEIDAE (sticklebacks)*Gasterosteus aculeatus microcephalus*

resident threespine stickleback

- 1) The U.S. Forest Service "Sensitive" designation refers to the full species.

Gasterosteus aculeatus santaannae

Santa Ana (=Shay Creek) threespine stickleback

- 1) The U.S. Forest Service "Sensitive" designation refers to the full species.

Gasterosteus aculeatus williamsoni

unarmored threespine stickleback

- 1) The U.S. Forest Service "Sensitive" designation refer to the full species.

POLYPRIONIDAE (wreckfishes)*Stereolepis gigas*

giant sea bass

- 1) AFS Vulnerable designation taken from: Musick, J.T. et al. 2000. "Marine, Estuarine, and Diadromous Fish Stocks at Risk of Extinction in North America (Exclusive of Pacific Salmonids). Fisheries 25(11):6-30.

Amphibians**PLETHODONTIDAE (lungless salamanders)***Plethodon asupak*

Scott Bar salamander

- 1) Newly described species from what was part of the range of *Plethodon stormi*.
- 2) Since this newly described species was formerly considered to be a subpopulation of *Plethodon stormi*, and since *Plethodon stormi* is listed as Threatened under the California Endangered Species Act (CESA), *Plethodon asupak* retains the designation as a Threatened species under CESA.

BUFONIDAE (true toads)*Anaxyrus californicus*

arroyo toad

- 1) Formerly *Bufo microscaphus californicus*, now considered a full species.
- 2) Formerly *Bufo californicus*; Frost, Grant, Faivovich, Bain, Haas, Haddad, De Sá, Channing, Wilkinson, Donnellan, Raxworthy, Campbell, Blotto, Moler, Drewes, Nussbaum, Lynch, Green & Wheeler (2006. The Amphibian Tree of Life. Bulletin of the American Museum of Natural History 297: 1-370) placed this species in the genus *Anaxyrus* (Tschudi, 1845). The standard common name remains arroyo toad.

Special Animals List - January 2011

Amphibians**BUFONIDAE (true toads)***Anaxyrus canorus*

Yosemite toad

- 1) Formerly *Bufo canorus*; Frost, Grant, Faivovich, Bain, Haas, Haddad, De Sá, Channing, Wilkinson, Donnellan, Raxworthy, Campbell, Blotto, Moler, Drewes, Nussbaum, Lynch, Green & Wheeler (2006. The Amphibian Tree of Life. Bulletin of the American Museum of Natural History 297: 1-370) placed this species in the genus *Anaxyrus* (Tschudi, 1845). The standard common name remains Yosemite toad.

Anaxyrus exsul

black toad

- 1) Formerly *Bufo exsul*; Frost, Grant, Faivovich, Bain, Haas, Haddad, De Sá, Channing, Wilkinson, Donnellan, Raxworthy, Campbell, Blotto, Moler, Drewes, Nussbaum, Lynch, Green & Wheeler (2006. The Amphibian Tree of Life. Bulletin of the American Museum of Natural History 297: 1-370) placed this species in the genus *Anaxyrus* (Tschudi, 1845). The standard common name remains black toad.

Incilius alvarius

Sonoran desert toad

- 1) Formerly *Bufo alvarius*. Between 2006 & 2009 the scientific name has been changed to *Cranopsis alvaria*, to *Ollotis alvaria*, to *Incilius alvarius*, back to *Ollotis alvarius* and then back to *Incilius alvarius*. The common name has changed from Colorado River toad to Sonoran desert toad.

RANIDAE*Lithobates pipiens*

northern leopard frog

- 1) Formerly *Rana pipiens*; Frost, Grant, Faivovich, Bain, Haas, Haddad, De Sá, Channing, Wilkinson, Donnellan, Raxworthy, Campbell, Blotto, Moler, Drewes, Nussbaum, Lynch, Green & Wheeler (2006. The Amphibian Tree of Life. Bulletin of the American Museum of Natural History 297: 1-370) placed this species in the genus *Lithobates* (Fitzinger, 1843). The standard common name remains northern leopard frog.

Lithobates yavapaiensis

lowland (=Yavapai, San Sebastian & San Felipe) leopard frog

- 1) Formerly *Rana yavapaiensis*; Frost, Grant, Faivovich, Bain, Haas, Haddad, De Sá, Channing, Wilkinson, Donnellan, Raxworthy, Campbell, Blotto, Moler, Drewes, Nussbaum, Lynch, Green & Wheeler (2006. The Amphibian Tree of Life. Bulletin of the American Museum of Natural History 297: 1-370) placed this species in the genus *Lithobates* (Fitzinger, 1843). The standard common name remains lowland leopard frog.

Rana aurora

northern red-legged frog

- 1) A recent mtDNA study concludes that *Rana aurora aurora* and *Rana aurora draytonii* should be recognized as separate species with a narrow zone of overlap.

Rana draytonii

California red-legged frog

- 1) A recent mtDNA study concludes that *Rana aurora aurora* and *Rana aurora draytonii* should be recognized as separate species with a narrow zone of overlap, and that the range of *draytonii* extends about 100 km further north in coastal California than previously thought.

Rana muscosa

Sierra Madre yellow-legged frog

- 1) Federal listing refers to populations in the San Gabriel, San Jacinto, & San Bernardino Mountains only.
- 2) Federal Candidate status refers to all populations that occur north of the Tehachapi Mountains in the Sierra Nevada.
- 3) *Rana muscosa* has been split into *Rana sierrae*, the Sierra Nevada yellow-legged frog, found in the northern and central Sierra Nevada and *Rana muscosa*, the Sierra Madre yellow-legged frog, found in the southern Sierra Nevada and southern California.
- 4) *Rana muscosa* was petitioned to be listed as endangered. It is now a state candidate species for listing as threatened or endangered.

Rana sierrae

Sierra Nevada yellow-legged frog

- 1) Federal candidate status refers to all populations that occur north of the Tehachapi Mountains in the Sierra Nevada.
- 2) Formerly *Rana muscosa*. *Rana muscosa* has been split into *Rana sierrae*, the Sierra Nevada yellow-legged frog, found in the northern and central Sierra Nevada and *Rana muscosa*, the Sierra Madre yellow-legged frog, found in the southern Sierra Nevada and southern California.
- 3) *Rana sierrae* was petitioned to be listed as endangered. It is now a state candidate for listing as threatened or endangered.

Special Animals List - January 2011

Reptiles**EMYDIDAE (box and water turtles)***Emys marmorata*

western pond turtle

- 1) The paper: Spinks, Phillip Q. & H. Bradley Shaffer. 2005. Range-wide molecular analysis of the western pond turtle (*Emys marmorata*): cryptic variation, isolation by distance, and their conservation implications. *Molecular Ecology* (2005) 14, 2047-2064. determined that the current subspecies split was not warranted. Therefore, we are now tracking the western pond turtle only at the full species level.
- 2) The paper: Spinks, Phillip Q., & H. Bradley Shaffer. 2009. Conflicting Mitochondrial and Nuclear Phylogenies for the Widely Disjunct *Emys* (Testudines: Emydidae) Species Complex, and What They Tell Us about Biogeography and Hybridization. *Systematic Biology*. 58(1): pp. 1-20 determined that the correct genus name is *Emys*.

HELODERMATIDAE (venomous lizards)*Heloderma suspectum cinctum*

banded gila monster

- 1) The BLM "Sensitive Species" designation refers to the full species.

BOIDAE (boas)*Charina trivirgata*

rosy boa

- 1) The Forest Service "Sensitive" designation refers only to the subspecies *roseofusca*.
- 2) The taxonomy of this species is in flux. The name *Lichanura trivirgata* is a synonym. Some sources list several subspecies while others don't recognize any subspecies.

Birds**PHASIANIDAE (grouse and ptarmigan)***Dendragapus fuliginosus howardi*

Mount Pinos sooty grouse

- 1) Formerly merged with *D. obscurus* as blue grouse, but separated on the basis of genetic evidence and differences in voice, behavior, & plumage.
- 2) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.

RALLIDAE (rails, coots, and gallinules)*Laterallus jamaicensis coturniculus*

California black rail

- 1) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.
- 2) The IUCN designation of "Near Threatened" refers to the full species.

Rallus longirostris levipes

light-footed clapper rail

- 1) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.

Rallus longirostris obsoletus

California clapper rail

- 1) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.

Rallus longirostris yumanensis

Yuma clapper rail

- 1) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.

CHARADRIIDAE (plovers and relatives)*Charadrius alexandrinus nivosus*

western snowy plover

- 1) Federal listing applies only to the Pacific coastal population
- 2) DFG "Species of Special Concern" designation refers to both the coastal & interior populations.
- 3) USFWS - Birds of Conservation Concern designation refers to non-listed subspecies or populations of Threatened or Endangered species.

Special Animals List - January 2011

Birds**CHARADRIIDAE (plovers and relatives)***Charadrius montanus*

mountain plover

- 1) The June 29, 2010 proposed rule reinstates that portion of the December 5, 2002 proposed rule concerning the listing of the mountain plover as threatened. It does not reinstate the portion of that proposed rule regarding a special rule under section 4(d) of the Endangered Species Act.

LARIDAE (gulls and terns)*Gelochelidon nilotica*

gull-billed tern

- 1) Taxonomy recently changed from *Sterna nilotica*

Hydroprogne caspia

Caspian tern

- 1) Taxonomy recently changed from *Sterna caspia*

Sternula antillarum browni

California least tern

- 1) Taxonomy recently changed from *Sterna antillarum browni*.
- 2) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.

Thalasseus elegans

elegant tern

- 1) Taxonomy recently changed from *Sterna elegans*

STRIGIDAE (owls)*Athene cucularia*

burrowing owl

- 1) A burrow site = an observation of one or more owls at a burrow or evidence of recent occupation such as whitewash and feathers. Winter observations at a burrow are mapped. Winter observations with or without a burrow in San Francisco, Ventura, Sonoma, Marin, Napa & Santa Cruz Counties are mapped.

Strix occidentalis caurina

northern spotted owl

- 1) There are no northern spotted owl EOs in the CNDDDB. All northern spotted owl location information is maintained in a separate data layer. This layer is packaged with the CNDDDB layer in BIOS. All RareFind subscribers have access to this information through BIOS (<http://BIOS.dfg.ca.gov>)
- 2) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.

Strix occidentalis occidentalis

California spotted owl

- 1) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.

TYRANNIDAE (tyrant flycatchers)*Empidonax traillii*

willow flycatcher

- 1) State listing of the full species includes all subspecies
- 2) USFWS: Birds of Conservation Concern designation refers to non-listed subspecies or populations of Threatened or Endangered species.

Empidonax traillii brewsteri

little willow flycatcher

- 1) State listing of the full species includes all subspecies
- 2) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.
- 3) USFWS - Birds of Conservation Concern designation refers to non-listed subspecies or populations for Threatened or Endangered species.

Empidonax traillii extimus

southwestern willow flycatcher

- 1) State listing of the full species includes all subspecies
- 2) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.

Special Animals List - January 2011

Birds**LANIIDAE (shrikes)***Lanius ludovicianus mearnsi*

San Clemente loggerhead shrike

- 1) Subspecific identity of shrikes currently on San Clemente is uncertain. Mundy et al. (1997a, b) provided evidence *L. l. mearnsi* is genetically distinct from *L. l. gambeli* and *L. l. anthonyi*, whereas Patten and Campbell (2000) concluded, based on morphology, that the birds now on San Clemente are intergrades between *L. l. mearnsi* and *L. l. anthonyi*.

VIREONIDAE (vireos)*Vireo bellii arizonae*

Arizona bell's vireo

- 1) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.
- 2) The IUCN designation of "Near Threatened" refers to the full species.

Vireo bellii pusillus

least Bell's vireo

- 1) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.
- 2) The IUCN designation of "Near Threatened" refers to the full species.

TROGLODYTIDAE (wrens)*Campylorhynchus brunneicapillus sandiegensis*

coastal cactus wren

- 1) Nomenclature follows the draft DFG Bird Species of Special Concern report.

SYLVIIDAE (gnatcatchers)*Polioptila californica californica*

coastal California gnatcatcher

- 1) AKA Alta California gnatcatcher
- 2) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.

MIMIDAE (mockingbirds and thrashers)*Toxostoma lecontei*

Le Conte's thrasher

- 1) The BLM "Sensitive Species" designation refers to the subspecies *Toxostoma lecontei macmillanorum*.
- 2) DFG "Species of Special Concern" designation refers only to the San Joaquin population, AKA *T. l. macmillanorum*.

PARULIDAE (wood-warblers)*Geothlypis trichas sinuosa*

saltmarsh common yellowthroat

- 1) AKA San Francisco common yellowthroat

EMBERIZIDAE (sparrows, buntings, warblers, & relatives)*Amphispiza belli belli*

Bell's sage sparrow

- 1) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.

Amphispiza belli clementeae

San Clemente sage sparrow

- 1) Subspecific validity uncertain. Recognized by AOU (1957), but not by Patten and Unitt (2002).
- 2) The American Bird Conservancy "WatchList of Birds of Conservation Concern" designation refers to the full species.

Melospiza melodia graminea

Channel Island song sparrow

- 1) Subspecific validity is uncertain. This subspecies when referred to as Santa Barbara song sparrow is extinct. However, the subspecies was merged by Patten (2001) with the San Miguel (*M. m. micronyx*), and San Clemente (*M. m. clementae*) song sparrows as the Channel Island song sparrow with the subspecific name *M. m. graminea*.

Piranga flava

hepatic tanager

- 1) According to The A.O.U. Check-list of North American Birds, Seventh Edition, this species is probably misplaced in the current phylogenetic listing but for which data indicating proper placement are not yet available.

Special Animals List - January 2011

Birds**EMBERIZIDAE (sparrows, buntings, warblers, & relatives)***Piranga rubra*

summer tanager

- 1) According to The A.O.U. Check-list of North American Birds, Seventh Edition, this species is probably misplaced in the current phylogenetic listing but for which data indicating proper placement are not yet available.

Mammals**PHYLLOSTOMIDAE (leaf-nosed bats)***Leptonycteris yerbabuena*

lesser long-nosed bat

- 1) Listed by the U.S. Fish & Wildlife Service as *Leptonycteris curasoae yerbabuena*.

VESPERTILIONIDAE (evening bats)*Lasiurus blossevillii*

western red bat

- 1) The DFG "Species of Special Concern" designation is based on the draft updated Mammalian Species of Special Concern report.

Lasiurus xanthinus

western yellow bat

- 1) The DFG "Species of Special Concern" designation is based on the draft updated Mammalian Species of Special Concern report.

OCHOTONIDAE (pikas)*Ochotona princeps schisticeps*

gray-headed pika

- 1) All of the subspecies of pika in California have been synonymized under *Ochotona princeps schisticeps*.

APLODONTIDAE (mountain beavers)*Aplodontia rufa californica*

Sierra Nevada mountain beaver

- 1) The IUCN "Least Concern" designation refers to the full species.

Aplodontia rufa nigra

Point Arena mountain beaver

- 1) The IUCN "Least Concern" designation refers to the full species.

Aplodontia rufa phaea

Point Reyes mountain beaver

- 1) The IUCN "Least Concern" designation refers to the full species.

HETEROMYIDAE (kangaroo rats, pocket mice, & kangaroo mice)*Chaetodipus fallax fallax*

northwestern San Diego pocket mouse

- 1) The DFG "Species of Special Concern" designation refers to the full species.

Chaetodipus fallax pallidus

pallid San Diego pocket mouse

- 1) The DFG "Species of Special Concern" designation refers to the full species.

Perognathus alticolus alticolus

white-eared pocket mouse

- 1) The DFG "Species of Special Concern" and the BLM "Sensitive Species" designations refer to the full species.
- 2) The IUCN "Endangered" designation is at the species level.

Perognathus alticolus inexpectatus

Tehachapi pocket mouse

- 1) The DFG "Species of Special Concern" designation refers to the full species.
- 2) The IUCN "Endangered" designation is at the species level.

Special Animals List - January 2011

Mammals**MURIDAE (mice, rats, and voles)***Neotoma fuscipes riparia*

riparian (=San Joaquin Valley) woodrat

- 1) This species is currently undergoing taxonomic revision

Reithrodontomys megalotis santacruzae

Santa Cruz harvest mouse

- 1) Synonymous with *Reithrodontomys megalotis longicaudus*, Santa Cruz Island Population.

CANIDAE (foxes, wolves, and coyotes)*Urocyon littoralis*

island fox

- 1) State listing is at the full species level and includes all subspecies on all islands. Federal listing does not include San Nicolas & San Clemente island subspecies.

Urocyon littoralis catalinae

Santa Catalina Island fox

- 1) The IUCN "Critically Endangered" designation refers to the full species.

Urocyon littoralis clementae

San Clemente Island fox

- 1) The IUCN "Critically Endangered" designation refers to the full species.

Urocyon littoralis dickeyi

San Nicolas Island fox

- 1) The IUCN "Critically Endangered" designation refers to the full species.

Urocyon littoralis littoralis

San Miguel Island fox

- 1) The IUCN "Critically Endangered" designation refers to the full species.

Urocyon littoralis santacruzae

Santa Cruz Island fox

- 1) The IUCN "Critically Endangered" designation refers to the full species.

Urocyon littoralis santarosae

Santa Rosa Island fox

- 1) The IUCN "Critically Endangered" designation refers to the full species.

MUSTELIDAE (weasels and relatives)*Enhydra lutris nereis*

southern sea otter

- 1) The IUCN "Endangered" designation refers to the full species.

Martes pennanti (pacifica) DPS

Pacific fisher

- 1) The subspecies *pacifica* is no longer considered a valid subspecies. The Pacific fisher is now considered to be a distinct population segment (DPS).
- 2) Federal candidate status refers to the distinct population segment in Washington, Oregon & California.
- 3) Was a candidate for state listing as an endangered or threatened species. The Fish and Game Commission at its Jun3 23, 2010 meeting determined that listing was not warranted.

BOVIDAE (sheep and relatives)*Ovis canadensis nelsoni* DPS

peninsular bighorn sheep

- 1) The subspecies *O. c. cremnobates* has been synonymized with *O. c. nelsoni*. Peninsular bighorn sheep are now considered to be a Distinct Population Segment (DPS).

Plants

***California Department of Fish and Wildlife
Natural Diversity Database***

***SPECIAL VASCULAR PLANTS,
BRYOPHYTES, AND LICHENS
LIST***

April 2014

Citation: California Department of Fish and Wildlife, Natural Diversity Database. April 2014. Special Vascular Plants, Bryophytes, and Lichens List. Quarterly publication. 73 pp.

SPECIAL PLANTS
Last updated July, 2013

“Special Plants” is a broad term used to refer to all the plant taxa inventoried by the Department of Fish and Wildlife’s California Natural Diversity Database (CNDDDB), regardless of their legal or protection status. Special Plants include vascular plants and high priority bryophytes (mosses, liverworts, and hornworts). A few lichens are also tracked. Special Plant taxa are species, subspecies, or varieties that fall into one or more of the following categories:

- Officially listed by California or the Federal Government as Endangered, Threatened, or Rare;
- A candidate for state or federal listing as Endangered, Threatened, or Rare;
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines; these taxa may indicate “None” under listing status, but note that all CNPS Rank 1 and 2 and some Rank 3 and 4 plants may fall under Section 15380 of CEQA.
- A Bureau of Land Management, U.S. Fish and Wildlife Service, or U.S. Forest Service Sensitive Species;
- Taxa listed in the California Native Plant Society’s *Inventory of Rare and Endangered Plants of California*;
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- Population(s) in California that may be peripheral to the major portion of a taxon’s range but are threatened with extirpation in California; and
- Taxa closely associated with a habitat that is declining in California at a significant rate (e.g. wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats, etc.).

This list contains taxa that are actively inventoried by the CNDDDB (Note: Taxa mapped in the GIS have a “yes” in the right column of the list) as well as an almost equal number of taxa (mostly Rare Plant Rank 3 and 4) which we track but for which we only currently have quad and county level geographic information. For the latter taxa, we maintain site and other information in manual files along with Internet access to the quad and county level information via our “*CNDDDB Quick Viewer*.” These plants will be mapped as time permits or when we have enough information to determine that they fulfill our rarity and/or endangerment criteria. For more copies of this list or other CNDDDB information, call (916) 324-3812 or email CNDDDB Information Services, at BDB@wildlife.ca.gov.

California Heritage (CNDDDB) Element Ranking For Plants

Last updated July, 2013

All Heritage Programs, such as the California Natural Diversity Database (CNDDDB) use the same ranking methodology, originally developed by The Nature Conservancy and now maintained and recently revised by NatureServe. It includes a **Global rank** (G rank), describing the rank for a given taxon over its entire distribution and a **State rank** (S rank), describing the rank for the taxon over its state distribution. For subspecies and varieties, there is also a “T” rank describing the global rank for the subspecies. The second page of this document details the criteria used to assign element ranks, from G1 to G5 for the Global rank and from S1 to S5 for the State rank. Procedurally, state programs such as the CNDDDB develop the State ranks and the Global ranks collaboratively among states/provinces containing the species. NatureServe then checks for consistency and logical errors at the national level.

An element rank is assigned using standard criteria and rank definitions. This standardization makes the ranks comparable across organism and political boundaries. NatureServe has developed a “rank calculator” to help increase repeatability and transparency of the ranking process. The three main categories that are taken into consideration when assigning an element rank are rarity, threats, and trends. Within these three categories, various factors are taken into consideration including:

- Range extent, area of occupancy, population size, number of occurrences and number of good occurrences (ranked A or B). Environmental specificity can also be used if other information is lacking.
- Overall threat impact as well as intrinsic vulnerability (if threats are unknown).
- Long-term and short-term trends.

Detailed information on the newest element ranking methodology can be found here:
<http://natureserve.org/publications/library.jsp>

With the above considerations in mind, refer below for the numerical definitions for G1-5 and S1-5. An element’s ranking status may be adjusted up or down depending upon the considerations above.

ELEMENT RANKING

GLOBAL RANKING

The *global rank* (G-rank) is a reflection of the overall status of an element throughout its global range. **Both Global and State ranks represent a letter+number score that reflects a combination of Rarity, Threat and Trend factors, with weighting being heavier on Rarity than the other two.**

SPECIES OR NATURAL COMMUNITY LEVEL

- G1 = Critically Imperiled**—At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
- G2 = Imperiled**—At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
- G3 = Vulnerable**—At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
- G4 = Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- G5 = Secure**—Common; widespread and abundant.

SUBSPECIES LEVEL

Subspecies receive a **T-rank** attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety. For example: *Chorizanthe robusta* var. *hartwegii*. This plant is ranked G2T1. The G-rank refers to the whole species range i.e., *Chorizanthe robusta*. The T-rank refers only to the global condition of var. *hartwegii*.

STATE RANKING

The *state rank* (S-rank) is assigned much the same way as the global rank, but state ranks refer to the imperilment status only within California’s state boundaries.

- S1 = Critically Imperiled**—Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.
- S2 = Imperiled**—Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.
- S3 = Vulnerable**—Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.
- S4 = Apparently Secure**—Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.
- S5 = Secure**—Common, widespread, and abundant in the state.

Notes:

1.	Other considerations used when ranking a species or natural community include the pattern of distribution of the element on the landscape, fragmentation of the population/stands, and historical extent as compared to its modern range. It is important to take a bird's eye or aerial view when ranking sensitive elements rather than simply counting element occurrences.	3.	Other symbols: GH All sites are historical ; the element has not been seen for at least 20 years, but suitable habitat still exists (SH = All California sites are historical). GX All sites are extirpated ; this element is extinct in the wild (SX = All California sites are extirpated). GXC Extinct in the wild; exists in cultivation. G1Q The element is very rare, but there are taxonomic questions associated with it. T Rank applies to a subspecies or variety.
2.	Uncertainty about the rank of an element is expressed in two major ways: By expressing the ranks as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3. By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less certainty than S2.		

SPECIAL LICHENS
Last updated March 23, 2007

There are a few lichens in California for which we have adequate information to place them on the list of Special taxa. They appear after the bryophytes at the beginning of the list. We are not including lichens for which little is known, even if they are only known from a few sites in California because the level of information is not developed enough. As information on individual taxa becomes better developed, more lichens may be added. Lichen statuses are developed in coordination with the California Lichen Society (CALs) and relevant experts.

Note that lichens are not plants, but a symbiotic relationship between a fungus and either green algae or cyanobacteria (aka bluegreen algae).

The California Rare Plant Ranks¹

- 1A. Presumed extirpated in California and either rare or extinct elsewhere
- 1B. Rare or Endangered in California and elsewhere
- 2A. Presumed extirpated in California, but more common elsewhere
- 2B. Rare or Endangered in California, but more common elsewhere
- 3. Plants for which we need more information - Review list
- 4. Plants of limited distribution - Watch list

1A: Plants Presumed Extirpated in California and either rare or extinct elsewhere

The plants of Rank 1A are presumed extirpated because they have not been seen or collected in the wild in California for many years. This rank includes those plant taxa that are both presumed extinct, as well as those plants which are presumed extirpated in California and rare elsewhere. A plant is extinct if it no longer occurs anywhere. A plant that is extirpated from California has been eliminated from California, but may still occur elsewhere in its range.

1B: Plants Rare, Threatened, or Endangered in California and Elsewhere (Includes Rare Plant Ranks 1B.1, 1B.2, 1B.3)

The plants of Rank 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. California Rare Plant Rank 1B plants constitute the majority of plant taxa tracked by the CNDDDB, with more than 1,000 plants assigned to this category of rarity.

2A: Plants Presumed Extirpated in California, but more common elsewhere

The plants of Rank 2A are presumed extirpated because they have not been seen or collected in the wild in California for many years. This rank includes only those plant taxa that are presumed extirpated in California, but that are more common elsewhere in their range. Note: Plants of both Rank 1A and 2A are presumed extirpated in California; the only difference is the status of the plants outside of the state.

2B: Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere (Includes Rare Plant Ranks 2B.1, 2B.2, 2B.3)

The plants of Rank 2B are rare, threatened or endangered in California, but more common elsewhere. Plants common in other states or countries are not eligible for consideration under the provisions of the **Federal** Endangered Species Act; however they are eligible for consideration under the **California** Endangered Species Act. This rank is meant to highlight the importance of protecting the geographic range and genetic diversity of more widespread species by protecting those species whose ranges just extend into California. Note: Plants of both Rank 1B and 2B are rare, threatened or endangered in California; the only difference is the status of the plants outside of the state.

3: Plants About Which We Need More Information - A Review list (Includes Rare Plant Ranks 3, 3.1, 3.2, 3.3)

The plants that comprise Rank 3 are united by one common theme--we lack the necessary information to assign them to one of the other lists or to reject them. Nearly all of the plants remaining on Rank 3 are taxonomically problematic.

4: Plants of Limited Distribution - A Watch list (Includes Rare Plant Ranks 4.1, 4.2, 4.3)

The plants in this category are of limited distribution or infrequent throughout a broader area in California, and their vulnerability or susceptibility to threat appears low at this time. While we cannot call these plants "rare" from a statewide perspective, they are uncommon enough that their status should be monitored regularly. Should the degree of endangerment or rarity of a Rank 4 plant change, we will transfer it to a more appropriate rank or delete it from consideration.

Threat Ranks:

The California Rare Plant Ranks (CRPR) use a decimal-style threat rank. The threat rank is an extension added onto the CRPR and designates the level of threats by a 1 to 3 ranking with 1 being the most threatened and 3 being the least threatened. So most CRPRs read as 1B.1, 1B.2, 1B.3, etc. Note that some Rank 3 plants do not have a threat code extension due to difficulty in ascertaining threats for these species. Rank 1A and 2A plants also do not have threat code extensions since there are no known extant populations of the plants in California.

Threat Code extensions and their meanings:

- .1** - Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- .2** - Moderately threatened in California (20-80% of occurrences threatened / moderate degree and immediacy of threat)
- .3** - Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

¹ In March, 2010, DFG changed the name of "CNPS List" or "CNPS Ranks" to "California Rare Plant Rank" (or CRPR). This was done to reduce confusion over the fact that CNPS and DFG jointly manage the Rare Plant Status Review groups (300+ botanical experts from government, academia, NGOs and the private sector) and that the rank assignments are the product of a collaborative effort and not solely a CNPS assignment.

In July 2013, CNPS revised the Rare Plant Ranks in order to better define and categorize rarity in California's flora. In essence, Rank 2 was split into Rank 2A and Rank 2B to be complementary to the already existing 1A and 1B ranks. This split in Rank 2 plants resulted in five Rank 2 plants moving to Rank 2A (Presumed extirpated in California, but more common elsewhere) and the remaining Rank 2 plants being re-classified as Rank 2B (Rare, Threatened or Endangered in California, but more common elsewhere).

Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities

State of California
CALIFORNIA NATURAL RESOURCES AGENCY
Department of Fish and Game
November 24, 2009²

INTRODUCTION AND PURPOSE

The conservation of special status native plants and their habitats, as well as natural communities, is integral to maintaining biological diversity. The purpose of these protocols is to facilitate a consistent and systematic approach to the survey and assessment of special status native plants and natural communities so that reliable information is produced and the potential of locating a special status plant species or natural community is maximized. They may also help those who prepare and review environmental documents determine when a botanical survey is needed, how field surveys may be conducted, what information to include in a survey report, and what qualifications to consider for surveyors. The protocols may help avoid delays caused when inadequate biological information is provided during the environmental review process; assist lead, trustee and responsible reviewing agencies to make an informed decision regarding the direct, indirect, and cumulative effects of a proposed development, activity, or action on special status native plants and natural communities; meet California Environmental Quality Act (CEQA)³ requirements for adequate disclosure of potential impacts; and conserve public trust resources.

DEPARTMENT OF FISH AND GAME TRUSTEE AND RESPONSIBLE AGENCY MISSION

The mission of the Department of Fish and Game (DFG) is to manage California's diverse wildlife and native plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. DFG has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (Fish and Game Code §1802). DFG, as trustee agency under CEQA §15386, provides expertise in reviewing and commenting on environmental documents and makes protocols regarding potential negative impacts to those resources held in trust for the people of California.

Certain species are in danger of extinction because their habitats have been severely reduced in acreage, are threatened with destruction or adverse modification, or because of a combination of these and other factors. The California Endangered Species Act (CESA) provides additional protections for such species, including take prohibitions (Fish and Game Code §2050 *et seq.*). As a responsible agency, DFG has the authority to issue permits for the take of species listed under CESA if the take is incidental to an otherwise lawful activity; DFG has determined that the impacts of the take have been minimized and fully mitigated; and, the take would not jeopardize the continued existence of the species (Fish and Game Code §2081). Surveys are one of the preliminary steps to detect a listed or special status plant species or natural community that may be impacted significantly by a project.

DEFINITIONS

Botanical surveys provide information used to determine the potential environmental effects of proposed projects on all special status plants and natural communities as required by law (i.e., CEQA, CESA, and Federal Endangered Species Act (ESA)). Some key terms in this document appear in **bold font** for assistance in use of the document.

For the purposes of this document, **special status plants** include all plant species that meet one or more of the following criteria⁴:

² This document replaces the DFG document entitled "Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities."

³ <http://ceres.ca.gov/ceqa/>

⁴ Adapted from the East Alameda County Conservation Strategy available at http://www.fws.gov/sacramento/EACCS/Documents/080228_Species_Evaluation_EACCS.pdf

- Listed or proposed for listing as threatened or endangered under ESA or candidates for possible future listing as threatened or endangered under the ESA (50 CFR §17.12).
- Listed⁵ or candidates for listing by the State of California as threatened or endangered under CESA (Fish and Game Code §2050 *et seq.*). A species, subspecies, or variety of plant is **endangered** when the prospects of its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, disease, or other factors (Fish and Game Code §2062). A plant is **threatened** when it is likely to become endangered in the foreseeable future in the absence of special protection and management measures (Fish and Game Code §2067).
- Listed as rare under the California Native Plant Protection Act (Fish and Game Code §1900 *et seq.*). A plant is **rare** when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901).
- Meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:
 - ♦ Species considered by the California Native Plant Society (CNPS) to be “rare, threatened or endangered in California” (Lists 1A, 1B and 2);
 - ♦ Species that may warrant consideration on the basis of local significance or recent biological information⁶;
 - ♦ Some species included on the California Natural Diversity Database’s (CNDDDB) *Special Plants, Bryophytes, and Lichens List* (California Department of Fish and Game 2008)⁷.
- Considered a **locally significant species**, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

Special status natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special status species or their habitat. The most current version of the Department’s *List of California Terrestrial Natural Communities*⁸ indicates which natural communities are of special status given the current state of the California classification.

Most types of wetlands and riparian communities are considered special status natural communities due to their limited distribution in California. These natural communities often contain special status plants such as those described above. These protocols may be used in conjunction with protocols formulated by other agencies, for example, those developed by the U.S. Army Corps of Engineers to delineate jurisdictional wetlands⁹ or by the U.S. Fish and Wildlife Service to survey for the presence of special status plants¹⁰.

BOTANICAL SURVEYS

⁵ Refer to current online published lists available at: <http://www.dfg.ca.gov/biogeodata>.

⁶ In general, CNPS List 3 plants (plants about which more information is needed) and List 4 plants (plants of limited distribution) may not warrant consideration under CEQA §15380. These plants may be included on special status plant lists such as those developed by counties where they would be addressed under CEQA §15380. List 3 plants may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a List 4 plant are significant even if individual project impacts are not. List 3 and 4 plants are also included in the California Natural Diversity Database’s (CNDDDB) *Special Plants, Bryophytes, and Lichens List*. [Refer to the current online published list available at: <http://www.dfg.ca.gov/biogeodata>.] Data on Lists 3 and 4 plants should be submitted to CNDDDB. Such data aids in determining or revising priority ranking.

⁷ Refer to current online published lists available at: <http://www.dfg.ca.gov/biogeodata>.

⁸ <http://www.dfg.ca.gov/biogeodata/veqcamp/pdfs/natcomlist.pdf>. The rare natural communities are asterisked on this list.

⁹ <http://www.wetlands.com/regs/tpge02e.htm>

¹⁰ U.S. Fish and Wildlife Service Survey Guidelines available at <http://www.fws.gov/sacramento/es/protocol.htm>

Conduct botanical surveys prior to the commencement of any activities that may modify vegetation, such as clearing, mowing, or ground-breaking activities. It is appropriate to conduct a botanical field survey when:

- Natural (or naturalized) vegetation occurs on the site, and it is unknown if special status plant species or natural communities occur on the site, and the project has the potential for direct or indirect effects on vegetation; or
- Special status plants or natural communities have historically been identified on the project site; or
- Special status plants or natural communities occur on sites with similar physical and biological properties as the project site.

SURVEY OBJECTIVES

Conduct field surveys in a manner which maximizes the likelihood of locating special status plant species or special status natural communities that may be present. Surveys should be **floristic in nature**, meaning that every plant taxon that occurs on site is identified to the taxonomic level necessary to determine rarity and listing status. “Focused surveys” that are limited to habitats known to support special status species or are restricted to lists of likely potential species are not considered floristic in nature and are not adequate to identify all plant taxa on site to the level necessary to determine rarity and listing status. Include a list of plants and natural communities detected on the site for each botanical survey conducted. More than one field visit may be necessary to adequately capture the floristic diversity of a site. An indication of the prevalence (estimated total numbers, percent cover, density, etc.) of the species and communities on the site is also useful to assess the significance of a particular population.

SURVEY PREPARATION

Before field surveys are conducted, compile relevant botanical information in the general project area to provide a regional context for the investigators. Consult the CNDDDB¹¹ and BIOS¹² for known occurrences of special status plants and natural communities in the project area prior to field surveys. Generally, identify vegetation and habitat types potentially occurring in the project area based on biological and physical properties of the site and surrounding ecoregion¹³, unless a larger assessment area is appropriate. Then, develop a list of special status plants with the potential to occur within these vegetation types. This list can serve as a tool for the investigators and facilitate the use of reference sites; however, special status plants on site might not be limited to those on the list. Field surveys and subsequent reporting should be comprehensive and floristic in nature and not restricted to or focused only on this list. Include in the survey report the list of potential special status species and natural communities, and the list of references used to compile the background botanical information for the site.

SURVEY EXTENT

Surveys should be comprehensive over the entire site, including areas that will be directly or indirectly impacted by the project. Adjoining properties should also be surveyed where direct or indirect project effects, such as those from fuel modification or herbicide application, could potentially extend offsite. Pre-project surveys restricted to known CNDDDB rare plant locations may not identify all special status plants and communities present and do not provide a sufficient level of information to determine potential impacts.

FIELD SURVEY METHOD

Conduct surveys using **systematic field techniques** in all habitats of the site to ensure thorough coverage of potential impact areas. The level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity, which determines the distance at which plants can be identified. Conduct surveys by walking over the entire site to ensure thorough coverage, noting all plant taxa observed. The level of effort should be sufficient to provide comprehensive reporting. For example, one person-hour per eight acres per survey date is needed for a comprehensive field survey in grassland with medium diversity and moderate terrain¹⁴, with additional time allocated for species identification.

¹¹ Available at <http://www.dfg.ca.gov/biogeodata/cnddb>

¹² <http://www.bios.dfg.ca.gov/>

¹³ [Ecological Subregions of California](http://www.fs.fed.us/r5/projects/ecoregions/toc.htm), available at <http://www.fs.fed.us/r5/projects/ecoregions/toc.htm>

¹⁴ Adapted from U.S. Fish and Wildlife Service kit fox survey guidelines available at www.fws.gov/sacramento/es/documents/kitfox_no_protocol.pdf

TIMING AND NUMBER OF VISITS

Conduct surveys in the field at the time of year when species are both evident and identifiable. Usually this is during flowering or fruiting. Space visits throughout the growing season to accurately determine what plants exist on site. Many times this may involve multiple visits to the same site (e.g. in early, mid, and late-season for flowering plants) to capture the floristic diversity at a level necessary to determine if special status plants are present¹⁵. The timing and number of visits are determined by geographic location, the natural communities present, and the weather patterns of the year(s) in which the surveys are conducted.

REFERENCE SITES

When special status plants are known to occur in the type(s) of habitat present in the project area, observe reference sites (nearby accessible occurrences of the plants) to determine whether those species are identifiable at the time of the survey and to obtain a visual image of the target species, associated habitat, and associated natural community.

USE OF EXISTING SURVEYS

For some sites, floristic inventories or special status plant surveys may already exist. Additional surveys may be necessary for the following reasons:

- Surveys are not current¹⁶; or
- Surveys were conducted in natural systems that commonly experience year to year fluctuations such as periods of drought or flooding (e.g. vernal pool habitats or riverine systems); or
- Surveys are not comprehensive in nature; or fire history, land use, physical conditions of the site, or climatic conditions have changed since the last survey was conducted¹⁷; or
- Surveys were conducted in natural systems where special status plants may not be observed if an annual above ground phase is not visible (e.g. flowers from a bulb); or
- Changes in vegetation or species distribution may have occurred since the last survey was conducted, due to habitat alteration, fluctuations in species abundance and/or seed bank dynamics.

NEGATIVE SURVEYS

Adverse conditions may prevent investigators from determining the presence of, or accurately identifying, some species in potential habitat of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any given year. Discuss such conditions in the report.

The failure to locate a known special status plant occurrence during one field season does not constitute evidence that this plant occurrence no longer exists at this location, particularly if adverse conditions are present. For example, surveys over a number of years may be necessary if the species is an annual plant having a persistent, long-lived seed bank and is known not to germinate every year. Visits to the site in more than one year increase the likelihood of detection of a special status plant especially if conditions change. To further substantiate negative findings for a known occurrence, a visit to a nearby reference site may ensure that the timing of the survey was appropriate.

REPORTING AND DATA COLLECTION

Adequate information about special status plants and natural communities present in a project area will enable reviewing agencies and the public to effectively assess potential impacts to special status plants or natural communities¹⁸ and will guide

¹⁵ U.S. Fish and Wildlife Service Survey Guidelines available at <http://www.fws.gov/sacramento/es/protocol.htm>

¹⁶ Habitats, such as grasslands or desert plant communities that have annual and short-lived perennial plants as major floristic components may require yearly surveys to accurately document baseline conditions for purposes of impact assessment. In forested areas, however, surveys at intervals of five years may adequately represent current conditions. For forested areas, refer to "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at <https://r1.dfg.ca.gov/portal/Portals/12/THPBotanicalGuidelinesJuly2005.pdf>

¹⁷ U.S. Fish and Wildlife Service Survey Guidelines available at http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/botanicalinventories.pdf

¹⁸ Refer to current online published lists available at: <http://www.dfg.ca.gov/biogeodata>. For Timber Harvest Plans (THPs) please refer to the "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at <https://r1.dfg.ca.gov/portal/Portals/12/THPBotanicalGuidelinesJuly2005.pdf>

the development of minimization and mitigation measures. The next section describes necessary information to assess impacts. For comprehensive, systematic surveys where no special status species or natural communities were found, reporting and data collection responsibilities for investigators remain as described below, excluding specific occurrence information.

SPECIAL STATUS PLANT OR NATURAL COMMUNITY OBSERVATIONS

Record the following information for locations of each special status plant or natural community detected during a field survey of a project site.

- A detailed map (1:24,000 or larger) showing locations and boundaries of each special status species occurrence or natural community found as related to the proposed project. Mark occurrences and boundaries as accurately as possible. Locations documented by use of global positioning system (GPS) coordinates must include the datum¹⁹ in which they were collected;
- The site-specific characteristics of occurrences, such as associated species, habitat and microhabitat, structure of vegetation, topographic features, soil type, texture, and soil parent material. If the species is associated with a wetland, provide a description of the direction of flow and integrity of surface or subsurface hydrology and adjacent off-site hydrological influences as appropriate;
- The number of individuals in each special status plant population as counted (if population is small) or estimated (if population is large);
- If applicable, information about the percentage of individuals in each life stage such as seedlings vs. reproductive individuals;
- The number of individuals of the species per unit area, identifying areas of relatively high, medium and low density of the species over the project site; and
- Digital images of the target species and representative habitats to support information and descriptions.

FIELD SURVEY FORMS

When a special status plant or natural community is located, complete and submit to the CNDDDB a California Native Species (or Community) Field Survey Form²⁰ or equivalent written report, accompanied by a copy of the relevant portion of a 7.5 minute topographic map with the occurrence mapped. Present locations documented by use of GPS coordinates in map and digital form. Data submitted in digital form must include the datum²¹ in which it was collected. If a potentially undescribed special status natural community is found on the site, document it with a Rapid Assessment or Relevé form²² and submit it with the CNDDDB form.

VOUCHER COLLECTION

Voucher specimens provide verifiable documentation of species presence and identification as well as a public record of conditions. This information is vital to all conservation efforts. Collection of voucher specimens should be conducted in a manner that is consistent with conservation ethics, and is in accordance with applicable state and federal permit requirements (e.g. incidental take permit, scientific collection permit). Voucher collections of special status species (or suspected special status species) should be made only when such actions would not jeopardize the continued existence of the population or species.

Deposit voucher specimens with an indexed regional herbarium²³ no later than 60 days after the collections have been made. Digital imagery can be used to supplement plant identification and document habitat. Record all relevant permittee names and permit numbers on specimen labels. A collecting permit is required prior to the collection of State-listed plant species²⁴.

¹⁹ NAD83, NAD27 or WGS84

²⁰ <http://www.dfg.ca.gov/biogeodata>

²¹ NAD83, NAD27 or WGS84

²² http://www.dfg.ca.gov/biogeodata/vegcamp/veg_publications_protocols.asp

²³ For a complete list of indexed herbaria, see: Holmgren, P., N. Holmgren and L. Barnett. 1990. Index Herbariorum, Part 1: Herbaria of the World. New York Botanic Garden, Bronx, New York. 693 pp. Or: <http://www.nybg.org/bsci/ih/ih.html>

²⁴ Refer to current online published lists available at: <http://www.dfg.ca.gov/biogeodata>.

BOTANICAL SURVEY REPORTS

Include reports of botanical field surveys containing the following information with project environmental documents:

- **Project and site description**
 - ♦ A description of the proposed project;
 - ♦ A detailed map of the project location and study area that identifies topographic and landscape features and includes a north arrow and bar scale; and,
 - ♦ A written description of the biological setting, including vegetation²⁵ and structure of the vegetation; geological and hydrological characteristics; and land use or management history.

- **Detailed description of survey methodology and results**
 - ♦ Dates of field surveys (indicating which areas were surveyed on which dates), name of field investigator(s), and total person-hours spent on field surveys;
 - ♦ A discussion of how the timing of the surveys affects the comprehensiveness of the survey;
 - ♦ A list of potential special status species or natural communities;
 - ♦ A description of the area surveyed relative to the project area;
 - ♦ References cited, persons contacted, and herbaria visited;
 - ♦ Description of reference site(s), if visited, and phenological development of special status plant(s);
 - ♦ A list of all taxa occurring on the project site. Identify plants to the taxonomic level necessary to determine whether or not they are a special status species;
 - ♦ Any use of existing surveys and a discussion of applicability to this project;
 - ♦ A discussion of the potential for a false negative survey;
 - ♦ Provide detailed data and maps for all special plants detected. Information specified above under the headings “Special Status Plant or Natural Community Observations,” and “Field Survey Forms,” should be provided for locations of each special status plant detected;
 - ♦ Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms should be sent to the CNDDDB and included in the environmental document as an Appendix. It is not necessary to submit entire environmental documents to the CNDDDB; and,
 - ♦ The location of voucher specimens, if collected.

- **Assessment of potential impacts**
 - ♦ A discussion of the significance of special status plant populations in the project area considering nearby populations and total species distribution;
 - ♦ A discussion of the significance of special status natural communities in the project area considering nearby occurrences and natural community distribution;
 - ♦ A discussion of direct, indirect, and cumulative impacts to the plants and natural communities;
 - ♦ A discussion of threats, including those from invasive species, to the plants and natural communities;
 - ♦ A discussion of the degree of impact, if any, of the proposed project on unoccupied, potential habitat of the species;
 - ♦ A discussion of the immediacy of potential impacts; and,
 - ♦ Recommended measures to avoid, minimize, or mitigate impacts.

²⁵ A vegetation map that uses the National Vegetation Classification System (<http://biology.usgs.gov/npsveg/nvcs.html>), for example *A Manual of California Vegetation*, and highlights any special status natural communities. If another vegetation classification system is used, the report should reference the system, provide the reason for its use, and provide a crosswalk to the National Vegetation Classification System.

QUALIFICATIONS

Botanical consultants should possess the following qualifications:

- Knowledge of plant taxonomy and natural community ecology;
- Familiarity with the plants of the area, including special status species;
- Familiarity with natural communities of the area, including special status natural communities;
- Experience conducting floristic field surveys or experience with floristic surveys conducted under the direction of an experienced surveyor;
- Familiarity with the appropriate state and federal statutes related to plants and plant collecting; and,
- Experience with analyzing impacts of development on native plant species and natural communities.

SUGGESTED REFERENCES

- Barbour, M., T. Keeler-Wolf, and A. A. Schoenherr (eds.). 2007. Terrestrial vegetation of California (3rd Edition). University of California Press.
- Bonham, C.D. 1988. Measurements for terrestrial vegetation. John Wiley and Sons, Inc., New York, NY.
- California Native Plant Society. Most recent version. Inventory of rare and endangered plants (online edition). California Native Plant Society, Sacramento, CA. Online URL <http://www.cnps.org/inventory>.
- California Natural Diversity Database. Most recent version. Special vascular plants, bryophytes and lichens list. Updated quarterly. Available at www.dfg.ca.gov.
- Elzinga, C.L., D.W. Salzer, and J. Willoughby. 1998. Measuring and monitoring plant populations. BLM Technical Reference 1730-1. U.S. Dept. of the Interior, Bureau of Land Management, Denver, Colorado.
- Leppig, G. and J.W. White. 2006. Conservation of peripheral plant populations in California. *Madroño* 53:264-274.
- Mueller-Dombois, D. and H. Ellenberg. 1974. Aims and methods of vegetation ecology. John Wiley and Sons, Inc., New York, NY.
- U.S. Fish and Wildlife Service. 1996. Guidelines for conducting and reporting botanical inventories for federally listed plants on the Santa Rosa Plain. Sacramento, CA.
- U.S. Fish and Wildlife Service. 1996. Guidelines for conducting and reporting botanical inventories for federally listed, proposed and candidate plants. Sacramento, CA.
- Van der Maarel, E. 2005. Vegetation Ecology. Blackwell Science Ltd., Malden, MA.

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Bryophytes

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Anomobryum julaceum</i> slender silver moss	NBMUS80010	None	None	G4G5/S2	2B.2		No	Yes
<i>Bruchia bolanderi</i> Bolander's bruchia	NBMUS13010	None	None	G3/S3?	2B.2	USFS:S	No	Yes
<i>Buxbaumia viridis</i> buxbaumia moss	NBMUS1B040	None	None	G4G5/S2	2B.2	BLM:S USFS:S	No	Yes
<i>Campylopodia stenocarpa</i> flagella-like atractylocarpus	NBMUS84010	None	None	G5/S1?	2B.2		No	Yes
<i>Dacryophyllum falcifolium</i> tear drop moss	NBMUS8Z010	None	None	G1/S1	1B.3	USFS:S	No	Yes
<i>Didymodon norrisii</i> Norris' beard moss	NBMUS2C0H0	None	None	G3G4/S3S4	2B.2		No	Yes
<i>Discelium nudum</i> naked flag moss	NBMUS2E010	None	None	G3G4/S1	2B.2		No	Yes
<i>Entosthodon kochii</i> Koch's cord moss	NBMUS2P050	None	None	G1/S1	1B.3		No	Yes
<i>Fissidens aphelotaxifolius</i> brook pocket moss	NBMUS2W290	None	None	G3G4/S1	2B.2	USFS:S	No	Yes
<i>Fissidens pauperculus</i> minute pocket moss	NBMUS2W0U0	None	None	G3?/S1	1B.2	USFS:S	No	Yes
<i>Geothallus tuberosus</i> Campbell's liverwort	NBHEP1C010	None	None	G1/S1	1B.1		No	Yes
<i>Helodium blandowii</i> Blandow's bog moss	NBMUS3C010	None	None	G5/S1	2B.3	USFS:S	No	Yes
<i>Meesia triquetra</i> three-ranked hump moss	NBMUS4L020	None	None	G5/S4	4.2		No	Yes
<i>Meesia uliginosa</i> broad-nerved hump moss	NBMUS4L030	None	None	G4/S3	2B.2	USFS:S	No	Yes
<i>Mielichhoferia elongata</i> elongate copper moss	NBMUS4Q022	None	None	G4/S2	2B.2	USFS:S	No	Yes
<i>Mielichhoferia mielichhoferiana</i> Mielichhofer's copper moss	NBMUS4Q020	None	None	G2G3/S1	2B.3		No	Yes
<i>Mielichhoferia tehamensis</i> Lassen Peak copper moss	NBMUS4Q030	None	None	G2/S2	1B.3		No	Yes
<i>Myurella julacea</i> small mousetail moss	NBMUS4U010	None	None	G5/S1S2	2B.3		No	Yes
<i>Orthotrichum kellmanii</i> Kellman's bristle moss	NBMUS56190	None	None	G2/S2	1B.2	USFS:S	No	Yes

April, 10, 2014

Page 1 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDB ?
<i>Orthotrichum shevockii</i> Shevock's bristle moss	NBMUS56150	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Orthotrichum spjutii</i> Spjut's bristle moss	NBMUS56160	None	None	G1/S1	1B.3		No	Yes
<i>Pohlia tundrae</i> tundra thread moss	NBMUS5S1B0	None	None	G2G3/S2S3	2B.3		No	Yes
<i>Pterygoneurum californicum</i> California chalk moss	NBMUS65020	None	None	GH/SH	1B.1		No	Yes
<i>Ptilidium californicum</i> Pacific fuzzwort	NBHEP2U010	None	None	G3G4/S3?	4.3	BLM:S	No	Yes
<i>Riella americana</i> American riella	NBHEP31020	None	None	G2?/S1?	2B.2		No	Yes
<i>Schizymerium shevockii</i> Shevock's copper moss	NBMUSA1010	None	None	G1/S1	1B.2		No	Yes
<i>Scopelophila cataractae</i> tongue-leaf copper moss	NBMUS6U010	None	None	G3/S1	2B.2		No	Yes
<i>Sphaerocarpos drewei</i> bottle liverwort	NBHEP35030	None	None	G1/S1	1B.1		No	Yes
<i>Tortella alpicola</i> alpine crisp moss	NBMUS7K100	None	None	G4G5/S1	2B.3		No	Yes
<i>Tortula californica</i> California screw moss	NBMUS7L090	None	None	G2?/S2	1B.2	BLM:S	No	Yes
<i>Trichodon cylindricus</i> cylindrical trichodon	NBMUS7N020	None	None	G4G5/S2	2B.2		No	Yes
<i>Triquetrella californica</i> coastal triquetrella	NBMUS7S010	None	None	G1/S1	1B.2	USFS:S	No	Yes

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Lichens

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDB ?
<i>Calicium adpersum</i> spiral-spored gilded-head pin lichen	NLT0005640	None	None	G3G4/S1?		USFS:S	No	Yes
<i>Cladonia firma</i> firm cup lichen	NLT0008460	None	None	G4/S1			No	Yes
<i>Graphis saxorum</i> Baja rock lichen	NLTES29470	None	None	G1G3/S1S3			No	Yes
<i>Mobergia calculiformis</i> light gray lichen	NLT0018660	None	None	G1/S1			No	Yes
<i>Peltigera gowardii</i> aquatic felt lichen	NLVER00460	None	None	G3G4/S3.2		USFS:S	No	Yes
<i>Solorina spongiosa</i> Solorina spongiosa	NLT0028030	None	None	G4G5/S1			No	Yes
<i>Sulcaria isidiifera</i> splitting yarn lichen	NLTEST0020	None	None	G1/S1			No	Yes
<i>Texosporium sancti-jacobi</i> woven-spored lichen	NLTEST7980	None	None	G3/S1			No	Yes
<i>Thamnomia vermicularis</i> thamnomia lichen	NLTES43860	None	None	G3G5/S1			No	Yes
<i>Usnea longissima</i> long-beard lichen	NLLEC5P420	None	None	G4/S4.2		BLM:S	No	Yes

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Vascular Plants

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Abies amabilis</i> Pacific silver fir	PGPIN01010	None	None	G5/S3	2B.3		No	Yes
<i>Abies bracteata</i> bristlecone fir	PGPIN01030	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Abies lasiocarpa</i> var. <i>lasiocarpa</i> subalpine fir	PGPIN01072	None	None	G5T5/S3	2B.3		No	Yes
<i>Abronia alpina</i> Ramshaw Meadows abronia	PDNYC01020	Candidate	None	G2/S2	1B.1	USFS:S	No	Yes
<i>Abronia maritima</i> red sand-verbena	PDNYC010E0	None	None	G4?/S3?	4.2		No	No
<i>Abronia nana</i> var. <i>covillei</i> Coville's dwarf abronia	PDNYC010H1	None	None	G4T3/S3.2	4.2	USFS:S	No	No
<i>Abronia umbellata</i> var. <i>breviflora</i> pink sand-verbena	PDNYC010N4	None	None	G4G5T2/S1	1B.1	BLM:S	No	Yes
<i>Abronia villosa</i> var. <i>aurita</i> chaparral sand-verbena	PDNYC010P1	None	None	G5T3T4/S2	1B.1	BLM:S USFS:S	No	Yes
<i>Abutilon parvulum</i> dwarf abutilon	PDMAL020F0	None	None	G5/S2	2B.3		No	Yes
<i>Acanthomintha duttonii</i> San Mateo thorn-mint	PDLAM01040	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Acanthomintha ilicifolia</i> San Diego thorn-mint	PDLAM01010	Threatened	Endangered	G1/S1	1B.1		No	Yes
<i>Acanthomintha lanceolata</i> Santa Clara thorn-mint	PDLAM01020	None	None	G3/S3.2	4.2		No	No
<i>Acanthomintha obovata</i> ssp. <i>cordata</i> heart-leaved thorn-mint	PDLAM01033	None	None	G3?T3?/S3.2?	4.2		No	No
<i>Acanthomintha obovata</i> ssp. <i>obovata</i> San Benito thorn-mint	PDLAM01032	None	None	G3?T3?/S3.2?	4.2		No	No
<i>Acanthoscyphus parishii</i> var. <i>abramsii</i> Abrams' oxytheca	PDPGN0J041	None	None	G4?T2/S2	1B.2	USFS:S	No	Yes
<i>Acanthoscyphus parishii</i> var. <i>cienegensis</i> Cienega Seca oxytheca	PDPGN0J042	None	None	G4?T2/S2	1B.3	USFS:S	No	Yes
<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i> Cushenbury oxytheca	PDPGN0J043	Endangered	None	G4?T1/S1	1B.1		No	Yes
<i>Acanthoscyphus parishii</i> var. <i>parishii</i> Parish's oxytheca	PDPGN0J044	None	None	G4?T3/S3.2	4.2		No	No

April, 10, 2014

Page 4 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Acleisanthes longiflora</i> angel trumpets	PDNYC02040	None	None	G5/S1	2B.3		No	Yes
<i>Acleisanthes nevadensis</i> desert wing-fruit	PDNYC0F040	None	None	G5/S1	2B.3		No	Yes
<i>Acmispon argophyllus</i> var. <i>adsurgens</i> San Clemente Island bird's-foot trefoil	PDFAB2A041	None	Endangered	G5T1/S1	1B.1		No	Yes
<i>Acmispon argophyllus</i> var. <i>niveus</i> Santa Cruz Island bird's-foot trefoil	PDFAB2A048	None	Endangered	G5T3/S3	4.2		No	Yes
<i>Acmispon argyraeus</i> var. <i>multicaulis</i> scrub lotus	PDFAB2A052	None	None	G4?T2/S2	1B.3	BLM:S	No	Yes
<i>Acmispon argyraeus</i> var. <i>notitius</i> Providence Mountains lotus	PDFAB2A053	None	None	G4?T2/S2	1B.3		No	Yes
<i>Acmispon dendroideus</i> var. <i>dendroideus</i> island broom	PDFAB2A1G1	None	None	G4T3/S3.2	4.2		No	No
<i>Acmispon dendroideus</i> var. <i>traskiae</i> San Clemente Island lotus	PDFAB2A1G2	Threatened	Endangered	G4T2/S2	1B.1		No	Yes
<i>Acmispon dendroideus</i> var. <i>veatchii</i> San Miguel Island deerweed	PDFAB2A1G3	None	None	G4T3/S3.3	4.3		No	No
<i>Acmispon haydonii</i> pygmy lotus	PDFAB2A0H0	None	None	G3/S2	1B.3		No	Yes
<i>Acmispon prostratus</i> Nuttall's acmispon	PDFAB2A0V0	None	None	G1/S1	1B.1		No	Yes
<i>Acmispon rubriflorus</i> red-flowered bird's-foot-trefoil	PDFAB2A150	None	None	G1/S1	1B.1	BLM:S	No	Yes
<i>Adolphia californica</i> California adolphia	PDRHA01010	None	None	G3G4/S2	2B.1		No	Yes
<i>Agave shawii</i> var. <i>shawii</i> Shaw's agave	PMAGA010P1	None	None	G2G3T2T3/S1	2B.1		No	Yes
<i>Agave utahensis</i> var. <i>eborispina</i> ivory-spined agave	PMAGA010S1	None	None	G4T3Q/S2	1B.3	BLM:S	No	Yes
<i>Agave utahensis</i> var. <i>nevadensis</i> Clark Mountain agave	PMAGA010S3	None	None	G4T3Q/S3.2	4.2		No	No
<i>Ageratina herbacea</i> desert ageratina	PDASTBX0J0	None	None	G5/S2	2B.3		No	Yes
<i>Ageratina shastensis</i> Shasta ageratina	PDASTBX0R0	None	None	G2/S2	1B.2		No	Yes
<i>Agrostis blasdalei</i> Blasdale's bent grass	PMPOA04060	None	None	G2/S2	1B.2	BLM:S	No	Yes

April, 10, 2014

Page 5 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Agrostis hendersonii</i> Henderson's bent grass	PMPOA040K0	None	None	G2Q/S2	3.2		No	Yes
<i>Agrostis hooveri</i> Hoover's bent grass	PMPOA040M0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Agrostis humilis</i> mountain bent grass	PMPOA040P0	None	None	G4Q/S2	2B.3		No	Yes
<i>Agrostis lacuna-vernalis</i> vernal pool bent grass	PMPOA041N0	None	None	G1/S1	1B.1	BLM:S	No	Yes
<i>Aliciella ripleyi</i> Ripley's aliciella	PDPLM041E0	None	None	G3/S2	2B.3		No	Yes
<i>Aliciella triodan</i> coyote gilia	PDPLM041T0	None	None	G5/S2	2B.2		No	Yes
<i>Alisma gramineum</i> grass alisma	PMALI01010	None	None	G5/S1S2	2B.2		No	Yes
<i>Allium abramsii</i> Abrams' onion	PMLIL02360	None	None	G2G3/S2S3	1B.2		No	Yes
<i>Allium atrorubens</i> var. <i>atorubens</i> Great Basin onion	PMLIL02061	None	None	G4T4/S2	2B.3		No	Yes
<i>Allium atrorubens</i> var. <i>cristatum</i> Inyo onion	PMLIL02063	None	None	G4T3?/S3.3	4.3		No	No
<i>Allium fimbriatum</i> var. <i>purdyi</i> Purdy's onion	PMLIL020Y7	None	None	G4G5T3/S3.3?	4.3		No	No
<i>Allium hickmanii</i> Hickman's onion	PMLIL02140	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Allium hoffmanii</i> Beegum onion	PMLIL02150	None	None	G3/S3.3	4.3		No	No
<i>Allium howellii</i> var. <i>clokeyi</i> Mt. Pinos onion	PMLIL02161	None	None	G4T2/S2	1B.3	USFS:S	No	Yes
<i>Allium jepsonii</i> Jepson's onion	PMLIL022V0	None	None	G1/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Allium marvinii</i> Yucaipa onion	PMLIL02330	None	None	G1/S1	1B.1	USFS:S	No	Yes
<i>Allium munzii</i> Munz's onion	PMLIL022Z0	Endangered	Threatened	G1/S1	1B.1		No	Yes
<i>Allium nevadense</i> Nevada onion	PMLIL021J0	None	None	G4/S2	2B.3		No	Yes
<i>Allium parishii</i> Parish's onion	PMLIL021N0	None	None	G3/S3.3?	4.3		No	No

April, 10, 2014

Page 6 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Allium peninsulare</i> var. <i>franciscanum</i> Franciscan onion	PMLIL021R1	None	None	G5T1/S1	1B.2		No	Yes
<i>Allium punctum</i> dotted onion	PMLIL021Y0	None	None	G3?/S1	2B.2		No	Yes
<i>Allium sanbornii</i> var. <i>congdonii</i> Congdon's onion	PMLIL02211	None	None	G3T3/S3.3	4.3		No	No
<i>Allium sanbornii</i> var. <i>sanbornii</i> Sanborn's onion	PMLIL02212	None	None	G3T3/S3.2	4.2		No	No
<i>Allium sharsmithiae</i> Sharsmith's onion	PMLIL02310	None	None	G2/S2	1B.3		No	Yes
<i>Allium shevockii</i> Spanish Needle onion	PMLIL022M0	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Allium siskiyouense</i> Siskiyou onion	PMLIL02280	None	None	G4/S3.3?	4.3		No	No
<i>Allium tribracteatum</i> three-bracted onion	PMLIL022D0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Allium tuolumnense</i> Rawhide Hill onion	PMLIL022W0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Allium yosemitense</i> Yosemite onion	PMLIL022L0	None	Rare	G3/S3	1B.3	USFS:S	No	Yes
<i>Alopecurus aequalis</i> var. <i>sonomensis</i> Sonoma alopecurus	PMPOA07012	Endangered	None	G5T1Q/S1	1B.1		No	Yes
<i>Aloysia wrightii</i> Wright's beebrush	PDVER02040	None	None	G5/S3.3	4.3		No	No
<i>Amaranthus watsonii</i> Watson's amaranth	PDAMA04170	None	None	G4G5/S3.3	4.3		No	No
<i>Ambrosia chenopodiifolia</i> San Diego bur-sage	PDAST0C080	None	None	G2G3/S1	2B.1		No	Yes
<i>Ambrosia monogyra</i> singlewhorl burrobrush	PDAST50010	None	None	G5/S2	2B.2		No	Yes
<i>Ambrosia pumila</i> San Diego ambrosia	PDAST0C0M0	Endangered	None	G1/S1	1B.1		No	Yes
<i>Ammoselinum giganteum</i> desert sand-parsley	PDAPI05020	None	None	G2G3/SH	2B.3		No	Yes
<i>Amorpha californica</i> var. <i>napensis</i> Napa false indigo	PDFAB08012	None	None	G4T2/S2	1B.2		No	Yes
<i>Amsinckia douglasiana</i> Douglas' fiddleneck	PDBOR01010	None	None	G3/S3.2	4.2		No	No

April, 10, 2014

Page 7 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Amsinckia furcata</i> forked fiddleneck	PDBOR010D1	None	None	G3/S3.2	4.2		No	No
<i>Amsinckia grandiflora</i> large-flowered fiddleneck	PDBOR01050	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Amsinckia lunaris</i> bent-flowered fiddleneck	PDBOR01070	None	None	G2?/S2?	1B.2	BLM:S	No	Yes
<i>Ancistrocarphus keilii</i> Santa Ynez groundstar	PDASTD5020	None	None	G1/S1	1B.1	BLM:S	No	Yes
<i>Androsace elongata ssp. acuta</i> California androsace	PDPRI02031	None	None	G5? T3T4/S3.2?	4.2		No	No
<i>Androsace filiformis</i> slender-stemmed androsace	PDPRI02040	None	None	G4/S1	2B.3		No	Yes
<i>Androsace occidentalis</i> western androsace	PDPRI02050	None	None	G5/S2	2B.3		No	Yes
<i>Androstephium brevilorum</i> small-flowered androstephium	PMLIL06010	None	None	G5/S2S3	2B.2		No	Yes
<i>Angelica callii</i> Call's angelica	PDAPI07060	None	None	G3/S3.3?	4.3		No	No
<i>Angelica kingii</i> King's angelica	PDAPI070D0	None	None	G4/S3.2	4.2		No	No
<i>Angelica lucida</i> sea-watch	PDAPI070G0	None	None	G5/S2S3	4.2		No	No
<i>Anisocarpus scabridus</i> scabrid alpine tarplant	PDASTDU020	None	None	G2G3/S2S3	1B.3	BLM:S USFS:S	No	Yes
<i>Antennaria flagellaris</i> stoloniferous pussy-toes	PDAST0H0W0	None	None	G5?/S3.2	4.2		No	Yes
<i>Antennaria lanata</i> woolly pussy-toes	PDAST0H0B0	None	None	G5Q/S1	3.2		No	Yes
<i>Antennaria marginata</i> white-margined everlasting	PDAST0H1G0	None	None	G4G5/S1	2B.3	USFS:S	No	Yes
<i>Antennaria pulchella</i> beautiful pussy-toes	PDAST0H1H0	None	None	G3/S3.3	4.3		No	No
<i>Antennaria suffrutescens</i> evergreen everlasting	PDAST0H0S0	None	None	G4/S3.3?	4.3		No	No
<i>Anthoxanthum nitens ssp. nitens</i> nodding vanilla-grass	PMPOA0F041	None	None	G5/S2	2B.3		No	Yes
<i>Antirrhinum ovatum</i> oval-leaved snapdragon	PDSCR2K010	None	None	G3/S3.2	4.2		No	Yes

April, 10, 2014

Page 8 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Antirrhinum subcordatum</i> dimorphic snapdragon	PDSCR2S070	None	None	G3/S3.3	4.3	USFS:S	No	Yes
<i>Antirrhinum virga</i> twig-like snapdragon	PDSCR2S090	None	None	G3/S3.3?	4.3		No	No
<i>Aphanisma blitoides</i> aphanisma	PDCHE02010	None	None	G3G4/S3	1B.2		No	Yes
<i>Arabis aculeolata</i> Waldo rockcress	PDBRA06010	None	None	G4/S2	2B.2		No	Yes
<i>Arabis blepharophylla</i> coast rockcress	PDBRA06040	None	None	G3/S3.3?	4.3		No	No
<i>Arabis mcdonaldiana</i> McDonald's rockcress	PDBRA06150	Endangered	Endangered	G2/S2	1B.1		No	Yes
<i>Arabis modesta</i> modest rockcress	PDBRA06180	None	None	G3/S3.3?	4.3		No	No
<i>Arabis oregana</i> Oregon rockcress	PDBRA061A0	None	None	G3G4Q/S3.3?	4.3		No	No
<i>Arabis repanda</i> var. <i>greenei</i> Greene's rockcress	PDBRA061Q1	None	None	G5T2T3Q/S2S 3	3.3		No	No
<i>Arabis rigidissima</i> var. <i>demota</i> Galena Creek rockcress	PDBRA061R1	None	None	G3T3Q/S1	1B.2	USFS:S	No	Yes
<i>Arabis rigidissima</i> var. <i>rigidissima</i> Trinity Mountains rockcress	PDBRA061R2	None	None	G3T2/S2	1B.3		No	Yes
<i>Arctomecon merriamii</i> white bear poppy	PDPAP02030	None	None	G3/S3	2B.2		No	Yes
<i>Arctostaphylos andersonii</i> Anderson's manzanita	PDERI04030	None	None	G2/S2?	1B.2		No	Yes
<i>Arctostaphylos auriculata</i> Mt. Diablo manzanita	PDERI04040	None	None	G2/S2	1B.3		No	Yes
<i>Arctostaphylos bakeri</i> ssp. <i>bakeri</i> Baker's manzanita	PDERI04221	None	Rare	G2T2/S2	1B.1		No	Yes
<i>Arctostaphylos bakeri</i> ssp. <i>sublaevis</i> The Cedars manzanita	PDERI04222	None	Rare	G2T2/S2	1B.2	BLM:S	No	Yes
<i>Arctostaphylos canescens</i> ssp. <i>sonomensis</i> Sonoma canescent manzanita	PDERI04066	None	None	G3G4T2/S2	1B.2	BLM:S	No	Yes
<i>Arctostaphylos catalinae</i> Santa Catalina Island manzanita	PDERI04070	None	None	G2?/S2?	1B.2		No	Yes
<i>Arctostaphylos confertiflora</i> Santa Rosa Island manzanita	PDERI040A0	Endangered	None	G1/S1	1B.2		No	Yes

April, 10, 2014

Page 9 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Arctostaphylos crustacea</i> ssp. <i>eastwoodiana</i> Eastwood's brittle-leaf manzanita	PDERI041H4	None	None	G4T2?/S2?	1B.1		No	Yes
<i>Arctostaphylos crustacea</i> ssp. <i>insulicola</i> island manzanita	PDERI041H5	None	None	G4T3/S3.2	4.2		No	No
<i>Arctostaphylos crustacea</i> ssp. <i>subcordata</i> Santa Cruz Island manzanita	PDERI041H7	None	None	G4T3/S3.2	4.2		No	No
<i>Arctostaphylos cruzensis</i> Arroyo de la Cruz manzanita	PDERI040B0	None	None	G3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Arctostaphylos densiflora</i> Vine Hill manzanita	PDERI040C0	None	Endangered	G1/S1	1B.1		No	Yes
<i>Arctostaphylos edmundsii</i> Little Sur manzanita	PDERI04260	None	None	G2?/S2?	1B.2	USFS:S	No	Yes
<i>Arctostaphylos franciscana</i> Franciscan manzanita	PDERI040J3	None	None	G1/S1	1B.1		No	Yes
<i>Arctostaphylos gabilanensis</i> Gabilan Mountains manzanita	PDERI042X0	None	None	G1/S1	1B.2		No	Yes
<i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i> Del Mar manzanita	PDERI040E8	Endangered	None	G5T2/S2	1B.1		No	Yes
<i>Arctostaphylos glandulosa</i> ssp. <i>gabrielensis</i> San Gabriel manzanita	PDERI042P0	None	None	G5T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Arctostaphylos glutinosa</i> Schreiber's manzanita	PDERI040G0	None	None	G1/S1	1B.2		No	Yes
<i>Arctostaphylos hispidula</i> Howell's manzanita	PDERI04230	None	None	G3/S3.2	4.2		No	No
<i>Arctostaphylos hookeri</i> ssp. <i>hearthorium</i> Hearsts' manzanita	PDERI040J4	None	Endangered	G3T2/S2	1B.2		No	Yes
<i>Arctostaphylos hookeri</i> ssp. <i>hookeri</i> Hooker's manzanita	PDERI040J1	None	None	G3T2?/S2?	1B.2	BLM:S	No	Yes
<i>Arctostaphylos hooveri</i> Hoover's manzanita	PDERI040K0	None	None	G3/S3.3?	4.3	USFS:S	No	No
<i>Arctostaphylos imbricata</i> San Bruno Mountain manzanita	PDERI040L0	None	Endangered	G1/S1	1B.1		No	Yes
<i>Arctostaphylos klamathensis</i> Klamath manzanita	PDERI041R0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Arctostaphylos luciana</i> Santa Lucia manzanita	PDERI040N0	None	None	G3/S3	1B.2	USFS:S	No	Yes

April, 10, 2014

Page 10 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Arctostaphylos malloryi</i> Mallory's manzanita	PDERI042V0	None	None	G3/S3.3?	4.3		No	No
<i>Arctostaphylos manzanita ssp. elegans</i> Konociti manzanita	PDERI04271	None	None	G5T3/S3	1B.3		No	Yes
<i>Arctostaphylos manzanita ssp. laevigata</i> Contra Costa manzanita	PDERI04273	None	None	G5T2/S2	1B.2		No	Yes
<i>Arctostaphylos mewukka ssp. truei</i> True's manzanita	PDERI040Q2	None	None	G4?T3/S3.2	4.2		No	No
<i>Arctostaphylos montana ssp. montana</i> Mt. Tamalpais manzanita	PDERI040J5	None	None	G3T3/S3	1B.3		No	Yes
<i>Arctostaphylos montana ssp. ravenii</i> Presidio manzanita	PDERI040J2	Endangered	Endangered	G3T1/S1	1B.1		No	Yes
<i>Arctostaphylos montaraensis</i> Montara manzanita	PDERI042W0	None	None	G1/S1	1B.2		No	Yes
<i>Arctostaphylos montereyensis</i> Toro manzanita	PDERI040R0	None	None	G2?/S2?	1B.2	BLM:S	No	Yes
<i>Arctostaphylos morroensis</i> Morro manzanita	PDERI040S0	Threatened	None	G2/S2	1B.1		No	Yes
<i>Arctostaphylos myrtifolia</i> lone manzanita	PDERI04240	Threatened	None	G2/S2	1B.2		No	Yes
<i>Arctostaphylos nissenana</i> Nissenan manzanita	PDERI040V0	None	None	G1/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Arctostaphylos nortensis</i> Del Norte manzanita	PDERI04092	None	None	G3?/S3?	4.3		No	No
<i>Arctostaphylos nummularia ssp. mendocinoensis</i> pygmy manzanita	PDERI04280	None	None	G3?T1/S1	1B.2		No	Yes
<i>Arctostaphylos obispoensis</i> Bishop manzanita	PDERI040X0	None	None	G3?/S3?	4.3	USFS:S	No	No
<i>Arctostaphylos ohloneana</i> Ohlone manzanita	PDERI042Y0	None	None	G1/S1	1B.1		No	Yes
<i>Arctostaphylos osoensis</i> Oso manzanita	PDERI042S0	None	None	G1/S1	1B.2		No	Yes
<i>Arctostaphylos otayensis</i> Otay manzanita	PDERI040Y0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Arctostaphylos pacifica</i> Pacific manzanita	PDERI040Z0	None	Endangered	G1/S1	1B.2		No	Yes
<i>Arctostaphylos pajaroensis</i> Pajaro manzanita	PDERI04100	None	None	G1/S1	1B.1	BLM:S	No	Yes

April, 10, 2014

Page 11 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Arctostaphylos pallida</i> pallid manzanita	PDERI04110	Threatened	Endangered	G1/S1	1B.1		No	Yes
<i>Arctostaphylos parryana</i> ssp. <i>tumescens</i> interior manzanita	PDERI042A1	None	None	G4T3/S3	4.3	USFS:S	No	No
<i>Arctostaphylos pechoensis</i> Pecho manzanita	PDERI04140	None	None	G2/S2	1B.2		No	Yes
<i>Arctostaphylos pilosula</i> Santa Margarita manzanita	PDERI04160	None	None	G3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Arctostaphylos pumila</i> sandmat manzanita	PDERI04180	None	None	G1/S1	1B.2	BLM:S	No	Yes
<i>Arctostaphylos purissima</i> La Purisima manzanita	PDERI041A0	None	None	G2?/S2?	1B.1		No	Yes
<i>Arctostaphylos rainbowensis</i> Rainbow manzanita	PDERI042T0	None	None	G2/S2	1B.1	BLM:S USFS:S	No	Yes
<i>Arctostaphylos refugioensis</i> Refugio manzanita	PDERI041B0	None	None	G2?/S2?	1B.2	USFS:S	No	Yes
<i>Arctostaphylos regismontana</i> Kings Mountain manzanita	PDERI041C0	None	None	G2/S2	1B.2		No	Yes
<i>Arctostaphylos rudis</i> sand mesa manzanita	PDERI041E0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Arctostaphylos silvicola</i> Bonny Doon manzanita	PDERI041F0	None	None	G1/S1	1B.2		No	Yes
<i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i> Rincon Ridge manzanita	PDERI041G4	None	None	G3T1/S1	1B.1		No	Yes
<i>Arctostaphylos stanfordiana</i> ssp. <i>raichei</i> Raiche's manzanita	PDERI041G2	None	None	G3T2?/S2?	1B.1		No	Yes
<i>Arctostaphylos tomentosa</i> ssp. <i>daciticola</i> dacite manzanita	PDERI041HD	None	None	G4T1/S1	1B.1		No	Yes
<i>Arctostaphylos virgata</i> Marin manzanita	PDERI041K0	None	None	G2/S2	1B.2		No	Yes
<i>Arctostaphylos viridissima</i> white-haired manzanita	PDERI041L0	None	None	G3/S3	4.2		No	No
<i>Arenaria lanuginosa</i> var. <i>saxosa</i> rock sandwort	PDCAR040E4	None	None	G5T5/S2	2B.3	USFS:S	No	Yes
<i>Arenaria paludicola</i> marsh sandwort	PDCAR040L0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Argyrochosma limitanea</i> ssp. <i>limitanea</i> southwestern false cloak-fern	PPADI0N051	None	None	G4G5T3T4/S1	2B.3		No	Yes

April, 10, 2014

Page 12 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Aristocapsa insignis</i> Indian Valley spineflower	PDPGN0U010	None	None	G2?/S2?	1B.2	BLM:S	No	Yes
<i>Arnica cernua</i> serpentine arnica	PDAST0Q040	None	None	G5/S3.3	4.3		No	No
<i>Arnica fulgens</i> hillside arnica	PDAST0Q090	None	None	G5/S3	2B.2		No	Yes
<i>Arnica spathulata</i> Klamath arnica	PDAST0Q0M0	None	None	G3?/S3.3	4.3		No	No
<i>Arnica venosa</i> Shasta County arnica	PDAST0Q0Q0	None	None	G3/S3.2	4.2		No	No
<i>Arnica viscosa</i> Mt. Shasta arnica	PDAST0Q0R0	None	None	G4/S3.3	4.3		No	No
<i>Artemisia nesiotica</i> island sagebrush	PDAST0S120	None	None	G3/S3.3	4.3		No	No
<i>Artemisia palmeri</i> San Diego sagewort	PDAST0S160	None	None	G3/S3.2	4.2		No	Yes
<i>Artemisia tripartita ssp. tripartita</i> threetip sagebrush	PDAST0S1S2	None	None	G5T3T5/S2	2B.3		No	Yes
<i>Asarum marmoratum</i> marbled wild-ginger	PDARI02070	None	None	G3G4/S2	2B.3		No	Yes
<i>Asclepias asperula ssp. asperula</i> antelope-horns	PDASC02051	None	None	G5T5/S3.3	4.3		No	No
<i>Asclepias nyctaginifolia</i> Mojave milkweed	PDASC02190	None	None	G4G5/S2	2B.1		No	Yes
<i>Asclepias solanoana</i> serpentine milkweed	PDASC021R0	None	None	G3/S3.2	4.2		No	No
<i>Aspidotis carlotta-halliae</i> Carlotta Hall's lace fern	PPADI07020	None	None	G3/S3.2	4.2		No	No
<i>Asplenium septentrionale</i> northern spleenwort	PPASP021F0	None	None	G4/S3	2B.3		No	Yes
<i>Asplenium trichomanes ssp. trichomanes</i> maidenhair spleenwort	PPASP021K2	None	None	G5T5/S1	2B.3		No	Yes
<i>Asplenium vespertinum</i> western spleenwort	PPASP021P0	None	None	G3?/S3.2	4.2		No	No
<i>Asplenium viride</i> green spleenwort	PPASP02250	None	None	G4/S1	2B.3		No	Yes
<i>Astragalus agnicidus</i> Humboldt milk-vetch	PDFAB0F080	None	Endangered	G3/S3	1B.1	BLM:S	No	Yes

April, 10, 2014

Page 13 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Astragalus agrestis</i> field milk-vetch	PDFAB0F090	None	None	G5/S2?	2B.2	BLM:S	No	Yes
<i>Astragalus albens</i> Cushenbury milk-vetch	PDFAB0F0A0	Endangered	None	G1/S1	1B.1		No	Yes
<i>Astragalus allochrous</i> var. <i>playanus</i> playa milk-vetch	PDFAB0F0C1	None	None	G4T3?/S1	2B.2		No	Yes
<i>Astragalus anxius</i> Ash Valley milk-vetch	PDFAB0FBD0	None	None	G1/S1	1B.3	BLM:S USFS:S	No	Yes
<i>Astragalus argophyllus</i> var. <i>argophyllus</i> silver-leaved milk-vetch	PDFAB0F0S1	None	None	G5T4/S1	2B.2	BLM:S	No	Yes
<i>Astragalus atratus</i> var. <i>mensanus</i> Darwin Mesa milk-vetch	PDFAB0F0Z3	None	None	G4G5T1/S1	1B.1	BLM:S	No	Yes
<i>Astragalus austiniiae</i> Austin's astragalus	PDFAB0F120	None	None	G2G3/S2S3	1B.3		No	Yes
<i>Astragalus bernardinus</i> San Bernardino milk-vetch	PDFAB0F190	None	None	G2G3/S2S3	1B.2	BLM:S USFS:S	No	Yes
<i>Astragalus bicristatus</i> crested milk-vetch	PDFAB0F1A0	None	None	G3/S3.3	4.3	USFS:S	No	No
<i>Astragalus brauntonii</i> Braunton's milk-vetch	PDFAB0F1G0	Endangered	None	G2/S2	1B.1		No	Yes
<i>Astragalus breweri</i> Brewer's milk-vetch	PDFAB0F1J0	None	None	G3/S3.2	4.2		No	No
<i>Astragalus cimae</i> var. <i>cimae</i> Cima milk-vetch	PDFAB0F231	None	None	G3T2/S2	1B.2		No	Yes
<i>Astragalus cimae</i> var. <i>sufflatus</i> inflated Cima milk-vetch	PDFAB0F232	None	None	G3T3/S3	1B.3	USFS:S	No	Yes
<i>Astragalus claranus</i> Clara Hunt's milk-vetch	PDFAB0F240	Endangered	Threatened	G1/S1	1B.1		No	Yes
<i>Astragalus clevelandii</i> Cleveland's milk-vetch	PDFAB0F250	None	None	G3?/S3.3?	4.3		No	No
<i>Astragalus crotalariae</i> Salton milk-vetch	PDFAB0F2K0	None	None	G4G5/S3.3	4.3		No	No
<i>Astragalus deanei</i> Dean's milk-vetch	PDFAB0F2R0	None	None	G1/S1	1B.1	BLM:S USFS:S	No	Yes
<i>Astragalus didymocarpus</i> var. <i>milesianus</i> Miles' milk-vetch	PDFAB0F2X3	None	None	G5T2/S2	1B.2		No	Yes
<i>Astragalus douglasii</i> var. <i>perstrictus</i> Jacumba milk-vetch	PDFAB0F303	None	None	G5T2?/S2?	1B.2	BLM:S USFS:S	No	Yes

April, 10, 2014

Page 14 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Astragalus ertterae</i> Walker Pass milk-vetch	PDFAB0FB30	None	None	G2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Astragalus funereus</i> black milk-vetch	PDFAB0F3K0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Astragalus geyeri</i> var. <i>geyeri</i> Geyer's milk-vetch	PDFAB0F3M1	None	None	G4T4/S2	2B.2		No	Yes
<i>Astragalus gilmanii</i> Gilman's milk-vetch	PDFAB0F3R0	None	None	G2/S2	1B.2		No	Yes
<i>Astragalus hornii</i> var. <i>hornii</i> Horn's milk-vetch	PDFAB0F421	None	None	G4G5T2T3/S1	1B.1	BLM:S	No	Yes
<i>Astragalus insularis</i> var. <i>harwoodii</i> Harwood's milk-vetch	PDFAB0F491	None	None	G5T3/S2	2B.2		No	Yes
<i>Astragalus inversus</i> Susanville milk-vetch	PDFAB0F4A0	None	None	G3/S3.3	4.3		No	No
<i>Astragalus inyoensis</i> Inyo milk-vetch	PDFAB0F4B0	None	None	G3/S3.2	4.2		No	No
<i>Astragalus iodanthus</i> var. <i>diaphanoides</i> snake milk-vetch	PDFAB0F4C3	None	None	G4T4/S3.3	4.3		No	No
<i>Astragalus jaegerianus</i> Lane Mountain milk-vetch	PDFAB0F4F0	Endangered	None	G1/S1	1B.1		No	Yes
<i>Astragalus johannis-howellii</i> Long Valley milk-vetch	PDFAB0F4H0	None	Rare	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Astragalus kentrophyta</i> var. <i>danaus</i> Sweetwater Mountains milk-vetch	PDFAB0F4J2	None	None	G5T3/S3	4.3		No	No
<i>Astragalus kentrophyta</i> var. <i>elatus</i> spiny-leaved milk-vetch	PDFAB0F4J4	None	None	G5T4/S2	2B.2		No	Yes
<i>Astragalus kentrophyta</i> var. <i>ungulatus</i> spiny milk-vetch	PDFAB0F4JB	None	None	G5T3T4/S1	2B.2		No	Yes
<i>Astragalus lemmonii</i> Lemmon's milk-vetch	PDFAB0F4N0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Astragalus lentiformis</i> lens-pod milk-vetch	PDFAB0F4P0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Astragalus lentiginosus</i> var. <i>antoniuis</i> San Antonio milk-vetch	PDFAB0FB92	None	None	G5T2/S2	1B.3	USFS:S	No	Yes
<i>Astragalus lentiginosus</i> var. <i>borreganus</i> Borrego milk-vetch	PDFAB0FB95	None	None	G5T4T5/S3.3	4.3		No	No
<i>Astragalus lentiginosus</i> var. <i>coachellae</i> Coachella Valley milk-vetch	PDFAB0FB97	Endangered	None	G5T1/S1	1B.2		No	Yes

April, 10, 2014

Page 15 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Astragalus lentiginosus</i> var. <i>kernensis</i> Kern Plateau milk-vetch	PDFAB0FB98	None	None	G5T2T3/S2S3	1B.2	USFS:S	No	Yes
<i>Astragalus lentiginosus</i> var. <i>micans</i> shining milk-vetch	PDFAB0FB9C	None	None	G5T2Q/S2	1B.2		No	Yes
<i>Astragalus lentiginosus</i> var. <i>piscinensis</i> Fish Slough milk-vetch	PDFAB0FB9E	Threatened	None	G5T1/S1	1B.1		No	Yes
<i>Astragalus lentiginosus</i> var. <i>sesquimetralis</i> Sodaville milk-vetch	PDFAB0FB9K	None	Endangered	G5T1/S1	1B.1		No	Yes
<i>Astragalus lentiginosus</i> var. <i>sierrae</i> Big Bear Valley milk-vetch	PDFAB0FB9L	None	None	G5T2/S2	1B.2	USFS:S	No	Yes
<i>Astragalus leucolobus</i> Big Bear Valley woollypod	PDFAB0F4T0	None	None	G2/S2	1B.2		No	Yes
<i>Astragalus macrodon</i> Salinas milk-vetch	PDFAB0F520	None	None	G3/S3.3	4.3		No	No
<i>Astragalus magdalenae</i> var. <i>peirsonii</i> Peirson's milk-vetch	PDFAB0F532	Threatened	Endangered	G3G4T2/S2	1B.2		No	Yes
<i>Astragalus miguelensis</i> San Miguel Island milk-vetch	PDFAB0F5C0	None	None	G3/S3.3?	4.3		No	No
<i>Astragalus mohavensis</i> var. <i>hemigyris</i> curved-pod milk-vetch	PDFAB0F5J1	None	None	G3G4T2T3/S1	1B.1	BLM:S	No	Yes
<i>Astragalus monoensis</i> Mono milk-vetch	PDFAB0F5N0	None	Rare	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Astragalus nevinii</i> San Clemente Island milk-vetch	PDFAB0F5X0	None	None	G3/S3	1B.2		No	Yes
<i>Astragalus nutans</i> Providence Mountains milk-vetch	PDFAB0F620	None	None	G3/S3.3	4.3		No	No
<i>Astragalus nuttallii</i> var. <i>nuttallii</i> ocean bluff milk-vetch	PDFAB0F641	None	None	G3T3/S3.2	4.2		No	No
<i>Astragalus nyensis</i> Nye milk-vetch	PDFAB0F660	None	None	G3/S1	1B.1	BLM:S	No	Yes
<i>Astragalus oocarpus</i> San Diego milk-vetch	PDFAB0F6B0	None	None	G3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Astragalus oophorus</i> var. <i>lavinii</i> Lavin's milk-vetch	PDFAB0F6C4	None	None	G4T2/S1	1B.2	BLM:S	No	Yes
<i>Astragalus oophorus</i> var. <i>oophorus</i> egg milk-vetch	PDFAB0F6C6	None	None	G4T3T4/S3.3	4.3		No	No
<i>Astragalus pachypus</i> var. <i>jaegeri</i> Jaeger's milk-vetch	PDFAB0F6G1	None	None	G4T1/S1	1B.1	BLM:S USFS:S	No	Yes

April, 10, 2014

Page 16 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Astragalus pauperculus</i> depauperate milk-vetch	PDFAB0F6N0	None	None	G3/S3.3	4.3		No	No
<i>Astragalus platytropis</i> broad-keeled milk-vetch	PDFAB0F6X0	None	None	G5/S2	2B.2		No	Yes
<i>Astragalus preussii</i> var. <i>laxiflorus</i> Lancaster milk-vetch	PDFAB0F721	None	None	G4T2/S1	1B.1		No	Yes
<i>Astragalus preussii</i> var. <i>preussii</i> Preuss' milk-vetch	PDFAB0F722	None	None	G4T4/S1	2B.3		No	Yes
<i>Astragalus pseudiodanthus</i> Tonopah milk-vetch	PDFAB0F750	None	None	G3Q/S2	1B.2	BLM:S	No	Yes
<i>Astragalus pulsiferae</i> var. <i>coronensis</i> Modoc Plateau milk-vetch	PDFAB0F784	None	None	G4T3/S3.2	4.2	USFS:S	No	No
<i>Astragalus pulsiferae</i> var. <i>pulsiferae</i> Pulsifer's milk-vetch	PDFAB0F783	None	None	G4T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i> Suksdorf's milk-vetch	PDFAB0F782	None	None	G4T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Astragalus pycnostachyus</i> var. <i>lanosissimus</i> Ventura Marsh milk-vetch	PDFAB0F7B1	Endangered	Endangered	G2T1/S1	1B.1		No	Yes
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i> coastal marsh milk-vetch	PDFAB0F7B2	None	None	G2T2/S2	1B.2	BLM:S	No	Yes
<i>Astragalus rattanii</i> var. <i>jepsonianus</i> Jepson's milk-vetch	PDFAB0F7E1	None	None	G4T3/S3	1B.2	BLM:S	No	Yes
<i>Astragalus rattanii</i> var. <i>rattanii</i> Rattan's milk-vetch	PDFAB0F7E2	None	None	G4T3/S3.3	4.3		No	No
<i>Astragalus ravenii</i> Raven's milk-vetch	PDFAB0F7F0	None	None	G2Q/S2	1B.3	USFS:S	No	Yes
<i>Astragalus sabulorum</i> gravel milk-vetch	PDFAB0F7R0	None	None	G5/S2	2B.2		No	Yes
<i>Astragalus serenoii</i> var. <i>shockleyi</i> Shockley's milk-vetch	PDFAB0F802	None	None	G4T3/S2	2B.2		No	Yes
<i>Astragalus shevockii</i> Shevock's milk-vetch	PDFAB0F850	None	None	G3/S3	1B.3	BLM:S	No	Yes
<i>Astragalus subvestitus</i> Kern County milk-vetch	PDFAB0F8M0	None	None	G3/S3.3	4.3		No	No
<i>Astragalus tener</i> var. <i>ferrisiae</i> Ferris' milk-vetch	PDFAB0F8R3	None	None	G2T1/S1	1B.1	BLM:S	No	Yes
<i>Astragalus tener</i> var. <i>tener</i> alkali milk-vetch	PDFAB0F8R1	None	None	G2T2/S2	1B.2		No	Yes

April, 10, 2014

Page 17 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Astragalus tener</i> var. <i>titi</i> coastal dunes milk-vetch	PDFAB0F8R2	Endangered	Endangered	G2T1/S1	1B.1		No	Yes
<i>Astragalus tidestromii</i> Tidestrom's milk-vetch	PDFAB0F8X0	None	None	G4G5/S2	2B.2	USFS:S	No	Yes
<i>Astragalus traskiae</i> Trask's milk-vetch	PDFAB0F910	None	Rare	G3/S3	1B.2		No	Yes
<i>Astragalus tricarinatus</i> triple-ribbed milk-vetch	PDFAB0F920	Endangered	None	G1/S1	1B.2		No	Yes
<i>Astragalus umbraticus</i> Bald Mountain milk-vetch	PDFAB0F990	None	None	G4/S2	2B.3		No	Yes
<i>Astragalus webberi</i> Webber's milk-vetch	PDFAB0F9J0	None	None	G1/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Astragalus whitneyi</i> var. <i>lenophyllus</i> woolly-leaved milk-vetch	PDFAB0F9L6	None	None	G5T3/S3.3	4.3		No	No
<i>Astrolepis cochisensis</i> ssp. <i>cochisensis</i> scaly cloak fern	PPADI0P013	None	None	G5?T4/S2	2B.3		No	Yes
<i>Atriplex argentea</i> var. <i>hillmanii</i> Hillman's silverscale	PDCHE04055	None	None	G5T3?/S2	2B.2		No	Yes
<i>Atriplex argentea</i> var. <i>longitrichoma</i> Pahrump orache	PDCHE04056	None	None	G5T2/S2	1B.1	BLM:S	No	Yes
<i>Atriplex cordulata</i> var. <i>cordulata</i> heartscale	PDCHE040B0	None	None	G3T2/S2	1B.2	BLM:S	No	Yes
<i>Atriplex cordulata</i> var. <i>erecticaulis</i> Earlimart orache	PDCHE042V0	None	None	G3T1/S1	1B.2	BLM:S	No	Yes
<i>Atriplex coronata</i> var. <i>coronata</i> crownscale	PDCHE040C3	None	None	G4T3/S3.2	4.2		No	No
<i>Atriplex coronata</i> var. <i>notatior</i> San Jacinto Valley crownscale	PDCHE040C2	Endangered	None	G4T1/S1	1B.1		No	Yes
<i>Atriplex coronata</i> var. <i>vallicola</i> Lost Hills crownscale	PDCHE04250	None	None	G4T2/S2	1B.2	BLM:S	No	Yes
<i>Atriplex coulteri</i> Coulter's saltbush	PDCHE040E0	None	None	G2/S2	1B.2		No	Yes
<i>Atriplex depressa</i> brittlescale	PDCHE042L0	None	None	G2/S2	1B.2		No	Yes
<i>Atriplex gardneri</i> var. <i>falcata</i> falcate saltbush	PDCHE040J0	None	None	G4Q/S2S3	2B.2		No	Yes
<i>Atriplex joaquinana</i> San Joaquin spearscale	PDCHE041F3	None	None	G2/S2	1B.2	BLM:S	No	Yes

April, 10, 2014

Page 18 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Atriplex minuscula</i> lesser saltscale	PDCHE042M0	None	None	G2/S2	1B.1		No	Yes
<i>Atriplex pacifica</i> south coast saltscale	PDCHE041C0	None	None	G3G4/S2	1B.2		No	Yes
<i>Atriplex parishii</i> Parish's brittle-scale	PDCHE041D0	None	None	G1G2/S1	1B.1	USFS:S	No	Yes
<i>Atriplex persistens</i> vernal pool smallscale	PDCHE042P0	None	None	G2/S2	1B.2		No	Yes
<i>Atriplex pusilla</i> smooth saltbush	PDCHE041P0	None	None	G5/S1	2B.1		No	Yes
<i>Atriplex serenana</i> var. <i> davidsonii</i> Davidson's saltscale	PDCHE041T1	None	None	G5T1/S1	1B.2		No	Yes
<i>Atriplex subtilis</i> subtle orache	PDCHE042T0	None	None	G1/S1	1B.2	BLM:S	No	Yes
<i>Atriplex tularensis</i> Bakersfield smallscale	PDCHE04240	None	Endangered	GX/SX	1A		No	Yes
<i>Ayenia compacta</i> California ayenia	PDSTE01020	None	None	G4/S3?	2B.3		No	Yes
<i>Azolla microphylla</i> Mexican mosquito fern	PPAZO01030	None	None	G5/S3.2?	4.2		No	No
<i>Baccharis malibuensis</i> Malibu baccharis	PDAST0W0W0	None	None	G1/S1	1B.1		No	Yes
<i>Baccharis plummerae</i> ssp. <i> glabrata</i> San Simeon baccharis	PDAST0W0D1	None	None	G3T2/S2	1B.2	USFS:S	No	Yes
<i>Baccharis plummerae</i> ssp. <i> plummerae</i> Plummer's baccharis	PDAST0W0D2	None	None	G3T3/S3.2	4.3		No	No
<i>Baccharis vanessae</i> Encinitas baccharis	PDAST0W0P0	Threatened	Endangered	G1/S1	1B.1		No	Yes
<i>Bahia neomexicana</i> many-flowered bahia	PDAST8C020	None	None	G5/S1S2	2B.3		No	Yes
<i>Balsamorhiza lanata</i> woolly balsamroot	PDAST11047	None	None	G3/S3	1B.2	BLM:S	No	Yes
<i>Balsamorhiza macrolepis</i> big-scale balsamroot	PDAST11061	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Balsamorhiza sericea</i> silky balsamroot	PDAST110C0	None	None	G4Q/S3	1B.3	BLM:S	No	Yes
<i>Balsamorhiza serrata</i> serrated balsamroot	PDAST110A0	None	None	G5/S2	2B.3		No	Yes

April, 10, 2014

Page 19 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Benitoa occidentalis</i> western lessingia	PDAST15010	None	None	G3/S3.3	4.3		No	No
<i>Bensoniella oregona</i> bensoniella	PDSAX02010	None	Rare	G3/S2	1B.1	USFS:S	No	Yes
<i>Berberis fremontii</i> Fremont barberry	PDBER06060	None	None	G5/S2?	3		No	Yes
<i>Berberis harrisoniana</i> Kofa barberry	PDBER02030	None	None	G1G2/S1	1B.2	BLM:S	No	Yes
<i>Berberis nevinii</i> Nevin's barberry	PDBER060A0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Berberis pinnata ssp. insularis</i> island barberry	PDBER060B2	Endangered	Endangered	G5T1/S1	1B.2		No	Yes
<i>Bergerocactus emoryi</i> golden-spined cereus	PDCAC11010	None	None	G2/S2	2B.2		No	Yes
<i>Betula glandulosa</i> dwarf resin birch	PDBET02030	None	None	G5/S2	2B.2		No	Yes
<i>Blennosperma bakeri</i> Sonoma sunshine	PDAST1A010	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Blennosperma nanum var. robustum</i> Point Reyes blennosperma	PDAST1A022	None	Rare	G4T2/S2	1B.2		No	Yes
<i>Blepharidachne kingii</i> King's eyelash grass	PMPOA0X020	None	None	G4/S2	2B.3		No	Yes
<i>Blepharizonia plumosa</i> big tarplant	PDAST1C011	None	None	G2/S2	1B.1		No	Yes
<i>Bloomeria clevelandii</i> San Diego goldenstar	PMLIL1H010	None	None	G2/S2	1B.1	BLM:S	No	Yes
<i>Bloomeria humilis</i> dwarf goldenstar	PMLIL0B020	None	Rare	G1/S1	1B.2	USFS:S	No	Yes
<i>Boechea bodiensis</i> Bodie Hills rockcress	PDBRA06240	None	None	G2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Boechea cobrensis</i> Masonic rockcress	PDBRA06080	None	None	G5/S1S2	2B.3		No	Yes
<i>Boechea constancei</i> Constance's rockcress	PDBRA06090	None	None	G2/S2	1B.1	USFS:S	No	Yes
<i>Boechea dispar</i> pinyon rockcress	PDBRA060F0	None	None	G3/S3	2B.3		No	Yes
<i>Boechea evadens</i> hidden rockcress	PDBRA40030	None	None	G1G2/S1S2	1B.3	USFS:S	No	Yes

April, 10, 2014

Page 20 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Boecheira hirshbergiae</i> Hirshberg's rockcress	PDBRA064D0	None	None	G1/S1	1B.2		No	Yes
<i>Boecheira hoffmannii</i> Hoffmann's rockcress	PDBRA060V0	Endangered	None	G2?/S2?	1B.1		No	Yes
<i>Boecheira johnstonii</i> Johnston's rockcress	PDBRA060Y0	None	None	G1/S1	1B.2	USFS:S	No	Yes
<i>Boecheira koehleri</i> Koehler's rockcress	PDBRA060Z0	None	None	G3/S2	1B.3	USFS:S	No	Yes
<i>Boecheira lincolnensis</i> Lincoln rockcress	PDBRA061M3	None	None	G4?/S2	2B.3	BLM:S	No	Yes
<i>Boecheira microphylla</i> small-leaved rockcress	PDBRA06162	None	None	G4Q/S3.3	3		No	No
<i>Boecheira parishii</i> Parish's rockcress	PDBRA061C0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Boecheira peirsonii</i> San Bernardino rockcress	PDBRA06053	None	None	G1/S1	1B.2	USFS:S	No	Yes
<i>Boecheira pendulina</i> rabbit-ear rockcress	PDBRA061E0	None	None	G5/S1	2B.3		No	Yes
<i>Boecheira pinzliae</i> Pinzl's rockcress	PDBRA06270	None	None	G2/S1	1B.3	USFS:S	No	Yes
<i>Boecheira pygmaea</i> Tulare County rockcress	PDBRA061N0	None	None	G3/S3	4.3		No	No
<i>Boecheira rollei</i> Rolle's rockcress	PDBRA064H0	None	None	G1/S1	1B.1		No	Yes
<i>Boecheira rubicundula</i> Mount Day rockcress	PDBRA40100	None	None	G1/S1	1B.1		No	Yes
<i>Boecheira serpenticola</i> serpentine rockcress	PDBRA40110	None	None	G1/S1	1B.2	BLM:S	No	Yes
<i>Boecheira shevockii</i> Shevock's rockcress	PDBRA40120	None	None	G1/S1	1B.1	USFS:S	No	Yes
<i>Boecheira shockleyi</i> Shockley's rockcress	PDBRA061V0	None	None	G3/S2	2B.2	USFS:S	No	Yes
<i>Boecheira tiehmii</i> Tiehm's rockcress	PDBRA06280	None	None	G3/S3	1B.3	USFS:S	No	Yes
<i>Boecheira tularensis</i> Tulare rockcress	PDBRA40130	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Boecheira ultraalsa</i> Snow Mountain rockcress	PDBRA40140	None	None	G1/S1	1B.1		No	Yes

April, 10, 2014

Page 21 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Boechea yorkii</i> Last Chance rockcress	PDBRA40010	None	None	G1/S1	1B.3		No	Yes
<i>Bolandra californica</i> Sierra bolandra	PDSAX03010	None	None	G3/S3.3	4.3		No	No
<i>Botrychium ascendens</i> upswept moonwort	PPOPH010S0	None	None	G3/S2	2B.3	USFS:S	No	Yes
<i>Botrychium crenulatum</i> scalloped moonwort	PPOPH010L0	None	None	G3/S2	2B.2	USFS:S	No	Yes
<i>Botrychium lineare</i> slender moonwort	PPOPH01120	None	None	G2G3/S1	1B.3	USFS:S	No	Yes
<i>Botrychium lunaria</i> common moonwort	PPOPH01080	None	None	G5/S2?	2B.3	USFS:S	No	Yes
<i>Botrychium minganense</i> mingan moonwort	PPOPH010R0	None	None	G4G5/S2	2B.2	USFS:S	No	Yes
<i>Botrychium montanum</i> western goblin	PPOPH010K0	None	None	G3/S2	2B.1	USFS:S	No	Yes
<i>Botrychium paradoxum</i> paradox moonwort	PPOPH010J0	None	None	G3G4/S1	2B.1	USFS:S	No	Yes
<i>Botrychium pedunculosum</i> stalked moonwort	PPOPH010T0	None	None	G2G3/S1	2B.1	USFS:S	No	Yes
<i>Botrychium pinnatum</i> northwestern moonwort	PPOPH010V0	None	None	G4/S2	2B.3	USFS:S	No	Yes
<i>Botrychium pumicola</i> pumice moonwort	PPOPH010D0	None	None	G3/S1?	2B.2	USFS:S	No	Yes
<i>Botrychium tunux</i> moosewort	PPOPH01240	None	None	G3/S1	2B.1	USFS:S	No	Yes
<i>Botrychium yaaxudakeit</i> giant moonwort	PPOPH01180	None	None	G3G4/S1	2B.1	USFS:S	No	Yes
<i>Botrypus virginianus</i> rattlesnake fern	PPOPH010H0	None	None	G5/S2	2B.2		No	Yes
<i>Bouteloua eriopoda</i> black grama	PMPOA10080	None	None	G5/S3.2	4.2		No	No
<i>Bouteloua trifida</i> three-awned grama	PMPOA100L0	None	None	G4G5/S2?	2B.3		No	Yes
<i>Brasenia schreberi</i> watershield	PDCAB01010	None	None	G5/S2	2B.3		No	Yes
<i>Brodiaea filifolia</i> thread-leaved brodiaea	PMLIL0C050	Threatened	Endangered	G1/S1	1B.1		No	Yes

April, 10, 2014

Page 22 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Brodiaea insignis</i> Kaweah brodiaea	PMLIL0C060	None	Endangered	G1/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Brodiaea kinkiensis</i> San Clemente Island brodiaea	PMLIL0C080	None	None	G2/S2	1B.2		No	Yes
<i>Brodiaea leptandra</i> narrow-anthered brodiaea	PMLIL0C022	None	None	G3?/S3?	1B.2		No	Yes
<i>Brodiaea matsonii</i> Sulphur Creek brodiaea	PMLIL0C0H0	None	None	G1/S1	1B.1		No	Yes
<i>Brodiaea orcuttii</i> Orcutt's brodiaea	PMLIL0C0B0	None	None	G2/S2	1B.1	BLM:S USFS:S	No	Yes
<i>Brodiaea pallida</i> Chinese Camp brodiaea	PMLIL0C0C0	Threatened	Endangered	G1/S1	1B.1		No	Yes
<i>Brodiaea rosea</i> Indian Valley brodiaea	PMLIL0C032	None	Endangered	G1/S1	1B.1	BLM:S USFS:S	No	Yes
<i>Brodiaea santarosae</i> Santa Rosa Basalt brodiaea	PMLIL0C0G0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Brodiaea sierrae</i> Sierra foothills brodiaea	PMLIL0C0J0	None	None	G3/S3	4.3		No	No
<i>Bulbostylis capillaris</i> thread-leaved beakseed	PMCYP02020	None	None	G5/S3.2	4.2		No	No
<i>Bursera microphylla</i> little-leaf elephant tree	PDBUR01020	None	None	G4/S2	2B.3		No	Yes
<i>Calamagrostis bolanderi</i> Bolander's reed grass	PMPOA17010	None	None	G3/S3.2	4.2		No	No
<i>Calamagrostis crassiglumis</i> Thurber's reed grass	PMPOA17070	None	None	G3Q/S2?	2B.1		No	Yes
<i>Calamagrostis foliosa</i> leafy reed grass	PMPOA170C0	None	Rare	G3/S3.2	4.2	BLM:S	No	Yes
<i>Calamagrostis ophitidis</i> serpentine reed grass	PMPOA170V0	None	None	G3/S3.3	4.3		No	No
<i>Calandrinia breweri</i> Brewer's calandrinia	PDPOR01020	None	None	G4/S3.2?	4.2		No	No
<i>California macrophylla</i> round-leaved filaree	PDGER01070	None	None	G2/S2	1B.1	BLM:S	No	Yes
<i>Calliandra eriophylla</i> pink fairy-duster	PDFAB0N040	None	None	G5/S2S3	2B.3		No	Yes
<i>Callitropsis nootkatensis</i> Alaska cedar	PGCUP03020	None	None	G4/S3.3	4.3		No	No

April, 10, 2014

Page 23 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Calochortus catalinae</i> Catalina mariposa-lily	PMLIL0D080	None	None	G3/S3.2	4.2		No	No
<i>Calochortus clavatus</i> var. <i>avius</i> Pleasant Valley mariposa-lily	PMLIL0D095	None	None	G4T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Calochortus clavatus</i> var. <i>clavatus</i> club-haired mariposa-lily	PMLIL0D091	None	None	G4T3/S3	4.3	USFS:S	No	No
<i>Calochortus clavatus</i> var. <i>gracilis</i> slender mariposa-lily	PMLIL0D096	None	None	G4T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Calochortus clavatus</i> var. <i>recurvifolius</i> Arroyo de la Cruz mariposa-lily	PMLIL0D098	None	None	G4T1/S1	1B.2		No	Yes
<i>Calochortus dunnii</i> Dunn's mariposa-lily	PMLIL0D0C0	None	Rare	G2?/S2?	1B.2	BLM:S USFS:S	No	Yes
<i>Calochortus excavatus</i> Inyo County star-tulip	PMLIL0D0F0	None	None	G2/S2	1B.1	BLM:S USFS:S	No	Yes
<i>Calochortus fimbriatus</i> late-flowered mariposa-lily	PMLIL0D1J2	None	None	G3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Calochortus greenei</i> Greene's mariposa-lily	PMLIL0D0H0	None	None	G3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i> long-haired star-tulip	PMLIL0D0R1	None	None	G4T3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Calochortus monanthus</i> single-flowered mariposa-lily	PMLIL0D0W0	None	None	GH/SH	1A	BLM:S	No	Yes
<i>Calochortus obispoensis</i> San Luis mariposa-lily	PMLIL0D110	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Calochortus palmeri</i> var. <i>munzii</i> San Jacinto mariposa-lily	PMLIL0D121	None	None	G2T1/S1	1B.2	USFS:S	No	Yes
<i>Calochortus palmeri</i> var. <i>palmeri</i> Palmer's mariposa-lily	PMLIL0D122	None	None	G3T3?/S3?	1B.2	BLM:S USFS:S	No	Yes
<i>Calochortus panamintensis</i> Panamint mariposa-lily	PMLIL0D130	None	None	G3/S3.2	4.2		No	No
<i>Calochortus persistens</i> Siskiyou mariposa-lily	PMLIL0D140	Candidate	Rare	G1/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Calochortus plummerae</i> Plummer's mariposa-lily	PMLIL0D150	None	None	G4/S4	4.2		No	Yes
<i>Calochortus pulchellus</i> Mt. Diablo fairy-lantern	PMLIL0D160	None	None	G2/S2	1B.2		No	Yes
<i>Calochortus raichei</i> The Cedars fairy-lantern	PMLIL0D1L0	None	None	G2/S2	1B.2	BLM:S	No	Yes

April, 10, 2014

Page 24 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Calochortus simulans</i> La Panza mariposa-lily	PMLIL0D170	None	None	G2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Calochortus striatus</i> alkali mariposa-lily	PMLIL0D190	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Calochortus syntrophus</i> Callahan's mariposa-lily	PMLIL0D1S0	None	None	G1/S1	1B.1		No	Yes
<i>Calochortus tiburonensis</i> Tiburon mariposa-lily	PMLIL0D1C0	Threatened	Threatened	G1/S1	1B.1		No	Yes
<i>Calochortus umbellatus</i> Oakland star-tulip	PMLIL0D1E0	None	None	G3/S3.2	4.2		No	No
<i>Calochortus uniflorus</i> pink star-tulip	PMLIL0D1F0	None	None	G4/S3	4.2		No	No
<i>Calochortus weedii</i> var. <i>intermedius</i> intermediate mariposa-lily	PMLIL0D1J1	None	None	G3G4T2/S2	1B.2	USFS:S	No	Yes
<i>Calochortus westonii</i> Shirley Meadows star-tulip	PMLIL0D1M0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Calycadenia hooveri</i> Hoover's calycadenia	PDAST1P040	None	None	G3/S3	1B.3	BLM:S	No	Yes
<i>Calycadenia micrantha</i> small-flowered calycadenia	PDAST1P0C0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Calycadenia oppositifolia</i> Butte County calycadenia	PDAST1P070	None	None	G3/S3.2	4.2	USFS:S	No	No
<i>Calycadenia villosa</i> dwarf calycadenia	PDAST1P0B0	None	None	G3/S3	1B.1	BLM:S USFS:S	No	Yes
<i>Calyptridium arizonicum</i> Arizona pussypaws	PDPOR09051	None	None	G2G3/S1	2B.1		No	Yes
<i>Calyptridium parryi</i> var. <i>hesseae</i> Santa Cruz Mountains pussypaws	PDPOR09052	None	None	G3G4T2/S2	1B.1	BLM:S	No	Yes
<i>Calyptridium pulchellum</i> Mariposa pussypaws	PDPOR09060	Threatened	None	G1/S1	1B.1		No	Yes
<i>Calyptridium pygmaeum</i> pygmy pussypaws	PDPOR09070	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Calyptridium quadripetalum</i> four-petaled pussypaws	PDPOR09080	None	None	G3/S3.3	4.3		No	No
<i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i> Butte County morning-glory	PDCON04012	None	None	G5T3/S3	4.2		No	Yes
<i>Calystegia collina</i> ssp. <i>oxyphylla</i> Mt. Saint Helena morning-glory	PDCON04032	None	None	G4T3/S3.2	4.2		No	Yes

April, 10, 2014

Page 25 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Calystegia collina ssp. tridactylosa</i> coast range bindweed	PDCON04036	None	None	G4T1/S1	1B.2	BLM:S	No	Yes
<i>Calystegia collina ssp. venusta</i> South Coast Range morning-glory	PDCON04034	None	None	G4T3/S3.2	4.3		No	No
<i>Calystegia macrostegia ssp. amplissima</i> island morning-glory	PDCON04081	None	None	G4G5T3/S3.3	4.3		No	No
<i>Calystegia malacophylla var. berryi</i> Berry's morning-glory	PDCON040K2	None	None	G4G5T3? Q/S3?	3.3		No	Yes
<i>Calystegia peirsonii</i> Peirson's morning-glory	PDCON040A0	None	None	G3/S3.2	4.2		No	Yes
<i>Calystegia purpurata ssp. saxicola</i> coastal bluff morning-glory	PDCON040D2	None	None	G4T2T3/S2S3	1B.2		No	Yes
<i>Calystegia sepium ssp. binghamiae</i> Santa Barbara morning-glory	PDCON040E6	None	None	G5T1/S1	1B.1		No	Yes
<i>Calystegia stebbinsii</i> Stebbins' morning-glory	PDCON040H0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Calystegia subacaulis ssp. episcopalis</i> Cambria morning-glory	PDCON040J1	None	None	G3T3/S3	4.2		No	Yes
<i>Camissonia benitensis</i> San Benito evening-primrose	PDONA03030	Threatened	None	G2/S2	1B.1		No	Yes
<i>Camissonia integrifolia</i> Kern River evening-primrose	PDONA030T0	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Camissonia kernensis ssp. kernensis</i> Kern County evening-primrose	PDONA030V2	None	None	G4T3/S3.3	4.3		No	No
<i>Camissonia sierrae ssp. alticola</i> Mono Hot Springs evening-primrose	PDONA031H1	None	None	G3T2/S2	1B.2	USFS:S	No	Yes
<i>Camissonia sierrae ssp. sierrae</i> Yosemite evening-primrose	PDONA031H2	None	None	G3T3/S3.3	4.3		No	No
<i>Camissoniopsis guadalupensis ssp. clementina</i> San Clemente Island evening-primrose	PDONA030M1	None	None	G3T3/S3	1B.2		No	Yes
<i>Camissoniopsis hardhamiae</i> Hardham's evening-primrose	PDONA030N0	None	None	G1Q/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Camissoniopsis lewisii</i> Lewis' evening-primrose	PDONA030X0	None	None	G2G3/S1S3	3		No	No
<i>Campanula californica</i> swamp harebell	PDCAM02060	None	None	G3/S3	1B.2	BLM:S	No	Yes

April, 10, 2014

Page 26 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Campanula exigua</i> chaparral harebell	PDCAM020A0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Campanula scabrella</i> rough harebell	PDCAM020U0	None	None	G4/S3.3	4.3		No	No
<i>Campanula sharsmithiae</i> Sharsmith's harebell	PDCAM02100	None	None	G1/S1	1B.2	BLM:S	No	Yes
<i>Campanula shetleri</i> Castle Crag's harebell	PDCAM020W0	None	None	G2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Campanula wilkinsiana</i> Wilkin's harebell	PDCAM020Z0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Canbya candida</i> white pygmy-poppy	PDPAP05020	None	None	G3/S3.2	4.2	USFS:S	No	Yes
<i>Cardamine angulata</i> seaside bittercress	PDBRA0K010	None	None	G5/S1	2B.1		No	Yes
<i>Cardamine bellidifolia</i> var. <i>pachyphylla</i> fleshy toothwort	PDBRA0K022	None	None	G5T3/S3	4.3		No	No
<i>Cardamine nuttallii</i> var. <i>gemmata</i> yellow-tubered toothwort	PDBRA0K0R3	None	None	G5T3Q/S2	3.3		No	Yes
<i>Cardamine pachystigma</i> var. <i>dissectifolia</i> dissected-leaved toothwort	PDBRA0K1B1	None	None	G3G5T2Q/S2	1B.2		No	Yes
<i>Carex arcta</i> northern clustered sedge	PMCYP030X0	None	None	G5/S2	2B.2		No	Yes
<i>Carex atherodes</i> wheat sedge	PMCYP03160	None	None	G5/S1	2B.2		No	Yes
<i>Carex buxbaumii</i> Buxbaum's sedge	PMCYP032B0	None	None	G5/S3.2	4.2		No	No
<i>Carex californica</i> California sedge	PMCYP032D0	None	None	G5/S2?	2B.3		No	Yes
<i>Carex comosa</i> bristly sedge	PMCYP032Y0	None	None	G5/S2	2B.1		No	Yes
<i>Carex congdonii</i> Congdon's sedge	PMCYP03320	None	None	G3/S3.3	4.3		No	No
<i>Carex davyi</i> Davy's sedge	PMCYP033H0	None	None	G2/S2	1B.3		No	Yes
<i>Carex duriuscula</i> spikerush sedge	PMCYP03GJ0	None	None	G5/S2?	2B.3		No	Yes
<i>Carex geyeri</i> Geyer's sedge	PMCYP03540	None	None	G5/S3.2	4.2		No	No

April, 10, 2014

Page 27 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Carex halliana</i> Oregon sedge	PMCYP035M0	None	None	G4G5/S2	2B.3		No	Yes
<i>Carex hystericina</i> porcupine sedge	PMCYP036D0	None	None	G5/S1	2B.1		No	Yes
<i>Carex idaho</i> Idaho sedge	PMCYP036E0	None	None	G2G3/S1	2B.3		No	Yes
<i>Carex incurviformis</i> Mount Dana sedge	PMCYP036G0	None	None	G4G5/S3.3	4.3		No	No
<i>Carex klamathensis</i> Klamath sedge	PMCYP03L70	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Carex lasiocarpa</i> woolly-fruited sedge	PMCYP03720	None	None	G5/S2	2B.3		No	Yes
<i>Carex lenticularis</i> var. <i>limnophila</i> lagoon sedge	PMCYP037A7	None	None	G5T5/S1	2B.2		No	Yes
<i>Carex leptalea</i> bristle-stalked sedge	PMCYP037E0	None	None	G5/S1	2B.2		No	Yes
<i>Carex limosa</i> mud sedge	PMCYP037K0	None	None	G5/S3	2B.2		No	Yes
<i>Carex livida</i> livid sedge	PMCYP037L0	None	None	G5/SH	2A		No	Yes
<i>Carex lyngbyei</i> Lyngbye's sedge	PMCYP037Y0	None	None	G5/S2	2B.2		No	Yes
<i>Carex nardina</i> nard sedge	PMCYP03920	None	None	G4G5/S1	2B.2		No	Yes
<i>Carex obispoensis</i> San Luis Obispo sedge	PMCYP039J0	None	None	G2G3/S2S3	1B.2	BLM:S USFS:S	No	Yes
<i>Carex occidentalis</i> western sedge	PMCYP039M0	None	None	G4/S2S3	2B.3		No	Yes
<i>Carex petasata</i> Liddon's sedge	PMCYP03AE0	None	None	G5/S2	2B.3		No	Yes
<i>Carex praticola</i> northern meadow sedge	PMCYP03B20	None	None	G5/S2S3	2B.2		No	Yes
<i>Carex saliniformis</i> deceiving sedge	PMCYP03BY0	None	None	G2/S2	1B.2		No	Yes
<i>Carex scabriuscula</i> Cascade sedge	PMCYP03C40	None	None	G3G4/S3.3?	4.3		No	No
<i>Carex scirpoidea</i> ssp. <i>pseudoscirpoidea</i> western single-spiked sedge	PMCYP03C85	None	None	G5T5/S2	2B.2		No	Yes

April, 10, 2014

Page 28 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Carex scoparia</i> var. <i>scoparia</i> pointed broom sedge	PMCYP03C91	None	None	G5T5/S2S3	2B.2		No	Yes
<i>Carex serpenticola</i> serpentine sedge	PMCYP03KM0	None	None	G4/S3	2B.3		No	Yes
<i>Carex sheldonii</i> Sheldon's sedge	PMCYP03CE0	None	None	G4/S3	2B.2		No	Yes
<i>Carex stevenii</i> Steven's sedge	PMCYP039D4	None	None	G4?/S1	2B.2		No	Yes
<i>Carex tahoensis</i> Tahoe sedge	PMCYP03DG0	None	None	G5/S3	4.3		No	No
<i>Carex tiogana</i> Tioga Pass sedge	PMCYP03GP0	None	None	G1Q/S1	1B.3	USFS:S	No	Yes
<i>Carex tompkinsii</i> Tompkins' sedge	PMCYP03DR0	None	Rare	G3/S3.3	4.3		No	Yes
<i>Carex vallicola</i> western valley sedge	PMCYP03EA0	None	None	G5/S2	2B.3		No	Yes
<i>Carex viridula</i> ssp. <i>viridula</i> green yellow sedge	PMCYP03EM5	None	None	G5T5/S2	2B.3		No	Yes
<i>Carlwrightia arizonica</i> Arizona carlowrightia	PDACA07010	None	None	G4G5/S2	2B.2		No	Yes
<i>Carlquistia muirii</i> Muir's tarplant	PDASTDU010	None	None	G2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Carnegiea gigantea</i> saguaro	PDCAC12010	None	None	G5/S1	2B.2		No	Yes
<i>Carpenteria californica</i> tree-anemone	PDHDR04010	None	Threatened	G1?/S1?	1B.2	BLM:S USFS:S	No	Yes
<i>Cascadia nuttallii</i> Nuttall's saxifrage	PDSAX0U160	None	None	G4?/S1	2B.1		No	Yes
<i>Castela emoryi</i> Emory's crucifixion-thorn	PDSIM03030	None	None	G4/S2S3	2B.2		No	Yes
<i>Castilleja affinis</i> var. <i>neglecta</i> Tiburon paintbrush	PDSCR0D013	Endangered	Threatened	G4G5T1/S1	1B.2		No	Yes
<i>Castilleja ambigua</i> var. <i>ambigua</i> johnny-nip	PDSCR0D401	None	None	G4T3T4/S3	4.2		No	No
<i>Castilleja ambigua</i> var. <i>humboldtensis</i> Humboldt Bay owl's-clover	PDSCR0D402	None	None	G4T2/S2	1B.2	BLM:S	No	Yes
<i>Castilleja ambigua</i> var. <i>insalutata</i> pink Johnny-nip	PDSCR0D403	None	None	G4T1/S1	1B.1		No	Yes

April, 10, 2014

Page 29 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Castilleja ambigua</i> var. <i>meadii</i> Mead's owls-clover	PDSCR0D404	None	None	G4T1/S1	1B.1		No	Yes
<i>Castilleja brevilobata</i> short-lobed paintbrush	PDSCR0D181	None	None	G3/S3.2	4.2		No	No
<i>Castilleja campestris</i> var. <i>succulenta</i> succulent owl's-clover	PDSCR0D3Z1	Threatened	Endangered	G4?T2/S2	1B.2		No	Yes
<i>Castilleja cinerea</i> ash-gray paintbrush	PDSCR0D0H0	Threatened	None	G2/S2	1B.2		No	Yes
<i>Castilleja densiflora</i> var. <i>obispoensis</i> San Luis Obispo owl's-clover	PDSCR0D453	None	None	G5T2/S2	1B.2	BLM:S	No	Yes
<i>Castilleja elata</i> Siskiyou paintbrush	PDSCR0D213	None	None	G3/S2S3	2B.2		No	Yes
<i>Castilleja gleasoni</i> Mt. Gleason paintbrush	PDSCR0D140	None	Rare	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Castilleja grisea</i> San Clemente Island paintbrush	PDSCR0D160	Threatened	Endangered	G3/S3	1B.3		No	Yes
<i>Castilleja hololeuca</i> island white-felted paintbrush	PDSCR0D1L1	None	None	G3/S3	1B.2		No	Yes
<i>Castilleja lasiorhyncha</i> San Bernardino Mountains owl's- clover	PDSCR0D410	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Castilleja latifolia</i> Monterey Coast paintbrush	PDSCR0D1P0	None	None	G3/S3.3	4.3		No	No
<i>Castilleja leschkeana</i> Point Reyes paintbrush	PDSCR0D1R0	None	None	GH/SH	1A		No	Yes
<i>Castilleja litoralis</i> Oregon coast paintbrush	PDSCR0D012	None	None	G4G5T4/S3	2B.2		No	Yes
<i>Castilleja mendocinensis</i> Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Castilleja mollis</i> soft-leaved paintbrush	PDSCR0D230	Endangered	None	G1/S1	1B.1		No	Yes
<i>Castilleja montigena</i> Heckard's paintbrush	PDSCR0D3G0	None	None	G3/S3.3	4.3		No	No
<i>Castilleja plagiotoma</i> Mojave paintbrush	PDSCR0D2J0	None	None	G3/S3.3	4.3	USFS:S	No	No
<i>Castilleja rubicundula</i> var. <i>rubicundula</i> pink creamsacs	PDSCR0D482	None	None	G5T2/S2	1B.2	BLM:S	No	Yes
<i>Castilleja schizotricha</i> split-hair paintbrush	PDSCR0D2Y0	None	None	G3/S3.3	4.3		No	No

April, 10, 2014

Page 30 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Castilleja uliginosa</i> Pitkin Marsh paintbrush	PDSCR0D380	None	Endangered	GXQ/SX	1A		No	Yes
<i>Caulanthus amplexicaulis</i> var. <i>barbarae</i> Santa Barbara jewelflower	PDBRA0M012	None	None	G4T1/S1	1B.1	USFS:S	No	Yes
<i>Caulanthus californicus</i> California jewelflower	PDBRA31010	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Caulanthus lemmonii</i> Lemmon's jewelflower	PDBRA0M0E0	None	None	G3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Caulanthus major</i> var. <i>nevadensis</i> slender jewelflower	PDBRA0M0F1	None	None	G4T3?/S3	4.3		No	No
<i>Caulanthus simulans</i> Payson's jewelflower	PDBRA0M0H0	None	None	G3/S3.2	4.2	USFS:S	No	Yes
<i>Ceanothus confusus</i> Rincon Ridge ceanothus	PDRHA04220	None	None	G1/S1	1B.1	BLM:S	No	Yes
<i>Ceanothus cuneatus</i> var. <i>fascicularis</i> Lompoc ceanothus	PDRHA04066	None	None	G5T3/S3.2	4.2		No	No
<i>Ceanothus cyaneus</i> Lakeside ceanothus	PDRHA04070	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Ceanothus divergens</i> Calistoga ceanothus	PDRHA04240	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Ceanothus ferrisiae</i> Coyote ceanothus	PDRHA041N0	Endangered	None	G2/S2	1B.1		No	Yes
<i>Ceanothus foliosus</i> var. <i>vineatus</i> Vine Hill ceanothus	PDRHA040D6	None	None	G3T1/S1?	1B.1		No	Yes
<i>Ceanothus fresnensis</i> Fresno ceanothus	PDRHA040E0	None	None	G3/S3.3	4.3		No	No
<i>Ceanothus gloriosus</i> var. <i>exaltatus</i> glory brush	PDRHA040F4	None	None	G3G4T3/S3.3	4.3		No	No
<i>Ceanothus gloriosus</i> var. <i>gloriosus</i> Point Reyes ceanothus	PDRHA040F5	None	None	G3G4T3/S3.3	4.3		No	No
<i>Ceanothus gloriosus</i> var. <i>porrectus</i> Mt. Vision ceanothus	PDRHA040F7	None	None	G3G4T2/S2	1B.3		No	Yes
<i>Ceanothus hearstiorum</i> Hearsts' ceanothus	PDRHA040J0	None	Rare	G1/S1	1B.2	BLM:S	No	Yes
<i>Ceanothus maritimus</i> maritime ceanothus	PDRHA040T0	None	Rare	G2/S2	1B.2		No	Yes
<i>Ceanothus masonii</i> Mason's ceanothus	PDRHA04200	None	Rare	G1/S1	1B.2		No	Yes

April, 10, 2014

Page 31 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Ceanothus megacarpus</i> var. <i>insularis</i> island ceanothus	PDRHA040W1	None	None	G5T3/S3.3	4.3		No	No
<i>Ceanothus ophiophilus</i> Vail Lake ceanothus	PDRHA041M0	Threatened	Endangered	G1/S1	1B.1		No	Yes
<i>Ceanothus otayensis</i> Otay Mountain ceanothus	PDRHA04430	None	None	G1/S1	1B.2	BLM:S	No	Yes
<i>Ceanothus pinetorum</i> Kern ceanothus	PDRHA04130	None	None	G3/S3.3	4.3		No	No
<i>Ceanothus purpureus</i> holly-leaved ceanothus	PDRHA04160	None	None	G2/S2	1B.2		No	Yes
<i>Ceanothus rigidus</i> Monterey ceanothus	PDRHA04067	None	None	G3/S3.2	4.2		No	No
<i>Ceanothus roderickii</i> Pine Hill ceanothus	PDRHA04190	Endangered	Rare	G1/S1	1B.2		No	Yes
<i>Ceanothus sonomensis</i> Sonoma ceanothus	PDRHA04420	None	None	G2/S2	1B.2		No	Yes
<i>Ceanothus verrucosus</i> wart-stemmed ceanothus	PDRHA041J0	None	None	G3/S2.2	2B.2		No	Yes
<i>Centromadia parryi</i> ssp. <i>australis</i> southern tarplant	PDAST4R0P4	None	None	G3T2/S2	1B.1		No	Yes
<i>Centromadia parryi</i> ssp. <i>congdonii</i> Congdon's tarplant	PDAST4R0P1	None	None	G3T2/S2	1B.1	BLM:S	No	Yes
<i>Centromadia parryi</i> ssp. <i>parryi</i> pappose tarplant	PDAST4R0P2	None	None	G3T1/S1	1B.2	BLM:S	No	Yes
<i>Centromadia parryi</i> ssp. <i>rudis</i> Parry's rough tarplant	PDAST4R0P3	None	None	G3T3/S3.2	4.2		No	No
<i>Centromadia pungens</i> ssp. <i>laevis</i> smooth tarplant	PDAST4R0R4	None	None	G3G4T2/S2	1B.1		No	Yes
<i>Cercocarpus betuloides</i> var. <i>blancheae</i> island mountain-mahogany	PDR0S08022	None	None	G5T3/S3.3	4.3		No	No
<i>Cercocarpus traskiae</i> Catalina Island mountain- mahogany	PDR0S08030	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Chaenactis carphoclinia</i> var. <i>peirsonii</i> Peirson's pincushion	PDAST20042	None	None	G5T2/S2	1B.3		No	Yes
<i>Chaenactis douglasii</i> var. <i>alpina</i> alpine dusty maidens	PDAST20065	None	None	G5T5/S2	2B.3		No	Yes
<i>Chaenactis glabriuscula</i> var. <i>orcuttiana</i> Orcutt's pincushion	PDAST20095	None	None	G5T1/S1	1B.1	BLM:S	No	Yes

April, 10, 2014

Page 32 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Chaenactis parishii</i> Parish's chaenactis	PDAST200D0	None	None	G3G4/S3	1B.3		No	Yes
<i>Chaenactis suffrutescens</i> Shasta chaenactis	PDAST200H0	None	None	G3/S3	1B.3	BLM:S USFS:S	No	Yes
<i>Chaetadelpa wheeleri</i> Wheeler's dune-broom	PDAST21010	None	None	G4/S2	2B.2		No	Yes
<i>Chamaebatia australis</i> southern mountain misery	PDROS0A010	None	None	G4/S3.2	4.2		No	No
<i>Chamaesyce abramsiana</i> Abrams' spurge	PDEUP0D010	None	None	G4/S2	2B.2		No	Yes
<i>Chamaesyce arizonica</i> Arizona spurge	PDEUP0D060	None	None	G5/S2	2B.3		No	Yes
<i>Chamaesyce hooveri</i> Hoover's spurge	PDEUP0D150	Threatened	None	G2/S2	1B.2		No	Yes
<i>Chamaesyce ocellata ssp. rattanii</i> Stony Creek spurge	PDEUP0D1P1	None	None	G4T1T2/S1S2	1B.2	BLM:S	No	Yes
<i>Chamaesyce parryi</i> Parry's spurge	PDEUP0D1T0	None	None	G5/S1	2B.3		No	Yes
<i>Chamaesyce platysperma</i> flat-seeded spurge	PDEUP0D1X0	None	None	G3/S1	1B.2	BLM:S	No	Yes
<i>Chamaesyce revoluta</i> revolute spurge	PDEUP0D230	None	None	G5/S3.3	4.3		No	No
<i>Chamaesyce vallis-mortae</i> Death Valley sandmat	PDEUP0D2G0	None	None	G3/S3.2	4.2		No	No
<i>Cheilanthes wootonii</i> Wooton's lace fern	PPADI090S0	None	None	G5/S1	2B.3		No	Yes
<i>Chenopodium littoreum</i> coastal goosefoot	PDCHE091Z0	None	None	G2/S2	1B.2		No	Yes
<i>Chenopodium simplex</i> large-seeded goosefoot	PDCHE091P0	None	None	G5/S3.3	4.3		No	No
<i>Chlorogalum grandiflorum</i> Red Hills soaproot	PMLIL0G020	None	None	G3/S3	1B.2	BLM:S	No	Yes
<i>Chlorogalum pomeridianum var. minus</i> dwarf soaproot	PMLIL0G042	None	None	G5T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Chlorogalum purpureum var. purpureum</i> Santa Lucia purple amole	PMLIL0G051	Threatened	None	G2T2/S2	1B.1		No	Yes
<i>Chlorogalum purpureum var. reductum</i> Camatta Canyon amole	PMLIL0G052	Threatened	Rare	G2T1/S1	1B.1		No	Yes

April, 10, 2014

Page 33 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Chloropyron maritimum</i> ssp. <i>maritimum</i> salt marsh bird's-beak	PDSCR0J0C2	Endangered	Endangered	G4?T1/S1	1B.2		No	Yes
<i>Chloropyron maritimum</i> ssp. <i>palustre</i> Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2/S2	1B.2	BLM:S	No	Yes
<i>Chloropyron molle</i> ssp. <i>hispidum</i> hispid salty bird's-beak	PDSCR0J0D1	None	None	G2T2/S2	1B.1	BLM:S	No	Yes
<i>Chloropyron molle</i> ssp. <i>molle</i> soft salty bird's-beak	PDSCR0J0D2	Endangered	Rare	G2T1/S1	1B.2		No	Yes
<i>Chloropyron palmatum</i> palmate-bracted salty bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Chloropyron tecopense</i> Tecopa salty bird's-beak	PDSCR0J0Q0	None	None	G2/S1	1B.2	BLM:S	No	Yes
<i>Chorizanthe biloba</i> var. <i>immemora</i> Hernandez spineflower	PDPGN04025	None	None	G3T1?/S1?	1B.2	BLM:S	No	Yes
<i>Chorizanthe blakleyi</i> Blakley's spineflower	PDPGN04030	None	None	G2G3/S2S3	1B.3	USFS:S	No	Yes
<i>Chorizanthe breweri</i> Brewer's spineflower	PDPGN04050	None	None	G2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i> San Francisco Bay spineflower	PDPGN04081	None	None	G2T1/S1	1B.2		No	Yes
<i>Chorizanthe cuspidata</i> var. <i>villosa</i> woolly-headed spineflower	PDPGN04082	None	None	G2T2/S2	1B.2		No	Yes
<i>Chorizanthe douglasii</i> Douglas' spineflower	PDPGN040A0	None	None	G3/S3.3	4.3		No	No
<i>Chorizanthe howellii</i> Howell's spineflower	PDPGN040C0	Endangered	Threatened	G1/S1	1B.2		No	Yes
<i>Chorizanthe leptotheca</i> Peninsular spineflower	PDPGN040D0	None	None	G4/S3.2	4.2		No	No
<i>Chorizanthe orcuttiana</i> Orcutt's spineflower	PDPGN040G0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Chorizanthe palmeri</i> Palmer's spineflower	PDPGN040H0	None	None	G3?/S3.2?	4.2		No	No
<i>Chorizanthe parryi</i> var. <i>fernandina</i> San Fernando Valley spineflower	PDPGN040J1	Candidate	Endangered	G2T1/S1	1B.1	USFS:S	No	Yes
<i>Chorizanthe parryi</i> var. <i>parryi</i> Parry's spineflower	PDPGN040J2	None	None	G2T2/S2	1B.1	BLM:S USFS:S	No	Yes
<i>Chorizanthe polygonoides</i> var. <i>longispina</i> long-spined spineflower	PDPGN040K1	None	None	G5T3/S3	1B.2	BLM:S	No	Yes

April, 10, 2014

Page 34 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Chorizanthe pungens</i> var. <i>hartwegiana</i> Ben Lomond spineflower	PDPGN040M1	Endangered	None	G2T1/S1	1B.1		No	Yes
<i>Chorizanthe pungens</i> var. <i>pungens</i> Monterey spineflower	PDPGN040M2	Threatened	None	G2T2/S2	1B.2		No	Yes
<i>Chorizanthe rectispina</i> straight-awned spineflower	PDPGN040N0	None	None	G1/S1	1B.3	BLM:S USFS:S	No	Yes
<i>Chorizanthe robusta</i> var. <i>hartwegii</i> Scotts Valley spineflower	PDPGN040Q1	Endangered	None	G2T1/S1	1B.1		No	Yes
<i>Chorizanthe robusta</i> var. <i>robusta</i> robust spineflower	PDPGN040Q2	Endangered	None	G2T1/S1	1B.1	BLM:S	No	Yes
<i>Chorizanthe spinosa</i> Mojave spineflower	PDPGN040R0	None	None	G3/S3.2	4.2		No	No
<i>Chorizanthe valida</i> Sonoma spineflower	PDPGN040V0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Chorizanthe ventricosa</i> potbellied spineflower	PDPGN040W0	None	None	G3/S3.3	4.3		No	No
<i>Chorizanthe wheeleri</i> Wheeler's spineflower	PDPGN040Y0	None	None	G3/S3.3	4.3		No	No
<i>Chorizanthe xanti</i> var. <i>leucotheca</i> white-bracted spineflower	PDPGN040Z1	None	None	G4T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Chrysothamnus Greenei</i> Greene's rabbitbrush	PDAST2C030	None	None	G5/S3?	2B.3		No	Yes
<i>Chylismia arenaria</i> sand evening-primrose	PDONA03020	None	None	G4?/S2	2B.2		No	Yes
<i>Chylismia claviformis</i> ssp. <i>cruciformis</i> cruciform evening-primrose	PDONA030D4	None	None	G5T4/S2S3	2B.3		No	Yes
<i>Cicuta maculata</i> var. <i>bolanderi</i> Bolander's water-hemlock	PDAP10M051	None	None	G5T3T4/S2	2B.1		No	Yes
<i>Cinna bolanderi</i> Bolander's woodreed	PMPOA1H040	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Cirsium andrewsii</i> Franciscan thistle	PDAST2E050	None	None	G3/S3	1B.2		No	Yes
<i>Cirsium arizonicum</i> var. <i>tenuisectum</i> desert mountain thistle	PDAST2E083	None	None	G5T2/S2	1B.2		No	Yes
<i>Cirsium ciliolatum</i> Ashland thistle	PDAST2E0P0	None	Endangered	G3/S1	2B.1	BLM:S	No	Yes
<i>Cirsium crassicaule</i> slough thistle	PDAST2E0U0	None	None	G2/S2	1B.1	BLM:S	No	Yes

April, 10, 2014

Page 35 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Cirsium fontinale</i> var. <i>campylon</i> Mt. Hamilton fountain thistle	PDAST2E163	None	None	G2T2/S2	1B.2	BLM:S	No	Yes
<i>Cirsium fontinale</i> var. <i>fontinale</i> Crystal Springs fountain thistle	PDAST2E161	Endangered	Endangered	G2T1/S1	1B.1		No	Yes
<i>Cirsium fontinale</i> var. <i>obispoense</i> San Luis Obispo fountain thistle	PDAST2E162	Endangered	Endangered	G2T2/S2	1B.2		No	Yes
<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i> Suisun thistle	PDAST2E1G1	Endangered	None	G2T1/S1	1B.1		No	Yes
<i>Cirsium hydrophilum</i> var. <i>vaseyi</i> Mt. Tamalpais thistle	PDAST2E1G2	None	None	G2T2/S2	1B.2		No	Yes
<i>Cirsium occidentale</i> var. <i>compactum</i> compact cobwebby thistle	PDAST2E1Z1	None	None	G3G4T1/S1	1B.2		No	Yes
<i>Cirsium occidentale</i> var. <i>lucianum</i> Cuesta Ridge thistle	PDAST2E1Z6	None	None	G3G4T2/S2	1B.2	BLM:S	No	Yes
<i>Cirsium praeteriens</i> lost thistle	PDAST2E2B0	None	None	GX/SX	1A		No	Yes
<i>Cirsium rhotophilum</i> surf thistle	PDAST2E2J0	None	Threatened	G1/S1	1B.2	BLM:S	No	Yes
<i>Cirsium scariosum</i> var. <i>loncholepis</i> La Graciosa thistle	PDAST2E1N0	Endangered	Threatened	G5T1/S1	1B.1		No	Yes
<i>Cistanthe maritima</i> seaside cistanthe	PDPOR09020	None	None	G3G4/S3.2	4.2		No	No
<i>Cladium californicum</i> California saw-grass	PMCYP04010	None	None	G4/S2	2B.2	USFS:S	No	Yes
<i>Clarkia amoena</i> ssp. <i>whitneyi</i> Whitney's farewell-to-spring	PDONA05025	None	None	G5T1/S1	1B.1		No	Yes
<i>Clarkia australis</i> Small's southern clarkia	PDONA05040	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Clarkia biloba</i> ssp. <i>australis</i> Mariposa clarkia	PDONA05051	None	None	G4G5T2T3/S2 S3	1B.2	BLM:S USFS:S	No	Yes
<i>Clarkia biloba</i> ssp. <i>brandegeeeae</i> Brandegee's clarkia	PDONA05053	None	None	G4G5T4/S4	4.2	BLM:S	No	Yes
<i>Clarkia borealis</i> ssp. <i>arida</i> Shasta clarkia	PDONA05061	None	None	G3T2/S2	1B.1	BLM:S	No	Yes
<i>Clarkia borealis</i> ssp. <i>borealis</i> northern clarkia	PDONA05062	None	None	G3T3/S3	1B.3	BLM:S USFS:S	No	Yes
<i>Clarkia breweri</i> Brewer's clarkia	PDONA05080	None	None	G3/S3.2	4.2		No	No

April, 10, 2014

Page 36 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Clarkia concinna ssp. automixa</i> Santa Clara red ribbons	PDONA050A1	None	None	G5?T3/S3.3	4.3		No	Yes
<i>Clarkia concinna ssp. raichei</i> Raiche's red ribbons	PDONA050A2	None	None	G5?T1/S1	1B.1		No	Yes
<i>Clarkia delicata</i> delicate clarkia	PDONA050D0	None	None	G3/S3	1B.2	BLM:S	No	Yes
<i>Clarkia exilis</i> slender clarkia	PDONA050G0	None	None	G3/S3.3	4.3		No	No
<i>Clarkia franciscana</i> Presidio clarkia	PDONA050H0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Clarkia gracilis ssp. albicaulis</i> white-stemmed clarkia	PDONA050J1	None	None	G5T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Clarkia gracilis ssp. tracyi</i> Tracy's clarkia	PDONA050J4	None	None	G5T3/S3.2	4.2		No	No
<i>Clarkia imbricata</i> Vine Hill clarkia	PDONA050K0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Clarkia jolonensis</i> Jolon clarkia	PDONA050L0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Clarkia lewisii</i> Lewis' clarkia	PDONA050N0	None	None	G3/S3.3	4.3		No	No
<i>Clarkia lingulata</i> Merced clarkia	PDONA050P0	None	Endangered	G1/S1	1B.1	USFS:S	No	Yes
<i>Clarkia mildrediae ssp. lutescens</i> golden-anthered clarkia	PDONA050Q1	None	None	G3T3/S3.2	4.2		No	No
<i>Clarkia mildrediae ssp. mildrediae</i> Mildred's clarkia	PDONA050Q2	None	None	G3T3/S3	1B.3	BLM:S USFS:S	No	Yes
<i>Clarkia mosquinii</i> Mosquin's clarkia	PDONA050S0	None	None	G2/S2	1B.1	BLM:S USFS:S	No	Yes
<i>Clarkia rostrata</i> beaked clarkia	PDONA050Y0	None	None	G2G3/S2S3	1B.3	BLM:S	No	Yes
<i>Clarkia speciosa ssp. immaculata</i> Pismo clarkia	PDONA05111	Endangered	Rare	G4T1/S1	1B.1		No	Yes
<i>Clarkia springvillensis</i> Springville clarkia	PDONA05120	Threatened	Endangered	G2/S2	1B.2		No	Yes
<i>Clarkia tembloriensis ssp. callientensis</i> Vasek's clarkia	PDONA05141	None	None	G3T1/S1	1B.1	BLM:S	No	Yes
<i>Clarkia virgata</i> Sierra clarkia	PDONA05160	None	None	G3/S3.3	4.3		No	No

April, 10, 2014

Page 37 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Clarkia xantiana</i> ssp. <i>parviflora</i> Kern Canyon clarkia	PDONA05181	None	None	G4T3/S3	4.2		No	Yes
<i>Claytonia lanceolata</i> var. <i>peirsonii</i> Peirson's spring beauty	PDPOR03097	None	None	G5T2Q/S2	3.1	USFS:S	No	Yes
<i>Claytonia megarhiza</i> fell-fields claytonia	PDPOR030A0	None	None	G4G5/S2S3	2B.3		No	Yes
<i>Claytonia palustris</i> marsh claytonia	PDPOR030S0	None	None	G3/S3.3	4.3		No	No
<i>Claytonia parviflora</i> ssp. <i>grandiflora</i> streambank spring beauty	PDPOR030D1	None	None	G5T3/S3.2	4.2		No	No
<i>Claytonia umbellata</i> Great Basin claytonia	PDPOR030P0	None	None	G5?/S2	2B.3		No	Yes
<i>Cleomella brevipes</i> short-pedicelled cleomella	PDCPP04020	None	None	G3G4/S3.2	4.2		No	No
<i>Cleomella hillmanii</i> var. <i>hillmanii</i> Hillman's cleomella	PDCPP04030	None	None	G4G5T4T5/S2	2B.2		No	Yes
<i>Clinopodium chandleri</i> San Miguel savory	PDLAM08030	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Clinopodium mimuloides</i> monkey-flower savory	PDLAM1T040	None	None	G3/S3.2	4.2		No	No
<i>Cochlearia groenlandica</i> Greenland cochlearia	PDBRA0S020	None	None	G4?/S2	2B.3		No	Yes
<i>Collinsia antonina</i> San Antonio collinsia	PDSCR0H010	None	None	G1/S1	1B.2	BLM:S	No	Yes
<i>Collinsia corymbosa</i> round-headed Chinese-houses	PDSCR0H060	None	None	G1/S1	1B.2		No	Yes
<i>Collinsia multicolor</i> San Francisco collinsia	PDSCR0H0B0	None	None	G2/S2	1B.2		No	Yes
<i>Collomia diversifolia</i> serpentine collomia	PDPLM02020	None	None	G3/S3.3	4.3		No	No
<i>Collomia larsenii</i> talus collomia	PDPLM02014	None	None	G4/S2	2B.2	USFS:S	No	Yes
<i>Collomia rawsoniana</i> Rawson's flaming trumpet	PDPLM02080	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Collomia tenella</i> slender collomia	PDPLM02090	None	None	G4?/S1	2B.2		No	Yes
<i>Collomia tracyi</i> Tracy's collomia	PDPLM020B0	None	None	G3/S3.3	4.3		No	No

April, 10, 2014

Page 38 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Colubrina californica</i> Las Animas colubrina	PDRHA05030	None	None	G4/S2S3	2B.3		No	Yes
<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i> summer holly	PDERI0B011	None	None	G3T2/S2	1B.2	BLM:S	No	Yes
<i>Condalia globosa</i> var. <i>pubescens</i> spiny abrojo	PDRHA06031	None	None	G5T3T4/S3.2	4.2		No	No
<i>Constancea nevinii</i> Nevin's woolly sunflower	PDAST3N090	None	None	G4/S4	1B.3		No	Yes
<i>Convolvulus simulans</i> small-flowered morning-glory	PDCON05060	None	None	G3/S3.2	4.2		No	No
<i>Coptis laciniata</i> Oregon goldthread	PDRAN0A020	None	None	G4G5/S3	2B.2		No	Yes
<i>Corallorhiza trifida</i> northern coralroot	PMORC0M050	None	None	G5/S1	2B.1		No	Yes
<i>Cordylanthus capitatus</i> Yakima bird's-beak	PDSCR0J030	None	None	G4/S2	2B.2		No	Yes
<i>Cordylanthus eremicus</i> ssp. <i>eremicus</i> desert bird's-beak	PDSCR0J042	None	None	G3?T3?/S3?	4.3		No	No
<i>Cordylanthus eremicus</i> ssp. <i>kernensis</i> Kern Plateau bird's-beak	PDSCR0J043	None	None	G3?T2/S2	1B.3	USFS:S	No	Yes
<i>Cordylanthus nidularius</i> Mt. Diablo bird's-beak	PDSCR0J0F0	None	Rare	G1/S1	1B.1	BLM:S	No	Yes
<i>Cordylanthus parviflorus</i> small-flowered bird's-beak	PDSCR0J0K0	None	None	G4G5/S1S2	2B.3		No	Yes
<i>Cordylanthus rigidus</i> ssp. <i>brevibracteatus</i> short-bracted bird's-beak	PDSCR0J0P3	None	None	G5T3/S3.3	4.3		No	No
<i>Cordylanthus rigidus</i> ssp. <i>littoralis</i> seaside bird's-beak	PDSCR0J0P2	None	Endangered	G5T2/S2	1B.1	BLM:S	No	Yes
<i>Cordylanthus tenuis</i> ssp. <i>barbatus</i> Fresno County bird's-beak	PDSCR0J0S4	None	None	G4G5T3/S3.3?	4.3		No	No
<i>Cordylanthus tenuis</i> ssp. <i>brunneus</i> serpentine bird's-beak	PDSCR0J0S1	None	None	G4G5T3/S3.3	4.3		No	No
<i>Cordylanthus tenuis</i> ssp. <i>capillaris</i> Pennell's bird's-beak	PDSCR0J0S2	Endangered	Rare	G4G5T1/S1	1B.2		No	Yes
<i>Cordylanthus tenuis</i> ssp. <i>pallescens</i> pallid bird's-beak	PDSCR0J0S3	None	None	G4G5T1/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Corethrogyne filaginifolia</i> var. <i>incana</i> San Diego sand aster	PDAST2M025	None	None	G4T1/S1	1B.1		No	Yes

April, 10, 2014

Page 39 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Corethrogyne filaginifolia</i> var. <i>linifolia</i> Del Mar Mesa sand aster	PDAST2M027	None	None	G4T1/S1	1B.1		No	Yes
<i>Corethrogyne leucophylla</i> branching beach aster	PDAST2M030	None	None	G3Q/S3.2	3.2		No	No
<i>Corispermum americanum</i> var. <i>americanum</i> American bugseed	PDCHE0A091	None	None	G5?T5?/S1	2B.2		No	Yes
<i>Cornus canadensis</i> bunchberry	PDCOR01040	None	None	G5/S2	2B.2		No	Yes
<i>Coryphantha alversonii</i> Alverson's foxtail cactus	PDCAC0X060	None	None	G3/S3.2	4.3		No	Yes
<i>Coryphantha chlorantha</i> desert pincushion	PDCAC040J0	None	None	G2G3/S2	2B.1		No	Yes
<i>Coryphantha vivipara</i> var. <i>rosea</i> viviparous foxtail cactus	PDCAC0X0G8	None	None	G5T3/S1	2B.2		No	Yes
<i>Crataegus castlegarensis</i> Calstlegar hawthorne	PDR0S0H9E0	None	None	G5/S1S3	3		No	No
<i>Crepis runcinata</i> ssp. <i>hallii</i> Hall's meadow hawksbeard	PDAST2R0KB	None	None	G5T3?/S1S2	2B.1		No	Yes
<i>Crossosoma californicum</i> Catalina crossosoma	PDCRO02020	None	None	G2/S2	1B.2		No	Yes
<i>Croton wigginsii</i> Wiggins' croton	PDEUP0H140	None	Rare	G2G3/S2	2B.2	BLM:S	No	Yes
<i>Cryptantha celosiooides</i> cocks-comb cat's-eye	PDBOR0A0F0	None	None	G5/S1	2B.3		No	Yes
<i>Cryptantha circumscissa</i> var. <i>rosulata</i> rosette cushion cryptantha	PDBOR0A0G3	None	None	G5T2/S2	1B.2	USFS:S	No	Yes
<i>Cryptantha clokeyi</i> Clokey's cryptantha	PDBOR0A3M0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Cryptantha costata</i> ribbed cryptantha	PDBOR0A0M0	None	None	G4G5/S3.3	4.3		No	No
<i>Cryptantha crinita</i> silky cryptantha	PDBOR0A0Q0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Cryptantha crymophila</i> subalpine cryptantha	PDBOR0A0R0	None	None	G3/S3	1B.3		No	Yes
<i>Cryptantha dissita</i> serpentine cryptantha	PDBOR0A0H2	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Cryptantha excavata</i> deep-scarred cryptantha	PDBOR0A0W0	None	None	G1/S1	1B.3	BLM:S	No	Yes

April, 10, 2014

Page 40 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Cryptantha fendleri</i> sand dune cryptantha	PDBOR0A0X0	None	None	G5/S1	2B.2		No	Yes
<i>Cryptantha ganderi</i> Gander's cryptantha	PDBOR0A120	None	None	G1G2/S1	1B.1	BLM:S	No	Yes
<i>Cryptantha glomeriflora</i> clustered-flower cryptantha	PDBOR0A130	None	None	G3Q/S3.3	4.3		No	No
<i>Cryptantha holoptera</i> winged cryptantha	PDBOR0A180	None	None	G3G4/S3?	4.3		No	No
<i>Cryptantha hooveri</i> Hoover's cryptantha	PDBOR0A190	None	None	GH/SH	1A		No	Yes
<i>Cryptantha incana</i> Tulare cryptantha	PDBOR0A1D0	None	None	G1/S1	1B.3	USFS:S	No	Yes
<i>Cryptantha mariposae</i> Mariposa cryptantha	PDBOR0A1Q0	None	None	G3/S3	1B.3	BLM:S	No	Yes
<i>Cryptantha rattanii</i> Rattan's cryptantha	PDBOR0A2H0	None	None	G3/S3.3	4.3		No	No
<i>Cryptantha roosiorum</i> bristlecone cryptantha	PDBOR0A2L0	None	Rare	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Cryptantha schoolcraftii</i> Schoolcraft's cryptantha	PDBOR0A3H0	None	None	G3/S1	2B.2	BLM:S	No	Yes
<i>Cryptantha scoparia</i> gray cryptantha	PDBOR0A2Q0	None	None	G4?/S3.3	4.3		No	No
<i>Cryptantha traskiae</i> Trask's cryptantha	PDBOR0A370	None	None	G2/S2	1B.1		No	Yes
<i>Cryptantha tumulosa</i> New York Mountains cryptantha	PDBOR0A380	None	None	G4?/S3.3	4.3		No	No
<i>Cryptantha wigginsii</i> Wiggins' cryptantha	PDBOR0A400	None	None	G2/S1	1B.2		No	Yes
<i>Cuniculotinus gramineus</i> Panamint rock-goldenrod	PDAST2C0H0	None	None	G4?/S3	2B.3		No	Yes
<i>Cuscuta californica</i> var. <i>apiculata</i> pointed dodder	PDCUS01071	None	None	G5T3?/S2S3	3		No	No
<i>Cuscuta jepsonii</i> Jepson's dodder	PDCUS011T0	None	None	GH/SH	1B.2		No	Yes
<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i> Peruvian dodder	PDCUS01111	None	None	G5T4T5/SH	2B.2		No	Yes
<i>Cuscuta pacifica</i> var. <i>papillata</i> Mendocino dodder	PDCUS011A2	None	None	G5T1/S1	1B.2		No	Yes

April, 10, 2014

Page 41 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Cusickiella quadricostata</i> Bodie Hills cusickiella	PDBRA2V010	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Cylindropuntia californica</i> var. <i>californica</i> snake cholla	PDCAC0D2Y1	None	None	G3T2/S1	1B.1		No	Yes
<i>Cylindropuntia fosbergii</i> pink cholla	PDCAC0D2U0	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Cylindropuntia munzii</i> Munz's cholla	PDCAC0D0V0	None	None	G3/S1	1B.3	BLM:S	No	Yes
<i>Cylindropuntia wolfii</i> Wolf's cholla	PDCAC0D2R0	None	None	G4?/S3.3	4.3		No	No
<i>Cymopterus deserticola</i> desert cymopterus	PDAPI0U090	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Cymopterus gilmanii</i> Gilman's cymopterus	PDAPI0U0C0	None	None	G3?/S2	2B.3		No	Yes
<i>Cymopterus globosus</i> globose cymopterus	PDAPI0U0E0	None	None	G4/S1	2B.2		No	Yes
<i>Cymopterus multinervatus</i> purple-nerve cymopterus	PDAPI0U0Q0	None	None	G5?/S2	2B.2		No	Yes
<i>Cymopterus ripleyi</i> var. <i>saniculoides</i> sanicle cymopterus	PDAPI0U0X1	None	None	G3G4T3Q/S1	1B.2	BLM:S	No	Yes
<i>Cyripedium californicum</i> California lady's-slipper	PMORC0Q040	None	None	G3/S3.2	4.2		No	No
<i>Cyripedium fasciculatum</i> clustered lady's-slipper	PMORC0Q060	None	None	G4/S3.2	4.2	BLM:S USFS:S	No	No
<i>Cyripedium montanum</i> mountain lady's-slipper	PMORC0Q080	None	None	G4/S4.2	4.2	BLM:S USFS:S	No	No
<i>Cyripedium parviflorum</i> var. <i>makasin</i> northern yellow lady's slipper	PMORC0Q093	None	None	G5T4T5/S1	3.1		No	No
<i>Dalea ornata</i> ornate dalea	PDFAB1A150	None	None	G4G5/S2	2B.1	BLM:S	No	Yes
<i>Darlingtonia californica</i> California pitcherplant	PDSAR01010	None	None	G3G4/S3.2	4.2		No	No
<i>Dedeckera eurekensis</i> July gold	PDPGN06010	None	Rare	G3/S3	1B.3	BLM:S USFS:S	No	Yes
<i>Deinandra arida</i> Red Rock tarplant	PDAST4R010	None	Rare	G1/S1	1B.2	BLM:S	No	Yes
<i>Deinandra bacigalupii</i> Livermore tarplant	PDAST4R0V0	None	None	G1/S1	1B.2		No	Yes

April, 10, 2014

Page 42 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Deinandra clementina</i> island tarplant	PDAST4R040	None	None	G3/S3.3	4.3		No	No
<i>Deinandra conjugens</i> Otay tarplant	PDAST4R070	Threatened	Endangered	G1/S1	1B.1		No	Yes
<i>Deinandra floribunda</i> Tecate tarplant	PDAST4R0B0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Deinandra halliana</i> Hall's tarplant	PDAST4R0C0	None	None	G2/S2	1B.1	BLM:S	No	Yes
<i>Deinandra increscens ssp. villosa</i> Gaviota tarplant	PDAST4R0U3	Endangered	Endangered	G4G5T2/S2	1B.1		No	Yes
<i>Deinandra minthornii</i> Santa Susana tarplant	PDAST4R0J0	None	Rare	G2/S2	1B.2	BLM:S	No	Yes
<i>Deinandra mohavensis</i> Mojave tarplant	PDAST4R0K0	None	Endangered	G2G3/S2S3	1B.3	BLM:S USFS:S	No	Yes
<i>Deinandra paniculata</i> paniculate tarplant	PDAST4R0N0	None	None	G3G4/S3.2	4.2		No	No
<i>Delphinium bakeri</i> Baker's larkspur	PDRAN0B050	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Delphinium californicum ssp. interius</i> Hospital Canyon larkspur	PDRAN0B0A2	None	None	G3T3/S3	1B.2		No	Yes
<i>Delphinium gypsophilum ssp. parviflorum</i> small-flowered gypsum-loving larkspur	PDRAN0B0S2	None	None	G4T3?Q/S3?	3.2		No	No
<i>Delphinium hansenii ssp. ewanianum</i> Ewan's larkspur	PDRAN0B0T2	None	None	G4T3/S3.2	4.2		No	No
<i>Delphinium hesperium ssp. cuyamaca</i> Cuyamaca larkspur	PDRAN0B0U1	None	Rare	G4T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Delphinium hutchinsoniae</i> Hutchinson's larkspur	PDRAN0B0V0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Delphinium inopinum</i> unexpected larkspur	PDRAN0B0W0	None	None	G3/S3.3	4.3	USFS:S	No	Yes
<i>Delphinium luteum</i> golden larkspur	PDRAN0B0Z0	Endangered	Rare	G1/S1	1B.1		No	Yes
<i>Delphinium parishii ssp. subglobosum</i> Colorado Desert larkspur	PDRAN0B1A3	None	None	G4T3/S3.2	4.3		No	No
<i>Delphinium parryi ssp. blochmaniae</i> dune larkspur	PDRAN0B1B1	None	None	G4T2/S2	1B.2	BLM:S	No	Yes

April, 10, 2014

Page 43 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Delphinium parryi</i> ssp. <i>eastwoodiae</i> Eastwood's larkspur	PDRAN0B1B2	None	None	G4T2/S2	1B.2		No	Yes
<i>Delphinium parryi</i> ssp. <i>purpureum</i> Mt. Pinos larkspur	PDRAN0B1B5	None	None	G4T3/S3.3	4.3	USFS:S	No	No
<i>Delphinium purpusii</i> rose-flowered larkspur	PDRAN0B1G0	None	None	G2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Delphinium recurvatum</i> recurved larkspur	PDRAN0B1J0	None	None	G3/S3	1B.2	BLM:S	No	Yes
<i>Delphinium scaposum</i> bare-stem larkspur	PDRAN0B1M0	None	None	G5/S1	2B.3		No	Yes
<i>Delphinium stachydeum</i> spiked larkspur	PDRAN0B1Q0	None	None	G5/S3	2B.3		No	Yes
<i>Delphinium uliginosum</i> swamp larkspur	PDRAN0B1V0	None	None	G3/S3.2	4.2		No	No
<i>Delphinium umbracolorum</i> umbrella larkspur	PDRAN0B1W0	None	None	G3/S3	1B.3	BLM:S USFS:S	No	Yes
<i>Delphinium variegatum</i> ssp. <i>kinkiense</i> San Clemente Island larkspur	PDRAN0B1X3	Endangered	Endangered	G4T2/S2	1B.1		No	Yes
<i>Delphinium variegatum</i> ssp. <i>thornei</i> Thorne's royal larkspur	PDRAN0B1X2	None	None	G4T2/S2	1B.1		No	Yes
<i>Dendromecon harfordii</i> var. <i>harfordii</i> north island bush-poppy	PDPAP08020	None	None	G3T3Q/S3	3.2		No	No
<i>Dendromecon harfordii</i> var. <i>rhamnoides</i> south island bush-poppy	PDPAP08012	None	None	G4T1Q/S1	3.1		No	Yes
<i>Dicentra formosa</i> ssp. <i>oregana</i> Oregon bleeding heart	PDFUM04052	None	None	G5T4/S3.2	4.2		No	No
<i>Dicentra nevadensis</i> Tulare County bleeding heart	PDFUM04060	None	None	G3/S3.3	4.3	USFS:S	No	No
<i>Dichondra occidentalis</i> western dichondra	PDCON08060	None	None	G4?/S3.2	4.2		No	No
<i>Dicranostegia orcuttiana</i> Orcutt's bird's-beak	PDSCR0J0G0	None	None	G2?/S1	2B.1		No	Yes
<i>Dieteria asteroides</i> var. <i>lagunensis</i> Mount Laguna aster	PDAST64131	None	Rare	G5T2T3Q/S1	2B.1	BLM:S USFS:S	No	Yes
<i>Dieteria canescens</i> var. <i>ziegleri</i> Ziegler's aster	PDAST640B2	None	None	G5T1/S1	1B.2	USFS:S	No	Yes
<i>Digitaria californica</i> var. <i>californica</i> Arizona cottontop	PMPOA27051	None	None	G5T5?/S2	2B.3		No	Yes

April, 10, 2014

Page 44 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Dimeresia howellii</i> doublet	PDAST2Z010	None	None	G4?/S3	2B.3		No	Yes
<i>Dirca occidentalis</i> western leatherwood	PDTHY03010	None	None	G2G3/S2S3	1B.2		No	Yes
<i>Dissanthelium californicum</i> California dissanthelium	PMPOA29010	None	None	G1/S1	1B.2		No	Yes
<i>Ditaxis claryana</i> glandular ditaxis	PDEUP080L0	None	None	G4G5/S1	2B.2		No	Yes
<i>Ditaxis serrata</i> var. <i>californica</i> California ditaxis	PDEUP08050	None	None	G5T2T3/S2	3.2		No	Yes
<i>Dithyrea maritima</i> beach spectaclepod	PDBRA10020	None	Threatened	G2/S2.1	1B.1	BLM:S	No	Yes
<i>Dodecagema leptoceras</i> slender-horned spineflower	PDPGN0V010	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Dodecatheon pulchellum</i> beautiful shootingstar	PDPRI030D0	None	None	G5/S3	4.2		No	No
<i>Downingia concolor</i> var. <i>brevior</i> Cuyamaca Lake downingia	PDCAM06041	None	Endangered	G4T1/S1	1B.1		No	Yes
<i>Downingia laeta</i> Great Basin downingia	PDCAM06080	None	None	G5/S3	2B.2		No	Yes
<i>Downingia pusilla</i> dwarf downingia	PDCAM060C0	None	None	GU/S2	2B.2		No	Yes
<i>Draba asterophora</i> var. <i>asterophora</i> Tahoe draba	PDBRA110D1	None	None	G2T2/S2	1B.2	USFS:S	No	Yes
<i>Draba asterophora</i> var. <i>macrocarpa</i> Cup Lake draba	PDBRA110D2	None	None	G2T1/S1	1B.1	USFS:S	No	Yes
<i>Draba aureola</i> golden alpine draba	PDBRA110F0	None	None	G4/S2	1B.3		No	Yes
<i>Draba californica</i> California draba	PDBRA11380	None	None	G3/S3.2	4.2		No	No
<i>Draba cana</i> canescent draba	PDBRA110M0	None	None	G5/S2	2B.3		No	Yes
<i>Draba carnosula</i> Mt. Eddy draba	PDBRA112T0	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Draba cruciata</i> Mineral King draba	PDBRA110U0	None	None	G3/S3	1B.3	USFS:S	No	Yes
<i>Draba howellii</i> Howell's draba	PDBRA11150	None	None	G4/S3.3	4.3		No	No

April, 10, 2014

Page 45 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Draba incrassata</i> Sweetwater Mountains draba	PDBRA113G0	None	None	G3/S3	1B.3	USFS:S	No	Yes
<i>Draba lonchocarpa</i> spear-fruited draba	PDBRA111F0	None	None	G5/S1	2B.3		No	Yes
<i>Draba monoensis</i> White Mountains draba	PDBRA113B0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Draba praealta</i> tall draba	PDBRA11210	None	None	G5/S3	2B.3		No	Yes
<i>Draba pterosperma</i> winged-seed draba	PDBRA11230	None	None	G3/S3.3	4.3		No	No
<i>Draba saxosa</i> Southern California rock draba	PDBRA110Q2	None	None	G2G3/S2S3	1B.3	USFS:S	No	Yes
<i>Draba sharsmithii</i> Mt. Whitney draba	PDBRA113F0	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Draba sierrae</i> Sierra draba	PDBRA112A0	None	None	G3/S3	1B.3		No	Yes
<i>Draba subumbellata</i> mound draba	PDBRA11370	None	None	G3/S3.3	4.3		No	No
<i>Drosera anglica</i> English sundew	PDDRO02010	None	None	G5/S2	2B.3		No	Yes
<i>Drymocallis cuneifolia</i> var. <i>cuneifolia</i> wedgeloaf woodbeauty	PDROS2D011	None	None	G1T1/S1	1B.1	USFS:S	No	Yes
<i>Drymocallis cuneifolia</i> var. <i>ewanii</i> Ewan's cinquefoil	PDROS1B0S3	None	None	G1T1/S1	1B.3	USFS:S	No	Yes
<i>Dryopteris filix-mas</i> male fern	PPDRY0A0B0	None	None	G5/S2	2B.3		No	Yes
<i>Dudleya abramsii</i> ssp. <i>affinis</i> San Bernardino Mountains dudleya	PDCRA04013	None	None	G3T2/S2	1B.2	USFS:S	No	Yes
<i>Dudleya abramsii</i> ssp. <i>bettinae</i> Betty's dudleya	PDCRA04011	None	None	G3T1/S1	1B.2		No	Yes
<i>Dudleya abramsii</i> ssp. <i>calicicola</i> limestone dudleya	PDCRA040Y0	None	None	G3T3/S3.3	4.3		No	No
<i>Dudleya abramsii</i> ssp. <i>murina</i> mouse-gray dudleya	PDCRA04012	None	None	G3T2/S2	1B.3	BLM:S	No	Yes
<i>Dudleya abramsii</i> ssp. <i>setchellii</i> Santa Clara Valley dudleya	PDCRA040Z0	Endangered	None	G3T2/S2	1B.1		No	Yes
<i>Dudleya alainae</i> banner dudleya	PDCRA040X0	None	None	G1?Q/S1?	3.2		No	No

April, 10, 2014

Page 46 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Dudleya attenuata</i> ssp. <i>attenuata</i> Orcutt's dudleya	PDCRA04032	None	None	G4T2/S1	2B.1		No	Yes
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i> Blochman's dudleya	PDCRA04051	None	None	G2T2/S2	1B.1		No	Yes
<i>Dudleya blochmaniae</i> ssp. <i>insularis</i> Santa Rosa Island dudleya	PDCRA04052	None	None	G2T1/S1	1B.1		No	Yes
<i>Dudleya brevifolia</i> short-leaved dudleya	PDCRA04053	None	Endangered	G2T1/S1	1B.1		No	Yes
<i>Dudleya candelabrum</i> candleholder dudleya	PDCRA04080	None	None	G3/S3	1B.2		No	Yes
<i>Dudleya cymosa</i> ssp. <i>agourensis</i> Agoura Hills dudleya	PDCRA040A7	Threatened	None	G5T1/S2	1B.2		No	Yes
<i>Dudleya cymosa</i> ssp. <i>costatifolia</i> Pierpoint Springs dudleya	PDCRA040A2	None	None	G5T1/S1	1B.2	USFS:S	No	Yes
<i>Dudleya cymosa</i> ssp. <i>crebrifolia</i> San Gabriel River dudleya	PDCRA040A8	None	None	G5T1/S1	1B.2	USFS:S	No	Yes
<i>Dudleya cymosa</i> ssp. <i>marcescens</i> marcescent dudleya	PDCRA040A3	Threatened	Rare	G5T2/S2	1B.2		No	Yes
<i>Dudleya cymosa</i> ssp. <i>ovatifolia</i> Santa Monica dudleya	PDCRA040A5	Threatened	None	G5T1/S1	1B.2		No	Yes
<i>Dudleya densiflora</i> San Gabriel Mountains dudleya	PDCRA040B0	None	None	G2/S2	1B.1	USFS:S	No	Yes
<i>Dudleya gnoma</i> munchkin dudleya	PDCRA040W0	None	None	G1/S1	1B.1		No	Yes
<i>Dudleya greenei</i> Greene's dudleya	PDCRA040E0	None	None	G3/S3.2	4.2		No	No
<i>Dudleya multicaulis</i> many-stemmed dudleya	PDCRA040H0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Dudleya nesiotica</i> Santa Cruz Island dudleya	PDCRA040J0	Threatened	Rare	G1/S1	1B.1		No	Yes
<i>Dudleya parva</i> Conejo dudleya	PDCRA040I6	Threatened	None	G2/S2	1B.2		No	Yes
<i>Dudleya saxosa</i> ssp. <i>saxosa</i> Panamint dudleya	PDCRA040N2	None	None	G4T3/S3	1B.3	BLM:S	No	Yes
<i>Dudleya stolonifera</i> Laguna Beach dudleya	PDCRA040P0	Threatened	Threatened	G1/S1	1B.1		No	Yes
<i>Dudleya traskiae</i> Santa Barbara Island dudleya	PDCRA040Q0	Endangered	Endangered	G1/S1	1B.2		No	Yes

April, 10, 2014

Page 47 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Dudleya variegata</i> variegated dudleya	PDCRA040R0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Dudleya verityi</i> Verity's dudleya	PDCRA040U0	Threatened	None	G1/S1	1B.2		No	Yes
<i>Dudleya virens ssp. hassei</i> Catalina Island dudleya	PDCRA040S1	None	None	G3?T2?/S2?	1B.2		No	Yes
<i>Dudleya virens ssp. insularis</i> island green dudleya	PDCRA040S2	None	None	G3?T3/S3	1B.2		No	Yes
<i>Dudleya virens ssp. virens</i> bright green dudleya	PDCRA040S3	None	None	G3?T1/S1	1B.2		No	Yes
<i>Dudleya viscida</i> sticky dudleya	PDCRA040T0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Echinocereus engelmannii var. howei</i> Howe's hedgehog cactus	PDCAC06035	None	None	G5T1/S1	1B.1	BLM:S	No	Yes
<i>Eleocharis parvula</i> small spikerush	PMCYP091G0	None	None	G5/S3.3	4.3		No	No
<i>Eleocharis torticulmis</i> California twisted spikerush	PMCYP092E0	None	None	G1/S1	1B.3	USFS:S	No	Yes
<i>Elymus californicus</i> California bottle-brush grass	PMPOA2H0W0	None	None	G3/S3.3	4.3		No	No
<i>Elymus salina</i> Salina Pass wild-rye	PMPOA6P010	None	None	G5/S2	2B.3		No	Yes
<i>Elymus scribneri</i> Scribner's wheat grass	PMPOA2H170	None	None	G5/S2?	2B.3		No	Yes
<i>Empetrum nigrum</i> black crowberry	PDEMP03020	None	None	G5/S2?	2B.2		No	Yes
<i>Enceliopsis covillei</i> Panamint daisy	PDAST3G020	None	None	G2?/S2?	1B.2	BLM:S	No	Yes
<i>Enceliopsis nudicaulis var. corrugata</i> Ash Meadows daisy	PDAST3G031	Threatened	None	G5T2/S1	3.3		No	Yes
<i>Enceliopsis nudicaulis var. nudicaulis</i> naked-stemmed daisy	PDAST3G032	None	None	G5T5/S3.3	4.3		No	No
<i>Enneapogon desvauxii</i> nine-awned pappus grass	PMPOA2J010	None	None	G5/S2	2B.2		No	Yes
<i>Ephedra torreyana</i> Torrey's Mormon-tea	PGEPH01080	None	None	G5?/S1	2B.1		No	Yes
<i>Epilobium howellii</i> subalpine fireweed	PDONA06180	None	None	G4/S4	4.3		No	Yes

April, 10, 2014

Page 48 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Epilobium luteum</i> yellow willowherb	PDONA060H0	None	None	G5/S2	2B.3		No	Yes
<i>Epilobium nivium</i> Snow Mountain willowherb	PDONA060M0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Epilobium oregonum</i> Oregon fireweed	PDONA060P0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Epilobium palustre</i> marsh willowherb	PDONA060R0	None	None	G5/S2	2B.3		No	Yes
<i>Epilobium rigidum</i> Siskiyou Mountains willowherb	PDONA060V0	None	None	G3G4/S3.3	4.3		No	No
<i>Epilobium septentrionale</i> Humboldt County fuchsia	PDONA06110	None	None	G3/S3.3	4.3		No	No
<i>Epilobium siskiyouense</i> Siskiyou fireweed	PDONA06100	None	None	G3/S3	1B.3	BLM:S	No	Yes
<i>Equisetum palustre</i> marsh horsetail	PPEQU01050	None	None	G5/S1S2	3		No	No
<i>Eremalche kernensis</i> Kern mallow	PDMAL0C031	Endangered	None	G3?T2Q/S2	1B.1		No	Yes
<i>Eremogone cliftonii</i> Clifton's eremogone	PDCAR17010	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Eremogone congesta</i> var. <i>charlestonensis</i> Charleston sandwort	PDCAR0405B	None	None	G5T2?/S1	1B.3		No	Yes
<i>Eremogone ursina</i> Big Bear Valley sandwort	PDCAR040R0	Threatened	None	G1/S1	1B.2		No	Yes
<i>Eremothera boothii</i> ssp. <i>alyssooides</i> Pine Creek evening-primrose	PDONA03051	None	None	G5T4/S3.3	4.3		No	No
<i>Eremothera boothii</i> ssp. <i>boothii</i> Booth's evening-primrose	PDONA03052	None	None	G5T4/S2	2B.3		No	Yes
<i>Eremothera boothii</i> ssp. <i>intermedia</i> Booth's hairy evening-primrose	PDONA03056	None	None	G5T3T4/S3	2B.3		No	Yes
<i>Eremothera minor</i> Nelson's evening-primrose	PDONA03110	None	None	G4/S2	2B.3		No	Yes
<i>Eriastrum brandegeeeae</i> Brandegee's eriastrum	PDPLM03020	None	None	G1Q/S1	1B.1	BLM:S	No	Yes
<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i> Santa Ana River woollystar	PDPLM03035	Endangered	Endangered	G4T1/S1	1B.1		No	Yes
<i>Eriastrum erterae</i> Lime Ridge eriastrum	PDPLM030F0	None	None	G1/S1	1B.1		No	Yes

April, 10, 2014

Page 49 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Eriastrum harwoodii</i> Harwood's eriastrum	PDPLM030B1	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Eriastrum hooveri</i> Hoover's eriastrum	PDPLM03070	Delisted	None	G3/S3.2	4.2		No	Yes
<i>Eriastrum luteum</i> yellow-flowered eriastrum	PDPLM03080	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Eriastrum rosamondense</i> Rosamond eriastrum	PDPLM030G0	None	None	G1/S1	1B.1		No	No
<i>Eriastrum sparsiflorum</i> few-flowered eriastrum	PDPLM030B0	None	None	G3G4/S3?	4.3		No	No
<i>Eriastrum tracyi</i> Tracy's eriastrum	PDPLM030C0	None	Rare	G3Q/S3	3.2	USFS:S	No	Yes
<i>Eriastrum virgatum</i> virgate eriastrum	PDPLM030D0	None	None	G3/S3.3	4.3		No	No
<i>Ericameria albida</i> white-flowered rabbitbrush	PDAST2C010	None	None	G4/S3.2	4.2		No	No
<i>Ericameria cuneata</i> var. <i>macrocephala</i> Laguna Mountains goldenbush	PDAST3L062	None	None	G5T3/S3	1B.3		No	Yes
<i>Ericameria fasciculata</i> Eastwood's goldenbush	PDAST3L080	None	None	G2/S2	1B.1	BLM:S	No	Yes
<i>Ericameria gilmanii</i> Gilman's goldenbush	PDAST3L0P0	None	None	G1/S1	1B.3	BLM:S USFS:S	No	Yes
<i>Ericameria nana</i> dwarf goldenbush	PDAST3L0B0	None	None	G5/S3.3	4.3		No	No
<i>Ericameria ophitidis</i> serpentine goldenbush	PDAST3L0S0	None	None	G3/S3.3	4.3		No	No
<i>Ericameria palmeri</i> var. <i>palmeri</i> Palmer's goldenbush	PDAST3L0C1	None	None	G4T2T3/S1	1B.1	BLM:S	No	Yes
<i>Erigeron aequifolius</i> Hall's daisy	PDAST3M030	None	None	G2/S2.3	1B.3	BLM:S USFS:S	No	Yes
<i>Erigeron biolettii</i> streamside daisy	PDAST3M5H0	None	None	G3?/S3?	3		No	No
<i>Erigeron blochmaniae</i> Blochman's leafy daisy	PDAST3M5J0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Erigeron bloomeri</i> var. <i>nudatus</i> Waldo daisy	PDAST3M0M2	None	None	G5T4/S2?	2B.3		No	Yes
<i>Erigeron breweri</i> var. <i>jacinteus</i> San Jacinto Mountains daisy	PDAST3M0P3	None	None	G5T3/S3.3	4.3		No	No

April, 10, 2014

Page 50 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Erigeron calvus</i> bald daisy	PDAST3M5N0	None	None	G1Q/S1	1B.1	BLM:S	No	Yes
<i>Erigeron cervinus</i> Siskiyou daisy	PDAST3M0U0	None	None	G3/S3.3	4.3		No	No
<i>Erigeron compactus</i> compact daisy	PDAST3M5Z0	None	None	G2G3/S2.3	2B.3		No	Yes
<i>Erigeron eatonii</i> var. <i>nevadincola</i> Nevada daisy	PDAST3M2U0	None	None	G5T4/S3	2B.3		No	Yes
<i>Erigeron elegantulus</i> volcanic daisy	PDAST3M190	None	None	G4G5/S3.3	4.3		No	No
<i>Erigeron greenei</i> Greene's narrow-leaved daisy	PDAST3M5G0	None	None	G2/S2	1B.2		No	Yes
<i>Erigeron inornatus</i> var. <i>calidipetris</i> hot rock daisy	PDAST3M1Z1	None	None	G5T3/S3.3	4.3		No	No
<i>Erigeron inornatus</i> var. <i>keilii</i> Keil's daisy	PDAST3M1Z2	None	None	G5T1/S1	1B.3		No	Yes
<i>Erigeron lassenianus</i> var. <i>deficiens</i> Plumas rayless daisy	PDAST3M262	None	None	G3G4T2T3/S2 S3	1B.3		No	Yes
<i>Erigeron maniopotamicus</i> Mad River fleabane daisy	PDASTE1050	None	None	G1/S1	1B.2	USFS:S	No	Yes
<i>Erigeron mariposanus</i> Mariposa daisy	PDAST3M5L0	None	None	GH/SH	1A		No	Yes
<i>Erigeron miser</i> starved daisy	PDAST3M2K0	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Erigeron multiceps</i> Kern River daisy	PDAST3M2N0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Erigeron nivalis</i> snow fleabane daisy	PDASTE1060	None	None	G4G5/S2S3	2B.3		No	Yes
<i>Erigeron oxyphyllus</i> wand-like fleabane daisy	PDAST3M2Z0	None	None	G2G4/S2	2B.3		No	Yes
<i>Erigeron parishii</i> Parish's daisy	PDAST3M310	Threatened	None	G2/S2	1B.1		No	Yes
<i>Erigeron petrophilus</i> var. <i>sierrensis</i> northern Sierra daisy	PDAST3M351	None	None	G4T3/S3.3	4.3		No	No
<i>Erigeron petrophilus</i> var. <i>viscidulus</i> Klamath rock daisy	PDAST3M352	None	None	G4T3/S3.3	4.3		No	No
<i>Erigeron robustior</i> robust daisy	PDAST3M134	None	None	G3/S3.3	4.3		No	No

April, 10, 2014

Page 51 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Erigeron sanctarum</i> saints' daisy	PDAST3M3R0	None	None	G3/S3.2	4.2		No	No
<i>Erigeron serpentinus</i> serpentine daisy	PDAST3M5M0	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Erigeron supplex</i> supple daisy	PDAST3M3Z0	None	None	G2/S2	1B.2		No	Yes
<i>Erigeron uncialis</i> var. <i>uncialis</i> limestone daisy	PDAST3M452	None	None	G3G4T2/S2.2	1B.2	USFS:S	No	Yes
<i>Erigeron utahensis</i> Utah daisy	PDAST3M480	None	None	G4/S2	2B.3		No	Yes
<i>Eriodictyon altissimum</i> Indian Knob mountainbalm	PDHYD04010	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Eriodictyon angustifolium</i> narrow-leaved yerba santa	PDHYD04020	None	None	G5/S2?	2B.3		No	Yes
<i>Eriodictyon capitatum</i> Lompoc yerba santa	PDHYD04040	Endangered	Rare	G2/S2	1B.2		No	Yes
<i>Eriogonum alexanderae</i> Alexander's buckwheat	PDPGN084C5	None	None	G2G3/S1	1B.1	BLM:S	No	Yes
<i>Eriogonum alpinum</i> Trinity buckwheat	PDPGN08060	None	Endangered	G3/S3	1B.2	USFS:S	No	Yes
<i>Eriogonum apricum</i> var. <i>apricum</i> lone buckwheat	PDPGN080F1	Endangered	Endangered	G2T1/S1	1B.1		No	Yes
<i>Eriogonum apricum</i> var. <i>prostratum</i> Irish Hill buckwheat	PDPGN080F2	Endangered	Endangered	G2T1/S1	1B.1		No	Yes
<i>Eriogonum argillosum</i> clay buckwheat	PDPGN080J0	None	None	G3/S3.3	4.3		No	No
<i>Eriogonum baileyi</i> var. <i>praebens</i> Bailey's woolly buckwheat	PDPGN080M2	None	None	G5T4/S3.3	4.3		No	No
<i>Eriogonum bifurcatum</i> forked buckwheat	PDPGN080R0	None	None	G3/S3	1B.2	BLM:S	No	Yes
<i>Eriogonum breedlovei</i> var. <i>breedlovei</i> Breedlove's buckwheat	PDPGN080V1	None	None	G3T2/S2	1B.2	USFS:S	No	Yes
<i>Eriogonum breedlovei</i> var. <i>shevockii</i> The Needles buckwheat	PDPGN080V2	None	None	G3T3/S3.3	4.3		No	Yes
<i>Eriogonum butterworthianum</i> Butterworth's buckwheat	PDPGN080X0	None	Rare	G2/S2	1B.3	USFS:S	No	Yes
<i>Eriogonum callistum</i> Tehachapi buckwheat	PDPGN08790	None	None	G1/S1	1B.1		No	Yes

April, 10, 2014

Page 52 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Eriogonum cedrorum</i> The Cedars buckwheat	PDPGN087A0	None	None	G1/S1	1B.3	BLM:S	No	Yes
<i>Eriogonum collinum</i> hill buckwheat	PDPGN08160	None	None	G4/S3.3	4.3		No	No
<i>Eriogonum congdonii</i> Congdon's buckwheat	PDPGN081A0	None	None	G3/S3.3	4.3		No	No
<i>Eriogonum contiguum</i> Ash Meadows buckwheat	PDPGN081B0	None	None	G2/S2	2B.3	BLM:S	No	Yes
<i>Eriogonum crocatum</i> conejo buckwheat	PDPGN081G0	None	Rare	G2/S2.1	1B.2		No	Yes
<i>Eriogonum diclinum</i> Jaynes Canyon buckwheat	PDPGN081S0	None	None	G3/S2S3	1B.3		No	Yes
<i>Eriogonum eastwoodianum</i> Eastwood's buckwheat	PDPGN081V0	None	None	G1G2/S1S2.3	1B.3		No	Yes
<i>Eriogonum elegans</i> elegant wild buckwheat	PDPGN081Y0	None	None	G3/S3	4.3		No	No
<i>Eriogonum eremicola</i> Wildrose Canyon buckwheat	PDPGN08210	None	None	G1/S1	1B.3	BLM:S	No	Yes
<i>Eriogonum evanidum</i> vanishing wild buckwheat	PDPGN08780	None	None	G1/S1	1B.1	USFS:S	No	Yes
<i>Eriogonum giganteum</i> var. <i>compactum</i> Santa Barbara Island buckwheat	PDPGN082A1	None	Rare	G2T2/S2.2	1B.3		No	Yes
<i>Eriogonum giganteum</i> var. <i>formosum</i> San Clemente Island buckwheat	PDPGN082A2	None	None	G2T2/S2.2	1B.2		No	Yes
<i>Eriogonum giganteum</i> var. <i>giganteum</i> Santa Catalina Island buckwheat	PDPGN082A3	None	None	G2T2/S2.2	4.3		No	No
<i>Eriogonum gilmanii</i> Gilman's buckwheat	PDPGN082B0	None	None	G2/S2.3	1B.3		No	Yes
<i>Eriogonum gossypinum</i> cottony buckwheat	PDPGN082E0	None	None	G3/S3.2	4.2		No	No
<i>Eriogonum grande</i> var. <i>grande</i> island buckwheat	PDPGN082J1	None	None	G3T3/S3.2	4.2		No	No
<i>Eriogonum grande</i> var. <i>rubescens</i> red-flowered buckwheat	PDPGN082J2	None	None	G3T3/S3	1B.2		No	Yes
<i>Eriogonum grande</i> var. <i>timorum</i> San Nicolas Island buckwheat	PDPGN082J3	None	Endangered	G3T1/S1	1B.1		No	Yes
<i>Eriogonum heermannii</i> var. <i>floccosum</i> Clark Mountain buckwheat	PDPGN082P3	None	None	G5T3/S3.3	4.3		No	No

April, 10, 2014

Page 53 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Eriogonum heermannii</i> var. <i>occidentale</i> western Heermann's buckwheat	PDPGN082P6	None	None	G5T3/S3.2	4.2		No	No
<i>Eriogonum heracleoides</i> var. <i>heracleoides</i> parsnip-flowered buckwheat	PDPGN082R2	None	None	G5T5/S3.3	4.3		No	No
<i>Eriogonum hirtellum</i> Klamath Mountain buckwheat	PDPGN082T0	None	None	G3/S3	1B.3	USFS:S	No	Yes
<i>Eriogonum hoffmannii</i> var. <i>hoffmannii</i> Hoffmann's buckwheat	PDPGN082V1	None	None	G3T2/S2.3	1B.3	BLM:S	No	Yes
<i>Eriogonum hoffmannii</i> var. <i>robustius</i> robust Hoffmann's buckwheat	PDPGN082V2	None	None	G3T2/S2.3	1B.3		No	Yes
<i>Eriogonum intrafractum</i> jointed buckwheat	PDPGN08360	None	None	G2/S2.3	1B.3		No	Yes
<i>Eriogonum kelloggii</i> Kellogg's buckwheat	PDPGN083A0	Candidate	Endangered	G2/S2	1B.2	BLM:S	No	Yes
<i>Eriogonum kennedyi</i> var. <i>alpigenum</i> southern alpine buckwheat	PDPGN083B1	None	None	G4T2/S2.3	1B.3	USFS:S	No	Yes
<i>Eriogonum kennedyi</i> var. <i>austromontanum</i> southern mountain buckwheat	PDPGN083B2	Threatened	None	G4T2/S2	1B.2		No	Yes
<i>Eriogonum kennedyi</i> var. <i>pinicola</i> Kern buckwheat	PDPGN083B4	None	None	G4T1/S1	1B.1	BLM:S	No	Yes
<i>Eriogonum libertini</i> Dubakella Mountain buckwheat	PDPGN083M0	None	None	G3/S3.2	4.2		No	No
<i>Eriogonum luteolum</i> var. <i>caninum</i> Tiburon buckwheat	PDPGN083S1	None	None	G5T2/S2	1B.2		No	Yes
<i>Eriogonum luteolum</i> var. <i>saltuarium</i> Jack's wild buckwheat	PDPGN083S4	None	None	G5T1/S1	1B.2	USFS:S	No	Yes
<i>Eriogonum mensicola</i> Pinyon Mesa buckwheat	PDPGN084H1	None	None	G2G3/S2	1B.3	BLM:S	No	Yes
<i>Eriogonum microthecum</i> var. <i>alpinum</i> northern limestone buckwheat	PDPGN083WA	None	None	G5T3/S3.3	4.3		No	No
<i>Eriogonum microthecum</i> var. <i>johnstonii</i> Johnston's buckwheat	PDPGN083W5	None	None	G5T2/S2	1B.3	USFS:S	No	Yes
<i>Eriogonum microthecum</i> var. <i>lacus-ursi</i> Bear Lake buckwheat	PDPGN083WF	None	None	G5T1/S1	1B.1	USFS:S	No	Yes
<i>Eriogonum microthecum</i> var. <i>lapidicola</i> Inyo Mountains buckwheat	PDPGN083W6	None	None	G5T3T4/S3.3	4.3		No	No

April, 10, 2014

Page 54 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Eriogonum microthecum</i> var. <i>panamintense</i> Panamint Mountains buckwheat	PDPGN083W9	None	None	G5T2/S2.3	1B.3	BLM:S	No	Yes
<i>Eriogonum microthecum</i> var. <i>schoolcraftii</i> Schoolcraft's wild buckwheat	PDPGN083WG	None	None	G5T2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Eriogonum nervulosum</i> Snow Mountain buckwheat	PDPGN08440	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Eriogonum nortonii</i> Pinnacles buckwheat	PDPGN08470	None	None	G2/S2.3	1B.3		No	Yes
<i>Eriogonum nudum</i> var. <i>decurrens</i> Ben Lomond buckwheat	PDPGN08492	None	None	G5T2/S2.1	1B.1		No	Yes
<i>Eriogonum nudum</i> var. <i>indictum</i> protruding buckwheat	PDPGN08494	None	None	G5T3/S3.2	4.2		No	No
<i>Eriogonum nudum</i> var. <i>murinum</i> mouse buckwheat	PDPGN08495	None	None	G5T2/S2.2	1B.2	BLM:S	No	Yes
<i>Eriogonum nudum</i> var. <i>paralinum</i> Del Norte buckwheat	PDPGN08498	None	None	G5T2T4/S2?	2B.2		No	Yes
<i>Eriogonum nudum</i> var. <i>psychicola</i> Antioch Dunes buckwheat	PDPGN0849Q	None	None	G5T1/S1	1B.1		No	Yes
<i>Eriogonum nudum</i> var. <i>regirivum</i> Kings River buckwheat	PDPGN0849F	None	None	G5T2/S2	1B.2	USFS:S	No	Yes
<i>Eriogonum nutans</i> var. <i>nutans</i> Dugway wild buckwheat	PDPGN084B2	None	None	G5T3T4/S2.3	2B.3		No	Yes
<i>Eriogonum ochrocephalum</i> var. <i>ochrocephalum</i> ochre-flowered buckwheat	PDPGN084C6	None	None	G5T4/S1	2B.2		No	Yes
<i>Eriogonum ovalifolium</i> var. <i>depressum</i> depressed wild buckwheat	PDPGN084FF	None	None	G5T4T5/S1	2B.1		No	Yes
<i>Eriogonum ovalifolium</i> var. <i>eximium</i> brown-margined buckwheat	PDPGN084FD	None	None	G5T3/S3.2	4.3		No	No
<i>Eriogonum ovalifolium</i> var. <i>monarchense</i> Monarch buckwheat	PDPGN084FJ	None	None	G5T1/S1	1B.3	USFS:S	No	Yes
<i>Eriogonum ovalifolium</i> var. <i>vineum</i> Cushenbury buckwheat	PDPGN084F8	Endangered	None	G5T1/S1	1B.1		No	Yes
<i>Eriogonum pendulum</i> Waldo wild buckwheat	PDPGN084Q0	None	None	G4/S3	2B.2		No	Yes
<i>Eriogonum polypodium</i> Tulare County buckwheat	PDPGN084U0	None	None	G3/S3.3	4.3		No	No
<i>Eriogonum prattenianum</i> var. <i>avium</i> Kettle Dome buckwheat	PDPGN084V1	None	None	G4T3/S3.2	4.2		No	No

April, 10, 2014

Page 55 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Eriogonum prociduum</i> prostrate buckwheat	PDPGN084W0	None	None	G3/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Eriogonum pyrolifolium</i> var. <i>pyrolifolium</i> pyrola-leaved buckwheat	PDPGN084Z2	None	None	G4T4/S3	2B.3		No	Yes
<i>Eriogonum shockleyi</i> var. <i>shockleyi</i> Shockley's buckwheat	PDPGN085E0	None	None	G5/S3.3	4.3		No	No
<i>Eriogonum siskiyouense</i> Siskiyou buckwheat	PDPGN085F0	None	None	G3/S3.3	4.3		No	No
<i>Eriogonum spectabile</i> Barron's buckwheat	PDPGN08750	None	None	G1/S1	1B.2	USFS:S	No	Yes
<i>Eriogonum spergulinum</i> var. <i>pratense</i> mountain meadow wild buckwheat	PDPGN085J1	None	None	G4T3/S3	4.3		No	No
<i>Eriogonum strictum</i> var. <i>greenei</i> Greene's buckwheat	PDPGN085L3	None	None	G5T3Q/S3.3	4.3		No	No
<i>Eriogonum temblorense</i> Temblor buckwheat	PDPGN085P0	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Eriogonum ternatum</i> ternate buckwheat	PDPGN085R0	None	None	G4/S3.3	4.3		No	No
<i>Eriogonum thornei</i> Thorne's buckwheat	PDPGN08233	None	Endangered	G1/S1	1B.2	BLM:S	No	Yes
<i>Eriogonum tripodum</i> tripod buckwheat	PDPGN085Y0	None	None	G3/S3.2	4.2	USFS:S	No	No
<i>Eriogonum truncatum</i> Mt. Diablo buckwheat	PDPGN085Z0	None	None	G2/S2	1B.1		No	Yes
<i>Eriogonum twisselmannii</i> Twisselmann's buckwheat	PDPGN08610	None	Rare	G2/S2.2	1B.2	USFS:S	No	Yes
<i>Eriogonum umbellatum</i> var. <i>ahartii</i> Ahart's buckwheat	PDPGN086UY	None	None	G5T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Eriogonum umbellatum</i> var. <i>bahiiiforme</i> bay buckwheat	PDPGN086UB	None	None	G5T3/S3.2	4.2		No	No
<i>Eriogonum umbellatum</i> var. <i>glaberrimum</i> Warner Mountains buckwheat	PDPGN086U2	None	None	G5T2?/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Eriogonum umbellatum</i> var. <i>humistratum</i> Mt. Eddy buckwheat	PDPGN086U4	None	None	G5T3/S3.3	4.3		No	No
<i>Eriogonum umbellatum</i> var. <i>juniporum</i> juniper sulphur-flowered buckwheat	PDPGN086U6	None	None	G5T3?/S1S2	2B.3		No	Yes

April, 10, 2014

Page 56 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Eriogonum umbellatum</i> var. <i>lautum</i> Scott Valley buckwheat	PDPGN086UX	None	None	G5T1/S1	1B.1		No	Yes
<i>Eriogonum umbellatum</i> var. <i>minus</i> alpine sulphur-flowered buckwheat	PDPGN086U7	None	None	G5T3/S3.3	4.3		No	No
<i>Eriogonum umbellatum</i> var. <i>torreyanum</i> Donner Pass buckwheat	PDPGN086U9	None	None	G5T2/S2.2	1B.2	USFS:S	No	Yes
<i>Eriogonum ursinum</i> var. <i>erubescens</i> blushing wild buckwheat	PDPGN08632	None	None	G3G4T2/S2.3	1B.3	BLM:S USFS:S	No	Yes
<i>Eriogonum vestitum</i> Idria buckwheat	PDPGN08640	None	None	G3Q/S3.3	4.3		No	No
<i>Eriogonum wrightii</i> var. <i>olanchense</i> Olancho Peak buckwheat	PDPGN086D3	None	None	G5T2/S2	1B.3	USFS:S	No	Yes
<i>Erioneuron pilosum</i> hairy erioneuron	PMPOA2S020	None	None	G5/S2S3	2B.3		No	Yes
<i>Eriophorum gracile</i> slender cottongrass	PMCYP0A080	None	None	G5/S3.3	4.3		No	No
<i>Eriophyllum confertiflorum</i> var. <i>tanacetiflorum</i> tansy-flowered woolly sunflower	PDAST3N0D0	None	None	G3Q/S3.3	4.3		No	No
<i>Eriophyllum congdonii</i> Congdon's woolly sunflower	PDAST3N030	None	Rare	G2/S2.2	1B.2	USFS:S	No	Yes
<i>Eriophyllum jepsonii</i> Jepson's woolly sunflower	PDAST3N040	None	None	G3/S3	4.3		No	No
<i>Eriophyllum lanatum</i> var. <i>hallii</i> Fort Tejon woolly sunflower	PDAST3N058	None	None	G5T1/S1	1B.1	USFS:S	No	Yes
<i>Eriophyllum lanatum</i> var. <i>obovatum</i> southern Sierra woolly sunflower	PDAST3N05D	None	None	G5T3/S3.3	4.3		No	No
<i>Eriophyllum latilobum</i> San Mateo woolly sunflower	PDAST3N060	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Eriophyllum mohavense</i> Barstow woolly sunflower	PDAST3N070	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Eriophyllum nubigenum</i> Yosemite woolly sunflower	PDAST3N0A0	None	None	G2/S2.3	1B.3	USFS:S	No	Yes
<i>Eryngium aristulatum</i> var. <i>hooveri</i> Hoover's button-celery	PDAP10Z043	None	None	G5T1/S1	1B.1		No	Yes
<i>Eryngium aristulatum</i> var. <i>parishii</i> San Diego button-celery	PDAP10Z042	Endangered	Endangered	G5T1/S1	1B.1		No	Yes
<i>Eryngium constancei</i> Loch Lomond button-celery	PDAP10Z0W0	Endangered	Endangered	G1/S1	1B.1		No	Yes

April, 10, 2014

Page 57 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Eryngium pendletonense</i> Pendleton button-celery	PDAP10Z120	None	None	G1/S1	1B.1		No	Yes
<i>Eryngium pinnatisectum</i> Tuolumne button-celery	PDAP10Z0P0	None	None	G2/S2	1B.2		No	Yes
<i>Eryngium racemosum</i> Delta button-celery	PDAP10Z0S0	None	Endangered	G1Q/S1	1B.1		No	Yes
<i>Eryngium spinosepalum</i> spiny-sepaled button-celery	PDAP10Z0Y0	None	None	G2/S2.2	1B.2		No	Yes
<i>Erysimum ammophilum</i> sand-loving wallflower	PDBRA16010	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Erysimum capitatum</i> var. <i>angustatum</i> Contra Costa wallflower	PDBRA16052	Endangered	Endangered	G5T1/S1	1B.1		No	Yes
<i>Erysimum capitatum</i> var. <i>lompocense</i> San Luis Obispo wallflower	PDBRA16057	None	None	G5T3/S3.2	4.2		No	No
<i>Erysimum concinnum</i> bluff wallflower	PDBRA160E3	None	None	G3/S3	1B.2		No	Yes
<i>Erysimum franciscanum</i> San Francisco wallflower	PDBRA160A0	None	None	G3/S3.2	4.2		No	No
<i>Erysimum insulare</i> island wallflower	PDBRA160D1	None	None	G3/S2.3	1B.3		No	Yes
<i>Erysimum menziesii</i> Menzies' wallflower	PDBRA160R0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Erysimum suffrutescens</i> suffrutescent wallflower	PDBRA160D2	None	None	G3/S3.2	4.2		No	No
<i>Erysimum teretifolium</i> Santa Cruz wallflower	PDBRA160N0	Endangered	Endangered	G2/S2	1B.1		No	Yes
<i>Erythranthe calicicola</i> limestone monkeyflower	PDPHR01010	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Erythranthe carsonensis</i> Carson Valley monkeyflower	PDPHR01020	None	None	G1/S1	1B.1		No	Yes
<i>Erythranthe hardhamiae</i> Santa Lucia monkeyflower	PDPHR01030	None	None	G1/S1	1B.1		No	Yes
<i>Erythranthe rhodopetra</i> Red Rock Canyon monkeyflower	PDPHR01040	None	None	G1/S1	1B.1	BLM:S	No	Yes
<i>Erythranthe sierrae</i> Sierra Nevada monkeyflower	PDPHR01060	None	None	G3/S3	4.2		No	No
<i>Erythranthe taylori</i> Shasta limestone monkeyflower	PDPHR01080	None	None	G1G2/S1S2	1B.1		No	Yes

April, 10, 2014

Page 58 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Erythranthe trinitensis</i> pink-margined monkeyflower	PDPHR01070	None	None	G2/S2	1B.3		No	Yes
<i>Erythronium citrinum</i> var. <i>citrinum</i> lemon-colored fawn lily	PMLIL0U041	None	None	G4T4/S3.3	4.3		No	No
<i>Erythronium citrinum</i> var. <i>roderickii</i> Scott Mountains fawn lily	PMLIL0U042	None	None	G4T3/S3	1B.3	BLM:S	No	Yes
<i>Erythronium helenae</i> St. Helena fawn lily	PMLIL0U060	None	None	G3/S3.2	4.2		No	No
<i>Erythronium hendersonii</i> Henderson's fawn lily	PMLIL0U070	None	None	G4/S2	2B.3	USFS:S	No	Yes
<i>Erythronium howellii</i> Howell's fawn lily	PMLIL0U080	None	None	G3G4/S2.3	1B.3		No	Yes
<i>Erythronium klamathense</i> Klamath fawn lily	PMLIL0U090	None	None	G4/S2	2B.2		No	Yes
<i>Erythronium oregonum</i> giant fawn lily	PMLIL0U0C0	None	None	G5/S2.2	2B.2		No	Yes
<i>Erythronium pluriflorum</i> Shuteye Peak fawn lily	PMLIL0U0Q0	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Erythronium pusaterii</i> Kaweah fawn lily	PMLIL0U0R0	None	None	G3/S3	1B.3	USFS:S	No	Yes
<i>Erythronium revolutum</i> coast fawn lily	PMLIL0U0F0	None	None	G4/S2S3	2B.2		No	Yes
<i>Erythronium taylorii</i> Pilot Ridge fawn lily	PMLIL0U0S0	None	None	G1/S1	1B.2	USFS:S	No	Yes
<i>Erythronium tuolumnense</i> Tuolumne fawn lily	PMLIL0U0H0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Eschscholzia hypocoides</i> San Benito poppy	PDPAP0A060	None	None	G3/S3.3	4.3		No	No
<i>Eschscholzia lemmonii</i> ssp. <i>kernensis</i> Tejon poppy	PDPAP0A071	None	None	G5T2/S2	1B.1		No	Yes
<i>Eschscholzia minutiflora</i> ssp. <i>twisselmannii</i> Red Rock poppy	PDPAP0A093	None	None	G5T2/S2.2	1B.2	BLM:S	No	Yes
<i>Eschscholzia procera</i> Kernville poppy	PDPAP0A0B0	None	None	G1G2Q/S1S2	3		No	No
<i>Eschscholzia ramosa</i> island poppy	PDPAP0A0C0	None	None	G3/S3.3	4.3		No	No
<i>Eschscholzia rhombipetala</i> diamond-petaled California poppy	PDPAP0A0D0	None	None	G1/S1	1B.1	BLM:S	No	Yes

April, 10, 2014

Page 59 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Eucephalus vialis</i> wayside aster	PDASTE00A0	None	None	G3/S1	1B.2	USFS:S	No	Yes
<i>Eucnide rupestris</i> annual rock-nettle	PDLOA02020	None	None	G3/S1	2B.2		No	Yes
<i>Euphorbia exstipulata</i> var. <i>exstipulata</i> Clark Mountain spurge	PDEUP0Q0P1	None	None	G5T5?/S2	2B.1		No	Yes
<i>Euphorbia jaegeri</i> Orocoxia Mountains spurge	PDEUP0Q440	None	None	G1/S1	1B.1	BLM:S	No	Yes
<i>Euphorbia misera</i> cliff spurge	PDEUP0Q1B0	None	None	G5/S2	2B.2		No	Yes
<i>Euphrosyne acerosa</i> copperwort	PDAST58010	None	None	G5/S3.2	4.2		No	No
<i>Euphrosyne nevadensis</i> Nevada wormwood	PDAST580D0	None	None	G3?/S3.3	4.3		No	No
<i>Eurybia merita</i> subalpine aster	PDASTEB030	None	None	G5/S1	2B.3		No	Yes
<i>Fendlerella utahensis</i> yerba desierto	PDHDR08010	None	None	G5/S3.3	4.3		No	No
<i>Ferocactus viridescens</i> San Diego barrel cactus	PDCAC08060	None	None	G3/S3	2B.1		No	Yes
<i>Festuca minutiflora</i> small-flowered fescue	PMPOA2V1M0	None	None	G5/S2	2B.3		No	Yes
<i>Fimbristylis thermalis</i> hot springs fimbristylis	PMCYP0B0N0	None	None	G4/S2.2	2B.2		No	Yes
<i>Frangula purshiana</i> ssp. <i>ultramafica</i> Caribou coffeeberry	PDRHA0H061	None	None	G4T2/S2	1B.2	USFS:S	No	Yes
<i>Frankenia palmeri</i> Palmer's frankenia	PDFRA01040	None	None	G3G4/S1	2B.1		No	Yes
<i>Frasera albomarginata</i> var. <i>albomarginata</i> desert green-gentian	PDGEN05021	None	None	G5T5/S3	2B.2		No	Yes
<i>Frasera albomarginata</i> var. <i>induta</i> Clark Mountain green-gentian	PDGEN05022	None	None	G5T2/S1	1B.2		No	Yes
<i>Frasera neglecta</i> pine green-gentian	PDGEN05080	None	None	G3/S3.3	4.3		No	No
<i>Frasera umpquaensis</i> Umpqua green-gentian	PDGEN050F0	None	None	G3Q/S2.2	2B.2	USFS:S	No	Yes
<i>Fraxinus parryi</i> chaparral ash	PDOLE040K0	None	None	G3?/S1	2B.2		No	Yes

April, 10, 2014

Page 60 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Fremontodendron decumbens</i> Pine Hill flannelbush	PDSTE03030	Endangered	Rare	G1/S1	1B.2		No	Yes
<i>Fremontodendron mexicanum</i> Mexican flannelbush	PDSTE03020	Endangered	Rare	G1/S1	1B.1		No	Yes
<i>Fritillaria agrestis</i> stinkbells	PMLIL0V010	None	None	G3/S3.2	4.2		No	Yes
<i>Fritillaria biflora</i> var. <i>ineziana</i> Hillsborough chocolate lily	PMLIL0V031	None	None	G1QT1Q/S1	1B.1		No	Yes
<i>Fritillaria brandegeei</i> Greenhorn fritillary	PMLIL0V040	None	None	G3/S3	1B.3	USFS:S	No	Yes
<i>Fritillaria eastwoodiae</i> Butte County fritillary	PMLIL0V060	None	None	G3Q/S3	3.2	USFS:S	No	Yes
<i>Fritillaria falcata</i> talus fritillary	PMLIL0V070	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Fritillaria gentneri</i> Gentner's fritillary	PMLIL0V080	Endangered	None	G1/S1	1B.1		No	Yes
<i>Fritillaria glauca</i> Siskiyou fritillaria	PMLIL0V090	None	None	G3G4/S3	4.2		No	No
<i>Fritillaria lanceolata</i> var. <i>tristulis</i> Marin checker lily	PMLIL0V0P1	None	None	G5T2/S2	1B.1		No	Yes
<i>Fritillaria liliacea</i> fragrant fritillary	PMLIL0V0C0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Fritillaria ojaiensis</i> Ojai fritillary	PMLIL0V0N0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Fritillaria pinetorum</i> pine fritillary	PMLIL0V0E0	None	None	G4/S3.3	4.3		No	No
<i>Fritillaria pluriflora</i> adobe-lily	PMLIL0V0F0	None	None	G3/S3	1B.2	BLM:S	No	Yes
<i>Fritillaria purdyi</i> Purdy's fritillary	PMLIL0V0H0	None	None	G3/S3.2	4.3		No	No
<i>Fritillaria roderickii</i> Roderick's fritillary	PMLIL0V0M0	None	Endangered	G1Q/S1	1B.1		No	Yes
<i>Fritillaria striata</i> striped adobe-lily	PMLIL0V0K0	None	Threatened	G2/S2	1B.1	BLM:S USFS:S	No	Yes
<i>Fritillaria viridea</i> San Benito fritillary	PMLIL0V0L0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Funastrum utahense</i> Utah vine milkweed	PDASC050M0	None	None	G4/S3.2	4.2		No	No

April, 10, 2014

Page 61 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Galium andrewsii</i> ssp. <i>gatense</i> serpentine phlox-leaf bedstraw	PDRUB0N032	None	None	G5T3/S3.2	4.2		No	No
<i>Galium angustifolium</i> ssp. <i>borregoense</i> Borrego bedstraw	PDRUB0N042	None	Rare	G5T2/S2.3	1B.3		No	Yes
<i>Galium angustifolium</i> ssp. <i>gabrielense</i> San Antonio Canyon bedstraw	PDRUB0N044	None	None	G5T3/S3.3	4.3		No	No
<i>Galium angustifolium</i> ssp. <i>gracillimum</i> slender bedstraw	PDRUB0N04B	None	None	G5T3/S3.2	4.2		No	No
<i>Galium angustifolium</i> ssp. <i>jacinticum</i> San Jacinto Mountains bedstraw	PDRUB0N04C	None	None	G5T2T3/S2S3	1B.3	USFS:S	No	Yes
<i>Galium angustifolium</i> ssp. <i>onycense</i> Onyx Peak bedstraw	PDRUB0N048	None	None	G5T2/S2.3	1B.3	BLM:S	No	Yes
<i>Galium buxifolium</i> box bedstraw	PDRUB0N0D0	Endangered	Rare	G1/S1	1B.2		No	Yes
<i>Galium californicum</i> ssp. <i>luciense</i> Cone Peak bedstraw	PDRUB0N0E3	None	None	G5T2/S2.3	1B.3	USFS:S	No	Yes
<i>Galium californicum</i> ssp. <i>miguelense</i> San Miguel Island bedstraw	PDRUB0N0E5	None	None	G5T3/S3.2	4.2		No	No
<i>Galium californicum</i> ssp. <i>primum</i> Alvin Meadow bedstraw	PDRUB0N0E6	None	None	G5T1Q/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Galium californicum</i> ssp. <i>sierrae</i> El Dorado bedstraw	PDRUB0N0E7	Endangered	Rare	G5T1/S1	1B.2		No	Yes
<i>Galium catalinense</i> ssp. <i>acrispum</i> San Clemente Island bedstraw	PDRUB0N0F1	None	Endangered	G4T2/S2	1B.2		No	Yes
<i>Galium catalinense</i> ssp. <i>catalinense</i> Santa Catalina Island bedstraw	PDRUB0N0F2	None	None	G4T2T3/S2S3	1B.2		No	Yes
<i>Galium clementis</i> Santa Lucia bedstraw	PDRUB0N0H0	None	None	G2/S2.3	1B.3	USFS:S	No	Yes
<i>Galium cliftonsmithii</i> Santa Barbara bedstraw	PDRUB0N0J0	None	None	G3/S3.3	4.3		No	No
<i>Galium glabrescens</i> ssp. <i>modocense</i> Modoc bedstraw	PDRUB0N0T2	None	None	G4T3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Galium grande</i> San Gabriel bedstraw	PDRUB0N0V0	None	None	G2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Galium hardhamiae</i> Hardham's bedstraw	PDRUB0N0Y0	None	None	G2/S2.3	1B.3	BLM:S USFS:S	No	Yes
<i>Galium hilendiae</i> ssp. <i>carneum</i> Panamint Mountains bedstraw	PDRUB0N0Z1	None	None	G4T2/S2.3	1B.3		No	Yes

April, 10, 2014

Page 62 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Galium hilendiae</i> ssp. <i>kingstonense</i> Kingston Mountains bedstraw	PDRUB0N0Z3	None	None	G4T2/S2	1B.3	BLM:S	No	Yes
<i>Galium hypotrichium</i> ssp. <i>tomentellum</i> Telescope Peak bedstraw	PDRUB0N126	None	None	G5T1/S1	1B.3		No	Yes
<i>Galium jepsonii</i> Jepson's bedstraw	PDRUB0N130	None	None	G3/S3.3	4.3		No	No
<i>Galium johnstonii</i> Johnston's bedstraw	PDRUB0N140	None	None	G3/S3.3	4.3		No	No
<i>Galium munzii</i> Munz's bedstraw	PDRUB0N1G0	None	None	G4G5/S3.3	4.3		No	No
<i>Galium nuttallii</i> ssp. <i>insulare</i> Nuttall's island bedstraw	PDRUB0N1K1	None	None	G5?T3/S3.3	4.3		No	No
<i>Galium oregonum</i> Oregon bedstraw	PDRUB0N1N0	None	None	G4/S2S3	3		No	No
<i>Galium proliferum</i> desert bedstraw	PDRUB0N1V0	None	None	G5/S2	2B.2		No	Yes
<i>Galium serpenticum</i> ssp. <i>scotticum</i> Scott Mountain bedstraw	PDRUB0N1Y6	None	None	G4G5T2/S2.2	1B.2	BLM:S	No	Yes
<i>Galium serpenticum</i> ssp. <i>warnerense</i> Warner Mountains bedstraw	PDRUB0N1Y8	None	None	G4G5T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Galium wrightii</i> Wright's bedstraw	PDRUB0N2F0	None	None	G3G4/S2	2B.3		No	Yes
<i>Gambelia speciosa</i> showy island snapdragon	PDSCR2H010	None	None	G2/S2.2	1B.2		No	Yes
<i>Gentiana affinis</i> var. <i>parvidentata</i> small-toothed prairie gentian	PDGEN06013	None	None	G5T3?Q/SNR	3		No	No
<i>Gentiana fremontii</i> Fremont's gentian	PDGEN060Y0	None	None	G4/S2	2B.3	USFS:S	No	Yes
<i>Gentiana plurisetosa</i> Klamath gentian	PDGEN060V0	None	None	G2G3/S2	1B.3		No	Yes
<i>Gentiana prostrata</i> pygmy gentian	PDGEN060M0	None	None	G4G5/S1	2B.3		No	Yes
<i>Gentiana setigera</i> Mendocino gentian	PDGEN060S0	None	None	G2/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Geraea viscida</i> sticky geraea	PDAST42020	None	None	G3/S2.3?	2B.3		No	Yes
<i>Geum aleppicum</i> Aleppo avens	PDROS0S010	None	None	G5/S2.2?	2B.2		No	Yes

April, 10, 2014

Page 63 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Gilia capitata ssp. chamissonis</i> blue coast gilia	PDPLM040B3	None	None	G5T2/S2.1	1B.1		No	Yes
<i>Gilia capitata ssp. pacifica</i> Pacific gilia	PDPLM040B6	None	None	G5T3T4/S2.2?	1B.2		No	Yes
<i>Gilia capitata ssp. tomentosa</i> woolly-headed gilia	PDPLM040B9	None	None	G5T2/S2	1B.1		No	Yes
<i>Gilia interior</i> inland gilia	PDPLM040Q0	None	None	G3/S3.3	4.3		No	No
<i>Gilia latiflora ssp. cuyamensis</i> Cuyama gilia	PDPLM040T2	None	None	G5?T3/S3.3	4.3		No	No
<i>Gilia leptantha ssp. leptantha</i> San Bernardino gilia	PDPLM040W1	None	None	G4T2/S2.3	1B.3	USFS:S	No	Yes
<i>Gilia leptantha ssp. pinetorum</i> pine gilia	PDPLM040W2	None	None	G4T3/S3.3	4.3		No	No
<i>Gilia mexicana</i> El Paso gilia	PDPLM04110	None	None	G4/S1	2B.3		No	Yes
<i>Gilia millefoliata</i> dark-eyed gilia	PDPLM04130	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Gilia nevinii</i> Nevin's gilia	PDPLM04160	None	None	G3/S3.2	4.3		No	No
<i>Gilia tenuiflora ssp. amplifaucalis</i> trumpet-throated gilia	PDPLM041P4	None	None	G3G4T3/S3.3	4.3		No	No
<i>Gilia tenuiflora ssp. arenaria</i> Monterey gilia	PDPLM041P2	Endangered	Threatened	G3G4T2/S2	1B.2		No	Yes
<i>Gilia tenuiflora ssp. hoffmannii</i> Hoffmann's slender-flowered gilia	PDPLM041P3	Endangered	None	G3G4T1/S1	1B.1		No	Yes
<i>Gilia yorkii</i> Monarch gilia	PDPLM04230	None	None	G1/S1	1B.2	USFS:S	No	Yes
<i>Gilmania luteola</i> golden-carpet gilmania	PDPGN0A010	None	None	G2/S2	1B.3		No	Yes
<i>Githopsis diffusa ssp. filicaulis</i> Mission Canyon bluecup	PDCAM07023	None	None	G5T2T3/S1	3.1	USFS:S	No	Yes
<i>Githopsis pulchella ssp. serpenticola</i> serpentine bluecup	PDCAM07053	None	None	G4T3/S3.3	4.3		No	No
<i>Githopsis tenella</i> delicate bluecup	PDCAM07070	None	None	G2/S2.3	1B.3		No	Yes
<i>Glehnia littoralis ssp. leiocarpa</i> American glehnia	PDAPI13011	None	None	G5T5/S3.2	4.2		No	No

April, 10, 2014

Page 64 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Glossopetalon pungens</i> pungent glossopetalon	PDCRO04020	None	None	G2G3/S1	1B.2	BLM:S	No	Yes
<i>Glyceria grandis</i> American manna grass	PMPOA2Y080	None	None	G5/S2	2B.3		No	Yes
<i>Goodmania luteola</i> golden goodmania	PDPGN0B010	None	None	G3/S3.2	4.2		No	No
<i>Gratiola heterosepala</i> Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2/S2	1B.2	BLM:S	No	Yes
<i>Grindelia fraxinipratensis</i> Ash Meadows gumplant	PDAST47080	Threatened	None	G2/S1	1B.2		No	Yes
<i>Grindelia hallii</i> San Diego gumplant	PDAST470D4	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Grindelia hirsutula var. maritima</i> San Francisco gumplant	PDAST470D3	None	None	G5T1Q/S1	3.2		No	Yes
<i>Grusonia parishii</i> Parish's club-cholla	PDCAC0D2H0	None	None	G3G4/S2?	2B.2		No	Yes
<i>Grusonia pulchella</i> beautiful cholla	PDCAC0D120	None	None	G4/S2S3	2B.2		No	Yes
<i>Hackelia amethystina</i> amethyst stickseed	PDBOR0G010	None	None	G3/S3.3	4.3		No	No
<i>Hackelia brevicula</i> Poison Canyon stickseed	PDBOR0G040	None	None	G2/S2.3	3.3		No	Yes
<i>Hackelia cusickii</i> Cusick's stickseed	PDBOR0G090	None	None	G5?/S3.3	4.3		No	No
<i>Hackelia sharsmithii</i> Sharsmith's stickseed	PDBOR0G0Q0	None	None	G2G3/S2S3	2B.3		No	Yes
<i>Harmonia doris-nilesiae</i> Niles' harmonia	PDAST650L0	None	None	G2/S2.1	1B.1	BLM:S USFS:S	No	Yes
<i>Harmonia guggolziorum</i> Guggolz's harmonia	PDAST650M0	None	None	G1/S1	1B.1		No	Yes
<i>Harmonia hallii</i> Hall's harmonia	PDAST650A0	None	None	G2/S2?	1B.2	BLM:S	No	Yes
<i>Harmonia nutans</i> nodding harmonia	PDAST650D0	None	None	G3/S3.3	4.3		No	No
<i>Harmonia stebbinsii</i> Stebbins' harmonia	PDAST650K0	None	None	G2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Harpagonella palmeri</i> Palmer's grapplinghook	PDBOR0H010	None	None	G4/S3.2	4.2		No	Yes

April, 10, 2014

Page 65 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Hazardia cana</i> San Clemente Island hazardia	PDAST4H020	None	None	G2/S2	1B.2		No	Yes
<i>Hazardia detonsa</i> northern islands hazardia	PDAST4H030	None	None	G3/S3.3	4.3		No	No
<i>Hazardia orcuttii</i> Orcutt's hazardia	PDAST4H070	None	Threatened	G1/S1	1B.1		No	Yes
<i>Hecastocleis shockleyi</i> prickle-leaf	PDAST4J010	None	None	G4/S3S4	3		No	No
<i>Hedeoma drummondii</i> Drummond's false pennyroyal	PDLAM0M060	None	None	G5/S1	2B.2		No	Yes
<i>Hedeoma nana ssp. californica</i> California mock pennyroyal	PDLAM0M0S1	None	None	G5T4/S3.3	4.3		No	No
<i>Helianthella castanea</i> Diablo helianthella	PDAST4M020	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Helianthemum greenei</i> island rush-rose	PDCIS02090	Threatened	None	G2/S2	1B.2		No	Yes
<i>Helianthemum suffrutescens</i> Bisbee Peak rush-rose	PDCIS020F0	None	None	G2Q/S2	3.2		No	Yes
<i>Helianthus exilis</i> serpentine sunflower	PDAST4N1J0	None	None	G3Q/S3.2	4.2		No	No
<i>Helianthus inexpectatus</i> Newhall sunflower	PDAST4N250	None	None	G1/S1	1B.1		No	Yes
<i>Helianthus niveus ssp. tephrodes</i> Algodones Dunes sunflower	PDAST4N0Z2	None	Endangered	G4T2/S2	1B.2	BLM:S	No	Yes
<i>Helianthus nuttallii ssp. parishii</i> Los Angeles sunflower	PDAST4N102	None	None	G5TH/SH	1A		No	Yes
<i>Hemieva ranunculifolia</i> buttercup-leaf suksdorfia	PDSAX0W010	None	None	G5/S2	2B.2		No	Yes
<i>Hemizonia congesta ssp. calyculata</i> Mendocino tarplant	PDAST4R063	None	None	G5T3/S3.3	4.3		No	No
<i>Hemizonia congesta ssp. congesta</i> white seaside tarplant	PDAST4R065	None	None	G5T2T3/S2S3	1B.2		No	Yes
<i>Hemizonia congesta ssp. tracyi</i> Tracy's tarplant	PDAST4R067	None	None	G5T3/S3.3	4.3		No	No
<i>Herissantia crispa</i> curly herissantia	PDMAL0F010	None	None	G5/S2	2B.3		No	Yes
<i>Hesperexax caulescens</i> hogwallow starfish	PDASTE5020	None	None	G3/S3.2	4.2		No	No

April, 10, 2014

Page 66 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Hesperevax sparsiflora</i> var. <i>brevifolia</i> short-leaved evax	PDASTE5011	None	None	G4T2T3/S2S3	1B.2	BLM:S	No	Yes
<i>Hesperidanthus jaegeri</i> Jaeger's hesperidanthus	PDBRA0N010	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Hesperocyparis abramsiana</i> var. <i>abramsiana</i> Santa Cruz cypress	PGCUP04081	Endangered	Endangered	G1T1/S1	1B.2		No	Yes
<i>Hesperocyparis abramsiana</i> var. <i>butanoensis</i> Butano Ridge cypress	PGCUP04082	Endangered	Endangered	G1T1/S1	1B.2		No	Yes
<i>Hesperocyparis bakeri</i> Baker cypress	PGCUP04020	None	None	G3/S3.2	4.2		No	No
<i>Hesperocyparis forbesii</i> Tecate cypress	PGCUP040C0	None	None	G2/S2	1B.1	BLM:S USFS:S	No	Yes
<i>Hesperocyparis goveniana</i> Gowen cypress	PGCUP04031	Threatened	None	G1/S1	1B.2		No	Yes
<i>Hesperocyparis macrocarpa</i> Monterey cypress	PGCUP04060	None	None	G1/S1	1B.2		No	Yes
<i>Hesperocyparis nevadensis</i> Piute cypress	PGCUP04012	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Hesperocyparis pygmaea</i> pygmy cypress	PGCUP04032	None	None	G2/S2	1B.2		No	Yes
<i>Hesperocyparis stephensonii</i> Cuyamaca cypress	PGCUP040B0	None	None	G1/S1	1B.1	USFS:S	No	Yes
<i>Hesperolinon adenophyllum</i> glandular western flax	PDLIN01010	None	None	G2/S2.3	1B.2	BLM:S	No	Yes
<i>Hesperolinon bicarpellatum</i> two-carpellate western flax	PDLIN01020	None	None	G2/S2.2	1B.2		No	Yes
<i>Hesperolinon breweri</i> Brewer's western flax	PDLIN01030	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Hesperolinon congestum</i> Marin western flax	PDLIN01060	Threatened	Threatened	G2/S2	1B.1		No	Yes
<i>Hesperolinon didymocarpum</i> Lake County western flax	PDLIN01070	None	Endangered	G1/S1	1B.2	BLM:S	No	Yes
<i>Hesperolinon drymarioides</i> drymaria-like western flax	PDLIN01090	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Hesperolinon sharsmithiae</i> Sharsmith's western flax	PDLIN010E0	None	None	G2Q/S2	1B.2	BLM:S	No	No
<i>Hesperolinon tehamense</i> Tehama County western flax	PDLIN010C0	None	None	G3/S3	1B.3	BLM:S	No	Yes

April, 10, 2014

Page 67 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Heteranthera dubia</i> water star-grass	PMPON03010	None	None	G5/S1	2B.2		No	Yes
<i>Heterotheca monarchensis</i> Monarch golden-aster	PDAST4V0U0	None	None	G1/S2	1B.3	USFS:S	No	Yes
<i>Heterotheca sessiliflora ssp. sessiliflora</i> beach goldenaster	PDAST4V0K2	None	None	G4T2T3/S2.1?	1B.1		No	Yes
<i>Heterotheca shevockii</i> Shevock's golden-aster	PDAST4V0T0	None	None	G2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Heuchera abramsii</i> Abrams' alumroot	PDSAX0E010	None	None	G3/S3.3	4.3	USFS:S	No	No
<i>Heuchera brevistaminea</i> Laguna Mountains alumroot	PDSAX0E050	None	None	G2/S2.3	1B.3	BLM:S	No	Yes
<i>Heuchera caespitosa</i> urn-flowered alumroot	PDSAX0E0C0	None	None	G3/S3.3	4.3	USFS:S	No	No
<i>Heuchera hirsutissima</i> shaggy-haired alumroot	PDSAX0E0J0	None	None	G2/S2.3	1B.3	USFS:S	No	Yes
<i>Heuchera maxima</i> island alumroot	PDSAX0E0M0	None	None	G2/S2.2	1B.2		No	Yes
<i>Heuchera parishii</i> Parish's alumroot	PDSAX0E0S0	None	None	G3/S3	1B.3	USFS:S	No	Yes
<i>Heuchera rubescens var. versicolor</i> San Diego County alumroot	PDSAX0E106	None	None	G5T4/S2	3.3		No	Yes
<i>Hibiscus lasiocarpus var. occidentalis</i> woolly rose-mallow	PDMAL0H0R3	None	None	G5T2/S2	1B.2		No	Yes
<i>Hoita strobilina</i> Loma Prieta hoita	PDFAB5Z030	None	None	G2/S2	1B.1		No	Yes
<i>Holmgrenanthe petrophila</i> rock lady	PDSCR2J010	None	Rare	G1/S1	1B.2		No	Yes
<i>Holocarpha macradenia</i> Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1/S1	1B.1		No	Yes
<i>Holocarpha virgata ssp. elongata</i> curving tarplant	PDAST4X041	None	None	G5T3/S3.2	4.2		No	No
<i>Hordeum intercedens</i> vernal barley	PMPOA380E0	None	None	G3G4/S3S4	3.2		No	No
<i>Horkelia bolanderi</i> Bolander's horkelia	PDROS0W010	None	None	G1/S1	1B.2	BLM:S	No	Yes
<i>Horkelia congesta ssp. nemorosa</i> Josephine horkelia	PDROS0W032	None	None	G4T4?/S1	2B.1		No	Yes

April, 10, 2014

Page 68 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Horkelia cuneata</i> var. <i>puberula</i> mesa horkelia	PDROS0W045	None	None	G4T2/S2.1	1B.1	USFS:S	No	Yes
<i>Horkelia cuneata</i> var. <i>sericea</i> Kellogg's horkelia	PDROS0W043	None	None	G4T2/S2?	1B.1	USFS:S	No	Yes
<i>Horkelia daucifolia</i> var. <i>indicta</i> Jepson's horkelia	PDROS0W053	None	None	G4T1/S1	1B.1		No	Yes
<i>Horkelia hendersonii</i> Henderson's horkelia	PDROS0W090	None	None	G1G2/S1	1B.1	BLM:S USFS:S	No	Yes
<i>Horkelia hispidula</i> White Mountains horkelia	PDROS0W0A0	None	None	G2/S2.3	1B.3	USFS:S	No	Yes
<i>Horkelia marinensis</i> Point Reyes horkelia	PDROS0W0B0	None	None	G2/S2.2	1B.2		No	Yes
<i>Horkelia parryi</i> Parry's horkelia	PDROS0W0C0	None	None	G2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Horkelia sericata</i> Howell's horkelia	PDROS0W0D0	None	None	G3G4/S3.3	4.3		No	No
<i>Horkelia tenuiloba</i> thin-lobed horkelia	PDROS0W0E0	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Horkelia truncata</i> Ramona horkelia	PDROS0W0G0	None	None	G3/S2.3	1B.3	USFS:S	No	Yes
<i>Horkelia tularensis</i> Kern Plateau horkelia	PDROS0W0H0	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Horkelia wilderae</i> Barton Flats horkelia	PDROS0W0J0	None	None	G2/S2	1B.1	USFS:S	No	Yes
<i>Horkelia yadonii</i> Santa Lucia horkelia	PDROS0W0K0	None	None	G3/S3.2	4.2	USFS:S	No	No
<i>Horsfordia alata</i> pink velvet-mallow	PDMAL0J010	None	None	G4/S3.3	4.3		No	No
<i>Horsfordia newberryi</i> Newberry's velvet-mallow	PDMAL0J020	None	None	G4/S3.3	4.3		No	No
<i>Hosackia crassifolia</i> var. <i>otayensis</i> Otay Mountain lotus	PDFAB2A092	None	None	G5T1/S1	1B.1	BLM:S	No	Yes
<i>Hosackia gracilis</i> harlequin lotus	PDFAB2A0D0	None	None	G4/S3.2	4.2		No	No
<i>Hosackia oblongifolia</i> var. <i>cuprea</i> copper-flowered bird's-foot trefoil	PDFAB2A0W1	None	None	G5T2/S2.3	1B.3		No	Yes
<i>Hosackia yollabolliensis</i> Yolla Bolly Mtns. bird's-foot trefoil	PDFAB2A1F0	None	None	G2/S2	1B.2		No	Yes

April, 10, 2014

Page 69 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Howellanthus dalesianus</i> Scott Mountain howellanthus	PDHYD0C140	None	None	G3/S3.3	4.3		No	Yes
<i>Howellia aquatilis</i> water howellia	PDCAM0A010	Threatened	None	G3/S2	2B.2		No	Yes
<i>Hulsea brevifolia</i> short-leaved hulsea	PDAST4Z020	None	None	G3/S3	1B.2	USFS:S	No	Yes
<i>Hulsea californica</i> San Diego hulsea	PDAST4Z030	None	None	G2/S2.1	1B.3	BLM:S	No	Yes
<i>Hulsea mexicana</i> Mexican hulsea	PDAST4Z050	None	None	G3G4/S1	2B.3		No	Yes
<i>Hulsea nana</i> little hulsea	PDAST4Z060	None	None	G4/S2.3	2B.3		No	Yes
<i>Hulsea vestita ssp. callicarpa</i> beautiful hulsea	PDAST4Z074	None	None	G5T3/S3.2	4.2		No	No
<i>Hulsea vestita ssp. gabrielensis</i> San Gabriel Mountains hulsea	PDAST4Z075	None	None	G5T3/S3.3	4.3	USFS:S	No	No
<i>Hulsea vestita ssp. inyoensis</i> Inyo hulsea	PDAST4Z073	None	None	G5T2T3/S1S2	2B.2		No	Yes
<i>Hulsea vestita ssp. parryi</i> Parry's hulsea	PDAST4Z076	None	None	G5T3/S3.3	4.3		No	No
<i>Hulsea vestita ssp. pygmaea</i> pygmy hulsea	PDAST4Z077	None	None	G5T2/S2.3	1B.3	USFS:S	No	Yes
<i>Hymenopappus filifolius var. eriopodus</i> hairy-podded fine-leaf hymenopappus	PDAST51032	None	None	G5T3/S1	2B.3		No	Yes
<i>Hymenopappus filifolius var. nanus</i> little cutleaf	PDAST5103H	None	None	G5T4/S2S3	2B.3		No	Yes
<i>Hymenothrix wrightii</i> Wright's hymenothrix	PDAST52030	None	None	G5/S3.3	4.3		No	No
<i>Hymenoxys lemmonii</i> alkali hymenoxys	PDAST530C0	None	None	G3?/S2	2B.2		No	Yes
<i>Hymenoxys odorata</i> bitter hymenoxys	PDAST530E0	None	None	G5/S2	2B.1		No	Yes
<i>Iliamna bakeri</i> Baker's globe mallow	PDMAL0K010	None	None	G4/S3.2	4.2		No	Yes
<i>Iliamna latibracteata</i> California globe mallow	PDMAL0K040	None	None	G3/S2.2	1B.2	USFS:S	No	Yes
<i>Imperata brevifolia</i> California satintail	PMPOA3D020	None	None	G2/S2.1	2B.1	USFS:S	No	Yes

April, 10, 2014

Page 70 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Ipomopsis effusa</i> Baja California ipomopsis	PDPLM060U0	None	None	G3?/S1	2B.1		No	Yes
<i>Ipomopsis tenuifolia</i> slender-leaved ipomopsis	PDPLM060J0	None	None	G3G4/S2	2B.3		No	Yes
<i>Iris bracteata</i> Siskiyou iris	PMIRI09020	None	None	G4G5/S3.3?	3.3		No	No
<i>Iris hartwegii</i> ssp. <i>columbiana</i> Tuolumne iris	PMIRI090D2	None	None	G4T2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Iris innominata</i> Del Norte County iris	PMIRI090F0	None	None	G4G5/S3.3	4.3		No	No
<i>Iris longipetala</i> coast iris	PMIRI092E0	None	None	G3/S3.2	4.2		No	No
<i>Iris munzii</i> Munz's iris	PMIRI090M0	None	None	G2/S2.3	1B.3	BLM:S USFS:S	No	Yes
<i>Iris tenax</i> ssp. <i>klamathensis</i> Orleans iris	PMIRI090Z2	None	None	G4G5T3/S3.3	4.3		No	No
<i>Isocoma arguta</i> Carquinez goldenbush	PDAST57050	None	None	G1/S1	1B.1		No	Yes
<i>Isocoma menziesii</i> var. <i>decumbens</i> decumbent goldenbush	PDAST57091	None	None	G3G5T2T3/S2. 2	1B.2		No	Yes
<i>Isocoma menziesii</i> var. <i>diabolica</i> Satan's goldenbush	PDAST57092	None	None	G3G5T3/S3.2	4.2		No	No
<i>Iva hayesiana</i> San Diego marsh-elder	PDAST580A0	None	None	G3?/S2.2?	2B.2		No	Yes
<i>Ivesia aperta</i> var. <i>aperta</i> Sierra Valley ivesia	PDROS0X011	None	None	G2T2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Ivesia aperta</i> var. <i>canina</i> Dog Valley ivesia	PDROS0X012	None	None	G2T1/S1	1B.1	USFS:S	No	Yes
<i>Ivesia argyrocoma</i> var. <i>argyrocoma</i> silver-haired ivesia	PDROS0X021	None	None	G2T2/S2.2	1B.2	USFS:S	No	Yes
<i>Ivesia arizonica</i> var. <i>arizonica</i> yellow ivesia	PDROS0X0R1	None	None	G3T3/S1	2B.3		No	Yes
<i>Ivesia baileyi</i> var. <i>baileyi</i> Bailey's ivesia	PDROS0X031	None	None	G5T4/S2	2B.3		No	Yes
<i>Ivesia baileyi</i> var. <i>beneolens</i> Owyhee ivesia	PDROS0X032	None	None	G5T5/S1	2B.3		No	Yes
<i>Ivesia callida</i> Tahquitz ivesia	PDROS0X040	None	Rare	G1/S1	1B.3	USFS:S	No	Yes

April, 10, 2014

Page 71 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Ivesia campestris</i> field ivesia	PDROS0X050	None	None	G3/S3	1B.2		No	Yes
<i>Ivesia jaegeri</i> Jaeger's ivesia	PDROS0X080	None	None	G2G3/S1	1B.3	BLM:S	No	Yes
<i>Ivesia kingii</i> var. <i>kingii</i> alkali ivesia	PDROS0X092	None	None	G4T3Q/S2	2B.2	BLM:S	No	Yes
<i>Ivesia longibracteata</i> Castle Crags ivesia	PDROS0X0U0	None	None	G1/S1	1B.3	BLM:S USFS:S	No	Yes
<i>Ivesia paniculata</i> Ash Creek ivesia	PDROS0X0S0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Ivesia patellifera</i> Kingston Mountains ivesia	PDROS0X0Z0	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Ivesia pickeringii</i> Pickering's ivesia	PDROS0X0D0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Ivesia sericoleuca</i> Plumas ivesia	PDROS0X0K0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Ivesia unguiculata</i> Yosemite ivesia	PDROS0X0N0	None	None	G3/S3.2	4.2		No	Yes
<i>Ivesia webberi</i> Webber's ivesia	PDROS0X0Q0	Proposed Threatened	None	G1/S1	1B.1	BLM:S USFS:S	No	Yes
<i>Jamesia americana</i> var. <i>rosea</i> rosy-petalled cliffbush	PDHDR02019	None	None	G5T3/S3.3	4.3		No	No
<i>Jensia yosemitana</i> Yosemite tarplant	PDAST650J0	None	None	G2G3/S2S3	3.2		No	No
<i>Jepsonia heterandra</i> foothill jepsonia	PDSAX0J010	None	None	G3/S3.3	4.3		No	No
<i>Jepsonia malvifolia</i> island jepsonia	PDSAX0J020	None	None	G3/S3.3	4.2		No	No
<i>Johanneshowellia puberula</i> downy buckwheat	PDPGN084X0	None	None	G3?/S1	2B.3		No	Yes
<i>Juglans californica</i> southern California black walnut	PDJUG02020	None	None	G3/S3.2	4.2		No	No
<i>Juglans hindsii</i> Northern California black walnut	PDJUG02040	None	None	G1/S1	1B.1		No	Yes
<i>Juncus acutus</i> ssp. <i>leopardii</i> southwestern spiny rush	PMJUN01051	None	None	G5T5/S3.2	4.2		No	No
<i>Juncus cooperi</i> Cooper's rush	PMJUN010T0	None	None	G4/S3.3	4.3		No	No

April, 10, 2014

Page 72 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Juncus digitatus</i> finger rush	PMJUN013E0	None	None	G1/S1	1B.1		No	Yes
<i>Juncus dudleyi</i> Dudley's rush	PMJUN01390	None	None	G5/S2.3?	2B.3		No	Yes
<i>Juncus duranii</i> Duran's rush	PMJUN013T0	None	None	G3/S3.3	4.3		No	No
<i>Juncus hemiendytus</i> var. <i>abjectus</i> Center Basin rush	PMJUN011F1	None	None	G5T4/S3.3	4.3		No	No
<i>Juncus interior</i> inland rush	PMJUN011J0	None	None	G4/S1	2B.2		No	Yes
<i>Juncus leiospermus</i> var. <i>ahartii</i> Ahart's dwarf rush	PMJUN011L1	None	None	G2T1/S1	1B.2		No	Yes
<i>Juncus leiospermus</i> var. <i>leiospermus</i> Red Bluff dwarf rush	PMJUN011L2	None	None	G2T2/S2	1B.1	BLM:S USFS:S	No	Yes
<i>Juncus luciensis</i> Santa Lucia dwarf rush	PMJUN013J0	None	None	G2G3/S2S3	1B.2	USFS:S	No	Yes
<i>Juncus nevadensis</i> var. <i>inventus</i> Sierra rush	PMJUN011Z5	None	None	G5T3T4/S1	2B.2		No	Yes
<i>Juncus nodosus</i> knotted rush	PMJUN01210	None	None	G5/S2.3	2B.3		No	Yes
<i>Juncus regelii</i> Regel's rush	PMJUN012D0	None	None	G4?/S1	2B.3		No	Yes
<i>Juncus supiniformis</i> hair-leaved rush	PMJUN012R0	None	None	G5/S2.2?	2B.2		No	Yes
<i>Kobresia myosuroides</i> seep kobresia	PMCY0F010	None	None	G5/S1	2B.3		No	Yes
<i>Koerberlinia spinosa</i> ssp. <i>tenuispina</i> slender-spined all-thorn	PDCPP05012	None	None	G4T4/S2.2	2B.2		No	Yes
<i>Kopsiopsis hookeri</i> small groundcone	PDORO01010	None	None	G5/S1S2	2B.3		No	Yes
<i>Ladeania lanceolata</i> lance-leaved scurf-pea	PDFAB5M030	None	None	G5/S2.3	2B.3		No	Yes
<i>Lagophylla diabolensis</i> Diablo Range hare-leaf	PDAST5J060	None	None	G2G3/S2S3	1B.2		No	No
<i>Lagophylla dichotoma</i> forked hare-leaf	PDAST5J070	None	None	G1/S1	1B.1		No	Yes
<i>Lasthenia burkei</i> Burke's goldfields	PDAST5L010	Endangered	Endangered	G1/S1	1B.1		No	Yes

April, 10, 2014

Page 73 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Lasthenia californica</i> ssp. <i>bakeri</i> Baker's goldfields	PDAST5L0C4	None	None	G3TH/SH	1B.2		No	Yes
<i>Lasthenia californica</i> ssp. <i>macrantha</i> perennial goldfields	PDAST5L0C5	None	None	G3T2/S2.2	1B.2		No	Yes
<i>Lasthenia conjugens</i> Contra Costa goldfields	PDAST5L040	Endangered	None	G1/S1	1B.1		No	Yes
<i>Lasthenia ferrisiae</i> Ferris' goldfields	PDAST5L070	None	None	G3/S3.2	4.2		No	No
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i> Coulter's goldfields	PDAST5L0A1	None	None	G4T3/S2.1	1B.1	BLM:S	No	Yes
<i>Lasthenia leptalea</i> Salinas Valley goldfields	PDAST5L0B0	None	None	G3/S3.3	4.3		No	No
<i>Lathyrus biflorus</i> two-flowered pea	PDFAB25180	None	None	G1/S1	1B.1	USFS:S	No	Yes
<i>Lathyrus delnorticus</i> Del Norte pea	PDFAB25070	None	None	G4/S3.3	4.3		No	No
<i>Lathyrus glandulosus</i> sticky pea	PDFAB251A0	None	None	G3/S3.3	4.3		No	No
<i>Lathyrus hitchcockianus</i> Bullfrog Mountain pea	PDFAB250A0	None	None	G2/S1	1B.3		No	Yes
<i>Lathyrus japonicus</i> seaside pea	PDFAB250C0	None	None	G5/S2	2B.1		No	Yes
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i> Delta tule pea	PDFAB250D2	None	None	G5T2/S2.2	1B.2		No	Yes
<i>Lathyrus palustris</i> marsh pea	PDFAB250P0	None	None	G5/S2S3	2B.2		No	Yes
<i>Lathyrus rigidus</i> rigid pea	PDFAB250W0	None	None	G5/S1	2B.2		No	Yes
<i>Lathyrus splendens</i> pride-of-California	PDFAB250Z0	None	None	G3G4/S3.3	4.3		No	No
<i>Lathyrus sulphureus</i> var. <i>argillaceus</i> dubious pea	PDFAB25101	None	None	G5T1T2/S1S2	3		No	Yes
<i>Lavatera assurgentiflora</i> ssp. <i>assurgentiflora</i> island mallow	PDMAL0N021	None	None	G1T1/S1	1B.1		No	Yes
<i>Lavatera assurgentiflora</i> ssp. <i>glabra</i> southern island mallow	PDMAL0N022	None	None	G1T1/S1	1B.1		No	Yes
<i>Layia carnosa</i> beach layia	PDAST5N010	Endangered	Endangered	G2/S2	1B.1		No	Yes

April, 10, 2014

Page 74 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Layia discoidea</i> rayless layia	PDAST5N030	None	None	G2/S2.2	1B.1	BLM:S	No	Yes
<i>Layia heterotricha</i> pale-yellow layia	PDAST5N070	None	None	G2/S2	1B.1	BLM:S USFS:S	No	Yes
<i>Layia jonesii</i> Jones' layia	PDAST5N090	None	None	G1/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Layia leucopappa</i> Comanche Point layia	PDAST5N0A0	None	None	G1/S1	1B.1	BLM:S	No	Yes
<i>Layia munzii</i> Munz's tidy-tips	PDAST5N0B0	None	None	G1/S1	1B.2	BLM:S	No	Yes
<i>Layia septentrionalis</i> Colusa layia	PDAST5N0F0	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Legenere limosa</i> legenere	PDCAM0C010	None	None	G2/S2.2	1B.1	BLM:S	No	Yes
<i>Lepechinia cardiophylla</i> heart-leaved pitcher sage	PDLAM0V020	None	None	G2/S2.2	1B.2	USFS:S	No	Yes
<i>Lepechinia fragrans</i> fragrant pitcher sage	PDLAM0V030	None	None	G3/S3.2	4.2	USFS:S	No	No
<i>Lepechinia ganderi</i> Gander's pitcher sage	PDLAM0V040	None	None	G2/S2.2	1B.3	BLM:S	No	Yes
<i>Lepechinia rossii</i> Ross' pitcher sage	PDLAM0V060	None	None	G1/S1	1B.2	USFS:S	No	Yes
<i>Lepidium flavum</i> var. <i>felipense</i> Borrego Valley pepper-grass	PDBRA1M0B1	None	None	G5T1/S1	1B.2	BLM:S	No	Yes
<i>Lepidium jaredii</i> ssp. <i>album</i> Panoche pepper-grass	PDBRA1M0G2	None	None	G2T2/S2	1B.2	BLM:S	No	Yes
<i>Lepidium jaredii</i> ssp. <i>jaredii</i> Jared's pepper-grass	PDBRA1M0G1	None	None	G2T1T2/S1S2	1B.2	BLM:S	No	Yes
<i>Lepidium latipes</i> var. <i>heckardii</i> Heckard's pepper-grass	PDBRA1M0K1	None	None	G4T2/S2	1B.2		No	Yes
<i>Lepidium virginicum</i> var. <i>robinsonii</i> Robinson's pepper-grass	PDBRA1M114	None	None	G5T3/S3	4.3		No	Yes
<i>Leptodactylon californicum</i> ssp. <i>tomentosum</i> fuzzy prickly-phlox	PDPLM08021	None	None	G5T3/S3.2	4.2		No	No
<i>Leptosiphon acicularis</i> bristly leptosiphon	PDPLM09010	None	None	G3/S3.2	4.2		No	No
<i>Leptosiphon ambiguus</i> serpentine leptosiphon	PDPLM09020	None	None	G3/S3.2	4.2		No	No

April, 10, 2014

Page 75 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Leptosiphon croceus</i> coast yellow leptosiphon	PDPLM09170	None	None	G1/S1	1B.1		No	Yes
<i>Leptosiphon floribundus ssp. hallii</i> Santa Rosa Mountains leptosiphon	PDPLM090J3	None	None	G4T1/S1	1B.3	USFS:S	No	Yes
<i>Leptosiphon grandiflorus</i> large-flowered leptosiphon	PDPLM090K0	None	None	G3/S3.2	4.2		No	No
<i>Leptosiphon jepsonii</i> Jepson's leptosiphon	PDPLM09140	None	None	G2/S2	1B.2		No	Yes
<i>Leptosiphon latisectus</i> broad-lobed leptosiphon	PDPLM09150	None	None	G3/S3.3	4.3		No	No
<i>Leptosiphon nuttallii ssp. howellii</i> Mt. Tedoc leptosiphon	PDPLM090V4	None	None	G5T2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Leptosiphon oblancoelatus</i> Sierra Nevada leptosiphon	PDPLM090W0	None	None	G3/S3.3	4.3		No	No
<i>Leptosiphon pygmaeus ssp. pygmaeus</i> pygmy leptosiphon	PDPLM09102	None	None	G4T1/S1	1B.2		No	Yes
<i>Leptosiphon rattanii</i> Rattan's leptosiphon	PDPLM09110	None	None	G3/S3.3	4.3		No	No
<i>Leptosiphon rosaceus</i> rose leptosiphon	PDPLM09180	None	None	G1/S1	1B.1		No	Yes
<i>Leptosiphon serrulatus</i> Madera leptosiphon	PDPLM09130	None	None	G17/S1?	1B.2	USFS:S	No	Yes
<i>Leptosyne hamiltonii</i> Mt. Hamilton coreopsis	PDAST2L0C0	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Leptosyne maritima</i> sea dahlia	PDAST2L0L0	None	None	G3/S2.2	2B.2		No	Yes
<i>Lessingia arachnoidea</i> Crystal Springs lessingia	PDAST5S0C0	None	None	G1/S1	1B.2		No	Yes
<i>Lessingia germanorum</i> San Francisco lessingia	PDAST5S010	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Lessingia glandulifera var. tomentosa</i> Warner Springs lessingia	PDAST5S022	None	None	G4?T2/S2.3	1B.3	USFS:S	No	Yes
<i>Lessingia hololeuca</i> woolly-headed lessingia	PDAST5S030	None	None	G3/S3	3		No	No
<i>Lessingia micradenia var. glabrata</i> smooth lessingia	PDAST5S062	None	None	G2T2/S2	1B.2		No	Yes
<i>Lessingia micradenia var. micradenia</i> Tamalpais lessingia	PDAST5S063	None	None	G2T1T2/S1S2	1B.2		No	Yes

April, 10, 2014

Page 76 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Lessingia tenuis</i> spring lessingia	PDAST5S0B0	None	None	G3/S3.3	4.3		No	No
<i>Lewisia brachycalyx</i> short-sepaled lewisia	PDPOR04010	None	None	G4G5/S2	2B.2	USFS:S	No	Yes
<i>Lewisia cantelovii</i> Cantelow's lewisia	PDPOR04020	None	None	G3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Lewisia congdonii</i> Congdon's lewisia	PDPOR04040	None	Rare	G2/S2	1B.3	USFS:S	No	Yes
<i>Lewisia cotyledon</i> var. <i>heckneri</i> Heckner's lewisia	PDPOR04052	None	None	G4T2/S2.2	1B.2	BLM:S	No	Yes
<i>Lewisia cotyledon</i> var. <i>howellii</i> Howell's lewisia	PDPOR04053	None	None	G4T4Q/S3?	3.2		No	No
<i>Lewisia disepala</i> Yosemite lewisia	PDPOR04060	None	None	G2/S2.2	1B.2	USFS:S	No	Yes
<i>Lewisia kelloggii</i> ssp. <i>hutchisonii</i> Hutchison's lewisia	PDPOR04071	None	None	G3G4T2T3Q/S 2S3	3.3	USFS:S	No	No
<i>Lewisia kelloggii</i> ssp. <i>kelloggii</i> Kellogg's lewisia	PDPOR040M1	None	None	G3G4T2T3Q/S 2S3	3.2	USFS:S	No	No
<i>Lewisia longipetala</i> long-petaled lewisia	PDPOR040K0	None	None	G2/S2.2	1B.3	USFS:S	No	Yes
<i>Lewisia oppositifolia</i> opposite-leaved lewisia	PDPOR040B0	None	None	G4/S2.2	2B.2	USFS:S	No	Yes
<i>Lewisia serrata</i> saw-toothed lewisia	PDPOR040E0	None	None	G2/S2.2	1B.1	USFS:S	No	Yes
<i>Lewisia stebbinsii</i> Stebbins' lewisia	PDPOR040G0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Lilaeopsis masonii</i> Mason's lilaeopsis	PDAPI19030	None	Rare	G2/S2	1B.1		No	Yes
<i>Lilium bolanderi</i> Bolander's lily	PMLIL1A010	None	None	G4/S3.2	4.2		No	No
<i>Lilium humboldtii</i> ssp. <i>humboldtii</i> Humboldt lily	PMLIL1A071	None	None	G4T3/S3.2	4.2		No	No
<i>Lilium humboldtii</i> ssp. <i>ocellatum</i> ocellated humboldt lily	PMLIL1A072	None	None	G4T3/S3.2	4.2		No	No
<i>Lilium kelloggii</i> Kellogg's lily	PMLIL1A0A0	None	None	G3/S3.3	4.3		No	No
<i>Lilium maritimum</i> coast lily	PMLIL1A0C0	None	None	G2/S2	1B.1		No	Yes

April, 10, 2014

Page 77 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Lilium occidentale</i> western lily	PMLIL1A0G0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Lilium pardalinum ssp. pitkinense</i> Pitkin Marsh lily	PMLIL1A0H3	Endangered	Endangered	G5T1/S1	1B.1		No	Yes
<i>Lilium pardalinum ssp. vollmeri</i> Vollmer's lily	PMLIL1A0H2	None	None	G5T4/S3.3	4.3		No	No
<i>Lilium pardalinum ssp. wigginsii</i> Wiggins' lily	PMLIL1A0S0	None	None	G5T4?/S3.3	4.3		No	No
<i>Lilium parryi</i> lemon lily	PMLIL1A0J0	None	None	G3/S3	1B.2	USFS:S	No	Yes
<i>Lilium rubescens</i> redwood lily	PMLIL1A0N0	None	None	G3/S3.2	4.2		No	No
<i>Lilium washingtonianum ssp. purpurascens</i> purple-flowered Washington lily	PMLIL1A0R2	None	None	G4T4/S3.3	4.3		No	No
<i>Limnanthes alba ssp. parishii</i> Parish's meadowfoam	PDLIM02052	None	Endangered	G3T2T3/S2S3	1B.2	BLM:S USFS:S	No	Yes
<i>Limnanthes bakeri</i> Baker's meadowfoam	PDLIM02020	None	Rare	G1/S1	1B.1	BLM:S	No	Yes
<i>Limnanthes douglasii ssp. sulphurea</i> Point Reyes meadowfoam	PDLIM02038	None	Endangered	G4T2/S2	1B.2		No	Yes
<i>Limnanthes floccosa ssp. bellingeriana</i> Bellinger's meadowfoam	PDLIM02041	None	None	G4T3/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Limnanthes floccosa ssp. californica</i> Butte County meadowfoam	PDLIM02042	Endangered	Endangered	G4T1/S1	1B.1		No	Yes
<i>Limnanthes floccosa ssp. floccosa</i> woolly meadowfoam	PDLIM02043	None	None	G4T4/S3.2	4.2		No	Yes
<i>Limnanthes vinculans</i> Sebastopol meadowfoam	PDLIM02090	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Limosella australis</i> Delta mudwort	PDSCR10050	None	None	G4G5/S2	2B.1		No	Yes
<i>Linanthus bellus</i> desert beauty	PDPLM09070	None	None	G2G3/S2	2B.1		No	Yes
<i>Linanthus bernardinus</i> Pioneertown linanthus	PDPLM09190	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Linanthus concinnus</i> San Gabriel linanthus	PDPLM090D0	None	None	G3/S3	1B.2	USFS:S	No	Yes
<i>Linanthus jaegeri</i> San Jacinto linanthus	PDPLM08030	None	None	G2/S2.2	1B.2	USFS:S	No	Yes

April, 10, 2014

Page 78 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Linanthus killipii</i> Baldwin Lake linanthus	PDPLM090N0	None	None	G1/S1	1B.2	USFS:S	No	Yes
<i>Linanthus maculatus</i> Little San Bernardino Mtns. linanthus	PDPLM041Y0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Linanthus orcuttii</i> Orcutt's linanthus	PDPLM090X0	None	None	G4/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Linum puberulum</i> plains flax	PDLIN020P0	None	None	G5/S2	2B.3		No	Yes
<i>Listera cordata</i> heart-leaved twayblade	PMORC1N060	None	None	G5/S3.2	4.2		No	No
<i>Lithophragma maximum</i> San Clemente Island woodland star	PDSAX0M070	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Lithospermum incisum</i> plains stoneseed	PDBOR0L070	None	None	G5/S1	2B.3		No	Yes
<i>Loeflingia squarrosa</i> var. <i>artemisiarum</i> sagebrush loeflingia	PDCAR0E011	None	None	G5T2T3/S2.2	2B.2	BLM:S	No	Yes
<i>Loeseliastrum depressum</i> depressed standing-cypress	PDPLM06040	None	None	G5/S3?	4.3		No	No
<i>Lomatium canbyi</i> Canby's lomatium	PDAP11B060	None	None	G4/S3?	4.3		No	No
<i>Lomatium congdonii</i> Congdon's lomatium	PDAP11B0B0	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Lomatium engelmannii</i> Engelmann's lomatium	PDAP11B0K0	None	None	G3/S3.3	4.3		No	No
<i>Lomatium foeniculaceum</i> ssp. <i>inyoense</i> Inyo lomatium	PDAP11B0M4	None	None	G5T3/S3.3	4.3		No	No
<i>Lomatium foeniculaceum</i> var. <i>macdougalli</i> Macdougall's lomatium	PDAP11B0M5	None	None	G5T4T5/S2.2	2B.2		No	Yes
<i>Lomatium grayi</i> Gray's lomatium	PDAP11B0Q0	None	None	G5/S1S2	2B.3		No	Yes
<i>Lomatium hendersonii</i> Henderson's lomatium	PDAP11B0T0	None	None	G5?/S2.3	2B.3		No	Yes
<i>Lomatium hooveri</i> Hoover's lomatium	PDAP11B2K0	None	None	G3/S3.3	4.3		No	No
<i>Lomatium howellii</i> Howell's lomatium	PDAP11B0U0	None	None	G4G5/S3.3	4.3		No	No
<i>Lomatium insulare</i> San Nicolas Island lomatium	PDAP11B0W0	None	None	G2G3/S2S3	1B.2		No	Yes

April, 10, 2014

Page 79 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Lomatium martindalei</i> Coast Range lomatium	PDAP11B140	None	None	G5/S2.3	2B.3		No	Yes
<i>Lomatium observatorium</i> Mt. Hamilton lomatium	PDAP11B2J0	None	None	G1/S1?	1B.2		No	Yes
<i>Lomatium parvifolium</i> small-leaved lomatium	PDAP11B1F0	None	None	G3/S3	4.2		No	No
<i>Lomatium peckianum</i> Peck's lomatium	PDAP11B1G0	None	None	G4/S1	2B.2		No	Yes
<i>Lomatium ravenii</i> Raven's lomatium	PDAP11B1L0	None	None	G4/S3	2B.3		No	Yes
<i>Lomatium repostum</i> Napa lomatium	PDAP11B1M0	None	None	G3/S3.3	4.3		No	No
<i>Lomatium rigidum</i> stiff lomatium	PDAP11B1N0	None	None	G3/S3.3	4.3		No	No
<i>Lomatium roseanum</i> adobe lomatium	PDAP11B2G0	None	None	G2G3/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Lomatium shevockii</i> Owens Peak lomatium	PDAP11B2C0	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Lomatium stebbinsii</i> Stebbins' lomatium	PDAP11B1V0	None	None	G2/S2	1B.1	USFS:S	No	Yes
<i>Lomatium tracyi</i> Tracy's lomatium	PDAP11B1Y0	None	None	G3/S3.3	4.3		No	No
<i>Lonicera subspicata</i> var. <i>subspicata</i> Santa Barbara honeysuckle	PDCPR030R3	None	None	G5T2/S2	1B.2	USFS:S	No	Yes
<i>Lupinus albifrons</i> var. <i>abramsii</i> Abrams' lupine	PDFAB2B010	None	None	G1Q/S1?	3.2		No	No
<i>Lupinus antoninus</i> Anthony Peak lupine	PDFAB2B0C0	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Lupinus arboreus</i> var. <i>eximius</i> San Mateo tree lupine	PDFAB2B570	None	None	G2Q/S2.2	3.2		No	No
<i>Lupinus cervinus</i> Santa Lucia lupine	PDFAB2B0X0	None	None	G3/S3.3	4.3		No	No
<i>Lupinus citrinus</i> var. <i>citrinus</i> orange lupine	PDFAB2B103	None	None	G2T2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Lupinus citrinus</i> var. <i>deflexus</i> Mariposa lupine	PDFAB2B102	None	Threatened	G2T1/S1	1B.2	BLM:S	No	Yes
<i>Lupinus constancei</i> The Lassics lupine	PDFAB2B490	None	None	G1/S1	1B.2	USFS:S	No	Yes

April, 10, 2014

Page 80 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Lupinus croceus</i> var. <i>pilosellus</i> saffron-flowered lupine	PDFAB2B162	None	None	G3T3/S3.3	4.3		No	No
<i>Lupinus dalesiae</i> Quincy lupine	PDFAB2B1A0	None	None	G3/S3.2	4.2		No	Yes
<i>Lupinus duranii</i> Mono Lake lupine	PDFAB2B1E0	None	None	G2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Lupinus elatus</i> silky lupine	PDFAB2B1F0	None	None	G3/S3.3	4.3		No	No
<i>Lupinus elmeri</i> South Fork Mtn. lupine	PDFAB2B1G0	None	None	G2/S2	1B.2		No	Yes
<i>Lupinus excubitus</i> var. <i>johnstonii</i> interior bush lupine	PDFAB2B1J4	None	None	G4T3/S3.3	4.3		No	No
<i>Lupinus excubitus</i> var. <i>medius</i> Mountain Springs bush lupine	PDFAB2B1J5	None	None	G4T2T3/S2	1B.3	BLM:S	No	Yes
<i>Lupinus gracilentus</i> slender lupine	PDFAB2B1R0	None	None	G2/S2	1B.3		No	Yes
<i>Lupinus guadalupensis</i> Guadalupe Island lupine	PDFAB2B1T0	None	None	G3/S3	1B.2		No	Yes
<i>Lupinus holmgrenianus</i> Holmgren's lupine	PDFAB2B1Y0	None	None	G2G3/S2.3	2B.3		No	Yes
<i>Lupinus lapidicola</i> Heller's Mt. Eddy lupine	PDFAB2B280	None	None	G3/S3.3	4.3		No	No
<i>Lupinus latifolius</i> var. <i>barbatus</i> bearded lupine	PDFAB2B29H	None	None	G5T1T2/S1	1B.2	USFS:S	No	Yes
<i>Lupinus lepidus</i> var. <i>culbertsonii</i> Hockett Meadows lupine	PDFAB2B171	None	None	G3?T2/S2	1B.3	USFS:S	No	Yes
<i>Lupinus lepidus</i> var. <i>utahensis</i> stemless lupine	PDFAB2B0V2	None	None	G5T5?/S3.3	4.3		No	No
<i>Lupinus ludovicianus</i> San Luis Obispo County lupine	PDFAB2B2G0	None	None	G2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Lupinus magnificus</i> var. <i>glarecola</i> Coso Mountains lupine	PDFAB2B2K1	None	None	G3T3Q/S3.3	4.3		No	No
<i>Lupinus magnificus</i> var. <i>hesperius</i> Mcgee Meadows lupine	PDFAB2B2K2	None	None	G3T2Q/S2.3	1B.3	BLM:S	No	Yes
<i>Lupinus magnificus</i> var. <i>magnificus</i> Panamint Mountains lupine	PDFAB2B2K3	None	None	G3T2Q/S2	1B.2	BLM:S	No	Yes
<i>Lupinus milo-bakeri</i> Milo Baker's lupine	PDFAB2B4E0	None	Threatened	G1Q/S1	1B.1		No	Yes

April, 10, 2014

Page 81 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Lupinus nevadensis</i> Nevada lupine	PDFAB2B500	None	None	G3G4/S3.3	4.3		No	No
<i>Lupinus nipomensis</i> Nipomo Mesa lupine	PDFAB2B550	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Lupinus padre-crowleyi</i> Father Crowley's lupine	PDFAB2B2Z0	None	Rare	G2/S2	1B.2	USFS:S	No	Yes
<i>Lupinus peirsonii</i> Peirson's lupine	PDFAB2B330	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Lupinus pusillus</i> var. <i>intermontanus</i> intermontane lupine	PDFAB2B3B1	None	None	G5T5?/S2.2	2B.3		No	Yes
<i>Lupinus sericatus</i> Cobb Mountain lupine	PDFAB2B3J0	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Lupinus spectabilis</i> shaggyhair lupine	PDFAB2B3P0	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Lupinus tidestromii</i> Tidestrom's lupine	PDFAB2B3Y0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Lupinus tracyi</i> Tracy's lupine	PDFAB2B3Z0	None	None	G4/S3.3	4.3		No	No
<i>Lupinus uncialis</i> lilliput lupine	PDFAB2B410	None	None	G4/S2.2	2B.2	BLM:S	No	Yes
<i>Lycium brevipes</i> var. <i>hassei</i> Santa Catalina Island desert-thorn	PDSOL0G0N0	None	None	G1Q/S1	1B.1		No	Yes
<i>Lycium californicum</i> California box-thorn	PDSOL0G050	None	None	G4/S3.2	4.2		No	No
<i>Lycium parishii</i> Parish's desert-thorn	PDSOL0G0D0	None	None	G3?/S2S3	2B.3		No	Yes
<i>Lycium verrucosum</i> San Nicolas Island desert-thorn	PDSOL0G0M0	None	None	GXQ/SX	1A		No	Yes
<i>Lycopodiella inundata</i> inundated bog-clubmoss	PPLYC03060	None	None	G5/S1?	2B.2		No	Yes
<i>Lycopodium clavatum</i> running-pine	PPLYC01080	None	None	G5/S4.1	4.1		No	Yes
<i>Lycopus uniflorus</i> northern bugleweed	PDLAM0X080	None	None	G5/S3.3	4.3		No	No
<i>Lyonothamnus floribundus</i> ssp. <i>aspleniifolius</i> Santa Cruz Island ironwood	PDROS12011	None	None	G3T3/S3	1B.2		No	Yes
<i>Lyonothamnus floribundus</i> ssp. <i>floribundus</i> Santa Catalina Island ironwood	PDROS12012	None	None	G3T2/S2	1B.2		No	Yes

April, 10, 2014

Page 82 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Lyrocarpa coulteri</i> Palmer's lyrepod	PDBRA1R010	None	None	G4/S3.3	4.3		No	No
<i>Lysimachia thyrsoiflora</i> tufted loosestrife	PDPRI070S0	None	None	G5/S1	2B.3		No	Yes
<i>Madia radiata</i> showy golden madia	PDAST650E0	None	None	G2/S2	1B.1	BLM:S	No	Yes
<i>Malacothamnus abbottii</i> Abbott's bush-mallow	PDMAL0Q010	None	None	G1/S1	1B.1		No	Yes
<i>Malacothamnus aboriginum</i> Indian Valley bush-mallow	PDMAL0Q020	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Malacothamnus arcuatus</i> arcuate bush-mallow	PDMAL0Q0E0	None	None	G2Q/S2.2	1B.2		No	Yes
<i>Malacothamnus clementinus</i> San Clemente Island bush-mallow	PDMAL0Q030	Endangered	Endangered	G2/S2	1B.1		No	Yes
<i>Malacothamnus davidsonii</i> Davidson's bush-mallow	PDMAL0Q040	None	None	G2/S2	1B.2		No	Yes
<i>Malacothamnus fasciculatus</i> var. <i>nesioticus</i> Santa Cruz Island bush-mallow	PDMAL0Q061	Endangered	Endangered	G4T1/S1	1B.1		No	Yes
<i>Malacothamnus gracilis</i> slender bush-mallow	PDMAL0Q0J0	None	None	G3Q/S3.3	4.3		No	No
<i>Malacothamnus hallii</i> Hall's bush-mallow	PDMAL0Q0F0	None	None	G2Q/S2	1B.2	BLM:S	No	Yes
<i>Malacothamnus helleri</i> Heller's bush-mallow	PDMAL0Q0G0	None	None	G3Q/S3.3	4.3		No	No
<i>Malacothamnus jonesii</i> Jones' bush-mallow	PDMAL0Q090	None	None	G3/S3.3	4.3		No	No
<i>Malacothamnus mendocinensis</i> Mendocino bush-mallow	PDMAL0Q0D0	None	None	GXQ/SX	1A		No	Yes
<i>Malacothamnus niveus</i> San Luis Obispo County bush- mallow	PDMAL0Q0H0	None	None	G3Q/S3.3	4.3		No	No
<i>Malacothamnus palmeri</i> var. <i>involutus</i> Carmel Valley bush-mallow	PDMAL0Q0B1	None	None	G3T2Q/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Malacothamnus palmeri</i> var. <i>lucianus</i> Arroyo Seco bush-mallow	PDMAL0Q0B2	None	None	G3T1Q/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Malacothamnus palmeri</i> var. <i>palmeri</i> Santa Lucia bush-mallow	PDMAL0Q0B5	None	None	G3T2Q/S2.2	1B.2	USFS:S	No	Yes
<i>Malacothamnus parishii</i> Parish's bush-mallow	PDMAL0Q0C0	None	None	GHQ/SH	1A		No	Yes

April, 10, 2014

Page 83 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Malacothrix foliosa</i> ssp. <i>crispifolia</i> wavy-leaved malacothrix	PDAST66066	None	None	G4T1/S1	1B.2		No	Yes
<i>Malacothrix foliosa</i> ssp. <i>foliosa</i> leafy malacothrix	PDAST66064	None	None	G4T3/S3.2	4.2		No	No
<i>Malacothrix foliosa</i> ssp. <i>philbrickii</i> Philbrick's malacothrix	PDAST66065	None	None	G4T1/S1	1B.2		No	Yes
<i>Malacothrix foliosa</i> ssp. <i>polycephala</i> many-headed malacothrix	PDAST66067	None	None	G4T3/S3.2	4.2		No	No
<i>Malacothrix incana</i> dunedelion	PDAST66070	None	None	G3/S3.3	4.3		No	No
<i>Malacothrix indecora</i> Santa Cruz Island malacothrix	PDAST660J0	Endangered	None	G2/S2	1B.1		No	Yes
<i>Malacothrix junakii</i> Junak's malacothrix	PDAST660Q0	None	None	G1/S1	1B.1		No	Yes
<i>Malacothrix phaeocarpa</i> dusky-fruited malacothrix	PDAST66090	None	None	G3/S3.3	4.3		No	No
<i>Malacothrix saxatilis</i> var. <i>arachnoidea</i> Carmel Valley malacothrix	PDAST660C2	None	None	G5T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Malacothrix saxatilis</i> var. <i>saxatilis</i> cliff malacothrix	PDAST660C5	None	None	G5T3/S3.2	4.2		No	No
<i>Malacothrix similis</i> Mexican malacothrix	PDAST660D0	None	None	G2G3/SH	2A		No	Yes
<i>Malacothrix squalida</i> island malacothrix	PDAST660K0	Endangered	None	G1/S1	1B.1		No	Yes
<i>Malaxis monophyllos</i> var. <i>brachypoda</i> white bog adder's-mouth	PMORC1R010	None	None	G4?T4/S1	2B.1	USFS:S	No	Yes
<i>Malperia tenuis</i> brown turbans	PDAST67010	None	None	G4?/S2	2B.3		No	Yes
<i>Mammillaria grahamii</i> var. <i>grahamii</i> Graham fishhook cactus	PDCAC0A021	None	None	G4T4/S2	2B.2		No	Yes
<i>Marina orcuttii</i> var. <i>orcuttii</i> California marina	PDFAB2F031	None	None	G2G3T1T2/S2 ?	1B.3	USFS:S	No	Yes
<i>Matelea parvifolia</i> spear-leaf matelea	PDASC0A0J0	None	None	G5?/S2.2	2B.3	USFS:S	No	Yes
<i>Maurandella antirrhiniflora</i> violet twining snapdragon	PDSCR2M010	None	None	G4G5/S2	2B.3		No	Yes
<i>Meconella oregana</i> Oregon meconella	PDPAP0G030	None	None	G2G3/S1	1B.1		No	Yes

April, 10, 2014

Page 84 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Melica spectabilis</i> purple onion grass	PMPOA3X0G0	None	None	G5/S3.3	4.3		No	No
<i>Menodora scabra</i> rough menodora	PDOLE09040	None	None	G5/S2.3	2B.3		No	Yes
<i>Menodora spinescens</i> var. <i>mohavensis</i> Mojave menodora	PDOLE09061	None	None	G4T2T3/S2S3	1B.2	BLM:S	No	Yes
<i>Mentzelia eremophila</i> solitary blazing star	PDLOA030G0	None	None	G3/S3.2	4.2		No	No
<i>Mentzelia hirsutissima</i> hairy stickleaf	PDLOA030K0	None	None	G3?/S2S3	2B.3		No	Yes
<i>Mentzelia inyoensis</i> Inyo blazing star	PDLOA032Z0	None	None	G2/S2.3	1B.3	BLM:S USFS:S	No	Yes
<i>Mentzelia monoensis</i> Mono Craters blazing star	PDLOA032B0	None	None	G3/S3	4.3		No	No
<i>Mentzelia polita</i> polished blazing star	PDLOA031D0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Mentzelia pterosperma</i> wing-seed blazing star	PDLOA031E0	None	None	G4/S2	2B.2		No	Yes
<i>Mentzelia puberula</i> Darlington's blazing star	PDLOA031F0	None	None	G4/S2	2B.2		No	Yes
<i>Mentzelia torreyi</i> Torrey's blazing star	PDLOA031S0	None	None	G4/S2.2	2B.2		No	Yes
<i>Mentzelia tricuspis</i> spiny-hair blazing star	PDLOA031T0	None	None	G4/S2	2B.1		No	Yes
<i>Mentzelia tridentata</i> creamy blazing star	PDLOA031U0	None	None	G2/S2.3	1B.3	BLM:S	No	Yes
<i>Mertensia bella</i> Oregon lungwort	PDBOR0N040	None	None	G4/S2S3	2B.2		No	Yes
<i>Mertensia cusickii</i> Toiyabe bluebells	PDBOR0N0M0	None	None	G4?/S2.2?	2B.2		No	Yes
<i>Mertensia longiflora</i> long bluebells	PDBOR0N0D0	None	None	G4G5/S1	2B.2		No	Yes
<i>Mertensia oblongifolia</i> var. <i>amoena</i> beautiful sagebrush bluebells	PDBOR0N0G1	None	None	G5T5/S2.2	2B.2		No	Yes
<i>Mertensia oblongifolia</i> var. <i>oblongifolia</i> sagebrush bluebells	PDBOR0N0G2	None	None	G5T2/S2.2?	2B.2		No	Yes
<i>Micranthes howellii</i> Howell's saxifrage	PDSAX0U0T0	None	None	G4/S3.3	4.3		No	No

April, 10, 2014

Page 85 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Micromonolepis pusilla</i> dwarf monolepis	PDCH0F020	None	None	G5/S2.3	2B.3		No	Yes
<i>Micropus amphibolus</i> Mt. Diablo cottonweed	PDAST6D030	None	None	G3/S3.2?	3.2		No	No
<i>Microseris borealis</i> northern microseris	PDAST6E030	None	None	G5/S1	2B.1		No	Yes
<i>Microseris douglasii</i> ssp. <i>platycarpa</i> small-flowered microseris	PDAST6E062	None	None	G4T3/S3.2	4.2		No	No
<i>Microseris laciniata</i> ssp. <i>detlingii</i> Detling's silverpuffs	PDAST6E0A1	None	None	G4T3/S1	2B.2		No	Yes
<i>Microseris paludosa</i> marsh microseris	PDAST6E0D0	None	None	G2/S2.2	1B.2		No	Yes
<i>Microseris sylvatica</i> sylvan microseris	PDAST6E0E0	None	None	G3/S3.2	4.2		No	No
<i>Mimulus acutidens</i> Kings River monkeyflower	PDSCR1B010	None	None	G2?Q/S2?	3		No	No
<i>Mimulus aurantiacus</i> var. <i>aridus</i> low bush monkeyflower	PDSCR22040	None	None	G5T3T4/S3.3	4.3		No	No
<i>Mimulus brandegeei</i> Santa Cruz Island monkeyflower	PDSCR1B0K0	None	None	GXQ/SX	1A		No	Yes
<i>Mimulus clevelandii</i> Cleveland's bush monkeyflower	PDSCR22010	None	None	G3G4/S3.2	4.2		No	No
<i>Mimulus cusickii</i> Cusick's monkeyflower	PDSCR1B0V0	None	None	G4G5/S2	2B.3		No	Yes
<i>Mimulus diffusus</i> Palomar monkeyflower	PDSCR1B0Z0	None	None	G4Q/S3.3	4.3		No	No
<i>Mimulus evanescens</i> ephemeral monkeyflower	PDSCR1B370	None	None	G3/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Mimulus exiguus</i> San Bernardino Mountains monkeyflower	PDSCR1B140	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Mimulus filicaulis</i> slender-stemmed monkeyflower	PDSCR1B150	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Mimulus flemingii</i> island bush monkeyflower	PDSCR1B320	None	None	G3Q/S3.3	4.3		No	No
<i>Mimulus fremontii</i> var. <i>vandenbergensis</i> Vandenberg monkeyflower	PDSCR1B381	Proposed Endangered	None	G3G5T1/S1	1B.1		No	Yes
<i>Mimulus glabratus</i> ssp. <i>utahensis</i> Utah monkeyflower	PDSCR1B1A6	None	None	G5T5?/S1	2B.1		No	Yes

April, 10, 2014

Page 86 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Mimulus glaucescens</i> shield-bracted monkeyflower	PDSCR1B1B0	None	None	G3/S3.3	4.3		No	No
<i>Mimulus gracilipes</i> slender-stalked monkeyflower	PDSCR1B1C0	None	None	G2G3/S2S3	1B.2	BLM:S USFS:S	No	Yes
<i>Mimulus grayi</i> Gray's monkeyflower	PDSCR1B1D0	None	None	G3/S3.3	4.3		No	No
<i>Mimulus inconspicuus</i> small-flowered monkeyflower	PDSCR1B1F0	None	None	G3/S3.3	4.3		No	No
<i>Mimulus johnstonii</i> Johnston's monkeyflower	PDSCR1B1H0	None	None	G3/S3.3	4.3		No	No
<i>Mimulus laciniatus</i> cut-leaved monkeyflower	PDSCR1B1L0	None	None	G3/S3.3	4.3		No	No
<i>Mimulus microphyllus</i> small-leaved monkeyflower	PDSCR1B300	None	None	G3Q/S3.3	4.3		No	No
<i>Mimulus mohavensis</i> Mojave monkeyflower	PDSCR1B1V0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Mimulus norrisii</i> Kaweah monkeyflower	PDSCR1B2Y0	None	None	G2/S2.3	1B.3	BLM:S USFS:S	No	Yes
<i>Mimulus nudatus</i> bare monkeyflower	PDSCR1B200	None	None	G3/S3.3	4.3		No	No
<i>Mimulus parryi</i> Parry's monkeyflower	PDSCR1B230	None	None	G3G4/S2.3	2B.3		No	Yes
<i>Mimulus pictus</i> calico monkeyflower	PDSCR1B240	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Mimulus pulchellus</i> yellow-lip pansy monkeyflower	PDSCR1B280	None	None	G2G3/S2S3	1B.2	BLM:S USFS:S	No	Yes
<i>Mimulus purpureus</i> little purple monkeyflower	PDSCR1B2B0	None	None	G2/S2.2	1B.2	USFS:S	No	Yes
<i>Mimulus pygmaeus</i> Egg Lake monkeyflower	PDSCR1B2C0	None	None	G4/S3.2	4.2		No	Yes
<i>Mimulus rattanii</i> ssp. <i>decurtatus</i> Santa Cruz County monkeyflower	PDSCR1B2D2	None	None	G4T3/S3.2	4.2		No	No
<i>Mimulus rupicola</i> Death Valley monkeyflower	PDSCR1B2H0	None	None	G3/S3.3	4.3		No	No
<i>Mimulus shevockii</i> Kelso Creek monkeyflower	PDSCR1B2Z0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Mimulus subsecundus</i> one-sided monkeyflower	PDSCR1B2K0	None	None	G3/S3.3	4.3		No	No

April, 10, 2014

Page 87 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Mimulus traskiae</i> Santa Catalina Island monkeyflower	PDSCR1B2P0	None	None	GX/SX	1A		No	Yes
<i>Mimulus whipplei</i> Whipple's monkeyflower	PDSCR1B2U0	None	None	GXQ/SX	1A		No	Yes
<i>Minuartia decumbens</i> The Lassics sandwort	PDCAR0G0Y0	None	None	G1/S1	1B.2	USFS:S	No	Yes
<i>Minuartia howellii</i> Howell's sandwort	PDCAR0G0F0	None	None	G4/S2	1B.3	BLM:S	No	Yes
<i>Minuartia obtusiloba</i> alpine sandwort	PDCAR0G0N0	None	None	G5/S3.3	4.3		No	No
<i>Minuartia rosei</i> peanut sandwort	PDCAR0G0R0	None	None	G3/S3.2	4.2	USFS:S	No	No
<i>Minuartia stolonifera</i> Scott Mountain sandwort	PDCAR0G110	None	None	G2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Minuartia stricta</i> bog sandwort	PDCAR0G0U0	None	None	G5/S2	2B.3		No	Yes
<i>Mirabilis coccinea</i> red four o'clock	PDNYC0A090	None	None	G5/S2	2B.3		No	Yes
<i>Mirabilis greenei</i> Greene's four o'clock	PDNYC0A0N0	None	None	G3/S3.2	4.2		No	No
<i>Mirabilis tenuiloba</i> slender-lobed four o'clock	PDNYC0A150	None	None	G4/S3.3	4.3		No	No
<i>Mitellastra caulescens</i> leafy-stemmed mitrewort	PDSAX0N020	None	None	G5/S4.2	4.2		No	Yes
<i>Monarda pectinata</i> plains bee balm	PDLAM170A0	None	None	G5/S1	2B.3		No	Yes
<i>Monardella antonina ssp. antonina</i> San Antonio Hills monardella	PDLAM18011	None	None	G4T3Q/S3?	3		No	No
<i>Monardella antonina ssp. benitensis</i> San Benito monardella	PDLAM18012	None	None	G4T3/S3.3	4.3		No	No
<i>Monardella australis ssp. cinerea</i> gray monardella	PDLAM18060	None	None	G4T3/S3.3	4.3		No	No
<i>Monardella australis ssp. jokerstii</i> Jokerst's monardella	PDLAM18112	None	None	G4T1/S1	1B.1	USFS:S	No	Yes
<i>Monardella beneolens</i> sweet-smelling monardella	PDLAM180U0	None	None	G1/S1	1B.3	BLM:S USFS:S	No	Yes
<i>Monardella boydii</i> Boyd's monardella	PDLAM18120	None	None	G2Q/S2	1B.2	BLM:S	No	Yes

April, 10, 2014

Page 88 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Monardella candidans</i> Sierra monardella	PDLAM18050	None	None	G3/S3.3	4.3		No	No
<i>Monardella eremicola</i> Clark Mountain monardella	PDLAM18130	None	None	G2G3Q/S2S3	1B.3	BLM:S	No	Yes
<i>Monardella follettii</i> Follett's monardella	PDLAM180W0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Monardella hypoleuca ssp. hypoleuca</i> white-veined monardella	PDLAM180A3	None	None	G4T2T3/S2S3	1B.3		No	Yes
<i>Monardella hypoleuca ssp. intermedia</i> intermediate monardella	PDLAM180A4	None	None	G4T2T3/S2S3	1B.3		No	Yes
<i>Monardella hypoleuca ssp. lanata</i> felt-leaved monardella	PDLAM180A2	None	None	G4T2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Monardella leucocephala</i> Merced monardella	PDLAM180C0	None	None	GH/SH	1A		No	Yes
<i>Monardella linooides ssp. oblonga</i> Tehachapi monardella	PDLAM180D2	None	None	G5T2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Monardella macrantha ssp. hallii</i> Hall's monardella	PDLAM180E1	None	None	G5T3/S3	1B.3	USFS:S	No	Yes
<i>Monardella nana ssp. leptosiphon</i> San Felipe monardella	PDLAM180F2	None	None	G4G5T2Q/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Monardella palmeri</i> Palmer's monardella	PDLAM180H0	None	None	G2/S2.2	1B.2	USFS:S	No	Yes
<i>Monardella pringlei</i> Pringle's monardella	PDLAM180J0	None	None	GX/SX	1A		No	Yes
<i>Monardella robisonii</i> Robison's monardella	PDLAM180K0	None	None	G3/S3	1B.3	BLM:S	No	Yes
<i>Monardella saxicola</i> rock monardella	PDLAM180Q1	None	None	G3/S3.2	4.2	USFS:S	No	No
<i>Monardella sinuata ssp. nigrescens</i> northern curly-leaved monardella	PDLAM18162	None	None	G3T2/S2	1B.2		No	Yes
<i>Monardella sinuata ssp. sinuata</i> southern curly-leaved monardella	PDLAM18161	None	None	G3T2/S2	1B.2		No	Yes
<i>Monardella stebbinsii</i> Stebbins' monardella	PDLAM180L0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Monardella stoneana</i> Jennifer's monardella	PDLAM180Y0	None	None	G1/S1.2	1B.2	BLM:S	No	Yes
<i>Monardella undulata ssp. arguelloensis</i> Point Arguello monardella	PDLAM18151	None	None	G3T1/S1	1B.1		No	Yes

April, 10, 2014

Page 89 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Monardella undulata ssp. crispa</i> crisp monardella	PDLAM18070	None	None	G3T2/S2.2	1B.2	BLM:S	No	Yes
<i>Monardella undulata ssp. undulata</i> San Luis Obispo monardella	PDLAM180X0	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Monardella venosa</i> veiny monardella	PDLAM18082	None	None	G1/S1	1B.1	BLM:S	No	Yes
<i>Monardella viminea</i> willowy monardella	PDLAM18140	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Monardella viridis</i> green monardella	PDLAM180Q2	None	None	G3T3/S3.3	4.3		No	No
<i>Moneses uniflora</i> woodnymph	PDPYR02010	None	None	G5/S3	2B.2		No	Yes
<i>Monolopia congdonii</i> San Joaquin woollythreads	PDASTA8010	Endangered	None	G2/S2	1B.2		No	Yes
<i>Monolopia gracilens</i> woodland woollythreads	PDAST6G010	None	None	G2G3/S2S3	1B.2		No	Yes
<i>Monotropa uniflora</i> ghost-pipe	PDMON03030	None	None	G5/S2	2B.2		No	Yes
<i>Montia howellii</i> Howell's montia	PDPOR05070	None	None	G3G4/S3	2B.2		No	Yes
<i>Mortonia utahensis</i> Utah mortonia	PDCEL09030	None	None	G4G5/S3	4.3		No	No
<i>Mucronea californica</i> California spineflower	PDPGN0F010	None	None	G3/S3	4.2		No	No
<i>Muhlenbergia alopecuroides</i> wolftail	PMPOA3W020	None	None	G5/S1?	2B.2		No	Yes
<i>Muhlenbergia appressa</i> appressed muhly	PMPOA48020	None	None	G4/S3	2B.2		No	Yes
<i>Muhlenbergia arsenei</i> tough muhly	PMPOA48060	None	None	G5/S1S2	2B.3		No	Yes
<i>Muhlenbergia californica</i> California muhly	PMPOA480A0	None	None	G3/S3.3	4.3		No	Yes
<i>Muhlenbergia fragilis</i> delicate muhly	PMPOA480Q0	None	None	G5?/S1	2B.3		No	Yes
<i>Muhlenbergia jonesii</i> Jones' muhly	PMPOA480X0	None	None	G3/S3.3	4.3		No	No
<i>Muhlenbergia pauciflora</i> few-flowered muhly	PMPOA48170	None	None	G5/S2	2B.3		No	Yes

April, 10, 2014

Page 90 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Muilla coronata</i> crowned muilla	PMLIL1H020	None	None	G3/S3.2?	4.2		No	No
<i>Munroa squarrosa</i> false buffalo-grass	PMPOA49010	None	None	G5/S1S2	2B.2		No	Yes
<i>Munzothamnus blairii</i> Blair's munzothamnus	PDAST8U0K0	None	None	G2/S2.2	1B.2		No	Yes
<i>Myosurus minimus ssp. apus</i> little mousetail	PDRAN0H031	None	None	G5T2Q/S2.2	3.1		No	Yes
<i>Myrica hartwegii</i> Sierra sweet bay	PDMCC02050	None	None	G3G4/S3S4	4.3		No	No
<i>Nama dichotomum var. dichotomum</i> forked purple mat	PDHYD0A061	None	None	G4T4?/S1	2B.3		No	Yes
<i>Nama stenocarpum</i> mud nama	PDHYD0A0H0	None	None	G4G5/S1S2	2B.2		No	Yes
<i>Nasturtium gambelii</i> Gambel's water cress	PDBRA270V0	Endangered	Threatened	G1/S1	1B.1		No	Yes
<i>Navarretia cotulifolia</i> cotula navarretia	PDPLM0C040	None	None	G3/S3.2	4.2		No	No
<i>Navarretia eriocephala</i> hoary navarretia	PDPLM0C060	None	None	G3/S3.3	4.3		No	No
<i>Navarretia fossalis</i> spreading navarretia	PDPLM0C080	Threatened	None	G1/S1	1B.1		No	Yes
<i>Navarretia gowenii</i> Lime Ridge navarretia	PDPLM0C120	None	None	G1/S1	1B.1		No	Yes
<i>Navarretia heterandra</i> Tehama navarretia	PDPLM0C0A0	None	None	G3/S3.3	4.3		No	No
<i>Navarretia jepsonii</i> Jepson's navarretia	PDPLM0C0D0	None	None	G3/S3.3	4.3		No	No
<i>Navarretia leucocephala ssp. bakeri</i> Baker's navarretia	PDPLM0C0E1	None	None	G4T2/S2	1B.1	BLM:S	No	Yes
<i>Navarretia leucocephala ssp. pauciflora</i> few-flowered navarretia	PDPLM0C0E4	Endangered	Threatened	G4T1/S1	1B.1		No	Yes
<i>Navarretia leucocephala ssp. plieantha</i> many-flowered navarretia	PDPLM0C0E5	Endangered	Endangered	G4T1/S1	1B.2		No	Yes
<i>Navarretia myersii ssp. deminuta</i> small pincushion navarretia	PDPLM0C0X2	None	None	G1T1/S1	1B.1		No	Yes
<i>Navarretia myersii ssp. myersii</i> pincushion navarretia	PDPLM0C0X1	None	None	G1T1/S1	1B.1		No	Yes

April, 10, 2014

Page 91 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Navarretia nigelliformis</i> ssp. <i>nigelliformis</i> adobe navarretia	PDPLM0C0J1	None	None	G4T3/S3.2	4.2		No	No
<i>Navarretia nigelliformis</i> ssp. <i>radians</i> shining navarretia	PDPLM0C0J2	None	None	G4T2/S2	1B.2	BLM:S	No	Yes
<i>Navarretia ojaiensis</i> Ojai navarretia	PDPLM0C130	None	None	G1/S1	1B.1	USFS:S	No	Yes
<i>Navarretia peninsularis</i> Baja navarretia	PDPLM0C0L0	None	None	G3?/S2	1B.2	USFS:S	No	Yes
<i>Navarretia prolifera</i> ssp. <i>lutea</i> yellow bur navarretia	PDPLM0C0N1	None	None	G4T3/S3.3	4.3	USFS:S	No	No
<i>Navarretia prostrata</i> prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2/S2	1B.1		No	Yes
<i>Navarretia rosulata</i> Marin County navarretia	PDPLM0C0Z0	None	None	G2?/S2?	1B.2		No	Yes
<i>Navarretia setiloba</i> Piute Mountains navarretia	PDPLM0C0S0	None	None	G2/S2	1B.1	BLM:S USFS:S	No	Yes
<i>Navarretia sinistra</i> ssp. <i>pinnatisecta</i> pinnate-leaved navarretia	PDPLM04211	None	None	G4G5T3/S3.3	4.3		No	No
<i>Navarretia subuligera</i> awl-leaved navarretia	PDPLM0C0U0	None	None	G4/S3.3	4.3		No	No
<i>Nemacladus denudata</i> var. <i>denudata</i> coast woolly-heads	PDPGN0G011	None	None	G3G4T3?/S2.2	1B.2		No	Yes
<i>Nemacladus denudata</i> var. <i>gracilis</i> slender cottonheads	PDPGN0G012	None	None	G3G4T3?/S2	2B.2		No	Yes
<i>Nemacladus calcaratus</i> Chimney Creek nemacladus	PDCAM0F0E0	None	None	G1/S1	1B.2	USFS:S	No	Yes
<i>Nemacladus gracilis</i> graceful nemacladus	PDCAM0F030	None	None	G3/S3.3	4.3		No	No
<i>Nemacladus secundiflorus</i> var. <i>robbinsii</i> Robbins' nemacladus	PDCAM0F0B2	None	None	G3T2T3/S2S3	1B.2	USFS:S	No	Yes
<i>Nemacladus secundiflorus</i> var. <i>secundiflorus</i> large-flowered nemacladus	PDCAM0F0B1	None	None	G3T3?/S3?	4.3		No	No
<i>Nemacladus twisselmannii</i> Twisselmann's nemacladus	PDCAM0F0D0	None	Rare	G1/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Nemophila breviflora</i> Great Basin nemophila	PDHYD0B020	None	None	G5/S2.3	2B.3		No	Yes
<i>Nemophila parviflora</i> var. <i>quercifolia</i> oak-leaved nemophila	PDHYD0B073	None	None	G5T3/S3.3	4.3		No	No

April, 10, 2014

Page 92 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Neostapfia colusana</i> Colusa grass	PMPOA4C010	Threatened	Endangered	G2/S2	1B.1		No	Yes
<i>Neviusia cliftonii</i> Shasta snow-wreath	PDROS14020	None	None	G2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Nitrophila mohavensis</i> Amargosa nitrophila	PDCHE0G010	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Noccaea fendleri ssp. californica</i> Kneeland Prairie pennycress	PDBRA2P041	Endangered	None	G5?T1/S1	1B.1		No	Yes
<i>Nolina cismontana</i> chaparral nolina	PMAGA080E0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Nolina interrata</i> Dehesa nolina	PMAGA08070	None	Endangered	G2/S2	1B.1	BLM:S	No	Yes
<i>Oenothera caespitosa ssp. crinita</i> caespitose evening-primrose	PDONA0C063	None	None	G5T4T5/S3.3	4.2		No	No
<i>Oenothera californica ssp. eurekaensis</i> Eureka Dunes evening-primrose	PDONA0C071	Endangered	Rare	G4?T2/S2	1B.2		No	Yes
<i>Oenothera cavernae</i> cave evening-primrose	PDONA0C090	None	None	G2G3/S1	2B.1		No	Yes
<i>Oenothera deltoides ssp. howellii</i> Antioch Dunes evening-primrose	PDONA0C0B4	Endangered	Endangered	G5T1/S1	1B.1		No	Yes
<i>Oenothera longissima</i> long-stem evening-primrose	PDONA0C0T0	None	None	G4/S1	2B.2		No	Yes
<i>Oenothera wolfii</i> Wolf's evening-primrose	PDONA0C1K0	None	None	G1/S1	1B.1	BLM:S	No	Yes
<i>Ophioglossum californicum</i> California adder's-tongue	PPOPH020G0	None	None	G4/S3.2	4.2		No	No
<i>Ophioglossum pusillum</i> northern adder's-tongue	PPOPH020F0	None	None	G5/S1	2B.2	USFS:S	No	Yes
<i>Opuntia basilaris var. brachyclada</i> short-joint beavertail	PDCAC0D053	None	None	G5T3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Opuntia basilaris var. treleasei</i> Bakersfield cactus	PDCAC0D055	Endangered	Endangered	G5T1/S1	1B.1		No	Yes
<i>Opuntia fragilis</i> brittle prickly-pear	PDCAC0D0H0	None	None	G4G5/SH	2B.1		No	Yes
<i>Opuntia wigginsii</i> Wiggins' cholla	PDCAC0D1P0	None	None	G3?Q/S1?	3.3		No	Yes
<i>Opuntia xcurvispina</i> curved-spine beavertail	PDCAC0D270	None	None	G3G4Q/S1	2B.2		No	Yes

April, 10, 2014

Page 93 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Orcuttia californica</i> California Orcutt grass	PMPOA4G010	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Orcuttia inaequalis</i> San Joaquin Valley Orcutt grass	PMPOA4G060	Threatened	Endangered	G1/S1	1B.1		No	Yes
<i>Orcuttia pilosa</i> hairy Orcutt grass	PMPOA4G040	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Orcuttia tenuis</i> slender Orcutt grass	PMPOA4G050	Threatened	Endangered	G2/S2	1B.1		No	Yes
<i>Orcuttia viscida</i> Sacramento Orcutt grass	PMPOA4G070	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Oreonana purpurascens</i> purple mountain-parsley	PDAP11G020	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Oreonana vestita</i> woolly mountain-parsley	PDAP11G030	None	None	G3/S3	1B.3	USFS:S	No	Yes
<i>Oreostemma elatum</i> tall alpine-aster	PDASTE020	None	None	G2Q/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Ornithostaphylos oppositifolia</i> Baja California birdbush	PDERI0W010	None	Endangered	G4/S1	2B.1		No	Yes
<i>Orobanche ludoviciana</i> var. <i>arenosa</i> Suksdorf's broom-rape	PDORO04073	None	None	G5T5/S2	2B.3		No	Yes
<i>Orobanche parishii</i> ssp. <i>brachyloba</i> short-lobed broomrape	PDORO040A2	None	None	G4?T3/S3.2	4.2		No	Yes
<i>Orobanche valida</i> ssp. <i>howellii</i> Howell's broomrape	PDORO040G1	None	None	G3T3/S3.3	4.3		No	No
<i>Orobanche valida</i> ssp. <i>valida</i> Rock Creek broomrape	PDORO040G2	None	None	G3T2/S2	1B.2	USFS:S	No	Yes
<i>Orthocarpus cuspidatus</i> ssp. <i>cuspidatus</i> Siskiyou Mountains orthocarpus	PDSCR1H081	None	None	G5T3T4/S3.3	4.3		No	No
<i>Orthocarpus pachystachyus</i> Shasta orthocarpus	PDSCR1H0L0	None	None	G1/S1	1B.1	BLM:S	No	Yes
<i>Oryctes nevadensis</i> Nevada oryctes	PDSOL0Q010	None	None	G2G3/S2	2B.1		No	Yes
<i>Osmorhiza depauperata</i> blunt-fruited sweet-cicely	PDAP11K050	None	None	G5/S1	2B.3		No	Yes
<i>Oxalis suksdorfii</i> Suksdorf's wood-sorrel	PDOXA010U0	None	None	G4/S3.3	4.3		No	No
<i>Oxytheca watsonii</i> Watson's oxytheca	PDPGN0J070	None	None	G3?/S1	2B.2		No	Yes

April, 10, 2014

Page 94 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Oxytropis deflexa</i> var. <i>sericea</i> blue pendent-pod oxytrope	PDFAB2X053	None	None	G5T5/S1	2B.1		No	Yes
<i>Oxytropis oreophila</i> var. <i>oreophila</i> rock-loving oxytrope	PDFAB2X0H3	None	None	G5T4/S2	2B.3	USFS:S	No	Yes
<i>Oxytropis parryi</i> Parry's oxytrope	PDFAB2X0J0	None	None	G5/S3.3	4.3		No	No
<i>Packera bernardina</i> San Bernardino ragwort	PDAST8H0E0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Packera bolanderi</i> var. <i>bolanderi</i> seacoast ragwort	PDAST8H0H1	None	None	G4T4/S2S3	2B.2		No	Yes
<i>Packera eurycephala</i> var. <i>lewisrosei</i> Lewis Rose's ragwort	PDAST8H182	None	None	G4T2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Packera ganderi</i> Gander's ragwort	PDAST8H1F0	None	Rare	G2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Packera hesperia</i> western ragwort	PDAST8H1L0	None	None	G3/S1	2B.2	USFS:S	No	Yes
<i>Packera indecora</i> rayless mountain ragwort	PDAST8H1R0	None	None	G5/S2?	2B.2		No	Yes
<i>Packera ionophylla</i> Tehachapi ragwort	PDAST8H1T0	None	None	G3/S3.3	4.3		No	No
<i>Packera layneae</i> Layne's ragwort	PDAST8H1V0	Threatened	Rare	G2/S2	1B.2		No	Yes
<i>Packera macounii</i> Siskiyou Mountains ragwort	PDAST8H1Z0	None	None	G5/S3.3	4.3		No	No
<i>Palafoxia arida</i> var. <i>gigantea</i> giant spanish-needle	PDAST6T012	None	None	G5T3/S2	1B.3	BLM:S	No	Yes
<i>Panicum acuminatum</i> var. <i>thermale</i> Geysers panicum	PMPOA24028	None	Endangered	G5T2Q/S2	1B.2	BLM:S	No	Yes
<i>Panicum hirticaule</i> ssp. <i>hirticaule</i> roughstalk witch grass	PMPOA4K170	None	None	G5T5/S1	2B.1		No	Yes
<i>Parkinsonia microphylla</i> little-leaved palo verde	PDFAB2Z030	None	None	G5/S3.3	4.3		No	No
<i>Parnassia cirrata</i> var. <i>cirrata</i> San Bernardino grass-of-Parnassus	PDSAX0P030	None	None	G5T2/S2.3	1B.3	USFS:S	No	Yes
<i>Parnassia cirrata</i> var. <i>intermedia</i> Cascade grass-of-Parnassus	PDSAX0P044	None	None	G5T3/S3	2B.2	USFS:S	No	Yes
<i>Parnassia parviflora</i> small-flowered grass-of-Parnassus	PDSAX0P0A0	None	None	G4/S2	2B.2		No	Yes

April, 10, 2014

Page 95 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Paronychia ahartii</i> Ahart's paronychia	PDCAR0L0V0	None	None	G2/S2	1B.1	BLM:S	No	Yes
<i>Pedicularis bracteosa</i> var. <i>flavida</i> yellowish lousewort	PDSCR1K044	None	None	G5T4/S3.3	4.3		No	No
<i>Pedicularis centranthera</i> Great Basin lousewort	PDSCR1K070	None	None	G4/S2	2B.3	BLM:S	No	Yes
<i>Pedicularis contorta</i> curved-beak lousewort	PDSCR1K090	None	None	G5/S3.3	4.3		No	No
<i>Pedicularis crenulata</i> scalloped-leaved lousewort	PDSCR1K0A0	None	None	G4/S1	2B.2		No	Yes
<i>Pedicularis dudleyi</i> Dudley's lousewort	PDSCR1K0D0	None	Rare	G2/S2	1B.2	USFS:S	No	Yes
<i>Pedicularis howellii</i> Howell's lousewort	PDSCR1K0J0	None	None	G4/S3.3	4.3	USFS:S	No	No
<i>Pediomelum castoreum</i> Beaver Dam breadroot	PDFAB5L050	None	None	G3/S2	1B.2	BLM:S	No	Yes
<i>Pellaea truncata</i> spiny cliff-brake	PPADI0H0C0	None	None	G5/S2	2B.3		No	Yes
<i>Penstemon albomarginatus</i> white-margined beardtongue	PDSCR1L070	None	None	G2/S1	1B.1	BLM:S	No	Yes
<i>Penstemon barnebyi</i> Barneby's beardtongue	PDSCR1L0Q0	None	None	G3G4/S1	2B.1		No	Yes
<i>Penstemon bicolor</i> ssp. <i>roseus</i> rosy two-toned beardtongue	PDSCR1L0S2	None	None	G3T3Q/S1	1B.1	BLM:S	No	Yes
<i>Penstemon calcareus</i> limestone beardtongue	PDSCR1L100	None	None	G2G3/S2S3	1B.3		No	Yes
<i>Penstemon californicus</i> California beardtongue	PDSCR1L110	None	None	G3?/S2	1B.2	USFS:S	No	Yes
<i>Penstemon cinereus</i> gray beardtongue	PDSCR1L7F0	None	None	G4/S3.3	4.3		No	No
<i>Penstemon cinicola</i> ashy-gray beardtongue	PDSCR1L1B0	None	None	G4/S3.3	4.3		No	No
<i>Penstemon clevelandii</i> var. <i>connatus</i> San Jacinto beardtongue	PDSCR1L1D2	None	None	G5T4/S3.3	4.3		No	No
<i>Penstemon filiformis</i> thread-leaved beardtongue	PDSCR1L2A0	None	None	G3/S3	1B.3	BLM:S	No	Yes
<i>Penstemon fruticiformis</i> var. <i>amargosae</i> Amargosa beardtongue	PDSCR1L2F2	None	None	G4T3/S2.3	1B.3	BLM:S	No	Yes

April, 10, 2014

Page 96 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Penstemon heterodoxus</i> var. <i>shastensis</i> Shasta beardtongue	PDSCR1L5Q0	None	None	G5T3/S3.3	4.3		No	No
<i>Penstemon janishiae</i> Janish's beardtongue	PDSCR1L3A0	None	None	G4/S1	2B.2	BLM:S	No	Yes
<i>Penstemon newberryi</i> var. <i>sonomensis</i> Sonoma beardtongue	PDSCR1L483	None	None	G4T1/S2	1B.3		No	Yes
<i>Penstemon pahutensis</i> Pahute beardtongue	PDSCR1L4H0	None	None	G3/S1	2B.3		No	Yes
<i>Penstemon papillatus</i> Inyo beardtongue	PDSCR1L4L0	None	None	G3/S3.3	4.3		No	No
<i>Penstemon personatus</i> closed-throated beardtongue	PDSCR1L4Y0	None	None	G2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Penstemon pseudospectabilis</i> ssp. <i>pseudospectabilis</i> desert beardtongue	PDSCR1L562	None	None	G4G5T3T5/S3	2B.2		No	Yes
<i>Penstemon rattanii</i> var. <i>kleei</i> Santa Cruz Mountains beardtongue	PDSCR1L5B1	None	None	G4T2/S2.2	1B.2		No	Yes
<i>Penstemon scapoides</i> pinyon beardtongue	PDSCR1L5J0	None	None	G3/S3.3	4.3		No	No
<i>Penstemon stephensii</i> Stephens' beardtongue	PDSCR1L5W0	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Penstemon sudans</i> Susanville beardtongue	PDSCR1L620	None	None	G3/S3	1B.3	BLM:S USFS:S	No	Yes
<i>Penstemon thompsoniae</i> Thompson's beardtongue	PDSCR1L670	None	None	G4/S1	2B.3		No	Yes
<i>Penstemon thurberi</i> Thurber's beardtongue	PDSCR1L680	None	None	G5/S3.2?	4.2		No	No
<i>Penstemon tracyi</i> Tracy's beardtongue	PDSCR1L6A0	None	None	G1/S1	1B.3	USFS:S	No	Yes
<i>Penstemon utahensis</i> Utah beardtongue	PDSCR1L6G0	None	None	G4/S2	2B.3		No	Yes
<i>Pentachaeta aurea</i> ssp. <i>allenii</i> Allen's pentachaeta	PDAST6X021	None	None	G4T2/S2	1B.1		No	Yes
<i>Pentachaeta aurea</i> ssp. <i>aurea</i> golden-rayed pentachaeta	PDAST6X022	None	None	G4T3/S3	4.2		No	No
<i>Pentachaeta bellidiflora</i> white-rayed pentachaeta	PDAST6X030	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Pentachaeta exilis</i> ssp. <i>aeolica</i> San Benito pentachaeta	PDAST6X041	None	None	G5T1/S1	1B.2	BLM:S USFS:S	No	Yes

April, 10, 2014

Page 97 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Pentachaeta fragilis</i> fragile pentachaeta	PDAST6X050	None	None	G3/S3.3	4.3		No	No
<i>Pentachaeta lyonii</i> Lyon's pentachaeta	PDAST6X060	Endangered	Endangered	G2/S2	1B.1		No	Yes
<i>Perideridia bacigalupii</i> Bacigalupi's yampah	PDAP11N020	None	None	G3/S3	4.2		No	No
<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i> California Gairdner's yampah	PDAP11N062	None	None	G5T3/S3.2	4.2		No	No
<i>Perideridia leptocarpa</i> narrow-seeded yampah	PDAP11N0A0	None	None	G3Q/S3.3	4.3		No	No
<i>Perideridia parishii</i> ssp. <i>parishii</i> Parish's yampah	PDAP11N0C2	None	None	G4T3T4/S2.2?	2B.2		No	Yes
<i>Perideridia pringlei</i> adobe yampah	PDAP11N0D0	None	None	G3/S3.3	4.3		No	No
<i>Perityle inyoensis</i> Inyo rock daisy	PDAST700F0	None	None	G2/S2.2	1B.2	BLM:S	No	Yes
<i>Perityle villosa</i> Hanaupah rock daisy	PDAST700V0	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Petalonyx thurberi</i> ssp. <i>gilmanii</i> Death Valley sandpaper-plant	PDLOA04041	None	None	G5T2/S2.3	1B.3	BLM:S	No	Yes
<i>Peteria thompsoniae</i> spine-noded milk vetch	PDFAB32020	None	None	G4/S1	2B.3		No	Yes
<i>Petradoria pumila</i> ssp. <i>pumila</i> rock goldenrod	PDAST72022	None	None	G5T4/S3.3	4.3		No	No
<i>Petrophytum caespitosum</i> ssp. <i>acuminatum</i> marble rockmat	PDROS18010	None	None	G5T2/S2	1B.3	USFS:S	No	Yes
<i>Phacelia amabilis</i> Saline Valley phacelia	PDHYD0C040	None	None	GHQ/SH	3.3		No	Yes
<i>Phacelia anelsonii</i> Aven Nelson's phacelia	PDHYD0C060	None	None	G2G3/S2.3?	2B.3		No	Yes
<i>Phacelia argentea</i> sand dune phacelia	PDHYD0C070	None	None	G2/S1	1B.1		No	Yes
<i>Phacelia barnebyana</i> Barneby's phacelia	PDHYD0C0C0	None	None	G3?/S2.3	2B.3		No	Yes
<i>Phacelia ciliata</i> var. <i>opaca</i> Merced phacelia	PDHYD0C0S2	None	None	G5TH/SH	3.2		No	Yes
<i>Phacelia coerulea</i> sky-blue phacelia	PDHYD0C0U0	None	None	G5/S2	2B.3		No	Yes

April, 10, 2014

Page 98 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Phacelia cookei</i> Cooke's phacelia	PDHYD0C0Y0	None	None	G1/S1	1B.1	BLM:S USFS:S	No	Yes
<i>Phacelia exilis</i> Transverse Range phacelia	PDHYD0C4Y0	None	None	G3Q/S3.3	4.3		No	No
<i>Phacelia floribunda</i> many-flowered phacelia	PDHYD0C1G0	None	None	G2/S2	1B.2		No	Yes
<i>Phacelia greenei</i> Scott Valley phacelia	PDHYD0C1V0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Phacelia gymnoclada</i> naked-stemmed phacelia	PDHYD0C1X0	None	None	G4/S2.3	2B.3		No	Yes
<i>Phacelia hubbyi</i> Hubby's phacelia	PDHYD0C0R4	None	None	G3/S3.2	4.2		No	No
<i>Phacelia insularis</i> var. <i>continentis</i> North Coast phacelia	PDHYD0C2B1	None	None	G2T1/S1	1B.2		No	Yes
<i>Phacelia insularis</i> var. <i>insularis</i> northern Channel Islands phacelia	PDHYD0C2B2	Endangered	None	G2T1/S1	1B.2		No	Yes
<i>Phacelia inundata</i> playa phacelia	PDHYD0C2E0	None	None	G2/S2.3	1B.3	BLM:S USFS:S	No	Yes
<i>Phacelia inyoensis</i> Inyo phacelia	PDHYD0C2F0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Phacelia keckii</i> Santiago Peak phacelia	PDHYD0C4G1	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Phacelia leonis</i> Siskiyou phacelia	PDHYD0C2N0	None	None	G2/S2.2	1B.3	BLM:S	No	Yes
<i>Phacelia mohavensis</i> Mojave phacelia	PDHYD0C310	None	None	G3Q/S3.3	4.3		No	No
<i>Phacelia monoensis</i> Mono County phacelia	PDHYD0C4V0	None	None	G3/S2.1	1B.1	BLM:S USFS:S	No	Yes
<i>Phacelia mustelina</i> Death Valley round-leaved phacelia	PDHYD0C330	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Phacelia nashiana</i> Charlotte's phacelia	PDHYD0C350	None	None	G3/S3	1B.2	BLM:S	No	Yes
<i>Phacelia novemmillensis</i> Nine Mile Canyon phacelia	PDHYD0C3A0	None	None	G3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Phacelia oregones</i> Sierra phacelia	PDHYD0C3C0	None	None	G3/S3.3	4.3		No	No
<i>Phacelia parishii</i> Parish's phacelia	PDHYD0C3G0	None	None	G2G3/S1	1B.1	BLM:S	No	Yes

April, 10, 2014

Page 99 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Phacelia peirsoniana</i> Peirson's phacelia	PDHYD0C3N0	None	None	G3G4/S3.3	4.3		No	No
<i>Phacelia perityloides</i> var. <i>jaegeri</i> Jaeger's phacelia	PDHYD0C1M0	None	None	G4T2/S1	1B.3		No	Yes
<i>Phacelia phacelioides</i> Mt. Diablo phacelia	PDHYD0C3Q0	None	None	G1/S1	1B.2	BLM:S	No	Yes
<i>Phacelia pulchella</i> var. <i>gooddingii</i> Goodding's phacelia	PDHYD0C3V1	None	None	G5T2T3/S2	2B.3		No	Yes
<i>Phacelia ramosissima</i> var. <i>austrolitoralis</i> south coast branching phacelia	PDHYD0C416	None	None	G5?T3/S3.2	3.2		No	No
<i>Phacelia sericea</i> var. <i>ciliosa</i> blue alpine phacelia	PDHYD0C4A1	None	None	G5T5/S2	2B.3		No	Yes
<i>Phacelia stebbinsii</i> Stebbins' phacelia	PDHYD0C4D0	None	None	G3/S3	1B.2	USFS:S	No	Yes
<i>Phacelia stellaris</i> Brand's star phacelia	PDHYD0C510	None	None	G1/S1	1B.1		No	Yes
<i>Phaseolus filiformis</i> slender-stem bean	PDFAB330P0	None	None	G5/S1	2B.1		No	Yes
<i>Phlox dispersa</i> High Sierra phlox	PDPLM0D0M0	None	None	G3/S3.3	4.3		No	No
<i>Phlox dolichantha</i> Big Bear Valley phlox	PDPLM0D0P0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Phlox hirsuta</i> Yreka phlox	PDPLM0D100	Endangered	Endangered	G1/S1	1B.2		No	Yes
<i>Phlox muscoides</i> squarestem phlox	PDPLM0D115	None	None	G5?/S2S3	2B.3		No	Yes
<i>Pholisma sonora</i> sand food	PDLNN02020	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Pholistoma auritum</i> var. <i>arizonicum</i> Arizona pholistoma	PDHYD0D011	None	None	G5T2T3/S2	2B.3		No	Yes
<i>Physalis lobata</i> lobed ground-cherry	PDSOL0T010	None	None	G5/S2	2B.3		No	Yes
<i>Physaria chambersii</i> Chambers' physaria	PDBRA22050	None	None	G4/S1S2	2B.3		No	Yes
<i>Physaria kingii</i> ssp. <i>bernardina</i> San Bernardino Mountains bladderpod	PDBRA1N0W1	Endangered	None	G5T1/S1	1B.1		No	Yes
<i>Physaria ludoviciana</i> silver bladderpod	PDBRA1N110	None	None	G5/S1	2B.2		No	Yes

April, 10, 2014

Page 100 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Physocarpus alternans</i> Nevada ninebark	PDROS19010	None	None	G4/S2.3	2B.3		No	Yes
<i>Picea engelmannii</i> Engelmann spruce	PGPIN03030	None	None	G5/S2.2	2B.2		No	Yes
<i>Pickeringia montana</i> var. <i>tomentosa</i> woolly chaparral-pea	PDFAB34012	None	None	G5T2T4/S2S4. 3	4.3		No	No
<i>Pilosyles thurberi</i> Thurber's pilostyles	PDRAF01010	None	None	G5/S3.3	4.3		No	Yes
<i>Pinguicula macroceras</i> horned butterwort	PDLNT01040	None	None	G5/S2S3	2B.2		No	Yes
<i>Pinus contorta</i> ssp. <i>bolanderi</i> Bolander's beach pine	PGPIN04081	None	None	G5T2/S2	1B.2		No	Yes
<i>Pinus edulis</i> two-needle pinyon pine	PGPIN040C0	None	None	G5Q/S2	3.3		No	No
<i>Pinus longaeva</i> bristlecone pine	PGPIN04180	None	None	G4/S3.3	4.3		No	No
<i>Pinus radiata</i> Monterey pine	PGPIN040V0	None	None	G1/S1	1B.1		No	Yes
<i>Pinus torreyana</i> ssp. <i>insularis</i> Santa Rosa Island Torrey pine	PGPIN04151	None	None	G1T1/S1	1B.2		No	Yes
<i>Pinus torreyana</i> ssp. <i>torreyana</i> Torrey pine	PGPIN04152	None	None	G1T1/S1	1B.2		No	Yes
<i>Piperia candida</i> white-flowered rein orchid	PMORC1X050	None	None	G3?/S2	1B.2	BLM:S	No	Yes
<i>Piperia colemanii</i> Coleman's rein orchid	PMORC1X080	None	None	G3/S3.3	4.3		No	No
<i>Piperia cooperi</i> chaparral rein orchid	PMORC1X090	None	None	G4/S3.2	4.2		No	No
<i>Piperia elegans</i> ssp. <i>decurtata</i> Point Reyes rein orchid	PMORC1X011	None	None	G4T1/S1	1B.1		No	Yes
<i>Piperia leptopetala</i> narrow-petaled rein orchid	PMORC1X100	None	None	G3/S3.3	4.3		No	No
<i>Piperia michaelii</i> Michael's rein orchid	PMORC1X110	None	None	G3/S3.2	4.2		No	No
<i>Piperia yadonii</i> Yadon's rein orchid	PMORC1X070	Endangered	None	G2/S2	1B.1		No	Yes
<i>Pityopus californica</i> California pinefoot	PDMON05010	None	None	G4G5/S3.2	4.2		No	No

April, 10, 2014

Page 101 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i> Choris' popcornflower	PDBOR0V061	None	None	G3T2Q/S2.2	1B.2		No	Yes
<i>Plagiobothrys chorisianus</i> var. <i>hickmanii</i> Hickman's popcornflower	PDBOR0V062	None	None	G3T3Q/S3.2	4.2		No	No
<i>Plagiobothrys diffusus</i> San Francisco popcornflower	PDBOR0V080	None	Endangered	G1Q/S1	1B.1		No	Yes
<i>Plagiobothrys glaber</i> hairless popcornflower	PDBOR0V0B0	None	None	GH/SH	1A		No	Yes
<i>Plagiobothrys glyptocarpus</i> var. <i>modestus</i> Cedar Crest popcornflower	PDBOR0V0C2	None	None	G3THQ/SH	3		No	No
<i>Plagiobothrys hystriculus</i> bearded popcornflower	PDBOR0V0H0	None	None	G2/S2	1B.1		No	Yes
<i>Plagiobothrys lithocaryus</i> Mayacamas popcornflower	PDBOR0V0P0	None	None	GH/SH	1A		No	Yes
<i>Plagiobothrys mollis</i> var. <i>vestitus</i> Petaluma popcornflower	PDBOR0V0Q2	None	None	G4?TX/SX	1A		No	Yes
<i>Plagiobothrys nitens</i> shiny-nutlet popcornflower	PDBOR0V1B0	None	None	GNR/S1	2B.1		No	Yes
<i>Plagiobothrys parishii</i> Parish's popcornflower	PDBOR0V0U0	None	None	G1/S1	1B.1	USFS:S	No	Yes
<i>Plagiobothrys salsus</i> desert popcornflower	PDBOR0V0X0	None	None	G2G3/S1	2B.2		No	Yes
<i>Plagiobothrys strictus</i> Calistoga popcornflower	PDBOR0V120	Endangered	Threatened	G1/S1	1B.1		No	Yes
<i>Plagiobothrys torreyi</i> var. <i>perplexans</i> chaparral popcornflower	PDBOR0V153	None	None	G4T3/S3	4.3		No	No
<i>Plagiobothrys torreyi</i> var. <i>torreyi</i> Yosemite popcornflower	PDBOR0V152	None	None	G4T2Q/S2.2	1B.2		No	Yes
<i>Plagiobothrys uncinatus</i> hooked popcornflower	PDBOR0V170	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Plagiobothrys verrucosus</i> warty popcorn-flower	PDBOR0V1D0	None	None	G4?/S1	2B.1		No	Yes
<i>Platanthera stricta</i> slender bog-orchid	PMORC1Y0P0	None	None	G5/S3.2?	4.2		No	No
<i>Platanthera yosemitensis</i> Yosemite bog orchid	PMORC1Y1B0	None	None	G2/S2.2	1B.2	USFS:S	No	Yes
<i>Platystemon californicus</i> var. <i>ciliatus</i> Santa Barbara Island cream cups	PDPAP0J022	None	None	G5T1Q/S1	1B.2		No	Yes

April, 10, 2014

Page 102 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Pleuropogon californicus</i> var. <i>davyi</i> Davy's semaphore grass	PMPOA7Y012	None	None	G5T3/S3.3	4.3		No	No
<i>Pleuropogon hooverianus</i> North Coast semaphore grass	PMPOA4Y070	None	Threatened	G2/S2	1B.1	BLM:S	No	Yes
<i>Pleuropogon refractus</i> nodding semaphore grass	PMPOA4Y080	None	None	G4/S3.2?	4.2		No	No
<i>Poa abbreviata</i> ssp. <i>marshii</i> Marsh's blue grass	PMPOA4Z013	None	None	G5T2/S1	2B.3		No	Yes
<i>Poa abbreviata</i> ssp. <i>pattersonii</i> Patterson's blue grass	PMPOA4Z015	None	None	G5T5/S1	2B.3		No	Yes
<i>Poa atropurpurea</i> San Bernardino blue grass	PMPOA4Z0A0	Endangered	None	G2/S2	1B.2		No	Yes
<i>Poa diaboli</i> Diablo Canyon blue grass	PMPOA4Z390	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Poa lettermanii</i> Letterman's blue grass	PMPOA4Z1H0	None	None	G4/S3	2B.3		No	Yes
<i>Poa napensis</i> Napa blue grass	PMPOA4Z1R0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Poa piperi</i> Piper's blue grass	PMPOA4Z200	None	None	G4/S3.3	4.3		No	No
<i>Poa rhizomata</i> timber blue grass	PMPOA4Z250	None	None	G3G4/S3.3	4.3		No	No
<i>Poa sierrae</i> Sierra blue grass	PMPOA4Z310	None	None	G2G3/S2S3	1B.3	USFS:S	No	Yes
<i>Podistera nevadensis</i> Sierra podistera	PDAP11T030	None	None	G3/S3.3	4.3		No	No
<i>Pogogyne abramsii</i> San Diego mesa mint	PDLAM1K010	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Pogogyne clareana</i> Santa Lucia mint	PDLAM1K020	None	Endangered	G2/S2	1B.2		No	Yes
<i>Pogogyne floribunda</i> profuse-flowered pogogyne	PDLAM1K070	None	None	G4/S4	4.2		No	Yes
<i>Pogogyne nudiuscula</i> Otay Mesa mint	PDLAM1K040	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Polemonium carneum</i> Oregon polemonium	PDPLM0E050	None	None	G4/S1	2B.2		No	Yes
<i>Polemonium chartaceum</i> Mason's sky pilot	PDPLM0E0T0	None	None	G2/S2	1B.3	USFS:S	No	Yes

April, 10, 2014

Page 103 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Polemonium eddyense</i> Mount Eddy sky pilot	PDPLM0E0S0	None	None	G1/S1	1B.2		No	No
<i>Poliomintha incana</i> frosted mint	PDLAM1L020	None	None	G5/SH	2A		No	Yes
<i>Polycytenium fremontii</i> var. <i>fremontii</i> Fremont's combleaf	PDBRA23012	None	None	G4T4/S3.3	4.3		No	No
<i>Polycytenium williamsiae</i> Williams' combleaf	PDBRA23030	None	None	G2Q/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Polygala acanthoclada</i> thorny milkwort	PDPGL02020	None	None	G4/S1	2B.3		No	Yes
<i>Polygala cornuta</i> var. <i>fishiae</i> Fish's milkwort	PDPGL020B2	None	None	G5T4/S3.3	4.3		No	No
<i>Polygala heterorhyncha</i> notch-beaked milkwort	PDPGL02270	None	None	G3/S2	2B.3		No	Yes
<i>Polygala intermontana</i> intermountain milkwort	PDPGL021U0	None	None	G3?/S2.3	2B.3		No	Yes
<i>Polygala subspinosa</i> spiny milkwort	PDPGL021Q0	None	None	G4?/S3	2B.2		No	Yes
<i>Polygonum bidwelliae</i> Bidwell's knotweed	PDPGN0L0C0	None	None	G3/S3.3	4.3		No	No
<i>Polygonum hickmanii</i> Scotts Valley polygonum	PDPGN0L310	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Polygonum marinense</i> Marin knotweed	PDPGN0L1C0	None	None	G2Q/S2	3.1		No	Yes
<i>Polygonum polygaloides</i> ssp. <i>esotericum</i> Modoc County knotweed	PDPGN0L1Y2	None	None	G4G5T3/S3	1B.1	BLM:S	No	Yes
<i>Polystichum kruckebergii</i> Kruckeberg's sword fern	PPDRY0R0C0	None	None	G4/S3.3	4.3		No	No
<i>Polystichum lonchitis</i> northern holly fern	PPDRY0R0F0	None	None	G5/S2?	3		No	No
<i>Populus angustifolia</i> narrow-leaved cottonwood	PDSAL01020	None	None	G5/S2S3	2B.2		No	Yes
<i>Portulaca halimoides</i> desert portulaca	PDPOR06040	None	None	G5/S3	4.2		No	No
<i>Potamogeton epiphydrus</i> Nuttall's ribbon-leaved pondweed	PMPOT03080	None	None	G5/S2S3	2B.2		No	Yes
<i>Potamogeton foliosus</i> ssp. <i>fibrillosus</i> fibrous pondweed	PMPOT030B1	None	None	G5T2T4/S1S2	2B.3		No	Yes

April, 10, 2014

Page 104 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Potamogeton praelongus</i> white-stemmed pondweed	PMPO030V0	None	None	G5/S1S2	2B.3		No	Yes
<i>Potamogeton robbinsii</i> Robbins' pondweed	PMPO030Z0	None	None	G5/S3	2B.3		No	Yes
<i>Potamogeton zosteriformis</i> eel-grass pondweed	PMPO03160	None	None	G5/S2.2?	2B.2		No	Yes
<i>Potentilla basaltica</i> Black Rock potentilla	PDROS1B270	None	None	G1/S1	1B.3	BLM:S USFS:S	No	Yes
<i>Potentilla concinna</i> var. <i>proxima</i> early cinquefoil	PDROS1B0F8	None	None	G5?T4T5/S1	2B.3		No	Yes
<i>Potentilla cristae</i> crested potentilla	PDROS1B2F0	None	None	G2/S2	1B.3		No	Yes
<i>Potentilla hickmanii</i> Hickman's cinquefoil	PDROS1B0U0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Potentilla morefieldii</i> Morefield's cinquefoil	PDROS1B2R0	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Potentilla multijuga</i> Ballona cinquefoil	PDROS1B120	None	None	GX/SX	1A		No	Yes
<i>Potentilla newberryi</i> Newberry's cinquefoil	PDROS1B130	None	None	G3G4/S2S3	2B.3		No	Yes
<i>Potentilla pulcherrima</i> beautiful cinquefoil	PDROS1B2P0	None	None	G5/S1	2B.2		No	Yes
<i>Potentilla rimicola</i> cliff cinquefoil	PDROS1B2G0	None	None	G2G4/S1	2B.3	USFS:S	No	Yes
<i>Potentilla uliginosa</i> Cunningham Marsh cinquefoil	PDROS1B4A0	None	None	GH/SH	1A		No	Yes
<i>Proboscidea althaeifolia</i> desert unicorn-plant	PDPE06010	None	None	G5/S3.3	4.3		No	No
<i>Prosartes parvifolia</i> Siskiyou bells	PMLIL0R014	None	None	G2?/S2	1B.2	USFS:S	No	Yes
<i>Prunus eremophila</i> Mojave Desert plum	PDROS1C1Q0	None	None	G1/S1	1B.2		No	Yes
<i>Prunus fasciculata</i> var. <i>punctata</i> sand almond	PDROS1C0E2	None	None	G5T3/S3.3	4.3		No	No
<i>Pseudobahia bahiifolia</i> Hartweg's golden sunburst	PDAST7P010	Endangered	Endangered	G2/S2	1B.1		No	Yes
<i>Pseudobahia peirsonii</i> San Joaquin adobe sunburst	PDAST7P030	Threatened	Endangered	G1/S1	1B.1		No	Yes

April, 10, 2014

Page 105 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Pseudognaphalium leucocephalum</i> white rabbit-tobacco	PDAST440C0	None	None	G4/S2S3.2	2B.2		No	Yes
<i>Pseudorantium cyathiferum</i> Deep Canyon snapdragon	PDSCR2R010	None	None	G4?/S1	2B.3		No	Yes
<i>Pseudostellaria sierrae</i> Sierra starwort	PDCAR13020	None	None	G3G4/S3S4	4.2		No	No
<i>Psilocarphus brevissimus</i> var. <i>multiflorus</i> Delta woolly-marbles	PDAST7R012	None	None	G4T3/S3	4.2		No	No
<i>Psilocarphus elatior</i> tall woolly-marbles	PDAST7R020	None	None	G4Q/S3.3	4.3		No	No
<i>Psorothamnus arborescens</i> var. <i>arborescens</i> Mojave indigo-bush	PDFAB3C011	None	None	G5T3/S3.3	4.3		No	No
<i>Psorothamnus fremontii</i> var. <i>attenuatus</i> narrow-leaved psorothamnus	PDFAB3C031	None	None	G5T3?/S2.3	2B.3		No	Yes
<i>Puccinellia howellii</i> Howell's alkali grass	PMPOA531A0	None	None	G1/S1	1B.1	BLM:S	No	Yes
<i>Puccinellia parishii</i> Parish's alkali grass	PMPOA530T0	None	None	G2G3/S1	1B.1	BLM:S	No	Yes
<i>Puccinellia pumila</i> dwarf alkali grass	PMPOA531L0	None	None	G4?/SH	2B.2		No	Yes
<i>Pyrola chlorantha</i> green-flowered wintergreen	PDPYR04030	None	None	G5/SH	2A		No	Yes
<i>Pyrocoma lucida</i> sticky pyrrocoma	PDASTDT0E0	None	None	G3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Pyrocoma racemosa</i> var. <i>congesta</i> Del Norte pyrrocoma	PDASTDT0F4	None	None	G5T4/S2	2B.3		No	Yes
<i>Pyrocoma racemosa</i> var. <i>pinetorum</i> pine pyrrocoma	PDASTDT0F2	None	None	G5T3/S3.2	4.2		No	No
<i>Pyrocoma uniflora</i> var. <i>gossypina</i> Bear Valley pyrrocoma	PDASTDT0K1	None	None	G5T1/S1	1B.2	USFS:S	No	Yes
<i>Quercus cedrosensis</i> Cedros Island oak	PDFAG05650	None	None	G2?/S1	2B.2		No	Yes
<i>Quercus dumosa</i> Nuttall's scrub oak	PDFAG050D0	None	None	G2/S2	1B.1	USFS:S	No	Yes
<i>Quercus durata</i> var. <i>gabrielensis</i> San Gabriel oak	PDFAG050G2	None	None	G4T3/S3.2	4.2		No	No
<i>Quercus engelmannii</i> Engelmann oak	PDFAG050K0	None	None	G3/S3.2	4.2		No	No

April, 10, 2014

Page 106 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Quercus pacifica</i> island scrub oak	PDFAG05620	None	None	G3/S3.2	4.2		No	No
<i>Quercus parvula</i> var. <i>parvula</i> Santa Cruz Island oak	PDFAG051Q1	None	None	G4T3/S3.2	4.2		No	No
<i>Quercus parvula</i> var. <i>tamalpaisensis</i> Tamalpais oak	PDFAG051Q3	None	None	G4T2/S2	1B.3		No	Yes
<i>Quercus tomentella</i> island oak	PDFAG05250	None	None	G3/S3.2	4.2		No	No
<i>Quercus turbinella</i> shrub live oak	PDFAG05270	None	None	G5/S3.3	4.3		No	No
<i>Raillardella pringlei</i> showy raillardella	PDAST7X030	None	None	G3/S3	1B.2	BLM:S USFS:S	No	Yes
<i>Ranunculus hydrocharoides</i> frog's-bit buttercup	PDRAN0L190	None	None	G4G5/S1	2B.1		No	Yes
<i>Ranunculus lobbii</i> Lobb's aquatic buttercup	PDRAN0L1J0	None	None	G4/S3.2	4.2		No	No
<i>Ranunculus macounii</i> Macoun's buttercup	PDRAN0L1M0	None	None	G5/S2.2	2B.2		No	Yes
<i>Rhamnus alniifolia</i> alder buckthorn	PDRHA0C010	None	None	G5/S3	2B.2		No	Yes
<i>Rhamnus pirifolia</i> island redberry	PDRHA0C0A0	None	None	G3/S3.2	4.2		No	No
<i>Rhus aromatica</i> var. <i>simplicifolia</i> single-leaved skunkbrush	PDANA080B5	None	None	G5T3T5/S2	2B.3		No	Yes
<i>Rhynchospora alba</i> white beaked-rush	PMCYP0N010	None	None	G5/S2	2B.2		No	Yes
<i>Rhynchospora californica</i> California beaked-rush	PMCYP0N060	None	None	G1/S1	1B.1	BLM:S	No	Yes
<i>Rhynchospora capitellata</i> brownish beaked-rush	PMCYP0N080	None	None	G5/S1	2B.2		No	Yes
<i>Rhynchospora globularis</i> round-headed beaked-rush	PMCYP0N0W0	None	None	G5/S1	2B.1		No	Yes
<i>Ribes amarum</i> var. <i>hoffmannii</i> Hoffmann's bitter gooseberry	PDGRO02012	None	None	G4? T2T3/S2S3	3		No	No
<i>Ribes canthariforme</i> Moreno currant	PDGRO02070	None	None	G2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Ribes divaricatum</i> var. <i>parishii</i> Parish's gooseberry	PDGRO020F3	None	None	G4TH/SH	1A		No	Yes

April, 10, 2014

Page 107 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Ribes hudsonianum</i> var. <i>petiolare</i> western black currant	PDGRO020N2	None	None	G5T3T5/S2.3?	2B.3		No	Yes
<i>Ribes laxiflorum</i> trailing black currant	PDGRO020V0	None	None	G5/S3.3	4.3		No	No
<i>Ribes marshallii</i> Marshall's gooseberry	PDGRO020Z0	None	None	G4/S3.3	4.3		No	No
<i>Ribes menziesii</i> var. <i>ixoderme</i> aromatic canyon gooseberry	PDGRO02104	None	None	G4T2/S2.2	1B.2		No	Yes
<i>Ribes roezlii</i> var. <i>amictum</i> hoary gooseberry	PDGRO021B1	None	None	G3G4T3/S3.3	4.3		No	No
<i>Ribes sericeum</i> Santa Lucia gooseberry	PDGRO021F0	None	None	G3/S3.3	4.3		No	No
<i>Ribes thacherianum</i> Santa Cruz Island gooseberry	PDGRO02109	None	None	G2/S2.2	1B.2		No	Yes
<i>Ribes tularense</i> Sequoia gooseberry	PDGRO021L0	None	None	G2/S2.3	1B.3	BLM:S	No	Yes
<i>Ribes viburnifolium</i> Santa Catalina Island currant	PDGRO021P0	None	None	G2?/S2?	1B.2		No	Yes
<i>Ribes victoris</i> Victor's gooseberry	PDGRO021Q0	None	None	G3/S3.3	4.3		No	No
<i>Robinia neomexicana</i> New Mexico locust	PDFAB3G070	None	None	G4/S1	2B.3		No	Yes
<i>Romanzoffia tracyi</i> Tracy's romanzoffia	PDHYD0E030	None	None	G4/S2	2B.3		No	Yes
<i>Romneya coulteri</i> Coulter's matilija poppy	PDPAP0L010	None	None	G3/S3.2	4.2		No	No
<i>Rorippa columbiae</i> Columbia yellow cress	PDBRA27060	None	None	G3/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Rorippa subumbellata</i> Tahoe yellow cress	PDBRA270M0	Candidate	Endangered	G1/S1	1B.1	USFS:S	No	Yes
<i>Rosa gymnocarpa</i> var. <i>serpentina</i> Gasquet rose	PDROS1J1V1	None	None	G5T2/S2	1B.3		No	Yes
<i>Rosa minutifolia</i> small-leaved rose	PDROS1J1B0	None	Endangered	G3/SX	2B.1		No	Yes
<i>Rosa pinetorum</i> pine rose	PDROS1J0W0	None	None	G2Q/S2.2	1B.2		No	Yes
<i>Rubus glaucifolius</i> var. <i>ganderi</i> Cuyamaca raspberry	PDROS1K2N1	None	None	G5T1Q/S1	3.1		No	Yes

April, 10, 2014

Page 108 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Rubus nivalis</i> snow dwarf bramble	PDR0S1K4S0	None	None	G4?/S1	2B.3		No	Yes
<i>Rumex venosus</i> winged dock	PDPGN0P1K0	None	None	G5?/S2.3	2B.3		No	Yes
<i>Rupertia hallii</i> Hall's rupertia	PDFAB62010	None	None	G2G3/S2S3	1B.2	BLM:S USFS:S	No	Yes
<i>Rupertia rigida</i> Parish's rupertia	PDFAB62030	None	None	G3/S3.3	4.3		No	No
<i>Sagittaria sanfordii</i> Sanford's arrowhead	PMALI040Q0	None	None	G3/S3	1B.2	BLM:S	No	Yes
<i>Salix bebbiana</i> Bebb's willow	PDSAL020E0	None	None	G5/S1	2B.3		No	Yes
<i>Salix brachycarpa</i> var. <i>brachycarpa</i> short-fruited willow	PDSAL020H5	None	None	G5T5/S2	2B.3		No	Yes
<i>Salix delnortensis</i> Del Norte willow	PDSAL023F0	None	None	G4/S3.3	4.3		No	No
<i>Salix nivalis</i> snow willow	PDSAL024K0	None	None	G5/S2	2B.3		No	Yes
<i>Saltugilia caruifolia</i> caraway-leaved woodland-gilia	PDPLM040C0	None	None	G4?/S3.3	4.3		No	No
<i>Saltugilia latimeri</i> Latimer's woodland-gilia	PDPLM0H010	None	None	G2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Salvia brandegeei</i> Brandegee's sage	PDLAM1S080	None	None	G3/S3	1B.2		No	Yes
<i>Salvia dorrii</i> var. <i>incana</i> fleshy sage	PDLAM1S0G8	None	None	G5T5/S1S2	3		No	No
<i>Salvia eremostachya</i> desert sage	PDLAM1S0K0	None	None	G4G5/S3.3	4.3		No	No
<i>Salvia funerea</i> Death Valley sage	PDLAM1S0M0	None	None	G3/S3.3	4.3		No	No
<i>Salvia greatae</i> Orocochia sage	PDLAM1S0P0	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Salvia munzii</i> Munz's sage	PDLAM1S140	None	None	G3/S2.2	2B.2		No	Yes
<i>Sanguisorba officinalis</i> great burnet	PDR0S1L060	None	None	G5?/S2	2B.2		No	Yes
<i>Sanicula hoffmannii</i> Hoffmann's sanicle	PDAP11Z090	None	None	G3/S3.3	4.3		No	No

April, 10, 2014

Page 109 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Sanicula maritima</i> adobe sanicle	PDAP11Z0D0	None	Rare	G2/S2.2	1B.1	USFS:S	No	Yes
<i>Sanicula peckiana</i> Peck's sanicle	PDAP11Z0E0	None	None	G4/S3.3	4.3		No	No
<i>Sanicula saxatilis</i> rock sanicle	PDAP11Z0H0	None	Rare	G2/S2	1B.2	BLM:S	No	Yes
<i>Sanicula tracyi</i> Tracy's sanicle	PDAP11Z0K0	None	None	G3/S3.2	4.2	USFS:S	No	Yes
<i>Sanvitalia abertii</i> Abert's sanvitalia	PDAST89010	None	None	G5/S1S2	2B.2		No	Yes
<i>Sarcobatus baileyi</i> Bailey's greasewood	PDCHE0L020	None	None	G4/S1	2B.3		No	Yes
<i>Saussurea americana</i> American saw-wort	PDAST8B020	None	None	G5/S1	2B.2		No	Yes
<i>Saxifraga cespitosa</i> tufted saxifrage	PDSAX0U0C0	None	None	G5/S1	2B.3		No	Yes
<i>Saxifraga rufidula</i> red-wool saxifrage	PDSAX0U1H0	None	None	G5/S1	2B.3		No	Yes
<i>Scheuchzeria palustris</i> American scheuchzeria	PMSCH02010	None	None	G5/S1	2B.1	USFS:S	No	Yes
<i>Schoenoplectus heterochaetus</i> slender bulrush	PMCYP0Q0T0	None	None	G5/S1	2B.3		No	Yes
<i>Schoenoplectus subterminalis</i> water bulrush	PMCYP0Q1G0	None	None	G4G5/S3	2B.3		No	Yes
<i>Schoenus nigricans</i> black bog-rush	PMCYP0P010	None	None	G4/S2.2	2B.2	USFS:S	No	Yes
<i>Scirpus pendulus</i> pendulous bulrush	PMCYP0Q160	None	None	G5/S1	2B.2		No	Yes
<i>Sclerocactus johnsonii</i> Johnson's bee-hive cactus	PDCAC0J0H0	None	None	G3G4/S2.2	2B.2		No	Yes
<i>Sclerocactus polyancistrus</i> Mojave fish-hook cactus	PDCAC0J050	None	None	G4/S3.2	4.2		No	No
<i>Scleropogon brevifolius</i> burro grass	PMPOA5G010	None	None	G5/S1	2B.3		No	Yes
<i>Scrophularia atrata</i> black-flowered figwort	PDSCR1S010	None	None	G2/S2.2	1B.2		No	Yes
<i>Scrophularia villosa</i> Santa Catalina figwort	PDSCR1S0D0	None	None	G3/S3	1B.2		No	Yes

April, 10, 2014

Page 110 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Scutellaria bolanderi</i> ssp. <i>austromontana</i> southern mountains skullcap	PDLAM1U0A1	None	None	G4T2/S2	1B.2	USFS:S	No	Yes
<i>Scutellaria galericulata</i> marsh skullcap	PDLAM1U0J0	None	None	G5/S2	2B.2		No	Yes
<i>Scutellaria holmgreniorum</i> Holmgren's skullcap	PDLAM1U1C0	None	None	G3Q/S3.3	3.3		No	Yes
<i>Scutellaria lateriflora</i> side-flowering skullcap	PDLAM1U0Q0	None	None	G5/S1	2B.2		No	Yes
<i>Sedella leiocarpa</i> Lake County stonecrop	PDCRA0F020	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Sedum albomarginatum</i> Feather River stonecrop	PDCRA0A030	None	None	G2/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Sedum divergens</i> Cascade stonecrop	PDCRA0A0B0	None	None	G5?/S2	2B.3		No	Yes
<i>Sedum laxum</i> ssp. <i>eastwoodiae</i> Red Mountain stonecrop	PDCRA0A0L1	Candidate	None	G5T2/S2	1B.2	BLM:S	No	Yes
<i>Sedum laxum</i> ssp. <i>flavidum</i> pale yellow stonecrop	PDCRA0A0L2	None	None	G5T3Q/S3.3	4.3		No	Yes
<i>Sedum laxum</i> ssp. <i>heckneri</i> Heckner's stonecrop	PDCRA0A0L3	None	None	G5T3Q/S3.3	4.3		No	No
<i>Sedum niveum</i> Davidson's stonecrop	PDCRA0A0R0	None	None	G3/S3.2	4.2	USFS:S	No	No
<i>Sedum oblancoelatum</i> Applegate stonecrop	PDCRA0A0T0	None	None	G3/S1	1B.1		No	Yes
<i>Sedum obtusatum</i> ssp. <i>paradisum</i> Canyon Creek stonecrop	PDCRA0A0U3	None	None	G4G5T2/S2	1B.3	BLM:S USFS:S	No	Yes
<i>Sedum pinetorum</i> Pine City sedum	PDCRA0A0Z0	None	None	GUGHQ/SUS H	3		No	No
<i>Selaginella asprella</i> bluish spike-moss	PPSEL01060	None	None	G4G5/S3.3	4.3		No	No
<i>Selaginella cinerascens</i> ashy spike-moss	PPSEL01090	None	None	G3G4/S3S4	4.1		No	No
<i>Selaginella eremophila</i> desert spike-moss	PPSEL010G0	None	None	G4/S2S3	2B.2		No	Yes
<i>Selaginella leucobryoides</i> Mojave spike-moss	PPSEL010P0	None	None	G3/S3.2	4.3		No	No
<i>Selaginella scopulorum</i> Rocky Mountain spike-moss	PPSEL010C2	None	None	G4G5/S2S3	3		No	No

April, 10, 2014

Page 111 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Senecio aphanactis</i> chaparral ragwort	PDAST8H060	None	None	G3?/S2	2B.2		No	Yes
<i>Senecio astephanus</i> San Gabriel ragwort	PDAST8H090	None	None	G3/S3	4.3		No	No
<i>Senecio blochmaniae</i> Blochman's ragwort	PDAST8H0G0	None	None	G3/S3.2	4.2		No	No
<i>Senecio clevelandii</i> var. <i>clevelandii</i> Cleveland's ragwort	PDAST8H0R1	None	None	G4?T3Q/S3.3	4.3		No	No
<i>Senecio clevelandii</i> var. <i>heterophyllus</i> Red Hills ragwort	PDAST8H0R2	None	None	G4?T2Q/S2?	1B.2	BLM:S	No	Yes
<i>Senecio hydrophiloides</i> sweet marsh ragwort	PDAST8H400	None	None	G4G5/S2S3	4.2		No	No
<i>Senecio pattersonensis</i> Mount Patterson senecio	PDAST8H2C0	None	None	G2/S2.3	1B.3	USFS:S	No	Yes
<i>Senna covesii</i> Cove's cassia	PDFAB491X0	None	None	G5?/S3	2B.2		No	Yes
<i>Shepherdia canadensis</i> Canadian buffalo-berry	PDELG03020	None	None	G5/S1	2B.1		No	Yes
<i>Sibara deserti</i> desert winged-rockcress	PDBRA2A010	None	None	G3/S3.3	4.3		No	No
<i>Sibara filifolia</i> Santa Cruz Island winged- rockcress	PDBRA2A020	Endangered	None	G1/S1	1B.1		No	Yes
<i>Sibaropsis hammittii</i> Hammitt's clay-cress	PDBRA32010	None	None	G2/S2.2	1B.2	USFS:S	No	Yes
<i>Sidalcea calycosa</i> ssp. <i>rhizomata</i> Point Reyes checkerbloom	PDMAL11012	None	None	G5T2/S2.2	1B.2		No	Yes
<i>Sidalcea celata</i> Redding checkerbloom	PDMAL110FG	None	None	G2G3/S2S3	3		No	No
<i>Sidalcea covillei</i> Owens Valley checkerbloom	PDMAL11040	None	Endangered	G2/S2	1B.1	BLM:S	No	Yes
<i>Sidalcea elegans</i> Del Norte checkerbloom	PDMAL110F5	None	None	G4?/S2?	3.3		No	No
<i>Sidalcea gigantea</i> giant checkerbloom	PDMAL110T0	None	None	G3/S3	4.3		No	No
<i>Sidalcea hickmanii</i> ssp. <i>anomala</i> Cuesta Pass checkerbloom	PDMAL110A1	None	Rare	G3T1/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Sidalcea hickmanii</i> ssp. <i>hickmanii</i> Hickman's checkerbloom	PDMAL110A2	None	None	G3T2/S2.3	1B.3	USFS:S	No	Yes

April, 10, 2014

Page 112 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Sidalcea hickmanii</i> ssp. <i>napensis</i> Napa checkerbloom	PDMAL110A6	None	None	G3T1/S1	1B.1		No	Yes
<i>Sidalcea hickmanii</i> ssp. <i>parishii</i> Parish's checkerbloom	PDMAL110A3	None	Rare	G3T1/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Sidalcea hickmanii</i> ssp. <i>pillsburiensis</i> Lake Pillsbury checkerbloom	PDMAL110A5	None	None	G3T1/S1	1B.2	USFS:S	No	Yes
<i>Sidalcea hickmanii</i> ssp. <i>viridis</i> Marin checkerbloom	PDMAL110A4	None	None	G3T1T2/S1S2	1B.3		No	Yes
<i>Sidalcea keckii</i> Keck's checkerbloom	PDMAL110D0	Endangered	None	G1/S1	1B.1		No	Yes
<i>Sidalcea malachroides</i> maple-leaved checkerbloom	PDMAL110E0	None	None	G3G4/S3S4.2	4.2		No	Yes
<i>Sidalcea malviflora</i> ssp. <i>dolosa</i> Bear Valley checkerbloom	PDMAL110FH	None	None	G5T2T3/S2S3	1B.2	USFS:S	No	Yes
<i>Sidalcea malviflora</i> ssp. <i>patula</i> Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2/S2	1B.2	BLM:S	No	Yes
<i>Sidalcea malviflora</i> ssp. <i>purpurea</i> purple-stemmed checkerbloom	PDMAL110FL	None	None	G5T2/S2.2	1B.2		No	Yes
<i>Sidalcea multifida</i> cut-leaf checkerbloom	PDMAL110G0	None	None	G3/S2	2B.3		No	Yes
<i>Sidalcea neomexicana</i> Salt Spring checkerbloom	PDMAL110J0	None	None	G4?/S2S3	2B.2	USFS:S	No	Yes
<i>Sidalcea oregana</i> ssp. <i>eximia</i> coast sidalcea	PDMAL110K9	None	None	G5T1/S1	1B.2	BLM:S	No	Yes
<i>Sidalcea oregana</i> ssp. <i>hydrophila</i> marsh checkerbloom	PDMAL110K2	None	None	G5T3/S3	1B.2		No	Yes
<i>Sidalcea oregana</i> ssp. <i>valida</i> Kenwood Marsh checkerbloom	PDMAL110K5	Endangered	Endangered	G5T1/S1	1B.1		No	Yes
<i>Sidalcea pedata</i> bird-foot checkerbloom	PDMAL110L0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Sidalcea robusta</i> Butte County checkerbloom	PDMAL110P0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Sidalcea stipularis</i> Scadden Flat checkerbloom	PDMAL110R0	None	Endangered	G1/S1	1B.1		No	Yes
<i>Sidothea caryophylloides</i> chickweed oxytheca	PDPGN0J010	None	None	G3/S3.3	4.3	USFS:S	No	No
<i>Sidothea emarginata</i> white-margined oxytheca	PDPGN0J030	None	None	G2/S2.3	1B.3	USFS:S	No	Yes

April, 10, 2014

Page 113 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Silene aperta</i> Tulare campion	PDCAR0U050	None	None	G3/S3.3	4.3		No	No
<i>Silene campanulata</i> ssp. <i>campanulata</i> Red Mountain catchfly	PDCAR0U0A2	None	Endangered	G5T3Q/S3	4.2	BLM:S	No	Yes
<i>Silene marmorensis</i> Marble Mountain campion	PDCAR0U0Z0	None	None	G2/S2.2	1B.2		No	Yes
<i>Silene occidentalis</i> ssp. <i>longistipitata</i> long-stiped campion	PDCAR0U161	None	None	G4T2Q/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Silene occidentalis</i> ssp. <i>occidentalis</i> Western campion	PDCAR0U162	None	None	G4T3/S3	4.3		No	No
<i>Silene oregana</i> Oregon campion	PDCAR0U170	None	None	G5/S2.3	2B.3		No	Yes
<i>Silene salmonacea</i> Klamath Mountain catchfly	PDCAR0U2D0	None	None	G2/S2	1B.2	USFS:S	No	Yes
<i>Silene serpentinicola</i> serpentine catchfly	PDCAR0U2B0	None	None	G2/S2.2	1B.2	USFS:S	No	Yes
<i>Silene suksdorfii</i> Cascade alpine campion	PDCAR0U1W0	None	None	G4/S2.3	2B.3		No	Yes
<i>Silene verecunda</i> ssp. <i>verecunda</i> San Francisco campion	PDCAR0U213	None	None	G5T2/S2.2	1B.2		No	Yes
<i>Sisyrinchium funereum</i> Death Valley blue-eyed grass	PMIRI0D0L0	None	None	G2G3/S2.3	1B.3		No	Yes
<i>Sisyrinchium hitchcockii</i> Hitchcock's blue-eyed grass	PMIRI0D0S0	None	None	G2/S1	1B.1		No	Yes
<i>Sisyrinchium longipes</i> timberland blue-eyed grass	PMIRI0D0Y0	None	None	G3/S1	2B.2	USFS:S	No	Yes
<i>Smelowskia ovalis</i> alpine smelowskia	PDBRA2D040	None	None	G5/S1	1B.2		No	Yes
<i>Smilax jamesii</i> English Peak greenbrier	PMSMI010D0	None	None	G2/S2	1B.3	BLM:S	No	Yes
<i>Solanum clokeyi</i> island nightshade	PDSOL0Z450	None	None	G3/S3.2	4.2		No	No
<i>Solanum wallacei</i> Wallace's nightshade	PDSOL0Z280	None	None	G2Q/S2.1	1B.1		No	Yes
<i>Solidago gigantea</i> giant goldenrod	PDAST8P0Q0	None	None	G5/S1	2B.2		No	Yes
<i>Solidago guiradonis</i> Guirado's goldenrod	PDAST8P0T0	None	None	G3/S3.2	4.3		No	No

April, 10, 2014

Page 114 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Sparganium natans</i> small bur-reed	PMSPA01090	None	None	G5/S3.3	4.3		No	No
<i>Spartina gracilis</i> alkali cord grass	PMPOA5S060	None	None	G5/S3.2	4.2		No	No
<i>Spergularia canadensis</i> var. <i>occidentalis</i> western sand-spurrey	PDCAR0W032	None	None	G5T4?/S1	2B.1		No	Yes
<i>Spermolepis echinata</i> bristly scaleseed	PDAP123020	None	None	G5/S1	2B.3		No	Yes
<i>Sphaeralcea grossulariifolia</i> currant-leaved desert mallow	PDMAL14090	None	None	G4G5/S2S3	2B.3		No	Yes
<i>Sphaeralcea munroana</i> Munro's desert mallow	PDMAL140F0	None	None	G4/S1	2B.2		No	Yes
<i>Sphaeralcea rusbyi</i> var. <i>eremicola</i> Rusby's desert-mallow	PDMAL140L1	None	None	G4T2/S2	1B.2	BLM:S	No	Yes
<i>Sphaeromeria potentilloides</i> var. <i>nitrophila</i> alkali tansy-sage	PDAST8S061	None	None	G5T4/S2.2	2B.2		No	Yes
<i>Sphenopholis obtusata</i> prairie wedge grass	PMPOA5T030	None	None	G5/S2.2	2B.2		No	Yes
<i>Stachys pilosa</i> hairy marsh hedge-nettle	PDLAM1X1A0	None	None	G5/S2.3	2B.3		No	Yes
<i>Stanleya viridiflora</i> green-flowered prince's plume	PDBRA2E060	None	None	G4/S1S2	2B.3		No	Yes
<i>Stebbinsoseris decipiens</i> Santa Cruz microseris	PDAST6E050	None	None	G2/S2.2	1B.2		No	Yes
<i>Stellaria littoralis</i> beach starwort	PDCAR0X0L0	None	None	G3G4/S3S4.2	4.2		No	No
<i>Stellaria longifolia</i> long-leaved starwort	PDCAR0X0M0	None	None	G5/S2	2B.2		No	Yes
<i>Stellaria obtusa</i> obtuse starwort	PDCAR0X0U0	None	None	G5/S3.3	4.3		No	Yes
<i>Stemodia durantifolia</i> purple stemodia	PDSCR1U010	None	None	G5/S2.1?	2B.1		No	Yes
<i>Stenotus lanuginosus</i> var. <i>lanuginosus</i> woolly stenotus	PDASTCX012	None	None	G5T5/S3	2B.2	BLM:S	No	Yes
<i>Stipa arida</i> Mormon needle grass	PMPOA5X010	None	None	G5/S2?	2B.3		No	Yes
<i>Stipa diegoensis</i> San Diego County needle grass	PMPOA5X0B0	None	None	G3/S3.2	4.2		No	No

April, 10, 2014

Page 115 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Stipa divaricata</i> small-flowered rice grass	PMPOA4J070	None	None	G5/S2S3	2B.3		No	Yes
<i>Stipa exigua</i> little ricegrass	PMPOA80030	None	None	G5/S2	2B.3	BLM:S	No	Yes
<i>Stipa lemmonii</i> var. <i>pubescens</i> pubescent needle grass	PMPOA5X0F2	None	None	G5T1T2Q/S1?	3.2		No	No
<i>Streptanthus albidus</i> ssp. <i>albidus</i> Metcalf Canyon jewelflower	PDBRA2G011	Endangered	None	G2T1/S1	1B.1	BLM:S	No	Yes
<i>Streptanthus albidus</i> ssp. <i>peramoenus</i> most beautiful jewelflower	PDBRA2G012	None	None	G2T2/S2.2	1B.2	USFS:S	No	Yes
<i>Streptanthus barbiger</i> bearded jewelflower	PDBRA2G040	None	None	G3/S3.2	4.2		No	No
<i>Streptanthus batrachopus</i> Tamalpais jewelflower	PDBRA2G050	None	None	G1/S1	1B.3		No	Yes
<i>Streptanthus bernardinus</i> Laguna Mountains jewelflower	PDBRA2G060	None	None	G3/S3	4.3		No	Yes
<i>Streptanthus brachiatus</i> ssp. <i>brachiatus</i> Socrates Mine jewelflower	PDBRA2G072	None	None	G2T1/S1	1B.2	BLM:S	No	Yes
<i>Streptanthus brachiatus</i> ssp. <i>hoffmanii</i> Freed's jewelflower	PDBRA2G071	None	None	G2T2/S2	1B.2	BLM:S	No	Yes
<i>Streptanthus callistus</i> Mt. Hamilton jewelflower	PDBRA2G0A0	None	None	G1/S1	1B.3	BLM:S	No	Yes
<i>Streptanthus campestris</i> southern jewelflower	PDBRA2G0B0	None	None	G2/S2.3	1B.3	BLM:S USFS:S	No	Yes
<i>Streptanthus cordatus</i> var. <i>piutensis</i> Piute Mountains jewelflower	PDBRA2G0D2	None	None	G5T1/S1	1B.2	BLM:S USFS:S	No	Yes
<i>Streptanthus drepanoides</i> sickle-fruit jewelflower	PDBRA2G200	None	None	G3/S3.3	4.3		No	No
<i>Streptanthus farnsworthianus</i> Farnsworth's jewelflower	PDBRA2G0G0	None	None	G3/S3.3	4.3		No	No
<i>Streptanthus fenestratus</i> Tehipite Valley jewelflower	PDBRA2G0H0	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Streptanthus glandulosus</i> ssp. <i>hoffmanii</i> Hoffman's bristly jewelflower	PDBRA2G0J4	None	None	G4TH/SH	1B.3	BLM:S	No	Yes
<i>Streptanthus glandulosus</i> ssp. <i>niger</i> Tiburon jewelflower	PDBRA2G0T0	Endangered	Endangered	G4T1/S1	1B.1		No	Yes

April, 10, 2014

Page 116 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Streptanthus glandulosus</i> ssp. <i>pulchellus</i> Mount Tamalpais bristly jewelflower	PDBRA2G0J2	None	None	G4T2/S2	1B.2		No	Yes
<i>Streptanthus gracilis</i> alpine jewelflower	PDBRA2G0K0	None	None	G3/S3	1B.3	USFS:S	No	Yes
<i>Streptanthus hesperidis</i> green jewelflower	PDBRA2G510	None	None	G2/S2	1B.2		No	Yes
<i>Streptanthus hispidus</i> Mt. Diablo jewelflower	PDBRA2G0M0	None	None	G1/S1	1B.3		No	Yes
<i>Streptanthus howellii</i> Howell's jewelflower	PDBRA2G0N0	None	None	G2G3/S2	1B.2	USFS:S	No	Yes
<i>Streptanthus insignis</i> ssp. <i>lyonii</i> Arburua Ranch jewelflower	PDBRA2G0Q1	None	None	G3G4T2/S2	1B.2		No	Yes
<i>Streptanthus longisiliqus</i> long-fruit jewelflower	PDBRA2G400	None	None	G3/S3.3	4.3		No	No
<i>Streptanthus morrisonii</i> Morrison's jewelflower	PDBRA2G0S0	None	None	G2/S2		BLM:S	No	Yes
<i>Streptanthus morrisonii</i> ssp. <i>elatus</i> Three Peaks jewelflower	PDBRA2G0S1	None	None	G2T2/S2.2	1B.2	BLM:S	No	No
<i>Streptanthus morrisonii</i> ssp. <i>hirtiflorus</i> Dorr's Cabin jewelflower	PDBRA2G0S2	None	None	G2T1/S1	1B.2	BLM:S	No	No
<i>Streptanthus morrisonii</i> ssp. <i>kruckebergii</i> Kruckeberg's jewelflower	PDBRA2G0S4	None	None	G2T1/S1	1B.2	BLM:S	No	No
<i>Streptanthus morrisonii</i> ssp. <i>morrisonii</i> Morrison's jewelflower	PDBRA2G0S3	None	None	G2T2/S2.2	1B.2	BLM:S	No	No
<i>Streptanthus oblaunceolatus</i> Trinity River jewelflower	PDBRA2G500	None	None	G1/S1	1B.2	USFS:S	No	Yes
<i>Streptanthus oliganthus</i> Masonic Mountain jewelflower	PDBRA2G0V0	None	None	G2G3/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Streptanthus vernalis</i> early jewelflower	PDBRA2G120	None	None	G1/S1	1B.2	BLM:S	No	Yes
<i>Stuckenia filiformis</i> ssp. <i>alpina</i> slender-leaved pondweed	PMPOT03091	None	None	G5T5/S3	2B.2		No	Yes
<i>Stylocline citroleum</i> oil neststraw	PDAST8Y070	None	None	G2/S2	1B.1	BLM:S	No	Yes
<i>Stylocline masonii</i> Mason's neststraw	PDAST8Y080	None	None	G1/S1	1B.1	BLM:S USFS:S	No	Yes
<i>Stylocline sonorensis</i> mesquite neststraw	PDAST8Y060	None	None	G3G5/SX	2A		No	Yes

April, 10, 2014

Page 117 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Suaeda californica</i> California seablite	PDCH0P020	Endangered	None	G1/S1	1B.1		No	Yes
<i>Suaeda esteroa</i> estuary seablite	PDCH0P0D0	None	None	G3/S2	1B.2		No	Yes
<i>Suaeda occidentalis</i> western seablite	PDCH0P080	None	None	G5/S2.3	2B.3		No	Yes
<i>Suaeda taxifolia</i> woolly seablite	PDCH0P0L0	None	None	G3?/S2S3	4.2		No	No
<i>Subularia aquatica ssp. americana</i> American water-awwort	PDBRA2H012	None	None	G5T5/S4.3	4.3		No	No
<i>Swallenia alexandrae</i> Eureka Valley dune grass	PMPOA5Y010	Endangered	Rare	G2/S2	1B.2		No	Yes
<i>Symphotrichum defoliatum</i> San Bernardino aster	PDASTE80C0	None	None	G2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Symphotrichum greatae</i> Greata's aster	PDASTE80U0	None	None	G2/S2.3	1B.3	BLM:S	No	Yes
<i>Symphotrichum lentum</i> Suisun Marsh aster	PDASTE8470	None	None	G2/S2	1B.2		No	Yes
<i>Synthyris missurica ssp. missurica</i> kitten-tails	PDSCR1W042	None	None	G4T4/S2.3	2B.3		No	Yes
<i>Syntrichopappus lemmonii</i> Lemmon's syntrichopappus	PDAST90020	None	None	G3/S3.3	4.3		No	No
<i>Systemotheca vortriedei</i> Vortriede's spineflower	PDPGN0W010	None	None	G3/S3.3	4.3		No	No
<i>Taraxacum californicum</i> California dandelion	PDAST93050	Endangered	None	G2/S2	1B.1		No	Yes
<i>Taraxacum ceratophorum</i> horned dandelion	PDAST930Y1	None	None	G5/S1	2B.1		No	Yes
<i>Tauschia glauca</i> glaucous tauschia	PDAP127020	None	None	G4/S3.3	4.3		No	No
<i>Tauschia howellii</i> Howell's tauschia	PDAP127050	None	None	G2/S2	1B.3	USFS:S	No	Yes
<i>Tetracoccus dioicus</i> Parry's tetracoccus	PDEUP1C010	None	None	G3/S2.2	1B.2	BLM:S USFS:S	No	Yes
<i>Tetracoccus hallii</i> Hall's tetracoccus	PDEUP1C021	None	None	G4/S3.3	4.3		No	No
<i>Tetracoccus ilicifolius</i> holly-leaved tetracoccus	PDEUP1C030	None	None	G2/S2	1B.3		No	Yes

April, 10, 2014

Page 118 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Tetradymia argyraea</i> striped horsebrush	PDAST95010	None	None	G4?/S3.3	4.3		No	No
<i>Tetradymia tetrameres</i> dune horsebrush	PDAST950A0	None	None	G4/S2	2B.2		No	Yes
<i>Teucrium cubense ssp. depressum</i> dwarf germander	PDLAM20032	None	None	G4G5T3T4/S2	2B.2		No	Yes
<i>Teucrium glandulosum</i> desert germander	PDLAM20040	None	None	G4/S2	2B.3		No	Yes
<i>Thalictrum alpinum</i> arctic meadow-rue	PDRAN0M010	None	None	G5/S3.3	4.3		No	No
<i>Thelypodium brachycarpum</i> short-podded thelypodium	PDBRA2N010	None	None	G3/S3.2	4.2		No	No
<i>Thelypodium howellii ssp. howellii</i> Howell's thelypodium	PDBRA2N051	None	None	G2T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Thelypodium integrifolium ssp. complanatum</i> foxtail thelypodium	PDBRA2N062	None	None	G5T5/S2.2	2B.2		No	Yes
<i>Thelypodium milleflorum</i> many-flowered thelypodium	PDBRA2N0A0	None	None	G5/S2S3	2B.2		No	Yes
<i>Thelypodium stenopetalum</i> slender-petaled thelypodium	PDBRA2N0F0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Thelypteris puberula var. sonorensis</i> Sonoran maiden fern	PPTHE05192	None	None	G5T3/S2.2?	2B.2	USFS:S	No	Yes
<i>Thermopsis californica var. argentata</i> silvery false lupine	PDFAB3Z011	None	None	G3T3/S3.3	4.3		No	No
<i>Thermopsis californica var. semota</i> velvety false lupine	PDFAB3Z013	None	None	G3T2/S2	1B.2	BLM:S USFS:S	No	Yes
<i>Thermopsis gracilis</i> slender false lupine	PDFAB3Z0C1	None	None	G3G4/S3.3	4.3		No	No
<i>Thermopsis macrophylla</i> Santa Ynez false lupine	PDFAB3Z0E0	None	Rare	G1/S1	1B.3	USFS:S	No	Yes
<i>Thermopsis robusta</i> robust false lupine	PDFAB3Z0D0	None	None	G2Q/S2.2	1B.2	USFS:S	No	Yes
<i>Thysanocarpus conchuliferus</i> Santa Cruz Island fringe-pod	PDBRA2Q060	Endangered	None	G1/S1	1B.2		No	Yes
<i>Thysanocarpus rigidus</i> rigid fringe-pod	PDBRA2Q070	None	None	G1G2/S1S2	1B.2	BLM:S USFS:S	No	Yes
<i>Tiarella trifoliata var. trifoliata</i> trifoliate laceflower	PDSAX10031	None	None	G5T5/S2S3	3		No	No

April, 10, 2014

Page 119 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Tiquilia canescens</i> var. <i>pulchella</i> Chocolate Mountains tiquilia	PDBOR0Y012	None	None	G5T3T4/S3?	3.2		No	No
<i>Tonestus eximius</i> Tahoe tonestus	PDASTE0030	None	None	G3/S3.3	4.3		No	No
<i>Tonestus lyallii</i> Lyall's tonestus	PDASTE0050	None	None	G5/S1	2B.3		No	Yes
<i>Tonestus peirsonii</i> Peirson's tonestus	PDASTE0070	None	None	G3/S3.3	4.3		No	No
<i>Townsendia condensata</i> cushion townsendia	PDAST9C040	None	None	G4/S3	2B.3		No	Yes
<i>Townsendia leptotes</i> slender townsendia	PDAST9C0F0	None	None	G4/S2.3	2B.3		No	Yes
<i>Toxicoscordion fontanum</i> marsh zigadenus	PMLIL28050	None	None	G3/S3.2	4.2		No	No
<i>Tracyina rostrata</i> beaked tracyina	PDAST9D010	None	None	G1G2/S1S2.2	1B.2	USFS:S	No	Yes
<i>Tragia ramosa</i> desert tragia	PDEUP1D090	None	None	G5/S3.3	4.3		No	No
<i>Transberingia bursifolia</i> ssp. <i>virgata</i> virgate halimolobos	PDBRA1A040	None	None	G4T?/S1	2B.3		No	Yes
<i>Trichocoronis wrightii</i> var. <i>wrightii</i> Wright's trichocoronis	PDAST9F031	None	None	G4T3/S1	2B.1		No	Yes
<i>Trichophorum pumilum</i> little bulrush	PMCYP0Q250	None	None	G5/S1	2B.2		No	Yes
<i>Trichostema austrorontanum</i> ssp. <i>compactum</i> Hidden Lake bluecurls	PDLAM22022	Threatened	None	G3G4T1/S1	1B.1		No	Yes
<i>Trichostema micranthum</i> small-flowered bluecurls	PDLAM22080	None	None	G4/S3.3	4.3		No	No
<i>Trichostema ovatum</i> San Joaquin bluecurls	PDLAM220A0	None	None	G3/S3.2	4.2		No	No
<i>Trichostema rubisepalum</i> Hernandez bluecurls	PDLAM220C0	None	None	G3/S3.3	4.3		No	No
<i>Trichostema ruygtii</i> Napa bluecurls	PDLAM220H0	None	None	G2/S2	1B.2		No	Yes
<i>Trientalis europaea</i> arctic starflower	PDPRI0A030	None	None	G5/S1	2B.2		No	Yes
<i>Trifolium amoenum</i> showy rancheria clover	PDFAB40040	Endangered	None	G1/S1	1B.1		No	Yes

April, 10, 2014

Page 120 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Trifolium andersonii</i> ssp. <i>andersonii</i> Anderson's clover	PDFAB40055	None	None	G4T3/S3.3	4.3		No	No
<i>Trifolium bolanderi</i> Bolander's clover	PDFAB400G0	None	None	G2G3/S2S3	1B.2	USFS:S	No	Yes
<i>Trifolium buckwestiorum</i> Santa Cruz clover	PDFAB402W0	None	None	G2/S2	1B.1	BLM:S	No	Yes
<i>Trifolium dedeckerae</i> Dedecker's clover	PDFAB400Q0	None	None	G2/S2.3	1B.3	BLM:S USFS:S	No	Yes
<i>Trifolium gymnocarpon</i> ssp. <i>plummerae</i> Plummer's clover	PDFAB40112	None	None	G5T4/S2.3	2B.3		No	Yes
<i>Trifolium howellii</i> Howell's clover	PDFAB40140	None	None	G4/S3.3	4.3		No	No
<i>Trifolium hydrophilum</i> saline clover	PDFAB400R5	None	None	G2/S2	1B.2		No	Yes
<i>Trifolium jokerstii</i> Butte County golden clover	PDFAB40310	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Trifolium lemmonii</i> Lemmon's clover	PDFAB401C0	None	None	G4/S3.2	4.2		No	No
<i>Trifolium palmeri</i> southern island clover	PDFAB40102	None	None	G3/S3.2	4.2		No	No
<i>Trifolium polyodon</i> Pacific Grove clover	PDFAB402H0	None	Rare	G1/S1	1B.1	BLM:S	No	Yes
<i>Trifolium siskiyouense</i> Siskiyou clover	PDFAB402S0	None	None	G3G4Q/S2.2	3.2		No	No
<i>Trifolium trichocalyx</i> Monterey clover	PDFAB402J0	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Triglochin palustris</i> marsh arrow-grass	PMJCG02040	None	None	G5/S3	2B.3		No	Yes
<i>Trillium ovatum</i> ssp. <i>oettingeri</i> Salmon Mountains wakerobin	PMLIL200M1	None	None	G5T3/S3.2	4.2		No	No
<i>Triphysaria floribunda</i> San Francisco owl's-clover	PDSCR2T010	None	None	G2/S2.2	1B.2		No	Yes
<i>Tripterocalyx crux-maltae</i> Kellogg's sand-verbena	PDNYC0G020	None	None	G4/S1	2B.2		No	Yes
<i>Tripterocalyx micranthus</i> small-flowered sand-verbena	PDNYC0G030	None	None	G5/S1	2B.3		No	Yes
<i>Triteleia clementina</i> San Clemente Island triteleia	PMLIL21020	None	None	G2/S2	1B.2		No	Yes

April, 10, 2014

Page 121 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Triteleia crocea</i> var. <i>crocea</i> yellow triteleia	PMLIL21031	None	None	G4T4/S3.3	4.3		No	No
<i>Triteleia crocea</i> var. <i>modesta</i> Trinity Mountains triteleia	PMLIL21032	None	None	G4T3/S3.3	4.3		No	No
<i>Triteleia grandiflora</i> large-flowered triteleia	PMLIL21060	None	None	G4G5/S1	2B.1		No	Yes
<i>Triteleia hendersonii</i> Henderson's triteleia	PMLIL21070	None	None	G4/S1	2B.2		No	Yes
<i>Triteleia ixioides</i> ssp. <i>cookii</i> Cook's triteleia	PMLIL210A2	None	None	G5T2/S2.3	1B.3	USFS:S	No	Yes
<i>Triteleia lugens</i> dark-mouthed triteleia	PMLIL210D0	None	None	G3/S3.3	4.3		No	No
<i>Tropidocarpum californicum</i> Kings gold	PDBRA33010	None	None	G1/S1	1B.1		No	Yes
<i>Tropidocarpum capparideum</i> caper-fruited tropidocarpum	PDBRA2R010	None	None	G1/S1	1B.1	USFS:S	No	Yes
<i>Tuctoria greenei</i> Greene's tuctoria	PMPOA6N010	Endangered	Rare	G1/S1	1B.1		No	Yes
<i>Tuctoria mucronata</i> Crampton's tuctoria or Solano grass	PMPOA6N020	Endangered	Endangered	G1/S1	1B.1		No	Yes
<i>Utricularia intermedia</i> flat-leaved bladderwort	PDLNT020A0	None	None	G5/S3	2B.2		No	Yes
<i>Utricularia minor</i> lesser bladderwort	PDLNT020D0	None	None	G5/S3.2	4.2		No	No
<i>Utricularia ochroleuca</i> cream-flowered bladderwort	PDLNT020E0	None	None	G4?/S1	2B.2		No	Yes
<i>Vaccinium coccineum</i> Siskiyou Mountains huckleberry	PDERI181N0	None	None	G3G4/S3?	3.3		No	No
<i>Vaccinium scoparium</i> little-leaved huckleberry	PDERI180Y0	None	None	G5/S2.2?	2B.2		No	Yes
<i>Vahlodea atropurpurea</i> mountain hair grass	PMPOA6M010	None	None	G5/S3.3	4.3		No	No
<i>Valeriana occidentalis</i> western valerian	PDVAL03080	None	None	G5/S1	2B.3		No	Yes
<i>Vancouveria chrysantha</i> Siskiyou inside-out-flower	PDBER09010	None	None	G4/S3.3	4.3		No	No
<i>Veratrum fimbriatum</i> fringed false-hellebore	PMLIL25030	None	None	G3/S3.3	4.3		No	No

April, 10, 2014

Page 122 of 124

Special Vascular Plants, Bryophytes, and Lichens List

California Department of Fish and Wildlife

Natural Diversity Database

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDDB ?
<i>Veratrum insolitum</i> Siskiyou false-hellebore	PMLIL25040	None	None	G3/S3.3	4.3		No	No
<i>Verbena californica</i> Red Hills vervain	PDVER0N050	Threatened	Threatened	G2/S2	1B.1		No	Yes
<i>Verbesina dissita</i> big-leaved crownbeard	PDAST9R050	Threatened	Threatened	G2G3/S1	1B.1		No	Yes
<i>Veronica copelandii</i> Copeland's speedwell	PDSCR200B0	None	None	G3/S3.3	4.3		No	No
<i>Veronica cusickii</i> Cusick's speedwell	PDSCR200C0	None	None	G5/S3.3	4.3		No	No
<i>Viburnum edule</i> squashberry	PDCPR07070	None	None	G5/S1	2B.1		No	Yes
<i>Viburnum ellipticum</i> oval-leaved viburnum	PDCPR07080	None	None	G5/S2.3	2B.3		No	Yes
<i>Viguiera laciniata</i> San Diego County viguiera	PDAST9T060	None	None	G4/S3.2	4.2		No	No
<i>Viguiera purisimae</i> La Purisima viguiera	PDAST9T0S0	None	None	G4?/S1	2B.3		No	Yes
<i>Viola howellii</i> Howell's violet	PDVIO040U0	None	None	G4/S1	2B.2		No	Yes
<i>Viola langsdorffii</i> Langsdorf's violet	PDVIO04100	None	None	G4/S1	2B.1		No	Yes
<i>Viola palustris</i> alpine marsh violet	PDVIO041G0	None	None	G5/S1S2	2B.2		No	Yes
<i>Viola pinetorum</i> var. <i>grisea</i> grey-leaved violet	PDVIO04431	None	None	G4G5T3?/S3?	1B.3		No	Yes
<i>Viola primulifolia</i> ssp. <i>occidentalis</i> western white bog violet	PDVIO040Y2	None	None	G5T2/S2	1B.2	USFS:S	No	Yes
<i>Viola purpurea</i> ssp. <i>aurea</i> golden violet	PDVIO04420	None	None	G5T2T3/S2S3	2B.2		No	Yes
<i>Viola tomentosa</i> felt-leaved violet	PDVIO04280	None	None	G3/S3.2	4.2		No	Yes
<i>Wislizenia refracta</i> ssp. <i>palmeri</i> Palmer's jackass clover	PDCPP09015	None	None	G5T2T4/S1	2B.2		No	Yes
<i>Wislizenia refracta</i> ssp. <i>refracta</i> jackass-clover	PDCPP09013	None	None	G5T5?/S1	2B.2		No	Yes
<i>Wolffia brasiliensis</i> Brazilian watermeal	PMLEM03020	None	None	G5/S1	2B.3		No	Yes

April, 10, 2014

Page 123 of 124

Scientific Name Common Name	Element Code	Federal Listing Status	State Listing Status	Heritage Rank	Rare Plant Rank	Other Status	Seed Banked	Records in CNDDB ?
<i>Woodsia plummerae</i> Plummer's woodsia	PPDRY0U0A0	None	None	G5/S2	2B.3		No	Yes
<i>Wyethia elata</i> Hall's wyethia	PDAST9X050	None	None	G3/S3.3	4.3		No	No
<i>Wyethia longicaulis</i> Humboldt County wyethia	PDAST9X0A0	None	None	G3/S3.3	4.3		No	No
<i>Wyethia reticulata</i> El Dorado County mule ears	PDAST9X0D0	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Xanthisma gracile</i> annual bristleweed	PDAST640E0	None	None	G5/S3.3	4.3		No	No
<i>Xanthisma junceum</i> rush-like bristleweed	PDAST641A0	None	None	G5/S3.3	4.3		No	No
<i>Xylorhiza cognata</i> Mecca-aster	PDASTA1010	None	None	G2/S2	1B.2	BLM:S	No	Yes
<i>Xylorhiza orcuttii</i> Orcutt's woody-aster	PDASTA1040	None	None	G2G3/S2	1B.2	BLM:S	No	Yes

Appendix J

List of Sensitive Natural Communities in California

September 2010 http://www.dfg.ca.gov/biogeodata/vegcomp/natural_communities.asp

Forest and Woodlands Alliances and Stands		Global & State Rank
*88.800.00	Abies amabilis (Pacific silver fir forest) Alliance	G5 S1
*88.800.01	<i>Abies amabilis</i>	
*88.300.00	Abies bracteata (Santa Lucia fir groves) Alliance	G3 S3
*88.300.01	<i>Abies bracteata / Galium clementis</i>	
*88.300.02	<i>Abies bracteata / Polystichum munitum</i>	
88.500.00	Abies concolor (White fir forest) Alliance	G5 S4 (some associations are of high priority for inventory)
88.500.40	<i>Abies concolor - Calocedrus decurrens - Pinus jeffreyi</i>	
88.510.10	<i>Abies concolor - Calocedrus decurrens - Pseudotsuga macrocarpa - Pinus coulteri</i>	
88.500.29	<i>Abies concolor - Calocedrus decurrens - Quercus kelloggii</i>	
88.500.31	<i>Abies concolor - Calocedrus decurrens / Pyrola picta</i>	
88.500.30	<i>Abies concolor - Calocedrus decurrens / Symphoricarpos mollis</i>	
*88.500.37	<i>Abies concolor - Chrysolepis chrysophylla</i>	
88.500.35	<i>Abies concolor / (Rosa gymnocarpa) - Symphoricarpos mollis</i>	
88.500.60	<i>Abies concolor / Acer glabrum</i>	
88.500.12	<i>Abies concolor / Achlys triphylla</i>	
88.500.33	<i>Abies concolor / Amelanchier alnifolia</i>	
88.500.10	<i>Abies concolor / Arctostaphylos nevadensis</i>	
88.500.17	<i>Abies concolor / Arnica cordifolia</i>	
88.500.32	<i>Abies concolor / Chimaphila menziesii - Pyrola picta</i>	
88.500.11	<i>Abies concolor / Chimaphila umbellata</i>	
88.500.59	<i>Abies concolor / Goodyera oblongifolia</i>	
88.500.54	<i>Abies concolor / Mahonia nervosa</i>	
88.500.58	<i>Abies concolor / Prunus emarginata</i>	
88.500.61	<i>Abies concolor / Pseudostellaria jamesiana</i>	
88.500.57	<i>Abies concolor / Trillium ovatum</i>	
88.500.53	<i>Abies concolor / Vicia americana</i>	
88.510.00	Abies concolor - Pinus lambertiana (White fir - sugar pine forest) Alliance	G4 S4
88.510.01	<i>Abies concolor - Pinus lambertiana</i>	
88.510.09	<i>Abies concolor - Pinus lambertiana - Calocedrus decurrens - Quercus chrysolepis</i>	
88.510.06	<i>Abies concolor - Pinus lambertiana - Calocedrus decurrens / Adenocaulon bicolor</i>	
88.510.07	<i>Abies concolor - Pinus lambertiana - Calocedrus decurrens / Chrysolepis sempervirens</i>	
88.510.05	<i>Abies concolor - Pinus lambertiana - Calocedrus decurrens / Cornus nuttallii / Corylus cornuta</i>	
88.510.08	<i>Abies concolor - Pinus lambertiana - Calocedrus decurrens / Symphoricarpos mollis / Kelloggia galioides</i>	
88.510.04	<i>Abies concolor - Pinus lambertiana - Pinus jeffreyi</i>	
	<i>Abies concolor - Pinus lambertiana - Pinus ponderosa / Lithocarpus densiflorus var. echinoides</i>	
88.510.17	<i>Abies concolor - Pinus lambertiana - Pseudotsuga menziesii / Carex rossii</i>	
88.510.14	<i>Abies concolor - Pinus lambertiana - Ceanothus cordulatus</i>	
88.510.13	<i>Abies concolor - Pinus lambertiana / Maianthemum racemosa - Prosartes hookeri</i>	
88.510.03	<i>Abies concolor - Pinus ponderosa / Lithocarpus densiflorus var. echinoides</i>	
88.510.16	<i>Abies concolor - Pinus ponderosa / Lithocarpus densiflorus var. echinoides</i>	
88.510.15	<i>Pinus ponderosa - Pinus lambertiana / Lithocarpus densiflorus var. echinoides</i>	
88.530.00	Abies concolor - Pseudotsuga menziesii (White fir - Douglas fir forest) Alliance	G5 S4 (some associations are of high priority for inventory)
88.530.34	<i>Abies concolor - Pseudotsuga menziesii - (mixed conifer) / Acer circinatum - Chrysolepis sempervirens</i>	
*88.530.06	<i>Abies concolor - Pseudotsuga menziesii - (Quercus chrysolepis)</i>	
88.530.30	<i>Abies concolor - Pseudotsuga menziesii - Calocedrus decurrens</i>	
88.530.35	<i>Abies concolor - Pseudotsuga menziesii / Amelanchier utahensis</i>	
88.530.14	<i>Abies concolor - Pseudotsuga menziesii / Arnica cordifolia</i>	
88.530.36	<i>Abies concolor - Pseudotsuga menziesii / Cornus nuttallii</i>	
88.530.37	<i>Abies concolor - Pseudotsuga menziesii / Cornus nuttallii / Corylus cornuta</i>	

*88.530.15	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Corylus cornuta</i>	
88.530.32	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Corylus cornuta</i> / <i>Adenocaulon bicolor</i>	
88.530.16	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Melica subulata</i>	
88.530.29	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Pteridium aquilinum</i>	
88.530.17	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Quercus sadleriana</i>	
88.530.18	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Quercus sadleriana</i> - <i>Arctostaphylos nevadensis</i>	
88.530.19	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Quercus sadleriana</i> - <i>Quercus vaccinifolia</i>	
88.530.38	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Quercus sadleriana</i> - <i>Rhododendron macrophyllum</i>	
88.530.20	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Quercus vaccinifolia</i>	
*88.530.21	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Rhododendron macrophyllum</i> - <i>Quercus</i>	
88.530.23	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Rosa gymnocarpa</i> - <i>Linnaea borealis</i> - <i>Symphoricarpos mollis</i>	
88.530.24	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Rosa gymnocarpa</i> - <i>Symphoricarpos mollis</i>	
*88.530.25	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Rosa gymnocarpa</i> / <i>Linnaea borealis</i>	
88.530.31	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Rubus ameniacus</i>	
*88.530.26	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Rubus parviflorus</i>	
88.530.33	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Trientalis latifolia</i>	
88.530.28	<i>Abies concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Xerophyllum tenax</i>	
*88.100.00	<i>Abies grandis</i> (Grand fir forest) Alliance	G4 S2
*88.400.00	<i>Abies lasiocarpa</i> (Subalpine fir forest) Alliance	G5 S2
*88.400.01	<i>Abies lasiocarpa</i>	
88.200.00	<i>Abies magnifica</i> (Red fir forest) Alliance	G5 S4 (some associations are of high priority for inventory)
88.200.23	<i>Abies magnifica</i>	
88.200.30	<i>Abies magnifica</i> - <i>Pinus monticola</i>	
88.200.15	<i>Abies magnifica</i> - <i>Tsuga mertensiana</i> / <i>Orthilia secunda</i>	
88.200.14	<i>Abies magnifica</i> - <i>Picea breweriana</i> / <i>Quercus sadleriana</i> - <i>Vaccinium membranaceum</i>	
88.200.16	<i>Abies magnifica</i> - <i>Pinus contorta</i> / <i>Sphenosciadium capitellatum</i>	
88.200.24	<i>Abies magnifica</i> - <i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Hieracium albiflorum</i>	
88.200.29	<i>Abies magnifica</i> - <i>Pinus monticola</i> - <i>Pinus contorta</i> ssp. <i>murrayana</i>	
88.200.43	<i>Abies magnifica</i> - <i>Pinus monticola</i> / <i>Quercus vaccinifolia</i>	
*88.200.10	<i>Abies magnifica</i> - (<i>Calocedrus decurrens</i>)	
88.200.03	<i>Abies magnifica</i> / <i>Achlys triphylla</i>	
88.200.27	<i>Abies magnifica</i> / <i>Arctostaphylos nevadensis</i>	
88.200.05	<i>Abies magnifica</i> / <i>Chimaphila umbellata</i>	
88.200.35	<i>Abies magnifica</i> / <i>Leucothoe davisiae</i>	
88.200.37	<i>Abies magnifica</i> / <i>Linnaea borealis</i>	
88.200.41	<i>Abies magnifica</i> / <i>Lupinus albifrons</i>	
88.200.11	<i>Abies magnifica</i> / <i>Orthilia secunda</i>	
88.200.06	<i>Abies magnifica</i> / <i>Penstemon gracilentus</i>	
88.200.25	<i>Abies magnifica</i> / <i>Pinus contorta</i> ssp. <i>murrayana</i>	
88.200.28	<i>Abies magnifica</i> / <i>Pinus monticola</i> / <i>Arctostaphylos nevadensis</i>	
88.200.31	<i>Abies magnifica</i> / <i>Pinus monticola</i> / <i>Chrysolepis sempervirens</i>	
88.200.13	<i>Abies magnifica</i> / <i>Pyrola picta</i>	
88.200.01	<i>Abies magnifica</i> / <i>Quercus sadleriana</i>	
88.200.09	<i>Abies magnifica</i> / <i>Quercus sadleriana</i> - <i>Arctostaphylos nevadensis</i>	
88.200.36	<i>Abies magnifica</i> / <i>Quercus vaccinifolia</i>	
*88.200.12	<i>Abies magnifica</i> / <i>Rhododendron macrophyllum</i>	
*88.200.02	<i>Abies magnifica</i> / <i>Vaccinium membranaceum</i>	
88.200.26	<i>Abies magnifica</i> / <i>Wyethia mollis</i>	
88.520.00	<i>Abies magnifica</i> - <i>Abies concolor</i> (Red fir - white fir forest) Alliance	G5 S4
88.520.01	<i>Abies magnifica</i> - <i>Abies concolor</i>	
88.520.09	<i>Abies magnifica</i> - <i>Abies concolor</i> - <i>Pinus jeffreyi</i>	
88.520.11	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Acer glabrum</i>	
88.520.08	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Achlys triphylla</i>	
88.520.16	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Anemone deltoidea</i>	

88.520.07	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Arctostaphylos nevadensis</i>	
88.520.12	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Arctostaphylos nevadensis</i>	
88.520.03	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Arnica cordifolia</i>	
88.520.13	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Penstemon anguineus</i> - <i>Monardella odoratissima</i>	
88.520.10	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Pinus lambertiana</i>	
88.520.02	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Pteridium aquilinum</i>	
88.520.15	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Pyrola picta</i>	
88.520.06	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Quercus sadleriana</i>	
88.520.14	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Quercus sadleriana</i>	
88.520.05	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Symphoricarpos mollis</i> - <i>Rosa gymnocarpa</i>	
88.520.04	<i>Abies magnifica</i> - <i>Abies concolor</i> / <i>Symphoricarpos mollis</i> / <i>Pyrola picta</i>	
*61.450.00	<i>Acer macrophyllum</i> (Bigleaf maple forest) Alliance	G4 S3
*61.450.01	<i>Acer macrophyllum</i>	
*61.450.02	<i>Acer macrophyllum</i> - <i>Pseudotsuga menziesii</i> / <i>Adenocaulon bicolor</i>	
*61.450.04	<i>Acer macrophyllum</i> - <i>Pseudotsuga menziesii</i> / <i>Corylus cornuta</i>	
*61.450.03	<i>Acer macrophyllum</i> - <i>Pseudotsuga menziesii</i> / <i>Dryopteris arguta</i>	
*61.450.05	<i>Acer macrophyllum</i> - <i>Pseudotsuga menziesii</i> / <i>Philadelphus lewisii</i>	
*61.450.06	<i>Acer macrophyllum</i> - <i>Pseudotsuga menziesii</i> / <i>Polystichum munitum</i>	
*61.440.00	<i>Acer negundo</i> (Box-elder forest) Alliance	G5 S2
*61.440.01	<i>Acer negundo</i> - <i>Salix gooddingii</i>	
*75.100.00	<i>Aesculus californica</i> (California buckeye groves) Alliance	G3 S3
*75.100.03	<i>Aesculus californica</i>	
*75.100.02	<i>Aesculus californica</i> - <i>Umbellularia californica</i> / <i>Diplacus aurantiacus</i>	
*75.100.06	<i>Aesculus californica</i> - <i>Umbellularia californica</i> / <i>Holodiscus discolor</i>	
*75.100.04	<i>Aesculus californica</i> / <i>Datisca glomerata</i>	
*75.100.05	<i>Aesculus californica</i> / <i>Lupinus albitrions</i>	
*75.100.01	<i>Aesculus californica</i> / <i>Toxicodendron diversilobum</i> / moss	
61.420.00	<i>Alnus rhombifolia</i> (White alder groves) Alliance	G4 S4 (some associations are of high priority for inventory)
61.420.10	<i>Alnus rhombifolia</i>	
61.420.03	<i>Alnus rhombifolia</i> - <i>Acer macrophyllum</i>	
*61.420.11	<i>Alnus rhombifolia</i> - <i>Platanus racemosa</i>	
61.420.12	<i>Alnus rhombifolia</i> - <i>Platanus racemosa</i> - <i>Quercus chrysolepis</i>	
*61.420.15	<i>Alnus rhombifolia</i> - <i>Platanus racemosa</i> - <i>Salix laevigata</i>	
61.420.29	<i>Alnus rhombifolia</i> - <i>Pseudotsuga menziesii</i>	
61.420.31	<i>Alnus rhombifolia</i> - <i>Pseudotsuga menziesii</i> - <i>Calocedrus decurrens</i>	
61.420.30	<i>Alnus rhombifolia</i> - <i>Pseudotsuga menziesii</i> / <i>Darmera peltata</i>	
61.420.04	<i>Alnus rhombifolia</i> - <i>Pseudotsuga menziesii</i> / <i>Rubus armeniacus</i>	
61.420.22	<i>Alnus rhombifolia</i> - <i>Quercus chrysolepis</i>	
*61.420.13	<i>Alnus rhombifolia</i> - <i>Salix laevigata</i>	
61.420.02	<i>Alnus rhombifolia</i> / <i>Aruncus dioicus</i>	
61.420.09	<i>Alnus rhombifolia</i> / <i>Baccharis salicifolia</i>	
61.420.24	<i>Alnus rhombifolia</i> / <i>Carex nudata</i>	
61.420.23	<i>Alnus rhombifolia</i> / <i>Carex spp</i>	
*61.420.07	<i>Alnus rhombifolia</i> / <i>Cornus sericea</i>	
61.420.06	<i>Alnus rhombifolia</i> / <i>Cornus sessilis</i>	
*61.420.05	<i>Alnus rhombifolia</i> / <i>Darmera peltata</i>	
61.420.08	<i>Alnus rhombifolia</i> / <i>Galium trifolium</i>	
61.420.26	<i>Alnus rhombifolia</i> / <i>Galium trifolium</i> - <i>Stachys ajugoides</i>	
61.420.21	<i>Alnus rhombifolia</i> / <i>Leucothoe davisiae</i>	
*61.420.01	<i>Alnus rhombifolia</i> / <i>Polypodium californicum</i>	
61.420.27	<i>Alnus rhombifolia</i> / <i>Pteridium aquilinum</i>	
*61.420.17	<i>Alnus rhombifolia</i> / <i>Rhododendron occidentale</i>	
*61.420.18	<i>Alnus rhombifolia</i> / <i>Salix exigua</i> - (<i>Rosa californica</i>)	

61.410.00	<i>Alnus rubra</i> (Red alder forest) Alliance	G5 S4 (some associations are of high priority for inventory)
*61.410.01	<i>Alnus rubra</i> - <i>Pseudotsuga menziesii</i> / <i>Acer circinatum</i> / <i>Claytonia sibirica</i>	
*61.410.02	<i>Alnus rubra</i> / <i>Gaultheria shallon</i>	
61.410.07	<i>Alnus rubra</i> / <i>Rubus spectabilis</i>	
*61.410.06	<i>Alnus rubra</i> / <i>Rubus spectabilis</i> - <i>Sambucus racemosa</i>	
*61.410.05	<i>Alnus rubra</i> / <i>Salix lasiolepis</i>	
*73.200.00	<i>Arbutus menziesii</i> (Madrone forest) Alliance	G4 S3
*73.200.03	<i>Arbutus menziesii</i> - <i>Quercus agrifolia</i>	
*73.200.01	<i>Arbutus menziesii</i> - <i>Umbellularia californica</i> - (<i>Lithocarpus densiflorus</i>)	
*73.200.02	<i>Arbutus menziesii</i> - <i>Umbellularia californica</i> - <i>Quercus kelloggii</i>	
*33.120.00	<i>Bursera microphylla</i> (Elephant tree stands) Special Stands	G4 S1
*81.606.00	<i>Callitropsis abramsiana</i> (Santa Cruz cypress groves) Special Stands	G1 S1
*81.601.00	<i>Callitropsis bakeri</i> (Baker cypress stands) Alliance	G2 S2
*81.601.01	<i>Callitropsis bakeri</i> / <i>Arctostaphylos patula</i>	
*81.607.00	<i>Callitropsis forbesii</i> (Tecate cypress stands) Alliance	G2 S2
*81.603.00	<i>Callitropsis goveniana</i> (Monterey pygmy cypress stands) Special Stands	G1 S1
*81.300.00	<i>Callitropsis macnabiana</i> (McNab cypress woodland) Alliance	G3 S3
*81.300.02	<i>Callitropsis macnabiana</i> / <i>Arctostaphylos viscida</i>	
*81.604.00	<i>Callitropsis macrocarpa</i> (Monterey cypress stands) Special Stands	G1 S1
*81.605.00	<i>Callitropsis nevadensis</i> (Piute cypress woodland) Alliance	G2 S2
*81.605.01	<i>Callitropsis nevadensis</i>	
*81.200.00	<i>Callitropsis nootkatensis</i> (Alaska yellow-cedar stands) Alliance	G4 S1
*81.400.00	<i>Callitropsis pigmaea</i> (Mendocino pygmy cypress woodland) Alliance	G2 S2
*81.400.01	<i>Callitropsis pigmaea</i> / <i>Cladonia bellidiflora</i>	
*81.400.03	<i>Callitropsis pigmaea</i> / <i>Ramalina tharusta</i>	
*81.400.04	<i>Callitropsis pigmaea</i> / <i>Usnea subfloridana</i>	
*81.400.02	<i>Callitropsis pigmaea</i> / <i>Cladina impexa</i>	
*81.500.00	<i>Callitropsis sargentii</i> (Sargent cypress woodland) Alliance	G3 S3
*81.500.01	<i>Callitropsis sargentii</i>	
*81.500.03	<i>Callitropsis sargentii</i> / <i>Arctostaphylos montana</i>	
*81.500.02	<i>Callitropsis sargentii</i> / riparian	
*81.610.00	<i>Callitropsis stephensonii</i> (Cuyamaca cypress stands) Special Stands	G1 S1
*85.100.00	<i>Calocedrus decurrens</i> (Incense cedar forest) Alliance	G4 S3
*85.100.05	<i>Calocedrus decurrens</i> - <i>Abies concolor</i> / <i>Senecio triangularis</i>	
*85.100.03	<i>Calocedrus decurrens</i> - <i>Alnus rhombifolia</i>	
*85.100.04	<i>Calocedrus decurrens</i> - <i>Quercus chrysolepis</i> - <i>Quercus kelloggii</i>	
*85.100.01	<i>Calocedrus decurrens</i> / <i>Listera convallarioides</i>	
*81.100.00	<i>Chamaecyparis lawsoniana</i> (Port Orford cedar forest) Alliance	G3 S3
*81.100.31	<i>Chamaecyparis lawsoniana</i> - <i>Abies concolor</i> / <i>Acer circinatum</i>	
*81.100.30	<i>Chamaecyparis lawsoniana</i> - <i>Abies concolor</i> / <i>Alnus viridis</i>	
*81.100.14	<i>Chamaecyparis lawsoniana</i> - <i>Abies concolor</i> / <i>Chrysolepis sempervirens</i> (- <i>Rhododendron occidentale</i> - <i>Leucothoe davisiae</i>)	
*81.100.08	<i>Chamaecyparis lawsoniana</i> - <i>Abies concolor</i> / herb	
*81.100.07	<i>Chamaecyparis lawsoniana</i> - <i>Abies concolor</i> / <i>Quercus sadleriana</i>	
*81.100.09	<i>Chamaecyparis lawsoniana</i> - <i>Abies concolor</i> / <i>Quercus vaccinifolia</i>	

*81.100.06	<i>Chamaecyparis lawsoniana</i> - <i>Abies concolor</i> / <i>Rhododendron occidentale</i>	
*81.100.32	<i>Chamaecyparis lawsoniana</i> - <i>Abies x shastensis</i> - <i>Picea breweri</i> / <i>Quercus sadleriana</i> - <i>Quercus vacciniifolia</i>	
*81.100.33	<i>Chamaecyparis lawsoniana</i> - <i>Abies x shastensis</i> / <i>Alnus viridis</i> - <i>Quercus sadleriana</i>	
*81.100.34	<i>Chamaecyparis lawsoniana</i> - <i>Abies x shastensis</i> / <i>Alnus viridis</i> / <i>Darlingtonia californica</i>	
*81.100.03	<i>Chamaecyparis lawsoniana</i> - <i>Abies x shastensis</i> / <i>Quercus sadleriana</i> - <i>Vaccinium membranaceum</i>	
*81.100.39	<i>Chamaecyparis lawsoniana</i> - <i>Calocedrus decurrens</i> - <i>Alnus rhombifolia</i>	
*81.100.40	<i>Chamaecyparis lawsoniana</i> - <i>Calocedrus decurrens</i> / <i>Quercus vacciniifolia</i>	
*81.100.16	<i>Chamaecyparis lawsoniana</i> - <i>Pinus monticola</i> / <i>Alnus viridis</i>	
*81.100.19	<i>Chamaecyparis lawsoniana</i> - <i>Pinus monticola</i> / dry herb complex	
*81.100.10	<i>Chamaecyparis lawsoniana</i> - <i>Pinus monticola</i> / <i>Quercus vacciniifolia</i>	
*81.100.15	<i>Chamaecyparis lawsoniana</i> - <i>Pinus monticola</i> / <i>Rhododendron neoglandulosum</i> / <i>Darlingtonia californica</i>	
*81.100.38	<i>Chamaecyparis lawsoniana</i> - <i>Pinus monticola</i> / <i>Rhododendron neoglandulosum</i> / <i>Darlingtonia californica</i>	
*81.100.37	<i>Chamaecyparis lawsoniana</i> - <i>Pinus monticola</i> / <i>Rhododendron occidentale</i> - <i>Lithocarpus densiflorus</i> var. <i>echinoides</i> - <i>Rhododendron neoglandulosum</i>	
*81.100.17	<i>Chamaecyparis lawsoniana</i> - <i>Pinus monticola</i> / <i>Vaccinium membranaceum</i>	
*81.100.18	<i>Chamaecyparis lawsoniana</i> - <i>Pinus monticola</i> / wet herb complex	
*81.100.25	<i>Chamaecyparis lawsoniana</i> - <i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Quercus vacciniifolia</i>	
*81.100.26	<i>Chamaecyparis lawsoniana</i> - <i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Rhododendron macrophyllum</i>	
*81.100.22	<i>Chamaecyparis lawsoniana</i> - <i>Pseudotsuga menziesii</i> / <i>Calycanthus occidentalis</i>	
*81.100.35	<i>Chamaecyparis lawsoniana</i> - <i>Pseudotsuga menziesii</i> / <i>Corylus cornuta</i>	
*81.100.02	<i>Chamaecyparis lawsoniana</i> - <i>Pseudotsuga menziesii</i> / <i>Quercus vacciniifolia</i>	
*81.100.20	<i>Chamaecyparis lawsoniana</i> - <i>Tsuga heterophylla</i> / <i>Chrysolepis sempervirens</i>	
*81.100.24	<i>Chamaecyparis lawsoniana</i> - <i>Tsuga heterophylla</i> / <i>Leucothoe davisiae</i>	
*81.100.21	<i>Chamaecyparis lawsoniana</i> - <i>Tsuga heterophylla</i> / <i>Rhododendron neoglandulosum</i>	
*81.100.05	<i>Chamaecyparis lawsoniana</i> / <i>Gaultheria shallon</i>	
*81.100.12	<i>Chamaecyparis lawsoniana</i> / <i>Quercus vacciniifolia</i> - <i>Rhododendron occidentale</i>	
*81.100.04	<i>Chamaecyparis lawsoniana</i> / <i>Rhododendron macrophyllum</i> - <i>Gaultheria shallon</i>	
*81.100.01	<i>Chamaecyparis lawsoniana</i> / <i>Rhododendron occidentale</i>	
*81.100.11	<i>Chamaecyparis lawsoniana</i> / <i>Rhododendron occidentale</i> - <i>Lithocarpus densiflorus</i> var. <i>echinoides</i>	
*61.550.00	<i>Chilopsis linearis</i> (Desert willow woodland) Alliance	G4 S3
*61.550.01	<i>Chilopsis linearis</i>	
*61.550.02	<i>Chilopsis linearis</i> / <i>Ambrosia salsola</i>	
*61.550.08	<i>Chilopsis linearis</i> / <i>Atriplex polycarpa</i>	
*61.550.07	<i>Chilopsis linearis</i> / <i>Ericameria paniculata</i>	
*61.550.04	<i>Chilopsis linearis</i> / <i>Prunus fasciculata</i>	
*61.550.03	<i>Chilopsis linearis</i> / <i>Prunus fasciculata</i> - <i>Ambrosia salsola</i>	
*61.550.05	<i>Chilopsis linearis</i> / <i>Salvia dorrii</i>	
*61.550.06	<i>Chilopsis linearis</i> / <i>Viguiera parishii</i>	
79.100.00	<i>Eucalyptus (globulus, camaldulensis)</i> (Eucalyptus groves) Semi-natural Stands	
*61.960.00	<i>Fraxinus latifolia</i> (Oregon ash groves) Alliance	G4 S3
*61.960.04	<i>Fraxinus latifolia</i>	
*61.960.02	<i>Fraxinus latifolia</i> - <i>Alnus rhombifolia</i>	
*61.960.03	<i>Fraxinus latifolia</i> / <i>Cornus sericea</i>	
*61.960.01	<i>Fraxinus latifolia</i> / <i>Toxicodendron diversilobum</i>	
*72.100.00	<i>Juglans californica</i> (California walnut groves) Alliance	G3 S3
*72.100.08	<i>Juglans californica</i> - <i>Quercus agrifolia</i>	
*72.100.03	<i>Juglans californica</i> / annual herbaceous	
*72.100.04	<i>Juglans californica</i> / <i>Artemisia californica</i> / <i>Leymus condensatus</i>	
*72.100.05	<i>Juglans californica</i> / <i>Ceanothus spinosus</i>	
*72.100.06	<i>Juglans californica</i> / <i>Heteromeles arbutifolia</i>	
*72.100.07	<i>Juglans californica</i> / <i>Malosma laurina</i>	

*61.810.00	<i>Juglans hindsii</i> and Hybrids (Hinds's walnut and related stands) Special Stands	G1 S1
89.100.00	<i>Juniperus californica</i> (California juniper woodland) Alliance	G4 S4 (some associations are of high priority for inventory)
89.100.08	<i>Juniperus californica</i> - (<i>Yucca schidigera</i>) / <i>Pleuraphis rigida</i>	
*89.100.01	<i>Juniperus californica</i> - <i>Adenostoma fasciculatum</i> - <i>Eriogonum fasciculatum</i>	
*89.100.04	<i>Juniperus californica</i> - <i>Coleogyne ramosissima</i>	
89.100.06	<i>Juniperus californica</i> - <i>Coleogyne ramosissima</i> - <i>Yucca schidigera</i>	
*89.100.02	<i>Juniperus californica</i> - <i>Ericameria linearifolia</i> / annual - perennial - herb	
89.100.12	<i>Juniperus californica</i> - <i>Eriogonum fasciculatum</i> - <i>Artemisia californica</i>	
*89.100.14	<i>Juniperus californica</i> - <i>Fraxinus dipetala</i> - <i>Ericameria linearifolia</i>	
89.100.05	<i>Juniperus californica</i> - <i>Quercus cornelius</i> - <i>mulleri</i> / <i>Coleogyne ramosissima</i>	
89.100.18	<i>Juniperus californica</i> - <i>Yucca schidigera</i>	
89.100.03	<i>Juniperus californica</i> / <i>Agave deserti</i>	
*89.100.15	<i>Juniperus californica</i> / annual herbaceous	
89.100.17	<i>Juniperus californica</i> / <i>Hesperostipa comata</i>	
89.100.11	<i>Juniperus californica</i> / <i>Nolina parryi</i>	
89.100.16	<i>Juniperus californica</i> / <i>Prunus ilicifolia</i> / moss	
89.200.00	<i>Juniperus grandis</i> (Mountain juniper woodland) Alliance	G4 S4 (some associations are of high priority for inventory)
89.200.01	<i>Juniperus grandis</i>	
*89.200.03	<i>Juniperus grandis</i> - <i>Cercocarpus ledifolius</i> / <i>Artemisia tridentata</i>	
89.200.05	<i>Juniperus grandis</i> / <i>Arctostaphylos nevadensis</i>	
*89.200.02	<i>Juniperus grandis</i> / <i>Artemisia tridentata</i>	
89.200.04	<i>Juniperus grandis</i> / <i>Holodiscus discolor</i>	
89.400.00	<i>Juniperus occidentalis</i> (Western juniper woodland) Alliance	G5 S4
89.400.02	<i>Juniperus occidentalis</i>	
89.400.03	<i>Juniperus occidentalis</i> - <i>Pinus jeffreyi</i> / (<i>Purshia tridentata</i>) - (<i>Prunus virginiana</i>)	
89.400.04	<i>Juniperus occidentalis</i> / <i>Artemisia arbuscula</i>	
*89.300.00	<i>Juniperus osteosperma</i> (Utah juniper woodland) Alliance	G5 S3
*89.300.01	<i>Juniperus osteosperma</i>	
*89.300.07	<i>Juniperus osteosperma</i> / <i>Ambrosia dumosa</i>	
*89.300.02	<i>Juniperus osteosperma</i> / <i>Artemisia tridentata</i> - <i>Ephedra viridis</i>	
*89.300.03	<i>Juniperus osteosperma</i> / <i>Artemisia tridentata</i> - <i>Purshia glandulosa</i> - <i>Ephedra nevadensis</i>	
*89.300.06	<i>Juniperus osteosperma</i> / <i>Atriplex confertifolia</i> - (<i>Tetradymia axillaris</i>)	
*89.300.08	<i>Juniperus osteosperma</i> / <i>Coleogyne ramosissima</i> / (<i>Achnatherum speciosum</i>)	
*89.300.09	<i>Juniperus osteosperma</i> / <i>Coleogyne ramosissima</i> / <i>Pleuraphis jamesii</i>	
*89.300.11	<i>Juniperus osteosperma</i> / <i>Ephedra nevadensis</i> / <i>Achnatherum speciosum</i>	
*89.300.04	<i>Juniperus osteosperma</i> / <i>Eriogonum fasciculatum</i>	
*89.300.05	<i>Juniperus osteosperma</i> / <i>Gutierrezia microcephala</i>	
*89.300.10	<i>Juniperus osteosperma</i> / <i>Yucca baccata</i>	
*73.100.00	<i>Lithocarpus densiflorus</i> (Tanoak forest) Alliance	G4 S3
*73.100.10	<i>Lithocarpus densiflorus</i> - <i>Acer circinatum</i>	
*73.100.11	<i>Lithocarpus densiflorus</i> - <i>Acer macrophyllum</i>	
*73.100.03	<i>Lithocarpus densiflorus</i> - <i>Arbutus menziesii</i>	
*73.100.12	<i>Lithocarpus densiflorus</i> - <i>Calocedrus decurrens</i> / <i>Festuca californica</i>	
*73.100.13	<i>Lithocarpus densiflorus</i> - <i>Chamaecyparis lawsoniana</i>	
*73.100.14	<i>Lithocarpus densiflorus</i> - <i>Chrysolepis chrysophylla</i>	
*73.100.15	<i>Lithocarpus densiflorus</i> - <i>Cornus nuttallii</i>	
*73.100.16	<i>Lithocarpus densiflorus</i> - <i>Cornus nuttallii</i> / <i>Toxicodendron diversilobum</i>	
*73.100.01	<i>Lithocarpus densiflorus</i> - <i>Pinus lambertiana</i> / <i>Toxicodendron diversilobum</i>	
*73.100.17	<i>Lithocarpus densiflorus</i> - <i>Quercus chrysolepis</i>	
*73.100.18	<i>Lithocarpus densiflorus</i> - <i>Quercus kelloggii</i>	
*73.100.19	<i>Lithocarpus densiflorus</i> - <i>Umbellularia californica</i>	
*73.100.04	<i>Lithocarpus densiflorus</i> / <i>Corylus cornuta</i>	
*73.100.02	<i>Lithocarpus densiflorus</i> / <i>Frangula californica</i>	

*73.100.05	<i>Lithocarpus densiflorus / Gaultheria shallon</i>	
*73.100.06	<i>Lithocarpus densiflorus / Mahonia nervosa</i>	
*73.100.07	<i>Lithocarpus densiflorus / Quercus vaccinifolia - Rhododendron macrophyllum</i>	
*73.100.08	<i>Lithocarpus densiflorus / Toxicodendron diversilobum - Lonicera hispidula var. vacillens</i>	
*73.100.09	<i>Lithocarpus densiflorus / Vaccinium ovatum</i>	
*77.000.00	<i>Lyonothamnus floribundus</i> (Catalina ironwood groves) Special Stands	G2 S2
*61.545.00	<i>Parkinsonia florida - Olneya tesota</i> (Blue palo verde - Ironwood woodland) Alliance	G4 S3
*61.545.05	<i>Parkinsonia florida</i>	
*61.545.06	<i>Parkinsonia florida - Acacia greggii - Encelia frutescens Parkinsonia florida</i>	
*61.545.10	<i>Parkinsonia florida - Olneya tesota</i>	
*61.545.12	<i>Parkinsonia florida - Olneya tesota / Cylindropuntia munzii</i>	
*61.545.11	<i>Parkinsonia florida - Olneya tesota / Hyptis emoryi</i>	
*61.545.07	<i>Parkinsonia florida / Chilopsis linearis</i>	
*61.545.08	<i>Parkinsonia florida / Hyptis emoryi</i>	
*61.545.09	<i>Parkinsonia florida / Larrea tridentata - Peucephyllum schottii</i>	
*61.545.01	<i>Olneya tesota</i>	
*61.545.02	<i>Olneya tesota - Psorothamnus schottii</i>	
*61.545.04	<i>Olneya tesota / Hyptis emoryi</i>	
*61.545.03	<i>Olneya tesota / Larrea tridentata - Encelia farinosa</i>	
*83.300.00	<i>Picea breweriana</i> (Brewer spruce forest) Alliance	G3 S2
*83.300.03	<i>Picea breweriana - Abies concolor / Chimaphila umbellata - Pyrola picta</i>	
*83.100.00	<i>Picea engelmannii</i> (Engelmann spruce forest) Alliance	G5 S2
*83.200.00	<i>Picea sitchensis</i> (Sitka spruce forest) Alliance	G5 S2
*83.200.04	<i>Picea sitchensis - Tsuga heterophylla</i>	
*83.200.01	<i>Picea sitchensis / Maianthemum dilatatum</i>	
*83.200.03	<i>Picea sitchensis / Polystichum munitum</i>	
*83.200.02	<i>Picea sitchensis / Rubus spectabilis</i>	
87.180.00	<i>Pinus albicaulis</i> (Whitebark pine forest) Alliance	G5 S4
87.180.07	<i>Pinus albicaulis - Tsuga mertensiana</i>	
87.180.01	<i>Pinus albicaulis / Achnatherum californica</i>	
87.180.03	<i>Pinus albicaulis / Arenaria aculeata</i>	
87.180.08	<i>Pinus albicaulis / Carex filifolia</i>	
87.180.09	<i>Pinus albicaulis / Carex rossii</i>	
87.180.04	<i>Pinus albicaulis / Holodiscus discolor</i>	
87.180.06	<i>Pinus albicaulis / Penstemon davidsonii</i>	
87.180.02	<i>Pinus albicaulis / Penstemon gracilentus</i>	
87.180.05	<i>Pinus albicaulis / Poa wheeleri</i>	
87.100.00	<i>Pinus attenuata</i> (Knobcone pine forest) Alliance	G4 S4
87.100.08	<i>Pinus attenuata - mixed oak / Arctostaphylos viscida</i>	
87.100.04	<i>Pinus attenuata / Adenostoma fasciculatum</i>	
87.100.01	<i>Pinus attenuata / Arctostaphylos columbiana</i>	
87.100.06	<i>Pinus attenuata / Arctostaphylos glandulosa</i>	
87.100.02	<i>Pinus attenuata / Arctostaphylos patula</i>	
87.100.05	<i>Pinus attenuata / Arctostaphylos viscida</i>	
87.100.07	<i>Pinus attenuata / Ceanothus lemmonii</i>	
87.100.03	<i>Pinus attenuata / Quercus vaccinifolia</i>	
*87.150.00	<i>Pinus balfouriana</i> (Foxtail pine woodland) Alliance	G3 S3
*87.150.01	<i>Pinus balfouriana</i>	
*87.150.04	<i>Pinus balfouriana - Abies magnifica</i>	
*87.150.05	<i>Pinus balfouriana - Pinus albicaulis</i>	
*87.150.07	<i>Pinus balfouriana - Pinus flexilis</i>	
*87.150.06	<i>Pinus balfouriana - Pinus monticola</i>	
*87.150.02	<i>Pinus balfouriana / Anemone drummondii</i>	

*87.150.03	<i>Pinus balfouriana</i> / <i>Chrysolepis sempervirens</i>	
87.080.00	<i>Pinus contorta</i> ssp. <i>murrayana</i> (Lodgepole pine forest) Alliance	G4 S4
87.080.01	<i>Pinus contorta</i> ssp. <i>murrayana</i>	
87.080.17	<i>Pinus contorta</i> ssp. <i>murrayana</i> - <i>Pinus albicaulis</i> / <i>Carex filifolia</i>	
87.080.11	<i>Pinus contorta</i> ssp. <i>murrayana</i> - <i>Pinus albicaulis</i> / <i>Carex rossii</i>	
87.080.02	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Artemisia tridentata</i>	
87.080.10	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Carex filifolia</i>	
87.080.06	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Carex rossii</i>	
87.080.13	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Carex</i> spp.	
87.080.05	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Cistanthe umbellata</i>	
87.080.03	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Ligusticum grayi</i>	
87.080.12	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Penstemon newberryi</i>	
87.080.08	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Rhododendron neoglandulosum</i>	
87.080.14	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Rhododendron neoglandulosum</i> - <i>Phyllodoce breweri</i>	
87.080.07	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Thalictrum fendleri</i>	
87.080.15	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Vaccinium caespitosum</i>	
87.080.09	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Vaccinium uliginosum</i>	
87.080.16	<i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Vaccinium uliginosum</i> - <i>Rhododendron neoglandulosum</i>	
*87.060.00	<i>Pinus contorta</i> var. <i>contorta</i> (Beach pine forest) Alliance	G5 S3
*87.060.01	<i>Pinus contorta</i> var. <i>contorta</i>	
*87.060.02	<i>Pinus contorta</i> ssp. <i>contorta</i> - <i>Picea sitchensis</i>	
87.090.00	<i>Pinus coulteri</i> (Coulter pine woodland) Alliance	G4 S4 (some associations are of high priority for inventory)
*87.090.01	<i>Pinus coulteri</i> - <i>Calocedrus decurrens</i> - <i>Pinus jeffreyi</i> / <i>Quercus durata</i>	
*87.092.03	<i>Pinus coulteri</i> - <i>Calocedrus decurrens</i> / <i>Frangula californica</i> spp. <i>tomentella</i> / <i>Aquilegia eximia</i>	
*87.090.02	<i>Pinus coulteri</i> - <i>Calocedrus decurrens</i> / <i>Quercus durata</i> - <i>Arctostaphylos glauca</i>	
*87.090.03	<i>Pinus coulteri</i> - <i>Pinus sabiniana</i> / <i>Quercus durata</i> - <i>Arctostaphylos pungens</i>	
87.090.04	<i>Pinus coulteri</i> - <i>Quercus chrysolepis</i>	
*87.090.06	<i>Pinus coulteri</i> - <i>Quercus chrysolepis</i> / <i>Arctostaphylos pringlei</i>	
87.092.08	<i>Pinus coulteri</i> - <i>Quercus kelloggii</i>	
87.092.05	<i>Pinus coulteri</i> - <i>Quercus wislizeni</i>	
87.092.07	<i>Pinus coulteri</i> / <i>Arctostaphylos glandulosa</i>	
87.092.01	<i>Pinus coulteri</i> / <i>Arctostaphylos glandulosa</i> - <i>Quercus wislizeni</i>	
87.092.02	<i>Pinus coulteri</i> / <i>Arctostaphylos glauca</i>	
*87.092.04	<i>Pinus coulteri</i> / <i>Quercus durata</i>	
*87.050.00	<i>Pinus edulis</i> (Two-needle pinyon stands) Special Stands	G4 S2?
*87.160.00	<i>Pinus flexilis</i> (Limber pine woodland) Alliance	G5 S3
*87.160.02	<i>Pinus flexilis</i> - <i>Pinus contorta</i> / <i>Chrysolepis sempervirens</i>	
*87.160.03	<i>Pinus flexilis</i> - <i>Pinus contorta</i> ssp. <i>murrayana</i>	
*87.160.01	<i>Pinus flexilis</i> / <i>Cercocarpus ledifolius</i>	
87.020.00	<i>Pinus jeffreyi</i> (Jeffrey pine forest) Alliance	G4 S4 (some associations are of high priority for inventory)
87.205.03	<i>Pinus jeffreyi</i> - <i>Abies concolor</i> - <i>Abies magnifica</i>	
87.020.30	<i>Pinus jeffreyi</i> - <i>Abies concolor</i> / <i>Chrysolepis sempervirens</i>	
87.205.06	<i>Pinus jeffreyi</i> - <i>Abies concolor</i> / <i>Iris innominata</i>	
87.205.05	<i>Pinus jeffreyi</i> - <i>Abies concolor</i> / <i>Quercus sadleriana</i>	
87.205.07	<i>Pinus jeffreyi</i> - <i>Abies concolor</i> / <i>Symphoricarpos rotundifolius</i> / <i>Elymus elymoides</i>	
87.020.39	<i>Pinus jeffreyi</i> - <i>Abies magnifica</i>	
87.020.04	<i>Pinus jeffreyi</i> - <i>Calocedrus decurrens</i> / <i>Ceanothus cuneatus</i>	
87.020.28	<i>Pinus jeffreyi</i> - <i>Calocedrus decurrens</i> / <i>Ceanothus pumila</i>	
87.020.37	<i>Pinus jeffreyi</i> - <i>Calocedrus decurrens</i> / <i>Quercus vaccinifolia</i>	
87.020.05	<i>Pinus jeffreyi</i> - <i>Calocedrus decurrens</i> / <i>Quercus vaccinifolia</i> / <i>Xerophyllum tenax</i>	
87.020.26	<i>Pinus jeffreyi</i> - <i>Pinus monophylla</i>	
87.200.08	<i>Pinus jeffreyi</i> - <i>Pinus ponderosa</i> - <i>Quercus kelloggii</i> / <i>Poa wheeleri</i> / granite	

87.200.09	<i>Pinus jeffreyi</i> - <i>Pinus ponderosa</i> / <i>Amelanchier alnifolia</i> - <i>Mahonia repens</i>	
*87.200.03	<i>Pinus jeffreyi</i> - <i>Pinus ponderosa</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> / <i>Festuca idahoensis</i> / Granite	
*87.200.07	<i>Pinus jeffreyi</i> - <i>Pinus ponderosa</i> / <i>Symphoricarpos mollis</i> / <i>Wyethia mollis</i>	
*87.020.02	<i>Pinus jeffreyi</i> - <i>Pseudotsuga menziesii</i> / <i>Quercus vaccinifolia</i> / <i>Festuca californica</i>	
87.020.38	<i>Pinus jeffreyi</i> - <i>Quercus chrysolepis</i> / <i>Arctostaphylos viscida</i>	
87.020.25	<i>Pinus jeffreyi</i> - <i>Quercus kelloggii</i>	
*87.020.15	<i>Pinus jeffreyi</i> - <i>Quercus kelloggii</i> / <i>Poa secunda</i>	
*87.020.16	<i>Pinus jeffreyi</i> - <i>Quercus kelloggii</i> / <i>Rhus trilobata</i>	
87.020.24	<i>Pinus jeffreyi</i> / <i>Arctostaphylos nevadensis</i>	
87.020.09	<i>Pinus jeffreyi</i> / <i>Arctostaphylos patula</i>	
87.020.35	<i>Pinus jeffreyi</i> / <i>Arctostaphylos patula</i> - <i>Ceanothus velutinus</i>	
87.020.32	<i>Pinus jeffreyi</i> / <i>Artemisia tridentata</i> / <i>Penstemon centranthifolius</i>	
*87.020.19	<i>Pinus jeffreyi</i> / <i>Artemisia tridentata</i> var. <i>vaseyana</i> / <i>Festuca idahoensis</i>	
*87.020.23	<i>Pinus jeffreyi</i> / <i>Calamagrostis koelerioides</i>	
87.020.10	<i>Pinus jeffreyi</i> / <i>Ceanothus cordulatus</i>	
87.020.36	<i>Pinus jeffreyi</i> / <i>Ceanothus cordulatus</i> - <i>Artemisia tridentata</i>	
*87.020.17	<i>Pinus jeffreyi</i> / <i>Cercocarpus ledifolius</i>	
*87.020.20	<i>Pinus jeffreyi</i> / <i>Chrysolepis sempervirens</i>	
*87.020.22	<i>Pinus jeffreyi</i> / <i>Ericameria ophitidis</i>	
*87.020.03	<i>Pinus jeffreyi</i> / <i>Festuca idahoensis</i>	
87.020.11	<i>Pinus jeffreyi</i> / <i>Lupinus caudatus</i>	
*87.020.21	<i>Pinus jeffreyi</i> / <i>Purshia tridentata</i> var. <i>tridentata</i>	
*87.020.14	<i>Pinus jeffreyi</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> - <i>Symphoricarpos longiflorus</i> / <i>Poa wheeleri</i>	
*87.020.13	<i>Pinus jeffreyi</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> / <i>Cercocarpus ledifolius</i> / <i>Achnatherum occidentale</i>	
*87.020.12	<i>Pinus jeffreyi</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> / <i>Wyethia mollis</i>	
87.020.33	<i>Pinus jeffreyi</i> / <i>Quercus palmeri</i>	
87.020.01	<i>Pinus jeffreyi</i> / <i>Quercus sadleriana</i> / <i>Xerophyllum tenax</i>	
87.020.08	<i>Pinus jeffreyi</i> / <i>Quercus vaccinifolia</i>	
87.020.27	<i>Pinus jeffreyi</i> / <i>Quercus vaccinifolia</i> - <i>Arctostaphylos nevadensis</i> / <i>Festuca idahoensis</i>	
87.020.34	<i>Pinus jeffreyi</i> / <i>Quercus wislizeni</i>	
*87.020.18	<i>Pinus jeffreyi</i> / <i>Symphoricarpos longiflorus</i> / <i>Poa wheeleri</i>	
*87.206.00	<i>Pinus lambertiana</i> (Sugar pine forest) Alliance	G4 S3
*87.206.01	<i>Pinus lambertiana</i> - <i>Chrysolepis chrysophylla</i> / <i>Quercus vaccinifolia</i> - <i>Quercus sadleriana</i>	
*87.206.02	<i>Pinus lambertiana</i> - <i>Pinus contorta</i> ssp. <i>contorta</i> / <i>Quercus vaccinifolia</i> - <i>Lithocarpus densiflorus</i> var. <i>echinoides</i>	
*87.206.03	<i>Pinus lambertiana</i> - <i>Pinus contorta</i> ssp. <i>contorta</i> / <i>Lithocarpus densiflorus</i> var. <i>echinoides</i> - <i>Rhododendron macrophyllum</i>	
*87.206.04	<i>Pinus lambertiana</i> - <i>Pinus monticola</i> / <i>Quercus vaccinifolia</i> - <i>Garrya buxifolia</i>	
*87.140.00	<i>Pinus longaeva</i> (Bristlecone pine woodland) Alliance	G4 S2
*87.140.01	<i>Pinus longaeva</i>	
*87.140.02	<i>Pinus longaeva</i> / <i>Cercocarpus intricatus</i>	
87.040.00	<i>Pinus monophylla</i> (Singleleaf pinyon woodlands) Alliance	G5 S4
87.040.14	<i>Pinus monophylla</i> - <i>Juniperus californica</i> / <i>Achnatherum speciosum</i>	
87.040.18	<i>Pinus monophylla</i> - <i>Juniperus californica</i> / <i>Quercus cornelius-mulleri</i>	
87.040.16	<i>Pinus monophylla</i> - <i>Juniperus osteosperma</i> / <i>Artemisia tridentata</i>	
87.040.17	<i>Pinus monophylla</i> - <i>Juniperus osteosperma</i> / <i>Cercocarpus intricatus</i>	
87.040.02	<i>Pinus monophylla</i> / <i>Artemisia tridentata</i>	
87.040.15	<i>Pinus monophylla</i> / <i>Artemisia tridentata</i> / <i>Elymus elymoides</i>	
87.040.12	<i>Pinus monophylla</i> / <i>Cercocarpus ledifolius</i> / <i>Artemisia tridentata</i> - <i>Purshia tridentata</i>	
87.040.03	<i>Pinus monophylla</i> / <i>Ephedra viridis</i>	
87.040.05	<i>Pinus monophylla</i> / <i>Garrya flavescens</i>	
87.040.06	<i>Pinus monophylla</i> / <i>Juniperus californica</i> / <i>Artemisia tridentata</i> - <i>Coleogyne ramosissima</i>	
87.040.07	<i>Pinus monophylla</i> / <i>Juniperus osteosperma</i> / <i>Artemisia nova</i>	
87.040.13	<i>Pinus monophylla</i> / <i>Juniperus osteosperma</i> / <i>Purshia mexicana</i>	
87.040.10	<i>Pinus monophylla</i> / <i>Prunus fasciculata</i> - <i>Rhus trilobata</i>	
87.040.09	<i>Pinus monophylla</i> / <i>Quercus cornelius-mulleri</i> / <i>Nama californica</i>	
87.040.11	<i>Pinus monophylla</i> / <i>Ribes velutinum</i>	

87.040.04	<i>Pinus monophylla</i> / <i>Symphoricarpos rotundifolia</i> - <i>Ribes velutinum</i>	
87.170.00	<i>Pinus monticola</i> (Western white pine forest) Alliance	G5 S4 (some associations are of high priority for inventory)
*87.170.01	<i>Pinus monticola</i> - <i>Pinus contorta</i> ssp. <i>contorta</i> / <i>Lithocarpus densiflorus</i> var. <i>echinoides</i>	
87.170.07	<i>Pinus monticola</i> - <i>Pinus contorta</i> var. ssp. <i>Murrayana</i>	
87.170.08	<i>Pinus monticola</i> - <i>Pseudotsuga menziesii</i> / <i>Quercus vaccinifolia</i> - <i>Lithocarpus densiflorus</i> var. <i>echinoides</i>	
87.170.06	<i>Pinus monticola</i> / <i>Achnatherum occidentale</i>	
*87.170.04	<i>Pinus monticola</i> / <i>Angelica arguta</i>	
*87.170.02	<i>Pinus monticola</i> / <i>Holodiscus discolor</i>	
*87.170.03	<i>Pinus monticola</i> / <i>Xerophyllum tenax</i>	
*87.070.00	<i>Pinus muricata</i> (Bishop pine forest) Alliance	G3 S3
*87.070.01	<i>Pinus muricata</i> - (<i>Arbutus menziesii</i>) / <i>Vaccinium ovatum</i>	
*87.070.10	<i>Pinus muricata</i> - <i>Callitropsis pigmaea</i>	
*87.070.02	<i>Pinus muricata</i> - <i>Pinus contorta</i> ssp. <i>bolanderi</i>	
*87.070.03	<i>Pinus muricata</i> - <i>Pinus contorta</i> ssp. <i>bolanderi</i> / <i>Arnica discoidea</i>	
*87.070.04	<i>Pinus muricata</i> - <i>Pseudotsuga menziesii</i>	
*87.070.07	<i>Pinus muricata</i> / <i>Arctostaphylos glandulosa</i>	
*87.070.09	<i>Pinus muricata</i> / <i>Xerophyllum tenax</i>	
87.010.00	<i>Pinus ponderosa</i> (Ponderosa pine forest) Alliance	G5 S4 (some associations are of high priority for inventory)
87.010.45	<i>Pinus ponderosa</i> - <i>Abies concolor</i> / <i>Lithocarpus densiflorus</i> var. <i>echinoides</i>	
87.010.37	<i>Pinus ponderosa</i> - <i>Alnus rhombifolia</i>	
87.010.44	<i>Pinus ponderosa</i> - <i>Alnus rhombifolia</i>	
87.010.46	<i>Pinus ponderosa</i> - <i>Lithocarpus densiflorus</i>	
*87.010.23	<i>Pinus ponderosa</i> - <i>Pinus contorta</i> ssp. <i>murrayana</i> / <i>Amelanchier alnifolia</i>	
87.010.54	<i>Pinus ponderosa</i> - <i>Pinus jeffreyi</i> / <i>Achnatherum occidentale</i>	
*87.010.25	<i>Pinus ponderosa</i> - <i>Pinus jeffreyi</i> / <i>Artemisia tridentata</i> var. <i>vaseyana</i> - <i>Purshia tridentata</i> var. <i>tridentata</i>	
87.010.55	<i>Pinus ponderosa</i> - <i>Pinus jeffreyi</i> / <i>Balsamorhiza sagittata</i>	
87.010.49	<i>Pinus ponderosa</i> - <i>Pinus jeffreyi</i> / <i>Cercocarpus ledifolius</i> / <i>Pseudoroegneria spicata</i>	
87.010.51	<i>Pinus ponderosa</i> - <i>Pinus jeffreyi</i> / <i>Frangula rubra</i> / <i>Poa secunda</i>	
87.010.50	<i>Pinus ponderosa</i> - <i>Pinus jeffreyi</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> / <i>Senecio integerrimus</i> / <i>granite</i>	
87.010.53	<i>Pinus ponderosa</i> - <i>Pinus jeffreyi</i> / <i>Quercus vaccinifolia</i>	
87.010.52	<i>Pinus ponderosa</i> - <i>Pinus jeffreyi</i> / <i>Quercus vaccinifolia</i> / <i>Wyethia mollis</i>	
87.010.48	<i>Pinus ponderosa</i> - <i>Pinus lambertiana</i> - <i>Quercus chrysolepis</i> / <i>Lithocarpus densiflorus</i> var. <i>echinoides</i>	
87.010.47	<i>Pinus ponderosa</i> - <i>Pinus lambertiana</i> / <i>Arctostaphylos patula</i> - <i>Lithocarpus densiflorus</i> var. <i>echinoides</i>	
*87.010.18	<i>Pinus ponderosa</i> / <i>Achnatherum nelsonii</i>	
*87.010.27	<i>Pinus ponderosa</i> / <i>Amelanchier alnifolia</i> - <i>Mahonia repens</i> / <i>Arnica cordifolia</i>	
87.010.42	<i>Pinus ponderosa</i> / <i>Amelanchier alnifolia</i> - <i>Mahonia repens</i> / <i>Arnica cordifolia</i>	
*87.010.26	<i>Pinus ponderosa</i> / <i>Amelanchier alnifolia</i> - <i>Prunus virginiana</i>	
*87.010.03	<i>Pinus ponderosa</i> / <i>Arctostaphylos patula</i> - <i>Chamaebatia foliolosa</i>	
87.010.39	<i>Pinus ponderosa</i> / <i>Arctostaphylos viscida</i>	
*87.010.04	<i>Pinus ponderosa</i> / <i>Artemisia tridentata</i>	
*87.010.24	<i>Pinus ponderosa</i> / <i>Artemisia tridentata</i> var. <i>vaseyana</i> / <i>Festuca idahoensis</i>	
*87.010.06	<i>Pinus ponderosa</i> / <i>Bromus carinatus</i>	
*87.010.09	<i>Pinus ponderosa</i> / <i>Ceanothus cuneatus</i>	
*87.010.08	<i>Pinus ponderosa</i> / <i>Ceanothus prostratus</i>	
*87.010.28	<i>Pinus ponderosa</i> / <i>Ceanothus velutinus</i> / <i>Achnatherum nelsonii</i>	
*87.010.19	<i>Pinus ponderosa</i> / <i>Cercocarpus ledifolius</i> - <i>Purshia tridentata</i> var. <i>tridentata</i> / <i>Festuca idahoensis</i>	
*87.010.20	<i>Pinus ponderosa</i> / <i>Cercocarpus ledifolius</i> / <i>Pseudoroegneria spicata</i>	
*87.010.02	<i>Pinus ponderosa</i> / <i>Chamaebatia foliolosa</i>	
*87.010.07	<i>Pinus ponderosa</i> / <i>Galium angustifolium</i>	
87.010.43	<i>Pinus ponderosa</i> / <i>Lithocarpus densiflorus</i> var. <i>echinoides</i>	
*87.010.05	<i>Pinus ponderosa</i> / <i>Purshia tridentata</i> var. <i>tridentata</i>	

*87.010.13	<i>Pinus ponderosa</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> - <i>Arctostaphylos patula</i> / <i>Achnatherum nelsonii</i>	
*87.010.14	<i>Pinus ponderosa</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> - <i>Ceanothus velutinus</i>	
87.010.41	<i>Pinus ponderosa</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> - <i>Prunus virginiana</i> / <i>Bromus orcuttianus</i>	
*87.010.16	<i>Pinus ponderosa</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> - <i>Ribes cereum</i> / <i>Bromus orcuttianus</i>	
*87.010.12	<i>Pinus ponderosa</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> / <i>Achnatherum nelsonii</i> / <i>pumice</i>	
*87.010.10	<i>Pinus ponderosa</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> / <i>Balsamorhiza sagittata</i>	
87.010.40	<i>Pinus ponderosa</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> / <i>Galium bolanderi</i>	
*87.010.15	<i>Pinus ponderosa</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> / <i>Senecio integerrimus</i> / <i>granite</i>	
*87.010.29	<i>Pinus ponderosa</i> / <i>Symphoricarpos longiflorus</i>	
87.010.38	<i>Pinus ponderosa</i> <i>stream terrace</i>	
87.015.00	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> (Mixed conifer forest) Alliance	G4 S4
87.015.02	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> - <i>Quercus kelloggii</i>	
87.015.04	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> (mixed conifer) - <i>Quercus chrysolepis</i> / <i>Chamaebatia foliosa</i>	
87.015.08	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> (mixed conifer) / <i>Arctostaphylos</i> sp. - <i>Chamaebatia foliolosa</i>	
87.015.01	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> (mixed conifer) / <i>Galium bolanderi</i> - <i>Polygala cornuta</i>	
87.015.10	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> / <i>Ceanothus prostratus</i>	
87.015.11	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> / <i>Chamaebatia foliolosa</i> / <i>Galium bolanderi</i>	
87.015.03	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> / <i>Chamaebatia foliosa</i>	
87.015.09	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> / <i>Mahonia nervosa</i>	
87.015.14	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> / <i>Purshia tridentata</i> / <i>Achnatherum occidentale</i>	
87.015.13	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> / (<i>Balsamorhiza sagittata</i> - <i>Achnatherum occidentale</i>)	
87.015.12	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> / <i>Quercus chrysolepis</i> var. <i>nana</i> - <i>Quercus vaccinifolia</i>	
87.015.05	<i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i> / <i>Quercus vaccinifolia</i> (serpentine)	
82.400.00	<i>Pinus ponderosa</i> - <i>Pseudotsuga menziesii</i> (Ponderosa pine - Douglas fir forest) Alliance	G4 S4 (some associations are of high priority for inventory)
82.400.08	<i>Pinus ponderosa</i> - <i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Chamaebatia foliolosa</i>	
82.400.09	<i>Pinus ponderosa</i> - <i>Pseudotsuga menziesii</i> - <i>Quercus chrysolepis</i> / <i>Galium bolanderi</i>	
82.400.07	<i>Pinus ponderosa</i> - <i>Pseudotsuga menziesii</i> / <i>Antennaria rosea</i> - <i>Eriogonum nudum</i>	
82.400.06	<i>Pinus ponderosa</i> - <i>Pseudotsuga menziesii</i> / <i>Purshia tridentata</i> var. <i>tridentata</i> / <i>Wyethia</i>	
*82.400.04	<i>Pseudotsuga menziesii</i> - <i>Pinus ponderosa</i>	
*82.400.02	<i>Pseudotsuga menziesii</i> - <i>Pinus ponderosa</i> - <i>Calocedrus decurrens</i>	
*82.400.03	<i>Pseudotsuga menziesii</i> - <i>Pinus ponderosa</i> - <i>Pinus jeffreyi</i> / <i>Poa secunda</i>	
*87.030.00	<i>Pinus quadrifolia</i> (Parry pinyon woodland) Alliance	G3 S2
*87.030.01	<i>Pinus quadrifolia</i> / <i>Quercus cornelius</i> - <i>mulleri</i>	
*87.110.00	<i>Pinus radiata</i> (Monterey pine forest) Alliance	G1 S1
*87.110.03	<i>Pinus radiata</i> - <i>Pinus muricata</i> / <i>Arctostaphylos tomentosa</i> - <i>Arctostaphylos hookeri</i>	
*87.110.04	<i>Pinus radiata</i> - <i>Quercus agrifolia</i> / <i>Toxicodendron diversilobum</i>	
*87.110.01	<i>Pinus radiata</i> / <i>Arctostaphylos tomentosa</i> - <i>Vaccinium ovatum</i>	
*87.110.02	<i>Pinus radiata</i> / <i>Toxicodendron diversilobum</i>	
87.130.00	<i>Pinus sabiniana</i> (Ghost pine woodland) Alliance	G4 S4 (some associations are of high priority for inventory)
87.130.02	<i>Pinus sabiniana</i> - <i>Juniperus californica</i> / <i>grass</i>	
87.130.12	<i>Pinus sabiniana</i> - <i>Quercus chrysolepis</i> / <i>Arctostaphylos viscida</i>	
87.130.11	<i>Pinus sabiniana</i> - <i>Quercus wislizeni</i> / <i>Adenostoma fasciculatum</i>	
87.130.04	<i>Pinus sabiniana</i> - <i>Quercus wislizeni</i> / <i>Ceanothus cuneatus</i>	
87.130.07	<i>Pinus sabiniana</i> / <i>Adenostoma fasciculatum</i>	
87.130.08	<i>Pinus sabiniana</i> / <i>Arctostaphylos viscida</i>	
87.130.06	<i>Pinus sabiniana</i> / <i>Artemisia californica</i> - <i>Ceanothus ferrisiae</i> - <i>Heteromeles arbutifolia</i>	
87.130.09	<i>Pinus sabiniana</i> / <i>Ceanothus cuneatus</i> - <i>Heteromeles arbutifolia</i>	
87.130.10	<i>Pinus sabiniana</i> / <i>Ceanothus cuneatus</i> - <i>Rhamnus illicifolia</i>	
*87.130.03	<i>Pinus sabiniana</i> / <i>Ceanothus cuneatus</i> / <i>Plantago erecta</i>	

87.130.13	<i>Pinus sabiniana</i> / <i>Frangula californica</i> ssp. <i>tomentella</i>	
*87.190.00	<i>Pinus torreyana</i> (Torrey pine stands) Special Stands	G1 S1
*87.190.01	<i>Pinus torreyana</i> / <i>Artemisia californica</i> - <i>Rhus integrifolia</i>	
*87.120.00	<i>Pinus washoensis</i> (Washoe pine woodland) Alliance	G2 S2
*87.120.03	<i>Pinus washoensis</i> / <i>Arctostaphylos nevadensis</i>	
*87.120.01	<i>Pinus washoensis</i> / <i>Lupinus caudatus</i>	
*87.120.02	<i>Pinus washoensis</i> / <i>Symphoricarpos longiflorus</i> / <i>Pseudostellaria jamesiana</i>	
*61.310.00	<i>Platanus racemosa</i> (California sycamore woodlands) Alliance	G3 S3
*61.314.01	<i>Platanus racemosa</i> - <i>Populus fremontii</i>	
*61.314.03	<i>Platanus racemosa</i> - <i>Populus fremontii</i> / <i>Salix lasiolepis</i>	
*61.314.02	<i>Platanus racemosa</i> - <i>Populus fremontii</i> / <i>Salix lasiolepis</i> - <i>Salix exigua</i> / <i>Scirpus americanus</i>	
*61.312.01	<i>Platanus racemosa</i> - <i>Quercus agrifolia</i>	
*61.312.06	<i>Platanus racemosa</i> - <i>Quercus agrifolia</i> - <i>Populus fremontii</i> - <i>Salix laevigata</i>	
*61.312.03	<i>Platanus racemosa</i> - <i>Quercus agrifolia</i> - <i>Salix lasiolepis</i>	
*61.312.04	<i>Platanus racemosa</i> - <i>Quercus agrifolia</i> / <i>Baccharis salicifolia</i> / <i>Artemisia douglasiana</i>	
*61.312.07	<i>Platanus racemosa</i> - <i>Salix laevigata</i>	
*61.312.05	<i>Platanus racemosa</i> - <i>Salix laevigata</i> / <i>Salix lasiolepis</i> - <i>Baccharis salicifolia</i>	
*61.313.03	<i>Platanus racemosa</i> / <i>Adenostoma fasciculatum</i>	
*61.311.03	<i>Platanus racemosa</i> / annual grass	
*61.311.01	<i>Platanus racemosa</i> / <i>Avena barbata</i>	
*61.313.01	<i>Platanus racemosa</i> / <i>Baccharis salicifolia</i>	
*61.311.02	<i>Platanus racemosa</i> / <i>Bromus hordeaceus</i>	
*61.313.02	<i>Platanus racemosa</i> / <i>Toxicodendron diversilobum</i>	
*61.130.00	<i>Populus fremontii</i> (Fremont cottonwood forest) Alliance	G4 S3
*61.130.06	<i>Populus fremontii</i>	
*61.130.18	<i>Populus fremontii</i> - <i>Juglans californica</i>	
*61.130.19	<i>Populus fremontii</i> - <i>Prosopis pubescens</i>	
*61.130.20	<i>Populus fremontii</i> - <i>Quercus agrifolia</i>	
*61.130.24	<i>Populus fremontii</i> - <i>Salix (laevigata, lasiolepis, lucida</i> ssp. <i>lasiandra)</i>	
*61.130.14	<i>Populus fremontii</i> - <i>Salix gooddingii</i> / <i>Baccharis salicifolia</i>	
*61.130.15	<i>Populus fremontii</i> - <i>Salix laevigata</i>	
*61.130.22	<i>Populus fremontii</i> - <i>Salix laevigata</i> / <i>Salix lasiolepis</i> - <i>Baccharis salicifolia</i>	
*61.130.21	<i>Populus fremontii</i> - <i>Salix laevigata</i> / <i>Salix lasiolepis</i> / <i>Vitis girdiana</i>	
*61.130.23	<i>Populus fremontii</i> - <i>Salix lasiolepis</i>	
*61.130.25	<i>Populus fremontii</i> - <i>Salix lucida</i> ssp. <i>lasiandra</i>	
*61.130.26	<i>Populus fremontii</i> - <i>Sambucus nigra</i>	
*61.130.07	<i>Populus fremontii</i> / <i>Acer negundo</i>	
*61.130.08	<i>Populus fremontii</i> / <i>Acer negundo</i> / <i>Rubus armeniacus</i>	
*61.130.09	<i>Populus fremontii</i> / <i>Artemisia douglasiana</i>	
*61.130.16	<i>Populus fremontii</i> / <i>Baccharis salicifolia</i>	
*61.130.10	<i>Populus fremontii</i> / <i>Galium aparine</i>	
*61.130.11	<i>Populus fremontii</i> / <i>Rubus ursinus</i>	
*61.130.17	<i>Populus fremontii</i> / <i>Salix exigua</i>	
*61.130.13	<i>Populus fremontii</i> / <i>Vitis californica</i>	
*61.111.00	<i>Populus tremuloides</i> (Aspen groves) Alliance	G5 S3
*61.111.02	<i>Populus tremuloides</i>	
*61.111.11	<i>Populus tremuloides</i> - <i>Pinus contorta</i> / <i>Artemisia tridentata</i> / <i>Poa pratensis</i>	
*61.111.06	<i>Populus tremuloides</i> / <i>Artemisia tridentata</i>	
*61.111.07	<i>Populus tremuloides</i> / <i>Artemisia tridentata</i> / <i>Monardella odoratissima</i> - <i>Kelloggia galioides</i>	
*61.111.19	<i>Populus tremuloides</i> / <i>Bromus carinatus</i>	
*61.111.18	<i>Populus tremuloides</i> / dry graminoid	
*61.111.17	<i>Populus tremuloides</i> / mesic forb	
*61.111.08	<i>Populus tremuloides</i> / <i>Monardella odoratissima</i>	
*61.111.09	<i>Populus tremuloides</i> / <i>Pinus jeffreyi</i>	
*61.111.20	<i>Populus tremuloides</i> / <i>Poa pratensis</i>	
*61.111.14	<i>Populus tremuloides</i> / <i>Prunus</i>	

*61.111.10	<i>Populus tremuloides</i> / <i>Rosa woodsii</i>	
*61.111.15	<i>Populus tremuloides</i> / <i>Symphoricarpos albus</i>	
*61.111.16	<i>Populus tremuloides</i> / <i>Symphoricarpos rotundifolius</i>	
*61.111.05	<i>Populus tremuloides</i> / <i>Symphytotricum foliaceum</i>	
*61.111.04	<i>Populus tremuloides</i> / upland	
*61.111.03	<i>Populus tremuloides</i> / <i>Veratrum californicum</i>	
*61.120.00	<i>Populus trichocarpa</i> (Black cottonwood forest) Alliance	G5 S3
*61.120.01	<i>Populus trichocarpa</i>	
*61.120.03	<i>Populus trichocarpa</i> - <i>Pinus jeffreyi</i>	
*61.120.08	<i>Populus trichocarpa</i> - <i>Quercus agrifolia</i>	
*61.120.09	<i>Populus trichocarpa</i> - <i>Salix laevigata</i>	
*61.120.10	<i>Populus trichocarpa</i> - <i>Salix lasiolepis</i>	
*61.120.11	<i>Populus trichocarpa</i> - <i>Salix lucida</i>	
*61.120.04	<i>Populus trichocarpa</i> / <i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	
*61.120.07	<i>Populus trichocarpa</i> / <i>Rhododendron occidentale</i>	
*61.120.05	<i>Populus trichocarpa</i> / <i>Symphoricarpos rotundifolius</i>	
*61.120.06	<i>Populus</i> / <i>Salix</i>	
*61.512.00	<i>Prosopis glandulosa</i> (Mesquite bosque, mesquite thicket) Alliance	G5 S3
*61.512.01	<i>Prosopis glandulosa</i>	
*61.512.09	<i>Prosopis glandulosa</i> - <i>Salix exigua</i> - <i>Salix lasiolepis</i>	
*61.512.02	<i>Prosopis glandulosa</i> - <i>Sambucus nigra</i>	
*61.512.04	<i>Prosopis glandulosa</i> / <i>Atriplex canescens</i>	
*61.512.03	<i>Prosopis glandulosa</i> / <i>Atriplex</i> spp. (alkaline)	
*61.512.05	<i>Prosopis glandulosa</i> / <i>Bebbia juncea</i> - <i>Petalonyx thurberi</i> (wash)	
*61.512.06	<i>Prosopis glandulosa</i> / <i>Pluchea sericea</i> - <i>Atriplex canescens</i> (alkaline spring)	
*61.512.07	<i>Prosopis glandulosa</i> / <i>Rhus ovata</i> (upper desert spring)	
*61.512.08	<i>Prosopis glandulosa</i> / <i>Suaeda moquinii</i>	
*61.513.00	<i>Prosopis pubescens</i> (Screwbean mesquite bosques) Alliance	G3 S2
*61.513.01	<i>Prosopis</i> / <i>Atriplex</i> spp. (alkaline)	
*61.513.03	<i>Prosopis</i> / <i>Bebbia juncea</i> - <i>Petalonyx thurberi</i> (wash)	
*61.513.02	<i>Prosopis</i> / <i>Pluchea sericea</i> - <i>Atriplex canescens</i> (alkaline spring)	
*82.100.00	<i>Pseudotsuga macrocarpa</i> (Bigcone Douglas fir forest) Alliance	G3 S3
*82.100.01	<i>Pseudotsuga macrocarpa</i> - <i>Quercus agrifolia</i>	
*82.100.02	<i>Pseudotsuga macrocarpa</i> - <i>Quercus chrysolepis</i>	
82.200.00	<i>Pseudotsuga menziesii</i> (Douglas fir forest) Alliance	G5 S4 (some associations are of high priority for inventory)
82.200.77	<i>Pseudotsuga menziesii</i>	
*82.200.12	<i>Pseudotsuga menziesii</i> - <i>Chrysolepis chrysophylla</i> - <i>Lithocarpus densiflorus</i>	
*82.200.13	<i>Pseudotsuga menziesii</i> - <i>Chrysolepis chrysophylla</i> - <i>Lithocarpus densiflorus</i> / <i>Mahonia nervosa</i>	
82.200.79	<i>Pseudotsuga menziesii</i> - <i>Chrysolepis chrysophylla</i> / <i>Rhododendron macrophyllum</i> - <i>Gaultheria shallon</i>	
*82.200.10	<i>Pseudotsuga menziesii</i> - <i>Chrysolepis chrysophylla</i> / <i>Rhododendron macrophyllum</i> - <i>Mahonia nervosa</i>	
*82.200.11	<i>Pseudotsuga menziesii</i> - <i>Chrysolepis chrysophylla</i> / <i>Rhododendron macrophyllum</i> - <i>Quercus sadleriana</i> - <i>Xerophyllum tenax</i>	
*82.200.09	<i>Pseudotsuga menziesii</i> - <i>Chrysolepis chrysophylla</i> / <i>Xerophyllum tenax</i>	
82.200.71	<i>Pseudotsuga menziesii</i> - <i>Quercus agrifolia</i>	
*82.300.03	<i>Pseudotsuga menziesii</i> - <i>Quercus chrysolepis</i>	
82.300.07	<i>Pseudotsuga menziesii</i> - <i>Quercus chrysolepis</i> - <i>Acer macrophyllum</i> / <i>Toxicodendron diversilobum</i>	
*82.300.02	<i>Pseudotsuga menziesii</i> - <i>Quercus chrysolepis</i> - <i>Arbutus menziesii</i> / <i>Toxicodendron diversilobum</i>	
*82.300.05	<i>Pseudotsuga menziesii</i> - <i>Quercus chrysolepis</i> - <i>Lithocarpus densiflorus</i>	
*82.300.01	<i>Pseudotsuga menziesii</i> - <i>Quercus chrysolepis</i> - mixed conifer / <i>Polystichum munitum</i>	
82.300.06	<i>Pseudotsuga menziesii</i> - <i>Quercus chrysolepis</i> / <i>Arctostaphylos manzanita</i>	
*82.200.19	<i>Pseudotsuga menziesii</i> - <i>Quercus garryana</i> var. <i>garryana</i> / grass	

*82.200.60	<i>Pseudotsuga menziesii</i> - <i>Quercus kelloggii</i>	
82.200.80	<i>Pseudotsuga menziesii</i> - <i>Quercus kelloggii</i>	
*82.200.66	<i>Pseudotsuga menziesii</i> - <i>Umbellularia californica</i>	
82.200.70	<i>Pseudotsuga menziesii</i> - <i>Umbellularia californica</i> / <i>Frangula californica</i>	
82.200.81	<i>Pseudotsuga menziesii</i> - <i>Umbellularia californica</i> / <i>Holodiscus discolor</i>	
82.200.69	<i>Pseudotsuga menziesii</i> - <i>Umbellularia californica</i> / <i>Polystichum munitum</i>	
*82.200.05	<i>Pseudotsuga menziesii</i> - <i>Umbellularia californica</i> / <i>Toxicodendron diversilobum</i>	
*82.200.20	<i>Pseudotsuga menziesii</i> / <i>Acer circinatum</i> - <i>Mahonia nervosa</i>	
*82.200.49	<i>Pseudotsuga menziesii</i> / <i>Achlys triphylla</i>	
*82.200.50	<i>Pseudotsuga menziesii</i> / <i>Arbutus menziesii</i>	
82.200.53	<i>Pseudotsuga menziesii</i> / <i>Arctostaphylos patula</i>	
82.200.72	<i>Pseudotsuga menziesii</i> / <i>Baccharis pilularis</i>	
*82.200.54	<i>Pseudotsuga menziesii</i> / <i>Chimaphila umbellata</i>	
*82.200.56	<i>Pseudotsuga menziesii</i> / <i>Corylus cornuta</i>	
*82.200.04	<i>Pseudotsuga menziesii</i> / <i>Corylus cornuta</i> / <i>Adenocaulon bicolor</i>	
*82.200.59	<i>Pseudotsuga menziesii</i> / <i>Gaultheria shallon</i>	
*82.200.55	<i>Pseudotsuga menziesii</i> / <i>Linnaea borealis</i>	
82.200.78	<i>Pseudotsuga menziesii</i> / <i>Lithocarpus densiflorus</i> var. <i>echinoides</i> / <i>Iris douglasii</i>	
*82.200.64	<i>Pseudotsuga menziesii</i> / <i>Mahonia nervosa</i>	
*82.200.15	<i>Pseudotsuga menziesii</i> / <i>Quercus vaccinifolia</i>	
*82.200.16	<i>Pseudotsuga menziesii</i> / <i>Quercus vaccinifolia</i> - <i>Lithocarpus densiflorus</i> var. <i>echinoides</i>	
*82.200.74	<i>Pseudotsuga menziesii</i> / <i>Quercus vaccinifolia</i> - <i>Rhododendron macrophyllum</i>	
*82.200.58	<i>Pseudotsuga menziesii</i> / <i>Rhododendron</i> spp.	
*82.200.57	<i>Pseudotsuga menziesii</i> / <i>Vancouveria planipetala</i>	
*82.600.00	<i>Pseudotsuga menziesii</i> - <i>Calocedrus decurrens</i> (Douglas fir - Incense cedar forest) Alliance	G3 S3
*82.600.15	<i>Pseudotsuga menziesii</i> - <i>Calocedrus decurrens</i> - (<i>Pinus jeffreyi</i>) / <i>Nassella pulchra</i>	
*82.600.14	<i>Pseudotsuga menziesii</i> - <i>Calocedrus decurrens</i> - (<i>Quercus kelloggii</i>) / <i>Nassella pulchra</i>	
*82.600.12	<i>Pseudotsuga menziesii</i> - <i>Calocedrus decurrens</i> - <i>Pinus jeffreyi</i>	
*82.600.13	<i>Pseudotsuga menziesii</i> - <i>Calocedrus decurrens</i> - <i>Pinus jeffreyi</i> / <i>Festuca californica</i>	
*82.600.01	<i>Pseudotsuga menziesii</i> - <i>Calocedrus decurrens</i> - <i>Umbellularia californica</i> / <i>Toxicodendron diversilobum</i>	
*82.600.02	<i>Pseudotsuga menziesii</i> - <i>Calocedrus decurrens</i> / <i>Festuca californica</i>	
*82.600.04	<i>Pseudotsuga menziesii</i> - <i>Calocedrus decurrens</i> / <i>Quercus vaccinifolia</i>	
82.500.00	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> (Douglas fir - tanoak forest) Alliance	G4 S4
82.500.48	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i>	
82.500.02	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Acer macrophyllum</i>) / <i>Polystichum munitum</i>	
82.500.50	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Acer macrophyllum</i>) / <i>Polystichum munitum</i>	
82.500.22	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Calocedrus decurrens</i>) / <i>Festuca californica</i>	
82.500.31	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Chamaecyparis lawsoniana</i> - <i>Alnus rubra</i>) / riparian	
82.500.24	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Chamaecyparis lawsoniana</i> - <i>Umbellularia californica</i>) / <i>Vaccinium ovatum</i>	
82.500.25	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Chamaecyparis lawsoniana</i>) / <i>Mahonia nervosa</i> / <i>Linnaea borealis</i>	
82.500.30	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Chamaecyparis lawsoniana</i>) / <i>Acer circinatum</i>	
82.500.29	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Chamaecyparis lawsoniana</i>) / <i>Gaultheria shallon</i>	
82.500.26	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Chamaecyparis lawsoniana</i>) / <i>Vaccinium ovatum</i>	
82.500.27	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Chamaecyparis lawsoniana</i>) / <i>Vaccinium ovatum</i> - <i>Rhododendron occidentale</i>	
82.500.28	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Chamaecyparis lawsoniana</i>) / <i>Vaccinium parvifolium</i>	
82.500.16	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Chrysolepis chrysophylla</i>) / <i>Gaultheria shallon</i>	

82.500.12	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Chrysolepis chrysophylla</i>) / <i>Pteridium aquilinum</i>	
82.500.15	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Chrysolepis chrysophylla</i>) / <i>Rhododendron macrophyllum</i> - <i>Gaultheria shallon</i>	
82.500.39	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Pinus lambertiana</i>)	
82.500.13	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Quercus chrysolepis</i>) / <i>Mahonia nervosa</i>	
82.500.06	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Quercus chrysolepis</i>) / <i>Mahonia nervosa</i> - <i>Gaultheria shallon</i>	
82.500.11	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Quercus chrysolepis</i>) / <i>rockpile</i>	
82.500.10	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Quercus chrysolepis</i>) / <i>Toxicodendron diversilobum</i>	
82.500.08	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Quercus chrysolepis</i>) / <i>Vaccinium ovatum</i>	
82.500.05	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Quercus chrysolepis</i> , <i>Quercus kelloggii</i>) / <i>Toxicodendron diversilobum</i>	
82.500.03	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Quercus kelloggii</i>) / <i>Rosa gymnocarpa</i>	
82.500.04	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - (<i>Umbellularia californica</i>) / <i>Toxicodendron diversilobum</i>	
82.500.44	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Iris</i>	
82.500.51	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - <i>Thuja plicata</i> / <i>Vaccinium ovatum</i> - <i>Gaultheria shallon</i>	
82.500.36	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Acer circinatum</i>	
82.500.40	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Achlys triphylla</i>	
82.500.01	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Chimaphila umbellata</i>	
82.500.43	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Cornus nuttallii</i>	
82.500.21	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Corylus cornuta</i>	
82.500.35	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Gaultheria shallon</i>	
82.500.07	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Mahonia nervosa</i>	
82.500.46	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Quercus vaccinifolia</i> - <i>Holodiscus</i>	
82.500.49	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Rhododendron macrophyllum</i>	
82.500.38	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Taxus brevifolia</i>	
82.500.23	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Toxicodendron diversilobum</i> - (<i>Lonicera hispidula</i>)	
82.500.19	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Vaccinium ovatum</i>	
82.500.20	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Vaccinium ovatum</i> - (<i>Gaultheria shallon</i>)	
82.500.47	<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> / <i>Whipplea modesta</i>	
*61.570.00	<i>Psoralea argophylla</i> (Smoke tree woodland) Alliance	G4 S3
*61.570.01	<i>Psoralea argophylla</i>	
*61.570.06	<i>Psoralea argophylla</i> - <i>Acacia greggii</i> - <i>Chrysothamnus sp</i>	
*61.570.02	<i>Psoralea argophylla</i> - <i>Ambrosia salsola</i> - <i>Bebbia juncea</i>	
*61.570.03	<i>Psoralea argophylla</i> - <i>Ephedra californica</i> - <i>Ambrosia salsola</i>	
*61.570.04	<i>Psoralea argophylla</i> - <i>Hyptis emoryi</i> - <i>Acacia greggii</i>	
71.100.00	<i>Quercus agrifolia</i>, <i>douglasii</i>, <i>garryana</i>, <i>kelloggii</i>, <i>lobata</i>, <i>wislizeni</i> (Mixed oak forest) Alliance	G4 S4
71.100.05	<i>Mixed oak</i> - <i>Aesculus californica</i> / grass	
71.100.07	<i>Mixed oak</i> - <i>Pinus sabiniana</i> / grass	
71.100.06	<i>Mixed oak</i> - <i>Quercus agrifolia</i> / <i>Toxicodendron diversilobum</i>	
71.100.04	<i>Mixed oak</i> - <i>Quercus kelloggii</i> / grass	
71.100.10	<i>Mixed oak</i> / <i>Baccharis pilularis</i> - <i>Toxicodendron diversilobum</i>	
71.100.08	<i>Mixed oak</i> / grass	
71.100.14	<i>Quercus douglasii</i> - <i>Quercus lobata</i> - <i>Quercus agrifolia</i> / <i>Toxicodendron diversilobum</i>	
71.060.00	<i>Quercus agrifolia</i> (Coast live oak woodland) Alliance	G5 S4 (some associations are of high priority for inventory)
71.060.02	<i>Quercus agrifolia</i>	
71.060.03	<i>Quercus agrifolia</i> - <i>Acer macrophyllum</i> / <i>Frangula californica</i> - <i>Holodiscus discolor</i>	
71.060.52	<i>Quercus agrifolia</i> - <i>Aesculus californica</i>	
71.060.40	<i>Quercus agrifolia</i> - <i>Arbutus menziesii</i>	
71.060.41	<i>Quercus agrifolia</i> - <i>Arbutus menziesii</i> - <i>Toxicodendron diversilobum</i>	
71.060.26	<i>Quercus agrifolia</i> - <i>Arbutus menziesii</i> - <i>Umbellularia californica</i>	

71.060.10	<i>Quercus agrifolia</i> - <i>Arbutus menziesii</i> / <i>Corylus cornuta</i> - <i>Rubus</i> spp.	
71.060.27	<i>Quercus agrifolia</i> - <i>Juglans californica</i>	
71.060.23	<i>Quercus agrifolia</i> - <i>Pinus coulteri</i>	
71.060.43	<i>Quercus agrifolia</i> - <i>Platanus racemosa</i> - <i>Salix laevigata</i>	
71.060.42	<i>Quercus agrifolia</i> - <i>Platanus racemosa</i> / <i>Toxicodendron diversilobum</i>	
71.060.01	<i>Quercus agrifolia</i> - <i>Quercus douglasii</i>	
71.060.45	<i>Quercus agrifolia</i> - <i>Quercus engelmannii</i> / <i>Eriogonum fasciculatum</i>	
*71.060.18	<i>Quercus agrifolia</i> - <i>Quercus kelloggii</i>	
71.060.47	<i>Quercus agrifolia</i> - <i>Salix lasiolepis</i>	
71.060.48	<i>Quercus agrifolia</i> - <i>Umbellularia californica</i>	
71.060.51	<i>Quercus agrifolia</i> - <i>Umbellularia californica</i> / <i>Arctostaphylos glauca</i> - <i>Toxicodendron diversilobum</i>	
71.060.49	<i>Quercus agrifolia</i> - <i>Umbellularia californica</i> / <i>Ceanothus oliganthus</i>	
71.060.05	<i>Quercus agrifolia</i> - <i>Umbellularia californica</i> / <i>Heteromeles arbutifolia</i> - <i>Quercus berberidifolia</i>	
71.060.50	<i>Quercus agrifolia</i> - <i>Umbellularia californica</i> / <i>Toxicodendron diversilobum</i>	
71.060.07	<i>Quercus agrifolia</i> / <i>Adenostoma fasciculatum</i> (- <i>Salvia mellifera</i>)	
71.060.08	<i>Quercus agrifolia</i> / <i>Artemisia californica</i>	
71.060.16	<i>Quercus agrifolia</i> / <i>Ceanothus oliganthus</i>	
71.060.34	<i>Quercus agrifolia</i> / <i>Ceanothus spinosus</i>	
71.060.29	<i>Quercus agrifolia</i> / chaparral	
71.060.28	<i>Quercus agrifolia</i> / coastal sage scrub	
71.060.35	<i>Quercus agrifolia</i> / <i>Equisetum hymale</i>	
71.060.22	<i>Quercus agrifolia</i> / <i>Eriogonum wrightii</i>	
71.060.06	<i>Quercus agrifolia</i> / <i>Frangula californica</i> - <i>Heteromeles arbutifolia</i>	
71.060.36	<i>Quercus agrifolia</i> / <i>Frangula californica</i> ssp. <i>tomentella</i> / <i>Stachys pycnantha</i>	
71.060.09	<i>Quercus agrifolia</i> / grass	
71.060.14	<i>Quercus agrifolia</i> / <i>Heteromeles arbutifolia</i>	
71.060.15	<i>Quercus agrifolia</i> / <i>Heteromeles arbutifolia</i> - <i>Toxicodendron diversilobum</i>	
71.060.11	<i>Quercus agrifolia</i> / <i>Holodiscus discolor</i> - <i>Symphoricarpos albus</i>	
71.060.37	<i>Quercus agrifolia</i> / <i>Quercus berberidifolia</i>	
71.060.04	<i>Quercus agrifolia</i> / <i>Rubus</i> spp. / <i>Pteridium aquilinum</i>	
71.060.38	<i>Quercus agrifolia</i> / <i>Salvia leucophylla</i> - <i>Artemisia californica</i>	
71.060.17	<i>Quercus agrifolia</i> / <i>Symphoricarpos albus</i>	
71.060.13	<i>Quercus agrifolia</i> / <i>Toxicodendron diversilobum</i>	
71.060.25	<i>Quercus agrifolia</i> / <i>Toxicodendron diversilobum</i> - (<i>Corylus cornuta</i>)	
71.060.12	<i>Quercus agrifolia</i> / <i>Toxicodendron diversilobum</i> / grass	
71.060.39	<i>Quercus agrifolia</i> / <i>Toxicodendron diversilobum</i> riparian	
71.050.00	<i>Quercus chrysolepis</i> (Canyon live oak forest) Alliance	G5 S5 (some associations are of high priority for inventory)
71.050.31	<i>Pinus ponderosa</i> - <i>Quercus chrysolepis</i> / <i>Arctostaphylos viscida</i>	
71.050.04	<i>Quercus chrysolepis</i>	
71.050.01	<i>Quercus chrysolepis</i> - <i>Arbutus menziesii</i> - <i>Lithocarpus densiflorus</i> var. <i>densiflorus</i>	
71.050.19	<i>Quercus chrysolepis</i> - <i>Calocedrus decurrens</i>	
*71.050.03	<i>Quercus chrysolepis</i> - <i>Ceanothus integerrimus</i>	
71.050.32	<i>Quercus chrysolepis</i> - <i>Pinus jeffreyi</i>	
*71.050.02	<i>Quercus chrysolepis</i> - <i>Pinus lambertiana</i>	
*71.050.18	<i>Quercus chrysolepis</i> - <i>Pinus ponderosa</i>	
71.050.16	<i>Quercus chrysolepis</i> - <i>Pinus sabiniana</i>	
*71.050.07	<i>Quercus chrysolepis</i> - <i>Quercus garryana</i> var. <i>garryana</i> / <i>Pentagramma triangularis</i>	
*71.050.27	<i>Quercus chrysolepis</i> - <i>Quercus kelloggii</i> - <i>Acer macrophyllum</i>	
71.050.26	<i>Quercus chrysolepis</i> - <i>Quercus kelloggii</i> / (<i>Toxicodendron diversilobum</i>)	
*71.050.28	<i>Quercus chrysolepis</i> - <i>Quercus lobata</i> / <i>Vitis californica</i>	
71.050.29	<i>Quercus chrysolepis</i> - <i>Quercus wislizeni</i>	
71.050.13	<i>Quercus chrysolepis</i> - <i>Umbellularia californica</i>	
*71.050.30	<i>Quercus chrysolepis</i> - <i>Umbellularia californica</i> / <i>Vitis californica</i>	
71.050.09	<i>Quercus chrysolepis</i> / <i>Arctostaphylos mewukka</i>	
71.050.15	<i>Quercus chrysolepis</i> / <i>Arctostaphylos patula</i>	
71.050.14	<i>Quercus chrysolepis</i> / <i>Arctostaphylos viscida</i>	
71.050.17	<i>Quercus chrysolepis</i> / <i>Dryopteris arguta</i>	
71.050.25	<i>Quercus chrysolepis</i> / <i>Lithocarpus densiflorus</i> var. <i>echinoides</i>	

71.050.08	<i>Quercus chrysolepis</i> / <i>Polystichum imbricans</i>	
71.050.33	<i>Quercus chrysolepis</i> / <i>Rhamnus ilicifolia</i>	
71.050.21	<i>Quercus chrysolepis</i> / <i>Toxicodendron diversilobum</i>	
71.020.00	<i>Quercus douglasii</i> (Blue oak woodland) Alliance	G4 S4 (some associations are of high priority for inventory)
71.020.44	<i>Quercus douglasii</i> - <i>Aesculus californica</i> / <i>Asclepias fascicularis</i>	
71.020.24	<i>Quercus douglasii</i> - <i>Aesculus californicus</i> / grass	
71.020.02	<i>Quercus douglasii</i> - <i>Pinus sabiniana</i>	
71.020.04	<i>Quercus douglasii</i> - <i>Pinus sabiniana</i> / <i>Arctostaphylos viscida</i>	
71.020.03	<i>Quercus douglasii</i> - <i>Pinus sabiniana</i> / <i>Ceanothus cuneatus</i> - <i>Cercocarpus montanus</i>	
71.020.25	<i>Quercus douglasii</i> - <i>Pinus sabiniana</i> / <i>Cercocarpus montanus</i>	
71.020.01	<i>Quercus douglasii</i> - <i>Quercus agrifolia</i>	
*71.020.11	<i>Quercus douglasii</i> - <i>Quercus lobata</i>	
71.020.06	<i>Quercus douglasii</i> - <i>Quercus wislizeni</i>	
71.020.18	<i>Quercus douglasii</i> - <i>Quercus wislizeni</i> - <i>Pinus sabiniana</i>	
71.020.17	<i>Quercus douglasii</i> - <i>Quercus wislizeni</i> / <i>Bromus</i> spp. - <i>Daucus pusillus</i>	
71.020.07	<i>Quercus douglasii</i> - <i>Quercus wislizeni</i> / <i>Ceanothus cuneatus</i>	
71.020.46	<i>Quercus douglasii</i> - <i>Quercus wislizeni</i> / <i>Lithophragma cymbalaria</i>	
71.020.42	<i>Quercus douglasii</i> / <i>Juniperus californica</i> - <i>Cercocarpus montanus</i>	
71.020.43	<i>Quercus douglasii</i> / <i>Achnatherum lemmonii</i>	
71.020.27	<i>Quercus douglasii</i> / <i>Amsinckia intermedia</i> - <i>Plagiobothrys nothofulvus</i>	
71.020.22	<i>Quercus douglasii</i> / <i>Arctostaphylos manzanita</i> / herbaceous	
71.020.28	<i>Quercus douglasii</i> / <i>Brachypodium distachyon</i>	
71.020.30	<i>Quercus douglasii</i> / <i>Bromus hordeaceus</i> - <i>Lolium multiflorum</i>	
71.020.29	<i>Quercus douglasii</i> / <i>Bromus hordeaceus</i> - <i>Madia gracilis</i>	
71.020.31	<i>Quercus douglasii</i> / <i>Bromus hordeaceus</i> - <i>Triteleia laxa</i>	
71.020.16	<i>Quercus douglasii</i> / <i>Bromus</i> spp. - <i>Daucus pusillus</i>	
71.020.12	<i>Quercus douglasii</i> / <i>Ceanothus cuneatus</i>	
*71.020.14	<i>Quercus douglasii</i> / <i>Cercocarpus montanus</i> / <i>Bowlesia incana</i> - <i>Lithophragma affine</i>	
71.020.32	<i>Quercus douglasii</i> / <i>Collinsia sparsiflora</i> - <i>Rigiopappus leptocladus</i>	
71.020.33	<i>Quercus douglasii</i> / <i>Delphinium parryi</i> - <i>Phacelia imbricata</i>	
71.020.08	<i>Quercus douglasii</i> / <i>Ericameria linearifolia</i>	
71.020.19	<i>Quercus douglasii</i> / <i>Ericameria linearifolia</i> - <i>Juniperus californica</i>	
71.020.34	<i>Quercus douglasii</i> / <i>Eriogonum elongatum</i> / <i>Lotus subpinnatus</i> - <i>Plantago erecta</i>	
71.020.20	<i>Quercus douglasii</i> / <i>Eriogonum fasciculatum</i> / herbaceous	
71.020.35	<i>Quercus douglasii</i> / <i>Erodium moschatum</i> - <i>Hordeum leporinum</i>	
71.020.36	<i>Quercus douglasii</i> / <i>Euphorbia spathulata</i> - <i>Pentagramma triangularis</i>	
71.020.37	<i>Quercus douglasii</i> / <i>Galium andrewsii</i> - <i>Lupinus concinnus</i>	
71.020.05	<i>Quercus douglasii</i> / grass	
71.020.38	<i>Quercus douglasii</i> / <i>Hordeum leporinum</i> - <i>Viola pedunculata</i>	
71.020.26	<i>Quercus douglasii</i> / <i>Juniperus californica</i>	
*71.020.23	<i>Quercus douglasii</i> / <i>Juniperus californica</i> - <i>Ceanothus cuneatus</i>	
71.020.41	<i>Quercus douglasii</i> / <i>Juniperus californica</i> - <i>Quercus john-tuckeri</i>	
71.020.40	<i>Quercus douglasii</i> / <i>Lotus subpinnatus</i> - <i>Nassella pulchra</i>	
71.020.39	<i>Quercus douglasii</i> / <i>Lupinus concinnus</i> - <i>Trifolium ciliolatum</i>	
71.020.15	<i>Quercus douglasii</i> / <i>Ribes californica</i> / <i>Bromus diandrus</i>	
*71.020.21	<i>Quercus douglasii</i> / <i>Selaginella hansenii</i> - <i>Navarretia pubescens</i>	
71.020.45	<i>Quercus douglasii</i> / <i>Toxicodendron diversilobum</i> / grass	
71.020.09	<i>Quercus douglasii</i> / understory oak	
*71.070.00	<i>Quercus engelmannii</i> (Engelmann oak woodland) Alliance	G3 S3
*71.070.02	<i>Quercus engelmannii</i> - <i>Quercus agrifolia</i> / <i>Artemisia californica</i>	
*71.070.03	<i>Quercus engelmannii</i> - <i>Quercus agrifolia</i> / chaparral (<i>Adenostoma fasciculatum</i> - <i>Quercus berberidifolia</i> - <i>Rhamnus ilicifolia</i>)	
*71.070.04	<i>Quercus engelmannii</i> - <i>Quercus agrifolia</i> / <i>Toxicodendron diversilobum</i> / annual grass	
*71.070.05	<i>Quercus engelmannii</i> / <i>Adenostoma fasciculatum</i> - <i>Arctostaphylos glauca</i>	
*71.070.06	<i>Quercus engelmannii</i> / annual grass - herb	
*71.070.07	<i>Quercus engelmannii</i> / <i>Quercus berberidifolia</i>	
*71.070.08	<i>Quercus engelmannii</i> / <i>Salvia apiana</i> / grass - herb	
*71.070.09	<i>Quercus engelmannii</i> / <i>Toxicodendron diversilobum</i> / grass	

*71.030.00	Quercus garryana (Oregon white oak woodland) Alliance	G4 S3
*71.030.03	<i>Quercus garryana</i> - <i>Pseudotsuga menziesii</i> / <i>Festuca californica</i>	
*71.030.01	<i>Quercus garryana</i> - <i>Quercus kelloggii</i> / <i>Arrhenatherum elatius</i>	
*71.030.15	<i>Quercus garryana</i> - <i>Quercus kelloggii</i> / <i>Dichelostemma ida-maia</i>	
*71.030.14	<i>Quercus garryana</i> - <i>Quercus kelloggii</i> / <i>Toxicodendron diversilobum</i>	
*71.030.02	<i>Quercus garryana</i> var. <i>garryana</i> - <i>Quercus garryana</i> var. <i>breweri</i> / <i>Festuca californica</i>	
*71.030.11	<i>Quercus garryana</i> / <i>Bromus carinatus</i>	
*71.030.06	<i>Quercus garryana</i> / <i>Cynosurus cristatus</i>	
*71.030.10	<i>Quercus garryana</i> / <i>Dactylis glomerata</i>	
*71.030.09	<i>Quercus garryana</i> / <i>Delphinium trollifolium</i>	
*71.030.13	<i>Quercus garryana</i> / <i>Melica subulata</i>	
*71.030.08	<i>Quercus garryana</i> / <i>Philadelphus lewisii</i>	
*71.030.07	<i>Quercus garryana</i> / <i>Ribes roezlii</i>	
*71.030.05	<i>Quercus garryana</i> / <i>Symphoricarpos albus</i>	
*71.030.04	<i>Quercus garryana</i> / <i>Toxicodendron diversilobum</i>	
71.010.00	Quercus kelloggii (California black oak forest) Alliance	G4 S4 (some associations are of high priority for inventory)
71.010.18	<i>Quercus kelloggii</i>	
71.010.22	<i>Quercus kelloggii</i> - <i>Arbutus menziesii</i> - <i>Quercus agrifolia</i>	
71.010.21	<i>Quercus kelloggii</i> - <i>Calocedrus decurrens</i>	
71.010.32	<i>Quercus kelloggii</i> - <i>Pinus coulteri</i>	
71.010.33	<i>Quercus kelloggii</i> - <i>Pinus coulteri</i> / <i>Arctostaphylos glandulosa</i>	
71.010.34	<i>Quercus kelloggii</i> - <i>Pinus coulteri</i> / <i>Arctostaphylos pringlei</i>	
71.010.26	<i>Quercus kelloggii</i> - <i>Pinus ponderosa</i>	
71.010.27	<i>Quercus kelloggii</i> - <i>Pinus ponderosa</i> / <i>Arctostaphylos viscida</i>	
71.010.28	<i>Quercus kelloggii</i> - <i>Pinus ponderosa</i> / <i>Ceanothus integerrimus</i>	
71.010.35	<i>Quercus kelloggii</i> - <i>Pinus sabiniana</i> / <i>Styrax officinalis</i> - <i>Toxicodendron diversilobum</i>	
*71.010.17	<i>Quercus kelloggii</i> - <i>Pseudotsuga menziesii</i>	
71.010.16	<i>Quercus kelloggii</i> - <i>Pseudotsuga menziesii</i> - <i>Acer macrophyllum</i>	
*71.010.29	<i>Quercus kelloggii</i> - <i>Pseudotsuga menziesii</i> - <i>Umbellularia californica</i>	
*71.010.02	<i>Quercus kelloggii</i> - <i>Quercus agrifolia</i> - pine / <i>Holodiscus discolor</i>	
71.010.12	<i>Quercus kelloggii</i> - <i>Quercus chrysolepis</i>	
71.010.01	<i>Quercus kelloggii</i> - <i>Quercus chrysolepis</i> / <i>Toxicodendron diversilobum</i>	
71.010.23	<i>Quercus kelloggii</i> - <i>Quercus chrysolepis</i> / <i>Toxicodendron diversilobum</i>	
*71.010.11	<i>Quercus kelloggii</i> - <i>Quercus lobata</i> / grass	
71.010.30	<i>Quercus kelloggii</i> / annual grass - herb	
71.010.20	<i>Quercus kelloggii</i> / <i>Arctostaphylos mewukka</i> / <i>Chamaebatia foliosa</i>	
71.010.06	<i>Quercus kelloggii</i> / <i>Arctostaphylos patula</i>	
71.010.24	<i>Quercus kelloggii</i> / <i>Arctostaphylos viscida</i>	
71.010.03	<i>Quercus kelloggii</i> / <i>Ceanothus integerrimus</i>	
71.010.04	<i>Quercus kelloggii</i> / <i>Ceanothus integerrimus</i> - <i>Toxicodendron diversilobum</i> / <i>Pteridium</i>	
71.010.31	<i>Quercus kelloggii</i> / <i>Heteromeles arbutifolia</i> - <i>Toxicodendron diversilobum</i>	
71.010.08	<i>Quercus kelloggii</i> / <i>Toxicodendron diversilobum</i>	
*71.010.10	<i>Quercus kelloggii</i> / <i>Toxicodendron diversilobum</i> - <i>Styrax officinalis</i> / <i>Triteleia laxa</i>	
71.010.25	<i>Quercus kelloggii</i> / <i>Toxicodendron diversilobum</i> / grass	
71.010.05	<i>Quercus kelloggii</i> / <i>Triteleia</i> spp.	
*71.040.00	Quercus lobata (Valley oak woodland) Alliance	G3 S3 (some associations are of high priority for inventory)
*71.040.15	<i>Quercus lobata</i> - <i>Acer negundo</i>	
*71.040.11	<i>Quercus lobata</i> - <i>Alnus rhombifolia</i>	
*71.040.16	<i>Quercus lobata</i> - <i>Fraxinus latifolia</i> / <i>Vitis californica</i>	
*71.040.06	<i>Quercus lobata</i> - <i>Quercus agrifolia</i> / grass	
*71.040.17	<i>Quercus lobata</i> - <i>Quercus agrifolia</i> / <i>Toxicodendron diversilobum</i>	
*71.040.18	<i>Quercus lobata</i> - <i>Quercus douglasii</i>	
*71.040.19	<i>Quercus lobata</i> - <i>Quercus kelloggii</i>	
*71.040.12	<i>Quercus lobata</i> - <i>Quercus wislizeni</i>	
*71.040.20	<i>Quercus lobata</i> - <i>Salix lasiolepis</i>	
*71.040.14	<i>Quercus lobata</i> (Sacramento River)	

*71.040.05	<i>Quercus lobata</i> / grass	
*71.040.13	<i>Quercus lobata</i> / herbaceous semi-riparian	
*71.040.09	<i>Quercus lobata</i> / <i>Rhus trilobata</i>	
*71.040.10	<i>Quercus lobata</i> / <i>Rubus armeniacus</i>	
*71.085.00	<i>Quercus parvula</i> var. <i>shrevei</i> (Shreve oak forests) Provisional Alliance	G2 S2
*71.090.00	<i>Quercus tomentella</i> (Island oak groves) Special Stands	G3 S3
71.080.00	<i>Quercus wislizeni</i> (Interior live oak woodland) Alliance	G4 S4
71.080.14	<i>Quercus wislizeni</i> - <i>Aesculus californica</i>	
71.080.37	<i>Quercus wislizeni</i> - <i>Aesculus californica</i> / <i>Toxicodendron diversilobum</i>	
71.080.03	<i>Quercus wislizeni</i> - <i>Arbutus menziesii</i> / <i>Toxicodendron diversilobum</i>	
*71.080.15	<i>Quercus wislizeni</i> - <i>Pinus ponderosa</i>	
71.080.42	<i>Quercus wislizeni</i> - <i>Pinus sabiniana</i> / annual grass - herb	
*71.080.02	<i>Quercus wislizeni</i> - <i>Pinus sabiniana</i> / <i>Arctostaphylos manzanita</i>	
71.080.08	<i>Quercus wislizeni</i> - <i>Pinus sabiniana</i> / <i>Arctostaphylos viscida</i>	
71.080.39	<i>Quercus wislizeni</i> - <i>Quercus chrysolepis</i> - <i>Pinus coulteri</i>	
71.080.38	<i>Quercus wislizeni</i> - <i>Quercus chrysolepis</i> tree	
71.080.43	<i>Quercus wislizeni</i> - <i>Quercus douglasii</i> - <i>Aesculus californica</i>	
71.080.01	<i>Quercus wislizeni</i> - <i>Quercus douglasii</i> - <i>Pinus sabiniana</i> / (grass)	
71.080.41	<i>Quercus wislizeni</i> - <i>Quercus douglasii</i> - <i>Pinus sabiniana</i> / <i>Toxicodendron diversilobum</i>	
71.080.44	<i>Quercus wislizeni</i> - <i>Quercus douglasii</i> / herbaceous	
71.080.46	<i>Quercus wislizeni</i> - <i>Quercus douglasii</i> / <i>Toxicodendron diversilobum</i>	
71.080.45	<i>Quercus wislizeni</i> - <i>Quercus kelloggii</i>	
71.080.47	<i>Quercus wislizeni</i> - <i>Quercus kelloggii</i> / <i>Heteromeles arbutifolia</i> - <i>Toxicodendron</i>	
*71.080.13	<i>Quercus wislizeni</i> - <i>Salix laevigata</i> / <i>Frangula californica</i>	
71.080.04	<i>Quercus wislizeni</i> / <i>Arctostaphylos viscida</i>	
71.080.05	<i>Quercus wislizeni</i> / <i>Eriodictyon californicum</i>	
71.080.40	<i>Quercus wislizeni</i> / <i>Heteromeles arbutifolia</i>	
71.080.48	<i>Quercus wislizeni</i> / <i>Toxicodendron diversilobum</i>	
71.080.16	<i>Quercus wislizeni</i> / <i>Toxicodendron diversilobum</i> / <i>Centaurea solstitialis</i>	
*61.211.00	<i>Salix gooddingii</i> (Black willow thickets) Alliance	G4 S3
*61.211.01	<i>Salix gooddingii</i>	
*61.211.04	<i>Salix gooddingii</i> - <i>Populus fremontii</i>	
*61.211.06	<i>Salix gooddingii</i> - <i>Quercus lobata</i> / wetland herb	
*61.211.05	<i>Salix gooddingii</i> - <i>Salix laevigata</i>	
*61.211.08	<i>Salix gooddingii</i> - <i>Salix lucida</i> - <i>Populus fremontii</i>	
*61.211.02	<i>Salix gooddingii</i> / <i>Baccharis salicifolia</i>	
*61.211.03	<i>Salix gooddingii</i> / <i>Lepidium latifolium</i>	
*61.211.07	<i>Salix gooddingii</i> / <i>Rubus armeniacus</i>	
*61.205.00	<i>Salix laevigata</i> (Red willow thickets) Alliance	G3 S3
*61.205.01	<i>Salix laevigata</i>	
*61.205.05	<i>Salix laevigata</i> - <i>Cornus sericea</i> / <i>Scirpus microcarpus</i>	
*61.205.02	<i>Salix laevigata</i> - <i>Salix lasiolepis</i>	
*61.205.03	<i>Salix laevigata</i> - <i>Salix lasiolepis</i> / <i>Artemisia douglasiana</i> - <i>Rubus ursinus</i>	
*61.205.07	<i>Salix laevigata</i> - <i>Salix lasiolepis</i> / <i>Baccharis salicifolia</i>	
*61.205.04	<i>Salix laevigata</i> / <i>Rosa californica</i>	
*61.205.06	<i>Salix laevigata</i> / <i>Salix lasiolepis</i> / <i>Artemisia douglasiana</i>	
*61.204.00	<i>Salix lucida</i> (Shining willow groves) Alliance	G4 S3
*61.204.02	<i>Salix lucida</i> / <i>Poa pratensis</i>	
*61.204.03	<i>Salix lucida</i> ssp. <i>lasiandra</i>	
*61.204.04	<i>Salix lucida</i> ssp. <i>lasiandra</i> / <i>Cornus sericea</i>	
*61.204.05	<i>Salix lucida</i> ssp. <i>lasiandra</i> / <i>Equisetum arvense</i>	
*61.204.06	<i>Salix lucida</i> ssp. <i>lasiandra</i> / <i>Trifolium longipes</i>	

79.200.00	Schinus (molle, terebinthifolius) - Myoporum laetum (Pepper tree or Myoporum groves) Semi-natural Stands	
79.200.01	<i>Myoporum laetum</i> / <i>Arundo donax</i>	
79.200.02	<i>Schinus molle</i>	
79.200.03	<i>Schinus molle</i> / <i>Lepidospartum squamatum</i>	
*86.100.00	Sequoia sempervirens (Redwood forest) Alliance	G3 S3
*86.100.04	<i>Sequoia sempervirens</i>	
*86.100.14	<i>Sequoia sempervirens</i> - <i>Acer macrophyllum</i> - <i>Umbellularia californica</i>	
*86.100.01	<i>Sequoia sempervirens</i> - <i>Acer macrophyllum</i> / <i>Polypodium californicum</i>	
*86.100.29	<i>Sequoia sempervirens</i> - <i>Alnus rubra</i> / <i>Rubus spectabilis</i>	
*86.100.15	<i>Sequoia sempervirens</i> - <i>Arbutus menziesii</i> / <i>Vaccinium ovatum</i>	
*86.100.18	<i>Sequoia sempervirens</i> - <i>Chrysolepis chrysophylla</i> / <i>Arctostaphylos glandulosa</i>	
*86.100.06	<i>Sequoia sempervirens</i> - <i>Lithocarpus densiflorus</i> / <i>Carex globosa</i> - <i>Iris douglasiana</i>	
*86.100.16	<i>Sequoia sempervirens</i> - <i>Lithocarpus densiflorus</i> / <i>Vaccinium ovatum</i>	
*86.100.23	<i>Sequoia sempervirens</i> - <i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> - <i>Chamaecyparis lawsoniana</i> / <i>Vaccinium ovatum</i>	
*86.100.20	<i>Sequoia sempervirens</i> - <i>Pseudotsuga menziesii</i> - <i>Umbellularia californica</i>	
*86.100.10	<i>Sequoia sempervirens</i> - <i>Pseudotsuga menziesii</i> / <i>Arbutus menziesii</i>	
*86.100.11	<i>Sequoia sempervirens</i> - <i>Pseudotsuga menziesii</i> / <i>Gaultheria shallon</i>	
*86.100.26	<i>Sequoia sempervirens</i> - <i>Pseudotsuga menziesii</i> / <i>Rhododendron macrophyllum</i>	
*86.100.12	<i>Sequoia sempervirens</i> - <i>Pseudotsuga menziesii</i> / <i>Vaccinium ovatum</i>	
*86.100.28	<i>Sequoia sempervirens</i> - <i>Tsuga heterophylla</i> / <i>Polystichum munitum</i>	
*86.100.30	<i>Sequoia sempervirens</i> - <i>Tsuga heterophylla</i> / <i>Rubus spectabilis</i>	
*86.100.27	<i>Sequoia sempervirens</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium ovatum</i>	
*86.100.21	<i>Sequoia sempervirens</i> - <i>Umbellularia californica</i>	
*86.100.02	<i>Sequoia sempervirens</i> / (<i>Pteridium aquilinum</i>) - <i>Woodwardia fimbriata</i>	
*86.100.09	<i>Sequoia sempervirens</i> / <i>Arbutus menziesii</i>	
*86.100.07	<i>Sequoia sempervirens</i> / <i>Blechnum spicatum</i>	
*86.100.08	<i>Sequoia sempervirens</i> / <i>Mahonia nervosa</i>	
*86.100.05	<i>Sequoia sempervirens</i> / <i>Marah fabaceus</i> - <i>Vicia angustifolia</i>	
*86.100.13	<i>Sequoia sempervirens</i> / <i>Oxalis oregana</i>	
*86.100.25	<i>Sequoia sempervirens</i> / <i>Polystichum munitum</i>	
*86.100.24	<i>Sequoia sempervirens</i> / <i>Pteridium aquilinum</i>	
*86.100.03	<i>Sequoia sempervirens</i> / <i>Pteridium aquilinum</i> - <i>Trillium ovatum</i>	
*86.200.00	Sequoiadendron giganteum (Giant sequoia forest) Alliance	G3 S3
*86.200.01	<i>Sequoiadendron giganteum</i> - <i>Pinus lambertiana</i> / <i>Cornus nuttallii</i>	
*84.200.00	Tsuga heterophylla (Western hemlock forest) Alliance	G5 S2
*84.200.01	<i>Tsuga heterophylla</i> - <i>Pseudotsuga menziesii</i> - <i>Chamaecyparis lawsoniana</i>	
84.100.00	Tsuga mertensiana (Mountain hemlock forest) Alliance	G5 S4
84.100.04	<i>Tsuga mertensiana</i>	
84.100.15	<i>Tsuga mertensiana</i> - <i>Pinus contorta</i> ssp. <i>murrayana</i>	
84.100.11	<i>Tsuga mertensiana</i> - <i>Pinus contorta</i> var. <i>murrayana</i> - <i>Pinus monticola</i>	
84.100.10	<i>Tsuga mertensiana</i> - <i>Pinus monticola</i>	
84.100.09	<i>Tsuga mertensiana</i> / <i>Arnica cordifolia</i>	
84.100.02	<i>Tsuga mertensiana</i> / <i>Juncus parryi</i>	
84.100.01	<i>Tsuga mertensiana</i> / <i>Phyllodoce empetriformis</i>	
84.100.08	<i>Tsuga mertensiana</i> / <i>Pyrola picta</i>	
84.100.03	<i>Tsuga mertensiana</i> / <i>Quercus sadleriana</i>	
84.100.07	<i>Tsuga mertensiana</i> / <i>Quercus vaccinifolia</i>	
84.100.14	<i>Tsuga mertensiana</i> / steep	
*74.100.00	Umbellularia californica (California bay forest) Alliance	G4 S3
*74.100.01	<i>Umbellularia californica</i>	
*74.100.10	<i>Umbellularia californica</i> - <i>Acer macrophyllum</i>	
*74.100.06	<i>Umbellularia californica</i> - <i>Aesculus californica</i> / <i>Holodiscus discolor</i>	
*74.100.16	<i>Umbellularia californica</i> - <i>Alnus rhombifolia</i>	
*74.100.03	<i>Umbellularia californica</i> - <i>Arbutus menziesii</i>	

*74.100.11	<i>Umbellularia californica</i> - <i>Juglans californica</i> / <i>Ceanothus spinosus</i>	
*74.100.12	<i>Umbellularia californica</i> - <i>Lithocarpus densiflorus</i>	
*74.100.13	<i>Umbellularia californica</i> - <i>Platanus racemosa</i>	
*74.100.17	<i>Umbellularia californica</i> - <i>Pseudotsuga menziesii</i> / <i>Rhododendron occidentale</i>	
*74.100.15	<i>Umbellularia californica</i> - <i>Quercus agrifolia</i> / (<i>Genista monspessulana</i>)	
*74.100.19	<i>Umbellularia californica</i> - <i>Quercus agrifolia</i> / <i>Heteromeles arbutifolia</i> - <i>Toxicodendron diversilobum</i> / <i>Melica torreyana</i>	
*74.100.05	<i>Umbellularia californica</i> - <i>Quercus agrifolia</i> / <i>Toxicodendron diversilobum</i> (<i>Corylus cornuta</i>)	
*74.100.20	<i>Umbellularia californica</i> - <i>Quercus chrysolepis</i>	
*74.100.18	<i>Umbellularia californica</i> - <i>Quercus wislizeni</i>	
*74.100.07	<i>Umbellularia californica</i> / <i>Ceanothus oliganthus</i>	
*74.100.08	<i>Umbellularia californica</i> / <i>Polystichum munitum</i>	
*74.100.09	<i>Umbellularia californica</i> / <i>Toxicodendron diversilobum</i>	
*61.520.00	<i>Washingtonia filifera</i> (California fan palm oasis) Alliance	G3 S3
*61.520.04	<i>Washingtonia filifera</i> - <i>Platanus racemosa</i> / <i>Salix</i> spp	
*61.520.03	<i>Washingtonia filifera</i> / spring (<i>Atriplex</i> - <i>Baccharis</i> - <i>Pluchea</i>)	
*33.170.00	<i>Yucca brevifolia</i> (Joshua tree woodland) Alliance	G4 S3
*33.170.01	<i>Yucca brevifolia</i>	
*33.170.20	<i>Yucca brevifolia</i> / <i>Ephedra nevadensis</i>	
*33.170.18	<i>Yucca brevifolia</i> / <i>Yucca baccata</i> / <i>Pleuraphis jamesii</i>	
*33.170.04	<i>Yucca brevifolia</i> / <i>Artemisia tridentata</i> - <i>Atriplex confertifolia</i>	
*33.170.02	<i>Yucca brevifolia</i> / <i>Coleogyne ramosissima</i>	
*33.170.06	<i>Yucca brevifolia</i> / <i>Cylindropuntia acanthocarpa</i>	
*33.170.14	<i>Yucca brevifolia</i> / <i>Gutierrezia microcephala</i> / <i>Pleuraphis rigida</i>	
*33.170.03	<i>Yucca brevifolia</i> / <i>Juniperus californica</i> / <i>Coleogyne ramosissima</i>	
*33.170.19	<i>Yucca brevifolia</i> / <i>Juniperus californica</i> / <i>Ephedra nevadensis</i>	
*33.170.10	<i>Yucca brevifolia</i> / <i>Larrea tridentata</i> - <i>Yucca schidigera</i>	
*33.170.11	<i>Yucca brevifolia</i> / <i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Eriogonum fasciculatum</i>	
*33.170.15	<i>Yucca brevifolia</i> / <i>Larrea tridentata</i> - <i>Pleuraphis rigida</i>	
*33.170.08	<i>Yucca brevifolia</i> / <i>Lycium andersonii</i>	
*33.170.07	<i>Yucca brevifolia</i> / <i>Pleuraphis (rigida, jamesii)</i>	
*33.170.16	<i>Yucca brevifolia</i> / <i>Pleuraphis rigida</i>	
*33.170.17	<i>Yucca brevifolia</i> / <i>Pleuraphis rigida</i> - <i>Muhlenbergia porteri</i>	
*33.170.13	<i>Yucca brevifolia</i> / <i>Prunus fasciculata</i>	
*33.170.09	<i>Yucca brevifolia</i> / <i>Salazaria mexicana</i>	

Shrubland Alliances and Stands**Global & State Rank**

33.040.00	<i>Acacia greggii</i> (Catclaw acacia thorn scrub) Alliance	G5 S4 (some associations are of high priority for inventory)
*33.040.08	<i>Acacia greggii</i> - <i>Ambrosia eriocentra</i>	
33.040.05	<i>Acacia greggii</i> - <i>Ambrosia salsola</i>	
33.040.02	<i>Acacia greggii</i> - annual herbs (<i>Bromus rubens</i>)	
33.040.10	<i>Acacia greggii</i> - <i>Bebbia juncea</i>	
33.040.12	<i>Acacia greggii</i> - <i>Encelia virginensis</i>	
33.040.13	<i>Acacia greggii</i> - <i>Eriogonum fasciculatum</i>	
33.040.03	<i>Acacia greggii</i> - <i>Hyptis emoryi</i>	
33.040.07	<i>Acacia greggii</i> - <i>Prunus fasciculata</i>	
33.040.09	<i>Acacia greggii</i> - <i>Salvia dorrii</i>	
33.040.06	<i>Acacia greggii</i> - <i>Viguiera parishii</i>	
*33.040.11	<i>Acacia greggii</i> / <i>Eriogonum nudum</i> var. <i>pauciflorum</i>	
33.040.01	<i>Acacia greggii</i> wash (<i>Justicia californica</i>)	
*61.430.00	<i>Acer glabrum</i> (Rocky Mountain maple thickets) Provisional Alliance	G5 S3?

37.101.00	Adenostoma fasciculatum (Chamise chaparral) Alliance	G5 S5 (some associations are of high priority for inventory)
37.101.16	<i>Adenostoma fasciculatum</i>	
37.101.07	<i>Adenostoma fasciculatum</i> - (<i>Arctostaphylos glandulosa</i>)	
*37.101.19	<i>Adenostoma fasciculatum</i> - (<i>Arctostaphylos manzanita</i>)	
37.101.26	<i>Adenostoma fasciculatum</i> - (<i>Arctostaphylos pungens</i>)	
37.101.27	<i>Adenostoma fasciculatum</i> - (<i>Arctostaphylos viscida</i>)	
37.101.08	<i>Adenostoma fasciculatum</i> - (<i>Ceanothus crassifolius</i>)	
37.101.10	<i>Adenostoma fasciculatum</i> - (<i>Ceanothus cuneatus</i>)	
*37.101.06	<i>Adenostoma fasciculatum</i> - (<i>Ceanothus greggii</i> / <i>mafic</i>)	
37.101.11	<i>Adenostoma fasciculatum</i> - (<i>Ceanothus tomentosus</i>)	
37.101.32	<i>Adenostoma fasciculatum</i> - <i>Arctostaphylos glandulosa</i> - <i>Ceanothus jepsonii</i> / <i>Calamagrostis ophitidis</i>	
37.101.22	<i>Adenostoma fasciculatum</i> - <i>Arctostaphylos pringlei</i>	
*37.101.12	<i>Adenostoma fasciculatum</i> - <i>Diplacus aurantiacus</i>	
37.101.31	<i>Adenostoma fasciculatum</i> - <i>Eriodictyon californicum</i> (<i>Lotus scoparius</i>)	
37.101.14	<i>Adenostoma fasciculatum</i> - <i>Eriogonum fasciculatum</i>	
37.103.03	<i>Adenostoma fasciculatum</i> - <i>Eriogonum fasciculatum</i> - <i>Salvia apiana</i>	
37.101.04	<i>Adenostoma fasciculatum</i> - <i>Hesperoyucca whipplei</i>	
37.101.28	<i>Adenostoma fasciculatum</i> - <i>Heteromeles arbutifolia</i> / <i>Melica torreyana</i>	
37.101.21	<i>Adenostoma fasciculatum</i> - <i>Malosma laurina</i>	
37.101.33	<i>Adenostoma fasciculatum</i> - <i>Malosma laurina</i> - <i>Eriodictyon crassifolium</i>	
37.101.24	<i>Adenostoma fasciculatum</i> / annual grass - forb	
37.101.29	<i>Adenostoma fasciculatum</i> / <i>Castilleja pruinosa</i>	
37.101.25	<i>Adenostoma fasciculatum</i> / mixed herb - moss	
37.101.30	<i>Adenostoma fasciculatum</i> / <i>Selaginella bigelovii</i>	
37.101.17	<i>Adenostoma fasciculatum</i> disturbance	
*37.101.15	<i>Adenostoma fasciculatum</i> serpentine	
*37.103.00	Adenostoma fasciculatum - Salvia apiana (Chamise - white sage chaparral) Alliance	G3 S3
*37.103.01	<i>Adenostoma fasciculatum</i> - <i>Salvia apiana</i>	
*37.103.02	<i>Adenostoma fasciculatum</i> - <i>Salvia apiana</i> - <i>Artemisia californica</i>	
*37.101.23	<i>Adenostoma fasciculatum</i> - <i>Salvia leucophylla</i>	
37.102.00	Adenostoma fasciculatum - Salvia mellifera (Chamise - black sage chaparral) Alliance	G5 S5 (some associations are of high priority for inventory)
37.102.04	<i>Adenostoma fasciculatum</i> - <i>Salvia mellifera</i> - <i>Artemisia californica</i>	
37.102.05	<i>Adenostoma fasciculatum</i> - <i>Salvia mellifera</i> - <i>Ceanothus crassifolius</i>	
37.102.06	<i>Adenostoma fasciculatum</i> - <i>Salvia mellifera</i> - <i>Malosma laurina</i>	
37.102.07	<i>Adenostoma fasciculatum</i> - <i>Salvia mellifera</i> - <i>Rhus ovata</i>	
37.102.02	<i>Adenostoma fasciculatum</i> - <i>Salvia mellifera</i> / (herbaceous)	
*37.102.03	<i>Adenostoma fasciculatum</i> - <i>Salvia mellifera</i> / mixed shrub	
*37.109.00	Adenostoma fasciculatum - Xylococcus bicolor (Chamise-mission manzanita chaparral) Alliance	G4 S3
*37.109.01	<i>Adenostoma fasciculatum</i> - <i>Xylococcus bicolor</i>	
*37.109.05	<i>Adenostoma fasciculatum</i> - <i>Xylococcus bicolor</i> - <i>Ceanothus crassifolius</i>	
*37.109.14	<i>Adenostoma fasciculatum</i> - <i>Xylococcus bicolor</i> - <i>Ceanothus crassifolius</i> - <i>Malosma laurina</i>	
*37.109.02	<i>Adenostoma fasciculatum</i> - <i>Xylococcus bicolor</i> - <i>Ceanothus tomentosus</i>	
*37.109.08	<i>Adenostoma fasciculatum</i> - <i>Xylococcus bicolor</i> - <i>Ceanothus verrucosus</i>	
*37.109.09	<i>Adenostoma fasciculatum</i> - <i>Xylococcus bicolor</i> - <i>Cneoridium dumosum</i>	
*37.109.10	<i>Adenostoma fasciculatum</i> - <i>Xylococcus bicolor</i> - <i>Eriogonum fasciculatum</i>	
*37.109.12	<i>Adenostoma fasciculatum</i> - <i>Xylococcus bicolor</i> - <i>Quercus berberidifolia</i>	
*37.109.11	<i>Adenostoma fasciculatum</i> - <i>Xylococcus bicolor</i> - <i>Rhus integrifolia</i>	
*37.109.13	<i>Adenostoma fasciculatum</i> - <i>Xylococcus bicolor</i> - <i>Salvia mellifera</i> - <i>Malosma laurina</i>	
37.501.00	Adenostoma sparsifolium (Redshank chaparral) Alliance	G4 S4 (some associations are of high priority for inventory)
*37.501.01	<i>Adenostoma sparsifolium</i>	
37.503.05	<i>Adenostoma sparsifolium</i> - <i>Adenostoma fasciculatum</i> - <i>Arctostaphylos glauca</i>	
*37.503.03	<i>Adenostoma sparsifolium</i> - <i>Adenostoma fasciculatum</i> - <i>Arctostaphylos pungens</i>	
37.503.04	<i>Adenostoma sparsifolium</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus crassifolius</i>	

*37.503.02	<i>Adenostoma sparsifolium</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus greggii</i>	
*37.503.01	<i>Adenostoma sparsifolium</i> - <i>Adenostoma fasciculatum</i> - <i>Cercocarpus montanus</i>	
37.503.06	<i>Adenostoma sparsifolium</i> - <i>Adenostoma fasciculatum</i> - <i>Opuntia parryi</i>	
37.501.02	<i>Adenostoma sparsifolium</i> - <i>Artemisia tridentata</i>	
37.501.03	<i>Adenostoma sparsifolium</i> - <i>Ceanothus crassifolius</i>	
37.501.04	<i>Adenostoma sparsifolium</i> - <i>Ceanothus cuneatus</i>	
37.502.01	<i>Adenostoma sparsifolium</i> - <i>Cercocarpus montanus</i>	
37.501.06	<i>Adenostoma sparsifolium</i> - <i>Ericameria linearifolia</i> - <i>Eriogonum fasciculatum</i> - <i>Opuntia basilaris</i>	
37.501.07	<i>Adenostoma sparsifolium</i> - <i>Eriogonum fasciculatum</i> - <i>Lotus scoparius</i>	
*33.075.00	Agave deserti (Desert agave scrub) Alliance	G3 S3
*33.075.01	<i>Agave deserti</i> - <i>Ambroia salsola</i> (wash and terrace)	
*33.075.02	<i>Agave deserti</i> - <i>Yucca schidigera</i>	
*36.120.00	Allenrolfea occidentalis (Iodine bush scrub) Alliance	G4 S3
*36.120.04	<i>Allenrolfea occidentalis</i>	
*36.120.03	<i>Allenrolfea occidentalis</i> - <i>Sporobolus airoides</i>	
*36.120.02	<i>Allenrolfea occidentalis</i> - <i>Suaeda moquinii</i>	
*63.210.00	Alnus incana (Mountain alder thicket) Alliance	G4 S3
*63.210.01	<i>Alnus incana</i>	
*63.210.02	<i>Alnus incana</i> / <i>Glyceria elata</i>	
*63.210.03	<i>Alnus incana</i> / bench	
*63.220.00	Alnus viridis (Sitka alder thickets) Provisional Alliance	G5 S3?
33.060.00	Ambrosia dumosa (White bursage scrub) Alliance	G5 S4 (some associations are of high priority for inventory)
*33.060.02	<i>Ambrosia dumosa</i>	
*33.060.01	<i>Ambrosia dumosa</i> - <i>Acamptopappus sphaerocephalus</i>	
33.060.03	<i>Ambrosia dumosa</i> - <i>Atriplex hymenolytra</i>	
33.060.06	<i>Ambrosia dumosa</i> - <i>Encelia farinosa</i>	
33.060.07	<i>Ambrosia dumosa</i> - <i>Ephedra californica</i> / sandy	
33.060.09	<i>Ambrosia dumosa</i> - <i>Olneya tesota</i> - <i>Calliandra eriophylla</i>	
*33.060.04	<i>Ambrosia dumosa</i> / <i>Pleuraphis rigida</i>	
33.200.00	Ambrosia salsola (Cheesebush scrub) Alliance	G5 S4 (some associations are of high priority for inventory)
33.200.01	<i>Ambrosia salsola</i>	
*33.200.06	<i>Ambrosia salsola</i> - <i>Ambrosia eriocentra</i>	
33.200.04	<i>Ambrosia salsola</i> - <i>Atriplex confertifolia</i>	
33.200.05	<i>Ambrosia salsola</i> - <i>Bebbia juncea</i>	
33.200.07	<i>Ambrosia salsola</i> - <i>Brickellia incana</i>	
33.200.02	<i>Ambrosia salsola</i> - <i>Eriogonum fasciculatum</i>	
33.200.10	<i>Ambrosia salsola</i> - <i>Larrea tridentata</i>	
33.200.09	<i>Ambrosia salsola</i> - <i>Psoralea schottii</i>	
33.200.08	<i>Ambrosia salsola</i> - <i>Senna armata</i>	
33.200.11	<i>Ambrosia salsola</i> - <i>Petalonyx thurberi</i>	
*37.308.00	Arctostaphylos (crustacea, tomentosa) (Brittle leaf-Woolly leaf manzanita chaparral)	G2 S2
*37.306.00	Arctostaphylos (nummularia, sensitiva) (Glossy leaf manzanita chaparral) Alliance	G2 S2
*37.322.00	Arctostaphylos (purissima, rudis) (Burton Mesa chaparral) Provisional Alliance	G1 S1
*37.317.00	Arctostaphylos bakeri (Stands of Baker manzanita) Special Stands	G1 S1

*37.311.00	Arctostaphylos canescens (Hoary manzanita chaparral) Provisional Alliance	G3? S3?
*37.311.01	<i>Arctostaphylos canescens</i> - <i>Arctostaphylos glandulosa</i> - <i>Adenostoma fasciculatum</i>	
*37.308.03	<i>Arctostaphylos crustacea</i>	
*37.308.04	<i>Arctostaphylos crustacea</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus (cuneatus, papillosus)</i>	
*37.308.05	<i>Arctostaphylos crustacea</i> - <i>Arctostaphylos gabilanensis</i>	
37.302.00	Arctostaphylos glandulosa (Eastwood manzanita chaparral) Alliance	G4 S4 (some associations are of high priority for inventory)
37.302.01	<i>Arctostaphylos glandulosa</i>	
37.106.13	<i>Arctostaphylos glandulosa</i> - <i>Adenostoma fasciculatum</i>	
37.106.12	<i>Arctostaphylos glandulosa</i> - <i>Adenostoma fasciculatum</i> - <i>Arctostaphylos glauca</i>	
37.106.04	<i>Arctostaphylos glandulosa</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus crassifolius</i>	
37.106.07	<i>Arctostaphylos glandulosa</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus cuneatus</i>	
37.106.02	<i>Arctostaphylos glandulosa</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus leucodermis</i>	
37.106.01	<i>Arctostaphylos glandulosa</i> - <i>Adenostoma fasciculatum</i> - <i>Cercocarpus montanus</i>	
37.106.11	<i>Arctostaphylos glandulosa</i> - <i>Adenostoma fasciculatum</i> - <i>Quercus berberidifolia</i>	
37.106.10	<i>Arctostaphylos glandulosa</i> - <i>Adenostoma fasciculatum</i> - <i>Quercus wislizeni</i>	
*37.106.05	<i>Arctostaphylos glandulosa</i> - <i>Adenostoma fasciculatum</i> / mafic soils	
37.106.03	<i>Arctostaphylos glandulosa</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus greggii</i>	
*37.302.07	<i>Arctostaphylos glandulosa</i> - <i>Arctostaphylos pringlei</i>	
37.302.03	<i>Arctostaphylos glandulosa</i> - <i>Cercocarpus montanus</i>	
37.302.04	<i>Arctostaphylos glandulosa</i> - <i>Quercus wislizeni</i>	
*37.302.02	<i>Arctostaphylos glandulosa</i> ssp. <i>adamsii</i>	
37.301.00	Arctostaphylos glauca (Bigberry manzanita chaparral) Alliance	G4 S4 (some associations are of high priority for inventory)
37.301.01	<i>Arctostaphylos glauca</i>	
37.104.01	<i>Arctostaphylos glauca</i> - <i>Adenostoma fasciculatum</i>	
37.104.05	<i>Arctostaphylos glauca</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus crassifolius</i>	
37.104.07	<i>Arctostaphylos glauca</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus cuneatus</i>	
37.104.04	<i>Arctostaphylos glauca</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus greggii</i>	
37.104.02	<i>Arctostaphylos glauca</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus leucodermis</i>	
37.104.08	<i>Arctostaphylos glauca</i> - <i>Adenostoma fasciculatum</i> - <i>Diplacus aurantiacus</i>	
37.104.03	<i>Arctostaphylos glauca</i> - <i>Adenostoma fasciculatum</i> - <i>Hesperoyucca whipplei</i>	
37.104.06	<i>Arctostaphylos glauca</i> - <i>Adenostoma fasciculatum</i> - <i>Quercus berberidifolia</i>	
37.104.09	<i>Arctostaphylos glauca</i> - <i>Adenostoma fasciculatum</i> - <i>Rhus ovata</i>	
37.104.10	<i>Arctostaphylos glauca</i> - <i>Adenostoma fasciculatum</i> - <i>Salvia mellifera</i>	
37.104.11	<i>Arctostaphylos glauca</i> - <i>Adenostoma fasciculatum</i> on serpentine	
37.301.03	<i>Arctostaphylos glauca</i> - <i>Artemisia californica</i> - <i>Salvia mellifera</i>	
37.301.05	<i>Arctostaphylos glauca</i> - <i>Cercocarpus montanus</i>	
*37.301.04	<i>Arctostaphylos glauca</i> - <i>Quercus durata</i> / <i>Pinus sabiniana</i>	
*37.301.02	<i>Arctostaphylos glauca</i> / <i>Melica torreyana</i>	
*37.321.00	Arctostaphylos hookeri (Hooker's manzanita chaparral) Provisional Alliance	G2 S2
*37.312.00	Arctostaphylos hooveri (Hoover's manzanita chaparral) Alliance	G2 S2
*37.312.01	<i>Arctostaphylos hooveri</i>	
*37.313.00	Arctostaphylos manzanita (Spiny menodora scrub) Provisional Alliance	G3? S3?
*37.307.00	Arctostaphylos montana (Mount Tamalpais manzanita chaparral) Alliance	G2 S2
*37.307.01	<i>Arctostaphylos montana</i>	
*37.307.02	<i>Arctostaphylos montana</i> - <i>Adenostoma fasciculatum</i>	
*37.314.00	Arctostaphylos montereyensis (Monterey manzanita chaparral) Provisional Alliance	G1 S1
*37.315.00	Arctostaphylos morroensis (Morro manzanita chaparral) Alliance	G1 S1
*37.304.00	Arctostaphylos myrtifolia (lone manzanita chaparral) Alliance	G1 S1
*37.304.01	<i>Arctostaphylos myrtifolia</i>	

*37.316.00	Arctostaphylos pajaroensis (Pajaro manzanita chaparral) Alliance	G1 S1
*37.316.01	<i>Arctostaphylos pajaroensis</i>	
37.303.00	Arctostaphylos patula (Green leaf manzanita chaparral) Alliance	G5 S4
37.303.01	<i>Arctostaphylos patula</i>	
37.303.02	<i>Arctostaphylos patula - Quercus vacciniifolia</i>	
*37.310.00	Arctostaphylos pringlei ssp. drupacea (Pink-bract manzanita chaparral) Alliance	G3 S3
*37.310.02	<i>Arctostaphylos pringlei ssp. drupacea</i>	
*37.310.01	<i>Arctostaphylos pringlei ssp. drupacea - Arctostaphylos pungens</i>	
*37.318.00	Arctostaphylos pumila (Sandmat manzanita chaparral) Provisional Alliance	G1 S1
*37.306.01	<i>Arctostaphylos sensitiva - Vaccinium ovatum - Chrysolepis chrysophylla var. minor</i>	
*37.306.02	<i>Arctostaphylos sensitiva - Arctostaphylos glandulosa</i>	
*37.320.00	Arctostaphylos silvicola (Silverleaf manzanita chaparral) Provisional Alliance	G1 S1
*37.319.00	Arctostaphylos stanfordiana (Stanford manzanita chaparral) Provisional Alliance	G3 S3?
37.305.00	Arctostaphylos viscida (White leaf manzanita chaparral) Alliance	G4 S4 (some associations are of high priority for inventory)
37.305.01	<i>Arctostaphylos viscida</i>	
37.305.05	<i>Arctostaphylos viscida - Heteromeles arbutifolia - Toxicodendron diversilobum</i>	
37.305.07	<i>Arctostaphylos viscida - Quercus wislizeni</i>	
*37.305.03	<i>Arctostaphylos viscida / Salvia sonomensis</i>	
37.305.06	<i>Arctostaphylos viscida ssp. pulchella</i>	
37.305.02	<i>Arctostaphylos viscida - Adenostoma fasciculatum</i>	
*37.305.04	<i>(Arctostaphylos viscida - Adenostoma fasciculatum) / Salvia sonomensis</i>	
35.120.00	Artemisia arbuscula ssp. arbuscula (Little sagebrush scrub) Alliance	G5 S4 (some associations are of high priority for inventory)
35.120.07	<i>Artemisia arbuscula</i>	
*35.120.05	<i>Artemisia arbuscula - Eriogonum microthecum</i>	
35.120.06	<i>Artemisia arbuscula / Carex exserta</i>	
35.120.08	<i>Artemisia arbuscula / Castilleja applegatei</i>	
35.120.09	<i>Artemisia arbuscula / Castilleja schizotrichia</i>	
35.120.10	<i>Artemisia arbuscula / Eriogonum nudum - Monardella odoratissima</i>	
*35.120.03	<i>Artemisia arbuscula / Festuca idahoensis</i>	
35.120.04	<i>Artemisia arbuscula / Leptodactylon pungens</i>	
35.120.02	<i>Artemisia arbuscula / Stenotus acaulis - Geum canescens</i>	
35.120.11	<i>Artemisia arbuscula / Stenotus acaulis - Linanthus pungens</i>	
35.120.12	<i>Artemisia arbuscula / Stenotus acaulis - Tetradymia canescens</i>	
*35.120.01	<i>Artemisia arbuscula / Trifolium andersonii ssp. monoense</i>	
35.121.00	Artemisia arbuscula ssp. longicaulis (Lahontan sagebrush scrub) Provisional Alliance	G5 S4?
32.010.00	Artemisia californica (California sagebrush scrub) Alliance	G5 S5
32.010.01	<i>Artemisia californica</i>	
45.455.02	<i>Artemisia californica - Malosma laurina</i>	
32.010.15	<i>Artemisia californica - Baccharis pilularis / Leymus condensatus</i>	
32.010.08	<i>Artemisia californica - Ceanothus ferrisiae</i>	
32.010.11	<i>Artemisia californica - Diplacus aurantiacus</i>	
32.010.07	<i>Artemisia californica - Eriogonum cinereum</i>	
32.010.03	<i>Artemisia californica - Keckiella cordifolia</i>	
32.010.09	<i>Artemisia californica - Lepidospartum squamatum</i>	
32.010.02	<i>Artemisia californica - Lotus scoparius</i>	
32.010.10	<i>Artemisia californica - Malosma laurina</i>	
32.010.04	<i>Artemisia californica - Salvia leucophylla</i>	

32.110.00	Artemisia californica - Eriogonum fasciculatum (California sagebrush - California buckwheat scrub) Alliance	G4 S4
32.110.05	<i>Artemisia californica - Eriogonum fasciculatum</i>	
32.110.07	<i>Artemisia californica - Eriogonum fasciculatum - Ephedra californica</i>	
32.110.06	<i>Artemisia californica - Eriogonum fasciculatum - Malosma laurina</i>	
32.110.01	<i>Artemisia californica - Eriogonum fasciculatum - Rhus ovata</i>	
32.110.02	<i>Artemisia californica - Eriogonum fasciculatum - Salvia apiana</i>	
32.110.03	<i>Artemisia californica - Eriogonum fasciculatum - Salvia leucophylla</i>	
32.110.04	<i>Artemisia californica - Eriogonum fasciculatum - Salvia mellifera</i>	
32.120.00	Artemisia californica - Salvia mellifera (California sagebrush - black sage scrub) Alliance	G4 S4
32.120.01	<i>Artemisia californica - Salvia mellifera</i>	
32.120.03	<i>Artemisia californica - Salvia mellifera - Baccharis sarothroides</i>	
32.010.12	<i>Artemisia californica / Amsinckia menziesii</i>	
32.010.13	<i>Artemisia californica / Eschscholzia californica</i>	
32.010.14	<i>Artemisia californica / Leymus condensatus</i>	
*35.150.00	Artemisia cana (Silver sagebrush scrub) Alliance	G5 S3
*35.150.06	<i>Artemisia cana - Muhlenbergia richardsonis</i>	
*35.150.01	<i>Artemisia cana / cold</i>	
*35.150.02	<i>Artemisia cana / dry graminoid</i>	
*35.150.05	<i>Artemisia cana / Iris missouriensis - Juncus arcticus var. balticus</i>	
*35.150.04	<i>Artemisia cana / Juncus arcticus var. balticus</i>	
*35.150.07	<i>Artemisia cana / mesic (Poa secunda - Poa cusickii)</i>	
*35.150.03	<i>Artemisia cana / warm</i>	
*35.130.00	Artemisia nova (Black sagebrush scrub) Alliance	G4 S3
*35.130.01	<i>Artemisia nova</i>	
*35.130.03	<i>Artemisia nova - Ambrosia salsola</i>	
*35.130.02	<i>Artemisia nova - Echinocereus engelmannii</i>	
*35.140.00	Artemisia rothrockii (Rothrock's sagebrush) Alliance	G3 S3
*35.140.02	<i>Artemisia rothrockii / Monardella odoratissima</i>	
*35.140.01	<i>Artemisia rothrockii / Penstemon heterodoxus</i>	
35.110.00	Artemisia tridentata (Big sagebrush) Alliance	G5 S5
35.110.02	<i>Artemisia tridentata</i>	
35.110.11	<i>Artemisia tridentata - Artemisia nova</i>	
35.110.12	<i>Artemisia tridentata - Chrysothamnus viscidiflorus</i>	
35.110.05	<i>Artemisia tridentata - Coleogyne ramosissima</i>	
35.110.06	<i>Artemisia tridentata - Encelia virginensis</i>	
35.110.13	<i>Artemisia tridentata - Ephedra nevadensis</i>	
35.110.01	<i>Artemisia tridentata - Ericameria nauseosa</i>	
35.110.14	<i>Artemisia tridentata - Ericameria teretifolia</i>	
35.110.09	<i>Artemisia tridentata - Eriogonum fasciculatum</i>	
35.110.10	<i>Artemisia tridentata - Eriogonum wrightii</i>	
35.110.07	<i>Artemisia tridentata - Purshia tridentata</i>	
35.110.15	<i>Artemisia tridentata - Purshia tridentata / Hesperostipa comata</i>	
35.110.04	<i>Artemisia tridentata - Symphoricarpos longiflorus</i>	
35.111.00	Artemisia tridentata ssp. vaseyana (Mountain big sagebrush) Alliance	G5 S5
35.111.02	<i>Artemisia tridentata ssp. vaseyana</i>	
35.111.03	<i>Artemisia tridentata ssp. vaseyana - Purshia tridentata / Festuca idahoensis</i>	
35.111.01	<i>Artemisia tridentata ssp. vaseyana / Carex exserta</i>	
35.111.04	<i>Artemisia tridentata ssp. vaseyana / Monardella odoratissima</i>	
36.310.00	Atriplex canescens (Fourwing saltbush scrub) Alliance	G5 S4
36.310.01	<i>Atriplex canescens</i>	
36.310.02	<i>Atriplex canescens - Krascheninnikovia lanata</i>	

36.320.00	Atriplex confertifolia (Shadscale scrub) Alliance	G5 S4
36.320.10	<i>Atriplex confertifolia</i>	
36.320.09	<i>Atriplex confertifolia</i> - <i>Grayia spinosa</i> - <i>Encelia virginensis</i> var. <i>actoni</i>	
36.320.03	<i>Atriplex confertifolia</i> - <i>Ambrosia dumosa</i>	
36.320.06	<i>Atriplex confertifolia</i> - <i>Atriplex canescens</i>	
36.320.04	<i>Atriplex confertifolia</i> - <i>Coleogyne ramosissima</i>	
36.320.02	<i>Atriplex confertifolia</i> - <i>Ephedra nevadensis</i>	
36.320.05	<i>Atriplex confertifolia</i> - <i>Gutierrezia microcephala</i> - <i>Tetradymia axillaris</i>	
36.320.08	<i>Atriplex confertifolia</i> - <i>Krascheninnikovia lanata</i>	
36.320.07	<i>Atriplex confertifolia</i> - <i>Lycium andersonii</i>	
36.320.11	<i>Atriplex confertifolia</i> / cryptogamic crust	
36.330.00	Atriplex hymenelytra (Desert holly scrub) Alliance	G5 S4
36.330.01	<i>Atriplex hymenelytra</i>	
36.330.02	<i>Atriplex hymenelytra</i> - <i>Ambrosia dumosa</i>	
36.330.06	<i>Atriplex hymenelytra</i> - <i>Encelia farinosa</i>	
36.330.03	<i>Atriplex hymenelytra</i> - <i>Larrea tridentata</i> - <i>Ambrosia dumosa</i>	
36.330.04	<i>Atriplex hymenelytra</i> - <i>Tidestromea oblongifolia</i>	
36.330.05	<i>Atriplex hymenelytra</i> / rock	
36.370.00	Atriplex lentiformis (Quailbush scrub) Alliance	G4 S4
36.370.01	<i>Atriplex lentiformis</i>	
36.340.00	Atriplex polycarpa (Allscale scrub) Alliance	G5 S4
36.340.04	<i>Atriplex polycarpa</i>	
36.340.01	<i>Atriplex polycarpa</i> - <i>Atriplex confertifolia</i>	
36.340.05	<i>Atriplex polycarpa</i> sparse playa	
*36.350.00	Atriplex spinifera (Spinescale scrub) Alliance	G3 S3
*36.350.01	<i>Atriplex spinifera</i>	
*36.350.03	<i>Atriplex spinifera</i> - <i>Picrothamnus desertorum</i>	
*36.350.02	<i>Atriplex spinifera</i> / annual herb	
*63.520.00	Baccharis emoryi (Emory's baccharis thickets) Provisional Alliance	G3 S2?
32.060.00	Baccharis pilularis (Coyote brush scrub) Alliance	G5 S5 (some associations are of high priority for inventory)
32.060.23	<i>Baccharis pilularis</i>	
32.060.06	<i>Baccharis pilularis</i> - <i>Lupinus arboreus</i>	
32.060.05	<i>Baccharis pilularis</i> - <i>Artemisia californica</i>	
32.060.19	<i>Baccharis pilularis</i> - <i>Artemisia californica</i> - <i>Heteromeles arbutifolia</i>	
32.060.18	<i>Baccharis pilularis</i> - <i>Artemisia californica</i> - <i>Toxicodendron</i> / <i>Monardella villosa</i>	
32.060.14	<i>Baccharis pilularis</i> - <i>Ceanothus thyrsiflorus</i>	
32.060.25	<i>Baccharis pilularis</i> - <i>Corylus cornuta</i>	
32.060.16	<i>Baccharis pilularis</i> - <i>Frangula californica</i> - <i>Rubus parviflorus</i>	
*32.060.12	<i>Baccharis pilularis</i> - <i>Holodiscus discolor</i>	
32.060.29	<i>Baccharis pilularis</i> - <i>Lotus scoparius</i>	
32.060.26	<i>Baccharis pilularis</i> - <i>Prunus ilicifolia</i>	
32.060.15	<i>Baccharis pilularis</i> - <i>Rubus ursinus</i> / weedy herb	
32.060.27	<i>Baccharis pilularis</i> - <i>Salvia mellifera</i>	
32.060.17	<i>Baccharis pilularis</i> - <i>Toxicodendron diversilobum</i>	
32.060.07	<i>Baccharis pilularis</i> / <i>Ammophila arenaria</i>	
32.060.20	<i>Baccharis pilularis</i> / Annual Grass - Herb	
*32.060.13	<i>Baccharis pilularis</i> / <i>Carex obnupta</i> - <i>Juncus patens</i>	
*32.060.11	<i>Baccharis pilularis</i> / <i>Danthonia californica</i>	
*32.060.02	<i>Baccharis pilularis</i> / <i>Deschampsia caespitosa</i>	
32.060.24	<i>Baccharis pilularis</i> / <i>Dudleya farinosa</i>	
*32.060.01	<i>Baccharis pilularis</i> / <i>Eriophyllum staechadifolium</i>	
*32.060.03	<i>Baccharis pilularis</i> / <i>Leymus triticoides</i>	
*32.060.10	<i>Baccharis pilularis</i> / <i>Nassella pulchra</i>	
32.060.21	<i>Baccharis pilularis</i> / Native Grass (Mixed)	

*32.060.04	<i>Baccharis pilularis</i> / <i>Polystichum munitum</i>	
32.060.08	<i>Baccharis pilularis</i> / <i>Scrophularia californica</i>	
32.060.28	<i>Gaultheria shallon</i> - <i>Baccharis pilularis</i> - <i>Ceanothus thyrsiflorus</i>	
63.510.00	<i>Baccharis salicifolia</i> (Mulefat thickets) Alliance	G5 S4
63.510.01	<i>Baccharis salicifolia</i>	
63.510.05	<i>Baccharis salicifolia</i> - <i>Arundo donax</i>	
63.510.02	<i>Baccharis salicifolia</i> - <i>Lepidospartum squamatum</i> - <i>Hazardia squarrosa</i>	
63.510.06	<i>Baccharis salicifolia</i> - <i>Pluchea sericea</i>	
63.510.03	<i>Baccharis salicifolia</i> - <i>Sambucus mexicana</i>	
63.510.07	<i>Baccharis salicifolia</i> - <i>Tamarix ramosissima</i>	
63.510.04	<i>Baccharis salicifolia</i> / <i>Stachys albens</i>	
*63.530.00	<i>Baccharis sergiloides</i> (Broom baccharis thickets) Alliance	G4 S3
*63.530.01	<i>Baccharis sergiloides</i> - <i>Prunus fasciculata</i>	
*63.530.02	<i>Baccharis sergiloides</i> - <i>Prunus fasciculata</i> - <i>Rhus trilobata</i>	
*63.530.03	<i>Baccharis sergiloides</i> / <i>Muhlenbergia rigens</i>	
*63.620.00	<i>Betula glandulosa</i> (Resin birch thickets) Provisional Alliance	G5 S2?
*63.610.00	<i>Betula occidentalis</i> (Water birch thicket) Alliance	G4 S2
*63.610.01	<i>Betula occidentalis</i> / <i>Salix</i> spp.	
32.180.00	Broom (<i>Cytisus scoparius</i> and Others) (Broom patches) Semi-natural Stands	
32.180.01	<i>Genista monspessulana</i>	
*32.180.02	<i>Spartium junceum</i>	
*91.126.00	<i>Cassiope mertensiana</i> (White mountain heather heath) Provisional Alliance	G5 S3?
*33.110.00	<i>Castela emoryi</i> (Crucifixion thorn stands) Special Stands	G2 S1
37.209.00	<i>Ceanothus cordulatus</i> (Mountain white thorn chaparral) Alliance	G4 S4
37.209.01	<i>Ceanothus cordulatus</i>	
37.208.00	<i>Ceanothus crassifolius</i> (Hoary leaf ceanothus chaparral) Alliance	G4 S4
37.208.01	<i>Ceanothus crassifolius</i>	
37.208.02	<i>Ceanothus crassifolius</i> - <i>Adenostoma fasciculatum</i>	
37.208.04	<i>Ceanothus crassifolius</i> - <i>Adenostoma fasciculatum</i> - <i>Rhus ovata</i>	
37.208.05	<i>Ceanothus crassifolius</i> - <i>Adenostoma fasciculatum</i> - <i>Salvia mellifera</i>	
37.208.03	<i>Ceanothus crassifolius</i> - <i>Adenostoma fasciculatum</i> - <i>Malosma Laurina</i>	
37.208.06	<i>Ceanothus crassifolius</i> - <i>Adenostoma fasciculatum</i> - <i>Xylococcus bicolor</i>	
37.208.07	<i>Ceanothus crassifolius</i> - <i>Cercocarpus montanus</i>	
37.208.08	<i>Ceanothus crassifolius</i> - <i>Malosma laurina</i>	
37.211.00	<i>Ceanothus cuneatus</i> (Wedge leaf ceanothus chaparral, Buck brush chaparral) Alliance	G4 S4
37.211.01	<i>Ceanothus cuneatus</i>	
37.211.06	<i>Ceanothus cuneatus</i> - <i>Adenostoma fasciculatum</i>	
37.211.10	<i>Ceanothus cuneatus</i> - <i>Adenostoma fasciculatum</i> - <i>Salvia mellifera</i> - <i>Malosma laurina</i>	
37.211.08	<i>Ceanothus cuneatus</i> - <i>Eriodictyon californicum</i> - (<i>Fremontodendron californicum</i>)	
37.211.09	<i>Ceanothus cuneatus</i> - <i>Frangula californica</i> - <i>Arctostaphylos pungens</i>	
37.211.02	<i>Ceanothus cuneatus</i> / <i>Calocedrus decurrens</i>	
37.211.03	<i>Ceanothus cuneatus</i> / <i>Elymus elymoides</i>	
37.211.11	<i>Ceanothus cuneatus</i> / <i>Eriophyllum lanatum</i>	
*37.211.05	<i>Ceanothus cuneatus</i> / <i>Plantago erecta</i>	
*37.212.00	<i>Ceanothus greggii</i> (Cup leaf ceanothus chaparral) Alliance	G4 S3
*37.212.01	<i>Ceanothus greggii</i>	
*37.212.03	<i>Ceanothus greggii</i> - <i>Adenostoma fasciculatum</i>	

37.206.00	<i>Ceanothus integerrimus</i> (Deer brush chaparral) Alliance	G4 S4 (some associations are of high priority for inventory)
37.206.01	<i>Ceanothus integerrimus</i>	
37.206.04	<i>Ceanothus integerrimus</i> - <i>Arctostaphylos viscida</i>	
*37.206.05	<i>Ceanothus integerrimus</i> - <i>Quercus garryana</i> var. <i>fruticosa</i>	
37.206.03	<i>Ceanothus integerrimus</i> / <i>Lithocarpus densiflorus</i> - <i>Arbutus menziesii</i>	
37.206.02	<i>Ceanothus integerrimus</i> / <i>Quercus chrysolepis</i> / <i>Elymus glaucus</i>	
37.205.00	<i>Ceanothus leucodermis</i> (Chaparral white thorn chaparral) Alliance	G4 S4
37.205.01	<i>Ceanothus leucodermis</i>	
37.205.02	<i>Ceanothus leucodermis</i> / <i>Toxicodendron diversilobum</i>	
37.201.00	<i>Ceanothus megacarpus</i> (Big pod ceanothus chaparral) Alliance	G4 S4
37.201.01	<i>Ceanothus megacarpus</i>	
37.201.02	<i>Ceanothus megacarpus</i> - <i>Adenostoma fasciculatum</i>	
37.201.04	<i>Ceanothus megacarpus</i> - <i>Adenostoma sparsifolium</i>	
37.201.05	<i>Ceanothus megacarpus</i> - <i>Cercocarpus montanus</i>	
37.201.06	<i>Ceanothus megacarpus</i> - <i>Malosma laurina</i>	
37.201.09	<i>Ceanothus megacarpus</i> - <i>Prunus ilicifolia</i>	
37.203.01	<i>Ceanothus megacarpus</i> - <i>Rhamnus ilicifolia</i>	
37.201.08	<i>Ceanothus megacarpus</i> - <i>Salvia mellifera</i>	
*37.207.00	<i>Ceanothus oliganthus</i> (Hairy leaf ceanothus chaparral) Alliance	G3 S3
*37.207.01	<i>Ceanothus oliganthus</i>	
*37.207.02	<i>Ceanothus oliganthus</i> - <i>Adenostoma fasciculatum</i>	
*37.207.03	<i>Ceanothus oliganthus</i> - <i>Adenostoma fasciculatum</i> - <i>Xylococcus bicolor</i>	
*37.207.04	<i>Ceanothus oliganthus</i> - <i>Adenostoma sparsifolium</i>	
*37.207.05	<i>Ceanothus oliganthus</i> - <i>Arctostaphylos glandulosa</i>	
*37.207.06	<i>Ceanothus oliganthus</i> - <i>Eriodictyon crassifolium</i>	
*37.207.07	<i>Ceanothus oliganthus</i> - <i>Heteromeles arbutifolia</i> - <i>Rhus ovata</i>	
*37.207.08	<i>Ceanothus oliganthus</i> - <i>Quercus berberidifolia</i>	
*37.215.00	<i>Ceanothus papillosus</i> (Wart leaf ceanothus chaparral) Alliance	G3 S3
*37.215.01	<i>Ceanothus papillosus</i> - <i>Adenostoma fasciculata</i>	
37.214.00	<i>Ceanothus spinosus</i> (Greenbark ceanothus chaparral) Alliance	G4 S4
37.214.01	<i>Ceanothus spinosus</i>	
37.214.02	<i>Ceanothus spinosus</i> - <i>Ceanothus megacarpus</i>	
37.204.00	<i>Ceanothus thyrsoiflorus</i> (Blue blossom chaparral) Alliance	G4 S4
37.204.01	<i>Ceanothus thyrsoiflorus</i> - <i>Baccharis pilularis</i> - <i>Toxicodendron diversilobum</i>	
37.204.02	<i>Ceanothus thyrsoiflorus</i> - <i>Rubus ursinus</i>	
37.204.03	<i>Ceanothus thyrsoiflorus</i> - <i>Vaccinium ovatum</i> - <i>Rubus parviflorus</i>	
37.210.00	<i>Ceanothus velutinus</i> (Tobacco brush or snow bush chaparral) Alliance	G5 S4
37.210.01	<i>Ceanothus velutinus</i>	
37.210.02	<i>Ceanothus velutinus</i> - <i>Prunus emarginata</i> - <i>Artemisia tridentata</i>	
*37.216.00	<i>Ceanothus verrucosus</i> (Wart-stemmed ceanothus chaparral) Provisional Alliance	G2 S2
*63.300.00	<i>Cephalanthus occidentalis</i> (Button willow thickets) Alliance	G5 S2
*63.300.01	<i>Cephalanthus occidentalis</i>	
*76.300.00	<i>Cercocarpus intricatus</i> (Small leaf mountain mahogany scrub) Provisional Alliance	G4 S3?
*76.300.01	<i>Cercocarpus intricatus</i>	
76.200.00	<i>Cercocarpus ledifolius</i> (Curl leaf mountain mahogany scrub) Alliance	G5 S4
76.200.03	<i>Cercocarpus ledifolius</i>	
76.200.01	<i>Cercocarpus ledifolius</i> - <i>Artemisia tridentata</i>	
76.200.02	<i>Cercocarpus ledifolius</i> / <i>Symphoricarpos rotundifolia</i>	

76.100.00	Cercocarpus montanus (Birch leaf mountain mahogany chaparral) Alliance	G5 S4
76.100.06	<i>Cercocarpus montanus - Adenostoma fasciculatum</i>	
76.100.17	<i>Cercocarpus montanus - Adenostoma fasciculatum - Diplacus aurantiacus</i>	
76.100.04	<i>Cercocarpus montanus - Arctostaphylos glauca</i>	
76.100.16	<i>Cercocarpus montanus - Ceanothus cuneatus</i>	
76.100.15	<i>Cercocarpus montanus - Ceanothus cuneatus - Fraxinus dipetala</i>	
76.100.09	<i>Cercocarpus montanus - Ceanothus cuneatus - Quercus john-tuckeri</i>	
76.100.05	<i>Cercocarpus montanus - Ceanothus spinosus</i>	
37.600.01	<i>Cercocarpus montanus - Eriogonum fasciculatum</i>	
37.600.02	<i>Cercocarpus montanus - Eriogonum fasciculatum - Eriogonum wrightii</i>	
76.100.10	<i>Cercocarpus montanus - Fremontodendron californicum</i>	
76.100.11	<i>Cercocarpus montanus - Juniperus californica</i>	
76.100.12	<i>Cercocarpus montanus - Malosma laurina - Artemisia californica</i>	
76.100.14	<i>Cercocarpus montanus - Prunus ilicifolia</i>	
76.100.13	<i>Cercocarpus montanus - Prunus ilicifolia - Adenostoma sparsifolium</i>	
76.100.03	<i>Cercocarpus montanus var. glaber</i>	
37.610.01	<i>Cercocarpus montanus var. macrourus</i>	
37.610.02	<i>Cercocarpus montanus var. minutiflorus</i>	
*37.417.00	Chrysolepis chrysophylla (Golden chinquapin thickets) Alliance	G2 S2
*37.417.02	<i>Chrysolepis chrysophylla - Arctostaphylos glandulosa</i>	
*37.417.01	<i>Chrysolepis chrysophylla / Vaccinium ovatum</i>	
*37.700.00	Chrysolepis sempervirens (Bush chinquapin chaparral) Alliance	G4 S3
*37.700.01	<i>Chrysolepis sempervirens</i>	
33.020.00	Coleogyne ramosissima (Black brush scrub) Alliance	G5 S4 (some associations are of high priority for inventory)
*33.020.01	<i>Coleogyne ramosissima</i>	
33.020.02	<i>Coleogyne ramosissima - Atriplex confertifolia</i>	
33.020.10	<i>Coleogyne ramosissima - Atriplex hymenelytra - Tetradymia axillaris</i>	
33.020.03	<i>Coleogyne ramosissima - Ephedra nevadensis</i>	
33.020.05	<i>Coleogyne ramosissima - Eriogonum fasciculatum</i>	
33.020.06	<i>Coleogyne ramosissima - Eriogonum fasciculatum - Larrea tridentata</i>	
33.020.11	<i>Coleogyne ramosissima - Grayia spinosa</i>	
33.020.12	<i>Coleogyne ramosissima - Guitierrezia microcephala</i>	
33.020.07	<i>Coleogyne ramosissima - Larrea tridentata - Ambrosia dumosa</i>	
33.020.08	<i>Coleogyne ramosissima - Lycium andersonii</i>	
33.020.09	<i>Coleogyne ramosissima - Salazaria mexicana</i>	
*43.100.00	Coreopsis gigantea (Giant coreopsis scrub) Alliance	G3 S3?
*43.100.01	<i>Coreopsis gigantea - Artemisia californica - Eriogonum cinereum</i>	
*43.100.02	<i>Coreopsis gigantea - Ericameria ericoides - Encelia californica</i>	
*80.100.00	Cornus sericea (Red osier thickets) Alliance	G4 S3?
*80.100.02	<i>Cornus sericea</i>	
*80.100.03	<i>Cornus sericea - Salix exigua</i>	
*80.100.04	<i>Cornus sericea - Salix lasiolepis</i>	
*80.100.01	<i>Cornus sericea / Senecio triangularis</i>	
*37.950.00	Corylus cornuta var. californica (Hazelnut scrub) Alliance	G3 S2?
*37.950.01	<i>Corylus cornuta / Polystichum munitum</i>	
*33.050.00	Cylindropuntia bigelovii (Teddy bear cholla patches) Alliance	G4 S3
*33.050.01	<i>Cylindropuntia bigelovii</i>	
*38.110.00	Dasiphora fruticosa (Shrubby cinquefoil scrub) Alliance	G5 S3?
*38.110.01	<i>Dasiphora fruticosa</i>	
*38.110.02	<i>Dasiphora fruticosa / Danthonia intermedia</i>	
*38.110.04	<i>Dasiphora fruticosa / Danthonia unispicata</i>	
*38.110.03	<i>Dasiphora fruticosa / Potentilla breweri</i>	

*38.110.05	<i>Dasiphora fruticosa</i> / <i>Veratrum californicum</i>	
*43.110.00	<i>Deinandra clementina</i> - <i>Eriogonum giganteum</i> (Island buckwheat - Island tar plant scrub) Provisional Alliance	G3? S3?
37.750.00	<i>Dendromecon rigida</i> (Bush poppy scrub) Alliance	G4 S4
37.750.01	<i>Dendromecon rigida</i>	
*32.082.00	<i>Diplacus aurantiacus</i> (Bush monkeyflower scrub) Alliance	G3 S3?
*32.082.01	<i>Diplacus aurantiacus</i>	
*32.050.00	<i>Encelia californica</i> (California brittle bush scrub) Alliance	G4 S3
*32.050.02	<i>Encelia californica</i>	
*32.050.01	<i>Encelia californica</i> - <i>Artemisia californica</i>	
*32.050.03	<i>Encelia californica</i> - <i>Artemisia californica</i> - <i>Salvia mellifera</i> - <i>Baccharis pilularis</i>	
*32.050.04	<i>Encelia californica</i> - <i>Eriogonum cinereum</i>	
*32.050.05	<i>Encelia californica</i> - <i>Malosma laurina</i> - <i>Salvia mellifera</i>	
*32.050.06	<i>Encelia californica</i> - <i>Rhus integrifolia</i>	
33.030.00	<i>Encelia farinosa</i> (Brittle bush scrub) Alliance	G5 S4 (some associations are of high priority for inventory)
33.030.05	<i>Encelia farinosa</i> - <i>coastal sage scrub</i>	
33.030.01	<i>Encelia farinosa</i> - <i>warm desert</i>	
33.030.07	<i>Encelia farinosa</i> - <i>Ambrosia dumosa</i> - <i>Fouquieria splendens</i>	
33.030.08	<i>Encelia farinosa</i> - <i>Ambrosia dumosa</i> - <i>Salvia greatae</i>	
33.030.09	<i>Encelia farinosa</i> - <i>Ambrosia dumosa</i> - <i>Senna armata</i>	
33.030.04	<i>Encelia farinosa</i> - <i>Artemisia californica</i>	
*33.030.03	<i>Encelia farinosa</i> - <i>Eriogonum fasciculatum</i> - <i>Agave deserti</i>	
33.030.06	<i>Encelia farinosa</i> - <i>Mirabilis californica</i>	
*33.030.02	<i>Encelia farinosa</i> - <i>Peucephyllum schottii</i>	
*33.025.00	<i>Encelia virginensis</i> (Virgin River brittle brush scrub) Alliance	G4 S3
*33.025.01	<i>Encelia virginensis</i>	
*33.025.02	<i>Encelia virginensis</i> - <i>Salvia dorrii</i>	
*33.270.00	<i>Ephedra californica</i> (California joint fir scrub) Alliance	G3 S3
*33.270.01	<i>Ephedra californica</i>	
*33.270.02	<i>Ephedra californica</i> - <i>Ambrosia salsola</i>	
*33.270.04	<i>Ephedra californica</i> - <i>Gutierrezia californica</i> / <i>Eriastrum pluriflorum</i>	
*33.270.03	<i>Ephedra californica</i> / <i>annual</i> - <i>perennial herb</i>	
*33.275.00	<i>Ephedra funerea</i> (Death Valley joint fir scrub) Provisional Alliance	G3? S2?
33.280.00	<i>Ephedra nevadensis</i> (Nevada joint fir scrub) Alliance	G4 S4
33.280.01	<i>Ephedra nevadensis</i>	
33.280.02	<i>Ephedra nevadensis</i> - <i>Atriplex confertifolia</i>	
33.280.05	<i>Ephedra nevadensis</i> - <i>Ericameria cooperi</i>	
33.280.04	<i>Ephedra nevadensis</i> - <i>Lycium andersonii</i>	
33.280.03	<i>Ephedra nevadensis</i> - <i>Salazaria mexicana</i>	
33.285.00	<i>Ephedra viridis</i> (Mormon tea scrub) Alliance	G4 S4
33.285.01	<i>Ephedra viridis</i> - <i>Artemisia tridentata</i>	
*38.125.00	<i>Ericameria linearifolia</i> (Narrowleaf goldenbush scrub) Provisional Alliance	G3 S3?
35.310.00	<i>Ericameria nauseosa</i> (Rubber rabbitbrush scrub) Alliance	G5 S5
35.310.01	<i>Ericameria nauseosa</i> - <i>Juniperus californica</i> / <i>annual to perennial herb</i>	
35.310.02	<i>Ericameria nauseosa</i> / <i>Sporobolus airoides</i>	
*38.130.00	<i>Ericameria palmeri</i> (Palmer's goldenbush scrub) Provisional Alliance	G3 S3?

*35.340.00	<i>Ericameria paniculata</i> (Black-stem rabbitbrush scrub) Alliance	G4 S3
*35.340.01	<i>Ericameria paniculata</i>	
*35.340.03	<i>Ericameria paniculata</i> - <i>Ambrosia eriocentra</i>	
*35.340.02	<i>Ericameria paniculata</i> - <i>Ambrosia salsola</i>	
*35.320.00	<i>Ericameria parryi</i> (Parry's rabbitbrush scrub) Alliance	G4 S3
*35.320.01	<i>Ericameria parryi</i> / <i>Gayophytum diffusum</i>	
35.330.00	<i>Ericameria teretifolia</i> (Needleleaf rabbitbrush scrub) Alliance	G4 S4
35.330.01	<i>Ericameria teretifolia</i>	
37.080.00	<i>Eriodictyon californicum</i> (California yerba santa scrub) Alliance	G4 S4
35.080.01	<i>Eriodictyon californicum</i> / herbaceous	
*37.090.00	<i>Eriodictyon crassifolium</i> (Thick leaf yerba santa scrub) Provisional Alliance	G3 S3
*32.035.00	<i>Eriogonum cinereum</i> (Ashy buckwheat scrub) Alliance	G3 S3
*32.035.01	<i>Eriogonum cinereum</i>	
32.040.00	<i>Eriogonum fasciculatum</i> (California buckwheat scrub) Alliance	G5 S5 (some associations are of high priority for inventory)
32.040.02	<i>Eriogonum fasciculatum</i>	
*32.070.01	<i>Eriogonum fasciculatum</i> - (<i>Lepidospartum squamatum</i>) alluvial fan	
32.040.05	<i>Eriogonum fasciculatum</i> - <i>Ambrosia dumosa</i>	
*32.040.03	<i>Eriogonum fasciculatum</i> - <i>Artemisia tridentata</i>	
32.040.08	<i>Eriogonum fasciculatum</i> - <i>Bebbia juncea</i>	
32.040.10	<i>Eriogonum fasciculatum</i> - <i>Cylindropuntia californica</i>	
32.040.18	<i>Eriogonum fasciculatum</i> - <i>Encelia farinosa</i>	
32.040.09	<i>Eriogonum fasciculatum</i> - <i>Gutierrezia sarothrae</i>	
32.040.19	<i>Eriogonum fasciculatum</i> - <i>Lotus scoparius</i>	
32.040.11	<i>Eriogonum fasciculatum</i> - <i>Rhus ovata</i>	
32.040.06	<i>Eriogonum fasciculatum</i> - <i>Salazaria mexicana</i>	
32.100.00	<i>Eriogonum fasciculatum</i> - <i>Salvia apiana</i> (California buckwheat - white sage scrub) Alliance	G4 S4 (some associations are of high priority for inventory)
*32.100.01	<i>Eriogonum fasciculatum</i> - <i>Salvia apiana</i>	
32.040.17	<i>Eriogonum fasciculatum</i> - <i>Salvia mellifera</i>	
32.040.07	<i>Eriogonum fasciculatum</i> - <i>Salvia mellifera</i> - <i>Malosma laurina</i>	
32.040.01	<i>Eriogonum fasciculatum</i> - <i>Scrophularia californica</i> - <i>Phacelia ramosissima</i>	
32.040.12	<i>Eriogonum fasciculatum</i> - <i>Simmondsia chinensis</i> - <i>Cylindropuntia californica</i>	
32.040.16	<i>Eriogonum fasciculatum</i> var. <i>foliolosum</i> - <i>Hesperoyucca whipplei</i>	
32.040.13	<i>Eriogonum fasciculatum</i> var. <i>foliolosum</i> - <i>Juniperus californica</i>	
32.040.15	<i>Eriogonum fasciculatum</i> var. <i>polifolium</i> / <i>Eriastrum pluriflorum</i>	
*32.045.00	<i>Eriogonum heermannii</i> (Heermann's buckwheat patches) Provisional Alliance	G2 S2?
*32.041.00	<i>Eriogonum wrightii</i> (Wright's buckwheat patches) Alliance	G3 S3
*32.041.01	<i>Eriogonum wrightii</i> - <i>Eriophyllum confertiflorum</i> / <i>Monardella antonina</i> ssp. <i>benitensis</i>	
*32.041.02	<i>Eriogonum wrightii</i> - <i>Juniperus californica</i>	
*32.041.03	<i>Eriogonum wrightii</i> - <i>Lessingia filaginifolia</i>	
*61.580.00	<i>Forestiera pubescens</i> (Desert olive patches) Alliance	G3 S2
*61.580.01	<i>Forestiera pubescens</i>	
*61.580.02	<i>Forestiera pubescens</i> - <i>Sambucus nigra</i>	
37.920.00	<i>Frangula californica</i> (California coffee berry scrub) Alliance	G4 S4 (some associations are of high priority for inventory)
*37.920.04	<i>Frangula californica</i> spp. <i>tomentella</i> / <i>Hoita macrostachya</i>	
37.920.02	<i>Frangula californica</i> ssp. <i>tomentella</i>	
37.920.03	<i>Frangula californica</i> ssp. <i>tomentella</i> / <i>Cirsium fontinale</i> var. <i>campylon</i> - <i>Mimulus guttatus</i>	
*37.920.01	<i>Frangula californica</i> - <i>Baccharis pilularis</i> / <i>Scrophularia californica</i>	

*39.040.00	<i>Garrya elliptica</i> (Coastal silk tassel scrub) Provisional Alliance	G3? S3?
*33.180.00	<i>Grayia spinosa</i> (Spiny hop sage scrub) Alliance	G5 S3
*33.180.02	<i>Grayia spinosa</i> - <i>Atriplex confertifolia</i>	
*33.180.06	<i>Grayia spinosa</i> - <i>Ephedra viridis</i>	
*33.180.03	<i>Grayia spinosa</i> - <i>Larrea tridentata</i>	
*33.180.04	<i>Grayia spinosa</i> - <i>Lycium andersonii</i>	
*33.180.07	<i>Grayia spinosa</i> - <i>Picrothamnus desertorum</i> / <i>Achnatherum hymenoides</i>	
*33.180.05	<i>Grayia spinosa</i> / <i>Eriogonum ovalifolium</i>	
*32.042.00	<i>Gutierrezia californica</i> (California match weed patches) Provisional Alliance	G3? S3?
*32.042.01	<i>Gutierrezia californica</i> / Annual - perennial grass - herb	
*32.043.00	<i>Gutierrezia sarothrae</i> (Broom snake weed scrub) Provisional Alliance	G3 S3
*32.055.00	<i>Hazardia squarrosa</i> (Sawtooth golden bush scrub) Alliance	G3 S3
*32.055.02	<i>Hazardia squarrosa</i> - <i>Artemisia californica</i>	
*32.055.01	<i>Hazardia squarrosa</i> / <i>Nassella pulchra</i> - <i>Deinandra fasciculata</i>	
*37.911.00	<i>Heteromeles arbutifolia</i> (Toyon chaparral) Alliance	G5 S3
*37.911.02	<i>Heteromeles arbutifolia</i> - <i>Artemisia californica</i>	
*37.911.03	<i>Heteromeles arbutifolia</i> - <i>Malosma laurina</i>	
*37.911.04	<i>Heteromeles arbutifolia</i> - <i>Quercus berberidifolia</i> - <i>Cercocarpus montanus</i> - <i>Fraxinus dipetala</i>	
*37.911.01	<i>Heteromeles arbutifolia</i> / serpentine	
*39.100.00	<i>Holodiscus discolor</i> (Ocean spray brush) Alliance	G4 S3
*39.100.03	<i>Holodiscus discolor</i> - <i>Arctostaphylos patula</i>	
*39.100.04	<i>Holodiscus discolor</i> - <i>Keckiella corymbosa</i>	
*39.100.06	<i>Holodiscus discolor</i> - <i>Sambucus racemosa</i>	
*39.100.02	<i>Holodiscus discolor</i> / <i>Achnatherum occidentale</i> - <i>Eriogonum nudum</i>	
*39.100.01	<i>Holodiscus discolor</i> / <i>Mimulus suksdorfii</i>	
*39.100.05	<i>Holodiscus discolor</i> / <i>Sedum obsusatum</i> ssp. boreale - <i>Cryptogramma acrostichoides</i>	
*33.190.00	<i>Hyptis emoryi</i> (Desert lavender scrub) Alliance	G4 S3
*33.190.01	<i>Hyptis emoryi</i>	
*33.190.02	<i>Hyptis emoryi</i> - <i>Psoralethamnus schottii</i>	
32.044.00	<i>Isocoma menziesii</i> (Menzies's golden bush scrub) Alliance	G4? S4? (some associations are of high priority for inventory)
32.044.03	<i>Isocoma menziesii</i> - <i>Lupinus albifrons</i>	
*32.044.01	<i>Isocoma menziesii</i> / <i>Astragalus miguelensis</i> - <i>Atriplex californica</i> - <i>Lasthenia californica</i>	
32.044.02	<i>Isocoma menziesii</i> / <i>Distichlis spicata</i> - <i>Paraphalis incurva</i>	
*33.340.00	<i>Justicia californica</i> (Chuparosa patches) Provisional Alliance	G2 S2?
*45.406.00	<i>Kalmia microphylla</i> (Alpine laurel heath) Provisional Alliance	G4 S3?
*32.065.00	<i>Keckiella antirrhinoides</i> (Bush penstemon scrub) Alliance	G3 S3
*32.065.01	<i>Keckellia antirrhinoides</i>	
*32.065.02	<i>Keckellia antirrhinoides</i> - <i>Artemisia californica</i>	
*32.065.03	<i>Keckellia antirrhinoides</i> - <i>Eriogonum fasciculatum</i>	
*32.065.04	<i>Keckiella antirrhinoides</i> - Mixed Chaparral	
*33.100.00	<i>Koeberlinia spinosa</i> (Crown-of-thorns stands) Special Stands	G2 S1
*36.500.00	<i>Krascheninnikovia lanata</i> (Winterfat scrubland) Alliance	G4 S2
*36.500.01	<i>Krascheninnikovia lanata</i>	

33.010.00	<i>Larrea tridentata</i> (Creosote bush scrub) Alliance	G5 S5 (some associations are of high priority for inventory)
33.140.04	<i>Larrea tridentata</i>	
33.010.08	<i>Larrea tridentata</i> - <i>Ambrosia salsola</i>	
33.010.17	<i>Larrea tridentata</i> - <i>Atriplex confertifolia</i>	
33.010.16	<i>Larrea tridentata</i> - <i>Atriplex hymenelytra</i>	
33.010.12	<i>Larrea tridentata</i> - <i>Atriplex polycarpa</i>	
33.010.10	<i>Larrea tridentata</i> - <i>Ephedra nevadensis</i>	
*33.010.07	<i>Larrea tridentata</i> - <i>Krameria grayi</i> - <i>Pleuraphis rigida</i>	
*33.010.13	<i>Larrea tridentata</i> - <i>Pleuraphis rigida</i>	
*33.010.14	<i>Larrea tridentata</i> - <i>Pleuraphis rigida</i> - <i>Lycium andersonii</i>	
33.010.19	<i>Larrea tridentata</i> / cryptogamic crust	
33.010.09	<i>Larrea tridentata</i> / <i>Eriogonum inflatum</i>	
33.010.06	<i>Larrea tridentata</i> / wash	
33.140.00	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> (Creosote bush - white burr sage scrub) Alliance	G5 S5 (some associations are of high priority for inventory)
33.140.42	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i>	
33.140.09	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - / <i>Atriplex hymenelytra</i>	
33.140.40	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Amphipappus fremontii</i>	
33.140.37	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Atriplex canescens</i>	
33.140.39	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Atriplex confertifolia</i>	
33.140.45	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Atriplex confertifolia</i> - <i>Psoralea arborescens</i>	
33.140.38	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Atriplex polycarpa</i>	
33.140.36	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Bebbia juncea</i>	
33.140.46	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Cylindropuntia acanthocarpa</i>	
33.140.18	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Cylindropuntia ramosissima</i>	
*33.140.33	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Echinocactus polycephalus</i>	
33.140.32	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Encelia farinosa</i>	
*33.140.31	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Encelia virginensis</i>	
*33.140.30	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Ephedra californica</i>	
*33.140.29	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Ephedra funerea</i>	
33.140.20	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Ephedra nevadensis</i>	
33.140.47	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Ephedra viridis</i>	
33.140.48	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Ericameria cooperi</i>	
33.140.28	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Eriogonum fasciculatum</i>	
33.140.27	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Eriogonum inflatum</i>	
33.140.44	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Fouquieria splendens</i>	
*33.140.10	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Galium angustifolium</i> - <i>Lyrocarpa coulteri</i>	
33.140.26	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Grayia spinosa</i>	
33.140.25	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Gutierrezia sarothrae</i>	
33.140.23	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Krameria erecta</i>	
33.140.22	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Krameria grayii</i>	
33.140.21	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Lepidium fremontii</i>	
33.140.19	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Lycium andersonii</i>	
33.140.49	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Olneya tesota</i>	
33.140.43	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Opuntia basilaris</i>	
*33.140.24	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Petalonyx thurberi</i>	
*33.140.17	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Pleuraphis rigida</i>	
33.140.15	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Psoralea arborescens</i>	
*33.140.08	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Psoralea emoryi</i> - sandy	
33.140.16	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Psoralea fremontii</i>	
*33.140.07	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Psoralea schottii</i>	
33.140.50	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Psoralea spinosus</i>	
33.140.14	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Salazaria mexicana</i>	
33.140.13	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Senna armata</i>	
33.140.12	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Viguiera parishii</i>	
33.140.11	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> - <i>Yucca schidigera</i>	
*33.140.35	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> / Cryptogamic crust	
*33.140.34	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> / <i>Dalea mollissima</i>	

33.027.00	Larrea tridentata - Encelia farinosa (Creosote bush - brittle bush scrub) Alliance	G5 S4
33.027.05	<i>Larrea tridentata - Encelia farinosa</i>	
33.027.03	<i>Larrea tridentata - Encelia farinosa - Ambrosia dumosa</i>	
33.027.02	<i>Larrea tridentata - Encelia farinosa - Bebbia juncea</i>	
33.027.04	<i>Larrea tridentata - Encelia farinosa - Fouquieria splendens</i>	
33.027.06	<i>Larrea tridentata - Encelia farinosa - Peucephyllum schottii</i>	
33.027.07	<i>Larrea tridentata - Encelia farinosa - Pleurocoronis pluriseta</i>	
*32.070.00	Lepidospartum squamatum (Scale broom scrub) Alliance	G3 S3
*32.070.09	<i>Lepidospartum squamatum - Artemisia californica</i>	
*32.070.04	<i>Lepidospartum squamatum - Atriplex canescens</i>	
*32.070.05	<i>Lepidospartum squamatum - Baccharis salicifolia</i>	
*32.070.02	<i>Lepidospartum squamatum - Eriodictyon crassifolium - Hesperoyucca whipplei</i>	
*32.070.08	<i>Lepidospartum squamatum - Eriodictyon trichocalyx - Hesperoyucca whipplei</i>	
*32.070.06	<i>Lepidospartum squamatum - Eriogonum fasciculatum</i>	
*32.070.07	<i>Lepidospartum squamatum / Amsinckia menziesii</i>	
*32.070.03	<i>Lepidospartum squamatum / ephemeral annuals</i>	
*73.110.00	Lithocarpus densiflorus var. echinoides (Shrub tanoak chaparral) Alliance	G3 S3
*73.110.01	<i>Lithocarpus densiflorus var. echinoides / Arctostaphylos nevadensis</i>	
*73.110.02	<i>Lithocarpus densiflorus var. echinoides / Pteridium aquilinum</i>	
52.240.00	Lotus scoparius (Deer weed scrub) Alliance	G5 S5
52.240.01	<i>Lotus scoparius</i>	
32.081.00	Lupinus albifrons (Silver bush lupine scrub) Alliance	G4 S4
32.081.01	<i>Lupinus albifrons</i>	
32.081.03	<i>Lupinus albifrons - Senecio flaccidus var. douglasii</i>	
32.081.02	<i>Lupinus albifrons coastal</i>	
32.080.00	Lupinus arboreus (Yellow bush lupine scrub) Alliance	G4 S4 (within native range), some associations are of high priority for inventory
32.080.02	<i>Lupinus arboreus</i>	
*32.080.03	<i>Lupinus arboreus - Ericameria ericoides</i>	
32.080.04	<i>Lupinus arboreus / Anthoxanthum odoratum</i>	
32.080.01	<i>Lupinus arboreus / Bromus diandrus</i>	
32.080.05	<i>Lupinus arboreus / Scrophularia californica</i>	
*32.160.00	Lupinus chamissonis - Ericameria ericoides (Silver dune lupine - mock heather scrub) Alliance	G3 S3
*32.160.01	<i>Ericameria ericoides</i>	
*32.160.02	<i>Lupinus chamissonis</i>	
*32.160.03	<i>Lupinus chamissonis - Ericameria ericoides</i>	
*33.360.00	Lycium andersonii (Anderson's boxthorn scrub) Alliance	G4 S3
*33.360.02	<i>Lycium andersonii</i>	
*33.360.01	<i>Lycium andersonii - Simmondsia chinensis - Pleuraphis rigida</i>	
*33.365.00	Lycium californicum (California desert-thorn) Provisional Alliance	G2? S2?
45.450.00	Malacothamnus fasciculatus (Bush mallow scrub) Alliance	G4 S4
45.450.01	<i>Malacothamnus fasciculatus</i>	
45.450.02	<i>Malacothamnus fasciculatus - Ceanothus megacarpus</i>	
45.450.03	<i>Malacothamnus fasciculatus - Ceanothus spinosus</i>	
45.450.04	<i>Malacothamnus fasciculatus - Malosma laurina</i>	
45.450.05	<i>Malacothamnus fasciculatus - Salvia leucophylla</i>	
45.450.06	<i>Malacothamnus fasciculatus - Salvia mellifera</i>	

45.455.00	Malosma laurina (Laurel sumac scrub) Alliance	G4 S4
45.455.01	<i>Malosma laurina</i>	
45.455.03	<i>Malosma laurina</i> - <i>Eriogonum cinereum</i>	
45.455.04	<i>Malosma laurina</i> - <i>Eriogonum fasciculatum</i>	
45.455.06	<i>Malosma laurina</i> - <i>Eriogonum fasciculatum</i> - <i>Salvia apiana</i>	
45.455.07	<i>Malosma laurina</i> - <i>Eriogonum fasciculatum</i> - <i>Salvia mellifera</i>	
45.455.08	<i>Malosma laurina</i> - <i>Rhus ovata</i> - <i>Ceanothus megacarpus</i>	
45.455.09	<i>Malosma laurina</i> - <i>Salvia mellifera</i>	
45.455.10	<i>Malosma laurina</i> - <i>Tetracoccus dioicus</i>	
*33.290.00	Menodora spinescens (Spiny menodora scrub) Alliance	G4 S3
*33.290.01	<i>Menodora spinescens</i> - <i>Atriplex confertifolia</i>	
*33.290.02	<i>Menodora spinescens</i> - <i>Ephedra nevadensis</i>	
*37.930.00	Morella californica (Wax myrtle scrub) Alliance	G3 S3
*37.930.01	<i>Morella californica</i>	
*33.080.00	Nolina (bigelovii, parryi) (Nolina scrub) Alliance	G3 S2
*33.080.02	<i>Nolina bigelovii</i>	
*33.080.01	<i>Nolina parryi</i>	
*32.150.00	Opuntia littoralis (Coast prickly pear scrub) Alliance	G4 S3
*32.150.01	<i>Opuntia littoralis</i> - <i>Eriogonum fasciculatum</i> - <i>Malosma laurina</i>	
*32.150.02	<i>Opuntia littoralis</i> - mixed coastal sage scrub	
*33.150.00	Parkinsonia microphylla (Foothill palo verde desert scrub) Alliance	G4 S1
45.402.00	Phyllodoce breweri (Mountain heather mats) Alliance	G4 S4?
45.402.02	<i>Phyllodoce breweri</i> - <i>Cassiope mertensiana</i> - <i>Juncus parryi</i>	
45.402.01	<i>Phyllodoce breweri</i> - <i>Juncus parryi</i>	
45.405.01	<i>Phyllodoce breweri</i> - <i>Vaccinium caespitosum</i>	
*45.404.00	Phyllodoce empetriformis (Mountain heather mats) Provisional Alliance	G5 S2?
*63.710.00	Pluchea sericea (Arrow weed thickets) Alliance	G3 S3
*63.710.01	<i>Pluchea sericea</i>	
*63.710.02	<i>Pluchea sericea</i> - <i>Allenrolfea occidentalis</i>	
*63.710.03	<i>Pluchea sericea</i> - <i>Atriplex canescens</i>	
37.900.00	Prunus emarginata (Bitter cherry thickets) Provisional Alliance	G4 S4
*33.300.00	Prunus fasciculata (Desert almond scrub) Alliance	G4 S3
*33.300.01	<i>Prunus fasciculata</i>	
*33.300.06	<i>Prunus fasciculata</i> - (<i>Viguiera reticulata</i> - <i>Mortonia utahensis</i>) limestone	
*33.300.05	<i>Prunus fasciculata</i> - <i>Ambrosia eriocentra</i>	
*33.300.04	<i>Prunus fasciculata</i> - <i>Purshia stansburiana</i>	
*33.300.03	<i>Prunus fasciculata</i> - <i>Rhus trilobata</i>	
*33.300.02	<i>Prunus fasciculata</i> - <i>Salazaria mexicana</i>	
*33.220.00	Prunus fremontii (Desert apricot scrub) Alliance	G4 S3
*33.220.01	<i>Prunus fremontii</i>	
*37.910.00	Prunus ilicifolia (Holly leaf cherry chaparral) Alliance	G3 S3 (some associations are of high priority for inventory)
*37.910.03	<i>Prunus ilicifolia</i> ssp. <i>ilicifolia</i>	
*37.910.05	<i>Prunus ilicifolia</i> ssp. <i>ilicifolia</i> - <i>Ceanothus cuneatus</i>	
*37.910.06	<i>Prunus ilicifolia</i> ssp. <i>ilicifolia</i> - <i>Fraxinus dipetala</i>	
*37.910.02	<i>Prunus ilicifolia</i> ssp. <i>ilicifolia</i> - <i>Heteromeles arbutifolia</i>	
*37.910.07	<i>Prunus ilicifolia</i> ssp. <i>ilicifolia</i> - <i>Toxicodendron diversilobum</i> / grass	
*37.910.01	<i>Prunus ilicifolia</i> ssp. <i>ilicifolia</i> / <i>Sanicula crassicaulis</i>	
*37.910.04	<i>Prunus ilicifolia</i> ssp. <i>lyonii</i>	

*37.905.00	<i>Prunus virginiana</i> (Choke cherry thickets) Provisional Alliance	G4 S2?
*33.240.00	<i>Purshia stansburiana</i> (Stansbury cliff rose scrub) Alliance	G3 S3
*33.240.01	<i>Purshia stansburiana</i>	
*35.200.00	<i>Purshia tridentata</i> (Bitter brush scrub) Alliance	G4 S3
*35.200.03	<i>Purshia tridentata</i> - <i>Artemisia tridentata</i> - <i>Symphoricarpos rotundifolia</i>	
*35.200.01	<i>Purshia tridentata</i> - <i>Artemisia tridentata</i> - <i>Tetradymia canescens</i>	
*35.200.02	<i>Purshia tridentata</i> - <i>Artemisia tridentata</i> / <i>Achnatherum hymenoides</i>	
*35.200.04	<i>Purshia tridentata</i> / <i>Achnatherum nelsonii</i>	
*35.200.05	<i>Purshia tridentata</i> / <i>Eriogonum umbellatum</i>	
37.407.00	<i>Quercus berberidifolia</i> (Scrub oak chaparral) Alliance	G4 S4 (some associations are of high priority for inventory)
37.407.02	<i>Quercus berberidifolia</i>	
37.406.01	<i>Quercus berberidifolia</i> - <i>Arctostaphylos glauca</i>	
37.406.05	<i>Quercus berberidifolia</i> - <i>Ceanothus cuneatus</i>	
37.406.02	<i>Quercus berberidifolia</i> - <i>Ceanothus integerrimus</i>	
37.407.05	<i>Quercus berberidifolia</i> - <i>Ceanothus leucodermis</i>	
*37.406.03	<i>Quercus berberidifolia</i> - <i>Ceanothus oliganthus</i>	
37.407.07	<i>Quercus berberidifolia</i> - <i>Ceanothus spinosus</i>	
37.406.06	<i>Quercus berberidifolia</i> - <i>Ceanothus tomentosus</i>	
37.407.06	<i>Quercus berberidifolia</i> - <i>Cercocarpus montanus</i>	
37.407.09	<i>Quercus berberidifolia</i> - <i>Fraxinus dipetela</i> - <i>Heteromeles arbutifolia</i>	
37.407.04	<i>Quercus berberidifolia</i> - <i>Heteromeles arbutifolia</i>	
37.407.08	<i>Quercus berberidifolia</i> - southern mixed chaparral	
37.407.01	<i>Quercus berberidifolia</i> / <i>Aesculus californica</i>	
37.409.00	<i>Quercus berberidifolia</i> - <i>Adenostoma fasciculatum</i> (Scrub oak - chamise chaparral)	G4 S4
37.409.03	<i>Quercus berberidifolia</i> - <i>Adenostoma fasciculatum</i>	
37.407.03	<i>Quercus berberidifolia</i> - <i>Adenostoma fasciculatum</i> - <i>Arctostaphylos glandulosa</i>	
37.409.01	<i>Quercus berberidifolia</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus crassifolius</i>	
37.409.02	<i>Quercus berberidifolia</i> - <i>Adenostoma fasciculatum</i> - <i>Ceanothus greggii</i>	
*37.413.00	<i>Quercus chrysolepis</i> (Canyon live oak chaparral) Alliance	G3 S3
*37.413.01	<i>Quercus chrysolepis</i>	
37.415.00	<i>Quercus cornelius-mulleri</i> (Muller oak chaparral) Alliance	G4 S4
37.415.04	<i>Quercus cornelius-mulleri</i> - <i>Adenostoma sparsifolium</i> - <i>Ceanothus greggii</i>	
37.415.05	<i>Quercus cornelius-mulleri</i> - <i>Adenostoma sparsifolium</i> - <i>Cercocarpus montanus</i>	
37.415.03	<i>Quercus cornelius-mulleri</i> - <i>Cercocarpus montanus</i>	
37.415.02	<i>Quercus cornelius-mulleri</i> - <i>Eriogonum fasciculatum</i> - <i>Ericameria linearifolia</i>	
37.415.01	<i>Quercus cornelius-mulleri</i> - <i>Rhus ovata</i>	
37.415.06	<i>Quercus cornelius-mulleri</i> - <i>Coleogyne ramosissima</i>	
37.405.00	<i>Quercus durata</i> (Leather oak chaparral) Alliance	G4 S4 (some associations are of high priority for inventory)
37.405.02	<i>Quercus durata</i>	
37.405.03	<i>Quercus durata</i> - <i>Adenostoma fasciculatum</i> - <i>Quercus wislizeni</i>	
*37.405.14	<i>Quercus durata</i> - <i>Adenostoma fasciculatum</i> / <i>Salvia sonomensis</i>	
*37.405.01	<i>Quercus durata</i> - <i>Arctostaphylos glandulosa</i>	
*37.405.06	<i>Quercus durata</i> - <i>Arctostaphylos glauca</i> - <i>Artemisia californica</i> / Grass	
*37.405.07	<i>Quercus durata</i> - <i>Arctostaphylos glauca</i> - <i>Garrya congdonii</i> / <i>Melica torreyana</i>	
37.405.04	<i>Quercus durata</i> - <i>Arctostaphylos glauca</i> / <i>Pinus sabiniana</i>	
*37.405.08	<i>Quercus durata</i> - <i>Arctostaphylos pungens</i> / <i>Pinus sabiniana</i>	
37.405.10	<i>Quercus durata</i> - <i>Cercocarpus montanus</i>	
*37.405.12	<i>Quercus durata</i> - <i>Frangula californica</i> - <i>Arctostaphylos glauca</i>	
37.405.11	<i>Quercus durata</i> - <i>Heteromeles arbutifolia</i> - <i>Umbellularia californica</i>	
*37.405.13	<i>Quercus durata</i> / <i>Allium falcifolium</i> - <i>Streptanthus batrachopus</i>	
37.405.09	<i>Quercus durata</i> / <i>Pinus sabiniana</i>	

37.411.00	Quercus garryana (Brewer oak scrub) Alliance	G4 S4
37.411.03	<i>Quercus garryana</i> shrub	
37.411.04	<i>Quercus garryana</i> / <i>Festuca californica</i>	
37.411.05	<i>Quercus garryana</i> - <i>Arctostaphylos patula</i>	
37.411.06	<i>Quercus garryana</i> - <i>Cercocarpus montanus</i>	
37.418.00	Quercus john-tuckeri (Tucker oak chaparral) Alliance	G4 S4
37.418.04	<i>Quercus john-tuckeri</i>	
37.418.01	<i>Quercus john-tuckeri</i> - <i>Adenostoma fasciculatum</i>	
37.418.05	<i>Quercus john-tuckeri</i> - <i>Juniperus californica</i> - <i>Ericameria linearifolia</i>	
37.418.02	<i>Quercus john-tuckeri</i> - <i>Juniperus californica</i> - <i>Fraxinus dipetala</i>	
37.418.03	<i>Quercus john-tuckeri</i> - <i>Quercus wislizeni</i> - <i>Garrya flavescens</i>	
*37.416.00	Quercus pacifica (Island scrub oak chaparral) Alliance	G3 S3
*37.416.01	<i>Quercus pacifica</i>	
*37.419.00	Quercus palmeri (Palmer oak chaparral) Alliance	G3 S2?
*37.419.01	<i>Quercus palmeri</i> - <i>Eriogonum fasciculatum</i>	
*37.419.02	<i>Quercus palmeri</i> - <i>Eriogonum wrightii</i>	
*37.412.00	Quercus sadleriana (Sadler oak or deer oak brush fields) Alliance	G3 S3
*37.412.01	<i>Quercus sadleriana</i>	
*71.095.00	Quercus turbinella (Sonoran live oak scrub) Alliance	G4 S1
*71.095.02	<i>Quercus turbinella</i> - <i>Baccharis sergiloides</i>	
*71.095.01	<i>Quercus turbinella</i> / <i>Pinus monophylla</i>	
37.414.00	Quercus vacciniifolia (Huckleberry oak chaparral) Alliance	G4 S4
37.414.01	<i>Quercus vacciniifolia</i>	
37.414.03	<i>Quercus vacciniifolia</i> - <i>Arctostaphylos patula</i>	
37.414.02	<i>Quercus vacciniifolia</i> - <i>Chrysolepis sempervirens</i>	
37.420.00	Quercus wislizeni (Interior live oak chaparral) Alliance	G4 S4
37.420.05	<i>Quercus wislizeni</i> - <i>Cercocarpus montanus</i> - <i>Arctostaphylos glandulosa</i>	
37.420.01	<i>Quercus wislizeni</i>	
37.420.02	<i>Quercus wislizeni</i> - <i>Arctostaphylos glandulosa</i>	
37.403.01	<i>Quercus wislizeni</i> - <i>Ceanothus leucodermis</i>	
37.403.02	<i>Quercus wislizeni</i> - <i>Ceanothus leucodermis</i> - <i>Arctostaphylos glandulosa</i>	
37.403.03	<i>Quercus wislizeni</i> - <i>Ceanothus leucodermis</i> / <i>Pinus coulteri</i>	
37.420.03	<i>Quercus wislizeni</i> - <i>Cercocarpus montanus</i>	
37.420.04	<i>Quercus wislizeni</i> - <i>Cercocarpus montanus</i> - <i>Adenostoma sparsifolium</i>	
37.404.01	<i>Quercus wislizeni</i> - <i>Quercus berberidifolia</i>	
37.404.02	<i>Quercus wislizeni</i> - <i>Quercus berberidifolia</i> - <i>Fraxinus dipetala</i>	
37.402.01	<i>Quercus wislizeni</i> - <i>Quercus chrysolepis</i> shrub	
*63.425.00	Rhododendron neoglandulosum (Western Labrador-tea thickets) Alliance	G4 S2?
*63.425.01	<i>Rhododendron neoglandulosum</i>	
*63.425.02	<i>Rhododendron neoglandulosum</i> - <i>Kalmia microphylla</i> / <i>Pinus contorta</i>	
*63.310.00	Rhododendron occidentale (Western azalea patches) Provisional Alliance	G3 S2?
*37.803.00	Rhus integrifolia (Lemonade berry scrub) Alliance	G3 S3
*37.803.01	<i>Rhus integrifolia</i>	
*37.803.02	<i>Rhus integrifolia</i> - <i>Adenostoma fasciculatum</i> - <i>Artemisia californica</i>	
*37.803.03	<i>Rhus integrifolia</i> - <i>Artemisia californica</i> - <i>Eriogonum cinereum</i>	
*37.803.04	<i>Rhus integrifolia</i> - <i>Opuntia</i> spp - <i>Eriogonum cinereum</i>	
*37.803.05	<i>Rhus integrifolia</i> - <i>Salvia mellifera</i> - <i>Artemisia californica</i>	

37.801.00	<i>Rhus ovata</i> (Sugarbush chaparral) Alliance	G4 S4 (some associations are of high priority for inventory)
37.801.01	<i>Rhus ovata</i>	
37.801.02	<i>Rhus ovata</i> - <i>Salvia leucophylla</i> - <i>Artemisia californica</i>	
*37.801.03	<i>Rhus ovata</i> - <i>Ziziphus parryi</i>	
*37.802.00	<i>Rhus trilobata</i> (Basket bush thickets) Provisional Alliance	G4 S3?
*37.960.00	<i>Ribes quercetorum</i> (Oak gooseberry thickets) Provisional Alliance	G2 S2?
*63.907.00	<i>Rosa californica</i> (California rose briar patches) Alliance	G3 S3
*63.907.02	<i>Rosa californica</i>	
*63.907.01	<i>Rosa californica</i> - <i>Baccharis pilularis</i>	
*63.907.03	<i>Rosa californica</i> / <i>Schoenoplectus</i> spp.	
*63.320.00	<i>Rosa woodsii</i> (Interior rose thickets) Provisional Alliance	G5 S3
*63.901.00	<i>Rubus (parviflorus, spectabilis, ursinus)</i> (Coastal brambles) Alliance	G4 S3
*63.901.01	<i>Gaultheria shallon</i> - <i>Rubus spectabilis</i> - <i>Rubus parviflorus</i>	
*63.901.03	<i>Rubus parviflorus</i>	
*63.901.02	<i>Rubus parviflorus</i> - <i>Rubus spectabilis</i> - <i>Rubus ursinus</i>	
*63.901.04	<i>Rubus spectabilis</i>	
*63.901.05	<i>Rubus ursinus</i>	
63.906.00	<i>Rubus armeniacus</i> (Himalayan black berry brambles) Semi-natural Stands	
63.906.01	<i>Rubus armeniacus</i>	
63.906.02	<i>Rubus armeniacus</i> - <i>Rubus ursinus</i>	
33.310.00	<i>Salazaria mexicana</i> (Bladder sage scrub) Alliance	G4 S4
33.310.01	<i>Salazaria mexicana</i>	
33.310.03	<i>Salazaria mexicana</i> - <i>Ambrosia salsola</i> - <i>Eriogonum fasciculatum</i>	
33.310.02	<i>Salazaria mexicana</i> - <i>Viguiera reticulata</i> - <i>Atriplex confertifolia</i>	
*61.213.00	<i>Salix bebbiana</i> (Bebb's willow thickets) Alliance	G4 S2?
*61.213.01	<i>Salix bebbiana</i> / mesic forb type	
*61.215.00	<i>Salix breweri</i> (Brewer willow thickets) Alliance	G2 S2
*61.215.01	<i>Salix breweri</i> / <i>Muhlenbergia asperifolia</i>	
*61.112.00	<i>Salix eastwoodiae</i> (Sierran willow thickets) Alliance	G3 S3
*61.112.01	<i>Salix eastwoodiae</i>	
*61.112.02	<i>Salix eastwoodiae</i> / <i>Carex scopulorum</i>	
*61.112.03	<i>Salix eastwoodiae</i> / <i>Oreostemma alpigenum</i>	
*63.160.02	<i>Salix eastwoodiae</i> / <i>Senecio triangularis</i>	
61.209.00	<i>Salix exigua</i> (Sandbar willow thickets) Alliance	G5 S4 (some associations are of high priority for inventory)
61.209.01	<i>Salix exigua</i>	
61.209.07	<i>Salix exigua</i> - (<i>Salix lasiolepis</i>) - <i>Rubus discolor</i>	
61.209.02	<i>Salix exigua</i> - <i>Arundo donax</i>	
*61.209.06	<i>Salix exigua</i> - <i>Brickellia californica</i>	
61.209.03	<i>Salix exigua</i> - <i>Salix melanopsis</i>	
61.209.04	<i>Salix exigua</i> / <i>Baccharis sergiloides</i>	
61.209.05	<i>Salix exigua</i> / <i>Juncus</i> spp.	
*61.212.00	<i>Salix geyeriana</i> (Geyer willow thickets) Alliance	G4 S2?
*61.212.01	<i>Salix geyeriana</i> / grass	
*61.212.02	<i>Salix geyeriana</i> / mesic graminoid	

*61.203.00	Salix hookeriana (Coastal dune willow thickets) Alliance	G4 S3
*61.203.01	<i>Salix hookeriana</i>	
*61.203.02	<i>Salix hookeriana</i> / <i>Rubus ursinus</i>	
*61.118.00	Salix jepsonii (Jepson willow thickets) Alliance	G3 S3
*61.118.01	<i>Salix jepsonii</i>	
*61.118.04	<i>Salix jepsonii</i> - <i>Cornus sericea</i>	
*61.118.03	<i>Salix jepsonii</i> - <i>Paxistima myrsinites</i>	
*61.118.02	<i>Salix jepsonii</i> / <i>Senecio triangularis</i>	
61.201.00	Salix lasiolepis (Arroyo willow thickets) Alliance	G4 S4 (some associations are of high priority for inventory)
*61.201.01	<i>Salix lasiolepis</i>	
61.201.04	<i>Salix lasiolepis</i> - <i>Salix lucida</i>	
61.201.02	<i>Salix lasiolepis</i> / <i>Artemisia douglasiana</i>	
61.201.05	<i>Salix lasiolepis</i> / <i>Baccharis pilularis</i> - <i>Rubus ursinus</i>	
61.201.06	<i>Salix lasiolepis</i> / <i>Baccharis salicifolia</i>	
61.201.07	<i>Salix lasiolepis</i> / <i>Malosma laurina</i>	
61.201.08	<i>Salix lasiolepis</i> / <i>Rosa californica</i>	
61.201.03	<i>Salix lasiolepis</i> / <i>Rubus</i> spp.	
*61.113.00	Salix lemmonii (Lemmon's willow thickets) Alliance	G4 S3
*61.113.01	<i>Salix lemmonii</i>	
*61.113.02	<i>Salix lemmonii</i> / <i>Carex</i> spp.	
*61.113.04	<i>Salix lemmonii</i> / mesic forb	
*61.113.03	<i>Salix lemmonii</i> / mesic graminoid	
*61.204.01	<i>Salix lucida</i> ssp. <i>lasiandra</i> / <i>Urtica urens</i> - <i>Urtica dioica</i>	
*61.210.00	Salix lutea (Yellow willow thickets) Alliance	G4 S3?
*61.210.01	<i>Salix lutea</i> / mesic forbs	
*61.210.02	<i>Salix lutea</i> / mesic graminoids	
*61.210.03	<i>Salix lutea</i> / <i>Poa pratensis</i>	
*61.210.04	<i>Salix lutea</i> / <i>Rosa woodsii</i>	
*91.127.00	Salix nivalis (Snow willow mats) Provisional Alliance	G4 S1?
61.115.00	Salix orestera (Sierra gray willow thickets) Alliance	G4 S4 (some associations are of high priority for inventory)
*63.160.03	<i>Salix orestera</i> / <i>Allium validum</i>	
61.115.01	<i>Salix orestera</i> / <i>Calamagrostis muiriana</i>	
61.115.02	<i>Salix orestera</i> / <i>Senecio triangularis</i>	
61.115.03	<i>Salix orestera</i> / tall forb	
*61.116.00	Salix petrophila (Alpine willow turf) Alliance	G5 S3
*61.116.01	<i>Salix petrophila</i>	
*61.116.03	<i>Salix petrophila</i> - <i>Calamagrostis muiriana</i>	
*61.116.02	<i>Salix petrophila</i> - <i>Calamagrostis muiriana</i> - <i>Vaccinium caespitosum</i> - <i>Antennaria media</i>	
*61.119.00	Salix planifolia (Tea-leaved willow thickets) Provisional Alliance	G4 S2?
*61.119.01	<i>Salix planifolia</i>	
*61.206.00	Salix sitchensis (Sitka willow thickets) Provisional Alliance	G4 S3?
*32.030.00	Salvia apiana (White sage scrub) Alliance	G4 S3
*32.030.01	<i>Salvia apiana</i> - <i>Artemisia californica</i>	
*32.030.02	<i>Salvia apiana</i> - <i>Encelia farinosa</i>	
*32.030.03	<i>Salvia apiana</i> - <i>Hesperoyucca whipplei</i>	
*33.320.00	Salvia dorrii (Desert purple sage scrub) Alliance	G3 S2
*33.320.01	<i>Salvia dorrii</i>	

32.090.00	Salvia leucophylla (Purple sage scrub) Alliance	G4 S4
32.090.03	<i>Salvia leucophylla</i>	
32.090.01	<i>Salvia leucophylla</i> - <i>Artemisia californica</i>	
32.090.04	<i>Salvia leucophylla</i> - <i>Artemisia californica</i> - <i>Eriogonum cinereum</i> / <i>Nassella</i> spp.	
32.090.05	<i>Salvia leucophylla</i> - <i>Eriogonum cinereum</i> / annual herb	
32.090.02	<i>Salvia leucophylla</i> - <i>Malosma laurina</i>	
32.020.00	Salvia mellifera (Black sage scrub) Alliance	G4 S4 (some associations are of high priority for inventory)
32.020.03	<i>Salvia mellifera</i>	
32.020.04	<i>Salvia mellifera</i> - <i>Encelia californica</i>	
*32.020.08	<i>Salvia mellifera</i> - <i>Eriogonum cinereum</i>	
32.020.06	<i>Salvia mellifera</i> - <i>Eriogonum fasciculatum</i> / <i>Bromus rubens</i>	
32.020.07	<i>Salvia mellifera</i> - <i>Eriogonum fasciculatum</i> var. <i>foliolosum</i> - <i>Eriodictyon tomentosum</i>	
32.020.09	<i>Salvia mellifera</i> - <i>Lotus scoparius</i>	
32.020.01	<i>Salvia mellifera</i> - <i>Malosma laurina</i>	
*32.020.05	<i>Salvia mellifera</i> - <i>Opuntia littoralis</i>	
32.020.11	<i>Salvia mellifera</i> - <i>Rhus ovata</i>	
*63.410.00	Sambucus nigra (Blue elderberry stands) Alliance	G3 S3
*63.410.01	<i>Sambucus nigra</i>	
*63.410.03	<i>Sambucus nigra</i> - <i>Heteromeles arbutifolia</i>	
*63.410.02	<i>Sambucus nigra</i> / <i>Leymus condensatus</i>	
*36.400.00	Sarcobatus vermiculatus (Greasewood scrub) Alliance	G5 S4 (some associations are of high priority for inventory)
36.400.01	<i>Sarcobatus vermiculatus</i>	
*36.400.02	<i>Sarcobatus vermiculatus</i> - <i>Atriplex confertifolia</i>	
*33.005.00	Simmondsia chinensis (Jojoba scrub) Provisional Alliance	G4 S3?
*33.005.01	<i>Simmondsia chinensis</i> - <i>Eriogonum fasciculatum</i> - <i>Opuntia parryi</i>	
*36.200.00	Suaeda moquinii (Bush seepweed scrub) Alliance	G5 S3
*36.200.01	<i>Suaeda moquinii</i>	
*36.200.02	<i>Suaeda moquinii</i> - <i>Allenrolfea occidentalis</i>	
*36.200.03	<i>Suaeda moquinii</i> - <i>Atriplex canescens</i>	
63.810.00	Tamarix spp. (Tamarisk thickets) Semi-natural Stands	
*33.350.00	Tetracoccus hallii (Hall's shrubby-spurge patches) Provisional Alliance	G2 S1
*33.330.00	Tidestromia oblongifolia (Arizona honey sweet sparse scrub) Provisional Alliance	G3 S3
37.940.00	Toxicodendron diversilobum (Poison oak scrub) Alliance	G4 S4
37.940.02	<i>Toxicodendron diversilobum</i> - <i>Artemisia californica</i> / <i>Leymus condensatus</i>	
37.940.01	<i>Toxicodendron diversilobum</i> - <i>Baccharis pilularis</i> - <i>Rubus parviflorus</i>	
37.940.03	<i>Toxicodendron diversilobum</i> - <i>Diplacus aurantiacus</i>	
37.940.04	<i>Toxicodendron diversilobum</i> - <i>Philadelphus lewisii</i>	
37.940.05	<i>Toxicodendron diversilobum</i> / <i>Bromus hordeaceus</i> - <i>Micropus californicus</i>	
37.940.06	<i>Toxicodendron diversilobum</i> / <i>Bromus hordeaceus</i> - <i>Vicia villosa</i> - <i>Madia gracilis</i>	
37.940.08	<i>Toxicodendron diversilobum</i> / herbaceous	
37.940.07	<i>Toxicodendron diversilobum</i> / <i>Pteridium aquilinum</i>	
*45.405.00	Vaccinium cespitosum (Dwarf bilberry meadows and mats) Alliance	G4? S3?
*45.405.03	<i>Vaccinium cespitosum</i> - <i>Calamagrostis muiriana</i>	
*45.405.04	<i>Vaccinium cespitosum</i> - <i>Carex filifolia</i>	
*45.405.00	<i>Vaccinium cespitosum</i> - <i>Carex nigricans</i>	
*45.405.02	<i>Vaccinium cespitosum</i> - <i>Kalmia microphylla</i>	
*45.410.00	Vaccinium uliginosum (Bog blue berry wet meadows) Alliance	G4 S3
*45.410.01	<i>Vaccinium uliginosum</i>	

*45.410.03	<i>Vaccinium uliginosum</i> / <i>Aulacomnium palustre</i>	
*45.410.04	<i>Vaccinium uliginosum</i> / <i>Sphagnum teres</i>	
*45.410.02	<i>Vaccinium uliginosum</i> ssp. <i>occidentale</i> / <i>Bistorta bistortoides</i>	
*39.030.00	Venegasia carpesioides (Canyon sunflower scrub) Alliance	G3 S3
*39.030.01	<i>Venegasia carpesioides</i>	
33.032.00	Viguiera parishii (Parish's goldeneye scrub) Alliance	G4 S4 (some associations are of high priority for inventory)
33.032.03	<i>Viguiera parishii</i>	
*33.032.01	<i>Viguiera parishii</i> - <i>Agave deserti</i>	
33.032.04	<i>Viguiera parishii</i> - <i>Encelia farinosa</i>	
33.032.02	<i>Viguiera parishii</i> - <i>Eriogonum fasciculatum</i>	
*33.032.05	<i>Viguiera parishii</i> - <i>Salvia dorrii</i>	
*33.033.00	Viguiera reticulata (Net-veined goldeneye scrub) Alliance	G3 S3?
*33.033.01	<i>Viguiera reticulata</i>	
33.070.00	Yucca schidigera (Mojave yucca scrub) Alliance	G4 S4 (some associations are of high priority for inventory)
33.070.01	<i>Yucca schidigera</i>	
33.070.03	<i>Yucca schidigera</i> - <i>Ambrosia dumosa</i>	
33.070.04	<i>Yucca schidigera</i> - <i>Coleogyne ramosissima</i>	
*33.070.08	<i>Yucca schidigera</i> - <i>Cylindropuntia acanthocarpa</i>	
33.070.02	<i>Yucca schidigera</i> - <i>Ephedra nevadensis</i>	
33.070.07	<i>Yucca schidigera</i> - <i>Eriogonum fasciculatum</i>	
*33.070.11	<i>Yucca schidigera</i> - <i>Larrea tridentata</i> - <i>Agave deserti</i>	
33.070.05	<i>Yucca schidigera</i> - <i>Larrea tridentata</i> - <i>Ambrosia dumosa</i>	
33.070.06	<i>Yucca schidigera</i> - <i>Larrea tridentata</i> - <i>Ephedra nevadensis</i>	
*33.070.10	<i>Yucca schidigera</i> - <i>Larrea tridentata</i> - <i>Simmondsia chinensis</i>	
33.070.09	<i>Yucca schidigera</i> - <i>Viguiera parishii</i>	
33.070.12	<i>Yucca schidigera</i> / <i>Pleuraphis rigida</i>	
*33.225.00	Ziziphus obtusifolia (Graythorn patches) Special Stands	G2 S2?
Herbaceous Alliances and Stands		Global & State Rank
*21.100.00	Abronia latifolia - Ambrosia chamissonis (Dune mat) Alliance	G3 S3
*21.101.01	<i>Abronia latifolia</i> - <i>Erigeron glaucus</i>	
*21.101.02	<i>Abronia latifolia</i> - <i>Leymus mollis</i>	
*21.102.02	<i>Ambrosia chamissonis</i> - <i>Abronia maritima</i> - <i>Cakile maritima</i>	
*21.102.01	<i>Ambrosia chamissonis</i> - <i>Abronia umbellata</i>	
*21.100.03	<i>Ambrosia chamissonis</i> - <i>Eriophyllum staechadifolium</i> (- <i>Lupinus arboreus</i>)	
*21.102.03	<i>Ambrosia chamissonis</i> - <i>Malacothrix incana</i> - <i>Carpobrotus chilensis</i> - <i>Poa douglasii</i>	
*21.100.01	<i>Artemisia pycnocephala</i> - <i>Calystegia soldanella</i>	
*21.110.01	<i>Artemisia pycnocephala</i> - <i>Cardionema ramosissimum</i>	
*21.110.03	<i>Artemisia pycnocephala</i> - <i>Ericameria ericoides</i>	
*21.110.04	<i>Artemisia pycnocephala</i> - <i>Poa douglasii</i>	
21.110.02	<i>Artemisia pycnocephala</i> - <i>Polygonum paronychia</i>	
21.125.01	<i>Cakile maritima</i> - <i>Abronia maritima</i>	
21.102.04	<i>Cakile maritima</i> - <i>Ambrosia chamissonis</i> - <i>Carpobrotus edulis</i>	
*21.100.06	<i>Poa douglasii</i> - <i>Lathyrus littoralis</i>	
33.065.00	Ambrosia psilostachya (Western ragweed meadows) Provisional Alliance	G4 S4?
*41.120.00	Achnatherum hymenoides (Indian rice grass grassland) Alliance	G4 S1
*41.120.01	<i>Achnatherum hymenoides</i> - <i>Leptodactylon pungens</i>	
*41.120.02	<i>Achnatherum hymenoides</i> - <i>Sphaeralcea ambigua</i>	

*41.090.00	<i>Achnatherum speciosum</i> (Desert needlegrass grassland) Alliance	G4 S2
*41.090.01	<i>Achnatherum speciosum</i>	
42.003.00	<i>Aegilops triuncialis</i> (Barbed goatgrass patches) Provisional Semi-natural Stands	
42.003.01	<i>Aegilops triuncialis</i> - <i>Hemizonia congesta</i>	
42.030.00	<i>Agropyron cristatum</i> (Crested wheatgrass rangelands) Semi-natural Stands	
45.106.00	<i>Agrostis (gigantea, stolonifera)</i> - <i>Festuca arundinacea</i> (Bent grass - tall fescue meadows) Semi-natural Stands	
45.106.01	<i>Agrostis gigantea</i>	
45.106.02	<i>Agrostis stolonifera</i>	
45.106.03	<i>Agrostis stolonifera</i> - <i>Festuca arundinacea</i>	
*42.006.00	<i>Alopecurus geniculatus</i> (Water foxtail meadows) Provisional Alliance	G3? S3?
42.010.00	<i>Ammophila arenaria</i> (European beach grass swards) Semi-natural Stands	
42.010.02	<i>Ammophila arenaria</i>	
42.010.03	<i>Ammophila arenaria</i> - <i>Cardionema ramosissimum</i>	
42.010.01	<i>Ammophila arenaria</i> - <i>Erechtites minima</i>	
42.010.04	<i>Ammophila arenaria</i> - <i>Lupinus variicolor</i>	
42.110.00	<i>Amsinckia (menziesii, tessellata)</i> (Fiddleneck fields) Alliance	G4 S4
42.110.01	<i>Amsinckia menziesii</i> - <i>Erodium</i> spp.	
42.110.02	<i>Amsinckia menziesii</i> - <i>Vulpia bromoides</i> - <i>Plagiobothrys canescens</i>	
*52.214.00	<i>Anemopsis californica</i> (Yerba mansa meadows) Alliance	G3 S2?
*52.214.01	<i>Anemopsis californica</i> - <i>Juncus arcticus</i> var. <i>mexicanus</i>	
*38.140.00	<i>Argentina egedii</i> (Pacific silverweed marshes) Alliance	G4 S2
*38.140.01	<i>Argentina egedii</i>	
*38.140.03	<i>Argentina egedii</i> - <i>Eleocharis macrostachya</i>	
*38.140.02	<i>Argentina egedii</i> - <i>Alopecurus aequalis</i>	
*38.140.04	<i>Argentina egedii</i> - <i>Lotus uliginosus</i>	
*45.425.00	<i>Aristida purpurea</i> (Purple three-awn meadows) Provisional Alliance	G4 S2?
35.160.00	<i>Artemisia dracunculus</i> (Wild tarragon patches) Alliance	G4 S4
35.160.01	<i>Artemisia dracunculus</i>	
35.160.02	<i>Artemisia dracunculus</i> - <i>Pseudognaphalium canescens</i>	
*52.212.00	<i>Arthrocnemum subterminale</i> (Parish's glasswort patches) Alliance	G4 S2
*52.212.01	<i>Arthrocnemum subterminale</i>	
*52.212.03	<i>Arthrocnemum subterminale</i> - <i>Monanthocloe littoralis</i>	
*52.212.02	<i>Arthrocnemum subterminale</i> - <i>Sarcocornia pacifica</i>	
42.080.00	<i>Arundo donax</i> (Giant reed breaks) Semi-natural Stands	
42.080.01	<i>Arundo donax</i>	
42.080.02	<i>Arundo donax</i> - <i>Salix exigua</i>	
52.211.00	<i>Atriplex prostrata</i> - <i>Cotula coronopifolia</i> (Fields of fat hen and brass buttons) Semi-natural Stands	
52.211.01	<i>Atriplex prostrata</i>	
52.211.02	<i>Atriplex prostrata</i> / annual grasses	
52.211.03	<i>Atriplex prostrata</i> / <i>Distichlis spicata</i>	
52.211.04	<i>Atriplex prostrata</i> / <i>Schoenoplectus maritimus</i>	
52.211.05	<i>Atriplex prostrata</i> / <i>Sesuvium verrucosum</i>	
52.211.06	<i>Cotula coronopifolia</i>	
44.150.00	<i>Avena (barbata, fatua)</i> (Wild oats grasslands) Semi-natural Stands	
44.150.01	<i>Avena barbata</i>	

44.150.02	<i>Avena barbata</i> - <i>Avena fatua</i>	
44.150.03	<i>Avena barbata</i> - <i>Bromus hordeaceus</i>	
44.150.04	<i>Avena fatua</i>	
52.106.00	<i>Azolla (filiculoides, mexicana)</i> (Mosquito fern mats) Provisional Alliance	G4 S4
45.413.00	<i>Bistorta bistortoides</i> - <i>Mimulus primuloides</i> (Western bistort - primrose monkey flower meadows) Alliance	G4 S4
45.413.02	<i>Bistorta bistortoides</i>	
42.011.00	<i>Brassica nigra</i> and other mustards (Upland mustards) Semi-natural Stands	
42.011.01	<i>Brassica nigra</i>	
42.011.02	<i>Brassica nigra</i> - <i>Bromus diandrus</i>	
42.011.03	<i>Brassicas tournefortii</i> / <i>Ambrosia dumosa</i>	
42.011.04	<i>Raphanus sativus</i>	
42.026.00	<i>Bromus (diandrus, hordeaceus)</i> - <i>Brachypodium distachyon</i> (Annual brome grasslands) Semi-natural Stands	
42.040.03	<i>Brachypodium distachyon</i>	
42.026.21	<i>Bromus diandrus</i>	
42.026.22	<i>Bromus diandrus</i> - <i>Avena</i> spp.	
42.026.11	<i>Bromus diandrus</i> - Mixed herbs	
42.026.20	<i>Bromus hordeaceus</i> - <i>Aira caryophyllea</i>	
42.026.23	<i>Bromus hordeaceus</i> - <i>Amsinckia menziesii</i> - <i>Hordeum murinum</i>	
42.026.08	<i>Bromus hordeaceus</i> - <i>Bromus tectorum</i>	
42.026.10	<i>Bromus hordeaceus</i> - <i>Dichelostemma multiflorum</i>	
42.026.09	<i>Bromus hordeaceus</i> - <i>Erodium botrys</i>	
42.040.02	<i>Bromus hordeaceus</i> - <i>Erodium botrys</i>	
42.026.13	<i>Bromus hordeaceus</i> - <i>Erodium botrys</i> - <i>Plagiobothrys fulvus</i>	
42.026.15	<i>Bromus hordeaceus</i> - <i>Holocarpha virgata</i> - <i>Lolium perenne</i>	
42.026.14	<i>Bromus hordeaceus</i> - <i>Holocarpha virgata</i> - <i>Taeniatherum caput - medusa</i>	
42.026.17	<i>Bromus hordeaceus</i> - <i>Leontodon taraxacoides</i>	
42.026.16	<i>Bromus hordeaceus</i> - <i>Limnanthes douglasii</i>	
42.026.18	<i>Bromus hordeaceus</i> - <i>Lupinus nanus</i> - <i>Trifolium</i> spp.	
42.026.07	<i>Bromus hordeaceus</i> - <i>Taeniatherum caput - medusae</i>	
42.026.02	<i>Bromus hordeaceus</i> - <i>Vulpia hirsuta</i>	
42.026.19	<i>Bromus hordeaceus</i> (- <i>Vicia villosa</i> - <i>Lolium multiflorum</i>) - <i>Trifolium hirtum</i>	
42.024.00	<i>Bromus rubens</i> - <i>Schismus (arabicus, barbatus)</i> (Red brome or Mediterranean grass grasslands) Semi-natural Stands	
42.024.01	<i>Bromus rubens</i>	
42.024.02	<i>Bromus rubens</i> - mixed herbs	
42.024.03	<i>Schismus playa</i>	
42.020.00	<i>Bromus tectorum</i> (Cheatgrass grassland) Semi-natural Stands	
42.020.01	<i>Bromus tectorum</i>	
42.020.02	<i>Bromus tectorum</i> - <i>Bromus diandrus</i>	
*52.112.00	<i>Bulboschoenus maritimus</i> (Salt marsh bulrush marshes) Alliance	G4 S3
*52.112.03	<i>Bulboschoenus maritimus</i>	
*52.112.04	<i>Bulboschoenus maritimus</i> / <i>Sarcocornia pacifica (depressa)</i>	
*52.112.05	<i>Bulboschoenus maritimus</i> / <i>Sesuvium verrucosum</i>	
21.125.00	<i>Cakile (edentula, maritima)</i> (Sea rocket sands) Provisional Semi-natural Stands	
*41.224.00	<i>Calamagrostis canadensis</i> (Bluejoint reed grass meadows) Alliance	G5 S3
*41.224.01	<i>Calamagrostis canadensis</i>	
*41.224.02	<i>Calamagrostis canadensis</i> - <i>Carex utriculata</i>	
*41.224.03	<i>Calamagrostis canadensis</i> - <i>Dodecatheon redolens</i>	
*41.224.04	<i>Calamagrostis canadensis</i> - <i>Scirpus microcarpus</i>	

45.141.00	Calamagrostis muiriana (Shorthair reed grass meadows) Alliance	G4 S4
45.141.02	<i>Calamagrostis muiriana</i> - <i>Oreostemma alpigenum</i>	
45.141.03	<i>Calamagrostis muiriana</i> - <i>Ptilagrostis kingii</i>	
45.141.04	<i>Calamagrostis muiriana</i> - <i>Trisetum spicatum</i>	
45.141.01	<i>Calamagrostis muriana</i> - <i>Juncus drummondii</i>	
*41.190.00	Calamagrostis nutkaensis (Pacific reed grass meadows) Alliance	G4 S2
*41.190.03	<i>Calamagrostis nutkaensis</i>	
*41.190.01	<i>Calamagrostis nutkaensis</i> - <i>Baccharis pilularis</i>	
*41.190.02	<i>Calamagrostis nutkaensis</i> - <i>Carex obnupta</i> . - <i>Juncus</i> spp.	
41.211.00	Calamagrostis purpurascens (Fell-fields with purple reed grass) Alliance	G4? S4?
41.211.02	<i>Calamagrostis purpurascens</i> - <i>Ericameria parryi</i> var. <i>monocephala</i> - <i>Linanthus pungens</i>	
41.211.01	<i>Calamagrostis purpurascens</i> - <i>Linanthus pungens</i>	
41.211.03	<i>Calamagrostis purpurascens</i> / <i>Ribes cereum</i>	
*45.416.00	Camassia quamash (Small camas meadows) Alliance	G4? S3?
*45.416.01	<i>Camassia quamash</i> / <i>Sphagnum subsecundum</i>	
*45.168.00	Carex (aquatilis, lenticularis) (Water sedge and Lakeshore sedge meadows) Alliance	G5 S3
*45.168.01	<i>Carex aquatilis</i>	
*45.168.04	<i>Carex aquatilis</i> - <i>Carex lenticularis</i>	
*45.168.02	<i>Carex lenticularis</i> / <i>Aulacomnium palustre</i>	
*45.168.03	<i>Carex lenticularis</i> / <i>Perideridia parishii</i>	
52.121.00	Carex (utriculata, vesicaria) (Beaked sedge and blister sedge meadows) Alliance	G5 S4
52.120.01	<i>Carex utriculata</i>	
52.121.01	<i>Carex utriculata</i> - <i>Mimulus primuloides</i>	
45.110.22	<i>Carex vernacula</i> - <i>Antennaria media</i>	
45.170.01	<i>Carex vesicaria</i>	
*45.142.00	Carex barbarae (White-root beds) Alliance	G2? S2?
*45.142.01	<i>Carex barbarae</i>	
*45.150.00	Carex breweri (Brewer sedge mats) Alliance	G4 S3
*45.150.01	<i>Carex breweri</i>	
*45.150.03	<i>Carex breweri</i> - <i>Cistanthe umbellata</i>	
*45.150.02	<i>Carex breweri</i> - <i>Poa wheeleri</i>	
*45.160.00	Carex congdonii (Congdon's sedge talus) Provisional Alliance	G2 S2
*45.160.01	<i>Arnica amplexicaulis</i> - <i>Carex congdonii</i>	
*45.165.00	Carex densa (Dense sedge marshes) Provisional Alliance	G2? S2?
*45.165.02	<i>Carex densa</i> - <i>Juncus xiphioides</i>	
*45.165.03	<i>Carex densa</i> - <i>Lolium perenne</i> - <i>Juncus</i> spp.	
*45.169.00	Carex douglasii (Douglas' sedge meadows) Provisional Alliance	G4? S2?
45.140.00	Carex filifolia (Shorthair sedge turf) Alliance	G4 S4
45.140.06	<i>Carex filifolia</i>	
45.140.09	<i>Carex filifolia</i> - <i>Calamagrostis muiriana</i>	
45.140.10	<i>Carex filifolia</i> - <i>Cistanthe monosperma</i>	
45.140.05	<i>Carex filifolia</i> - <i>Erigeron algidus</i>	
45.140.11	<i>Carex filifolia</i> - <i>Erigeron petiolaris</i>	
45.140.08	<i>Carex filifolia</i> - <i>Penstemon heterodoxus</i>	
45.140.07	<i>Carex filifolia</i> - <i>Saxifraga aprica</i>	
45.140.01	<i>Carex filifolia</i> - <i>Trisetum spicatum</i>	
*45.145.00	Carex helleri (Heller's sedge fell-fields) Alliance	G4 S2
*45.145.03	<i>Carex helleri</i> - <i>Saxifraga tolmiei</i> - <i>Luzula divaricata</i>	
*45.145.06	<i>Carex helleri</i> - <i>Arabis platysperma</i> - <i>Penstemon heterodoxus</i>	

*45.145.05	<i>Carex helleri</i> - <i>Eriogonum incanum</i> - <i>Raillardella argentea</i>	
*45.145.04	<i>Carex helleri</i> - <i>Poa suksdorfii</i>	
*45.115.00	Carex heteroneura (Different-nerve sedge patches) Provisional Alliance	G3? S3?
*45.115.01	<i>Carex heteroneura</i> - <i>Achillea millefolium</i>	
*45.175.00	Carex integra (Small-fruited sedge meadows) Provisional Alliance	G4? S2?
*45.162.00	Carex jonesii (Jones's sedge turf) Alliance	G4 S3
*45.162.02	<i>Carex jonesii</i>	
*45.162.01	<i>Carex jonesii</i> - <i>Bistorta bistortoides</i>	
*45.162.03	<i>Carex jonesii</i> / <i>Sphagnum subsecundum</i>	
*45.166.00	Carex lasiocarpa (Slender sedge meadows) Provisional Alliance	G5? S3?
*45.166.01	<i>Carex lasiocarpa</i>	
*45.178.00	Carex limosa (Shore sedge fens) Alliance	G4? S2?
*45.178.02	<i>Carex limosa</i> - <i>Menyanthes trifoliata</i>	
*45.110.03	<i>Carex limosa</i> - <i>Mimulus primuloides</i>	
*45.178.01	<i>Carex limosa</i> / <i>Drepanocladus sordidus</i>	
*45.179.00	Carex luzulina (Woodland sedge fens) Provisional Alliance	G3 S2?
*45.181.00	Carex microptera (Small-winged sedge meadows) Provisional Alliance	G4 S2?
45.130.00	Carex nebrascensis (Nebraska sedge meadows) Alliance	G5 S4
45.130.01	<i>Carex nebrascensis</i>	
45.130.02	<i>Carex nebrascensis</i> - <i>Ptilagrostis kingii</i>	
*45.164.00	Carex nigricans (Showy sedge sod) Provisional Alliance	G4 S3?
*45.182.00	Carex nudata (Torrent sedge patches) Alliance	G3 S3
*45.182.01	<i>Carex nudata</i>	
*45.183.00	Carex obnupta (Slough sedge swards) Alliance	G4 S3
*45.183.01	<i>Carex obnupta</i>	
*45.183.02	<i>Carex obnupta</i> - <i>Juncus lescurii</i>	
*45.183.03	<i>Carex obnupta</i> - <i>Juncus patens</i>	
*45.184.00	Carex pansa (Sand dune sedge swaths) Provisional Alliance	G4? S3?
*45.120.00	Carex scopulorum (Sierra alpine sedge turf) Alliance	G4 S3
*45.120.01	<i>Carex scopulorum</i>	
*45.120.07	<i>Carex scopulorum</i> - <i>Allium validum</i>	
*45.120.04	<i>Carex scopulorum</i> - <i>Eleocharis quinquefolia</i>	
*45.120.03	<i>Carex scopulorum</i> - <i>Eriophorum crinigerum</i>	
*45.120.08	<i>Carex scopulorum</i> - <i>Mimulus primuloides</i>	
*45.120.02	<i>Carex scopulorum</i> - <i>Pedicularis groenlandica</i>	
*45.120.06	<i>Carex scopulorum</i> / <i>Aulacomnium palustre</i>	
*45.120.05	<i>Carex scopulorum</i> / <i>Oreostemma alpigenum</i>	
*45.180.00	Carex serratodens (Twotooth sedge seeps) Provisional Alliance	G3 S3?
*45.190.00	Carex simulata (Short-beaked sedge meadows) Alliance	G4 S3
*45.190.01	<i>Carex simulata</i>	
*45.190.04	<i>Carex simulata</i> - <i>Carex utriculata</i>	
*45.190.05	<i>Carex simulata</i> - <i>Carex vesicaria</i>	
*45.190.02	<i>Carex simulata</i> / <i>Aulacomnium palustre</i>	
*45.190.03	<i>Carex simulata</i> / <i>Philonotis fontana</i>	

*45.155.00	Carex spectabilis (Showy sedge sod) Alliance	G4 S3
*45.155.02	<i>Carex spectabilis</i> - <i>Senecio triangularis</i>	
*45.155.01	<i>Carex spectabilis</i> - <i>Sibbaldia procumbens</i>	
*45.185.00	Carex straminiformis (Mount Shasta sedge meadows) Provisional Alliance	G3? S3?
*45.186.00	Carex subnigricans (Dark alpine sedge turf) Alliance	G4 S3
*45.186.01	<i>Carex subnigricans</i> - <i>Antennaria media</i>	
*45.186.05	<i>Carex subnigricans</i> - <i>Deschampsia caespitosa</i>	
*45.186.03	<i>Carex subnigricans</i> - <i>Dodecatheon alpinum</i>	
*45.186.02	<i>Carex subnigricans</i> - <i>Oreostemma alpigenum</i>	
*45.186.04	<i>Carex subnigricans</i> - <i>Pedicularis attollens</i>	
21.200.00	Carpobrotus edulis or other Ice Plants (Ice plant mats) Semi-natural Stands	
42.042.00	Centaurea (solstitialis, meletensis) (Yellow star-thistle fields) Semi-natural Stands	
42.042.01	<i>Centaurea melitensis</i> - <i>Brassica nigra</i>	
42.042.02	<i>Centaurea solstitialis</i>	
42.040.04	<i>Centaurea</i> spp. - <i>Brachypodium distachyon</i> .	
42.043.00	Centaurea (virgata) (Knapweed and purple-flowered star-thistle fields) Provisional Semi-natural Stands	
*44.160.00	Centromadia (pungens) (Tar plant fields) Alliance	G2? S2?
*44.160.02	<i>Centromadia pungens</i> - <i>Downingia bella</i>	
*44.160.01	<i>Centromadia pungens</i> ssp. <i>laevis</i>	
*42.100.00	Cirsium fontinale (Fountain thistle seeps) Alliance	G1 S1
*42.100.01	<i>Cirsium fontinale</i> var. <i>campylon</i> - <i>Carex serratodens</i> - <i>Hordeum brachyantherum</i>	
*42.100.02	<i>Cirsium fontinale</i> var. <i>campylon</i> - <i>Hemizonia congesta</i> var. <i>luzulifolia</i>	
*42.100.03	<i>Cirsium fontinale</i> var. <i>campylon</i> - <i>Mimulus guttatus</i> - <i>Stachys pycnantha</i>	
45.311.00	Cistanthe (umbellata) - Gayophytum (diffusum) (Pussypaws - groundsmoke openings) Alliance	G4 S4
45.311.01	<i>Astragalus bolanderi</i> - (<i>Cistanthe umbellatum</i>)	
45.311.02	<i>Cistanthe umbellatum</i> - <i>Achnatherum occidentale</i>	
45.311.03	<i>Cistanthe</i> - <i>Castilleja arachnoidea</i>	
45.311.04	<i>Polygonum douglasii</i> - <i>Gayophytum diffusum</i>	
45.556.00	Conium maculatum - Foeniculum vulgare (Poison hemlock or fennel patches) Semi-natural Stands	
45.556.01	<i>Conium maculatum</i>	
45.556.02	<i>Foeniculum vulgare</i>	
42.070.00	Cortaderia (jubata, selloana) (Pampas grass patches) Semi-natural Stands	
46.100.00	Cressa truxillensis - Distichlis spicata (Alkali weed - Salt grass playas and sinks) Alliance	G4 S4
46.100.02	<i>Chamaesyce hooveri</i> - <i>Bolboschoenus maritimus</i>	
46.100.03	<i>Neostapfia colusana</i> - <i>Malvella leprosa</i>	
46.100.04	<i>Neostapfia colusana</i> - <i>Polypogon maritimus</i>	
46.100.05	<i>Orcuttia pilosa</i>	
42.044.00	Cynosurus echinatus (Annual dogtail grasslands) Semi-natural Stands	
42.044.07	<i>Cynosurus echinatus</i> - <i>Arrhenatherum elatius</i> / <i>Dichelostemma capitatum</i>	
42.044.01	<i>Cynosurus echinatus</i> - <i>Bromus hordeaceus</i> - <i>Avena fatua</i>	
42.044.02	<i>Cynosurus echinatus</i> - <i>Bromus hordeaceus</i> - <i>Madia elegans</i>	
42.044.04	<i>Cynosurus echinatus</i> - <i>Bromus hordeaceus</i> - <i>Taeniatherum caput-medusae</i>	
42.044.03	<i>Cynosurus echinatus</i> - <i>Bromus hordeaceus</i> - <i>Taraxacum officinale</i>	
42.044.05	<i>Cynosurus echinatus</i> - <i>Lagophylla ramosissima</i>	

*41.050.00	<i>Danthonia californica</i> (California oat grass prairie) Provisional Alliance	G4 S3
*41.050.05	<i>Danthonia californica</i>	
*41.050.04	<i>Danthonia californiaca</i> - <i>Aira caryophyllea</i>	
*41.050.01	<i>Danthonia californica</i> - <i>Arrhenatherum elatius</i>	
*41.050.02	<i>Danthonia californica</i> - <i>Elymus elymoides</i>	
*41.050.03	<i>Danthonia californica</i> - <i>Muhlenbergia filiformis</i>	
*41.051.00	<i>Danthonia intermedia</i> (Wild mountain oat grass meadows) Alliance	G4? S3?
*41.051.01	<i>Danthonia intermedia</i> - <i>Antennaria rosea</i>	
*41.051.02	<i>Danthonia intermedia</i> - <i>Ptilagrostis kingii</i>	
*51.200.00	<i>Darlingtonia californica</i> (California pitcher plant fens) Alliance	G4? S3
*51.200.01	<i>Darlingtonia californica</i>	
*44.161.00	<i>Deinandra fasciculata</i> (Clustered tarweed fields) Alliance	G3? S3?
*44.161.01	<i>Deinandra fasciculata</i> - annual grass-herb	
*44.161.02	<i>Deinandra fasciculata</i> - <i>Hordeum depressum</i> - <i>Atriplex coronata</i> var. <i>notatior</i>	
41.220.00	<i>Deschampsia caespitosa</i> (Tufted hair grass meadows) Alliance	G5 S4? (some associations are of high priority for inventory)
*41.220.08	<i>Deschampsia caespitosa</i>	
*41.220.05	<i>Deschampsia caespitosa</i> - <i>Anthoxanthum odoratum</i>	
41.220.12	<i>Deschampsia caespitosa</i> - <i>Bistorta bistortoides</i>	
*41.220.02	<i>Deschampsia caespitosa</i> - <i>Cardamine breweri</i>	
41.220.01	<i>Deschampsia caespitosa</i> - <i>Carex nebrascensis</i>	
41.220.09	<i>Deschampsia caespitosa</i> - <i>Danthonia californica</i>	
*41.220.13	<i>Deschampsia caespitosa</i> - <i>Horkelia marinensis</i>	
*41.220.14	<i>Deschampsia caespitosa</i> - <i>Lilaeopsis masonii</i>	
41.220.11	<i>Deschampsia caespitosa</i> - <i>Perideridia parishii</i>	
41.220.03	<i>Deschampsia caespitosa</i> - <i>Senecio scorzonella</i>	
41.220.04	<i>Deschampsia caespitosa</i> - <i>Senecio scorzonella</i> - <i>Achillea millefolium</i>	
41.220.07	<i>Deschampsia caespitosa</i> - <i>Solidago multiradiata</i>	
*41.220.10	<i>Deschampsia caespitosa</i> - <i>Trifolium longipes</i>	
*41.220.15	<i>Deschampsia caespitosa</i> var. <i>holciformis</i>	
*22.100.00	<i>Dicoria canescens</i> - <i>Abronia villosa</i> (Desert dunes) Alliance	G3 S2
*22.100.01	<i>Dicoria canescens</i>	
41.200.00	<i>Distichlis spicata</i> (Salt grass flats) Alliance	G5 S4 (some associations are of high priority for inventory)
41.200.14	<i>Distichlis spicata</i> - <i>Agrostis viridis</i>	
*41.200.11	<i>Distichlis spicata</i> - <i>Ambrosia chamissonis</i>	
41.200.15	<i>Distichlis spicata</i> - <i>Atriplex triangularis</i>	
41.200.16	<i>Distichlis spicata</i> - <i>Bromus diandrus</i>	
41.200.17	<i>Distichlis spicata</i> - <i>Cotula coronopifolia</i>	
*41.200.07	<i>Distichlis spicata</i> - <i>Frankenia salina</i> - <i>Jaumea carnosa</i>	
41.200.18	<i>Distichlis spicata</i> - <i>Hordeum muminum</i>	
*41.200.06	<i>Distichlis spicata</i> - <i>Jaumea carnosa</i>	
41.200.05	<i>Distichlis spicata</i> - <i>Juncus arcticus</i> ssp. <i>balticus</i> (<i>J. arcticus</i> ssp. <i>mexicanus</i>)	
*41.200.02	<i>Distichlis spicata</i> - <i>Juncus cooperi</i>	
41.200.19	<i>Distichlis spicata</i> - <i>Leymus triticoides</i> / <i>Lupinus (albifrons, arboreus)</i>	
41.200.10	<i>Distichlis spicata</i> - <i>Parapholis strigosa</i>	
*41.200.20	<i>Distichlis spicata</i> - <i>Sarcocornia pacifica</i>	
*41.200.01	<i>Distichlis spicata</i> / <i>Allenrolfea occidentalis</i>	
41.200.13	<i>Distichlis spicata</i> / annual grasses	
*41.200.04	<i>Distichlis spicata</i> / <i>Chrysothamnus albidus</i>	
*41.200.03	<i>Distichlis spicata</i> / <i>Sarcobatus vermiculatus</i>	
*52.115.00	<i>Dulichium arundinaceum</i> (Three-way sedge meadows) Provisional Alliance	G3? S1
*52.115.01	<i>Dulichium arundinaceum</i>	

*45.231.00	<i>Eleocharis acicularis</i> (Needle spike rush stands) Alliance	G4? S3?
*45.231.01	<i>Eleocharis acicularis</i> - <i>Eryngium castrense</i>	
*45.231.03	<i>Navarretia</i> spp. - (<i>Eleocharis acicularis</i> - <i>Eryngium alismaefolium</i>)	
*45.231.02	<i>Plagiobothrys mollis</i> - (<i>Eleocharis acicularis</i> - <i>Eryngium mathiasiae</i>)	
45.230.00	<i>Eleocharis macrostachya</i> (Pale spike rush marshes) Alliance	G4 S4 (some associations are of high priority for inventory)
45.230.01	<i>Eleocharis macrostachya</i>	
*45.230.07	<i>Eleocharis macrostachya</i> - (<i>Pleuropogon californicus</i>)	
*45.230.02	<i>Eleocharis macrostachya</i> - <i>Callitriche hermaphroditica</i>	
*45.230.04	<i>Eleocharis macrostachya</i> - <i>Eryngium aristulatum</i> ssp. <i>Parishii</i>	
*45.230.05	<i>Eleocharis macrostachya</i> - <i>Lasthenia glaberrima</i>	
*45.230.06	<i>Eleocharis macrostachya</i> - <i>Marsilea vestita</i>	
*45.230.03	<i>Eleocharis macrostachya</i> - <i>Sagittaria montevidensis</i>	
45.220.00	<i>Eleocharis quinqueflora</i> (Few-flowered spike rush marshes) Alliance	G4 S4 (some associations are of high priority for inventory)
45.220.01	<i>Eleocharis quinqueflora</i>	
*45.220.02	<i>Eleocharis quinqueflora</i> - <i>Mimulus primuloides</i>	
*45.220.03	<i>Eleocharis quinqueflora</i> / <i>Aulacomnium palustre</i>	
*45.220.04	<i>Eleocharis quinqueflora</i> / <i>Campylium stellatum</i>	
*45.220.05	<i>Eleocharis quinqueflora</i> / <i>Drepanocladus aduncus</i> - <i>Drepanocladus sordidus</i>	
*45.220.06	<i>Eleocharis quinqueflora</i> / <i>Philonotis fontana</i>	
*41.640.00	<i>Elymus glaucus</i> (Blue wild rye meadows) Alliance	G3? S3?
*41.640.01	<i>Elymus glaucus</i>	
*41.640.03	<i>Elymus glaucus</i> - <i>Carex feta</i>	
*41.640.02	<i>Elymus glaucus</i> - <i>Carex pellita</i>	
*41.640.04	<i>Elymus glaucus</i> - <i>Heracleum lanatum</i>	
41.650.00	<i>Elymus multisetus</i> (Big squirreltail patches) Provisional Alliance	G4 S4?
*38.120.00	<i>Ericameria discoidea</i> - <i>Hulsea algida</i> (Fell-fields with California heath-goldenrod and Pacific alpine gold) Alliance	G3? S3?
*38.120.02	<i>Ericameria discoidea</i> - <i>Linanthus pungens</i>	
*38.120.01	<i>Ericameria discoidea</i> - <i>Minuartia nuttallii</i>	
*38.120.04	<i>Hulsea algida</i>	
*38.120.05	<i>Hulsea algida</i> - <i>Ericameria discoidea</i> - <i>Phacelia hastata</i>	
*38.120.06	<i>Hulsea algida</i> - <i>Muhlenbergia richardsonis</i> - <i>Achnatherum pinetorum</i>	
*42.004.00	<i>Eryngium aristulatum</i> (California button-celery patches) Alliance	G3 S3?
*42.004.01	<i>Eryngium aristulatum</i> - <i>Lupinus bicolor</i>	
43.200.00	<i>Eschscholzia (californica)</i> (California poppy fields) Alliance	G4 S4
43.200.01	<i>Eschscholzia californica</i>	
*91.170.00	<i>Festuca brachyphylla</i> (Alpine fescue fell-fields) Alliance	G4? S3?
*91.170.02	<i>Festuca brachyphylla</i> - <i>Penstemon davidsonii</i>	
*91.170.01	<i>Festuca brachyphylla</i> - <i>Eriogonum ovalifolium</i>	
*41.250.00	<i>Festuca idahoensis</i> (Idaho fescue grassland) Alliance	G4 S3?
*41.250.03	<i>Festuca idahoensis</i> - <i>Achillea millefolium</i>	
*41.250.01	<i>Festuca idahoensis</i> - <i>Bromus carinatus</i>	
*41.250.02	<i>Festuca idahoensis</i> - <i>Festuca rubra</i>	
*41.255.00	<i>Festuca rubra</i> (Red fescue grassland) Alliance	G4 S3?
*41.255.01	<i>Festuca rubra</i>	
*52.500.00	<i>Frankenia salina</i> (Alkali heath marsh) Alliance	G4 S3
*52.500.02	<i>Frankenia salina</i>	
*52.500.01	<i>Frankenia salina</i> - <i>Limonium californicum</i> - <i>Monanthochloe littoralis</i> - <i>Sarcocornia pacifica</i>	

*52.500.03	<i>Frankenia salina / Agrostis avenacea</i>	
*52.500.04	<i>Frankenia salina / Distichlis spicata</i>	
*52.500.06	<i>Suaeda taxifolia / Hordeum murinum</i>	
*41.222.00	<i>Glyceria (elata, striata) (Manna grass meadows) Alliance</i>	G4 S3?
*41.222.01	<i>Glyceria elata</i>	
*41.222.03	<i>Glyceria elata - Lotus longifolius</i>	
*41.222.02	<i>Glyceria elata - Scirpus microcarpus</i>	
*41.222.04	<i>Glyceria striata</i>	
*41.223.00	<i>Glyceria occidentalis (Northwest manna grass marshes) Provisional Alliance</i>	G3? S3?
*52.206.00	<i>Grindelia (stricta) (Gum plant patches) Provisional Alliance</i>	G3? S3?
42.050.00	<i>Holcus lanatus - Anthoxanthum odoratum (Common velvet grass - sweet vernal grass meadows) Semi-natural Stands</i>	
42.050.08	<i>Holcus lanatus</i>	
42.050.09	<i>Holcus lanatus - Anthoxanthum odoratum</i>	
*42.052.00	<i>Hordeum brachyantherum (Meadow barley patches) Alliance</i>	G4 S3?
*42.052.01	<i>Hordeum brachyantherum</i>	
*42.052.04	<i>Hordeum brachyantherum - Poa pratensis</i>	
*42.052.02	<i>Hordeum brachyantherum - Polypogon monspeliensis</i>	
*42.052.03	<i>Hordeum brachyantherum - Senecio triangularis</i>	
*52.117.00	<i>Hydrocotyle (ranunculoides, umbellata) (Mats of floating pennywort) Alliance</i>	G4 S3?
*52.117.01	<i>Hydrocotyle ranunculoides</i>	
*52.117.02	<i>Hydrocotyle ranunculoides - Schoenoplectus pungens</i>	
45.401.00	<i>Iris missouriensis (Western blue flag patches) Provisional Alliance</i>	G5 S4
*52.109.00	<i>Isoetes (bolanderi, echinospora, howellii, nuttallii, occidentalis) (Quillwort beds) Provisional Alliance</i>	G3 S3?
*45.568.00	<i>Juncus (oxymyris, xiphioides) (Iris-leaf rush seeps) Provisional Alliance</i>	G2? S2?
45.562.00	<i>Juncus arcticus (var. balticus, mexicanus) (Baltic and Mexican rush marshes) Alliance</i>	G5 S4
45.562.07	<i>Juncus arcticus var. balticus</i>	
91.120.21	<i>Juncus arcticus var. balticus</i>	
45.562.05	<i>Juncus arcticus var. balticus - Argentina egedii</i>	
45.562.04	<i>Juncus arcticus var. balticus - Carex praegracilis</i>	
45.562.01	<i>Juncus arcticus var. balticus - Conium maculatum</i>	
45.562.06	<i>Juncus arcticus var. balticus - Lepidium latifolium</i>	
45.562.02	<i>Juncus arcticus var. mexicanus</i>	
*45.563.00	<i>Juncus cooperi (Cooper's rush marsh) Alliance</i>	G3 S3
*45.563.01	<i>Juncus cooperi</i>	
45.561.00	<i>Juncus effusus (Soft rush marshes) Alliance</i>	G4 S4?
45.561.01	<i>Juncus effusus</i>	
*45.569.00	<i>Juncus lescurii (Salt rush swales) Alliance</i>	G3 S2?
*45.569.01	<i>Juncus lescurii</i>	
*45.569.02	<i>Juncus (lescurii) - Distichlis spicata</i>	
*45.567.00	<i>Juncus nevadensis (Sierra rush marshes) Alliance</i>	G3? S3?
*45.567.01	<i>Juncus nevadensis</i>	
*45.567.02	<i>Juncus nevadensis - Carex leporinella</i>	
*45.567.03	<i>Juncus nevadensis - Eleocharis quinqueflora</i>	

45.566.00	<i>Juncus parryi</i> (Parry's rush outcrops) Alliance	G4 S4
45.566.01	<i>Juncus parryi</i> - <i>Eriogonum incanum</i>	
45.564.00	<i>Juncus patens</i> (Western rush marshes) Provisional Alliance	G4? S4?
*91.115.00	<i>Kobresia myosuroides</i> (Pacific bog sedge meadows) Alliance	G5 S1
*91.115.01	<i>Kobresia myosuroides</i> - <i>Thalictrum alpinum</i>	
44.108.00	<i>Lasthenia californica</i> - <i>Plantago erecta</i> - <i>Vulpia microstachys</i> (California goldfields - Dwarf plantain - Six-weeks fescue flower fields) Alliance	G4 S4 (some associations are of high priority for inventory)
44.109.03	<i>Lasthenia californica</i>	
*44.109.01	<i>Lasthenia californica</i> - <i>Atriplex coronata</i> var. <i>notatior</i>	
*44.109.04	<i>Lasthenia californica</i> - <i>Lupinus bicolor</i> - <i>Layia platyglossa</i> - <i>Bromus</i> spp.	
*44.108.01	<i>Lasthenia californica</i> - <i>Plantago erecta</i> - <i>Hesperis matronalis</i>	
*52.500.05	<i>Lasthenia ferrisiae</i> - <i>Lasthenia conjugens</i>	
44.108.02	<i>Plantago erecta</i> - <i>Lolium perenne</i> lichen-rocky	
*44.108.08	<i>Vulpia microstachys</i> - <i>Elymus elymoides</i> - <i>Achnatherum lemmonii</i>	
*44.109.05	<i>Vulpia microstachys</i> - <i>Lasthenia californica</i> - <i>Agrostis eliottiana</i>	
44.108.05	<i>Vulpia microstachys</i> - <i>Mimulus guttatus</i> - <i>Pentagramma triangularis</i>	
*44.108.09	<i>Vulpia microstachys</i> - <i>Navarretia tagetina</i>	
44.109.06	<i>Vulpia microstachys</i> - <i>Parvisedum pumilum</i> - <i>Lasthenia californica</i>	
*44.108.04	<i>Vulpia microstachys</i> - <i>Plantago erecta</i>	
44.108.03	<i>Vulpia microstachys</i> - <i>Plantago erecta</i> - <i>Calycadenia (truncata, multiglandulosa)</i>	
*44.108.10	<i>Vulpia microstachys</i> - <i>Selaginella hansenii</i>	
*44.108.11	<i>Vulpia microstachys</i> - <i>Selaginella hansenii</i> - <i>Lupinus nanus</i>	
*44.108.07	<i>Vulpia microstachys</i> - <i>Selaginella hansenii</i> - <i>Lupinus spectabilis</i>	
*44.119.00	<i>Lasthenia fremontii</i> - <i>Distichlis spicata</i> (Fremont's goldfields - Saltgrass alkaline vernal pools) Alliance	G4 S3
*44.119.01	<i>Downingia bella</i> - <i>Lilaea scilloides</i>	
*44.119.02	<i>Downingia cuspidata</i> - <i>Myosurus minimus</i>	
*44.119.03	<i>Downingia insignis</i> - <i>Psilocarphus brevissimus</i>	
*44.119.04	<i>Downingia pulchella</i> - <i>Cressa truxillensis</i>	
*44.119.05	<i>Downingia pulchella</i> - <i>Distichlis spicata</i>	
*44.119.07	<i>Lasthenia fremontii</i> - <i>Pleuropogon californicus</i>	
*44.119.09	<i>Lasthenia platycarpha</i> - <i>Lepidium latipes</i>	
*44.119.10	<i>Limnanthes douglasii</i> ssp. <i>rosea</i> - <i>Pleuropogon californicus</i>	
*44.119.06	<i>Hordeum (depressum, murinum</i> spp. <i>leporinum)</i>	
*44.119.11	<i>Lasthenia fremontii</i> - <i>Distichlis spicata</i>	
*42.007.00	<i>Lasthenia fremontii</i> - <i>Downingia (bicornuta)</i> (Fremont's goldfields - Downingia vernal pools) Alliance	G3 S3
*42.007.02	<i>Downingia (bicornuta, cuspidata)</i>	
*42.007.01	<i>Downingia bicornuta</i>	
*42.007.06	<i>Eryngium (vaseyi, castrense)</i>	
*42.007.08	<i>Lasthenia californica</i> - <i>Downingia bicornuta</i>	
*42.007.07	<i>Lasthenia fremontii</i>	
*42.007.03	<i>Lasthenia fremontii</i> - <i>Downingia bicornuta</i>	
*42.007.04	<i>Lasthenia fremontii</i> - <i>Downingia ornatissima</i>	
*42.007.05	<i>Ranunculus bonariensis</i> - <i>Holocarpha virgata</i>	
*44.140.00	<i>Lasthenia glaberrima</i> (Smooth goldfields vernal pool bottoms) Alliance	G3 S3
*44.119.08	<i>Lasthenia glaberrima</i> - <i>Atriplex persistens</i>	
*44.140.01	<i>Lasthenia glaberrima</i> - <i>Downingia bicornuta</i>	
*44.140.05	<i>Lasthenia glaberrima</i> - <i>Downingia insignis</i>	
*44.140.06	<i>Lasthenia glaberrima</i> - <i>Lupinus bicolor</i>	
*44.140.02	<i>Lasthenia glaberrima</i> - <i>Pleuropogon californicus</i>	
*44.140.03	<i>Lasthenia glaberrima</i> - <i>Pogogyne douglasii</i>	
*44.140.04	<i>Lasthenia glaberrima</i> - <i>Trifolium variegatum</i>	

*42.002.00	<i>Layia fremontii</i> - <i>Achyrrachaena mollis</i> (Fremont's tidy-tips - Blow wives vernal pools) Alliance	G3 S3?
*42.002.01	<i>Layia fremontii</i> - <i>Achyrrachaena mollis</i>	
*42.002.02	<i>Layia fremontii</i> - <i>Lasthenia californica</i> - <i>Achyrrachaena mollis</i>	
*42.002.03	<i>Layia fremontii</i> - <i>Leontodon taraxacoides</i> - <i>Plagiobothrys greenei</i>	
*42.002.04	<i>Plagiobothrys austina</i> - <i>Achyrrachaena mollis</i>	
52.105.00	<i>Lemna</i> (minor) and Relatives (Duckweed blooms) Provisional Alliance	G5 S4?
52.205.00	<i>Lepidium latifolium</i> (Perennial pepper weed patches) Semi-natural Stands	
52.205.02	<i>Lepidium latifolium</i>	
52.205.01	<i>Lepidium latifolium</i> - <i>Distichlis spicata</i> .	
*41.020.00	<i>Leymus cinereus</i> (Ashy ryegrass meadows) Alliance	G4 S2
*41.265.00	<i>Leymus condensatus</i> (Giant wild rye grassland) Alliance	G3 S3
*41.265.01	<i>Leymus condensatus</i>	
*41.260.00	<i>Leymus mollis</i> (Sea lyme grass patches) Alliance	G4 S2
*41.260.03	<i>Leymus mollis</i> - <i>Abronia latifolia</i> - (<i>Cakile</i> sp.)	
*41.260.02	<i>Leymus mollis</i> - <i>Ammophila arenaria</i>	
*41.260.01	<i>Leymus mollis</i> - <i>Carpobrotus edulis</i>	
*41.080.00	<i>Leymus triticoides</i> (Creeping rye grass turfs) Alliance	G4 S3
*41.080.01	<i>Leymus triticoides</i>	
*41.080.05	<i>Leymus triticoides</i> - <i>Anemopsis californica</i>	
*41.080.02	<i>Leymus triticoides</i> - <i>Bromus</i> spp. - <i>Avena</i> spp.	
*41.080.04	<i>Leymus triticoides</i> - <i>Carduus pycnocephalus</i> - <i>Geranium dissectum</i>	
*41.080.03	<i>Leymus triticoides</i> - <i>Lolium perenne</i>	
*41.080.06	<i>Leymus triticoides</i> - <i>Poa secunda</i>	
41.321.00	<i>Lolium perenne</i> (Perennial rye grass fields) Semi-natural Stands	
41.321.01	<i>Lolium perenne</i>	
41.321.07	<i>Lolium perenne</i>	
41.321.02	<i>Lolium perenne</i> - <i>Bromus hordeaceus</i>	
41.321.03	<i>Lolium perenne</i> - <i>Centaurium muehlenbergii</i>	
41.321.08	<i>Lolium perenne</i> - <i>Convolvulus arvensis</i>	
41.321.09	<i>Lolium perenne</i> - <i>Festuca arundinacea</i>	
41.321.04	<i>Lolium perenne</i> - <i>Hemizonia congesta</i>	
41.321.05	<i>Lolium perenne</i> - <i>Hordeum marinum</i> - <i>Ranunculus californicus</i>	
41.321.10	<i>Lolium perenne</i> - <i>Lepidium latifolium</i>	
41.321.06	<i>Lolium perenne</i> - <i>Leymus triticoides</i>	
41.321.11	<i>Lolium perenne</i> - <i>Lotus corniculatus</i>	
41.321.12	<i>Zigadenus fremontii</i> (- <i>Lolium perenne</i>)	
52.230.00	<i>Lotus purshianus</i> (Spanish clover fields) Provisional Alliance	G4? S4?
52.118.00	<i>Ludwigia</i> (<i>hexapetala</i>, <i>peploides</i>) (Water primrose wetlands) Provisional Semi-natural Stands	
*41.275.00	<i>Melica torreyana</i> (Torrey's melic grass patches) Provisional Alliance	G2 S2?
*41.275.01	<i>Melica torreyana</i>	
*44.111.00	<i>Mimulus</i> (<i>guttatus</i>) (Common monkey flower seeps) Alliance	G4? S3?
*44.111.01	<i>Mimulus guttatus</i>	
*44.111.03	<i>Mimulus guttatus</i> - (<i>Mimulus</i> spp.)	
*44.111.02	<i>Mimulus guttatus</i> - <i>Vulpia microstachys</i>	
*44.111.04	<i>Mimulus lewisii</i>	
*45.413.03	<i>Mimulus primuloides</i>	

*44.113.00	Montia fontana - Sidalcea calycosa (Water blinks - Annual checkerbloom vernal pools) Alliance	G2 S2
*44.113.01	<i>Montia fontana - Sidalcea calycosa</i>	
41.276.00	Muhlenbergia filiformis (Pullup muhly meadows) Provisional Alliance	G4? S4?
41.277.00	Muhlenbergia richardsonis (Mat muhly meadows) Provisional Alliance	G4? S4?
*41.278.00	Muhlenbergia rigens (Deer grass beds) Alliance	G3 S2?
*41.278.01	<i>Muhlenbergia rigens</i>	
*41.140.00	Nassella cernua (Nodding needle grass grassland) Provisional Alliance	G4 S3?
*41.110.00	Nassella lepida (Foothill needle grass grassland) Provisional Alliance	G3? S3?
*41.150.00	Nassella pulchra (Purple needle grass grassland) Alliance	G4 S3?
*41.150.04	<i>Nassella pulchra</i>	
*41.150.02	<i>Nassella pulchra - Avena fatua</i>	
*41.150.05	<i>Nassella pulchra - Avena spp. - Bromus spp.</i>	
*41.150.10	<i>Nassella pulchra - Distichlis spicata - Bromus spp.</i>	
*41.150.06	<i>Nassella pulchra - Erodium spp. - Avena barbata</i>	
*41.150.11	<i>Nassella pulchra - Leontodon taraxicoides</i>	
*41.150.01	<i>Nassella pulchra - Lolium perenne (-Trifolium spp.)</i>	
*41.150.12	<i>Nassella pulchra - Lolium perenne - Astragalus gambelianus - Lepidium nitidum</i>	
*41.150.13	<i>Nassella pulchra - Lolium perenne - Calystegia collina</i>	
*41.150.09	<i>Nassella pulchra - Melica californica - annual grass</i>	
*41.150.03	<i>Nassella pulchra - Sanicula bipinnatifida</i>	
*41.150.14	<i>Nassella pulchra / Baccharis pilularis</i>	
*41.150.07	<i>Nassella pulchra / Hazardia squarrosa</i>	
*52.110.00	Nuphar lutea (Yellow pond-lily mats) Provisional Alliance	G5 S3?
*52.119.00	Oenanthe sarmentosa (Water-parsley marsh) Alliance	G4 S2?
*52.119.01	<i>Oenanthe sarmentosa</i>	
*45.418.00	Oxypolis occidentalis (Western cowbane meadows) Alliance	G3 S3
*45.418.02	<i>Oxypolis occidentalis - Bistorta bistortoides</i>	
*45.418.03	<i>Oxypolis occidentalis - Carex amplifolia</i>	
*45.418.04	<i>Oxypolis occidentalis - Eleocharis montevidensis</i>	
*45.418.05	<i>Oxypolis occidentalis - Senecio triangularis</i>	
*45.418.06	<i>Oxypolis occidentalis / Philonotis fontana</i>	
*91.122.00	Oxyria digyna (Mountain sorrel patches) Provisional Alliance	G4 S3?
*42.095.00	Panicum urvilleanum (Desert panic grass patches) Alliance	G3 S1
*42.095.01	<i>Panicum urvilleanum</i>	
42.085.00	Pennisetum setaceum (Fountain grass swards) Semi-natural Stands	
42.085.01	<i>Pennisetum setaceum - Coreopsis gigantea - Hesperoyucca whipplei - Malosma laurina</i>	
*45.414.00	Penstemon heterodoxus (Heretic penstemon patches) Provisional Alliance	G4? S3?
*91.120.02	<i>Antennaria alpina - Penstemon heterodoxus</i>	
45.415.00	Penstemon newberryi (Mountain pride patches) Alliance	G4 S4
45.415.03	<i>Penstemon newberryi - Streptanthus tortuosus - Sedum obtusatum ssp. boreale - Muhlenbergia montana</i>	
45.415.04	<i>Penstemon newberryi - Streptanthus tortuosus / Selaginella watsonii</i>	
45.415.02	<i>Penstemon newberryi - Streptanthus tortuosus / Spiraea densiflora</i>	

42.207.00	<i>Persicaria lapathifolia</i> - <i>Xanthium strumarium</i> (Smartweed - cocklebur patches) Provisional Alliance	G4 S4
42.051.00	<i>Phalaris aquatica</i> (Harding grass swards) Semi-natural Stands	
42.051.02	<i>Phalaris aquatica</i>	
42.051.03	<i>Phalaris aquatica</i> - <i>Avena barbata</i>	
42.051.01	<i>Phalaris aquatica</i> - <i>Bromus hordeaceus</i> - <i>Centaurea solstitialis</i>	
*91.123.00	<i>Phlox covillei</i> (Coville's phlox fell-fields) Alliance	G4 S3
*91.123.03	<i>Astragalus kentrophyta</i> - <i>Draba oligosperma</i>	
*91.123.04	<i>Draba oligosperma</i> - <i>Poa glauca</i> ssp. <i>Rupicola</i>	
*91.120.36	<i>Festuca minutiflora</i> - <i>Penstemon davidsonii</i>	
*91.120.06	<i>Ivesia muirii</i>	
*91.123.01	<i>Phlox covillei</i> - <i>Elymus elymoides</i> - <i>Podistera nevadensis</i>	
*91.123.02	<i>Phlox covillei</i> - <i>Elymus elymoides</i> - <i>Podistera nevadensis</i> - <i>Erigeron pygmaeus</i>	
*91.123.09	<i>Phlox covillei</i> - <i>Eriogonum gracilipes</i>	
*91.123.05	<i>Phlox covillei</i> - <i>Eriogonum incanum</i>	
*91.123.07	<i>Phlox (covillei)</i> - <i>Ivesia shockleyi</i>	
*91.123.08	<i>Phlox covillei</i> - <i>Linum lewisii</i>	
*91.120.08	<i>Podistera nevadensis</i> - <i>Arenaria kingii</i>	
*91.123.06	<i>Podistera nevadensis</i> - <i>Erigeron pygmaeus</i>	
*91.150.00	<i>Phlox pulvinata</i> (Cushion phlox fell-fields) Alliance	G4 S3
*91.150.02	<i>Phlox pulvinata</i> - <i>Anelsonia eurycarpa</i>	
*91.150.03	<i>Phlox pulvinata</i> - <i>Ericameria suffruticosa</i> - <i>Ipomopsis congesta</i>	
*91.150.05	<i>Phlox pulvinata</i> - <i>Festuca brachyphylla</i>	
*91.150.06	<i>Phlox pulvinata</i> - <i>Ivesia gordonii</i>	
*91.150.04	<i>Phlox pulvinata</i> - <i>Lupinus argenteus</i> var. <i>montigenus</i>	
41.061.00	<i>Phragmites australis</i> (Common reed marshes) Alliance	G5 S4?
41.061.01	<i>Phragmites australis</i>	
41.061.02	<i>Phragmites australis</i> - <i>Scirpus</i> spp.	
43.300.00	<i>Plagiobothrys nothofulvus</i> (Popcorn flower fields) Alliance	G4 S4
43.300.01	<i>Plagiobothrys nothofulvus</i> - <i>Daucus pusillus</i> - <i>Bromus hordeaceus</i>	
*41.610.00	<i>Pleuraphis jamesii</i> (James' galleta shrub-steppe) Alliance	G3 S2
*41.610.03	<i>Pleuraphis jamesii</i> / <i>Ephedra nevadensis</i>	
*41.610.01	<i>Pleuraphis jamesii</i> / <i>Eriogonum fasciculatum</i>	
*41.610.02	<i>Pleuraphis jamesii</i> / <i>Lycium andersonii</i>	
*41.030.00	<i>Pleuraphis rigida</i> (Big galleta shrub-steppe) Alliance	G3 S2
*41.030.01	<i>Pleuraphis rigida</i>	
*41.030.04	<i>Pleuraphis rigida</i> - <i>Dalea mollissima</i>	
*41.030.02	<i>Pleuraphis rigida</i> / <i>Acamptopappus sphaerocephalus</i>	
*41.030.06	<i>Pleuraphis rigida</i> / <i>Ambrosia dumosa</i>	
*41.030.05	<i>Pleuraphis rigida</i> / <i>Atriplex canescens</i>	
*41.030.07	<i>Pleuraphis rigida</i> / <i>Ephedra californica</i>	
*41.030.03	<i>Pleuraphis rigida</i> / <i>Ericameria cooperi</i>	
*41.030.08	<i>Pleuraphis rigida</i> / <i>Larrea tridentata</i>	
42.060.00	<i>Poa pratensis</i> (Kentucky blue grass turf) Semi-natural Stands	
42.060.05	<i>Poa pratensis</i>	
42.060.01	<i>Poa pratensis</i> - <i>Carex (nebrascensis, pellita)</i>	
42.060.04	<i>Poa pratensis</i> - <i>Juncus patens</i> - <i>Luzula comosa</i>	
42.060.02	<i>Poa pratensis</i> - <i>Potentilla gracilis</i>	
42.060.07	<i>Poa pratensis</i> ssp. <i>pratensis</i>	
42.060.06	<i>Poa pratensis</i> ssp. <i>agassizensis</i>	
*41.180.00	<i>Poa secunda</i> (Curly blue grass grassland) Alliance	G4 S3?
*41.180.04	<i>Poa secunda</i> - <i>Danthonia unispicata</i>	

*41.180.03	<i>Poa secunda</i> ssp. <i>juncifolia</i>	
*41.180.02	<i>Poa secunda</i> ssp. <i>secunda</i>	
*41.040.00	<i>Pseudoroegneria spicata</i> (Bluebunch wheat grass grassland) Alliance	G4 S2
41.225.00	<i>Ptilagrostis kingii</i> (King's needle grass meadows) Alliance	G4 S4
41.225.01	<i>Ptilagrostis kingii</i>	
41.225.02	<i>Ptilagrostis kingii</i> - <i>Oreostemma alpigenum</i>	
91.120.25	<i>Ptilagrostis kingii</i> - <i>Senecio scorzonella</i>	
*52.202.00	<i>Ruppia (cirrhosa, maritima)</i> (Ditch-grass or widgeon-grass mats) Alliance	G4? S2
*52.202.02	<i>Ruppia cirrhosa</i> - algae	
*52.215.00	<i>Sarcocornia pacifica (Salicornia depressa)</i> (Pickleweed mats) Alliance	G4 S3
*52.215.12	<i>Sarcocornia pacific</i> - <i>Lepidium latifolium</i>	
*52.215.04	<i>Sarcocornia pacifica</i>	
*52.215.22	<i>Sarcocornia pacifica</i> - <i>Jaumea carnosa</i> - <i>Batis maritima</i>	
*52.215.06	<i>Sarcocornia pacifica</i> - <i>Atriplex prostrata</i>	
*52.215.07	<i>Sarcocornia pacifica</i> - <i>Bolboschoenus maritimus</i>	
*52.215.15	<i>Sarcocornia pacifica</i> - <i>Brassica nigra</i>	
*52.215.16	<i>Sarcocornia pacifica</i> - <i>Cotula coronopifolia</i>	
*52.215.17	<i>Sarcocornia pacifica</i> - <i>Crypsis schoenoides</i>	
*52.215.01	<i>Sarcocornia pacifica</i> - <i>Cuscuta salina</i> - <i>Spartina densiflora</i>	
*52.215.02	<i>Sarcocornia pacifica</i> - <i>Distichlis spicata</i>	
*52.215.08	<i>Sarcocornia pacifica</i> - <i>Distichlis spicata</i>	
*52.215.18	<i>Sarcocornia pacifica</i> - <i>Echinochloa crus-galli</i> - <i>Polygonum</i> - <i>Xanthium strumarium</i>	
*52.215.09	<i>Sarcocornia pacifica</i> - <i>Frankenia salina</i>	
*52.215.21	<i>Sarcocornia pacifica</i> - <i>Frankenia salina</i> - <i>Suaeda taxifolia</i>	
*52.215.10	<i>Sarcocornia pacifica</i> - <i>Grindelia stricta</i>	
*52.215.11	<i>Sarcocornia pacifica</i> - <i>Jaumea carnosa</i>	
*52.215.03	<i>Sarcocornia pacifica</i> - <i>Jaumea carnosa</i> - <i>Distichlis spicata</i>	
*52.215.20	<i>Sarcocornia pacifica</i> - <i>Sesuvium verrucosum</i>	
*52.215.13	<i>Sarcocornia pacifica</i> - <i>Spartina foliosa</i>	
*52.215.14	<i>Sarcocornia pacifica</i> / algae	
*52.215.19	<i>Sarcocornia pacifica</i> /annual grasses (<i>Polypogon</i> , <i>Hordeum</i> , <i>Lolium</i>)	
*91.124.00	<i>Saxifraga nidifica</i> (Pink saxifrage patches) Provisional Alliance	G4? S3?
*91.124.03	<i>Polygonum minimum</i>	
*91.124.02	<i>Rhodiola integrifolia</i> - <i>Selaginella watsonii</i>	
*91.125.00	<i>Saxifraga tolmiei</i> (Patches of Tolmie's alpine saxifrage) Provisional Alliance	G4 S3?
52.122.00	<i>Schoenoplectus acutus</i> (Hardstem bulrush marsh) Alliance	G5 S4
52.122.01	<i>Schoenoplectus acutus</i>	
52.122.02	<i>Schoenoplectus acutus</i> - <i>Apocynum cannabinum</i>	
52.122.03	<i>Schoenoplectus acutus</i> - <i>Typha angustifolia</i>	
52.102.02	<i>Schoenoplectus acutus</i> - <i>Typha domingensis</i>	
52.122.04	<i>Schoenoplectus acutus</i> - <i>Typha latifolia</i>	
52.122.05	<i>Schoenoplectus acutus</i> - <i>Typha latifolia</i> - <i>Phragmites australis</i>	
52.122.06	<i>Schoenoplectus acutus</i> - <i>Xanthium strumarium</i>	
*52.111.00	<i>Schoenoplectus americanus</i> (American bulrush marsh) Alliance	G5 S3
*52.111.04	<i>Schoenoplectus americanus</i>	
*52.111.05	<i>Schoenoplectus americanus</i> - <i>Eleocharis rostellata</i>	
*52.111.02	<i>Schoenoplectus americanus</i> / <i>Argentina egedii</i>	
*52.111.03	<i>Schoenoplectus americanus</i> / <i>Lepidium latifolium</i>	
*52.111.06	<i>Schoenoplectus americanus</i> / <i>Schoenoplectus californicus</i> - <i>Schoenoplectus acutus</i>	
52.114.00	<i>Schoenoplectus californicus</i> (California bulrush marsh) Alliance	G5 S4?
52.114.02	<i>Schoenoplectus californicus</i>	
52.114.03	<i>Schoenoplectus californicus</i> - <i>Apocynum cannabinum</i>	

52.114.04	<i>Schoenoplectus californicus</i> - <i>Eichhornia crassipes</i>	
52.114.01	<i>Schoenoplectus californicus</i> - <i>Schoenoplectus acutus</i>	
52.114.06	<i>Schoenoplectus californicus</i> - <i>Schoenoplectus acutus</i> / <i>Rosa californica</i>	
52.114.05	<i>Schoenoplectus californicus</i> - <i>Typha latifolia</i>	
*52.113.00	Scirpus microcarpus (Small-fruited bulrush marsh) Alliance	G4 S2
*52.113.01	<i>Scirpus microcarpus</i>	
*52.113.02	<i>Scirpus microcarpus</i> - <i>Oxypolis occidentalis</i>	
*52.113.03	<i>Scirpus microcarpus</i> - <i>Scirpus congdonii</i>	
43.400.00	Sedum spathulifolium (Coast Range stonecrop draperies) Provisional Alliance	G4? S4?
*42.062.00	Selaginella bigelovii (Bushy spikemoss mats) Alliance	G4 S3
*42.062.01	<i>Selaginella bigelovii</i> / <i>Eriogonum fasciculatum</i>	
45.419.00	Senecio triangularis (Herb-rich meadows) Alliance	G4 S4
45.419.04	<i>Senecio triangularis</i> - <i>Athyrium filix-femina</i>	
45.419.01	<i>Senecio triangularis</i> - <i>Lupinus latifolius</i>	
45.419.05	<i>Senecio triangularis</i> - <i>Lupinus polyphyllus</i>	
*52.210.00	Sesuvium verrucosum (Western sea-purslane marshes) Alliance	G3? S2
*52.210.01	<i>Sesuvium verrucosum</i>	
*52.210.02	<i>Sesuvium verrucosum</i> - <i>Cotula coronopifolia</i>	
*52.210.03	<i>Sesuvium verrucosum</i> - <i>Distichlis spicata</i>	
*52.210.04	<i>Sesuvium verrucosum</i> - <i>Lolium perenne</i>	
45.420.00	Solidago canadensis (Canada goldenrod patches) Provisional Alliance	G4? S4?
*52.010.00	Sparganium (angustifolium) (Mats of bur-reed leaves) Alliance	G4 S3?
*52.010.01	<i>Sparganium angustifolium</i>	
*41.070.00	Spartina (alterniflora, densiflora) (Smooth or Chilean cordgrass marshes) Semi-natural Stands	
41.070.02	<i>Spartina densiflora</i>	
*52.020.00	Spartina foliosa (California cordgrass marsh) Alliance	G3 S3
*52.020.02	<i>Spartina foliosa</i>	
*52.020.01	<i>Spartina foliosa</i> - <i>Sarcocornia pacifica</i>	
*52.030.00	Spartina gracilis (Alkali cordgrass marsh) Alliance	GU S1
*52.030.01	<i>Spartina gracilis</i> - <i>Sporobolus airoides</i>	
*41.010.00	Sporobolus airoides (Alkali sacaton grassland) Alliance	G4 S2
*41.010.01	<i>Sporobolus airoides</i>	
*41.010.03	<i>Sporobolus airoides</i> / <i>Allenrolfea occidentalis</i>	
*41.010.02	<i>Sporobolus airoides</i> / <i>Ericameria nauseosa</i>	
*52.107.00	Stuckenia (pectinata) - Potamogeton spp. (Pondweed mats) Alliance	G3G5 S3?
*52.107.02	<i>Potamogeton</i> spp.	
*52.107.01	<i>Stuckenia pectinata</i>	
*41.600.00	Swallenia alexandrae (Patches of Eureka Valley dune grass) Special Stands	G1 S1
*45.171.00	Torreyochloa pallida (Floating mats of weak manna grass) Alliance	G3 S3?
*45.171.01	<i>Torreyochloa pallida</i>	
*45.171.02	<i>Torreyochloa pallida</i> - <i>Isoetes bolanderi</i>	
*45.135.00	Triantha occidentalis - Narthecium californicum (Western false asphodel - California bog asphodel fens) Alliance	G2? S2?
*45.135.01	<i>Triantha occidentalis</i> - <i>Rhynchospora alba</i>	
*45.135.02	<i>Triantha occidentalis</i> / <i>Sphagnum teres</i>	

*45.135.03	<i>Triantha occidentalis</i> - <i>Nartheceium californicum</i>	
*45.426.00	<i>Trifolium longipes</i> (Long-stalk clover meadows) Provisional Alliance	G3? S3?
*42.005.00	<i>Trifolium variegatum</i> (White-tip clover swales) Alliance	G3? S3?
*42.005.02	<i>Trifolium gracilentum</i> - <i>Hesperervax caulescens</i>	
*42.005.01	<i>Trifolium variegatum</i>	
*42.005.03	<i>Trifolium variegatum</i> - <i>Lolium perenne</i> - <i>Leontodon taraxacoides</i>	
*42.005.04	<i>Trifolium variegatum</i> - <i>Vulpia bromoides</i> (<i>Hypochaeris glabra</i> - <i>Leontodon taraxacoides</i>)	
*42.005.05	(<i>Trifolium variegatum</i> - <i>Vulpia bromoides</i>) - <i>Hypochaeris glabra</i> - <i>Leontodon taraxacoides</i>	
52.050.00	<i>Typha</i> (<i>angustifolia</i>, <i>domingensis</i>, <i>latifolia</i>) (Cattail marshes) Alliance	G5 S5
52.050.01	<i>Typha angustifolia</i>	
52.050.02	<i>Typha angustifolia</i> - <i>Distichlis spicata</i>	
52.050.05	<i>Typha angustifolia</i> - <i>Typha latifolia</i> - <i>Typha domingensis</i>	
52.050.06	<i>Typha angustifolia</i> - <i>Typha latifolia</i> - <i>Typha domingensis</i> / <i>Distichlis spicata</i>	
52.050.07	<i>Typha angustifolia</i> - <i>Typha latifolia</i> - <i>Typha domingensis</i> / <i>Echinochloa crus-galli</i>	
52.050.08	<i>Typha angustifolia</i> - <i>Typha latifolia</i> - <i>Typha domingensis</i> / <i>Phragmites australis</i>	
52.050.09	<i>Typha angustifolia</i> - <i>Typha latifolia</i> - <i>Typha domingensis</i> / <i>Schoenoplectus americanus</i>	
52.050.03	<i>Typha domingensis</i>	
52.103.02	<i>Typha latifolia</i>	
52.050.04	<i>Typha latifolia</i> - <i>Typha angustifolia</i>	
45.423.00	<i>Veratrum californicum</i> (White corn lily patches) Alliance	G5 S4
45.423.02	<i>Veratrum californicum</i>	
45.423.03	<i>Veratrum californicum</i> - <i>Bistorta bistortoides</i>	
45.423.04	<i>Veratrum californicum</i> - <i>Juncus nevadensis</i>	
45.423.01	<i>Veratrum californicum</i> - <i>Senecio triangularis</i>	

Appendix K

Potential Effects of Pesticide Use and Other
Stressors on Pollinators and Associated Biological
Resources

Contents

Introduction..... K-1

Background..... K-1

Pollinator Biology and Role in the Ecosystem..... K-2

Potential Effects of Pesticide Use on Pollinators and Pollinator-Dependent Plants..... K-3

Potential Impacts of Pesticide Use on Special-Status Pollinator Species K-4

Potential Effects of Pollinator Reductions on Agricultural Outputs..... K-5

Potential Impacts of Pollinator Reductions on SSFP and Sensitive Natural Communities..... K-6

Potential Effects of the Proposed Program on Pollinators and Related Species..... K-7

References K-8

Attachment 1. Beneficial Actions for Pollinators, California Department of Food & Agriculture (CDFA) Plant Health and Pest Prevention Services Division level, by Branch, and Pierce’s Disease Control Program K-12

 Background K-12

 Actions before June 2011 K-12

 Actions Currently Taken..... K-16

 Proposed Activities/Actions to Benefit Pollinators..... K-18

Tables

Table K-1. Pollinator Species Listed as Threatened or Endangered K-4

Acronyms and Abbreviations

CCD	Colony Collapse Disorder
CDFA	California Department of Food and Agriculture
EPA	U.S. Environmental Protection Agency
ERT	extended residual toxicity
MP	Management Practice
NRC	National Research Council
SSFP	special-status flowering plants
SSP	special-status pollinators
USDA	U.S. Department of Agriculture

Page intentionally left blank.

Introduction

Declines in populations of pollinator species have become a global concern. The California Department of Food and Agriculture (CDFA) recognizes that healthy pollinator populations are critical to protecting the environmental quality and agricultural resources of the state. CDFA engages in a number of activities to help protect the health of pollinator populations and minimize the potential for CDFA's activities to contribute to their decline. For further discussion of CDFA's activities, see Attachment 1 to this Appendix.

This Appendix reviews the available literature that evaluates the relationship between various stressors and pollinator declines. The activities that may be conducted under the Proposed Program, in particular chemical management approaches, are evaluated in relationship to pollinators, special-status species, and the natural environment.

Background

Pollinators include honey bees (*Apis mellifera*), native bees, birds, and other insects or small mammals, some of which are listed under the federal Endangered Species Act. Scientists in the U.S. Environmental Protection Agency (EPA 2013), U.S. Department of Agriculture (USDA 2012), National Research Council (NRC 2006), and global scientific and regulatory communities have observed a general decline in populations of many pollinators, including a decline in the general health of honey bees. These declines may be related to complex interactions among multiple stressors, including:

- Pests (e.g., varroa mite), pathogens (e.g., the bacterial disease American foulbrood), and viruses;
- Poor nutrition (e.g., loss of foraging habitat, increased reliance on supplemental diets);
- Pesticide (e.g., insecticides, fungicides) exposure;
- Bee management practices (e.g., long migratory routes to support pollination services);
- Lack of genetic diversity;
- Habitat loss; and
- Drought.

The interactions between these stressors are complex, and many of the stressors reduce resilience and health, making the bees more susceptible to pests, pathogens, and disease (Pettis et al. 2012, USDA 2010, and Vanbergen and Insect Pollinators Initiative 2013). One manifestation of the honey bee decline is a phenomenon known as Colony Collapse Disorder (CCD).

Honey bee populations have been adversely affected by CCD over the past 10 years. CCD is only a problem for managed honey bee hives and not native bees (USGS 2013). CCD occurs when most of the worker bees in a colony disappear and leave behind a queen, food stores, and only a few nurse bees to care for the remaining immature bees and the queen. Reported cases of CCD have declined over the last 6 years. The number of winter losses attributed to CCD dropped from approximately 60 percent of total hives lost in 2008, to 26 percent in 2012 (EPA 2013). During this period, losses of honey bee colonies in the United States from all causes have averaged approximately 30 percent (USDA 2014), posing a threat to meeting the pollination service demands for several commercial crops (USDA 2012).

Pollinator Biology and Role in the Ecosystem

Pollinators include species of invertebrates, bats, birds, and some mammals. This discussion focuses on invertebrate pollinators, because this group of pollinators has the greatest potential to be affected by the Proposed Program's chemical management activities (for evaluation of potential effects, please refer to PEIR Appendix A, Ecological Risk Assessment). Non-native honey bees are the most abundant pollinators in California, but 1,600 native bee species and other pollinators are also found in the state. This includes 18 species listed as threatened and endangered under the federal and/or state Endangered Species Acts (Frankie et al. 2009). Native bees in California include leafcutting bees, sweat bees, digger bees, mining bees, mason bees, carpenter bees, and cuckoo bees (Frankie et al. 2009).

Pollinators play a critical role in the life cycle of most plants, including pollinator-dependent agricultural crops and special-status flowering plants (SSFP). Plants can either reproduce vegetatively, where an exact clone is reproduced from a cutting or underground shoot, or sexually, where a seed is produced from an ovary being pollinated. For most flowering plants, sexual reproduction is the primary mode of reproduction; therefore, a flower must be pollinated either by wind or by an animal for the plant to reproduce. However, not all flowering plants are pollinator-dependent. For example, most grass species are self-pollinated or wind pollinated, and do not rely on pollinators.

Over 75 percent of flowering plants are pollinated by animals (ESA 2008; Pesticide Environmental Stewardship 2014; USFWS 2014). Approximately 90 percent of some crop pollination is estimated to be done by invertebrate species (Classen et al. 2014; Roubik 1995). Many natural communities are dominated by pollinator-dependent plant species (including populations of SSFP). Examples include Joshua tree woodlands (Baker 1986; Pellmyr and Segraves 2003), California poppy fields (Smith 2010), and vernal pools (USFWS 2014).

The pollinator-plant relationships usually are mutually beneficial to both parties: flowering plants produce nectar, a highly nutritious, sugar-based substance that has no direct benefit for the plant but is a critical source of energy for pollinators, and the pollinators facilitate the reproduction of plants by transporting pollen from flower to flower. In addition, pollinated plants produce fruits and seeds that are an important food source for wildlife.

The geographic range and active periods of pollinators are variable. Honey bees are active during daylight hours, traveling as far as 8 miles while foraging for food, with a median travel distance of around 3.5 miles. Foraging distance is correlated with body size and

varies greatly depending on the type of pollinator, the type of resource that the pollinator visits, and its availability (Beekman and Ratnieks 2000; Greenleaf et al. 2007; Hagler et al. 2011).

Potential Effects of Pesticide Use on Pollinators and Pollinator-Dependent Plants

Two broad categories of pesticides exist: contact chemicals that are only toxic while active on the surface of the plant, and systemic chemicals that are absorbed into the plant tissue. Both categories can have extended residual toxicity (ERT) for hours after being applied, but systemic pesticide toxicity typically is longer because the chemical is designed to remain active in the plant tissue. The extent to which a pesticide may result in an adverse effect on a pollinator depends on a variety of factors, including the type of chemical, transport mechanism, ERT of the chemical formulation, and the size of the pollinator.

Bees can be poisoned by pesticides, either by absorption of the pesticide through contact or by consuming contaminated nectar, pollen, or water. Absorption can occur if bees are foraging as the spray is applied or if they walk across plants that have spray residues (NRC 2006). Consumption of contaminated nectar or pollen is associated with a class of pesticides called systemic chemicals, including neonicotinoids, which are absorbed in the plant and transferred through the vascular system, making the plant poisonous long after pesticide application (Hopwood et al. 2012). Neonicotinoids, a pesticide toxic to bees, remain persistent in soil for months and can be detected in woody plant tissue for up to 6 years (Hopwood et al. 2012). The relationship between concentrations in soil or woody plant tissue and the concentration in pollen has not been well studied, however systemic chemicals and their metabolites are known to translocate throughout a plant. One study has been conducted linking seed treatments with pollen contamination. The study tested for imidacloprid (a systemic neonicotinoid) throughout a plant after it was used to treat the seed. Once the plant matured and flowered, the pollen tested positive for imidacloprid. The concentration in the pollen was lower than the starting seed concentration; the study does not test the longevity of this translocation. (Laurent and Rathahao 2003)

Poisoning is more likely to occur if pesticides are applied to crops when they are blooming because the bees are more likely to make contact while foraging. Other factors that can increase potential pollinator-pesticide contact include (Hooven et al. 2013; Pesticide Environmental Stewardship 2014):

1. If the chemical was sprayed during the day and has an ERT of more than 8 hours;
2. Pesticide drift outside of the spray site, increasing the area with potential pesticide-pollinator contact;
3. If flowering ground cover or hedgerows are sprayed; and
4. When contaminated particles and pollen make it back to the hive.

Depending on the species, native bees may nest in underground tunnels, hollow plant stems, and tunnels in wood. Many ground-nesting species, such as squash bees, long-horned bees, mining bees, and sweat bees, construct their nests in the midst of annual and

perennial crop fields (Hooven et al. 2013). Unlike honey bees, whose hives can be moved, these native pollinators cannot be moved from the locations where pesticides are used.

Bee kill incidents from pesticides have been observed, such as the Wilsonville bee kill in 2013 (Grossman 2013). However, detrimental sublethal impacts are more likely; for example, pesticide contact can reduce foraging success of bees, disrupt navigation, reduce lifespan and disrupt the population biology of pollinators (i.e., lowering pollinator abundance even if not causing mortality) (Hopwood et al. 2012; Sandrock et al. 2014; Vanbergen and the Insect Pollinators Initiative 2013). Most native bees are substantially smaller than honey bees, in some cases only a fraction of the size, which makes them more susceptible to adverse effects (Johansen et al. 1983).

Potential Impacts of Pesticide Use on Special-Status Pollinator Species

In California, 18 invertebrate special-status pollinators (SSP) exist, all of which are butterfly, moth, fly, and beetle species (Table K-1) (CDFW 2014). None of the native bee species in California are special-status species. Although little research has been done specifically about the effects of pesticides on SSP species, they may be susceptible to similar toxic effects from the four broad-spectrum systemic pesticides that may be used under the Proposed Program which affect honey bees and native bees. Because the SSPs are less abundant, a decrease in their numbers resulting from pesticide contact would have a more substantial effect on the population's ability to survive. SSPs typically have very limited ranges; therefore, potential impacts are best addressed through species-specific measures.

Table K-1. Pollinator Species Listed as Threatened or Endangered

Common Name	Scientific Name	Listing Status*
Bay checkerspot butterfly	<i>Euphydryas editha bayensis</i>	FT
Behren's silverspot butterfly	<i>Speyeria zerene behrensii</i>	FE
Callippe silverspot butterfly	<i>Speyeria callippe callippe</i>	FE
Carson wandering skipper	<i>Pseudocopaeodes eunus obscurus</i>	FE
Delhi Sands flower-loving fly	<i>Rhaphiomidas terminatus abdominalis</i>	FE
El Segundo blue butterfly	<i>Euphilotes battoides allyni</i>	FE
Kern primrose sphinx moth	<i>Euproserpinus Euterpe</i>	FT
Laguna Mountains skipper	<i>Pyrgus ruralis lagunae</i>	FE
Lange's metalmark butterfly	<i>Apodemia mormo langei</i>	FE
Lotis blue butterfly	<i>Plebejus anna lotis</i>	FE
Mission blue butterfly	<i>Plebejus icarioides missionensis</i>	FE
Myrtle's silverspot butterfly	<i>Speyeria zerene myrtleae</i>	FE
Oregon silverspot butterfly	<i>Speyeria zerene hippolyta</i>	FE
Palos Verdes blue butterfly	<i>Glaucopsyche lygdamus palosverdesensis</i>	FE
Quino checkerspot butterfly	<i>Euphydryas editha quino (=E.</i>	FE

Common Name	Scientific Name	Listing Status*
	<i>e. wrighti</i>	
San Bruno elfin butterfly	<i>Callophrys mossii bayensis</i>	FE
Smith's blue butterfly	<i>Euphilotes enoptes smithi</i>	FE
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT

*FE = Federally Endangered, FT = Federally Threatened

Potential Effects of Pollinator Reductions on Agricultural Outputs

As described earlier, many types of plants, including fruit and vegetable crops, depend on insects and other species (e.g., certain bird species) for pollination. The economic contribution of pollinators and the potential impact of pollinators on agriculture production have been estimated in many ways.

Honey bees are California's most important pollinators, resulting in an estimated ecosystem service value of \$4.4 billion a year.¹ Harm to honey bees, other pollinators, and other beneficial organisms from pesticide use could contribute to declines in pollinator or other ecosystem services, affecting the specialty crop industry in California.

Pollination is estimated to contribute "to crop production worth \$20-30 billion in agricultural production annually," (USDA 2012). Honey bees migrate by truck all over the country and pollinate 30 percent of the food we consume (ESA 2008). Pollinators are responsible for the reproduction of approximately 75 percent of all crops, including 150 crops in the U.S. (Kearns et al. 1998; USFWS 2014). Regardless of the specific statistics, clearly much of our food is dependent on the existence of pollinators, and agricultural production will decline as a result of pollinator declines. For example, a link was found between the insecticide spray program of lowbush blueberries in eastern Canada, the reduced native pollinator populations of 70 wild insects needed to pollinate the blueberries, and lower blueberry yields. (Kevan and Plowright 1995; Kevan et al. 1997; Kevan 1975).

The majority of crops can be pollinated by generalist pollinators, such as the honey bee. However, some crops have specialist pollinators, such as the wasp pollinators associated with figs (Janzen 1979; Molbo et al. 2003). A decline in specialist pollinators would be detrimental to those specialist-dependent crops because no replacement pollinator exists. In addition, wild native pollinators have been shown to be more successful in pollinating crops than managed honey bees, making them not only a good backup to managed honey bees but also an important resource to cultivate.

The diversity and abundance of wild insect pollinators have declined in many agricultural landscapes (Garibaldi et al. 2013). Diverse wild-bee communities potentially provide enhanced stability, quality, and quantity of pollination services over space and time, compared with single, managed species such as the honey bee (Klein et al. 2003; Greenleaf and Kremen 2006; Hoehn et al. 2008; Winfree and Kremen 2009). Therefore, in the face of

¹ Ecosystem services are the benefits people obtain from ecosystems.

honey bee population declines, wild pollinators may become increasingly important to farmers. Maintaining pollinator habitats and pollinator diversity within agricultural landscapes, therefore, is important to provide food production, quality, and security.

Potential Impacts of Pollinator Reductions on SSFP and Sensitive Natural Communities

Pollinators are essential to the survival of over 70 percent of the 250,000 flowering plants species on the planet today (Kearns et al. 1998). Honey bees are generalist pollinators that do not discriminate between flower types, visiting different species and families of flowering plants. Therefore, a wide range of native flowering plants benefit from honey bee pollination (Brosi and Briggs 2013; Memmott et al. 2004). Reductions in pollinator populations may have substantial “implications for ecosystem functioning in terms of reduced plant reproduction, even when potentially effective pollinators remained in the system... results suggest that ongoing pollinator declines may have more serious negative implications for plant communities than is currently assumed” (Brosi and Briggs 2013). It has been predicted that 20,000 flowering plant species will disappear in the next few decades. Although pollinator declines will not be the sole cause of these plant extinctions, and few plants are dependent exclusively on one pollinator species, large-scale losses of either flowering plants or pollinators are likely to result in cascading declines within both groups (Bronstein 1992:1–44). These conclusions could not only impact SSFP but also plant species that make up sensitive natural communities.

Some SSFP may have specialized pollinators, where successful pollination and reproduction is dependent on the existence of one specific pollinator or group of pollinators. Reduced reproduction of SSFPs is likely to result in fewer new individuals of that species. This correlative relationship is different for each SSFP, depending on its prime mode of reproduction, its life history, and the species’ degree of seed limitation (Garren and Strauss 2009). It is beyond the scope of this evaluation to individually evaluate the likelihood of a pollinator-induced population decline for each SSFP in California.

Sensitive natural communities, sometimes referred to as special-status plant communities, are described in PEIR Section 6.3, Biological Resources. These communities generally are rare, unique, or support a high level of endemic or rare plant and/or animal species, or have limited distribution statewide or within a county or region. These communities often are vulnerable to the environmental effects of projects (CDFG 2009). Plants that make up natural communities may depend on a diverse group of native pollinators as a form of pollinator redundancy (Moisset and Buchmann 2011). These pollinators may be more susceptible to pesticides because they are much smaller than the honey bee, which was the surrogate species evaluated in the Ecological Risk Assessment (PEIR Appendix A) (Johansen et al. 1983).

Similar to SSFP, sensitive natural communities dominated by pollinator-dependent plant species are sensitive to reductions in pollinator numbers if they are pollinated by uncommon specialists or if they have no other options for reproduction. For example, Joshua trees (*Yucca brevifolia*), the namesake tree in the sensitive natural community Joshua tree woodlands, are only pollinated by two species of moths whose distributions do not overlap (Baker 1986; Pellmyr and Segraves 2003). California poppy fields, another

sensitive natural community, are dominated by California poppies (*Eschscholzia californica*), which are pollinated by a suite of generalists but are an obligate-outcrosser, which means the plant relies on the pollination services of insects for reproductive success without other modes of reproduction (i.e., self-pollination or wind-pollination) (Smith 2010).

Potential Effects of the Proposed Program on Pollinators and Related Species

Proposed Program activities potentially could affect native and non-native pollinators through several mechanisms that are potential stressors on pollinators, as described above. These mechanisms include application of pesticides by soil application or foliar application, using both ground-based and aerial methods. The choices of chemical and application method are dependent on the pest and the circumstances at hand because specific protocols are in place for different application scenarios. Proposed Program activities would take place in agricultural areas, nurseries, and residential/urban areas as needed; recreational areas, protected lands, and public lands would generally be excluded. Both contact and systemic pesticides would be included in the Proposed Program; this would include four systemic pesticides: imidacloprid, thiamethoxam, acetamiprid, and dinotefuran (see PEIR Chapter 3, Proposed Program Activities, for more information regarding their use). Acetamiprid, imidacloprid, and thiamethoxam also are neonicotinoids. The toxicity of each of these chemicals on pollinators was evaluated in the Ecological Risk Assessment (PEIR Appendix A) and is summarized in PEIR Section 6.3, Biological Resources.

Soil application methods apply the chemical directly to the soil and not the plant. These methods potentially can affect soil-dwelling native bees; in addition, if the chemical applied to the soil is systemic, it can be absorbed into the tissue of the plant, reach pollen, and make contact with foraging pollinators.

Foliar application of chemicals can be applied using several methods, including a backpack sprayer and an airblast sprayer on a tractor). These methods can affect pollinators by depositing the chemical directly on the plant/flowers, as well as drift which can expand the area of contact beyond the target plants.

Aerial applications (which may be conducted in response to quarantines in non-residential areas) use aircraft (i.e., a helicopter or airplane), spreading pesticides through the atmosphere and over the area where a pest population exists. This technique provides a rapid, uniform application over a large area. During aerial applications, the applied pesticide directly contacts some non-target areas, including the ground surface, other vegetation, and waterbodies.

Magnitude and duration of the applications for the Proposed Program would be limited, compared to the widespread application of these pesticides throughout agricultural and residential areas of California. In addition, the CDFA would implement a number of avoidance and minimization measures as part of the Proposed Program, including:

- Specific pollinator protection measures (Attachment 1);
- Pesticide label restrictions to reduce potential for drift and protect pollinators;

- Additional MPs, described in Chapter 2, Proposed Program Description, of the Final PEIR; and
- Measures identified based on coordination with USFWS and CDFW.

Therefore, the contribution of the Proposed Program to pollinator declines and the stressors that potentially result in pollinator declines is likely to be small, relative to other mechanisms described above that are part of the baseline environment.

References

- Baker, H. G. 1986. Yuccas and Yucca Moths--a Historical Commentary. *Annals of the Missouri Botanical Garden* 73: 556–564 [379].
- Beekman, M., and F. L. W. Ratnieks. 2000 (August). Long-Range Foraging by the Honey-Bee, *Apis mellifera*. *Functional Ecology* Vol. 14, No. 4, 490–496.
- Bronstein, J. L. 1992. Seed Predators as Mutualists: Ecology and Evolution of the Fig-Pollinator Interaction. In *Insect-Plant Interactions*, Vol. IV, E. Bernays, editor. Boca Raton, FL: CRC Press.
- Brosi, B. J., and H. M. Briggs. 2013. Single Pollinator Species Losses Reduce Floral Fidelity and Plant Reproductive Function. *Proceedings of the National Academy of Sciences* 110:13044–13048.
- California Department of Fish and Game (CDFG). 2009. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*. Biogeographic Data Branch, Sacramento, CA.
- California Department of Fish and Wildlife (CDFW) 2014. *State and Federally Listed Endangered and Threatened Animals of California*. Available: <https://www.dfg.ca.gov/biogeodata/cnddb/pdfs/TEAnimals.pdf>. Accessed May 23, 2014.
- Classen, A, M. K. Peters, S. W. Ferger, M. Helbig-Bonitz, J. M. Schmack, G. Maassen, M. Schleuning, E. K. V. Kalko, K. Böhning-Gaese, and I. Steffan-Dewenter. 2014. Complementary Ecosystem Services Provided by Pest Predators and Pollinators Increase Quantity and Quality of Coffee Yields. *Proceedings of the Royal Society B* 281:20133148.
- Ecological Society of America (ESA). 2008 (June 20). *Communicating Ecosystem Services Pollination Toolkit: Pollination Fact Sheet – Revealing Secrets about the Birds and the Bees*. Available: www.esa.org/ecoservices. Accessed June 15, 2014.
- Frankie, G., R. Thorp, J. Hernandez, M. Rizzardi, B. Ertter, J. Pawelek, S. Witt, M. Schindler, R. Coville, and V. Wojcik. 2009. Native Bees are a Rich Natural Resource in Urban California Gardens. *California Agriculture* 63(3):113–120. DOI: 10.3733/ca.v063n03p113.
- Garibaldi, L. A., I. Steffan-Dewenter, R. Winfree, M. A. Aizen, R. Bommarco, S. A. Cunningham, C. Kremen, L. G. Carvalheiro, L. D. Harder, O. Afik, I. Bartomeus, F. Benjamin, V. Boreux, D. Cariveau, N. P. Chacoff, J. H. Dudenhöffer, B. M. Freitas, J. Ghazoul, S. Greenleaf,

- J. Hipólito, A. Holzschuh, B. Howlett, R. Isaacs, S. K. Javorek, C. M. Kennedy, K. Krewenka, S. Krishnan, Y. Mandelik, M. M. Mayfield, I. Motzke, T. Munyuli, B. A. Nault, M. Otieno, J. Petersen, G. Pisanty, S. G. Potts, R. Rader, T. Ricketts, M. Rundlöf, C. L. Seymour, C. Schüepp, H. Szentgyörgyi, H. Taki, T. Tscharntke, C. H. Vergara, B. F. Viana, T. C. Wanger, C. Westphal, N. Williams, and A. M. Klein. 2013. Wild Pollinators Enhance Fruit Set of Crops Regardless of Honey-Bee Abundance. *Science* Vol. 339, No. 6127:1608–1611.
- Garren, J. M., and S. Y. Strauss. 2009. Population-Level Compensation by an Invasive Thistle Thwarts Biological Control from Seed Predators. *Ecological Applications* 19(3): 709–721.
- Greenleaf, S. S., and C. Kremen. 2006. Wild Bee Species Increase Tomato Production and Respond Differently to Surrounding Land Use in Northern California. *Biological Conservation* 133:81–87.
- Greenleaf, S. S., N. M. Williams, R. Winfree, and C. Kremen. 2007. Bee Foraging Ranges and Their Relationship to Body Size. *Oecologia* 153:589–596.
- Grossman, E. 2013. *The Day the Bees Died*. Available: <http://america.aljazeera.com/articles/2013/8/20/the-day-the-beesdied.html>. Accessed May 19, 2014.
- Hagler, J.R., S. Mueller, L. R. Teuber, S. A. Machtley, and A. Van Deynze. 2011. Foraging Range of Honey Bees, *Apis mellifera*, in Alfalfa Seed Production Fields. *Journal of Insect Science* 11:144. Available: insectscience.org/11.144. Accessed June 15, 2014.
- Hoehn, P., T. Tscharntke, J. M. Tylianakis, and I. Steffan-Dewenter. 2008. Functional Group Diversity of Bee Pollinators Increases Crop Yield. *Proceedings of the Royal Society B: Biological Sciences*:275:2283–2291.
- Hopwood, J., M. Vaughan, M. Shepherd, D. Biddinger, E. Mader, S. H. Black, and C. Mazzacano. 2012. *Are Neonicotinoids Killing Bees?* The Xerces Society for Invertebrate Conservation. Oregon.
- Hooven, L., R. Sagili, and E. Johansen. 2013. How to Reduce Bee Poisoning. Pacific Northwest Extension Publication. Available: <http://www.xerces.org/pollinator-conservation/agriculture/managing-pesticides-to-protect-bees>. Accessed June 15, 2014.
- Janzen, D. H. 1979. How to Be a Fig. *Annual Review of Ecology and Systematics* 10:13–51.
- Johansen, C. A., D. F. Mayer, J. D. Eves, and C. W. Kious. 1983. Pesticides and Bees. *Environmental Entomology* 12:1513–1518.
- Kearns, C. A., D. W. Inouye, and N. Waser. 1998. Endangered Mutualisms: the Conservation of Plant-Pollinator Interactions. *Annual Review of Ecology and Systematics* 29:83–112.
- Kevan, P. G. 1975. Pollination and Environmental Conservation. *Environmental Conservation* 2(4): 293–297.

- Kevan, P. G., and R. C. Plowright. 1995. Impact of Pesticides on Forest Pollination. In *Forest Insect Pests in Canada*, J. A. Armstrong, J. A. Ives, and W. G. H. Ives, editors, Ottawa, Canada. *Natural Resources Canada*:607–618.
- Kevan, P. G., C. F. Greco, and S. Belaoussoff. 1997. Log-Normality of Biodiversity and Abundance in Diagnosis and Measuring of Ecosystemic Health: Pesticide Stress of Pollinators on Blueberry Heaths. *Journal of Applied Ecology* 34: 1122–1136.
- Klein, A.M., I. Steffan-Dewenter, and T. Tscharntke. 2003. Fruit Set of Highland Coffee Increases with the Diversity of Pollinating Bees. *Proceedings of the Royal Society of London Series B: Biological Sciences* 270:955–961.
- Laurent, F.M. and E. Rathahao. 2003. Distribution of [C-14]imidacloprid in sunflowers (*Helianthus annuus* L.) following seed treatment. *Journal of Agricultural and Food Chemistry* 51:8005–8010. Available: <http://www.ncbi.nlm.nih.gov/pubmed/14690387>. Accessed July 24, 2014.
- Memmott, J., N. M. Waser, and M. V. Price. 2004. Tolerance of Pollination Networks to Species Extinctions. *Proceedings of the Royal Society of London B* Vol. 271, No. 1557:2605–2611.
- Moisset B., and S. Buchmann. 2011. *Bee Basics: An Introduction to Our Native Bees*. U.S. Department of Agriculture. Available: http://www.fs.usda.gov/internet/fse_documents/stelprdb5306468.pdf. Accessed May 22, 2014.
- Molbo, D., C. A. Machado, J. G. Sevenster, K. Laurent, and E. A. Herre. 2003. Cryptic Species of Fig-Pollinating Wasps: Implications for the Evolution of the Fig–Wasp Mutualism, Sex Allocation, and Precision of Adaptation. *Proceedings of the National Academy of Sciences* 100(10): 5867–5872.
- National Resource Council (NRC). 2006. *Status of Pollinators in North America*. The National Academies Press. Washington, DC.
- Pellmyr, O., and K. A. Seagraves. 2003. Pollinator Divergence within an Obligate Mutualism: Two Yucca Moth Species (*Lepidoptera; Prodoxidae: Tegeticula*) on the Joshua Tree (*Yucca brevifolia; Agavaceae*). *Annals of the Entomological Society of America* 96(6):716–722 [61309].
- Pesticide Environmental Stewardship. 2014. *Pollinator Protection*. Available: <http://pesticidestewardship.org/pollinatorprotection/Pages/default.aspx>. Accessed May 22, 2014.
- Pettis, J. S., D. van Engeldorp, J. Johnson, and G. Dively. 2012. Pesticide Exposure in Honey Bees Results in Increased Levels of the Gut Pathogen *Nosema*. *Naturwissenschaften*. 99:153–158.
- Roubik, D. W. 1995. *Pollination of Cultivated Plants in the Tropics*. Rome: Food and Agriculture.

- Sandrock, C., L. G. Tanadini, J. S. Pettis, J. C. Biesmeijer, S. G. Potts, and P. Neumann. 2014. Sublethal Neonicotinoid Insecticide Exposure Reduces Solitary Bee Reproductive Success. *Agricultural and Forest Entomology* 16:2:119–128.
- Smith, C. 2010. *Plant Guide for California Poppy (Eschscholzia californica)*. USDA Natural Resources Conservation Service, Plant Materials Center. Lockeford, CA.
- U.S. Department of Agriculture (USDA). 2010. *2010 Colony Collapse Disorder Progress Report*. Available: <http://www.ars.usda.gov/is/br/ccd/ccdprogressreport2010.pdf>. Accessed June 15, 2014.
- . 2012 (October). *Report on the National Stakeholders Conference on Honey Bee Health*. Available: <http://www.usda.gov/documents/ReportHoneyBeeHealth.pdf>. Accessed December 6, 2013.
- . 2014. *Fact Sheet: Survey of Bee Losses during Winter 2012/2013*. Prepared by Kim Kaplan. Available: <http://www.ars.usda.gov/is/br/beelosses/>. Accessed June 27, 2014.
- U.S. Environmental Protection Agency (EPA). 2013. *Pollinator Protection*. Available: <http://www.epa.gov/opp00001/ecosystem/pollinator/>. Accessed December 6, 2013.
- U.S. Fish and Wildlife Service (USFWS) 2014. *Pollinators*. Available: <http://www.fws.gov/pollinators/>. Accessed May 22, 2014.
- U.S. Geological Survey (USGS). 2013. *The Buzz on Native Bees*. USGS Science Features. Available: http://www.usgs.gov/blogs/features/usgs_top_story/the-buzz-on-native-bees/. Accessed June 27, 2014.
- Vanbergen, A. J. and the Insect Pollinators Initiative. 2013. Threats to an Ecosystem Service: Pressures on Pollinators. *Frontiers in Ecology and the Environment* 11: 251–259. Available: <http://dx.doi.org/10.1890/120126>. June 15, 2014.
- Winfrey, R., and C. Kremen. 2009. Are Ecosystem Services Stabilized by Differences Among Species? A Test Using Crop Pollination. *Proceedings of the Royal Society of London* 276:229–237.

Attachment 1. Beneficial Actions for Pollinators, California Department of Food & Agriculture (CDFA) Plant Health and Pest Prevention Services Division level, by Branch, and Pierce's Disease Control Program

Background

CDFA currently is implementing or proposing to implement a number of actions to benefit pollinator species. To distinguish between actions that are reflected in baseline conditions, the actions are divided into two groups—those implemented by CDFA before issuance of the Notice of Preparation (June 2011), and those implemented since that time or to be implemented in the future.

Actions before June 2011

The Department of Food and Agriculture (CDFA) conducts an Integrated Pest Management (IPM) analysis of alternative treatment methods for the control of the targeted pest in the project area including:

- Mechanical Control;
- Cultural Control;
- Biological Control; and
- Chemical Control.

After the analysis, CDFA selects the effective alternative or combination of alternatives which are scientifically found to be likely to achieve the desired outcome.

CDFA (All programs) conducts a site-specific evaluation of the project area to determine what beneficial actions may be needed to reduce or eliminate any unintentional impacts on non-target species, including bee hives and the environment. CDFA implements the following types of beneficial actions for the evaluated project site:

- Establish the minimum and maximum project area boundary based upon the target pest profile and scientific expert consultations. The project area is the area where activities take place including a smaller defined treatment area, any regulatory actions if applicable and survey activity for presence of pollinators.
- Consult the California Department of Fish and Wildlife Natural Diversity Data Base for threatened and endangered species including pollinators (when this information is available).
- As appropriate, request technical assistance from the United States Fish and Wildlife Service, the California Department of Fish and Wildlife, and/or the National Marine Fisheries Service.

- Establish a treatment plan based upon selected alternative(s) and scientific expert consultations with added focus on beneficial actions in regards to pollinator activity in treatment area.

CDFA (All programs) conducts the following beneficial avoidance actions including, but not limited to:

- Implement site specific buffers as necessary to protect pollinators from possible drift.
- Check properties for evidence of bee hives to ensure protection of pollinators.
- Choose appropriate sprayer and nozzles using site-specific parameters to avoid unintended impacts to pollinators.

CDFA (Pest Exclusion)

- Maintains a Bee and Beehive Information webpage that includes European Honey Bee Pollination Information, Bumble Bee Pollination Information and Small Hive Beetle Management. Also included is information on Africanized Honey Bee.
- Staff provides information and additional referrals to callers re: bees.
- Border stations provide water in the form of available water faucet for hose hook-up by Apiary Shipment drivers at no charge to the drivers. When bees are shipped by truck in their respective bee hives, the interior of the hives will get very warm. At the point when the temperature in their hive becomes too dry and hot, the bees may be inclined to disperse to find a water source. Additionally the warm environment will cause stress and may be a detriment to bee health. The CDFA has worked with Apiary stakeholders and top bee scientists to improve conditions during critical inspections at the stations, as well as, worked to enhance the overall health and vitality of the colonies. Providing a water source to drivers to hose down their hives will ensure that bees can settle down comfortably in their hives & have the moisture needed for a healthy environment.
- With CDFA's border station operation data and coordination efforts, Project Apis m, (a non-profit organization dedicated to funding and directing research to enhance the health and vitality of honey bee colonies while improving crop production), created a video on Colony Management BMPs, in regard to preparing apiary shipments, what to expect at the California Agricultural Inspection Station and at the shipper's end destination. http://projectapism.org/?page_id=225.
- Recent figures from Project Apis m reflect that the California Almond Industry requires over 1.6 million colonies of bees to pollinate their crop. Over 1.2 million bee colonies, or approximately 2,600 truckloads of bee hives, come from out of state and require inspection to make sure they are free of invasive pests that can cause damage to California's agriculture and natural environment. The Border Stations use digital imaging technology to send images to the California Plant Pest Diagnostic Laboratory Scientists to identify potential serious pests that may be discovered at the inspection station. The suspect pests intercepted and imaged are then sent to the Plant Pest Diagnostic Lab for final confirmation. The digital imaging and subsequent transmittal for identification at the lab is available 7 days a week at no extra charge to the bee keepers. The digital imaging will provide for faster

ID and less hold time for Apiary Shipments in order to get the trucks on their way and keep the bees from becoming stressed from heat, noise, or other stressors.

- An Ant Free Certification system created for certification of bee hives at origin. This certification allows beekeepers to prepare in advance for a more streamline inspection at the Border Station, and to be able to unload hives at their destination without waiting for county apiary inspectors.
- <http://www.cdfa.ca.gov/plant/PE/interiorexclusion/pdfs/BeeFlyer-HoneybeeShipmentsEnteringCA.pdf>.
- CDFA provides referrals to a location across the street from the Needles Border Station to provide Apiary shippers who do not pass inspection, the option of having their loads cleaned by 3 different vendors who will come out to the assigned location and perform the service. The vendors charge for this service. If the Apiary shipper does not want this service, they have the option to return out of state and locate another service. This referral service which is done informally, (the vendors have supplied their business information to CDFA for verification purposes) was a recommendation by the Apiary industry.

CDFA (Pierce's Disease Control program) contracts with the County Agricultural Commissioner's (CAC) office for local program activities. When needed, a licensed pest control operator hired by the CAC's office, and operating under the authority and direction of the PDCP and the CAC, performs urban & residential treatments . Pierce's Disease Control Program beneficial actions are included in the all CDFA Programs prior to June 2011.

CDFA (Integrated Pest Control)

- Actively survey area to be treated up to and including the day of treatment, specifically for new arrivals of pollinators. In rangeland treatment areas, beekeepers may set down hives on land that they believe is for public use. Private landowners may be unaware of this activity. Treatment schedules are altered if presence of new hives is discovered until hive owners are located and bees are moved out of the area.

CDFA (Plant Pest Diagnostic Center)

- Prior to June 2011, CDFA's Dr. Andrew Cline has been the main point of contact for insect interceptions on apiary loads at California border stations. Dr. Cline directs identification activities for pests of concern on apiary loads after hours (5pm-10pm M-F) and weekends (8am-10pm) to facilitate shipment of bees within the state. Dr. Cline's educational, research, and other scientific qualifications to serve as an apiary inspector are provided below.

Dr. Andrew Cline:

- Ph.D. Committee member; Edward Atkinson; University of Florida, Dissertation Title: Integration of Small Hive Beetle (*Aethina tumida* Murray, Coleoptera: Nitidulidae) into Western Honey Bee (*Apis mellifera* L., Hymenoptera: Apidae) Colonies. Graduated in spring 2011.

- Presenter in 2010: Pacific Coast Entomological Society; Sacramento, CA; Seminar Topic: Nitidulid Beetles as Pollinators of Different Plant Species from Around the World.
- Presenter in November 2010: Entomological Society of America, San Diego, CA; Poster Presentation; Topic: Small Hive Beetle Associations with Western Honeybees.
- Collaborator/Expert Identifier for work completed in 2008: two graduate student projects involving beetle pollinators—one project associated with New World palms in Colombia, and one project with cycads in South Africa.
- Collaborator for work completed in 2007: Investigations in the Biodiversity of Soil and Canopy Arthropods (IBISCA) working group in Panama and Vanuatu. Biodiversity initiative that looked at the differential diversity of insects in soil and canopy habitats in tropical regions throughout the world, including pollinators.
- Publication: Audisio, P., **A.R. Cline**, A. De Biase, G. Antonini, E. Mancini, M. Trizzino, L. Costantini, S. Strika, F. Lamanna, and P. Ceretti. 2009. Preliminary re-examination of genus-level taxonomy of the pollen beetle subfamily Meligethinae (Coleoptera: Nitidulidae). *Acta Entomologica Musei Nationalis Pragae* 49(2):341-504.
- Publication: Jelínek, J., C.E. Carlton, **A.R. Cline**, & R.A.B. Leschen. 2010. Nitidulidae Latrielle, 1802. Pp. 390-407. *In* Leschen, R.A.B., R.G. Beutel, & J.F. Lawrence (eds.) *Handbook of Zoology. Volume IV. Arthropoda: Insecta. Part 38. Coleoptera, Beetles.* 786pp.
- Publication: Jelínek, J. and **A.R. Cline**. 2010. Kateretidae Erichson in Agassiz, 1846. Pp. 386-390. *In* Leschen, R.A.B., R.G. Beutel, & J.F. Lawrence (eds.) *Handbook of Zoology. Volume IV. Arthropoda: Insecta. Part 38. Coleoptera, Beetles.* 786pp.
- Publication: **Cline, A.R.** and P. Audisio. 2010. Revision of the New World Short-Winged Flower Beetles (Coleoptera: Cucujoidea: Kateretidae). Part I. Generic Review and Revision of *Anthonaeus* Horn, 1879. *The Coleopterists Bulletin* 64: 173-186.
- Audisio, P., **Cline, A.R.**, Lamanna, F., Trizzino, M., Antonini, G., Mancini, E., & DeBiase, A. 2009. Revision of the Southern African Pollen Beetle Genus *Anthystrix* (Coleoptera: Nitidulidae:Meligethinae). *Annals of the Entomological Society of America* 102(6):998-1012.
- Publication. Ellis, J.D., K.S. Delaplane, **A.R. Cline**, & J.V. McHugh. 2008. The association of multiple sap beetle species (Coleoptera: Nitidulidae) with western honeybee (*Apis mellifera*) colonies in North America. *Journal of Apicultural Research* 47(3):188-189.
- Publication: Audisio P., Kirk-Spriggs A.H., **Cline A.R.**, Trizzino M., Antonini G., Mancini E. and DeBiase A. 2008. A new genus of pollen-beetle from South Africa (Coleoptera: Nitidulidae), with discussion of the generic classification of the subfamily Meligethinae. *Insect Systematics and Evolution* 39:419-430.
- Publication: Audisio, P., A. De Biase, A.H. Kirk-Spriggs, **A.R. Cline**, M. Trizzino, G. Antonini & E. Mancini. 2008. Molecular biogeography of Mediterranean and southern African

disjunctions as exemplified by pollen beetles of the *Meligethes planiusculus* species-group and related taxa (Coleoptera: Nitidulidae; Meligethinae). *Biogeographia* 29:45-65.

Dr. Martin Hauser

- Scientific consultant and mentioned in the article “Pollinators in Peril by D.L. Green in “South Carolina Wildlife” July/August 2008.

Actions Currently Taken

CDFA (Plant Health lead and all programs) –

- Work collaboratively with the State Apiary Board to promote bee health.
- CDFA Secretary appointed a new Liaison to the Apiary Board in 2013 to facilitate a new exchange of ideas, better communication and recommendations from Apiary Industry regarding their concerns.
- In 2013, CDFA formed a California Pollinator Workgroup to exchange ideas, identify existing research areas, existing project areas, and identify potential criteria for critical research needs. The main goal was to discover gaps in research areas and suggest potential projects as a result of the dialog with bee experts, regulatory agencies, industry stakeholders and other conservation partners.

CDFA – Pest Detection/Emergency Projects

- Identify registered beekeepers in the treatment zone by contacting the Agricultural Commissioner for their list
- Once identified as located in the treatment area, notify registered beekeepers via a notification packet which includes:
 - Letter addressed to registrant serving as a “notification of pesticide application.”
 - Map(s) of treatment area.
 - Product labels and application rates, including any supplemental or section 18 registrations).
- Notify treatment personnel of any properties that are known to have bee hives so they can coordinate with bee keepers if alternative scheduling is required.
- Add Bee Rescheduling line in post treatment notice – your property was not treated today due to pollinator activity.
- Be on the lookout for bee hives to provide unregistered bee keepers that same information as registered bee keepers. Provide alternative treatment schedule to newly located bee keepers.
- Educate treatment personnel on how to handle bee encounters.

- Check host material before applying treatments for presence of pollinators.
- Identify actions to be taken in site specific situations.
- Cover non-target flowering plants and water sources (i.e. bird baths) during treatment to avoid drift or drip from adjacent or overhanging treated plants when necessary.
- Provide expert (entomologist) at public meetings or fact sheets to answer commonly asked pollinator questions.

CDFA Pest Exclusion - Border Stations

- Identify gaps and trends in border station hold times for bee shipments and work on process improvement to streamline inspections.
- Provide dedicated lines for watering stations for bee health management and colony control, located in border stations with high Apiary Shipment volume.
- Provide misting sprayers at designated border stations if possible. At some stations the water has a high mineral content and the sprayers become inoperable after only a week, so this service is not practical in all areas.
- Encourage Ant Free Certification to provide ease of inspection at Border Station and ability to unload at destination without waiting for County Apiary staff.
- Border Stations provide operation data to Apis m and Apiary Industry Point of Contact to allow for dialog and assessment of critical needs of the Apiary/Pollinator community.

CDFA (Pierce's Disease Control Program)

- Identify registered beekeepers in the treatment zone.
- Notify registered beekeepers with information about the upcoming treatments and offer alternative scheduling if needed to protect hives.
- Be on the lookout for additional bee keepers so the same information offered to registered bee keepers can be offered to new bee keepers.
- Educate treatment personnel on how to handle bee encounters.
- Provide for pollinator experts at public meetings.
- Follow the same protocols as CDFA Pest Detection and Emergency Project treatment crews.

CDFA (Integrated Pest Control)

- Apiary Brand – Information Packet for Resident Apiaries. Apiary Brand ensures that information regarding owner of hive will be retained by the County of origin. This information may be critical in case of any emergencies and appropriate regulatory staff must find out who owns the bee hive.

- Issues Apiary Brand for a \$25 one-time charge.

CDFA (Plant Pest Diagnostic Center)

- After June 2011, Dr. Andrew Cline has been the main point of contact for insect interceptions on apiary loads at California border stations. In addition to providing identification of possible invasive pests during the normal business hours of 8AM – 5PM, Dr. Cline directs identification activities for pests of concern on apiary loads **after hours** (5pm-10pm M-F) and **weekends** (8am-10pm). These additional on-call hours' result in better facilitation of bee shipments by providing inspections & identification 7 days per week for apiary shipments at select border stations that see a high volume of apiary shipments.
- **Dr. Stephen D. Gaimari**, Hosting a seminar for the Laboratory seminar series, Speaker, Leithen M'Gonigle (UC Berkeley/ Entomology), 17 April 2014, Title: "Reassembly of native pollinator communities in an agricultural landscape in California" to further educate pollinator community as well as other attendees on the latest research and current developments.
- **Dr. Martin Hauser** – First identification of Stingless bee (*Plebeia* sp.) and along with USDA determined no impacts to native pollinators. Research in cooperation with USDA and property owners.
- **Dr. Martin Hauser** - Since 2011 annually identifies the Syrphid pollinators (often around 2000 specimens per year) for the Kremen lab in Berkeley (<http://nature.berkeley.edu/kremenlab/index.html>).
- **Dr. Martin Hauser** -Publication: Dahlberg, L., **M. Hauser**, & D. Yanega. 2013. Japanese carpenter bee, *Xylocopa appendiculata* Smith 1852 (Hymenoptera: Apidae) potentially established in Santa Clara County, first record in North America. The Pan Pacific Entomologist 89(4):226-229.

Proposed Activities/Actions to Benefit Pollinators

- Further promote benefits of the Apiary Brand and positive outcome of registration by expanding webpage information.
- Coordinate with University and Extension experts on more materials for Education and Outreach on Bee Biology and Management.
- Coordinate with Caltrans, land management, and conservation agencies to provide access for bees to native forage.
- Coordinate with other agencies and promote awareness of need for access to more forage for native pollinators.
- Provide dedicated water lines for watering bees at all border stations.
- Provide outreach and education about access to clean water for bees.

- Promote the protection of wild and native pollinators by education, outreach and coordination with native pollinator experts.
- Encourage permitting of native pollinators.
- Work collaboratively with State Apiary Board to make recommendations regarding funding of pollinator health research through sources of available funding including federal and state grant programs.
- Encourage Ant Free Certification to provide ease of inspection at Border Station and ability to unload at destination without waiting for County Apiary staff.
- Create an enhanced checklist for treatment crews that includes a pollinator awareness section.
- Enhance Pest Exclusion Webpage to include more information on pollinators to expand access to information and easy registration.
- Create a Plant Health Division Webpage and list serve.
- Partner with bee experts and sister agencies to develop more regionally located cleaning areas. CDFA currently only has the Needles staging area as an option for Apiary Shippers.
- State Fair Pollinator Garden – CDFA to provide funding for same.
- 21st Century IPM – Pollinator Section.

Page left intentionally blank.

Appendix L

Crosswalk Between Surrogate Species and
Californian Native Wildlife Species Federally or
State-Listed as Threatened or Endangered

Table L-1. Crosswalk Between Surrogate Species and Californian Native Wildlife Species Federally or State-Listed as Threatened or Endangered

Common Name	Scientific Name	Federal Listing	State Listing	Surrogate species
Gastropods				
Black abalone	<i>Haliotis cracherodii</i>	FE	--	Black Abalone
White abalone	<i>Haliotis sorenseni</i>	FE	--	Black Abalone
Morro shoulderband (=banded dune) snail	<i>Helminthoglypta walkeriana</i>	FE	--	Mimic Tryonia/ San Joaquin Tiger Beetle
Trinity bristle snail	<i>Monadenia setosa</i>	--	ST	Mimic Tryonia / San Joaquin Tiger Beetle
Crustaceans				
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	FE	--	Vernal Pool Fairy Shrimp
Longhorn fairy shrimp	<i>Branchinecta longiantenna</i>	FE	--	Vernal Pool Fairy Shrimp
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	--	Vernal Pool Fairy Shrimp
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	FE	--	Vernal Pool Fairy Shrimp
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	FE	--	Vernal Pool Fairy Shrimp
Shasta crayfish	<i>Pacifastacus fortis</i>	FE	SE	Shasta Crayfish
Riverside fairy shrimp	<i>Streptocephalus woottoni</i>	FE	--	Vernal Pool Fairy Shrimp
California freshwater shrimp	<i>Syncaris pacifica</i>	FE	SE	California Freshwater Shrimp
Terrestrial Invertebrates				
Pollinating Insects	--	--	--	Honeybee
Lange's metalmark butterfly	<i>Apodemia mormo langei</i>	FE	--	Honeybee
San Bruno elfin butterfly	<i>Callophrys mossii bayensis</i>	FE	--	Honeybee
Ohlone tiger beetle	<i>Cicindela ohlone</i>	FE	--	San Joaquin tiger beetle

Table L-1. Crosswalk Between Surrogate Species and Californian Native Wildlife Species Federally or State-Listed as Threatened or Endangered

Common Name	Scientific Name	Federal Listing	State Listing	Surrogate species
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT, pD	--	San Joaquin tiger beetle
Casey's June beetle	<i>Dinacoma caseyi</i>	FE	--	San Joaquin tiger beetle
Delta green ground beetle	<i>Elaphrus viridis</i>	FT	--	San Joaquin tiger beetle
El Segundo blue butterfly	<i>Euphilotes battoides allyni</i>	FE	--	Honeybee
Smith's blue butterfly	<i>Euphilotes enoptes smithi</i>	FE	--	Honeybee
Bay checkerspot butterfly	<i>Euphydryas editha bayensis</i>	FT	--	Honeybee
Quino checkerspot butterfly	<i>Euphydryas editha quino</i> (=E. e. <i>wrighti</i>)	FE	--	Honeybee
Kern primrose sphinx moth	<i>Euproserpinus euterpe</i>	FT	--	Honeybee
Palos Verdes blue butterfly	<i>Glaucopsyche lygdamus palosverdesensis</i>	FE	--	Honeybee
Mission blue butterfly	<i>Icaricia icarioides missionensis</i>	FE	--	Honeybee
Lotis blue butterfly	<i>Lycaeides argyrognomon lotis</i>	FE	--	Honeybee
Mount Hermon June beetle	<i>Polyphylla barbata</i>	FE	--	San Joaquin tiger beetle
Carson wandering skipper	<i>Pseudocopaeodes eunus obscurus</i>	FE	--	Honeybee
Laguna Mountains skipper	<i>Pyrgus ruralis lagunae</i>	FE	--	Honeybee
Delhi Sands flower-loving fly	<i>Rhaphiomidas terminatus abdominalis</i>	FE	--	Honeybee
Callippe silverspot butterfly	<i>Speyeria callippe callippe</i>	FE	--	Honeybee
Behren's silverspot butterfly	<i>Speyeria zerene behrensii</i>	FE	--	Honeybee
Oregon silverspot butterfly	<i>Speyeria zerene hippolyta</i>	FT	--	Honeybee
Myrtle's silverspot butterfly	<i>Speyeria zerene myrtleae</i>	FE	--	Honeybee

Table L-1. Crosswalk Between Surrogate Species and Californian Native Wildlife Species Federally or State-Listed as Threatened or Endangered

Common Name	Scientific Name	Federal Listing	State Listing	Surrogate species
Zayante band-winged grasshopper	<i>Trimerotropis infantilis</i>	FE	--	San Joaquin tiger beetle
Birds				
San Clemente sage sparrow	<i>Amphispiza belli clementeae</i>	FT	--	tricolored blackbird/redwinged blackbird
golden eagle	<i>Aquila chrysaetos</i>	--	FP	White-tailed kite
Marbled murrelet	<i>Brachyramphus marmoratus</i>	FT	SE	Yellow rail
Swainson’s hawk	<i>Buteo swainsoni</i>	--	ST	Cooper’s Hawk
greater sage-grouse	<i>Centrocercus urophasianus</i>	FC	--	Mourning Dove
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	FT	--	Yellow rail
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	FC	SE	Western Yellow-billed Cuckoo
Gilded northern flicker	<i>Colaptes auratus chrysoides</i>	--	SE	Western Yellow-billed Cuckoo
trumpeter swan	<i>Cygnus buccinator</i>	--	FP	Fulvous whistling-ducks
white-tailed kite	<i>Elanus leucurus</i>	--	FP	White-tailed kite
Willow flycatcher	<i>Empidonax traillii</i>	--	SE	Purple Martin
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE	SE	Purple Martin
American peregrine falcon	<i>Falco peregrinus anatum</i>	--	FP	Cooper’s hawks
Greater sandhill crane	<i>Grus canadensis tabida</i>	--	ST	Yellow rail
California condor	<i>Gymnogyps californianus</i>	FE	SE	California Condor
Bald eagle	<i>Haliaeetus leucocephalus</i>	FD	SE	Osprey
San Clemente loggerhead shrike	<i>Lanius ludovicianus mearnsi</i>	FE	--	purple martin
California black rail	<i>Laterallus jamaicensis coturniculus</i>	--	ST	Yellow rail
Gila woodpecker	<i>Melanerpes uropygialis</i>	--	SE	Western Yellow-billed Cuckoo

Table L-1. Crosswalk Between Surrogate Species and Californian Native Wildlife Species Federally or State-Listed as Threatened or Endangered

Common Name	Scientific Name	Federal Listing	State Listing	Surrogate species
Elf owl	<i>Micrathene whitneyi</i>	--	SE	White-tailed Kite
Belding's savannah sparrow	<i>Passerculus sandwichensis beldingi</i>	--	SE	Yellow rail
brown pelican (=California brown pelican)	<i>Pelecanus occidentalis</i>	--	FP	California Brown Pelican
Short-tailed albatross	<i>Phoebastria albatrus</i>	FE	--	California Brown Pelican
Black-backed woodpecker	<i>Picoides arcticus</i>	--	SC	Tricolored Blackbird /redwinged blackbird
Inyo California towhee	<i>Pipilo crissalis eremophilus</i>	FT	SE	Mourning Dove
Coastal California gnatcatcher	<i>Polioptila californica californica</i>	FT	--	Purple Martin
Light-footed clapper rail	<i>Rallus longirostris levipes</i>	FE	SE	Yellow rail
California clapper rail	<i>Rallus longirostris obsoletus</i>	FE	SE	Yellow rail
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	FE	ST	Yellow rail
Bank swallow	<i>Riparia riparia</i>	--	ST	Purple Martin
California least tern	<i>Sterna antillarum browni</i>	FE	SE	California Brown Pelican
Great gray owl	<i>Strix nebulosa</i>	--	SE	White-tailed Kite
Northern spotted owl	<i>Strix occidentalis caurina</i>	FT	SC	White-tailed Kite
Xantus's murrelet	<i>Synthliboramphus hypoleucus</i>	--	ST	California Brown Pelican
Arizona Bell's vireo	<i>Vireo bellii arizonae</i>	--	SE	Western Yellow-billed Cuckoo
Least Bell's vireo	<i>Vireo bellii pusillus</i>	FE	SE	Western Yellow-billed Cuckoo
Amphibians				
California tiger salamander	<i>Ambystoma californiense</i>	FE/FT	ST	California tiger salamander
California tiger salamander - central California DPS	<i>Ambystoma californiense</i>	FT	ST	California tiger salamander
California tiger salamander - Santa Barbara County DPS	<i>Ambystoma californiense</i>	FE	ST	California tiger salamander
California tiger salamander - Sonoma County DPS	<i>Ambystoma californiense</i>	FE	ST	California tiger salamander

Table L-1. Crosswalk Between Surrogate Species and Californian Native Wildlife Species Federally or State-Listed as Threatened or Endangered

Common Name	Scientific Name	Federal Listing	State Listing	Surrogate species
Santa Cruz long-toed salamander	<i>Ambystoma macrodactylum croceum</i>	FE	SE	Santa Cruz long-toed salamander
Desert slender salamander	<i>Batrachoseps aridus</i>	FE	SE	arroyo toad
Kern Canyon slender salamander	<i>Batrachoseps simatus</i>	--	ST	Western Spadefoot
Tehachapi slender salamander	<i>Batrachoseps stebbinsi</i>	--	ST	Western Spadefoot
black toad	<i>Bufo exsul</i>	--	FP	California red-legged frog
Limestone salamander	<i>Hydromantes brunus</i>	--	ST	Southern Torrent Salamander
Shasta salamander	<i>Hydromantes shastae</i>	--	ST	Southern Torrent Salamander
Scott Bar salamander	<i>Plethodon asupak</i>	--	ST	Southern Torrent Salamander
Siskiyou Mountains salamander	<i>Plethodon stormi</i>	--	ST	Southern Torrent Salamander
California red-legged frog	<i>Rana aurora draytonii</i>	FT	--	California red-legged frog
Southern mountain yellow-legged frog	<i>Rana muscosa</i>	FE/FPE	SE	Foothill yellow-legged frog
Southern mountain yellow-legged frog - southern California DPS	<i>Rana muscosa</i>	FE	SE	Foothill yellow-legged frog
Southern mountain yellow-legged frog - northern California DPS	<i>Rana muscosa</i>	FPE	SE	Foothill yellow-legged frog
Oregon spotted frog	<i>Rana pretiosa</i>	FPT	--	California red-legged frog
Sierra Nevada mountain yellow-legged frog	<i>Rana sierrae</i>	FPE	ST	Foothill yellow-legged frog
Arroyo toad	<i>Anaxyrus californicus</i>	FE	--	arroyo toad
Yosemite toad	<i>Anaxyrus canorus</i>	FPT	--	California red-legged frog
Black toad	<i>Bufo exsul</i>	--	ST	arroyo toad
Reptiles				
Loggerhead sea turtle - North Pacific DPS	<i>Caretta caretta</i>	FE	--	East Pacific Grean Sea Turtle
Southern rubber boa	<i>Charina bottae umbratica</i>	--	ST	Alameda whipsnake

Table L-1. Crosswalk Between Surrogate Species and Californian Native Wildlife Species Federally or State-Listed as Threatened or Endangered

Common Name	Scientific Name	Federal Listing	State Listing	Surrogate species
Green sea turtle	<i>Chelonia mydas</i>	FT	--	East Pacific Green Sea Turtle
Barefoot banded gecko	<i>Coleonyx switaki</i>	--	ST	Blunt-nosed leopard lizard
Leatherback sea turtle	<i>Dermochelys coriacea</i>	FE	--	East Pacific Green Sea Turtle
Blunt-nosed leopard lizard	<i>Gambelia silus</i>	FE	SE	Blunt-nosed Leopard Lizard
Desert tortoise	<i>Gopherus agassizii</i>	FT	ST	Desert Tortoise
Olive (=Pacific) ridley sea turtle	<i>Lepidochelys olivacea</i>	FT	--	East Pacific Green Sea Turtle
Alameda whipsnake	<i>Masticophis lateralis euryxanthus</i>	FT	ST	Alameda Whipsnake
Giant garter snake	<i>Thamnophis couchi gigas</i>	FT	ST	Giant Garter Snake
San Francisco garter snake	<i>Thamnophis sirtalis tetrataenia</i>	FE	SE	Alameda Whipsnake
Coachella Valley fringe-toed lizard	<i>Uma inornata</i>	FT	SE	Western Fence Lizard
Island night lizard	<i>Xantusia riversiana</i>	FT	--	Western Fence Lizard
Mammals				
San Joaquin antelope squirrel	<i>Ammospermophilus nelsoni</i>	--	ST	Nelson's Antelope Squirrel
Point Arena mountain beaver	<i>Aplodontia rufa nigra</i>	FE		Riparian brush rabbit
Guadalupe fur seal	<i>Arctocephalus townsendi</i>	FT	ST	southern sea otter
Sei whale	<i>Balaenoptera borealis</i>	FE	--	southern sea otter
Blue whale	<i>Balaenoptera musculus</i>	FE	--	southern sea otter
Fin whale	<i>Balaenoptera physalus</i>	FE	--	southern sea otter
ring-tailed cat	<i>Bassariscus astutus</i>	--	FP	American badger
Gray wolf	<i>Canis lupus</i>	FE	SCE	American Badger
Morro Bay kangaroo rat	<i>Dipodomys heermanni morroensis</i>	FE	SE	Northwestern San Diego Pocket Mouse
Giant kangaroo rat	<i>Dipodomys ingens</i>	FE	SE	Northwestern San Diego Pocket Mouse
San Bernardino kangaroo rat	<i>Dipodomys merriami parvus</i>	FE	--	Northwestern San Diego Pocket Mouse

Table L-1. Crosswalk Between Surrogate Species and Californian Native Wildlife Species Federally or State-Listed as Threatened or Endangered

Common Name	Scientific Name	Federal Listing	State Listing	Surrogate species
Fresno kangaroo rat	<i>Dipodomys nitratooides exilis</i>	FE	SE	Northwestern San Diego Pocket Mouse
Tipton kangaroo rat	<i>Dipodomys nitratooides nitratooides</i>	FE	SE	Northwestern San Diego Pocket Mouse
Stephens' kangaroo rat	<i>Dipodomys stephensi</i>	FE	ST	Northwestern San Diego Pocket Mouse
Southern sea otter	<i>Enhydra lutris nereis</i>	FT	--	southern sea otter
North Pacific right whale	<i>Eubalaena japonica</i>	FE	--	southern sea otter
Pacific right whale	<i>Eubalaena sieboldi</i> (= <i>Balaena glacialis</i>)	--	FP	southern sea otter
Steller sea lion - Eastern DPS	<i>Eumetopias jubatus</i>	FPD	--	southern sea otter
Wolverine	<i>Gulo gulo</i>	--	ST	American Badger
Lesser long-nosed bat	<i>Leptonycteris yerbabuenae</i>	FE	--	Big Free-tailed Bat
Humpback whale	<i>Megaptera novaeangliae</i>	FE	--	southern sea otter
Amargosa vole	<i>Microtus californicus scirpensis</i>	FE	SE	Nelson's Antelope Squirrel
northern elephant seal	<i>Mirounga angustirostris</i>	--	FP	southern sea otter
Riparian woodrat	<i>Neotoma fuscipes riparia</i>	FE	--	Riparian brush rabbit
American pika	<i>Ochotona princeps</i>	--	SCT	Riparian brush rabbit
Killer whale (Southern resident DPS)	<i>Orcinus orca</i>	FE	--	southern sea otter
California (=Sierra Nevada) bighorn sheep	<i>Ovis canadensis californiana</i>	FE	SE	Mule Deer
Peninsular bighorn sheep DPS	<i>Ovis canadensis cremnobates</i>	FE	ST	Mule Deer
Pacific pocket mouse	<i>Perognathus longimembris pacificus</i>	FE	--	Northwestern San Diego Pocket Mouse
Sperm whale	<i>Physeter macrocephalus</i>	FE	--	southern sea otter
Salt-marsh harvest mouse	<i>Reithrodontomys raviventris</i>	FE	SE	Northwestern San Diego Pocket Mouse
Buena Vista Lake shrew	<i>Sorex ornatus relictus</i>	FE	--	Nelson's Antelope Squirrel
Mohave ground squirrel	<i>Spermophilus mohavensis</i>	--	ST	Nelson's Antelope Squirrel

Table L-1. Crosswalk Between Surrogate Species and Californian Native Wildlife Species Federally or State-Listed as Threatened or Endangered

Common Name	Scientific Name	Federal Listing	State Listing	Surrogate species
Riparian brush rabbit	<i>Sylvilagus bachmani riparius</i>	FE	SE	Riparian brush rabbit
Island fox	<i>Urocyon littoralis</i>	--	ST	American Badger
Santa Catalina Island Fox	<i>Urocyon littoralis catalinae</i>	FE	(ST)	American Badger
San Miguel Island Fox	<i>Urocyon littoralis littoralis</i>	FE	(ST)	American Badger
Santa Cruz Island Fox	<i>Urocyon littoralis santacruzae</i>	FE	(ST)	American Badger
Santa Rosa Island Fox	<i>Urocyon littoralis santarosae</i>	FE	(ST)	American Badger
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	FE	ST	American Badger
Sierra Nevada red fox	<i>Vulpes vulpes necator</i>	--	ST	American Badger
Fishes				
Green sturgeon - southern DPS	<i>Acipenser medirostris</i>	FT	--	Chinook
Lost River sucker	<i>Catostomus luxatus</i>	--	FP	coastal cutthroat
Modoc sucker	<i>Catostomus microps</i>	FE	SE	coast cutthroat
Santa Ana sucker	<i>Catostomus santaanae</i>	FT		arroyo chub
Shortnose sucker	<i>Chasmistes brevirostris</i>	FE	SE	Sacramento splittail
Rough sculpin	<i>Cottus asperimus</i>	--	ST	arroyo chub
Desert pupfish	<i>Cyprinodon macularius</i>	FE	SE	arroyo chub
Owens pupfish	<i>Cyprinodon radiosus</i>	FE	SE	arroyo chub
Cottonball Marsh pupfish	<i>Cyprinodon salinus milleri</i>	--	ST	Sacramento splittail
Lost River sucker	<i>Deltistes luxatus</i>	FE	SE	Sacramento splittail
Unarmored threespine stickleback	<i>Gasterosteus aculeatus williamsoni</i>	FE	SE	arroyo chub
Mohave tui chub	<i>Gila bicolor mohavensis</i>	FE	SE	arroyo chub
Owens tui chub	<i>Gila bicolor snyderi</i>	FE	SE	arroyo chub
Bonytail	<i>Gila elegans</i>	FE	SE	Sacramento splittail
thicktail chub	<i>Gila crassicauda</i>	--	FP	Delta smelt
Mohave chub (=Mohave tui chub)	<i>Gila mohavensis</i>	--	FP	arroyo chub

Table L-1. Crosswalk Between Surrogate Species and Californian Native Wildlife Species Federally or State-Listed as Threatened or Endangered

Common Name	Scientific Name	Federal Listing	State Listing	Surrogate species
Tidewater Goby	<i>Eucyclogobius newberryi</i>	FE	--	Tidewater goby
Delta smelt	<i>Hypomesus transpacificus</i>	FT	SE	Delta smelt
Lahontan cutthroat trout	<i>Oncorhynchus clarkii henshawi</i>	FT	--	coast cutthroat
Paiute cutthroat trout	<i>Oncorhynchus clarkii seleniris</i>	FT	--	coast cutthroat
Coho salmon - south of Punta Gorda	<i>Oncorhynchus kisutch</i>	FE	SE	chinook salmon
Coho salmon - Punta Gorda to the N. border of California	<i>Oncorhynchus kisutch</i>	FT	ST	chinook salmon
Steelhead - Southern California DPS	<i>Oncorhynchus mykiss</i>	FE	--	coast cutthroat
Steelhead - South-Central California Coast DPS	<i>Oncorhynchus mykiss</i>	FT	--	coast cutthroat
Steelhead - Central California Coast DPS	<i>Oncorhynchus mykiss</i>	FT	--	coast cutthroat
Steelhead - California Central Valley DPS	<i>Oncorhynchus mykiss</i>	FT	--	coast cutthroat
Steelhead - Northern California DPS	<i>Oncorhynchus mykiss</i>	FT	--	coast cutthroat
Little Kern golden trout	<i>Oncorhynchus mykiss whitei</i>	FT	--	coast cutthroat
Chinook salmon - Winter-run	<i>Oncorhynchus tshawytscha</i>	FE	SE	chinook salmon
Chinook salmon - California coastal ESU	<i>Oncorhynchus tshawytscha</i>	FT	--	chinook salmon
Chinook salmon - Spring-run	<i>Oncorhynchus tshawytscha</i>	FT	ST	chinook salmon
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	FE	SE	Sacramento splittail
Bull trout	<i>Salvelinus confluentus</i>	FT	SE	coast cutthroat
Longfin smelt	<i>Spirinchus thaleichthys</i>	--	ST	Delta smelt
Pacific eulachon - southern DPS	<i>Thaleichthys pacificus</i>	FT	--	Delta smelt
Razorback sucker	<i>Xyrauchen texanus</i>	FE	SE	Sacramento splittail

Key to Abbreviations for Federal and State Endangered Species Acts

FE = Federally Endangered SE = State Endangered (CA) FP = Fully Protected Species (CA)
 FT = Federally Threatened ST = State Threatened (CA)
 FD = Federally Delisted SC = State-listing Candidate

Page left intentionally blank.

Appendix M

List of Chemicals and Synonyms of Chemical Names

Table M-1. CDFA Statewide Program Chemical Pesticide Ingredients

Product Name	Chemical Name	CAS Number	Ingredient Type
1,2-propanediol	1,2-propanediol	57-55-6	Capturing Agent
Admire Pro	Imidacloprid	138261-41-3	Active
Alias 2F	Imidacloprid	138261-41-3	Active
Alias 4F	Imidacloprid	138261-41-3	Active
Assail 30 SG	acetamiprid	135410-20-7	Active
	Naphthalene sulfonic acid polymer with formaldehyde (sodium salt)	9084-06-4	Inert
Assail 70 WP	acetamiprid	135410-20-7	Active
	kaolin clay	1332-58-7	Inert
	silica gel	63231-67-4	Inert
Astro	permethrin	52645-53-1	Active
	Aliphatic hydrocarbons C9-C16	64742-47-8	Inert
	Alkyl biphenyl mixture	69009-90-1	Inert
Baythroid XL	cyfluthrin	68359-37-5	Active
	Cyclohexanone	108-94-1	Inert
	Naphthalene	91-20-3	Inert
	Solvent naphtha	64742-94-5	Inert
Bonide All Seasons Horticultural and Dormant Spray Oil	mineral oil	None	Formulated Product
Brom-O-Gas	chloropicrin	76-06-2	Active
	Methyl Bromide	74-83-9	Active
CMR Silicone Surfactant	Dimethylpolysiloxane	63148-62-9	Additive or Adjuvant
Conserve SC Turf and Ornamental	Spinosad	168316-95-8	Active
	1,2-propanediol	57-55-6	Inert
CoreTect Tree & Shrub Tablets Insecticide	Imidacloprid	138261-41-3	Active
	Copper(II)- sulphate pentahydrate	7758-99-8	Inert
Couraze 2F	Imidacloprid	138261-41-3	Active
Cuelure	4-[4-(acetyloxy)phenyl]-2-butanone	3572-06-3	Lure/Attractant
Danitol 2.4 EC Spray	Fenpropathrin	39515-41-8	Active
	1,2,4-Trimethylbenzene	95-63-6	Inert
	Naphthalene	91-20-3	Inert
	Solvent naphtha	64742-94-5	Inert
Decathlon 20 WP	cyfluthrin	68359-37-5	Active
	Quartz	14808-60-7	Inert
Deltagard GC 5SC	1,2-propanediol	57-55-6	Inert

Table M-1. CDFA Statewide Program Chemical Pesticide Ingredients

Product Name	Chemical Name	CAS Number	Ingredient Type
Diazinon AG500	diazinon	333-41-5	Active
	1,2,4-Trimethylbenzene	95-63-6	Inert
	Xylenes	1330-20-7	Inert
Dibrom 8 Emulsive	DDVP	62-73-7	Active
	Naled	300-76-5	Active
	Naphthalene	91-20-3	Inert
Dibrom Concentrate	DDVP	62-73-7	Active
	Naled	300-76-5	Active
	Naphthalene	91-20-3	Inert
DiPel DF	Bacillus thuringiensis, subsp. Kurstaki	68038-71-1	Active
Dipel Pro DF	Bacillus thuringiensis, subsp. Kurstaki	68038-71-1	Active
Discus	cyfluthrin	68359-37-5	Active
	Imidacloprid	138261-41-3	Active
	Glycerin	56-81-5	Inert
	Heptyl acetate	90438-79-2	Inert
Dual Lure	1(R,Z)-5-(1-Decenyl)dihydro-2(3H) Furanone	64726-91-6	Lure/Attractant
	2-Phenethyl propionate	122-70-3	Lure/Attractant
	Eugenol	97-53-0	Lure/Attractant
	Geraniol	106-24-1	Lure/Attractant
DuPont Acelepryn	chlorantraniliprole	500008-45-7	Active
Dursban 50W	chlorpyrifos	2921-88-2	Active
	Calcium silicate	1344-95-2	Inert
	kaolin clay	1332-58-7	Inert
Entrust Naturalyte Insect Control	Spinosad	168316-95-8	Active
	kaolin clay	1332-58-7	Inert
First Choice Narrow Range 415 Spray Oil	mineral oil	None	Active
Flagship 25WG	Thiamethoxam	153719-23-4	Active
	Diatomaceous earth	61790-53-2	Inert
	Quartz	14808-60-7	Inert
	Starch	None	Inert
Foam Fighter	Dimethylpolysiloxane	63148-62-9	Additive or Adjuvant
FT-Methyl Eugenol	methyl eugenol	93-15-2	Active
GF-120-Naturalyte Fruit Fly Bait*	Spinosad	168316-95-8	Active
	1,2-propanediol	57-55-6	Inert
Grandlure	(cis)-1-methyl-2-(1-methylethenyl) cyclobutaneethanol	30820-22-5	Lure/Attractant
	(E)-(3,3-dimethylcyclohexylidene)-	26532-25-2	Lure/Attractant

Table M-1. CDFA Statewide Program Chemical Pesticide Ingredients

Product Name	Chemical Name	CAS Number	Ingredient Type
	acetaldehyde		
	(Z)-(3,3-dimethylcyclohexylidene)-acetaldehyde	26532-24-1	Lure/Attractant
	(Z)-2-(3,3-dimethylcyclohexylidene) ethanol	26532-23-0	Lure/Attractant
Hercon Vaportape II	DDVP	62-73-7	Active
In-Place	Modified vegetable oil	67784-80-9	Additive or Adjuvant
	Solvent naphtha	64742-94-5	Additive or Adjuvant
Intrepid 2F	methoxyfenozide	161050-58-4	Active
	1,2-propanediol	57-55-6	Inert
Isomate EGVM	(E,Z)-7,9-Dodecadien-1-YL Acetate	55774-32-8	Lure/Attractant
Kinetic	Proprietary blend of polyalkyleneoxide modified polydimethylsiloxane and nonionic surfactant	None	Additive or Adjuvant
Kontos	Spirotetramat	203313-25-1	Active
	chlorpyrifos	2921-88-2	Active
Lorsban 4E	1,2,4-Trimethylbenzene	95-63-6	Inert
	Cumene	98-82-8	Inert
	Xylenes	1330-20-7	Inert
Malathion 8 Aquamul	malathion	121-75-5	Active
Marathon II Greenhouse & Nursery Insecticide	Imidacloprid	138261-41-3	Active
Mavrik Aquaflow	tau-Fluvalinate	102851-06-9	Active
	ethylene glycol	107-21-1	Inert
Merit 2F	Imidacloprid	138261-41-3	Active
Merit 75 WP	Imidacloprid	138261-41-3	Active
Merit 75 WSP	Imidacloprid	138261-41-3	Active
	Methyl Bromide	74-83-9	Active
Meth-O-Gas Q	Dimethyl ether	11510-6	Inert
	Methyl chloride	74-87-3	Inert
	chloropicrin	76-06-2	Active
methyl bromide	Methyl Bromide	74-83-9	Active
Min-U-Gel 400	Hydrated aluminum-magnesium silicate	12174-11-7	Additive or Adjuvant
	Quartz	14808-60-7	Inert
Movento	Spirotetramat	203313-25-1	Active

Table M-1. CDFA Statewide Program Chemical Pesticide Ingredients

Product Name	Chemical Name	CAS Number	Ingredient Type
No Foam B	Dodecylbenzene sulfonate	27176-87-0	Additive or Adjuvant
	Ethanolamine	141-43-5	Additive or Adjuvant
	Isopropyl alcohol	67-63-0	Additive or Adjuvant
	POE Nonylphenol	26027-38-3	Additive or Adjuvant
	Sodium xylene sulfonate	1300-72-7	Additive or Adjuvant
Nu-Lure	Hydrolyzed corn gluten meal	None	Additive or Adjuvant
Nuprid 4.6F Pro	Imidacloprid	138261-41-3	Active
	1,2-propanediol	57-55-6	Inert
Orthene 97	acephate	30560-19-1	Active
	Methamidophos	10265-92-6	Degradate
Pounce 3.2 EC	permethrin	52645-53-1	Active
	1,2,4-Trimethylbenzene	95-63-6	Inert
	Cumene	98-82-8	Inert
	Solvent naphtha	64742-94-5	Inert
	Xylenes	1330-20-7	Inert
Provado 1.6 Flowable Insecticide	Imidacloprid	138261-41-3	Active
PyGanic Crop Protection EC 1.4	pyrethrins	8003-34-7	Active
Pyrellin E.C.	pyrethrins	8003-34-7	Active
Quali-Pro Imidacloprid 2F	Imidacloprid	138261-41-3	Active
Renounce 20 WP	cyfluthrin	68359-37-5	Active
	Quartz	14808-60-7	Inert
RoundUp	Glyphosate	38641-94-0	Active
Safari 20 SG	dinotefuran	165252-70-0	Active
	lambda-cyhalothrin	91465-08-6	Active
Scimitar GC	1,2,4-Trimethylbenzene	95-63-6	Inert
	1,2-propanediol	57-55-6	Inert
	Cumene	98-82-8	Inert
	Solvent naphtha	64742-94-5	Inert
	Xylenes	1330-20-7	Inert
Sevin SL	carbaryl	63-25-2	Active
	1,2-propanediol	57-55-6	Inert
Sevin XLR Plus	carbaryl	63-25-2	Active
	1,2-propanediol	57-55-6	Inert
Sirex Lure	Alpha-pinene	80-56-8	Lure/Attractant

Table M-1. CDFA Statewide Program Chemical Pesticide Ingredients

Product Name	Chemical Name	CAS Number	Ingredient Type
SSM Sex Pheromone	(Z,E)-5,7-dodecadien-1-ol	73416-71-4	Lure/Attractant
	(Z,E)-5,7-dodecadienal	75983-34-58	Lure/Attractant
	butylated hydroxytoluene	128-37-0	Lure/Attractant
	Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylpropyl)-	25973-55-1	Lure/Attractant
STATIC Spinosad ME	methyl eugenol	93-15-2	Active
	Spinosad	168316-95-8	Active
Talstar S Select	bifenthrin	82657-04-3	Active
	1,2-propanediol	57-55-6	Inert
Tame 2.4 EC Spray	Fenpropathrin	39515-41-8	Active
	1,2,4-Trimethylbenzene	95-63-6	Inert
	Naphthalene	91-20-3	Inert
	Solvent naphtha	64742-94-5	Inert
Tempo SC Ultra	cyfluthrin	68359-37-5	Active
	1,2-propanediol	57-55-6	Inert
Tempo Ultra WP	cyfluthrin	68359-37-5	Active
	Quartz	14808-60-7	Inert
	Sodium lignosulphonate	8061-56-1	Inert
Tombstone	cyfluthrin	68359-37-5	Active
	Naphthalene	91-20-3	Inert
Triact 70	Neem oil	8002-65-1	Active
	D-limonene	5989-27-5	Inert
Tristar 30 SG	acetamiprid	135410-20-7	Active
	Naphthalene sulfonic acid polymer with formaldehyde (sodium salt)	9084-06-4	Inert
Tristar 8.5 SL	acetamiprid	135410-20-7	Active
	dipropylene glycol	25265-71-8	Inert
	propylene carbonate	108-32-7	Inert
Widespread Max	Dimethylpolysiloxane	63148-62-9	Additive or Adjuvant
Widow	Imidacloprid	138261-41-3	Active
	Glycerin	56-81-5	Inert

Page intentionally left blank.

Table M-2. List of CDFA Statewide Program Chemicals Found in Pesticides and Synonyms of Chemical Names

Chemical Name	CAS Number	Synonym	Organophosphate	USDA Organic	Prop65 Reproductive Toxicant	Carcinogens	DPR Ground Water Protection List	Toxic Air Contaminant	Fumigants	Oils	Biopesticide
acephate	30560-19-1		1	0	0	0	1	0	0	0	0
acetamiprid	135410-20-7		0	0	0	0	0	0	0	0	0
Bacillus thuringiensis, subsp. Kurstaki	68038-71-1			1							1
bifenthrin	82657-04-3		0	0	0	0	0	0	0	0	0
carbaryl	63-25-2		1	0	1	1	1	1	0	0	0
chlorantraniliprole	500008-45-7		0	0	0	0	0	0	0	0	0
chloropicrin	76-06-2	Trichloronitromethane	0	0	0	0	1	0	1	0	0
chlorpyrifos	2921-88-2		1	0	0	0	0	0	0	0	0
cyfluthrin	68359-37-5		0	0	0	0	0	0	0	0	0
DDVP	62-73-7	Dichlorovos 2,2-Dichlorovinyl dimethyl phosphate	1	0	0	1	0	1	0	0	0
deltamethrin	52918-63-5		0	0	0	0	0	0	0	0	0
diazinon	333-41-5		1	0	0	0	1	0	0	0	0
dinotefuran	165252-70-0		0	0	0	0	1	0	0	0	0
Fenpropathrin	39515-41-8		0	0	0	0	0	0	0	0	0
Glyphosate	38641-94-0		0	0	0	0	0	0	0	0	0
Imidacloprid	138261-41-3		0	0	0	0	1	0	0	0	0
lambda-cyhalothrin	91465-08-6		0	0	0	0	0	0	0	0	0
malathion	121-75-5		1	0	0	0	1	0	0	0	0
methoxyfenozide	161050-58-4		0	0	0	0	0	0	0	0	0
Methyl Bromide	74-83-9	Bromomethane	0	0	1	0	0	1	1	0	0
methyl eugenol	93-15-2	1,2 dimethoxy-4-(2-propenyl) benzene	0	1	0	1	0	0	0	0	1
mineral oil		Modified Vegetable Oil	0	0	0	0	0	0	0	1	0
Naled	300-76-5		1	0	0	0	0	0	0	0	0
Neem oil	8002-65-1			1							1
permethrin	52645-53-1		0	0	0	0	0	0	0	0	0
pyrethrins	8003-34-7		0	1	0	0	0	0	0	0	0
rotenone	83-79-4		0	0	0	0	0	0	0	0	0
Spinosad	168316-95-8	spinosyn A, spinosyn D	0	1	0	0	0	0	0	0	0
Spirotetramat	203313-25-1		0	0	0	0	0	0	0	0	0

Table M-2. List of CDFA Statewide Program Chemicals Found in Pesticides and Synonyms of Chemical Names

Chemical Name	CAS Number	Synonym	Organophosphate	USDA Organic	Prop65 Reproductive Toxicant	Carcinogens	DPR Ground Water Protection List	Toxic Air Contaminant	Fumigants	Oils	Biopesticide
tau-Fluvalinate	102851-06-9		0	0	1	0	0	0	0	0	0
Thiamethoxam	153719-23-4		0	0	0	0	1	0	0	0	0
Related compounds (DDVP)			1	0	0	1	0	1			
Dimethylpolysiloxane	63148-62-9	Polydimethyl siloxane, dimethyl silicone fluid emulsion	0	1	0	0	0	0	0	0	0
Dodecylbenzene sulfonate	27176-87-0					1					
Hydrated aluminum-magnesium silicate	12174-11-7	Palygorskite, Attapulgite-type clay		1							
Hydrolyzed corn gluten meal	66071-96-3			1							1
Isopropyl alcohol	67-63-0	Isopropanol, rubbing alcohol	0	0	0	0	0	0	0	0	0
POE Nonylphenol	26027-38-3	Nonoxynol									
Sodium xylene sulfonate	1300-72-7		0	1	0	0	0	1	0	0	0
1,2-propanediol	57-55-6	Propylene glycol						1			
1,2,4-Trimethylbenzene	95-63-6		0	0	0	0	0	0	0	0	0
1-butanol	71-36-3										
Aliphatic hydrocarbons C9-C16	64742-47-8	Petroleum Oil								1	
Alkyl biphenyl mixture	69009-90-1										
Calcium silicate	1344-95-2		0	0	0	0	0	0	0	0	0
Copper(II)- sulphate pentahydrate	7758-99-8										
Cumene	98-82-8		0	0	0	1	0	1	0	0	0
Cyclohexanone	108-94-1		0	0	0	0	0	0	0	0	0
Diatomaceous earth	61790-53-2		0	0	0	0	0	0	0	0	0
Dimethyl ether	11510-6		0	0	0	0	0	0	0	0	0
dipropylene glycol	25265-71-8		0	0	0	0	0	0	0	0	0
D-limonene	5989-27-5			1							1
Ethylbenzene	100-41-4					1		1			
Glycerin	56-81-5										
Heptyl acetate	90438-79-2										
kaolin clay	1332-58-7	Porcelain Clay									
Methyl chloride	74-87-3		0	0	1	0	0	1	0	0	0
Naphthalene	91-20-3		0	0	0	1	0	1	0	0	0
Naphthalene sulfonic acid polymer with formaldehyde (sodium salt)	9084-06-4			1							
Other associated resins											
Other ingredients determined not to be hazardous											

Table M-2. List of CDFA Statewide Program Chemicals Found in Pesticides and Synonyms of Chemical Names

Chemical Name	CAS Number	Synonym	Organophosphate	USDA Organic	Prop65 Reproductive Toxicant	Carcinogens	DPR Ground Water Protection List	Toxic Air Contaminant	Fumigants	Oils	Biopesticide
Other ingredients including glycerin											
Other ingredients including naphthalene											
Other ingredients including propylene glycol											
Other ingredients not listed											
Particulates not otherwise classified											
propylene carbonate	108-32-7										
Quartz	14808-60-7	Crystalline silica									
silica gel	63231-67-4		0	0	0	0	0	0	0	0	0
Sodium lignosulphonate	8061-56-1			1							
Solvent naphtha	64742-94-5	Total hydrocarbons				1		1			
Starch			0	0	0	0	0	0	0	0	0
Surfactant blend											
Trade secrets											
Water-soluble polymer, dye and water											
Xylenes	1330-20-7							1			
(cis)-1-methyl-2-(1-methylethenyl) cyclobutaneethanol	30820-22-5	Grandisol, Boll Weevil attractant									
(E)-(3,3-dimethylcyclohexylidene)-acetaldehyde	26532-25-2	Boll Weevil attractant									
(Z)-(3,3-dimethylcyclohexylidene)-acetaldehyde	26532-24-1	Boll Weevil attractant									
(Z)-2-(3,3-dimethylcyclohexylidene) ethanol	26532-23-0	Boll Weevil attractant									
(Z,E)-5,7-dodecadien-1-ol	73416-71-4	moth pheromone									
(Z,E)-5,7-dodecadienal	75983-34-58	moth pheromone									
1(R,Z)-5-(1-Decenyl)dihydro-2(3H) Furanone	64726-91-6	Japonilure									
2-Phenethyl propionate	122-70-3										
4-[4-(acetyloxy)phenyl]-2-butanone	3572-06-3	Q-lure,									
Alpha-pinene	80-56-8										
Beta-pinene	127-91-3										
butylated hydroxytoluene	128-37-0	BHT	0	0	0	0	0	0	0	0	0
Eugenol	97-53-0		0	1	0	0	0	0	0	0	1
Geraniol	106-24-1		0	1	0	0	0	0	0	0	1
Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylpropyl)-	25973-55-1	Tinuvin 328									

Page left intentionally blank.

Appendix N

Noise Technical Report

Appendix N

NOISE TECHNICAL REPORT

**California Department of Food
and Agriculture**

**Statewide Plant Pest Prevention
and Management Program**

Prepared by:



One Montgomery Street, Suite 900
San Francisco, CA 94104
(415) 896-5858

URS Project Number 17326576

December 2014

Page intentionally left blank.

Contents

1.0 Introduction 1

2.0 Noise Fundamentals 3

 2.1 Fundamentals of Acoustics 3

 2.2 Fundamentals of Vibration 7

3.0 Methodology 9

 3.1 Evaluation Criteria 9

 3.1.1 HUD Noise Guidelines (Daytime Criteria)..... 9

 3.1.2 World Health Organization Nighttime Criteria..... 9

 3.2 Analysis Methodology – Noise 10

 3.3 Analysis Methodology – Vibration 12

4.0 Analysis of Potential Noise to be Generated by Proposed Program Activities 13

 4.1 Physical Management Activities 13

 4.2 Biological Management Activities 14

 4.3 Chemical Management Activities 15

 4.4 Cumulative Impacts 17

5.0 Potential Mitigation Measures 19

 5.1 Noise..... 19

 5.2 Vibration..... 19

6.0 References 21

Tables

Table 2.1–1. Sound Pressure Levels of Typical Noise Sources and Noise Environments 5

Table 3.1-1. Options for Duration that Proposed Program Noise L_{eq} May Exceed Nighttime World Health Organization-Based Threshold of 45 dBA..... 10

Table 4.1-1. Physical Management Noise-Generating Activities and Equipment/Vehicle List..... 13

Table 4.1-2. Minimum Activity-to-Receiver Distances for Physical Management Activity Operation (Compliant with Indicated Noise Criterion) 14

Table 4.1-3. Minimum Activity-to-Receiver Distances for Physical Management Activity Vibration Sources (Compliant with Indicated Noise Criteria)..... 14

Table 4.2-1. Biological Management Noise-Generating Activities and Equipment List..... 15

Table 4.2–2. Minimum Activity-to-Receiver Distances for Biological Management Activity Operation (Compliant with Indicated Noise Criterion) 15

Table 4.3-1. Chemical Management Noise-Generating Activities and Equipment/Vehicle List 16

Table 4.3-2. Minimum Activity-to-Receiver Distances for Chemical Management
Activity Operation (Compliant with Indicated Noise Criterion)16

Acronyms and Abbreviations

AUF	acoustical usage factor
BLM	U.S. Bureau of Land Management
CDFA	California Department of Food and Agriculture
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
d_{ref}	The reference distance that helps define L_{eq} (activity)
FAA	Federal Aviation Administration
FTA	Federal Transit Administration
HUD	U.S. Department of Housing and Urban Development
Hz	hertz
IPM	Integrated Pest Management
L_{dn}	Day-Night Average Sound Level
L_{eq}	equivalent sound level
$L_{eq(h)}$	hourly equivalent sound level
L_{max}	maximum L_{eq}
L_{min}	minimum L_{eq}
L_v	vibration level
PPV	peak particle velocity
RMS	root mean square
RNA	ribonucleic acid
Statewide Program	Statewide Plant Pest Prevention and Management Program
USC	U.S. Code
VdB	vibration velocity in decibels
WHO	World Health Organization

1.0 INTRODUCTION

The Statewide Plant Pest Prevention and Management Program (Statewide Program) encompasses a range of prevention and management activities carried out or overseen by the California Department of Food and Agriculture (CDFA) against specific injurious agricultural and other pests, which include arthropods, mollusks, nematodes, fungi, bacteria, other microorganisms, viruses, and their vectors, throughout California. The Statewide Program consists of a variety of focused programs, targeted at the prevention and management of specific plant pests, and each program includes a suite of management approaches to control each target pest. The management approaches identified within each program are implemented as individual pest management activities, carried out by farmers, nursery managers, CDFA contractors, and CDFA field staff. The purpose of the Statewide Program is to protect California's agricultural, urban, and natural environments from damage caused by invasive plant pests. California is unique because it is free from many invasive species that cause substantial damage in the rest of the United States as well as in other countries.

The ongoing Statewide Program includes pest management activities occurring throughout California in a variety of contexts. Individual management activities that are conducted under the Statewide Program may occur anywhere that a pest is found, depending on management decision criteria, including the size and density of the pest population, the severity of threat to agriculture, natural lands, and/or urban populations, and a variety of other factors. The specific area and extent of management activities depend on the targeted pest, the type of program, and the management approaches available under the Statewide Program.

Every pest prevention and management activity under the Statewide Program is carried out by CDFA using an integrated pest management (IPM) approach. The IPM approach uses information about the life cycles of pests and their interaction with the environment, and takes advantage of all appropriate pest management options, including mechanical control, biological control, and the use of pesticides where indicated.

Three broad categories for pest management are used under the Statewide Program: physical, biological, and chemical management activities. This technical study focuses on noise associated with activities for each of these activity types. The following discussion summarizes the specific activities associated with each:

- **Physical Management Activities**—Physical management activities may include visual observation to identify and detect pests, the use of physical labor, devices, or machinery to remove and destroy pest or host material, and the restriction or prohibition of the movement of commodities that may harbor pests. These activities do not involve the use of chemical control agents. Physical management activities

that also employ chemical treatments are described under Chemical Management Activities below.

- **Biological Management Activities**—Biological management activities include release of biological control agents (or “natural enemies”) and sterile insect releases. Biological agents used to control pests may include parasites, predators, pathogens, and organisms with other control characteristics.
- **Chemical Management Activities**—Chemicals can be applied using various methods that can be generally categorized as trap and spot applications, soil applications, fumigation applications, and foliar spray applications.

This technical noise report predictively analyzes noise likely to be generated during implementation of the Proposed Program, discussed in the Final PEIR. The analysis focuses on noise generated from mechanical equipment that potentially could increase ambient noise levels for sensitive receptors.

2.0 NOISE FUNDAMENTALS

2.1 Fundamentals of Acoustics

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that typically is associated with human activity, and that interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise exposure levels is annoyance. The responses of individuals to similar noise events are diverse and are influenced by many factors, including the type of noise, the perceived importance of the noise, its appropriateness to the setting, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by several variables, including frequency and amplitude. Frequency describes the sound's pitch (tone) and is measured in cycles per second (hertz [Hz]), while amplitude describes the sound's pressure (loudness). Because the range of sound pressures that occur in the environment is extremely large, it is convenient to express these pressures on a logarithmic scale that compresses the wide range of pressures into a more useful range of numbers. The standard unit of sound pressure measurement is the decibel (dB).

Outdoor sound levels decrease logarithmically as the distance from the emission source increases. The decrease occurs because of a combination of factors, including wave divergence, atmospheric absorption, and ground absorption attenuation. Sound radiating from a source in a homogeneous and undisturbed manner travels in spherical waves. As the sound waves travel away from the source, the sound energy is dispersed over a greater area, decreasing the sound pressure of the wave. Spherical spreading of the sound wave reduces the noise level at a rate of 6 dB per doubling of distance.

Atmospheric absorption also influences the sound levels received by an observer. The greater the distance traveled, the greater the influence of the atmosphere and the resultant fluctuations. Atmospheric absorption becomes important at distances greater than 1,000 feet. The degree of absorption varies depending on the frequency of the sound, as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest (i.e., sound carries further) at high humidity and high temperatures, and lower frequency sounds are less readily absorbed (i.e., sound carries further) than those of higher frequencies. Hence, over long distances, lower frequency sound tends to become dominant as higher frequency sound is more rapidly attenuated. Turbulence, gradients of wind velocity, and other atmospheric phenomena also play a significant role in determining the degree of resulting sound attenuation between a noise-emitting source and a receiver position. Certain conditions, such as temperature inversions, can channel

or focus the sound waves, resulting in higher noise levels than would result from simple spherical spreading.

Hz is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a number of times per second. When the drum skin vibrates 100 times per second, it generates a sound pressure wave that is oscillating at 100 Hz, and this pressure oscillation is perceived by the ear/brain as a tonal pitch of 100 Hz. Sound frequencies between 20 and 20,000 Hz are within the range of sensitivity of the average healthy human ear.

Sound from a tuning fork contains a single frequency (a pure tone); however, most sounds that are heard in the environment do not consist of a single frequency, but rather a broad band of many frequencies differing in sound level. Because of the broad range of audible frequencies, methods have been developed to quantify these values into a single number. The most common method used to quantify environmental sounds consists of evaluating all frequencies of a sound according to a weighting system that emulates human hearing. Human hearing is less sensitive at both low frequencies and extremely high frequencies than it is at the mid-range frequencies (the ones normally associated with speech and music). This process of discriminating frequencies based on human sensitivity is termed “A-weighting,” and the resulting dB level is termed an “A-weighted” decibel (dBA). A-weighting is widely used in local noise ordinances and in state and federal guidelines. In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve of weighting adjustments to the “raw” sound pressure level detected by the sound level meter microphone. Unless specifically noted, the use of A-weighting always is assumed with respect to environmental sound and community noise, even if the notation does not show the “A.” A-weighted sound pressure levels of typical sources of noise are shown in Table 2.1–1.

Because of the logarithmic nature of the dB unit, sound levels cannot be added or subtracted arithmetically and thus are somewhat cumbersome to express or explain to the layperson; however, common rules are useful in dealing with sound levels. First, if a sound’s intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. For example: $60 \text{ dB} + 60 \text{ dB} = 63 \text{ dB}$, and $80 \text{ dB} + 80 \text{ dB} = 83 \text{ dB}$. Second, noise levels from point sources, such as an electrical substation, decrease by approximately 6 dB per doubling of distance due solely to geometric divergence.

Table 2.1–1. Sound Pressure Levels of Typical Noise Sources and Noise Environments

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 1,000 feet	110-100	Rock Band
Gas Lawn Mower at 3 feet	100-90	
Diesel Truck at 50 feet, at 50 miles per hour	90-80	Food Blender at 3 feet
Commercial Area, Gas Lawn Mower at 100 feet	70	Vacuum Cleaner at 10 feet
Heavy Traffic at 300 feet	60	Normal Speech at 3 feet
Quiet Urban Daytime	50-40	Large Business Office
Quiet Urban/Suburban Nighttime	40-30	Theater, Large Conference Room (Background)
Quiet Rural Nighttime	30-20	Library, Bedroom at Night
	20-10	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	0	

Note:

dBA = A-weighted decibel

Source: Caltrans 2009

Although dBA may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most ambient environmental noise includes a mixture of noise from nearby and distant sources that creates an ebb and flow of sound, including some identifiable sources plus a relatively steady background noise in which no particular source is identifiable. A single descriptor called the equivalent sound level (L_{eq}) is used to describe sound that is either constant or changing in level. L_{eq} is the energy-mean dBA during a measured time interval. It is the “equivalent” constant sound level that would have to be produced by a given constant source to equal the acoustic energy contained in the fluctuating sound level measured during the interval. The L_{eq} often is the “base” metric used to establish other measures of environmental noise, such as the Day-Night Average Sound Level (L_{dn}) or the Community Noise Equivalent Level (CNEL) that are discussed in subsequent paragraphs.

In addition to L_{eq} , often it is desirable to know the acoustic range of the noise source being measured. This is accomplished through the maximum L_{eq} (L_{max}) and minimum L_{eq} (L_{min}). These values represent the root mean square (RMS) maximum and minimum noise levels measured during the monitoring interval. The L_{min} value obtained for a particular monitoring location often is called the “acoustic floor” for that location.

To describe the time-varying character of environmental noise, the statistical or percentile noise descriptors L_{10} , L_{50} , and L_{90} may be used. These are the noise levels equaled or exceeded during 10 percent, 50 percent, and 90 percent of the measured time interval.

Sound levels associated with L_{10} typically describe transient or short-term events, such as the noise from distinct passing cars and trucks, measured from a position near a roadway. Sound levels are higher than this value only 10 percent of the measurement time. L_{50} represents the median sound level during the measurement interval. Levels will be above and below this value exactly one-half of the accumulated measurement time. L_{90} is the sound level exceeded 90 percent of the time, and often is used to describe background noise conditions or sources that are continuous or “steady-state” in character. As a result, 90 percent of the time measured levels are higher than this value; therefore, L_{90} represents the outdoor environment at its typically quietest periods, during which only the apparent continuous but indistinct din of background noise is being measured.

L_{dn} is a cumulative noise metric, and represents the average sound level for a 24-hour day. L_{dn} is calculated from the L_{eq} by adding a 10-dB penalty to sounds that occur at night (from 10:00 p.m. to 7:00 a.m.). L_{dn} is the descriptor of choice that is used by nearly all federal, state, and local agencies throughout the United States to define acceptable land use compatibility with respect to noise. L_{dn} is the metric used by the Federal Transit Administration (FTA) for evaluating noise impacts at residential receivers.

In California, CNEL is sometimes used instead of L_{dn} . CNEL is very similar to L_{dn} , except that an additional 5-dB penalty is applied to sounds that occur during the evening hours (from 7:00 p.m. to 10:00 p.m.). Because of the time-of-day penalties associated with L_{dn} and CNEL descriptors, L_{dn} or CNEL dBA values for a continuously operating sound source during a 24-hour period will be numerically greater than the dBA value of the 24-hour L_{eq} . Thus, for a continuously operating noise source producing a constant noise level operating for periods of 24 hours or more, the L_{dn} value will be approximately 6 dB higher than the L_{eq} value.

Humans are better able to perceive changes in noise level than absolute noise levels. Potential responses of persons to changes in the noise environment are usually assessed by evaluating differences between the existing and total predicted future noise environments. The following relationships of perception and response to quantifiable noise changes are used as a basis for assessing potential effects of these changes in environmental noise level:

- Except in a carefully controlled laboratory condition, a change of 1 dBA is very difficult to perceive.
- In the outside environment, a change of 3 dBA is considered just perceptible.
- An increase of 5 dBA is considered readily perceptible, and would be likely to result in some level of community response.
- An increase of 10 dBA is perceived as a doubling in loudness, and would likely result in a widespread community response.

2.2 Fundamentals of Vibration

Groundborne vibration propagates from the source through the ground to adjacent buildings by surface waves. Vibration may be composed of a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how rapidly it is oscillating, measured in Hz. Most environmental vibrations consist of a composite, or “spectrum” of many frequencies. The normal frequency range of most groundborne vibrations that can be felt generally starts from a low frequency of less than 1 Hz to a high of about 200 Hz. Vibration information for this analysis has been described in terms of the peak particle velocity (PPV), measured in inches per second, or vibration level measured with respect to RMS vibration velocity in decibels (VdB), with a reference quantity of 1 micro inch per second.

Vibration energy dissipates as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. High-frequency vibrations reduce much more rapidly than do low frequencies, so that in the far-field zone distant from a source, the low frequencies tend to dominate. Soil properties also affect the propagation of vibration. When groundborne vibration interacts with a building, usually a ground-to-foundation coupling loss occurs, but the vibration also can be amplified by the structural resonances of the walls and floors. Vibration in buildings typically is perceived as rattling of windows, shaking of loose items, or the motion of building surfaces. In some cases, the vibration of building surfaces also can be radiated as sound and heard as a low-frequency rumbling noise, known as groundborne noise.

Groundborne vibration generally is limited to areas within a few hundred feet of certain types of industrial operations and construction/demolition activities, such as pile driving. Road vehicles rarely create enough groundborne vibration amplitude to be perceptible to humans unless the receiver is in immediate proximity to the source or the road surface is poorly maintained and has potholes or bumps. Human sensitivity to vibration varies by frequency and by receiver. Generally, people are more sensitive to low-frequency vibration. Human annoyance also is related to the number and duration of events; the more events that occur or the greater the duration, the more annoying it becomes.

Page left intentionally blank.

3.0 METHODOLOGY

3.1 Evaluation Criteria

This section discusses the U.S. Department of Housing and Urban Development (HUD) Noise Guidelines' (Title 24 CFR, Section 51, Subpart B) (HUD 1996) Daytime Criteria and the World Health Organization's (WHO) Nighttime Criteria that were used for this analysis.

3.1.1 HUD Noise Guidelines (Daytime Criteria)

To provide a uniform system for analyzing noise impacts for Proposed Program activities throughout California, a criterion of 65 dBA L_{dn} for daytime management activity was used. Proposed Program implementation measures would be temporary activities by nature, with associated equipment and vehicles operating for short-term durations and at several locations. Thus, the predicted acoustical combination of these likely brief or intermittent activity-related noises occurring throughout the day, calculated as a day-night sound level that includes periods when no noise is expected, is compared with 65 dBA L_{dn} that HUD considers an acceptable standard for exterior noise.

In general, local and State standards are not available for determining vibration thresholds. Therefore, for potential groundborne vibration impacts, the FTA standard for human annoyance vibration level (L_v) ranges from 75 to 83 vibration decibels (VdB) (depending on frequency of vibration event or duration) for "Category 3: Institutional Land Uses with Primarily Daytime Use" (FTA 2006). These annoyance thresholds are more stringent than the building damage risk vibration criteria, and therefore were used for this analysis, although building damage risk also was calculated for informational purposes. Although not a universally accepted notation, the acronym VdB is used herein for vibration decibels to reduce the potential for confusion with sound decibels.

3.1.2 World Health Organization Nighttime Criteria

At night (between 10 p.m. and 6 a.m.), when Proposed Program activities may need to occur beyond or outside of typical daytime periods, this noise analysis uses an 8-hour L_{eq} of 45 dBA immediately outside an occupied bedroom window as the applicable noise threshold. Alternately, an L_{max} of 60 dBA must be satisfied during this 8-hour period. These criteria are based on a typically referenced World Health Organization (WHO) guidance limit with the intent of minimizing sleep disturbance for potentially noise-affected residential land uses and occupied dwellings (Berglund 1999). Because of it being an 8-hour metric, Table 3.1-1 shows that several ways exist to satisfy the 45 dBA L_{eq} , which would allow opportunity for a short-duration but higher than 44 dBA L_{eq}

(from the perspective of the noise-sensitive receiver location) noise-producing activity to occur and still comply with this nighttime guideline.

Table 3.1-1. Options for Duration that Proposed Program Noise L_{eq} May Exceed Nighttime World Health Organization-Based Threshold of 45 dBA

Allowable Portion of 8-Hour Period above 45 dBA L_{eq} (percent, cumulative minutes)	L_{eq} Not to Exceed for Allowable Portion of 8-Hour Period, when above 45 dBA (dBA)
0.5 percent (2.4 minutes)	60
2 percent (9.6 minutes)	55
8 percent (38.4 minutes)	50
22 percent (105.6 minutes)	47

Notes:

dBA = A-weighted decibels; L_{eq} = Equivalent Sound Level, dBA

Source: WHO 2009

3.2 Analysis Methodology – Noise

The analysis of Proposed Program noise effects for anticipated daytime activities included the following steps:

1. From available CDFA information, the pieces of electro-mechanical equipment or vehicles associated with a specific type of activity were identified. This typically would include fuel-burning engines or anything powered with electric motors rated over 5 horsepower.
2. The following characteristics were determined or estimated for the equipment and vehicles under consideration:
 - a. L_{max} sound power or sound pressure level (in dBA) at some specified distance (e.g., 50 feet); and,
 - b. What the Federal Highway Administration Roadway Construction Noise Model User’s Guide (DOT 2006) refers to as the “Acoustical Usage Factor”, or the fraction of a given duration that the equipment or vehicle actually would be operating. This would include, for vehicles, when an engine would be idling—when it still would be generating noise. For aircraft, this usage factor refers to the actual time that it would be flying over a Proposed Program activity site and would be conducting its Proposed Program task (i.e., this would not include the gradual increase of noise because of the onset or the gradual decrease of noise because of the retreat of the aircraft).
 - c. The approximate duration, represented as a fraction of an hour (t), that the equipment and vehicles associated with the activity under consideration would

be present at the implementation site or area. For example, if an activity would require only a half-hour to complete, then $t = 0.5$. If an activity would be expected to take more than an hour to complete, $t = 1$.

3. Calculating an hourly L_{eq} at a reference distance for each equipment piece or vehicle, applying the L_{max} , the acoustical usage factor (AUF) and activity duration value t per the following expression: $L_{eq(h), ref} = L_{max} + 10*LOG (AUF) + 10*LOG (t)$.
4. From the calculated $L_{eq(h), ref}$ in Step 3, logarithmically adding the two loudest from the roster of equipment associated with the activity. The equipment with the loudest L_{max} may not, based on its AUF or the value for t , necessarily have the loudest anticipated $L_{eq(h), ref}$.
5. Using the following two expressions, iteratively calculating a minimum distance (“d”, in feet) at which the combined $L_{eq(h), ref}$ from Step 4 would attenuate to an hourly L_{eq} noise level for the activity that, when applied for the number of hours N associated with the activity, would generate an L_{dn} that approaches but does not exceed the 65 dBA L_{dn} goal.
 - a. $L_{eq(h), activity} = L_{eq(h), ref} - 20*LOG (d/d_{ref}) - d/1000$. In this expression, “ d_{ref} ” is the reference distance that helps define $L_{eq(h), ref}$ and often would be 50 feet. The first term accounts for geometric divergence, and the second approximates the effect of attenuation resulting from air absorption.
 - b. $65 \text{ dBA} > L_{dn, activity} = 10*LOG[N/24*10^{(L_{eq(h), activity}/10)} + (15-N)/24*10^{(L_{eq(h), non-activity \text{ daytime}}/10)} + 9/24*10^{(L_{eq(h), non-activity \text{ nighttime}} + 10)/10}]$. This expression calculates an L_{dn} for the daytime management activity under consideration; therefore, the $L_{eq(h), non-activity \text{ daytime}}$ and $L_{eq(h), non-activity \text{ nighttime}}$ values would be zero because no management activity would occur during those hours.

This technique of considering only the two loudest noise-emitting sources from an activity, rather than computing an aggregate sound level from an exhaustive roster of equipment, is consistent with FTA construction noise general assessment guidance. This technique also has been adopted by the U.S. Bureau of Land Management (BLM) for management activity noise assessment (BLM 2005). Although the Proposed Program would not include activities specific to construction, this technique would be applicable for calculating predicted noise from the use of mechanical equipment and vehicles operating within a known and limited area or zone.

3.3 Analysis Methodology – Vibration

The analysis of Proposed Program vibration effects included the following:

1. The equipment that may be used under the Proposed Program with the greatest likelihood of being a substantial source of vibration emission, namely, a loaded truck. A loaded truck's peak particle velocity (inches per second) at 25 feet is 0.076 (FTA 2006).
2. Using this reference vibration level, the expected minimum distance between a receiver and the loaded truck for the set of potential human annoyance and building damage risk vibration criteria that would apply to a specific Proposed Program activity (and its location) under consideration. Separate expressions exist for calculating these distances, for human annoyance and building damage risk, respectively, as follows:
 - a. Human annoyance – $L_v(d) = L_v(d_{ref}) - 30 * \text{LOG}(d/d_{ref})$
 - b. Building damage risk – peak particle velocity(d) =
peak particle velocity(d_{ref}) * $(d_{ref}/d)^{1.5}$

In these expressions, “d” is the distance between the receiver and a vibration source, “ d_{ref} ” is the reference distance that applies for the indicated vibration magnitude.

4.0 ANALYSIS OF POTENTIAL NOISE TO BE GENERATED BY PROPOSED PROGRAM ACTIVITIES

4.1 Physical Management Activities

Physical management activities would include inspection, trapping, host removal of fruit or flowers, cleaning, and restricted movement. Table 4.1-1 includes activities that would require the use of mechanical equipment or vehicles that would generate the highest expected reference maximum noise levels. After accounting for activity duration, and the percentage of that duration when the listed equipment or vehicle is expected to be generating noise at a level no greater than the referenced maximum (L_{max}) at 50 feet, Table 4.1-1 indicates that trapping would generate noise levels of 63.6 hourly L_{eq} dBA at 50 feet, and host removal activity would generate a combined level of approximately 62.7 dBA hourly L_{eq} at 50 feet. These noise levels were calculated per the methodology discussed in Section 3.2, Analysis Methodology – Noise.

Table 4.1-1. Physical Management Noise-Generating Activities and Equipment/Vehicle List

Management Activity	Equipment Type	Activity Duration per Site	Acoustical Usage Factor (percent)	Reference Level (L_{max} , dBA) at 50 feet	Combined Level (hourly L_{eq} , dBA) of up to Two Noisiest Equipment, at 50 feet
Non-Chemical Trapping	Light Duty Truck	5 minutes	40	75	63.6
	ATV	5 minutes	40	75	
	Automobile	6 minutes	40	75	
Host Removal	Heavy Duty Truck	5 minutes	40	74	62.7
	Light Duty Truck	5 minutes	40	75	

Notes:

dBA = A-weighted decibel; L_{eq} = equivalent sound level; L_{max} = maximum equivalent sound level

Sources: CDFA 2013, FTA 2006

Table 4.1–2 shows the distance at which the Proposed Program would comply with HUD and WHO guidance for daytime and nighttime operation. Table 4.1-2 uses the predicted noise levels generated by a management activity (shown in Table 4.1-1) to determine at what minimum distance the Proposed Program would comply with the HUD and WHO significance criteria. Trapping and host removal would occur at distances of 9 feet and 8 feet or greater, respectively, during the daytime, and at 415 feet or 375 feet or greater, respectively, at night, and would comply with the established guidelines.

Table 4.1-2. Minimum Activity-to-Receiver Distances for Physical Management Activity Operation (Compliant with Indicated Noise Criterion)

Management Activity	Daytime, per HUD Guidance (65 dBA L _{dn})	Nighttime, per WHO Guidance (45 dBA)
Non-Chemical Trapping	9 feet	415 feet
Host Removal	8 feet	375 feet

Notes:

dBA = A-weighted decibels; FTA = Federal Transit Administration

Source: CDFA 2013, FTA 2006

With respect to groundborne vibration, if assuming a “loaded truck” resembles what is planned for host removal activities and trapping, Table 4.1–3 presents estimates of minimum distances that would comply with the human annoyance and building damage risk criteria. Using reference levels from the FTA for these types of equipment, the vibration levels generated by the physical management approaches were calculated using the FTA methodology.

Table 4.1-3. Minimum Activity-to-Receiver Distances for Physical Management Activity Vibration Sources (Compliant with Indicated Noise Criteria)

Equipment	Category 2 Human Annoyance (VdB)			Building Damage Risk Category (PPV)			
	Frequent Events (72 VdB)	Occasional Events (75 VdB)	Infrequent Events (80 VdB)	Cat. 1 (0.5 ips)	Cat. 2 (0.3 ips)	Cat. 3 (0.2 ips)	Cat. 4 (0.12 ips)
Loaded Truck	75 feet	60 feet	40 feet	8 feet	10 feet	13 feet	18 feet

Notes:

VdB = vibration velocity in decibels; ips = inches per second; PPV = peak particle velocity

Category 2 (Human Annoyance) refers to residences and buildings where people normally sleep.

Cat. 1 refers to building damage to reinforced-concrete, steel or timber (no plaster).

Cat. 2 refers to building damage to engineered concrete and masonry (no plaster).

Cat. 3 refers to building damage to non-engineered timber and masonry.

Cat. 4 refers to building damage to extreme susceptibility to vibration damage (e.g., historic structures).

Source: CDFA 2013, FTA 2006

4.2 Biological Management Activities

Biological management activities would occur in laboratories, growth chambers and outdoor areas. One biological management activity would include the use of airplanes for the sterile male release program. Table 4.2-1 shows activities that would require the use of mechanical equipment that would generate the highest noise levels. As shown in the table, the use of aircraft during biological management activities are expected to generate the highest noise levels.

Table 4.2-1. Biological Management Noise-Generating Activities and Equipment List

Management Activity	Equipment Type	Activity Duration per Site	Usage Factor (percent)	Reference Level (L_{max} , dBA) at 50 feet	Level (hourly L_{eq} , dBA) at 50 feet (horizontal distance)
Sterile Male Release	Beechcraft C90 Aircraft	20 minutes	100*	100	61.2 **
Biological Control Agent Release	Light Duty Truck	5 minutes	40	75	60.2

Notes:

dBA = A-weighted decibels; L_{eq} = equivalent sound level

* This assumes time for release above area while aircraft is in flight.

** This assumes the aircraft would maintain a minimum relative altitude of 2,000 feet.

Sources: CDFA 2013, FTA 2006, FAA 2013

Table 4.2-2 shows the minimum distances for the biological management activities necessary to achieve compliance during daytime and nighttime operation. Vibration activities were not analyzed because aircraft are not expected to operate close enough to sensitive receptors to generate vibration that could cause annoyance or damage.

Table 4.2–2. Minimum Activity-to-Receiver Distances for Biological Management Activity Operation (Compliant with Indicated Noise Criterion)

Management Activity	Daytime, per FTA Guidance (65 dBA L_{dn})	Nighttime, per WHO Guidance (45 dBA)
Sterile Male Release *	0 feet	6,900 feet
Biological Control Agent Release	6 feet	280 feet

Notes:

dBA = A-weighted decibels

* This assumes the aircraft would maintain a minimum relative altitude of 2,000 feet.

Source: CDFA, 2013, FTA 2006

4.3 Chemical Management Activities

Chemical management activities would include application of a chemical component, such as trap and spot applications, soil applications, fumigation applications, foliar spray applications, and disinfection. Table 4.3–1 shows activities that would require the use of mechanical equipment and the equipment that would generate the highest noise levels.

Table 4.3-1. Chemical Management Noise-Generating Activities and Equipment/Vehicle List

Management Activity	Equipment Type	Activity Duration per Site	Usage Factor (percent)	Reference Level (L_{max} , dBA) at 50 feet	Level or Combined Level of up to Two Noisiest Equipment (hourly L_{eq} , dBA) at 50 feet (horizontal distance)
Chemical Trapping	Light Duty Truck	5 minutes	40	75	63.6
	ATV	5 minutes	40	75	
	Automobile	6 minutes	40	75	
MAT/Sprayed Bait	SPLAT Sprayer	1 minute	1	93.3	57.5
	Light Duty Truck	1 minute	40	75	
Fumigation	Sprayer/Injector	7 hours	40	71.3	67.3
Soil Injection	Pump/Injector	5 minutes	50	81	67.1
Tablet Soil Injection	Light Duty Truck	5 minutes	40	75	60.2
Airblast	Tractor	7 hours	40	84	80.4
	Airblast Sprayer	7 hours	40	74	
Aerial Spray	Aircraft (Beechcraft C90)	1 hour	100	100	79.5
Boom Spray	Tractor	7 hours	40	84	80.1
	Boom Spray	7 hours	40	69.5	
Chemigation	Water Pump	7 hours	50	81	77.9

Notes:

dBA = A-weighted decibel; L_{eq} = equivalent sound level; L_{max} = maximum equivalent sound level

* This assumes time for release while the aircraft is in flight.

Sources: CDFR 2013, FTA 2006, Berger 2010, Smithco 2013, FAA 2013, Jacto 2013

Table 4.3-2 presents minimum distances for the chemical management activities that correspond with achieving compliance during daytime and nighttime periods of operation.

Table 4.3-2. Minimum Activity-to-Receiver Distances for Chemical Management Activity Operation (Compliant with Indicated Noise Criterion)

Management Activity	Daytime, per HUD Guidance (65 dBA L_{dn})	Nighttime, per WHO Guidance (45 dBA)
Survey/Trapping	9 feet	415 feet
MAT/Sprayed Bait	5 feet	220 feet
Fumigation	36 feet	625 feet
Soil Injection	14 feet	600 feet
Tablet Soil Injection	6 feet	280 feet

Management Activity	Daytime, per HUD Guidance (65 dBA L_{dn})	Nighttime, per WHO Guidance (45 dBA)
Airblast	160 feet	2,300 feet
Aerial Spray *	500 feet	9,500 feet
Boom Spray	155 feet	2,250 feet
Chemigation	120 feet	1,850 feet

Notes:

dBA = A-weighted decibel

* This assumes the aircraft would maintain a minimum relative altitude of 200 feet.

Sources: CDFA 2013, FTA 2006, WHO 2009

4.4 Cumulative Impacts

Cumulative impacts, in the context of this report, represent consideration of Proposed Program activity noise combining with noise from other concurrent projects. Although a complete description and detailed assessment of noise from cumulative projects across the State of California is beyond the scope of this Noise Technical Report, the FTA-based guidelines discussed in Section 6.6, Noise of the Final PEIR offer criteria for assessing the relative effect of adding Proposed Program noise to an existing ambient sound level that presumably would include the acoustical contributions of other projects.

In summary, when the existing sound environment already is at an elevated level, the allowable increase is correspondingly narrow. Conversely, when the existing ambient sound level is quieter, the allowable increase (expressed as added dBA) widens considerably.

However, any such cumulative effects resulting from acoustical contribution of the Proposed Program would be temporary and would last in any given area only for as long as a specific activity was conducted.

Page left intentionally blank.

5.0 POTENTIAL MITIGATION MEASURES

This section discusses possible mitigation measures for potential impacts of the Proposed Program related to noise.

5.1 Noise

The following noise control or sound abatement options for the Proposed Program would comply with the applicable noise impact criteria.

- When possible, schedule the activity operation so that it occurs during the day, taking advantage of noise criteria that are higher (i.e., less stringent) than those that apply during nighttime hours.

Additionally, the following best management procedures are recommended:

- Before Proposed Program activities begin, conduct appropriate noticing to inform surrounding sensitive receptors to expect noise-generating activities during a given time period.
- In advance, check for the existence of applicable local (i.e., municipal or county) noise regulations that may influence how a given Proposed Program activity is to be conducted. CDFG or its approved contractors and other approved parties performing the activities should allow sufficient time to properly plan for and implement any necessary noise mitigation measures.

5.2 Vibration

The following vibration isolation options for the Proposed Program would comply with the applicable vibration impact criteria:

- When possible, schedule the activity operation so that it occurs during the day, and thus can take advantage of time frames where residential building occupants are less likely to be home (i.e., avoid nighttime work when vibration may be perceived and potentially interrupt sleeping residents).

Additionally, the following best management procedures are recommended:

- Before beginning Proposed Program activities, conduct appropriate noticing to inform surrounding sensitive receptors to expect vibration-generating activities during a given time period.

- In advance, check for the existence of applicable local (i.e., municipal or county) vibration regulations that may influence how a given Proposed Program activity is to be conducted. CDFA or its approved contractors and other approved parties performing the activities should allow sufficient time to properly plan for and implement any necessary vibration-related mitigation measures.

6.0 REFERENCES

- Berger, E. 2010. *Noise Navigator Sound Level Database, E-A-R 88-34/HP*. E•A•RCAL Laboratory, Indianapolis, IN. Available: http://www.trpa.org/documents/rseis/3.6%20Noise/3.6_Berger%202006_Noise%20Navigator%20Sound.pdf. Accessed October 15, 2013.
- Berglund, B. 1999. *Guidelines for Community Noise*. Geneva, Switzerland: World Health Organization.
- Federal Transit Administration (FTA). 2006 (May). *Transit Noise and Vibration Impact Assessment*. Report No. FTA-VA-90-1003-06. Washington, DC: Department of Transportation. Available: http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf. Accessed September 2013.
- Jacto. 2013. *Arbus Super Export Airblast Sprayer Specifications*. Available: http://www.jacto.com/sprayers/agricultural/airblast/arbus_2000se_specs.html. Accessed September 2013.
- Smithco. 2013. *Spray Star 3180*. Available: <http://www.smithco.com/golf-course-maintenance/sprayers/spray-star-3180/>. Accessed October 2013.
- U.S. Bureau of Land Management (BLM). 2005. *The Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in Western United States*.
- U.S. Department of Housing and Urban Development (HUD). 1996 (March 26). *HUD Noise Guidelines*. 24 CFR 51 Subpart B.
- U.S. Department of Transportation (DOT). 2006. *FHWA Roadway Construction Noise Model User's Guide, Final Report*. FHWA-HEP-05-054. Washington, DC.
- U.S. Environmental Protection Agency 1974. *Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety*. Report No. 550/9-74-004. Washington, DC.

Page left intentionally blank.

Appendix O

Regulatory Setting

Contents

Introduction 0-1

0.1 Agricultural Resources and Economics Regulatory Setting..... 0-1

 0.1.1 Federal Laws, Ordinances, Regulations, and Standards 0-1

 0.1.2 State Agencies, Laws and Programs..... 0-4

 0.1.3 Local Laws, Plans, Policies, and Regulations 0-7

0.2 Air Quality Regulatory Setting 0-8

 0.2.1 Federal Laws, Ordinances, Regulations, and Standards 0-8

 0.2.2 State Laws, Ordinances, Regulations, and Standards 0-16

 0.2.3 Regional Laws, Plans, Policies, and Regulations 0-21

 0.2.4 Local Laws, Plans, Policies, and Regulations 0-22

0.3 Biological Resources Regulatory Setting 0-22

 0.3.1 Federal Laws, Regulations, and Standards..... 0-23

 0.3.2 State Agencies, Laws, and Programs..... 0-25

0.4 Global Climate Change Regulatory Setting 0-26

 0.4.1 Federal Laws, Ordinances, Regulations, and Standards 0-26

 0.4.2 State Agencies, Laws, and Programs..... 0-27

 0.4.3 Local Laws, Plans, Policies, and Regulations 0-29

0.5 Hazards and Hazardous Materials Regulatory Setting 0-30

 0.5.1 Federal Laws, Ordinances, Regulations, and Standards 0-30

 0.5.2 State Laws, Ordinances, Regulations, and Standards 0-38

 0.5.3 Local Laws, Plans, Policies, and Regulations 0-56

0.6 Noise Regulatory Setting..... 0-57

 0.6.1 Federal Laws, Ordinances, Regulations, and Standards 0-57

 0.6.2 State Codes and Agencies 0-61

 0.6.3 Local Laws, Plans, Policies, and Regulations 0-62

0.7 Water Quality Regulatory Setting..... 0-64

 0.7.1 Federal Laws, Regulations, and Standards..... 0-64

 0.7.2 State Agencies, Laws, and Programs..... 0-68

 0.7.3 Local/Regional Laws and Plans 0-71

0.8 Energy Regulatory Setting 0-77

 0.8.1 Federal Regulations 0-77

0.8.2 State Regulations 0-79

Tables

Table O.2-1. State and Federal Ambient Air Quality Standards 0-11
Table O.6-1. Land Use Categories and Metrics for Transit Noise Impact Criteria 0-59
Table O.6-2. Noise Impact Criteria Effect on Cumulative Noise Exposure 0-60
Table O.6-3. Groundborne Vibration Impact Criteria - Human Annoyance 0-61
Table O.6-4. Groundborne Vibration Impact Criteria - Building Damage Risk..... 0-61
Table O.6-5. Summarized Requirements of California's County Noise Ordinances..... 0-63
Table O.7-1. Applicable Maximum Contaminant Levels for Chemicals in Drinking Water..... 0-69
Table O.7-2. Applicable RWQCB Basin Plan Water Quality Standards..... 0-73

Introduction

This Appendix identifies the federal, state, regional, and local plans, policies, laws, regulations, and ordinances that are relevant to each environmental resource topic discussed in Sections 6.1 through 6.7 of the Draft PEIR. It also presents the energy regulatory setting that corresponds to the energy discussion in Chapter 8, Other Statutory Considerations of the Draft PEIR.

All terms and acronyms used in this Appendix can be found in Section 9, Glossary and Acronyms of the Draft PEIR. All references are included in Section 11, References of the Draft PEIR, under the related subsections.

O.1 Agricultural Resources and Economics Regulatory Setting

The federal, State, and local laws, ordinances, regulations, and standards related to agricultural resources and economics, and relevant to the Proposed Program are discussed next.

O.1.1 Federal Laws, Ordinances, Regulations, and Standards

U.S. Environmental Protection Agency Pesticide Regulatory Program

The U.S. Environmental Protection Agency (EPA), in conjunction with each state's Department of Pesticide Regulation, regulates agricultural pesticide use. Pesticides are registered or licensed for usage, and a tolerance level is set for the maximum residue limit for each pesticide. Tolerances are set after determining the toxicity of the pesticide and its breakdown products, how much pesticide remains in or on food by its market time, and the amount and frequency of pesticide application. In California, EPA and the California Department of Pesticide Regulation (CDPR) conduct testing and enforcement of these tolerance levels. Licensing and registration of pesticides primarily is intended to protect environmental assets, although tolerance levels for produce are designed to provide a safe food supply for public consumption. EPA sets the tolerance limits for pesticide residues on foods. USDA enforces tolerances established for meat, poultry, and some egg products, and the U.S. Food and Drug Administration enforces tolerances established for other foods, including agricultural commodities.

Organic Foods Production Act of 1990 (Public Law 101-624)

The Organic Foods Production Act of 1990, adopted under Title 21 of the 1990 Farm Bill and amended in 2005, required USDA to develop national standards for organically produced agricultural products to assure consumers that agricultural products marketed as "organic" met consistent, uniform standards. The Organic Foods Production Act authorized a National Organic Program to set national standards for the production, handling, and processing of organically grown agricultural products, based on recommendations of a 15-member National Organic Standards Board (NOSB). A farm or handling facility may be certified as organic by a private, foreign, or state entity that has been accredited by the USDA. These entities are called certifying agents (USDA AMS 2012a).

National Organic Standards (Code of Federal Regulations [CFR] Title 7, Part 205)

The National Organic Standards, which went into effect October 21, 2002, were developed by USDA to implement the Organic Foods Production Act based on recommendations of the National Organic Standards Board and other state, private, and foreign organic certification programs. The Agriculture Marketing Service of the USDA oversees the National Organic Program, the regulatory program for the National Organic Standards. The National Organic Standards include an extensive list of definitions, the National List of Allowed and Prohibited Substances (National List; 7 CFR Sections 205.600 et seq.; <http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5068682>), labeling, certification, accreditation, enforcement, and testing requirements.

The National List identifies substances that may and may not be used for organic crop and livestock production (USDA AMS 2013). In general, synthetic substances are prohibited unless specifically allowed, and non-synthetic substances are allowed unless specifically prohibited. For example, a synthetic pheromone that is chemically identical to a natural insect pheromone is an allowed substance, but the highly toxic natural substance arsenic is a prohibited substance. Some substances on the National List may be used only in specific situations (e.g., only for certain crops or up to a maximum amount). Notably, the use of genetically modified organisms is prohibited, including organisms produced by such methods as cell fusion, microencapsulation and macroencapsulation, and recombinant deoxyribonucleic acid (DNA) technology (including gene deletion, gene doubling, introducing a foreign gene, and changing the positions of genes when achieved by recombinant DNA technology).

The Organic Materials Review Institute (OMRI) is a national nonprofit organization that determines which agricultural input products available on the market are allowable for use in organic production and processing, and under what circumstances. OMRI approves the products that may be used in agricultural operations, as certified organic under the USDA National Organic Program. The OMRI Products List® is the most complete directory of allowable products for organic production or processing. The OMRI Products List includes over 2,800 products that are “OMRI Listed®” to U.S. National Organic Program standards (OMRI 2013).

The majority of pest control materials permitted in USDA organic agriculture are naturally derived from a plant (e.g., pyrethrum), microorganism (e.g., *Bacillus thuringiensis*), or other natural sources (e.g., sulfur) (USDA AMS 2012b). Organic standards prohibit the use of most synthetic substances for at least 3 years before the harvest of a certifiable USDA organic crop.

EPA establishes the maximum allowed levels of pesticides that may be present on foods. Although most EPA-registered pesticides are prohibited in USDA organic production, incidental contact from neighboring conventional farms, or shared handling facilities is allowed under USDA organic standards up to a certain tolerance level. As long as the operator has not directly applied prohibited pesticides and has documented efforts to minimize exposure to them, the USDA organic regulations allow residues of prohibited pesticides up to 5 percent of the EPA tolerance.

Section 205.202(c) requires producers to “have distinct, defined boundaries and buffer zones such as runoff diversions to prevent the unintended application of prohibited

materials.” This means that growers must keep a specific distance from neighboring areas (or roadways) where prohibited materials are applied, or are likely to be applied, and the organic production areas seeking certification.

The following subsections discuss the USDA organic certification process, the decertification process, and how USDA organic certification is affected by CDFA or USDA emergency pest or disease management programs.

Organic Certification

The USDA organic certification process is described in CFR Title 7, Part 205. Certifying agents are responsible for ensuring that USDA organic products meet all National Organic Standards (USDA AMS 2012a). To be certified as organic, a farm must submit an organic production plan to a certifying agent as part of the application for certification. Applicants must demonstrate that they will abide by land requirements, soil fertility, and crop nutrient management practice standards, seed and planting stock practice standards, crop rotation practice standards, crop pest, weed, and disease management practice standards, wild-crop harvesting practice standards, livestock standards, organic handling requirements, facility pest management practice standards, and commingling and contact with prohibited substance prevention practice standards. The certifying agent must conduct an on-site inspection to ensure that the facility conforms to the requirements and standards. Following submission of the proper documentation and site inspection, if the organic system plan and all procedures and activities of the lead agency’s operation comply with the requirements, then the certifying agent grants certification. Annual inspections are conducted thereafter to determine whether the certification of the operation should continue.

Organic Decertification

CFR Title 7, Part 205 also explains the process for decertification of an organic farm. When an inspection, review, or investigation of a certified operation by a certifying agent reveals noncompliance with the Organic Foods Production Act, the operation receives a written notification. The notification describes the noncompliance and sets a date by which the operation must refute or correct the noncompliance. If the operation demonstrates that the noncompliance has been resolved, the certifying agent sends the operation a written notification that the noncompliance has been resolved. If the rebuttal to the noncompliance notice is unsuccessful or the correction of the noncompliance is not completed within a specified time, the certifying agent sends a written notification of the proposed suspension or revocation of certification.

Organic Pest Management Standards

The standards for organic farm pest management are described in CFR Title 7, Section 205.271 as follows:

(a) The producer or handler of an organic facility must use management practices to prevent pests, including but not limited to: (1) Removal of pest habitat, food sources, and breeding areas; (2) Prevention of access to handling facilities; and (3) Management of environmental factors, such as temperature, light, humidity, atmosphere, and air circulation, to prevent pest reproduction.

(b) Pests may be controlled through: (1) Mechanical or physical controls including but not limited to traps, light, or sound; or (2) Lures and repellents using nonsynthetic or synthetic substances consistent with the National List.

(c) If the practices provided for in paragraphs (a) and (b) of this section are not effective to prevent or control pests, a nonsynthetic or synthetic substance consistent with the National List may be applied.

(d) If the practices provided for in paragraphs (a), (b), and (c) of this section are not effective to prevent or control facility pests, a synthetic substance not on the National List may be applied: *Provided*, that, the handler and certifying agent agree on the substance, method of application, and measures to be taken to prevent contact of the organically produced products or ingredients with the substance used.

(e) The handler of an organic handling operation who applies a nonsynthetic or synthetic substance to prevent or control pests must update the operation's organic handling plan to reflect the use of such substances and methods of application. The updated organic plan must include a list of all measures taken to prevent contact of the organically produced products or ingredients with the substance used.

(f) Notwithstanding the practices provided for in paragraphs (a), (b), (c), and (d) of this section, a handler may otherwise use substances to prevent or control pests as required by Federal, State, or local laws and regulations: *Provided*, that measures be taken to prevent contact of the organically produced products or ingredients with the substance used.

Emergency Pest or Disease Treatment

The use of substances that are prohibited for use in USDA organic agriculture may be required in an organic growing operation because of CDFA's or USDA's statutorily mandated pest management objectives. If a certified USDA organic grower is required to use synthetic pesticide treatments to comply with a quarantine regulation or eradication order, the grower's certification status is not jeopardized. However, the crop treated with the prohibited substance may not be marketed as organic, and the pesticide residue standards continue to apply to all subsequent organic crops. CFR Title 7, Section 205.672 states:

When a prohibited substance is applied to a certified operation due to a Federal or State emergency pest or disease treatment program and the certified operation otherwise meets the requirements of this part, the certification status of the operation shall not be affected as a result of the application of the prohibited substance: *Provided*, that: Any harvested crop or plant part to be harvested that has contact with a prohibited substance applied as the result of a Federal or State emergency pest or disease treatment program cannot be sold, labeled, or represented as organically produced.

O.1.2 State Agencies, Laws and Programs

California Department of Pesticide Regulation

CDPR is the State agency with primary responsibility for regulating pesticide use in California. CDPR oversees State pesticide laws, including pesticide labeling, and is vested by

the EPA to enforce federal pesticide laws in California. CDPR oversees the county agricultural commissioners' activities related to enforcement of pesticide and related environmental laws and regulations locally.

The mission of CDPR is to protect human health and the environment by regulating pesticide sales and use, and by fostering reduced-risk pest management. CDPR's strict oversight begins with pesticide product evaluation and registration, and continues through statewide licensing of commercial applicators, dealers, consultants, and other pesticide professionals. CDPR evaluates the health impacts of pesticides through illness surveillance and risk assessment; environmental monitoring of air, water, and soil; field enforcement (with the county agricultural commissioners) of laws regulating pesticide use; residue testing of fresh produce; and encouraging development and adoption of least-toxic pest management practices through incentives and grants (CDPR 2011).

Farmland Mapping and Monitoring Program

The California Department of Conservation established the FMMP in 1982, as a non-regulatory program to provide a consistent and impartial analysis of agricultural land use and land use changes throughout California. Creation of the FMMP was supported by the Legislature and a broad coalition of building, business, government, and conservation interests. The first Important Farmland Maps, produced in 1984, covered 30.3 million acres in 38 counties. This is an ongoing data set; the Department collects data every 2 years to assist in understanding changes in agricultural land in the state. Data now spans more than 24 years and has expanded to 49.1 million acres as modern soil surveys have been completed by USDA. FMMP now maps agricultural and urban land use for nearly 98 percent of the state's privately held land (CDOC 2013a).

The FMMP has developed categorical definitions of Important Farmland that incorporate the land's suitability for agricultural production rather than solely relying on the physical and chemical characteristics of the soil. It includes data on the location of agricultural land, land use changes from agriculture to urban development, and soil quality. Land that is identified as Important Farmland is mapped as one of the following four categories (CDOC 2004):

- **Prime Farmland:** Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. These lands have the soil quality, growing season, and moisture supply needed to produce sustained high yields. Prime Farmland must have been used for irrigated agricultural production at some time during the 4 years before the FMMP's mapping date.
- **Farmland of Statewide Importance:** Farmland similar to Prime Farmland, but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Farmland of Statewide Importance must have been used for irrigated agricultural production at some time during the 4 years before the FMMP's mapping date.
- **Unique Farmland:** Farmland of lesser quality soils used for the production of the state's leading agricultural crops. These lands usually are irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones. Unique

Farmland must have been cropped at some time during the 4 years before the FMMP's mapping date.

- **Farmland of Local Importance:** Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

California Land Conservation Act of 1965 (Williamson Act)

The California Land Conservation Act of 1965, better known as the Williamson Act, is California's primary program to protect agricultural land. The Williamson Act discourages premature and unnecessary conversion of agricultural land to urban uses. The legislation benefits landowners by allowing them to enter into long-term contracts (10 or 20 years) with the State of California to keep agricultural land in production. In return, the State reduces property taxes based on a complex calculation tied to agricultural income. The State implements the Williamson Act when a city or county creates an agricultural preserve. The purpose of an agriculture preserve is the long-term conservation of agricultural and open space lands; the lands are restricted to agricultural, open space, or recreational uses in exchange for reduced property tax assessments. After a preserve is established, the landowner enters into a contract with a city or county. The landowner and any successors-in-interest are obligated to adhere to the contract's enforceable restrictions, unless the contract is rescinded or cancelled. In 1998, an option was added in the Williamson Act Program to create Farmland Security Zones (FSZs), which are areas within an agricultural preserve that offer private landowners a greater property tax reduction than the regular assessment within the Williamson Act. Land restricted by a FSZ contract is valued for property assessment purposes at 65 percent of its Williamson Act valuation (CDOC 2013b). The minimum initial term of FSZs is 20 years, and the contracts renew annually unless the nonrenewal process is initiated. Except under limited circumstances, land subject to an FSZ contract cannot be annexed into a city, or a special district that provides non-agricultural services, or acquired by a school district for use as a public school.

Williamson Act and FSZ contracts may be terminated by nonrenewal or by cancellation. If a 10- or 20-year contract is terminated through nonrenewal, a 9- or 19-year nonrenewal period must be initiated by either the landowner or the city or county, during which time the land is still under contract, and the property taxes rise by a statutory formula during the last 9 years of either form of contract. If a contract is terminated through cancellation, a city or county must make findings specific to each type of contract to justify cancellation. The State's policy is to avoid, whenever practicable, the location of any federal, State, or local public improvements and any improvements of public utilities, and the acquisition of land in agricultural preserves. However, under several provisions of the Williamson Act, land under contract may be removed from contract to convert land to a non-agricultural use. Land may be acquired from a willing seller or by public acquisition for a public improvement project. In 2008, Assembly Bill 2921 was enacted, providing for a mechanism to rescind Williamson Act agricultural contracts to enter into either an open space contract under the Williamson Act or an open space easement. Under the new provisions, the resulting agreement must be at least as restrictive as the contract it replaces, and the affected parcel must be large enough to provide open space benefits.

According to the Williamson Act 2010 Status Report, approximately 15 million acres were enrolled under the Williamson Act statewide as of January 1, 2009 (CDOC 2010). Of

California's 58 counties, all have adopted the Williamson Act program except Del Norte, San Francisco, Inyo, and Yuba counties. The Imperial County Board of Supervisors voted in 2010 to not renew all Williamson Act contracts. The FSZ program has been adopted by 25 counties, although not all of the counties have executed contracts; 21 counties reported a total of 863,530 acres of land under FSZ contract, which constituted approximately 6 percent of the statewide Williamson Act enrollment.

The Open Space Subvention Act of 1971 provided local governments an annual subvention of forgone property tax revenues from the State through 2009; these payments have been suspended since that time because of revenue shortfalls. Consequently, some counties have removed lands from Williamson Act contracts. In 2010, Senate Bill 863 restored funding to a statewide level of \$10 million for the 2010–2011 fiscal year. However, in 2011, Senate Bill 80 terminated this fund, although Assembly Bill 1265 reinstated the subvention to allow eligible counties to re-capture 10 percent of the property tax benefits provided to the owners of Williamson Act lands. (CDOC 2011)

California Department of Food and Agriculture

CDFA implements programs to support California agriculture and food production with improved quality assurance, animal safety programs, production, and on-farm safety management practices, and programs for processors of farm products. CDFA also conducts pest and disease prevention activities and programs to respond to emergencies that threaten California's food and agriculture, as described in detail in Chapter 2, Proposed Program Description, and Chapter 3, Proposed Program Activities. CDFA is responsible for inspection services regarding both the federal and state organic farming products.

California Organic Products Act of 2003

The California Organic Food Products Act of 2003 (Food and Agricultural Code, Sections 46000–46029; Health and Safety Code, Sections 110810–110959) implements all organic food or product regulations and amendments adopted pursuant to the federal Organic Foods Production Act and requires annual registration through county agricultural commissioners for anyone marketing products as organic before the first sale of the product. CDFA's Organic Program is responsible for the enforcement of both the Organic Foods Production Act and the California Organic Food Products Act. Enforcement activities include program administration, county biologist training, initiation of complaint investigation, registration of private certification organizations, and providing a source of information on California's organic industry. The California Department of Public Health enforces laws for processed products marketed as organic (CDFA 2013a).

O.1.3 Local Laws, Plans, Policies, and Regulations

General Plans

General Plans are long-range comprehensive plans, developed for cities and counties to govern growth and development. Many county general plans include goals and policies to preserve agricultural land use through a variety of mechanisms, such as creation of urban growth boundaries, designation of agricultural overlay zones, requirement of buffers between agricultural and other uses, and mitigation fees for conversion of agricultural land associated with development. City general plans also may have some provisions for the

protection of agricultural land. An increasing number of general plans (e.g., Marin, Santa Cruz, and Sonoma counties) include provisions to promote organic agriculture.

California Right-to-Farm Act

The Right-to-Farm Act (Civil Code, Section 3482.5) of 1981 (amended in 1993 and 1999) protects agricultural operations from nuisance complaints and actions associated with adjacent residential uses. About 40 of California's 58 counties and 50 cities have adopted right-to-farm ordinances (Wacker et al. 2001). These laws do not interfere with other statutes, such as regulations affecting the application of pest control materials, fish and game laws, and air quality rules.

O.2 Air Quality Regulatory Setting

The federal, State, regional, and local laws, ordinances, regulations, and standards related to air quality and relevant to the Proposed Program are discussed next.

O.2.1 Federal Laws, Ordinances, Regulations, and Standards

Federal regulations and requirements applicable to the Proposed Program include the following:

- Clean Air Act (CAA)
- National Ambient Air Quality Standards (NAAQS)
- National Emission Standards for Hazardous Air Pollutants (NESHAP)
- EPA Aircraft Emissions Regulations
- Corporate Average Fuel Economy (CAFE) standards
- Nonroad Emissions Regulations
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

Clean Air Act

The federal Clean Air Act and the 1990 Clean Air Act Amendments (CAAA) govern air quality in the United States and are administered by EPA. The CAA authorizes EPA to set limits on the concentrations in the air of certain air pollutants and the authority to limits on emissions sources. EPA implements a variety of programs under the CAA that focus on reducing ambient air concentrations of pollutants that cause smog, haze, acid rain, serious health effects, and phasing out ozone depleting chemicals.

National Ambient Air Quality Standards

As required by the CAA, EPA has established NAAQS for six major air pollutants. These pollutants, known as criteria air pollutants, are: ozone (O₃); particulate matter (PM), specifically PM₁₀ (PM with aerodynamic radius of 10 micrometers or less) and PM_{2.5} (PM

with aerodynamic radius of 2.5 micrometers or less); carbon monoxide (CO); nitrogen dioxide (NO₂); sulfur dioxide (SO₂); and lead. California also has established ambient air quality standards, known as the California Ambient Air Quality Standards (CAAQS), which generally are more stringent than the corresponding federal standards, and incorporate additional standards for sulfates, hydrogen sulfide (H₂S), vinyl chloride, and visibility-reducing particles. CAAQS are discussed in more detail under State Law, Ordinances, Regulations, and Standards in this section, under California Clean Air Act and California Ambient Air Quality Standards.

The federal standards for the criteria air pollutants as well as the California standards are shown in Table N-2-1. The primary standards have been established to protect public health. The secondary standards are intended to protect the nation's welfare and account for air pollutant impacts on soil, water, visibility, materials, vegetation, and other aspects of the general welfare.

Page left intentionally blank.

Table O.2-1. State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards ¹		National Standards ²		
		Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m ³)		0.075 ppm (147 µg/m ³)		
Respirable Particulate Matter (PM ₁₀)	24 Hour	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m ³		—		
Fine Particulate Matter (PM _{2.5}) ¹³	24 Hour	—	—	35 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m ³	Gravimetric or Beta Attenuation	12 µg/m ³	15 µg/m ³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m ³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m ³)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m ³)		9 ppm (10 mg/m ³)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)		—	—	
Nitrogen Dioxide (NO ₂) ⁸	1 Hour	0.18 ppm (339 µg/m ³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m ³)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)		0.053 ppm (100 µg/m ³)	Same as Primary Standard	
Sulfur Dioxide (SO ₂)	1-hour	0.25 ppm (655 µg/m ³)	Ultraviolet Fluorescence	75 ppb (196 µg/m ³)	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3-hour	—		—	0.5 ppm (1300 µg/m ³)	
	24-hour	0.04 ppm (105 µg/m ³)		0.14 ppm (for certain areas) ⁹	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas) ⁹	—	

Pollutant	California Standards ¹			National Standards ²		
	Averaging Time	Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷
Lead ^{10, 11}	30-day average	1.5 µg/m ³	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar quarter	—		1.5 µg/m ³ (for certain areas) ¹¹	Same as Primary Standard	
	Rolling 3-month average	—		0.15 µg/m ³		
Visibility Reducing Particles ¹²	8-hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape			
Sulfates	24-hour	25 µg/m ³	Ion Chromatography	No National Standards		
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence			
Vinyl Chloride ¹⁰	24-hour	0.01 ppm (26 µg/m ³)	Gas Chromatography			

Notes:

ppm = parts per million; ppb = parts per billion; µg/m³ = micrograms per cubic meter

- California standards for O3, CO (except 8-hour Lake Tahoe), SO2 (1 and 24 hour), NO2, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200, Title 17 of the California Code of Regulations.
- National standards (other than O3, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O3 standard is attained when the fourth highest 8-hour concentration measured at each site in 1 year, averaged over 3 years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than 1. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact EPA for further clarification and current national policies.
- Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
- Any equivalent measurement method which can be shown to the satisfaction of CARB to give equivalent results at or near the level of the air quality standard may be used.
- National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

- 6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- 7 Reference method as described by EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by EPA.
- 8 To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in ppb. California standards are in ppm. To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
- 9 On June 2, 2010, a new 1-hour SO₂ standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO₂ national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
- 10 CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
- 11 The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
- 12 In 1989, CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.
- 13 On December 14, 2012, the national annual PM_{2.5} primary standard was lowered from 15.0 µg/m³ to 12.0 µg/m³. The existing national 24-hour PM_{2.5} standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour PM₁₀ standards (primary and secondary) of 150 µg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

Source: CARB 2013

Page left intentionally blank.

Areas where air pollution levels persistently exceed one or more of the NAAQS may be designated “nonattainment” by EPA. As part of its enforcement responsibilities, EPA requires each state with nonattainment areas (NAAs) to prepare and submit a State Implementation Plan (SIP) that demonstrates the means by which it will attain the federal standards, and requires that a maintenance plan be prepared for each former NAA that subsequently has demonstrated attainment of the standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the time frame identified in the SIP.

National Emission Standards for Hazardous Air Pollutants

The National Emission Standards for Hazardous Pollutants are standards for major sources of hazardous air pollutants (HAPs). The standards are contained in two CFR parts, 40 CFR Part 61, promulgated before the 1990 CAAA, and 40 CFR Part 63, promulgated as part of the CAAA in 1990. Part 61 regulates only seven HAPs: asbestos, beryllium, mercury, vinyl chloride, benzene, arsenic, and radon/radionuclides. Part 63 was promulgated as a result of the 1990 CAAA, which established a list of 187 additional HAPs. The maximum achievable control technology standards of Part 63 regulate major sources of HAPs as well as specific source categories of HAPs. A major source is defined as having the potential to emit 10 tons per year of a single HAP or 25 tons per year of a combination of HAPs. The Statewide Program is not covered by any of the specific source categories of the NESHAP.

EPA Aircraft Emissions Regulations

The CAA authorizes EPA to regulate the emissions from aircraft. The Control of Air Pollution from Aircraft and Aircraft Engines: Emissions Standards and Test Procedures (codified in 40 CFR Part 87) were first issued in 1973. They have been updated several times since then with different standards for engine smoke, fuel venting, and emissions of hydrocarbons, nitrogen oxides (NO_x), and CO. The most recent updates were adopted in 2012, adding two new tiers of more stringent emission standards for NO_x. The regulations cover all types of engines; although turboprop engine standards are limited to controlling smoke, and even then, only if the engine’s rated output is greater than 1,000 kilowatts. Because the turboprop engines on the aircraft to be used in the Proposed Program have a rated output less than 1,000 kilowatts, the regulations would not apply.

Corporate Average Fuel Economy Standards

The CAFE standards were first enacted by Congress in 1975, requiring vehicle manufacturers to comply with the gas mileage or fuel economy standards. These standards are set and regulated by the National Highway Traffic Safety Administration (NHTSA), with testing and data support from EPA.

The issued rules include fuel economy standards for both light- and heavy-duty vehicles. On September 15, 2011, EPA and NHTSA issued a final rule on greenhouse gas (GHG) emissions standards and fuel efficiency standards for medium- and heavy-duty engines and vehicles model years 2014 to 2018 (76 FR 57106). On August 28, 2012, EPA and NHTSA issued a joint final rulemaking to establish 2017 through 2025 GHG emissions and CAFE standards for light-duty vehicles (77 FR 62624).

Nonroad Emission Regulations

EPA has adopted emissions standards for different types of nonroad engines, equipment, and vehicles. For nonroad diesel engines, EPA has adopted multiple tiers of emission standards.

EPA signed a final rule on May 11, 2004 introducing the Tier 4 emission standards, to be phased in between 2008 and 2015 (69 CFR 38957–39273, June 29, 2004). The Tier 4 standards require that emissions of PM and NO_x be further reduced by about 90 percent. Such emission reductions can be achieved through the use of control technologies, including advanced exhaust gas after-treatment. To enable sulfur-sensitive control technologies in Tier 4 engines, such as catalytic particulate filters and NO_x absorbers, EPA also mandated reductions in sulfur content in nonroad diesel fuels. In most cases, federal non-road regulations also apply in California, which has only limited authority to set emission standards for new nonroad engines. The CAA preempts California's authority to control emissions from new farm and construction equipment under 175 horsepower (CAA Section 209[e][1][A]) and requires California to receive authorization from EPA for controls over other off-road sources (CAA Section 209[e][2][A]).

Federal Insecticide, Fungicide, and Rodenticide Act

FIFRA was passed in 1947, with significant amendments made in 1972 under the Federal Environmental Pesticide Control Act, and in 1996 under the Food Quality Protection Act. FIFRA mandates for EPA to regulate the use and sale of pesticides, to protect human health and the environment. Pesticides must be registered by EPA and properly labeled so that they will not cause unreasonable harm to the environment when used in accordance with the labeling specifications. Because FIFRA does not preempt state, tribal, or local law, each of these governing sectors also may regulate pesticide use.

O.2.2 State Laws, Ordinances, Regulations, and Standards

California Clean Air Act and California Ambient Air Quality Standards

The State of California initiated its own air quality standards, the CAAQS, in 1969 under the mandate of the Mulford-Carrell Act. The CAAQS are goals for air quality within the state. The CAAQS generally are more stringent than the NAAQS. In addition to the six criteria pollutants covered by the NAAQS, CAAQS exist for sulfates, H₂S, vinyl chloride, and visibility-reducing particles. These standards are listed in Table N-2-1.

The California Clean Air Act (CCAA) was enacted in 1988. The CCAA provides a comprehensive framework for air quality planning. The CCAA requires NAAs to achieve and maintain the health-based CAAQS by the earliest practicable date. The CCAA is administered by the California Air Resources Board (CARB) at the State level and by local air districts at the regional level; the air districts are required to develop plans and control programs for attaining State standards.

The CCAA requires NAAs in the state to prepare attainment plans. The attainment plans are required to achieve a minimum 5 percent annual reduction in the emissions of nonattainment pollutants unless all feasible measures have been implemented. All air basins in California are either unclassified or in attainment of the NAAQS and CAAQS for CO

and SO₂. Some air basins are classified as NAAs for the NAAQS and CAAQS for O₃, PM₁₀, and PM_{2.5}, NO₂, and lead. In addition, a few air basins have been classified as nonattainment for H₂S under the CAAQS.

CARB is responsible for ensuring implementation of the CCAA, meeting State requirements for the federal CAA, and establishing the CAAQS. CARB oversees activities of local air districts and is responsible for incorporating air quality management plans for local air basins into a SIP for EPA approval. It also is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB also establishes passenger vehicle fuel specifications.

Truck and Bus Regulation

On December 12, 2008, CARB approved a new regulation to substantially reduce emissions of diesel PM, NO_X, and other pollutants from existing on-road diesel vehicles operating in California. The regulation requires affected trucks and buses to meet performance standards and requirements between 2011 and 2023. Affected vehicles included on-road, heavy-duty, diesel-fueled vehicles with a gross vehicle weight rating great than 14,000 pounds. The regulation was updated in 2011, with revisions that provide more compliance flexibility and reflect the impact of the economic recession on vehicle activity and emissions. Therefore, heavy-duty trucks used in Proposed Program activities would have to comply with this regulation.

Commercial Vehicle Idling Regulation

On October 20, 2005, CARB approved the Airborne Toxic Control Measure (ACTM) to limit diesel-fuel commercial motor vehicle idling. This regulation was a follow-up to previous idling ATCMs, and it consists of new engine and in-use truck requirements, as well as idling emission performance standards. The regulation requires for 2008 and newer model year heavy-duty diesel engines to be equipped with a nonprogrammable engine shutdown system that automatically shuts down the engine after 5 minutes of idling or optionally meets a stringent NO_X idling emission standard (i.e., 30 grams/hour). The regulation also is applicable to the operation of in-use trucks, requiring operators of both in-state and out-of-state registered, sleeper berth-equipped trucks to manually shut down their engine when idling more than 5 minutes at any location within California, beginning in 2008. Affected vehicles included diesel-fueled commercial vehicles with a gross vehicle weight rating greater than 10,000 pounds. Therefore, trucks used for vendor delivery of materials for Proposed Program activities would comply with the commercial vehicle idling regulatory requirements.

Heavy-Duty On-Board Diagnostic System Regulations

In 2004, CARB adopted a regulation requiring on-board diagnostic systems (OBD) on all 2007 and later model year heavy-duty engines and vehicles (i.e., vehicles with a gross vehicle weight rating greater than 14,000 pounds) in California. CARB subsequently adopted a comprehensive on-board diagnostic regulation for heavy-duty vehicles model years 2010 and beyond. The heavy-duty OBD regulation was updated in 2010 and 2013, with revisions to enforcement requirements, testing requirements, and implementation schedules. Therefore heavy-duty trucks used for Proposed Program activities would comply with the heavy-duty on-board diagnostic regulatory requirements.

Heavy-Duty Vehicle Inspection Program

This program requires for heavy-duty trucks and buses to be inspected for excessive smoke and tampering, and engine certification label compliance. Any heavy-duty vehicle (i.e., vehicles with a gross vehicle weight rating greater than 6,000 pounds) traveling in California, including vehicles registered in other states and foreign countries, may be tested. Tests are performed by CARB inspection teams at border crossings, California Highway Patrol weigh stations, fleet facilities, and randomly selected roadside locations. Owners of trucks and buses found in violation are subject to minimum penalties, starting at \$300 per violation. Heavy-duty trucks used for Proposed Program activities would be subject to the inspection program.

California Standards for Diesel Fuel Regulations

These regulations require for diesel fuel with sulfur content of 15 parts per million (ppm) or lower (by weight) to be used for all diesel-fueled vehicles that are operated in California. The standard also applies to non-vehicular diesel fuel, other than diesel fuel used solely in locomotives or marine vessels. The regulations also contain standards for the aromatic hydrocarbon content and lubricity of diesel fuels.

In-Use Off-Road Diesel Vehicle Regulation

In 2007, CARB adopted a regulation to reduce diesel PM and NOX emissions from in-use, off-road, heavy-duty diesel vehicles in California. The regulation imposes limits on vehicle idling and requires fleets to reduce emissions by retiring, replacing, repowering, or installing exhaust retrofits to older engines. In December 2010, major amendments were made to the regulation, including a delay of the first performance standards compliance date to no earlier than January 1, 2014 (CARB 2010). All fleets used in the Proposed Program owned by CDFG, individual contractors, or growers that are not otherwise exempt from the regulation must comply with these regulations.

Assembly Bill 1803

In 1983, the California Legislature enacted Assembly Bill 1803, establishing a two-step process of risk identification and risk management, to address the potential health effects from air toxic substances and protect public health. In the first step (identification), CARB and the Office of Environmental Health Hazard Assessment (OEHHA) determine whether a substance needs to be formally identified as a toxic air contaminant (TAC) in California. In the second step, CARB reviews the emission sources of an identified TAC to determine whether any regulatory action is necessary to reduce the risk. The analysis includes a review of controls already in place, the available technologies and associated costs for reducing emissions, and the associated risk. Public outreach is an essential element in the development of a control plan and any control measure, so that CARB's efforts are cost-effective and appropriately balance public health protection and economic growth. Using this process, CARB has adopted several ATCMs to reduce exposure to TACs. This includes several measures and controls to limit exposure of diesel PM by limiting vehicle idling and limiting the emission rate of engines through engine or exhaust control technologies. Other ATCMs are aimed at reducing exposure to several other sources of TACs, including benzene from retail service stations; hexavalent chromium from plating facilities and vehicle coatings; asbestos from construction, grading, quarrying, surface mining operations, and

surfacing applications; formaldehyde from composite wood products; various TACs associated with combustion sources; ethylene oxide from sterilizers and aerators; perchloroethylene from dry cleaning; and TACs from thermal spraying, cooling towers, non-ferrous metal mining, and automotive maintenance and repair.

State Transport Refrigeration Unit Airborne Toxic Control Measure

Transport Refrigeration Units (TRUs) are refrigeration systems, powered by diesel internal combustion engines, designed to refrigerate or heat perishable products that are transported in various containers, including semi-trailers, truck vans, shipping containers, and rail cars. Although TRU engines are relatively small, ranging from 9 to 36 horsepower, substantial numbers of these engines congregate at distribution centers, truck stops, and other facilities, resulting in the potential for health risks to those that live and work nearby. Because diesel PM has been identified as a TAC, CARB adopted an ATCM for TRUs and TRU generator sets on February 26, 2004. Compliance with this ATCM requires specific model year engines to meet Low Emission TRU or Ultra Low Emission TRU In-Use Standards by specific calendar years. TRUs are used in sterile insect release programs.

State Portable Engine Airborne Toxic Control Measure

The California Portable Engine ATCM is designed to reduce the PM emissions from portable diesel-fueled engines rated at 50 brake horsepower or larger. Because backpack sprayer engines are assumed to be electric or gas-powered and the vehicle-mounted pump engines are assumed to be smaller than 50 brake horsepower, they are exempt from the State Portable Engine ACTM. No other portable engines are expected to be used under the Proposed Program.

Portable Equipment Registration Program

The statewide Portable Equipment Registration Program (PERP) establishes a system to uniformly regulate portable engines and portable engine-driven equipment units. After being registered in this program, engines and equipment units may operate throughout the state without the need to obtain individual permits from air districts. Owners or operators of portable engines and certain types of equipment can voluntarily register their units under this program, to operate their equipment anywhere in the state. Operation of registered portable engines still may be subject to certain district requirements for reporting and notification. Engines with less than 50 brake horsepower are exempt from this program; therefore, some of the engines used for the Proposed Program would be exempt.

California Toxic Air Contaminant Act

Under the California Toxic Air Contaminant Act (pesticide regulations), CDPR is responsible for evaluating pesticide uses of chemicals as TACs. CDPR lists pesticides that have been previously identified under federal laws as HAPs and pesticides identified as TACs by CDPR through the TAC statute evaluation process. The list contains 38 HAPs, as well as 8 pesticides identified by CDPR through the TAC evaluation process. Some of these identified pesticides may be used in the Proposed Program.

California Department of Pesticide Regulation Air Program Activities

As previously described, the federal CAA requires each state to submit a SIP for achieving and maintaining the NAAQS, including the standard for O₃. NAAs are regions in California that do not meet either federal or state ambient air quality standards. CARB and CDPR have developed a plan to track and reduce pesticide sources of volatile organic compounds (VOCs) in NAAs as part of the California SIP, to meet the O₃ standard. CDPR is responsible for agricultural and commercial structural pesticide products, and CARB is responsible for pesticides in consumer products. CDPR, in collaboration with CARB, implements several air program activities, as follows:

- **Air monitoring:** In February 2011, CDPR established a monitoring network to sample ambient air for 34 pesticides one day each week in Ripon (San Joaquin County), Salinas (Monterey County), and Shafter (Kern County). Since August 2010, CARB has been sampling ambient air for several fumigants in the Oxnard area (Ventura County) and Santa Maria (Santa Barbara County). CARB has been monitoring in the Pajaro area (Monterey County) since January 2012. Monitoring at all three sites continued through December 2013. Under an agreement with EPA, CDPR and CARB also conducted air monitoring for methyl bromide in several communities between 2011 and 2013. CDPR also requested for CARB to monitor a 2,4-Dichlorophenoxyacetic acid application and a chlorpyrifos application in 2013. Several of these monitored pesticides are included in the Proposed Program.
- **Evaluating health risk of pesticides in air:** CDPR conducts risk assessments on health effects and exposure to pesticides. CDPR is preparing risk assessments for the following pesticide(s), for which ambient air is the focus or a significant component of the evaluation: 1,3-dichloropropene, chlorothalonil, chlorpyrifos, diazinon, and methomyl.
- **Mitigating and controlling health risk of pesticides in air:** After completing a risk assessment, CDPR investigates the need for, and appropriate degree of, control for a pesticide. CDPR is preparing control measures for chloropicrin.
- **Tracking pesticide VOC emissions:** CDPR tracks emissions from agricultural and structural pesticide products of these O₃ precursor compounds so that specified reduction goals are met. The most recent report from 2011 showed that all reduction goals for all five areas tracked were being met.
- **Reducing pesticide VOC emissions:** CDPR is required to reduce VOC emissions by specified amounts to help meet air quality standards. Between 2008 and 2011, CDPR implemented a series of regulations to reduce VOC emissions from fumigant pesticides. CDPR has given interim approval for fumigation methods that reduce VOC emissions using low permeability tarpaulins. CDPR finalized regulations to reduce VOC emissions from non-fumigant pesticides on May 23, 2013. These regulations went into effect on November 1, 2013, and require prohibitions on the use of “high-VOC” non-fumigant products on certain crops in the San Joaquin Valley O₃. NAA during May 1 through October 31, if a VOC trigger level is exceeded. These prohibitions apply to high-VOC products containing abamectin, chlorpyrifos, gibberellins, or oxyfluorfen. Also, when purchasing or using certain products

containing these four active ingredients, the regulations require a written recommendation from a licensed pest control adviser and require pest control dealers to provide VOC information to the purchaser.

O.2.3 Regional Laws, Plans, Policies, and Regulations

CARB has divided the state into fifteen air basins, which are managed by 35 air districts. These air basins may be under the jurisdiction of more than one district. Air districts have substantial authority regarding air quality control, in regulating stationary source emissions and developing local attainment plans.

A discussion of applicable district rules and regulations is provided below. Summaries for general regulatory areas are presented with examples from selected districts. The specific rules cited below represent a large sample of districts throughout the state, but because of their large number, not all applicable rules and regulations of all districts have been included. Further information on all district rules and regulations are available in CARB's District Rules database (CARB 2011).

Portable Equipment Regulations

Many districts have adopted rules that require portable equipment to be registered with the district. Each air district may have different definitions of portable engines, based on the type of activity or duration of operation. These portable equipment rules generally contain registration protocols, source category standards (emission standards for pollutants such as NO_x, CO, VOCs, and PM), testing requirements, and reporting and recordkeeping requirements. These rules include San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 2280, Yolo-Solano Air Quality Management District (YSAQMD) Rule 3.3, San Diego County Air Pollution Control District (APCD) Rule 12.1, and Northern Sierra Air Quality Management District (AQMD) Rule 523.

Other districts may require operators of portable equipment to obtain permits to operate. Under these rules, portable engines may be subject to emission standards, administrative requirements, and monitoring and reporting requirements. These rules include South Coast Air Quality Management District (SCAQMD) Rule 203, Bay Area Air Quality Management District (BAAQMD) Regulation 2–Rule 1, Sacramento Metropolitan Air Quality Management District (SMAQMD) Rule 201, Santa Barbara County APCD Rule 201, Ventura County APCD Rule 10, San Luis Obispo County APCD Rule 202, Mojave Desert AQMD Rule 203, Imperial County APCD Rule 201, Monterey Bay Unified APCD Rule 200, and Mendocino County AQMD Rule 1-200.

In addition, districts may adopt permitting and registration rules that specifically apply to equipment used in agricultural operations. These rules include YSAQMD Rule 11.3, SMAQMD Rule 215, Santa Barbara County APCD Rule 1201, Ventura County APCD Rule 250, San Luis Obispo County APCD Rule 250, Mojave Desert AQMD Rule 1160.1, and Monterey Bay Unified APCD Rule 220.

As stated previously, the statewide PERP allows portable units to be registered and operate anywhere within the state. Portable engines registered with PERP are exempt from district

registration and permitting requirements, although certain district requirements for reporting and notification of operation may still apply.

Solvent Regulations

Some districts have adopted rules to limit emissions of VOCs from the use of organic solvents and other organic materials. These rules may contain VOC emissions limits, control measures, reduction standards, and testing or monitoring requirements. In several districts, the application of pesticides, herbicides, and insecticides are exempt under these rules. These rules include SJVAPCD Rule 4661, SCAQMD Rule 442, YSAQMD Rule 2.13, SMAQMD Rule 441, Santa Barbara County APCD Rule 317, San Diego County APCD Rule 66.1, San Luis Obispo County AQMD Rule 407, Mojave Desert AQMD Rule 442, Imperial County APCD Rule 417, and Monterey Bay Unified APCD Rule 416.

Rules in some districts may not contain exemptions for these operations. For example, BAAQMD Regulation 8–Rule 2 regarding organic compound emissions from miscellaneous operations contains an emissions limit of 6.8 kilograms (15 pounds) per day for materials with a concentration of more than 300 ppm total carbon on a dry basis. BAAQMD does not exempt pesticides, herbicides, or insecticides from this rule.

Visible Emission Regulations

Rules regarding visible emissions may limit the duration, volume, or opacity of emissions from various sources. Exemptions for agricultural operations or insecticide spraying exist in certain district rules, including SJVAPCD Rule 4101, SCAQMD Rule 401, YSAQMD Rule 2.3, SMAQMD Rule 401, Santa Barbara County APCD Rule 302, San Diego County APCD Rule 50, San Luis Obispo County AQMD Rule 401, Monterey Bay Unified APCD Rule 400, and Mendocino County AQMD Rule 1-410. Other visible emission rules, such as BAAQMD Regulation 6, Mojave Desert AQMD Rule 401, and Northern Sierra AQMD Rule 202, may not provide these exemptions.

O.2.4 Local Laws, Plans, Policies, and Regulations

Local General Plans

Many city and county general plans contain goals, policies, and strategies related to air quality and emissions. Applicable policies and strategies from these general plans include encouraging the use of alternative fuels, limiting idling time of vehicles and equipment, recommending appropriate practices for agriculture operations and construction, and encouraging the installation of emission control devices.

O.3 Biological Resources Regulatory Setting

The federal, State, and local laws, ordinances, regulations, and standards related to biological resources and relevant to the Proposed Program are discussed next.

O.3.1 Federal Laws, Regulations, and Standards

Endangered Species Act of 1973

The Endangered Species Act (ESA) (16 U.S. Code [USC] Section 1531 et seq.; 50 CFR Parts 17 and 222) provides for conservation of species that are endangered or threatened throughout all or a significant portion of their range, as well as the protection of habitats on which they depend. The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) share responsibility for implementing the ESA. In general, USFWS manages land and freshwater species, whereas NMFS manages marine and anadromous species. The ESA and subsequent amendments provide guidance for projects that may affect the continued existence of federally listed species or adversely affect their designated critical habitat.

Section 9 (Prohibited Acts)

Section 9 of the ESA and its implementing regulations prohibit the “take” of any fish or wildlife species listed under the ESA as endangered or threatened, unless otherwise authorized by federal regulations. The term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. USFWS has interpreted the definition of harm to include habitat modification. Section 9 prohibits a number of specified activities with respect to endangered and threatened plants as well as adverse modifications to critical habitat.

Section 7 (Interagency Consultation and Biological Assessments)

Section 7 of the ESA (16 USC 1531 et seq.) outlines the procedures for federal interagency cooperation to conserve federally listed species and designated critical habitats. Section 7(a)(1) directs the Secretary of the Interior/Secretary of Commerce to review other programs administered by them and use such programs to further the purposes of the Act. It also directs all other federal agencies to use their authorities in furtherance of the purposes of the Act by carrying out programs for the conservation of species listed pursuant to the Act. Section 7(a)(2) states that each federal agency shall, in consultation with the Secretary, ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. In fulfilling these requirements, each agency must use the best scientific and commercial data available. This section of the Act defines the consultation process, which is further developed in regulations promulgated by 50 CFR Section 402.

Section 10 (Habitat Conservation Plans)

Section 10(a)(1)(B) of the ESA provides a process by which nonfederal entities may obtain an Incidental Take Permit from the USFWS or NMFS for otherwise lawful activities that incidentally may result in “take” of endangered or threatened species, subject to specific conditions. A habitat conservation plan (HCP) must accompany an application for an incidental take permit. The habitat conservation plan associated with the permit ensures that the effects of the authorized incidental take are adequately minimized and mitigated.

Magnuson-Stevens Fishery Conservation and Management Act

The amended Magnuson-Stevens Fishery Conservation and Management Act 1996, also known as the Sustainable Fisheries Act, provides for the conservation and management of all fish resources within the exclusive economic zone of the U.S. It requires that all federal agencies consult with NMFS on activities or proposed activities authorized, funded, or undertaken by that agency which may adversely affect Essential Fish Habitat of commercially managed marine and anadromous fish species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (Title 16, USC Sections 703–712; 50 CFR Subchapter B) makes it unlawful to pursue, hunt, take, capture, kill, or possess any migratory birds, or part, nests, or eggs of such migratory birds, which are listed in wildlife protection treaties between the United States and Canada, Mexico, Japan, and Russia. The MBTA applies to almost all avian species that are native to California. The Act prohibits the take of such species, including the removal of nests, eggs, and feathers. It requires that all federal agencies consult with USFWS on activities or proposed activities authorized, funded, or undertaken by that agency which may adversely affect migratory birds.

The Migratory Bird Treaty Reform Act amends the MBTA so that nonnative birds or birds which have been introduced by humans to the United States or its territories are excluded from protection under the MBTA.

Protection of Migratory Bird Populations Executive Order 13186 directs each federal agency taking actions that have or may have adverse impact on migratory bird populations to work with USFWS to develop a memorandum of understanding, to promote the conservation of migratory bird populations.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (Title 16, USC Section 668; 50 CFR Part 22) prohibits take, which is defined to include molesting or disturbing bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) and their occupied and unoccupied nests. The golden eagle, however, is accorded somewhat lighter protection under this Act than the bald eagle. The administering agency is the USFWS.

Executive Orders

Executive Order 11990, Protection of Wetlands

Executive Order 11990 provides for protection of wetlands from federal or federally approved projects when a practicable alternative is available. If wetland impacts cannot be avoided, all practicable measures to minimize harm must be included. The administering agency is the U.S. Army Corps of Engineers.

Executive Order 13112, Invasive Species

Executive Order 13112 requires federal agencies to work cooperatively to prevent the introduction of invasive species, to provide for their control, and to minimize the economic,

ecological, and human health impacts that invasive species cause, as outlined in the National Invasive Species Council's National Invasive Species Management Plan.

O.3.2 State Agencies, Laws, and Programs

California Fish and Game Code

Sections 2050-2098 (California Endangered Species Act)

The California Endangered Species Act (CESA) (California Fish and Game Code Sections 2050–2098) prohibits State agencies from approving a project that would jeopardize the continued existence of a species listed under the CESA as endangered or threatened, or would result in the destruction or adverse modification of habitat essential to the continued existence of those species, if reasonable and prudent alternatives are available that would avoid a jeopardy finding.

Section 2080 of the Fish and Game Code prohibits the take of any species that is state-listed as endangered or threatened, or designated as a candidate for such listing. "Take" is defined by Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" an individual of a listed species. Under the CESA, the California Department of Fish and Wildlife (CDFW) may issue an incidental take permit authorizing the take of listed and candidate species that is incidental to an otherwise lawful activity, subject to specified conditions.

Sections 3511, 4700, 5050, and 5515 (Fully Protected Species)

CDFW has designated 37 fully protected species and prohibited the take or possession of these species at any time, and no licenses or permits may be issued for their take except for necessary scientific research or relocation of certain bird species for the protection of livestock.

Sections 3503, 3503.5, and 3513 (Nesting Bird Protections)

Section 3503 of the Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by code or any regulation made pursuant thereto. Section 3503.5 prohibits the take, possession, or needless destruction of any nests, eggs, or birds in the orders Falconiformes (New World vultures, hawks, eagles, ospreys, and falcons, among others) or Strigiformes (owls). Section 3513 prohibits the take or possession of any migratory nongame bird or part thereof, as designated in the MBTA. To avoid violation of the take provisions, project-related disturbance at active nesting territories generally are required to be reduced or eliminated during the nesting cycle.

Section 1600 et seq. (Lake and Streambed Alteration)

This section of the Fish and Game Code establishes the Lake and Streambed Alteration Program to provide for protection and conservation of fish and wildlife resources with respect to any project that may substantially divert or obstruct the natural flow of, or

substantially change or use any material from the bed, channel, or bank of any river, stream, or lake.

Pursuant to the program, CDFW must be notified before any activity that would: substantially divert or obstruct the natural flow of any river, stream, or lake; or would substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

CDFW typically interprets their jurisdiction under Section 1600 to include the bed and bank of lakes and stream, as well as the adjacent floodplain and riparian vegetation, if present.

Sections 1900-1913 (California Native Plant Protection Act)

California's Native Plant Protection Act requires all State agencies to use their authority to carry out programs to conserve endangered and rare native plants. Provisions of this Act prohibit the taking of listed plants from the wild and require notification of the CDFW at least 10 days in advance of any change in land use. This allows CDFW to salvage listed plant species that otherwise would be destroyed.

Local/Regional Laws and Plans

Within California, numerous regional, county and city-level ordinances and policies exist for the protection of biological resources. Examples include ordinances and local zoning that specify setbacks for wetlands, streams, and lakes, and regulate the removal of trees. Because of the broad geographic scope of the Proposed Program, local ordinances and land use designations are not considered specifically in this analysis.

O.4 Global Climate Change Regulatory Setting

The federal, State, and local laws, ordinances, regulations, and standards related to global climate change and relevant to the Proposed Program are discussed next.

O.4.1 Federal Laws, Ordinances, Regulations, and Standards

U.S. Supreme Court and Endangerment Ruling

The U.S. Supreme Court ruled for the first time in 2007 that GHG emissions are air pollutants, covered under the Clean Air Act, in *Massachusetts v. The Environmental Protection Agency*. The Court found that EPA has a mandatory duty to enact rules regulating mobile GHG emissions pursuant to the federal Clean Air Act. The Court held that GHGs fit the definition of an air pollutant causing and contributing to air pollution, which reasonably may be anticipated to endanger public health or welfare. In 2009, the EPA Administrator determined that existing and projected concentrations of GHGs threaten public health and welfare of present-day and future generations, and that combined emissions from motor vehicles contribute to GHG pollution. EPA's endangerment finding covers emissions of six key GHGs: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons, and sulfur hexafluoride. These GHGs are discussed further in Section 6.4.2, Environmental Setting of the Draft PEIR.

Corporate Average Fuel Economy and Greenhouse Gas Emission Standards

In 2009, NHTSA and EPA issued the first joint ruling to establish a national program to regulate model year 2012 through 2016 passenger cars and light trucks, to improve fuel economy and reduce greenhouse gas emissions. NHTSA previously had set Corporate Average Fuel Economy standards for vehicle fuel efficiency, but the joint rule was the first coordinated effort between federal programs for fuel economy and GHGs. Since then, NHTSA and EPA have issued new fuel efficiency and GHG emission standards. On August 9, 2011, standards were issued to reduce GHG emissions and improve fuel efficiency for heavy-duty trucks and buses. On October 15, 2012, EPA and NHTSA established a program to reduce GHG emissions and improve fuel economy standards for new cars and light trucks through 2025 (EPA 2012).

Mandatory Reporting of Greenhouse Gases Rule

In response to the 2008 Consolidated Appropriations Act, EPA issued the Mandatory Reporting of Greenhouse Gases Rule in 2009. The purpose of this rule is to collect accurate GHG data, to inform future policy decisions. The rule requires reporting of GHG data and other relevant information from large sources and suppliers in the United States. Large sources are considered to have facilities that emit more than 25,000 metric tons of carbon dioxide equivalent (CO₂e) emissions per year. Facilities began reporting yearly emissions for 2010, and this data became available to the public in January 2012.

O.4.2 State Agencies, Laws, and Programs

California Department of Food and Agriculture GHG Reduction Actions

The California Environmental Protection Agency (Cal/EPA) is required to prepare an annual report describing State agency actions to reduce GHG emissions. The 2013 State Agency Greenhouse Gas Reduction Report Card (Cal/EPA 2013) lists GHG reduction programs and actions being undertaken by CDFA. These include research and education programs to study GHG emissions from nitrogen fertilizers, implementation of dairy biodigester systems, and biofuel production from crops.

CDFA's California Agricultural Vision (Ag Vision) report addresses future sustainability challenges faced by the California agriculture system, and contains strategies and actions to adapt to climate change and reduce greenhouse gas emissions (CDFA 2010). Strategies include promoting renewable energy and substitutes for fossil-based inputs and identifying ways to reduce GHG emissions from diesel fuel, nitrogen fertilizer, pesticides and other agri-chemicals. CDFA has issued a progress report documenting ongoing progress in meeting the strategies and action items from the Ag Vision report (CDFA 2012).

California Global Warming Solutions Act

CARB is the lead agency for implementing Assembly Bill (AB) 32, the California Global Warming Solutions Act, adopted by the State Legislature in 2006. AB 32 set a statewide target to reduce GHG emissions to 1990 levels by 2020. AB 32 also required CARB to prepare a Scoping Plan with the main strategies to be used to achieve reductions in GHG emissions in California.

After receiving public input on their discussion draft of the Proposed Scoping Plan (released in June 2008), CARB issued its Climate Change Proposed Scoping Plan in October 2008, and adopted the plan in December 2008. This plan contains an outline of the proposed State strategies to achieve the 2020 GHG emission limits. Key elements of the Scoping Plan include the following recommendations:

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
2. Achieving a statewide renewables energy mix of 33 percent;
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
4. Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
5. Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel standard;
6. Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

Under the Scoping Plan, approximately 85 percent of the state's emissions are subject to a cap-and-trade program, where covered sectors are placed under a declining emissions cap. Emissions reductions are to be achieved through regulatory requirements and the option to reduce emissions further or purchase allowances to cover compliance obligations. Emission reductions from this cap-and-trade program are expected to account for a large portion of the reductions required by AB 32.

CARB is updating the Scoping Plan to reflect progress since 2005, additional reduction measures, and plans for reductions beyond 2020. CARB recently released the draft proposed first update (CARB 2014).

Executive Order S-03-05 and B-16-2012

In 2005, Executive Order S-03-05 was issued, calling for statewide GHG reductions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. The Executive Order also called for the creation of a "Climate Action Team," which was to report to the Governor every 2 years on progress toward meeting the targets and the effects of GHG emissions on the state. The latest of these reports, Climate Action Team Biennial Report, was published in December 2010 (Cal/EPA 2010). In March 2012, Executive Order B-16-2012 was issued, affirming the long-range climate goal for California to reduce greenhouse gases to 80 percent below 1990 levels by 2050.

Low Carbon Fuel Standard

Executive Order S-1-07, the Low Carbon Fuel Standard (LCFS), was issued in January 2007. The order called for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. The LCFS was approved by CARB in 2009, and it became effective in April 2010. The regulation established annual performance standards for fuel producers and importers, applicable to all fuels used for transportation in California (CARB 2011a).

Assembly Bill 1493

With the passage of AB 1493 in 2002, California launched an innovative and pro-active approach for dealing with GHG emissions and climate change at the State level. AB 1493 required CARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards apply to automobiles and light trucks beginning with the 2009 model year. Although litigation was filed, challenging these regulations; EPA initially denied California's related request for a waiver, but a waiver subsequently was granted (CARB 2013b).

Senate Bill 375

Senate Bill 375, the Sustainable Communities and Climate Protection Act of 2008, enhanced California's ability to reach its AB 32 goals, by promoting good land use and transportation planning with the goal of more sustainable communities. Sustainable Communities requires CARB to develop regional GHG emission reduction targets for 2020 and 2035 for each region covered by one of the state's 18 metropolitan planning organizations (MPOs). Executive Order G-11-024 set these targets in 2011. The MPOs were tasked with developing Sustainable Communities Strategies (SCS), integrating land use and transportation planning and demonstrating an ability to attain the 2020 and 2035 reduction targets.

CEQA Guidance and GHG Significance Thresholds

Several State-authorized air districts have drafted or adopted guidance on the analysis of GHGs for CEQA. These guidance documents contain recommendations of methods for quantifying GHGs and determining the significance of GHG emission impacts. Typically, these significance thresholds are based on a bright-line level of GHG emissions, best performance standards, a reduction target from baseline GHG emission levels, or consistency with a Climate Action Plan (CAP). A discussion of thresholds applicable to this analysis is included in the Methodology section of Section 6.5.3, Impact Analysis.

O.4.3 Local Laws, Plans, Policies, and Regulations

Sustainable Community Strategies

As mentioned previously, MPOs throughout the state were tasked with developing an SCS to integrate land use and transportation planning in their respective planning regions. An SCS may contain provisions for projects to be relieved of certain environmental review requirements if the project is consistent with the SCS, although these streamlining processes mainly are applicable to development involving residential and mixed-use projects.

Local General Plans and Climate Action Plans

Many city and county general plans contain goals, policies, and strategies related to air quality and GHG emissions. In addition, a number of cities and counties have adopted or drafted CAPs or GHG emission reduction plans that include measures for GHG emission reductions and guidelines for evaluating project consistency with the CAP. Depending on the specific CAP, demonstration of project compliance and consistency with the CAP may involve evaluation of GHG emissions with a bright-line threshold, implementation of mandatory or voluntary GHG reduction measures, or a comparison of project emission reductions and CAP emission reduction goals.

For example, the Tulare County CAP requires that projects achieve a 6 percent reduction in GHG emissions to be consistent with the CAP (Tulare County 2010). The City of Sacramento CAP lists primary actions for GHG emissions reductions that must be incorporated into new development projects and existing development for CAP compliance (City of Sacramento 2012). The San Diego County CAP contains an efficiency threshold (emissions per service population), a bright line threshold, and a performance threshold for development projects, as well as a stationary source threshold (San Diego County 2012).

Applicable policies and strategies from these general plans and CAPs include encouraging the use of low carbon fuels and alternative energy, limiting idling time of vehicles and equipment, recommending best management practices for agriculture operations and construction, and supporting heavy-duty fleet conversions.

O.5 Hazards and Hazardous Materials Regulatory Setting

The federal, State, and local laws, ordinances, regulations, and standards related to hazards and hazardous materials and relevant to the Proposed Program are discussed next.

O.5.1 Federal Laws, Ordinances, Regulations, and Standards

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also called the Superfund Act) (42 USC Section 9601 et seq.) was established to protect the public and the environment from the effects of past hazardous waste disposal activities and new hazardous material spills. CERCLA created a tax on the chemical and petroleum industries to generate funds to clean up abandoned or uncontrolled hazardous waste sites in which no responsible party could be identified (EPA 2011a). CERCLA also granted authority to EPA to respond directly to hazardous waste spills. The Superfund Amendments and Reauthorization Act of 1986 (SARA) (Public Law 99-499) amended some provisions of CERCLA (EPA 2011b). For example, SARA increased the focus on human health problems posed by hazardous waste releases, stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites, and encouraged greater citizen participation in making decisions on how sites should be cleaned up (EPA 2011b). CERCLA also requires those responsible for a spill or accidental release of hazardous materials to report the release to EPA. With respect to pesticides and the Proposed Program, normal applications of registered pesticides that are consistent with the pesticides' purpose are not subject to CERCLA reporting requirements. However, CERCLA

does require the reporting of accidents, spills, improper application, and improper disposal of pesticides, and it authorizes EPA to take action to address such releases. It also would ensure that CDFA, or pesticide applicators using pesticides pursuant to the Proposed Program, would be held liable for improper releases of pesticides and any resulting environmental contamination.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) (42 USC Section 6901 et seq.) was enacted in 1976, to address the increasing problems the nation faced from the growing volume of municipal and industrial solid waste (EPA 2013a). RCRA sets national goals for protecting human health and the environment from the potential hazards of waste disposal, conserving energy and natural resources, reducing the amount of waste generated, and ensuring that wastes are managed in an environmentally-sound manner. To achieve these goals, RCRA established three interrelated programs: the solid waste program, the hazardous waste program, and the underground storage tank program. Of the most relevance to the Proposed Program, the hazardous waste program established a system for controlling hazardous wastes from the time they are generated to the time they are disposed (“cradle-to-grave”) (EPA 2013a). Under RCRA and the hazardous waste program, owners and operators of hazardous waste treatment, storage, and disposal facilities have to follow a set of standards (e.g., regarding facility design and operation, contingency planning and emergency preparedness, and recordkeeping) to minimize risk and impacts on human health and the environment, codified in Title 40 of the Code of Federal Regulations (CFR), Part 264. These standards would apply to pesticide manufacturers, transporters, and applicators conducting activities under the Proposed Program.

Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 USC Section 136 et seq.) was enacted in 1947, but has since been amended by the Federal Environmental Pesticide Control Act of 1972 and the Food Quality Protection Act of 1996. In its current form, FIFRA mandates EPA to regulate the use and sale of pesticides to protect human health and the environment (EPA 2012a). EPA achieves this mandate by registering and labeling pesticides. Under FIFRA, all new pesticides (with minor exceptions) must be registered by the Administrator of EPA; a process in which appropriate crops and sites for the pesticide are identified and prescribed based on research data (EPA 2012a). So that registrations are up to date, all registrations must be reviewed every 15 years, and all pesticides registered before 1984 must be reregistered (EPA 2013c). Labeling requirements control when and under what conditions pesticides can be applied, mixed, stored, loaded, or used, and when a field can be reentered after application and crops can be harvested (EPA 2012a). For an emergency condition, however, Section 18 of FIFRA authorizes EPA to allow temporary unregistered use of a pesticide to avert risks to the environment, economy, and public health (EPA 2013b).

In relation to the Proposed Program, the regulations that govern Section 18, located in CFR, Title 40, Part 166, authorize EPA to issue pesticide emergency exemptions to state and federal agencies to control the introduction of invasive pests or avert significant economic losses, such as those associated with agricultural crops. To exercise such exemptions, state and federal agencies are required to submit to EPA, among other information, a detailed explanation of why pesticides currently registered for the proposed use are not available or

would not be effective, and why alternative methods of control either would not be effective or are not feasible. They also must submit a discussion of the potential risks to human health, endangered species, beneficial organisms, and the environment associated with use of the proposed pesticide. With respect to the Proposed Program, FIFRA requires that pesticides used to control invasive pests in non-emergency conditions be registered by EPA and their proposed uses be supported by research data. These pesticides must be labeled with application and storage instructions.

Toxic Release Inventory-Emergency Planning and Community Right-to-Know Act

Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) established the Toxic Release Inventory (TRI) (EPA 2013d). TRI is a database containing information on disposal and other releases of toxic chemicals from industrial facilities that is accessible to the public. As stipulated in 40 CFR Part 372, owners or operators of facilities that release toxic chemicals above a certain threshold (25,000 pounds or more per year) are required to submit information about: (1) on-site releases and other disposals of toxic chemicals; (2) on-site recycling, treatment, and energy recovery associated with TRI chemicals; (3) off-site transfers of toxic chemicals from TRI facilities to other locations; and (4) pollution prevention activities at facilities.

Many of the pesticide manufacturing facilities producing, recycling, or disposing pesticides that may be used under the Proposed Program would be subject to TRI reporting requirements. The owners or operators of these facilities would have to report information about their releases of toxic chemicals to EPA. This information would be available to the public in the TRI database.

Occupational Safety and Health Act and Occupational Safety and Health

Administration Regulations

The Occupational Safety and Health Act of 1970 created the Occupational Safety and Health Administration (OSHA) to assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education, and assistance (U.S. Department of Labor 2013a). To fulfill this purpose, OSHA develops and enforces mandatory job safety and health standards (U.S. Department of Labor 2013b). These standards, codified in Title 29, Part 1910 of the CFR, range in scope from walking and working surfaces, to exit routes and emergency planning, to hazardous materials and personal protective equipment. They include exposure limits for a wide range of specific hazardous materials, including pesticides, as well as requirements that employers provide personal protective equipment (i.e., protective equipment for eyes, face, or extremities; protective clothing; respiratory devices) to their employees wherever it is necessary (i.e., when required by the pesticide label instructions) (CFR Title 29, Section 1910.132). The OSHA standards also require that chemical manufacturers and importers obtain and develop safety data sheets, known as Material Safety Data Sheets (MSDSs) (CFR, Title 29, Section 1910.1200; U.S. Department of Labor 2013c). Employers must have an MSDS in the workplace for each chemical they use (CFR, Title 29, Section 1910.1200). With respect to the Proposed Program, OSHA regulations would require that pesticide applicators not be exposed to levels of pesticides greater than the limits set by OSHA and that employers of persons potentially exposed to pesticides as a result of treatments performed pursuant to the Proposed Program provide employees with personal protective

equipment and information (e.g., active ingredients, health hazards, signs and symptoms of exposure).

Federal Aviation Administration Regulations, 14 CFR Part 137

Aerial applications of pesticides are regulated by state and federal laws. The Federal Aviation Administration (FAA) regulations, Title 14 of the CFR contains several general aviation regulations that pertain to all pilots and aircraft operation, and specifically to agricultural aircraft operations. The parts of Title 14 of the CFR that are most relevant to aerial applicators are as follows:

- Part 61, Certification, Pilots and Flight Instructors
- Part 91, General Operating and Flight Rules
- Part 133, Rotorcraft External-Load Operations
- Part 137, Agricultural Aircraft Operations

The first three (14 CFR 61, 14 CFR 91, and 14 CFR 133) pertain to all pilots; the fourth (14 CFR 137) is specific to aerial pesticide applicators. Part 137 prescribes rules governing agricultural aircraft operations in the U.S. and the requirements for commercial and private Agricultural Aircraft Operator Certificates for those operations. This regulation consists of four subsections: general provisions, operator certification rule, operating rule, and records and reports.

General Provisions

Agricultural aircraft operation involves any operation of an aircraft for the purpose of:

- Dispensing an economic poison (i.e. pesticide)
- Dispensing other substances intended for plant nourishment, soil treatment, propagation of plants, or pest control
- Engaging in dispensing activities directly affecting agriculture, horticulture, or forest preservation

Using an aircraft to dispense live insects for pest control is not an “agricultural aircraft operation” under this federal regulation, but it is considered a pest control activity in California and a State-issued Pest Control Aircraft Pilot Certificate is required.

An “economic poison” is any substance or mixture of substances used to prevent, destroy, repel, or mitigate pests such as insects and mites, rodents, weeds, nematodes, fungi, and other microorganisms. It also is any substance or mixture of substances intended for plant growth regulation, plant defoliation, or plant desiccation. Under this definition, pesticides are economic poisons.

Operator Certification Rule

Pilots conducting agricultural aircraft operations must possess a valid agricultural aircraft operator certificate, issued under the provisions of the 14 CFR 137 regulations. An exception to this rule is any federal, state, or local government conducting agricultural aircraft operation using public aircraft.

Two types of federal agricultural aircraft operator certificates are available, one for private operator pilots and one for commercial operator pilots. The applicant for a private certificate must:

- Hold a current U.S. private, commercial, or airline transport pilot certificate and be properly rated for the aircraft to be used;
- Have at least one certified and airworthy aircraft, equipped for agricultural operations; and
- Show, or have the person who is designated as the chief supervisor of agricultural aircraft operations for him/her show, that he/she has satisfactory knowledge and skill regarding agricultural aircraft operations.

The applicant for a commercial certificate must have available the services of at least one person who holds a current U.S. commercial or airline transport pilot certificate and is properly rated for the aircraft to be used. The applicant must be that person. In addition, the applicant must:

- Have at least one certified and airworthy aircraft equipped for agricultural operations; and
- Show, or have the person who is designated as the chief supervisor of agricultural aircraft operations for him/her show, that he/she has satisfactory knowledge and skill regarding agricultural aircraft operations.

Whether an individual is working towards a private or commercial certificate, that individual must show knowledge about the following:

- Steps to be taken before starting operations, including surveying the area to be worked;
- Performance capabilities and operating limitations of the aircraft to be used;
- Safe flight and application procedures;
- Safe handling of economic poisons and the proper disposal of used containers for those pesticides;
- The general effects of pesticides on plants, animals, and people, with emphasis on those normally used in the areas of intended operations;
- The precautions to be observed in using pesticides; and

- Primary symptoms of poisoning of people from pesticides, the appropriate emergency measures to be taken, and how to contact poison control centers.

The applicant also must pass a skills test in the certified and airworthy aircraft that has been equipped for agricultural operations. The applicant must perform a variety of maneuvers at that aircraft's maximum certified takeoff weight, or the maximum weight established for a special purpose load, whichever is greater.

Operating Rule

No one may operate an aircraft for agricultural operations unless the aircraft is certified, airworthy, and equipped for agricultural operations. A person conducting an agricultural aircraft operation under the authority of a private agricultural aircraft operator certificate may not operate the aircraft for compensation or hire, over a congested area, or over any property unless he or she is the owner or lessee of the property or has ownership or other property interest in the crop located on that property.

According to 14 CFR 137, it is illegal to dispense pesticides or other materials from an aircraft in a manner that creates a hazard to people or property. Pesticides that are dispensed from an aircraft must be used:

- Only for the use for which they are stated on the registered pesticide label;
- According to any safety instructions or use limitations on their labels; and
- In accordance with any federal or state laws.

The only exception to the above requirements is if the pesticide is being dispensed for experimental purposes under the supervision of a federal or state agency, authorized by law to conduct research in the field of economic poisons, or under a permit issued by EPA.

FAA inspectors administer the knowledge and skills test to agricultural aircraft operators applying for this certificate. The certificate holder then examines any pilots working for him/her under this certificate so that they meet the standards of Part 137.

Except for flights to and from a dispensing area, agricultural aircraft operations cannot occur within Class D airspace, or within an associated, active, surface-based Class E airspace, unless authorization is received for that operation from the control tower. Class D airspace is generally cylindrical in form and normally extends from the surface to 2,500 feet (760 meters) above the ground; Class D airspace is typically limited to a 4-mile radius of an airport. Class E airspace extends from 1,200 feet (370 meters) above ground level up to but not including 18,000 feet (5,500 meters) mean sea level, the lower limit of Class A airspace. Agricultural aircraft operations also cannot occur in weather conditions below visual flight rule minimums within a surface-based Class E airspace unless authorization is received from the appropriate air traffic control facility.

According to 14 CFR 137, the pilot in command of an aircraft may deviate from an airport traffic pattern only when authorized by the control tower concerned. At an airport without a functioning control tower, the pilot in command may deviate from the traffic pattern if:

- Prior coordination is made with the airport management concerned;
- Deviations are limited to the agricultural aircraft operation;
- Except in an emergency, landing and takeoffs are not made on ramps, taxiways, or other areas of the airport not intended for such use; and
- The aircraft at all times remains clear of, and gives way to, aircraft conforming to the traffic pattern for the airport.
 - The regulations strictly limit operations over a congested area. According to 14 CFR 137.51:
- An aircraft may be operated over a congested area at altitudes required for the proper accomplishment of the agricultural aircraft operation if the operation is conducted:
 - With the maximum safety to persons and property on the surface, consistent with the operation; and
 - In accordance with the requirements of paragraph (b) of this section.
- No person may operate an aircraft over a congested area except in accordance with the requirements of this the following:
 - Prior written approval must be obtained from the appropriate official or governing body of the political subdivision over which the operations are conducted.
 - Notice of the intended operation must be given to the public by some effective means, such as daily newspapers, radio, television, or door-to-door notice.
 - A plan for each complete operation must be submitted to, and approved by appropriate personnel of the FAA Flight Standards District Office having jurisdiction over the area where the operation is to be conducted. The plan must include consideration of obstructions to flight; the emergency landing capabilities of the aircraft to be used; and any necessary coordination with air traffic control.
- Single engine aircraft must be operated as follows:
 - Except for helicopters, no person may take off a loaded aircraft, or make a turnaround over a congested area.
 - No person may operate an aircraft over a congested area below the altitudes prescribed except during the actual dispensing operation, including the approaches and departures necessary for that operation.
 - No person may operate an aircraft over a congested area during the actual dispensing operation, including the approaches and departures for that operation, unless it is operated in a pattern and at such an altitude that the

aircraft can land, in an emergency, without endangering persons or property on the surface.

- Multiengine aircraft must be operated as follows:
 - No person may take off a multiengine airplane over a congested area except under conditions that will allow the airplane to be brought to a safe stop within the effective length of the runway from any point on takeoff up to the time of attaining, with all engines operating at normal takeoff power, 105 percent of the minimum control speed with the critical engine inoperative in the takeoff configuration or 115 percent of the power-off stall speed in the takeoff configuration, whichever is greater, as shown by the accelerate stop distance data. In applying this requirement, takeoff data is based upon still-air conditions, and no correction is made for any uphill gradient of 1 percent or less when the percentage is measured as the difference between elevation at the end points of the runway divided by the total length. For uphill gradients greater than 1 percent, the effective takeoff length of the runway is reduced 20 percent for each 1-percent grade.
 - No person may operate a multiengine airplane at a weight greater than the weight that, with the critical engine inoperative, would permit a rate of climb of at least 50 feet per minute at an altitude of at least 1,000 feet above the elevation of the highest ground or obstruction within the area to be worked or at an altitude of 5,000 feet, whichever is higher. For the purposes of this subdivision, it is assumed that the propeller of the inoperative engine is in the minimum drag position; that the wing flaps and landing gear are in the most favorable positions; and that the remaining engine or engines are operating at the maximum continuous power available.
 - No person may operate any multiengine aircraft over a congested area below the altitudes prescribed except during the actual dispensing operation, including the approaches, departures, and turnarounds necessary for that operation.

Reporting and Record Keeping

- Holders of agriculture aircraft operator certificates must maintain a listing of the following and have them available for at least 12 months for inspection.
- The name and location of all services provided;
- The date of services provided;
- Name and quantity of chemicals used ; and
- Name and certification for each pilot involved in operations.

Pending: Bilingual Pesticide Labeling Effort

EPA is considering a petition from the Migrant Clinicians Network, Farmworker Justice, and other farm work interest groups to require that pesticide manufacturers make their product

labels available in both English and Spanish (EPA 2012b). Currently, EPA does not require that pesticide labels be printed in Spanish as well as English (although it does require certain parts of some pesticide product labels to include words or phrases in Spanish, pursuant to the Worker Protection Standard) (EPA 2012b). The California Environmental Protection Agency (Cal/EPA) and the California Department of Pesticide Regulation (CDPR) follow EPA's lead and do not require bilingual pesticide labeling in California. After receiving responses to the petition, EPA is leaning towards only requiring the health and safety-related portions of pesticide labels (e.g., acute toxicity information, protective equipment) to be printed in Spanish (Gayoso, pers. comm., 2013). EPA is considering establishing a pilot program in certain states, to test out Spanish labeling requirements, and California has expressed interest in participating. To ease the burden of developing new pesticide label formats to accommodate Spanish translations, EPA also is considering developing label templates for states to use in their regulatory programs. At this point, it is unclear whether EPA will ultimately require bilingual pesticide labeling (Gayoso, pers. comm., 2013).

O.5.2 State Laws, Ordinances, Regulations, and Standards

California Health and Safety Code: Hazardous Waste and Hazardous Materials

Several sections of the California Health and Safety Code deal with hazardous waste and hazardous materials. Division 20, Chapter 6.5 addresses hazardous waste control and contains regulations on hazardous waste management plans, hazardous waste reduction, recycling and treatment, and hazardous waste transportation and hauling. For example, under Chapter 6.5, Article 6, persons generating hazardous wastes that are to be transported for off-site handling, treatment, storage, or disposal must complete a Hazardous Waste Manifest before transportation, indicating to which facility the waste is to be shipped for treatment, disposal, or other purposes. Chapter 6.91 promulgates regulations requiring the California Department of Toxic Substances Control (DTSC), in conjunction with the California Department of Public Health and California Office of Environmental Health Hazard Assessment (OEHHA), to conduct epidemiological studies to identify and monitor health effects related to hazardous materials exposure.

Under Chapter 6.95, areas and businesses that have a threshold amount of hazardous materials on site (500 pounds for businesses) must have plans in place for emergency response to an accidental materials release. Area plans must provide the following:

- Procedures and protocols for emergency rescue personnel, including the safety and health of those personnel;
- Pre-emergency planning;
- Notification and coordination of on-site activities with State, local, and federal agencies, responsible parties, and special districts;
- Training of appropriate employees;
- On-site public safety and information;

- Required supplies and equipment;
- Access to emergency response contractors and hazardous waste disposal sites;
- Incident critique and follow up; and
- Requirements for notification.

Business plans must include at least the following:

- A listing of the chemical name and common names of every hazardous substance or chemical product handled by the business;
- The category of waste, including the general chemical and mineral composition of the waste, of every hazardous waste handled by the business;
- The maximum amount of each hazardous material or mixture containing a hazardous material;
- Sufficient information on how and where the hazardous materials are handled by the business to allow fire, safety, health, and other appropriate personnel to prepare adequate emergency responses to potential releases of the hazardous materials;
- Emergency response plans and procedures in the event of a reportable release or threatened release of a hazardous material; and
- Training for all new employees and annual training, including refresher courses, for all employees in safety procedures in the event of a release or threatened release of a hazardous materials.

Under Chapter 6.95, stationary sources of hazardous materials are required (if they are deemed an accident risk) to prepare RMPs, detailing strategies to reduce the risk of accidental hazardous material release, and submit them to the California Emergency Management Agency. Under Article 2 of this chapter, toxic chemical manufacturing facilities (that produce, process, or use toxic chemicals over specific threshold quantities) also are required to disclose their releases of toxic chemicals to the environment through submission of Toxic Chemical Release Forms to DTSC, pursuant to the California Toxic Release Inventory Program Act of 2007. With respect to the Proposed Program, hazardous waste and hazardous materials elements of the California Health and Safety Code would require manufacturers and suppliers of pesticides that may be used under the Proposed Program to develop RMPs to reduce the chance of accidental release of pesticides, document and disclose any releases of pesticides, and complete a Hazardous Waste Manifest before shipping any hazardous wastes that they generate.

California Accidental Release Prevention Program

First implemented in 1997, the California Accidental Release Prevention (CalARP) program was designed to prevent accidental releases of hazardous substances (e.g., pesticides), minimize damage if releases occur, and satisfy community right-to-know laws (Cal OES 2014). Similar to the federal CAA chemical accident prevention provisions, the CalARP

program and implementing regulations (19 CCR, Division 2, Chapter 4.5) require businesses that handle more than a certain threshold quantity of regulated substances to develop an RMP. The components and submission requirements for the RMP required under CalARP are the same as those for the RMP required under the CAA. However, substantially more substances are listed in the State's program regulations.

In most cases, the Certified Uniform Program Agency (CUPA) is the Administering Agency (AA), or the agency responsible for implementing the CalARP program. When no CUPA exists, the implementing agency is an agency designated by the Secretary for Environmental Protection or Office of Emergency Services. The AA determines the level of detail in the RMPs, review the RMPs, conduct facility site inspections, and provide public access to most of the information provided by facilities.

The only chemical listed in the CalARP program regulations that may be used under the Proposed Program is methyl bromide. Under CalARP program regulations, facilities that produce or handle methyl bromide for use under the Proposed Program would have to develop an RMP and, in doing so, would have to analyze the worst-case release scenario for their covered process(es) and any potential impacts on nearby populations and environmental receptors, as well as ensure that response actions have been coordinated with local emergency planning and response agencies, among other requirements.

Hazardous Waste Generator and On-site Waste Treatment Surveillance and Enforcement Programs

The Hazardous Waste Generator Program is administered by CUPAs under the Unified Program, with oversight and assistance from DTSC. Under the program, CUPAs conduct inspections at hazardous waste generator facilities. Inspectors check such requirements as having an EPA identification number, having contingency plan information posted near a phone, having containers in good condition and properly labeled, and having authorized waste transport vehicles (DTSC 2010). If generators refuse or fail to comply with regulations or permit requirements, CUPAs may assess penalties (DTSC 2002a).

CUPAs also administer on-site, tiered permitting programs. Based on the type of waste they treat and the treatment processes they employ, businesses are required to obtain a permit for the appropriate tier (DTSC 2002b). Permits may require businesses to clean equipment or alter processes to improve safety (DTSC 1999).

Under these programs, pesticide manufacturing facilities or other businesses that handle pesticides that may be used under the Proposed Program would be subject to inspections and would have to obtain permits. They would be required to meet hazardous waste generator and permit requirements, which are designed to prevent accidental releases.

Pesticide Contamination Prevention Act

The Pesticide Contamination Prevention Act (Sections 13145–13152 of the Food and Agricultural Code) requires CDPR to: obtain environmental fate and chemistry data for agricultural pesticides before they can be registered for use in California; identify agricultural pesticides with the potential to pollute groundwater; sample wells for presence of agricultural pesticides in groundwater; obtain, report, and analyze the results of well sampling for pesticides for public agencies; formally review a detected pesticide to

determine whether its use can be allowed; and adopt use modifications to protect groundwater from pollution if the formal review indicates that continued use can be allowed. More specifically, the act requires CDPR to develop numerical values for water solubility, soil adsorption coefficient, hydrolysis, aerobic and anaerobic soil metabolism, and field dissipation for pesticides to protect groundwater, based in part on data submitted by pesticide registrants. The act also states that CDPR shall establish a list of pesticides that have the potential to pollute groundwater, called the Groundwater Protection List. Any person who uses a pesticide that is listed on the Groundwater Protection List is required to file a report with the county agricultural commissioner (CAC) and pesticide dealers are required to make quarterly reports to CDPR of all sales of pesticides on the list to persons not otherwise required to file a report. CDPR will not register or renew the registration of a pesticide that is intended to be applied to the ground by ground-based application equipment if a groundwater protection data gap exists for that pesticide. In addition, the act requires CDPR to conduct soil and groundwater monitoring in areas of the state where pesticides are used primarily, to determine the mobility and persistence of the pesticides.

California Food and Agricultural Code

Section 11456 of the California Food and Agricultural Code (CFAC) gives authority to CDPR in the areas of regulation adoption, inspection authority, licensing, and intergovernmental personnel agreements. Joint authority for pesticide use enforcement activities is performed by CACs under CDPR's direction and supervision. Under the CFAC, CDPR has the authority and responsibility to register pesticides for use and sale within California. Pesticides registered by CDPR must, at a minimum, be registered for use by EPA. In addition, CDPR performs risk assessments of pesticides before they can be sold or used in California, and it periodically re-evaluates already registered pesticides.

California Code of Regulations: Pesticides and Pest Control Operations

Title 3, Division 6 of the California Code of Regulations (CCR) addresses Pesticides and Pest Control Operations. This portion of the CCR contains detailed implementing regulations for CDPR's pesticide regulatory program. CDPR evaluates proposed pesticide products and only registers those pesticides that it determines can be used safely. In addition, CDPR's oversight includes:

- Licensing of pesticide professionals;
- Site-specific permits before restricted-use pesticides may be used in agriculture;
- Strict rules to protect workers and consumers;
- Mandatory reporting of pesticide use by agriculture and by pest control businesses;
- Environmental monitoring of water and air; and
- Testing fresh produce for pesticide residues; and
- Cultural commissioners.

As described in further detail below, CDPR's regulations include a description of the pesticide registration process and information requirements, pesticide applicator safety standards, field worker safety standards and training, and greenhouse ventilation requirements, among other requirements. In addition, the regulations include a list of pesticides considered to be toxic air contaminants (TACs), prohibitions on use of certain pesticides to prevent environmental contamination in aquatic and marine environments, and surface water protection provisions. The regulations outline the appropriate enforcement actions for CACs to take in response to violations of the regulatory program, as well as the inspection authority and procedures for CACs in inspecting pesticide operations and investigating pesticide operation employee illness. It contains pesticide possession and use limitations and requirements for specific pesticides, as well as license requirements for pesticide applicators and dealers, and standards for worker safety. As discussed below, under the regulations in CCR, Title 3, Division 6, employers of pesticide workers are required to provide protective clothing, eyewear, gloves, respirators, and any other required protection, and also ensure that protective wear is worn according to product labels during application. The regulations also require that employers: provide field workers with adequate training in pesticide application and safety; communicate pesticide-related hazards to field workers; ensure emergency medical services is available to field workers; and ensure adherence to restricted entry intervals between pesticide treatments (CCR, Title 3, Section 6764). Furthermore, the Pesticides and Pest Control Operations regulations contain standards and requirements related to environmental protection, including use reporting requirements for pesticides with the potential to contaminate groundwater found on the Groundwater Protection List.

One of the first parts of the pesticide and pest control operation regulations involves the registration of pesticides. Information that factors into CDPR's pesticide registration decisions includes the following:

- Health effects data (acute and chronic)
 - Acute oral and dermal LD₅₀
 - LC₅₀ for respirable aerosols and gases
 - Studies on oncogenicity, teratogenicity, and mutagenicity
- Residue data
- Exposure studies for specific receptors
- Pesticide drift
- Field reentry
- Toxicity to aquatic biota and wildlife
- Phytotoxicity
- Environmental effects

- Adjuvants, inert ingredients, and contaminants
- Methodology for managing poison and injuries
- Available feasible alternatives
 - Application and Use Permits are required to use the pesticides subject to this regulation. These applications and permits must adhere to the following:
- Permits are required for possession of any restricted material.
- Permits are required for use within ground water protection areas for chemicals listed in section 6800a except if used in pest eradication programs approved by CDFA.
- Permits require adoption of any reasonable mitigation measures or alternatives which would decrease any significant adverse environmental effect.
- Permits may be canceled and no new permits issued if residues, symptoms or health hazards appear at the discretion of CDPR director or commissioners.
 - Pesticide labeling has specific regulations that apply which include the following:
- All words, statements, graphic presentations, or designs required to appear on the label or labeling must be clearly legible and easy to read by a person with normal vision.
- Warning or caution statements must appear on the label in a place sufficiently prominent to warn the user, and must state clearly and in nontechnical language the particular hazard involved in the use of the pesticide, e.g., ingestion, skin absorption, inhalation, flammability or explosion, and the precautions to be taken to avoid accident, injury, or damage.
 - Pest control operations must adhere to strict regulations which include the following conditions:
- Equipment must be in good repair and safe to operate.
- Methods and equipment that ensure proper application must be used.
- Applications may only be performed under climatic conditions suitable to ensure proper application of pesticides.
- Reasonable precautions must be taken to avoid contamination
- A copy of registered labeling must be available at site of use.
- All equipment shall be thoroughly cleaned.

- The applicator must evaluate the surrounding area and determine likelihood of harm or damage. No application can continue if there is reasonable possibility of contamination or harm during the application process.
- Adjacent property owners must be informed and consent obtained before discharging any pesticides onto adjacent property or having protection zones on adjacent property.
- All directions of approach for pesticide storage areas must contain signage.
 - Pesticide worker safety portions of the regulation specify numerous conditions that are aimed at protecting workers who use or are around pesticides. This includes the following:
 - Employers shall inform employees in a language they understand the pesticide being used, pesticide safety hazards, personal protective equipment to use, procedures to follow, and safety regulations that are applicable to work they perform,
 - Employers must supervise employees and assure that safe work practices are complied with
 - Employers must prohibit entry to work areas if directed to do so to protect human health.
 - Employers must provide medical supervision if a suspected exposure occurs. Emergency medical care for employees must be planned for in advance. If pesticide exposure is suspected the employer shall ensure that the employee is taken to a physician immediately.
 - Employers must provide a written copy of Hazard Communication Information for Employees Handling Pesticides in Agricultural Settings or Hazard Communication Information for Employees Handling Pesticides in Noncrop Settings. The material must be read upon request in a language understood by employee. These are available in English and Spanish.
 - Employers shall maintain a central location for pesticide use records, Pesticide Safety Information Series leaflets, and MSDSs.
 - A written training program is required.
 - Workers may not work alone during mixing, loading, or applying unless contact is made to a responsible adult at intervals not exceeding 2 hours.
 - Employers must assure sufficient water, soap, and towels for routine washing, eye flushing, and whole body washing are available to employees.
 - Employer must provide coveralls for employees handling pesticide with signal word “DANGER or “WARNING”. Coveralls must be washed at end of each work day and may not be taken home by employees unless stored in sealable container outside of the living quarters.

- Employers must provide all required personal protective equipment and ensure proper use by employees.
- Field workers must be provided written copy of Hazard Communication Information for Employees Working in Fields and upon request it must be read in language understandable to employee.
- Employers may not allow a person other than applicator to enter or remain in a treated area during application.

These pesticides and pest control operation regulations would require that pesticide handlers and workers conducting activities under the Proposed Program would be trained in safe pesticide application, notified of the health hazards of pesticide exposure, and provided with protective clothing and equipment. In addition to the details described above, the regulations also ensure that aerial applicators are fully qualified and operate in a safe manner and possess a valid Pest Control Aircraft Pilot Certification issued by CDPR. They would also require that pesticide application standards are developed to protect groundwater, wildlife, and the environment are followed.

As mentioned above, workers must receive training and use personal protective equipment. The pesticides and pest control operation regulations give specific details of what must be covered in worker training for both pesticide handlers and field workers as well as specifics on personal protective equipment usage which is detailed below.

Pesticide Handler Training

According to CDPR's pesticide regulations, a pesticide handler is any employee who:

- mixes, loads, transfers, applies (including chemigation), or flags during aerial applications (flaggers are used on the ground to assist the pilot in identifying the area for application)
- maintains, services, repairs, cleans, or handles equipment that may contain residues or that has been used in pesticide mixing or application activities
- works with opened pesticide containers, including emptied but not rinsed containers
- adjusts, repairs, or removes treatment site coverings, such as tarpaulins covering fumigated soil or agricultural commodities
- incorporates pesticides into the soil through mechanical means, or chemigation through an irrigation system
- enters a treated area during any application, or before the inhalation exposure level listed on pesticide product labeling has been reached, or before greenhouse ventilation criteria have been met
- performs the duties of a crop advisor, including field checking or scouting, making observations of the well-being of the plants, or taking samples during an application or any restricted entry interval listed on pesticide product labeling

- CDPR regulations require all employers to have written training programs for pesticide handlers working in their operations. Certified private and commercial applicators and licensed Pest Control Advisers are exempt from this training. The training program addresses each of the following topics as they apply to the pesticides that employees handle:
 - understanding the format and meaning of information, such as precautionary statements about human health hazards, contained in the labeling of the pesticide products being handled
 - understanding the hazards of the pesticides being handled, including acute and chronic effects, delayed effects, and sensitization, as identified in pesticide product labeling, MSDSs, or Pesticide Safety Information Series leaflets
 - knowing the routes by which pesticides can enter the body
 - recognizing the signs and symptoms of overexposure
 - knowing specific emergency first aid for overexposure to the pesticides being handled
 - knowing how to obtain emergency medical care
 - knowing routine and emergency decontamination procedures, including spill cleanup and the need to thoroughly shower with soap and warm water after the exposure period
 - understanding the need for, limitations, appropriate use, and cleaning of any required PPE
 - knowing the prevention, recognition, and first aid for heat-related illness
 - understanding safety requirements and procedures, including engineering controls (such as closed mixing systems and enclosed cabs) for handling, transporting, storing, and disposing of the pesticides being handled
 - recognizing environmental concerns such as drift, runoff, and wildlife hazards
 - heeding warnings about taking pesticides or pesticide containers home
 - knowing the requirements relating to pesticide safety, MSDSs, and Pesticide Safety Information Series leaflets
 - understanding the purposes and requirements for medical supervision if organophosphate or carbamate pesticides with the signal word “DANGER” or “WARNING” on the labeling are mixed, loaded, or applied
 - knowing the location of the written *Hazard Communication Information for Employees Handling Pesticides* (Pesticide Safety Information Series leaflet A-8), other Pesticide Safety Information Series leaflets, and MSDSs

- knowing the employee's rights, including the right
 - to personally receive information about pesticides to which he or she may be exposed
 - for his or her physician or employee representative to receive information about pesticides to which he or she may be exposed
 - to be protected against retaliatory action due to the exercise of any of his or her rights
 - The following topics are also covered, if appropriate, during training. These are general pesticide handling procedures that apply to any pesticide product being handled:
 - understanding the importance of wearing clean work clothing daily
 - knowing how to handle, open, and lift containers
 - knowing how to properly pour pesticides out of containers
 - knowing how to operate mixing and application equipment
 - knowing procedures for triple rinsing containers
 - knowing how to dispose of empty containers
 - knowing how to confine spray to the target area
 - knowing how to avoid contamination of people, animals, waterways, and sensitive areas
 - knowing how and where to store containers that hold pesticides or are empty
 - understanding procedures to follow when containers cannot be locked up
 - understanding the importance of washing hands thoroughly before eating, smoking, drinking, or using the restroom

Employers shall assure that their agricultural field workers are also provided pesticide safety training before they enter treated areas within 30 days of completion of the application or expiration of a restricted entry interval. Field worker training also shall be performed by qualified trainers. This training shall be provided to any workers who enter pesticide-treated areas for the 30 days following expiration of a restricted entry interval. Training shall be provided to workers when an area has been treated with any type of pesticide, such as herbicides, fungicides, and insecticides. The current employer does not have to provide training if the worker or employer can verify such training has been provided within the past five years.

Field Worker Training

The following topics are covered in field worker training:

- where and how workers may come in contact with pesticides or pesticide residues during work, including hazards from chemigation and drift
- the routes by which pesticides can enter the body (skin, mouth, inhalation, and eyes)
- symptoms of acute pesticide poisoning or injury, and long-term and delayed health effects from pesticide exposure, including sensitization
- first aid for pesticide injury and poisoning, and emergency decontamination
- how workers can protect themselves from exposure, e.g., clothing; avoiding skin, eye, and mouth contact; personal hygiene
- obtaining medical help
- after-work storage, laundering, and decontamination of contaminated work clothes
- warnings about taking home pesticides or pesticide containers
- an explanation of the work place safety (WPS) entry restrictions, application limitations, posting, oral warnings, access to pesticide use information, and protection from employer retaliation

Personal Protective Equipment

California regulation requirements for PPE may be more restrictive than pesticide label requirements, and the California requirements must be understood and followed when they are more restrictive. The Pesticides and Pest Control Operations Regulations state that the employer shall provide the required PPE, and shall assure that it is worn. At the minimum, employers shall provide appropriate eyewear and chemical resistant gloves to pesticide handlers and assure that employees use them properly. In addition, employers shall follow certain requirements when the label requires using chemical resistant footwear, head covering, apron, or body covering.

Eyewear. California regulations require employers to assure that their employee handlers wear protective eyewear

- when required by the pesticide product labeling
- during all mixing or loading activities
- while adjusting, cleaning, or repairing the mixing, loading, or application equipment that contains pesticide material in hoppers, tanks, or lines
- when making applications by hand or using hand held equipment, except when:
 - applying vertebrate pest control baits that are placed without being propelled from application equipment

- applying solid fumigants (including aluminum phosphide, magnesium phosphide, and smoke cartridges) to vertebrate burrows
- baiting insect monitoring traps
- applying noninsecticidal lures
- while making ground application using vehicle-mounted or towed equipment, except when:
 - injecting or incorporating pesticides into soil
 - spray nozzles are located below the employee and the nozzles are directed downward
 - working in an enclosed cab
- while flagging for aerial operations to identify the location, except when the flagger is in an enclosed cab
 - Whenever protective eyewear is required, one of the following types shall be worn:
- safety glasses that provide front, and supplemental brow and temple protection (common eyeglasses, including sunglasses, do not meet this requirement)
- goggles
- ace shield
- full face mask used in conjunction with respiratory protection
- visor (for aircraft operation only)
 - **Gloves.** California regulations require employers to assure that their employee handlers wear chemical resistant gloves:
- when required by the pesticide product labeling (unless the pesticide product labeling specifies that gloves shall not be worn)
- when employees are engaged in:
 - mixing or loading (pilots are not required to wear gloves while flying the aircraft during an application)
 - adjusting, cleaning or repairing contaminated mixing, loading, or application equipment
 - application by hand or using hand-held equipment, except when applying vertebrate pest control baits using long handled implements that avoid actual hand contact with the bait or potentially contaminated areas of the equipment

If the type of glove is not specified on product labeling for the pesticide being handled, gloves made of rubber, neoprene, or other chemical resistant material that provides equivalent or better protection shall be used. Pesticide handlers shall not wear gloves or glove linings of leather, cotton, or other absorbent materials unless expressly permitted by pesticide product labeling. If chemical resistant gloves with sufficient durability and suppleness are not available, leather gloves may be worn over chemical resistant glove liners. Once leather gloves have been used for this purpose, they shall not be worn in any other situation.

Footwear. The employer shall assure that their employee handlers wear chemical resistant footwear when required by the pesticide product label. Chemical resistant footwear includes the following types of footwear:

- chemical resistant shoes
- chemical resistant boots
- chemical resistant coverings worn over boots or shoes

For aircraft operation, chemical resistant footwear need not be worn.

Headwear. The employer shall assure that their employee handlers wear chemical resistant headgear when required by the pesticide product labeling. Either a chemical resistant hood or a chemical resistant hat with a wide brim will satisfy this requirement. For aircraft operation, a helmet may be substituted for chemical resistant headgear.

Chemical Resistant Apron. Employers shall assure that their employee handlers wear a chemical resistant apron when required by the pesticide product labeling. It shall be a garment that covers the front of the body from mid-chest to the knees.

Bodywear. Employers shall assure that their employee handlers wear chemical resistant body wear when required by pesticide product labeling or regulations. Chemical resistant body wear includes waterproof or impervious pants and coat, or a rain suit that covers the torso, head, arms, and legs.

Except for those conditions listed below, when the pesticide label requires chemical resistant bodywear, employees cannot handle the material if the outdoor temperature exceeds 80°F during daylight hours or 85°F during nighttime hours. If outdoor temperatures exceed those maximums listed above, employees can only perform handling activities if employees are

- using cooled chemical resistant suits (mixers, loaders, other handlers, and applicators)
- working in an enclosed cab or cockpit (applicators)
- using a closed mixing system (mixers and loaders)
- handling pesticides packaged in water-soluble packets and the packets are not opened (mixers and loaders)

Pesticide Illness Surveillance Program

California law requires physicians to report any known or suspected illness caused by a pesticide exposure. The Pesticide Illness Surveillance Program (PISP) is tasked with collecting and evaluating these reports before they are assigned to county agricultural commissioners to investigate the exposure circumstances. Scientists then review the collected information and enter it in a database. This data not only reflects the effectiveness of the California's pesticide regulatory program but also identifies areas for improvement. The Pesticide Illness Surveillance Program helps CDPR reevaluate pesticide registrations and modify use practices to enhance protection for people and the environment. The PISP applies a broad definition to the term pesticide-related. If health effects appear to derive from exposure to any component of a pesticide product, including inert ingredients, impurities, and breakdown products, the surveillance program attributes those health effects to that pesticide product. Similarly, reporting includes but is not limited to toxic effects similar to those seen in pests. For example, a product designed to disrupt insect nerve function may, at excessive levels, cause neurologic symptoms in humans. The surveillance program records such cases, and also records cases in which contact with a pesticide causes local irritant effects such as rashes or inflammation of the eyes. Pesticides may act as irritants or allergens, through their odor, or by resulting in fires or explosions. These effects are all recognized as potential causes of illness or injury, along with the toxic impact of pesticide active ingredients.

Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

The Safe Drinking Water and Toxic Enforcement Act, or Proposition 65, requires the Governor to maintain and publish a list of chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm. Once a chemical has been listed, businesses are responsible for providing a warning before knowingly or intentionally exposing their employees or the public to an amount of the chemical that poses a significant risk (CDPR 2013b). OEHHA is the lead agency responsible for implementing Proposition 65, with input from CDPR and other agencies so that the best scientific information is used in listing chemicals. In its current state, the Proposition 65 list contains a wide variety of chemicals, including a number of pesticides (OEHHA 2013a). Five pesticide active ingredients, one adjuvant, and four inert ingredients that may be used under the Proposed Program are required to have Proposition 65 warning labels. These are: carbaryl, tau-fluvalinate, methyl bromide, DDVP, methyl eugenol, hydrated aluminum magnesium silicate, cumene, ethyl benzene, methyl chloride, and naphthalene.

California Occupational Safety and Health Administration Regulations

Title 8 of the California Occupational Safety and Health Administration (Cal/OSHA) regulations contains some requirements for agricultural operations related to pesticide application. For example, the regulations require that all tanks over 100 gallons in capacity, used for pesticides, have an attached notice that provides precautionary instructions and controls placed in such a way as to minimize exposure to employees from ruptured or breaking lines (8 CCR, Section 3453). Also, according to the Cal/OSHA regulations, all hoppers on crop dusting aircraft must have dust-tight covers and lids secured so that they would not open in the event of a flip-over (8 CCR, Section 3452). Machines, aircraft, applicators, or other equipment used for pesticide application also must be decontaminated before they are overhauled or placed in storage (8 CCR, Section 3451). In addition, the

Cal/OSHA regulations contains various provisions that require safe operation of equipment, safety instructions provided in a language that employees understand, access to first-aid, and specific regulations regarding fumigations. With respect to the Proposed Program, these regulations would require for businesses implementing Proposed Program activities to provide pesticide workers with precautionary instructions for storage tank operation and minimize their risk of exposure from storage tank malfunction. The regulations also would require that those responsible for aircraft and machinery to be used in implementing Proposed Program activities take basic safety precautions.

California Government Code Sections 51175-51181, Fire Prevention

Sections 51175 to 51181 of the California Government Code outline the responsibilities of the California Department of Forestry and Fire Prevention (CAL FIRE) and local agencies with respect to fire prevention. CAL FIRE is legally responsible for providing fire protection on all State Responsibility Area (SRA) lands (CAL FIRE 2012). SRA lands are defined based on land ownership, population density, and land use (e.g., SRAs would not include densely populated areas, agricultural lands, or lands administered by the federal government) (CAL FIRE 2012).

Hazardous Materials Management Plans and Hazardous Materials Inventory

Statements—California Fire Code

Title 29, Part 9 of the CCR (also referred to as the California Fire Code) requires businesses that handle over a threshold quantity of hazardous materials to prepare a Hazardous Materials Management Plan (HMMP) and a Hazardous Materials Inventory Statement (HMIS). The HMMP and HMIS are very similar to the Hazardous Materials Release Response Plan and Inventory, or Business and Area Plans, required under Chapter 6.95 of the California Health and Safety Code. Like Business and Area Plans, the HMMP/HMIS requirement is an element of the Unified Program. However, the CAL FIRE Office of the State Fire Marshall is responsible for implementing the HMMP and HMIS (CAL FIRE 2013).

The HMMP must include a facility site plan designating information such as the location of emergency equipment, hazardous material storage tanks, and emergency exits. The HMIS must include information on the hazardous materials at the site, such as product name, chemical components, amount in storage, and hazard classification. As part of an application for a permit from the fire code official, owners or operators of facilities that handle hazardous materials also must submit an emergency response plan and an emergency response training plan.

Pesticide manufacturers supplying pesticides that may be used under the Proposed Program would have to provide the information above under the California Fire Code.

California Emergency Services Act (California Code, Chapter 7)

The California Emergency Services Act established the California Emergency Management Agency (Cal EMA) and created requirements for emergency response training and planning. Under the act, the State is required to develop a state toxic disaster contingency plan that can facilitate an effective, multi-agency response to a situation where toxic substances are dispersed in the environment so as to cause, or potentially cause, injury or death to a

significant number of persons or significant harm to the natural environment (7 California Code, Section 8574.18). The California Emergency Services Act also requires Cal EMA to develop and manage the California Hazardous Substances Incident Response Training and Education Program, to provide classes in hazardous substance response (7 California Code 8574.20).

With respect to the Proposed Program, the California Emergency Services Act would require that a contingency plan be in place to protect people and the environment for the possibility of a substantial pesticide spill or other incident associated with implementation of activities under the Proposed Program. The act also would require for emergency responders to any substantial pesticide spill be trained or have access to training in hazardous substances incident response.

Environmental Justice Legislation

Enacted in 2003, Assembly Bill 1360 required OEHHA to develop and maintain a system of environmental indicators, to evaluate the effectiveness of the agency's programs in improving environmental quality and protecting public health throughout the state, including environmental quality and public health in low-income communities and communities of color (Steinberg 2003). This law would require CDPR (and other agencies responsible for regulating pesticide use) to evaluate Proposed Program activities based on their effectiveness in improving environmental quality and protecting public health in low-income and minority communities.

Senate Bill 89, enacted in 2000, required Cal/EPA to convene a working group, to analyze data and studies on environmental justice, recommend criteria for addressing gaps in programs or policies impeding the achievement of environmental justice, and recommend procedures for implementing environmental justice strategies (Escutia 2000). The Bill also ordered Cal/EPA to “conduct its programs, policies, and activities that substantially affect human health and the environment in a manner that ensures the fair treatment of all races, cultures, and income levels, including minority populations and low-income populations of the state (Escutia 2000:2).” Because CDPR and DTSC are part of Cal/EPA, Senate Bill 89 would require for regulatory programs administered by CDPR and DTSC for pesticide use, storage, transport, and disposal under the Proposed Program to be consistent with environmental justice objectives.

Senate Bill 32, enacted in 2001, authorizes local governments to investigate and remediate properties contaminated with hazardous waste (Escutia 2001). Specifically, Senate Bill 32 authorizes local governments to require property owners to provide information regarding whether hazardous materials release may occur on their properties (Escutia 2001). If the information provided to a local government indicates that the property is affected by a hazardous materials release or is a site for a potential hazardous materials release, then the local government may require the property owner to conduct a Phase I Environmental Assessment for remediation (Escutia 2001). Because Senate Bill 32 addresses ongoing as well as past hazardous waste contamination, it would authorize local governments to order site investigations and remedial actions if they had reason to believe that properties used pursuant to the Proposed Program potentially threatened contamination of the surrounding community.

Healthy School Act of 2000 (California Education Code, Sections 17608–17613)

The Healthy School Act of 2000 restricts the use of certain pesticides at school sites and requires noticing for application of approved pesticides at schools. Under Section 17610 of the California Education Code, the use of a pesticide on a school site is prohibited if that pesticide is granted a conditional registration, an interim registration, or an experimental use permit by CDPR, or if the pesticide is subject to an experimental registration issued by EPA, and (a) the pesticide contains a new active ingredient, or (b) the pesticide is for new use. The use of a pesticide on a school site is prohibited if CDPR cancels or suspends registration, or requires phase out of use, of that pesticide. Property owners who own properties where child daycare facilities are located must provide notice to the child daycare facility if they intend to personally apply any pesticide: (a) inside the rented premises on which the child daycare facility is located; (b) on a designated child daycare facility playground designated by the owner; (c) on an area designated for use by the child daycare facility; or (d) on an area within 10 feet of the perimeter of any child daycare facility.

Under Section 17611 of the California Education Code, each school site must keep records of all pesticide use at the school site for a period of 4 years, and make such information available to the public. Under Section 17612, the school designee annually has to provide to all staff and parents or guardians of pupils written notification of the name of all pesticide products (as well as product active ingredients) that are expected to be applied at the school site in the upcoming year. The school designee must post each area of the school site where pesticides are to be applied with a warning sign, displaying the pesticide product's name, manufacturer's name, EPA's product registration number, intended date and areas of application, and the reason for the pesticide applications. Sections 17611 and 17612 do not apply to pesticides deployed in the form of a self-contained bait or trap devices.

Under the Proposed Program, it is possible that pesticides would be applied at school sites or child daycare facilities. If an infestation of a potentially economically damaging pest was detected on vegetation in a school playground, for example, then that infestation may be eradicated using chemical methods. As required under the California Education Code, if such a situation occurs, only EPA-registered pesticide products would be used; school facilities would be notified in advance of the application; records of pesticide applications would be kept and made available to the public, and warning signs would be displayed at pesticide application areas. None of the pesticide products that may be used in the Proposed Program meet the criteria specified in Section 17610, and thus they would be permitted for use at school sites.

Assembly Bill 304, Toxic Air Contaminant Control

On October 5, 2013, amendments to Sections 14022, 14023, and 14024 of the CFAC relating to pesticides were enacted. These amendments added additional requirements for public reporting and specific timing of actions required when any pesticide is determined to be a TAC that poses a present or potential hazard to human health resulting from airborne emission from its use. For each pesticide that had had a risk assessment, which identified the pesticide as a TAC based on its listing as a federally identified hazardous air pollutant, would require the Plant Health Division Director (Director), in consultation with OEHHA, CARB, and the air districts in the affected counties, to determine the need for and appropriate degree of control measures, as specified. These amendments place specific time

limits on responses, requires responses in writing, and preparation of reports in detailing why additional control measures were not adopted, and all of these details including comments received must be available to the public.

Statewide Pesticide Use and Label Restrictions

To use a pesticide product in California, the pesticide first must be registered by EPA and CDPR. When a pesticide is evaluated for registration, EPA and CDPR consider the chemical characteristics of the active ingredient(s) and potential exposure during pesticide application. Potential effects are considered to human health, water quality and aquatic environments, and non-target ecological organisms. Potential incompatibilities with other chemicals also are considered. From this evaluation, these agencies add restrictions to the pesticide product label to prohibit the use of the pesticide from occurring in a manner that has the potential to produce adverse effects. Label restrictions can specify where a pesticide can or cannot be applied, the maximum rate of application, the time period during which additional applications of the pesticide may or may not be made, or incompatible chemicals that must be avoided.

EPA examines the ingredients of a pesticide, the site or crop on which it is to be used, the amount, frequency and timing of its use, and storage and disposal practices. EPA evaluates the pesticide so that it will not have unreasonable adverse effects on humans, the environment and non-target species. Pesticides must be registered or exempted by EPA's Office of Pesticide Programs before they may be sold or distributed in the U.S. (EPA 2013c).

CDPR considers the toxic properties of a chemical and estimates the amount of the chemical that potentially may cause an adverse effect. This includes acute (one-time), subchronic (1 to 3 months), and chronic (long-term and lifetime) evaluations. Compared to EPA's review, CDPR's review of a pesticide focuses on California-specific potential impacts and may require additional studies, such as data on worker exposure, foliar residue, indoor exposure potential, hazards to bees, dust hazards, and efficacy (CDPR 2011).

California requires reporting of all commercial pesticide use, including amounts applied and types of crops or places (e.g., structures, roadsides) treated. In 2011, in an effort to more efficiently and accurately capture pesticide use data, a new county-based reporting system known as CalAgPermits was created, to streamline reporting procedures for pesticide users and upgrade data management capabilities of county departments of agriculture.

CDPR annually collects and processes more than 2.5 million records of pesticide applications. A single application creates more than one record if multiple pesticide products are applied at the same time. The reporting requirements include pesticide applications in production agriculture, parks, golf courses, cemeteries, rangeland, pastures, and along roadside and railroad rights-of-way. In addition, all post-harvest pesticide treatments of agricultural commodities must be reported, along with all pesticide treatments in poultry and fish production as well as some livestock applications. All uses by licensed applicators and outdoor applications of pesticides with the potential to pollute ground water must be reported. The primary exceptions to the reporting requirements are home-and-garden use pesticide products and most industrial and institutional pesticide product uses (CDPR 2011).

O.5.3 Local Laws, Plans, Policies, and Regulations

Pesticide Regulatory Program: County Agricultural Commissioners

Although CDPR is responsible for managing California's statewide pesticide regulatory program, the local administration of pesticide use enforcement is delegated to CACs. With assistance from CDPR, CACs plan and develop county programs and regulate pesticide use so that applicators comply with label directions and pesticide laws and regulations (CDPR 2011). CACs oversee pesticide use reporting, promote best management practices, monitor field applications, and may assist in cleanup of accidental pesticide spills. CACs inspect operations and records of growers, nonagricultural applicators (including industrial and institutional), pest control dealers, agricultural pest control advisers, farm labor contractors, and government agencies for compliance with worker protection standards and other pesticide safety requirements. CACs, assisted by CDPR, investigate incidents where pesticides harm agricultural workers, people nearby, and the environment, including contamination or environmental damage such as fish or wildlife kills, and water quality contamination. When an enforcement action is needed, CACs have the option to revoke or suspend the right of a pest control or other company to do business in the county or to issue civil or criminal penalties (CDPR 2011). With respect to the Proposed Program, local CACs are responsible for implementing and enforcing many aspects of pesticide regulation discussed in the section State Agencies, Laws, and Programs.

Unified Program—Certified Unified Program Agencies

The Unified Program consolidates and coordinates a number of regulatory programs in California related to hazardous wastes and materials (Cal/EPA 2012). Codified in the 27 CCR Division 1, and Chapter 6.11 of the California Health and Safety Code, the Unified Program consolidates the Hazardous Materials Release Response Plans and Inventories, CalARP Program, Underground Storage Tank Program, Aboveground Petroleum Storage Act, Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) programs, and California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements. The Unified Program also transfers responsibility for implementation of these hazardous waste and materials regulatory programs to local agencies, such as cities and counties (Cal/EPA 2012). After local agencies are certified by Cal/EPA as CUPAs, they must establish a program that consolidates, coordinates, and makes consistent the administrative requirements, permits, inspection activities, enforcement activities, and hazardous waste and hazardous materials fees associated with programs under the Unified Program. With oversight from Cal/EPA, CUPAs conduct inspections for all program activities according to the standards contained in the relevant statute or regulation (Cal/EPA 2012). With respect to the Proposed Program, local CUPAs are responsible for implementing and enforcing many of the state hazardous waste and materials requirements, as discussed in Section 6.6.2.2, State Agencies, Laws, and Programs. If a pesticide spill or other incident occurred under the Proposed Program, a CUPA or other local government agency likely would be the first to respond.

California Government Code Sections 51175–51181, Fire Prevention—Local Government Responsibilities

Local agencies are responsible for providing fire protection on Local Responsibility Area (LRA) lands. Like State Responsibility Areas, LRAs are defined based on land ownership, population density, and land use (CAL FIRE 2012).

O.6 Noise Regulatory Setting

The federal, State, and local laws, ordinances, regulations, and standards related to noise and relevant to the Proposed Program are discussed next. Local noise guidelines are often based on the broader guidelines of State and federal agencies, and many are implemented as enforceable noise ordinances. A detailed discussion of local ordinances was not included in this analysis because the Proposed Program activities may occur in various locations throughout California. Although not specifically noise-related, some of the following regulations and standards were influential in development of the noise assessment techniques used in this document.

O.6.1 Federal Laws, Ordinances, Regulations, and Standards

No federal laws, ordinances, regulations, or standards related to noise are directly relevant to the Proposed Program. However, the following guidelines at the federal level direct consideration of a broad range of noise issues:

- National Environmental Policy Act (Title 42, U.S. Code (USC) Section 4321, et seq.) (PL-91-190) (Title 40, Code of Federal Regulations [CFR] Section 1506.5)
- Noise Control Act of 1972 (Title 42, USC Section 4910)
- U.S. Department of Housing and Urban Development Noise Guidelines (Title 24, CFR Section 51, Subpart B) (HUD 1996)

Furthermore, the U.S. Environmental Protection Agency (EPA) has published a guideline document that specifically addresses issues of community noise, the EPA Levels Document Report 556/9-74-004 (EPA 1974). This report, commonly referred to as the “levels document,” contains goals for noise levels affecting residential land use of a day-night average sound level (L_{dn}) less than 55 A-weighted decibels (dBA) for exterior levels and an L_{dn} less than 45 dBA for interior levels. The U.S. Department of Housing and Urban Development Noise Guidelines (HUD 1996), in Chapter 2, Section 51.101(a)(8) also recommends that exterior areas of frequent human use follow the EPA guideline of 55 L_{dn} . However, the same section of these guidelines indicates that a noise level of up to 65 dBA L_{dn} can be considered acceptable.

Occupational exposure to noise is regulated by Title 29 of the CFR, Section 1910.95, Occupational Noise Exposure, which in summary describes requirements of an employer for implementation of feasible administrative or engineering controls, personal protective equipment, and/or a hearing conservation program to protect employees against the effects of noise exposure when it exceeds an average of 90 dBA for an 8-hour period.

Federal Aviation Administration

The major parts of Title 14 of the CFR: Aeronautics and Space, Chapter I: Federal Aviation Administration (FAA), Department of Transportation, Subchapter C (U.S. National Archives and Records Administration 2008–2009) were reviewed for applicability to the proposed use of aircraft; specifically of interest to this noise study are the reference noise levels from fixed-wing and rotary-wing delivery platforms under consideration and the minimum relative altitudes that they may fly when used for designated Proposed Program activities.

Pertinent sections of 14 CFR are cited and discussed next.

Part 36: Noise Standards: Aircraft Type and Airworthiness Certification

Noise data from aircraft power plants, propellers, and combinations of each by aircraft type are well documented because each aircraft type must be certified by the FAA under Part 36 before use by general and commercial aviation.

The primary aircraft proposed for use under the Proposed Program is a Beechcraft A90. This aircraft make, model, engines, and propellers, as a system, was certified by the FAA in the 1960s. Noise levels were recorded for three configurations: takeoff, normal cruise, and landing, at locations specified in the regulation. Other aircraft under consideration for use in the Proposed Program include a Fletcher FU-24A and Robinson R-44.

Part 91: Flight Operations

Elements of Part 91 are provided here as a reference. Altitude limitations governing agricultural operations are stated in Part 137, Agricultural Operations.

Fixed-wing aircraft not operating under an Instrument Flight Rules, emergencies, during takeoff or landing, or Part 137 are required to maintain the altitudes listed in Section 91.119—Minimum Safe Altitudes: General (a)–(d). Section 91.119 (a), (b), and (c) are provided below. Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(a) Anywhere. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.

(b) Over congested areas. Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

(c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

Section 137.49 – Operations over Other than Congested Areas

Notwithstanding Part 91 of this chapter, during an actual dispensing operation, including approaches, departures, and turnarounds reasonably necessary for the operation, an aircraft may be operated (other than over congested areas) below 500 feet above the

surface and closer than 500 feet to persons, vessels, vehicles, and structures, if the operations are conducted without creating a hazard to persons or property on the surface.

Federal Transit Administration Guidelines

Noise

The Federal Transit Administration (FTA) has published guidance for assessment of noise and vibration impacts for transit projects, including construction activity (FTA 2006). Although the Proposed Program is not transit-related, the FTA guidelines provide a widely accepted method for analyzing noise and vibration impacts specifically related to mechanical equipment that may be used for Statewide Program activities. The FTA has developed three “sensitive” land use categories to evaluate the compatibility of predicted noise levels, as described below and also provided in Table N-6-1.

- Category 1 includes land where quiet is an essential element, such as outdoor amphitheaters.
- Category 2 includes residences where people sleep.
- Category 3 includes institutional buildings where quiet is important, such as schools, libraries, and churches.

Categories 1 and 3 use the hourly equivalent sound level (L_{eq}), whereas Category 2 uses L_{dn} . Such criteria recognize the heightened community annoyance caused by late-night or early-morning operations, and respond to the varying sensitivities of communities to projects under different ambient noise conditions. The noise criteria are to be applied outside of building locations for residential land use and at the property line for parks and other significant outdoor use.

The applicable noise criteria in this context, as shown in Table N-6-2, are both relative to and vary with the existing ambient sound environment that a receiving category is experiencing.

As the existing level of ambient noise increases, the allowable level of transit noise decreases, but the total community noise exposure is allowed to increase at a reduced rate. This accounts for the unexpected result when noise exposure that is less than the existing noise exposure can still cause an impact. This is clearer from the examples given in Table N-6-2, which indicate the level of noise allowed for different existing levels of exposure.

Table O.6-1. Land Use Categories and Metrics for Transit Noise Impact Criteria

Land Use Category	Noise Metric ¹ (dBA)	Land Use Category
1	Outdoor $L_{eq}(h)^2$	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use.
2	Outdoor L_{dn}	Residences and buildings where people normally sleep. This category includes homes and hospitals, where nighttime sensitivity to noise is

Land Use Category	Noise Metric ¹ (dBA)	Land Use Category
		assumed to be the utmost importance.
3	Outdoor $L_{eq}(h)$ ²	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches, where it is important to avoid interference with such activities as speech, meditation, and concentration. Buildings with interior spaces where quiet is important, such as medical offices, conference rooms, recording studios, and concert halls fall into this category, as do places for meditation or study associated with cemeteries, monuments, and museums. Certain historical sites, parks, and recreational facilities also are included.

Notes:

Onset-rate adjusted sound levels (Leq, Ldn) are to be used where applicable.

L_{eq} for the noisiest hour of transit-related activity during hours of noise sensitivity.

dBA = A-weighted decibels; L_{dn} = day-night sound level, dBA; $L_{eq}(h)$ = equivalent sound level for a 1-hour period, dBA

Source: FTA 2006

Table O.6-2. Noise Impact Criteria Effect on Cumulative Noise Exposure

Existing Noise Exposure	L_{dn} or L_{eq} in dBA (rounded to nearest whole decibel)		
	Allowable Noise Exposure	Allowable Combined Total Noise Exposure	Allowable Noise Exposure Increase
45	51	52	7
50	53	55	5
55	55	58	3
60	57	62	2
65	60	66	1
70	64	71	1
75	65	75	0

Notes:

dBA = A-weighted decibels; Ldn = Day-Night Sound Level, dBA; Leq = Equivalent Sound Level, dBA

Source: FTA 2006

Vibration

Summarized in Table N-6-3, FTA guidance indicates groundborne vibration impact levels associated with three categories of receiver sensitivity (that resemble those previously described for noise) as they pertain to human annoyance.

Table O.6-3. Groundborne Vibration Impact Criteria - Human Annoyance

Land Use Category	Velocity in Decibels (VdB) (re: 1 micro-inch/second)		
	Frequent Events ¹	Occasional Events ²	Infrequent Events ³
<i>Category 1:</i> Buildings where Vibration Interferes with Interior Operations	65 ⁴	65 ⁴	65 ⁴
<i>Category 2:</i> Residences and Buildings where People Normally Sleep	72	75	80
<i>Category 3:</i> Institutional Land Uses with Primarily Daytime Usage	75	78	83

Notes:

1. "Frequent Events" is defined as more than 70 vibration events of the same source per day.
2. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.
3. "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day.
4. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration-sensitive manufacturing or research would require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the heating, ventilating, and air conditioning systems and stiffened floors.

Source: FTA 2006

In Table N-6-4, FTA guidance indicates groundborne vibration impact levels associated with four building categories as they pertain to risk of building damage.

Table O.6-4. Groundborne Vibration Impact Criteria - Building Damage Risk

Building Category	Peak Particle Velocity (inches per second)	VdB (re: micro-inches/second)
<i>Category 1:</i> Reinforced-Concrete, Steel or Timber (no plaster)	0.5	102
<i>Category 2:</i> Engineered Concrete and Masonry (no plaster)	0.3	98
<i>Category 3:</i> Non-Engineered Timber and Masonry	0.2	94
<i>Category 4:</i> Extreme Susceptibility to Vibration Damage (e.g., historic structures)	0.12	90

Source: FTA 2006

O.6.2 State Codes and Agencies***California Building Code, Title 24***

Title 24, Part 2, Section 1207 of the California Building Code establishes a uniform minimum noise insulation performance standard to protect persons within hotels, motels, dormitories, apartment houses and dwellings other than detached single-family dwellings from the effects of excessive noise, including hearing loss or impairment and interference with speech and sleep. Title 24 states that interior noise levels attributable to exterior

sources are not to exceed 45 decibels in any habitable room (California Building Code 2010). The noise metric must be either the L_{dn} or the community noise equivalent level, consistent with the noise element of the local general plan.

California Department of Transportation, Division of Aeronautics

The Division of Aeronautics administers noise regulation and land use planning laws that foster compatible land use around airports and encourages environmental mitigation measures to lessen noise caused by aviation. The Aeronautics Act (Public Utilities Code Section 21001 et seq.) is the foundation for the California Department of Transportation's aviation policies.

O.6.3 Local Laws, Plans, Policies, and Regulations

Table N-6-5 summarizes existing noise requirements and guidelines found in noise ordinances and general plans (i.e., noise elements) from all California counties with respect to anticipated Proposed Program noise-producing activities located on unincorporated county land. Proposed Program activities also may occur within municipalities, such as an eradication project conducted in a residential area¹, in which case a local enforceable noise ordinance and/or general plan noise element may apply, and if so, could be identified (e.g., by online search). The results of such a search, like the one conducted to produce Table N-6-5, most likely would yield one of the following with respect to agricultural or other activities that would reasonably describe Proposed Program activities:

- **None found**—Noise regulation, policy, or guidelines may exist, but they do not pertain to the anticipated Proposed Program activities, or the language defers to county requirements and guidance.
- **Exempt**—Agricultural and/or pest control processes, which some Proposed Program activities may relate to or be categorized under, are specifically exempted.
- **Quantitative** (absolute, relative or both)—Either noise thresholds apply to Proposed Program noise or the combined ambient of pre-Proposed Program ambient and the added Proposed Program noise; or, allowable increases over existing ambient noise that result from the added Proposed Program noise; or, such as the example of Ventura County, shown in Table N-6-5, for both types of limits may apply.
- **Qualitative**—No quantitative levels exist, but noise is characterized as a potential nuisance that needs to be addressed on a case by case basis, or is subject to review and judgment by a city administrator.

The search also may yield terms for a noise permit, waiver, or variance application, which could be important if the activity itself (regardless of noise level) may be prohibited (or allowed) during certain time periods or under certain circumstances.

¹ Aerial spraying would not occur in residential areas without conducting additional tiered CEQA analysis and associated public review.

Table O.6-5. Summarized Requirements of California's County Noise Ordinances

County(ies)	Applicable Noise Criteria (exterior unless otherwise noted)
Alameda, Alpine, Butte, Calaveras, Fresno, Glenn, Imperial, Kings, Lake, Merced, Napa, Orange, Placer, Plumas, Riverside, San Benito, San Luis Obispo, San Mateo, Santa Cruz, Stanislaus	None – Agricultural and/or pest control activities are exempt.
Sacramento, San Diego, San Bernardino	Agricultural and/or pest control activities are exempt during daytime.
Contra Costa, Del Norte, Humboldt, Inyo, Kern, Lassen, Marin, Mariposa, Modoc, Sonoma, Sutter, Tehama, Trinity	None found
El Dorado	Daytime and Nighttime: 60 dBA Leq, 70 dBA Lmax
Amador	Allowable increase above existing ambient: if Ldn = 55 dBA, +3 dBA Ldn; if Ldn = 60 dBA, +2 dBA Ldn; and, if Ldn = 65 dBA, +1 dBA Ldn Higher Leq values permitted for cumulative time periods < 1 hour duration
Colusa	55 dBA
Los Angeles	Within 500 feet of a residential zone, between 7 a.m. and 10 p.m., 75 dBA at 50 feet for powered equipment
Madera	Daytime: 70 dBA; Nighttime: 65 dBA
Mendocino	Nighttime: 50 dBA not exceed for more than one-half hour
Monterey	No equipment to exceed 85 dBA at 50 feet, unless 2,500 feet from any occupied dwelling unit
San Francisco	No equipment to exceed 80 dBA at 100 feet
San Joaquin, Santa Barbara, Siskiyou, Solano	“Right to farm” and/or “not a nuisance” (no quantitative criteria)
Santa Clara	Daytime: 55 dBA; Nighttime: 50 dBA
Shasta	Daytime: 55 dBA hourly; Nighttime: 50 dBA hourly
Tuolumne	65 dBA L _{dn} or community noise equivalent level at exterior use
Ventura	Daytime (6 a.m. to 7 p.m.): 55 dBA hourly or ambient + 3dBA, whichever is greater; Evening (7 p.m. to 10 p.m.): 50 dBA hourly or ambient + 3dBA, whichever is greater; and, Nighttime (10 p.m. to 6 a.m.): 45 dBA hourly or ambient + 3dBA, whichever is greater
Yolo	Daytime (6 a.m. to 6 p.m.): 80 dBA L _{eq} at site boundary, or 60 dBA L _{eq} at any off-site residences or noise-sensitive land uses; Nighttime (6 p.m. to 6 a.m.): 65 dBA L _{eq} at site boundary
Yuba	Single-family residential: 60 (day), 55 (night); Multi-family residential: 65 (day), 60 (night)

Notes:

dBA = A-weighted decibels; Ldn = Day-Night Sound Level, dBA; Leq = Equivalent Sound Level, dBA

O.7 Water Quality Regulatory Setting

The federal, State, and local laws, ordinances, regulations, and standards related to water quality and relevant to the Proposed Program are discussed next.

O.7.1 Federal Laws, Regulations, and Standards

Clean Water Act and Associated Programs

The Federal Water Pollution Control Act, also known as the Clean Water Act (CWA), is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands (EPA 1977). The objective of the CWA "is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The U.S. Environmental Protection Agency (EPA) defines water quality as "the biological, chemical and physical conditions of a waterbody...[and] a measure of the waterbody's ability to support beneficial uses," and has established specific water quality criteria for various pollutants, as well as an anti-degradation policy (EPA 2011a).

EPA is responsible for implementing the CWA, although sections of the act are implemented by other federal agencies under EPA's oversight, such as Section 404 dealing with discharge of dredged and fill material into water. EPA also has the option to delegate implementation of certain sections to a state. In California, the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs) administer various sections of the CWA.

The key sections pertaining to water quality regulation for the Proposed Program are Sections 402 and 303.

Section 402

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES). Under Section 402, a permit is required for point source discharges of pollutants into navigable waters of the United States (other than dredge or fill material). In California, the NPDES Permit program is administered by the SWRCB. Permits contain specific water quality-based limits and establish pollutant monitoring and reporting requirements. Discharge limits in NPDES Permits may be based on water quality criteria designed to protect designated uses of surface waters, such as recreation or supporting aquatic life. The various NPDES Permits that may apply to the Proposed Program are discussed below.

NPDES PERMIT FOR BIOLOGICAL AND RESIDUAL PESTICIDE DISCHARGES

The SWRCB has adopted an NPDES Permit (Water Quality Order No. 2011-0004-DWQ, General Permit No. CAG990007) for biological and residual pesticide discharges to waters of the United States from spray applications (SWRCB 2011). CDFA is listed as the discharger

with full coverage, and the U.S. Department of Agriculture (USDA) is covered for specified biological controls only. The permit addresses point source discharges of the following biological and residual pesticides: acetamiprid, aminopyralid, *Bacillus thuringiensis* subsp. *kurstaki* (Btk), carbaryl, chlorsulfuron, clopyralid, cyfluthrin, dinotefuran, glyphosate, imazapyr, imidacloprid, malathion, naled, nuclear polyhedrosis virus (NPV), pheromones, pyrethrins, Spinosad A and D, triclopyr butoxyethyl ester (BEE) and triclopyr triethylamine salt (TEA). This does not include all of the active ingredients that may be used under the Proposed Program. Most notably it does not contain any organophosphate pesticides, such as dichlorvos (DDVP). Activities covered by the permit include control of invasive insect and weed species.

To obtain authorization under the permit, dischargers must submit a signed Notice of Intent (NOI), pay an application fee, and submit a Pesticide Application Plan (PAP). The PAP must be posted for a 30-day comment period on the SWRCB website, and a Notice of Applicability, which specifies the pesticide products that may be used, must be issued for the permit coverage to be effective. In addition, applicators of a pesticide designated as a restricted material must be licensed by the California Department of Pesticide Regulation (CDPR) or must work under the supervision of a licensed professional. (SWRCB 2011)

This permit is applicable for activities carried out by CDFA or its contractors, but it is not valid for pesticides used by individual growers in response to a CDFA quarantine. The main activities carried out by CDFA or its contractors not covered by this permit are related to exotic fruit flies, using pesticides that contain DDVP, an organophosphate.

Furthermore, this permit is only applicable when discharges occur to a surface water. CDFA prefers to avoid any discharge to waterbodies through implementation of best management practices (BMPs) specified in the permit, and uses this permit when it is not feasible to avoid discharge to surface water despite the implementation of BMPs. All pesticides applied by CDFA under the NPDES Permit for Biological and Residual Pesticide Discharges are done in accordance with the permit requirements, including implementing the BMPs specified in the permit, provided in Appendix C of this Draft PEIR.

NPDES PERMIT FOR INDUSTRIAL DISCHARGES

The SWRCB also has adopted a permit (Water Quality Order 97-03-DWQ) for regulation of stormwater discharges associated with industrial activity (General Industrial Permit). Water Quality Order 97-03-DWQ has expired but remains in effect until a new General Industrial Permit is adopted. This permit applies to manufacturing facilities, mining/oil/gas facilities, hazardous waste treatment, storage, and disposal facilities, landfills, land application sites, and open dumps that receive industrial waste, recycling facilities, steam electric-generating facilities, transportation facilities that conduct any type of vehicle maintenance, sewage treatment plants, and “light industry” facilities where industrial materials, equipment, or activities are exposed to stormwater.

Similar to other NPDES general permits, a discharger must submit a signed NOI, accompanied by details on how the proposed discharge will meet effluent limitations, will not impair receiving waterbodies, how stormwater may be captured and treated (as applicable), and the discharger must prepare and implement a Stormwater Pollution Prevention Program (SWPPP) and implement a Mitigation Monitoring Program. The

General Industrial Permit may be applicable to certain facilities where Proposed Program activities take place, such as landfills where host material may be buried or otherwise properly disposed.

NPDES PERMITS FOR MUNICIPAL DISCHARGES

The Municipal Storm Water Permitting Program regulates stormwater discharges from municipal separate storm sewer systems (MS4s). Stormwater is runoff from rain or snow melt that runs off surfaces such as rooftops, paved streets, highways, or parking lots, and can carry with it pollutants such as oil, pesticides, herbicides, sediment, trash, bacteria, and metals. This runoff ultimately may reach surface waterbodies.

The municipal or urban areas addressed by this program commonly include large areas of impervious surface. These large impervious surfaces can contribute to increased pollutant loads, with results such as turbid water, nutrient enrichment, bacterial contamination, increased temperature, and accumulation of trash. In addition, these impervious areas can contribute to an increase in runoff timing, volume, and velocity, and streams may be affected by streambed scouring, sedimentation, and loss of aquatic and riparian habitat.

MS4 permits were issued in two phases. Under Phase I, which started in 1990, the RWQCBs adopted NPDES Permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities. Most of these permits have been issued to groups of co-permittees, encompassing entire metropolitan areas. The Phase I MS4 permits require the discharger to develop and implement a Storm Water Management Plan/Program with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the CWA. The management programs specify management measures used to address various program areas. These program areas include: public education and outreach; illicit discharge detection and elimination; construction and post-construction; and good housekeeping for municipal operations. In general, medium and large municipalities also are required to conduct monitoring.

Under Phase II, the SWRCB issued a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2003-0005-DWQ) in 2003, to provide permit coverage for smaller municipalities (population less than 100,000), including non-traditional Small MS4s, which are facilities such as military bases, public campuses, and prison and hospital complexes. The most recent Phase II Small MS4 General Permit was adopted in 2013. The Phase II Small MS4 General Permit addresses Phase II permittees statewide.

Proposed Program activities may occur in locations with permit coverage under the MS4 program, and as such, Proposed Program activities may be subject to the requirements of such permits.

Section 303

Section 303 of the CWA (as well as the State-level Porter-Cologne Water Quality Control Act [Porter-Cologne Act], discussed further below) requires that California adopt water quality standards. In addition, under CWA Section 303(d), states are required to identify "impaired waterbodies" (those not meeting established water quality standards), identify the

pollutants causing the impairment, establish priority rankings for waters on the list, and develop a schedule for development of control plans to improve water quality. EPA then approves the state's recommended list of impaired waters, or adds to and/or removes waterbodies from the list. Each RWQCB must update the Section 303(d) list every 2 years. Waterbodies on the list have no further assimilative capacity for the identified pollutant, and the Section 303(d) list identifies priorities for development of pollution control plans for each listed waterbody and pollutant.

The pollution control plans triggered by the CWA Section 303(d) list are called Total Maximum Daily Loads (TMDLs). The TMDL is a "pollution budget," designed to restore the health of a polluted waterbody and provide protection for beneficial uses. The TMDL also contains the target reductions needed to meet water quality standards and allocates those reductions among the pollutant sources in the watershed (i.e., point sources, nonpoint sources, and natural sources) (40 Code of Federal Regulations [CFR] 130.2). A TMDL is unique to a specific waterbody and its surrounding pollutant sources, and is not applicable to be used for other waterbodies.

The current effective EPA-approved 303(d) list for waterbodies in California is the 2008–2010 list, approved on November 12, 2010 (see Table 6.7-1 in the Draft PEIR for the number of waterbodies listed as impaired by region and pollutant type). For the Proposed Program, activities that may result in discharge of a contaminant to waterbodies listed as impaired for that contaminant would be of particular concern, because of the lack of the waterbody's assimilative capacity for that contaminant.

National Toxics Rule and California Toxics Rule

EPA issued the National Toxics Rule (NTR) in 1992. The goal of the NTR is to establish numeric criteria for specific priority toxic pollutants, to ensure that all states comply with the requirements in Section 303 of the CWA. A total of 126 priority toxic pollutants currently are specified in the NTR.

In 2000, EPA promulgated the California Toxics Rule (CTR), containing additional numeric water quality criteria for priority toxic pollutants for waters in the state. For California, the criteria in the CTR supplements the criteria in the NTR (i.e., the CTR does not change or supersede any criteria previously promulgated for California in the NTR, but it does include them in the table of criteria, for convenience). (EPA 2009)

The Proposed Program contains only a few of the chemicals listed on the NTR and CTR. The only active ingredient is methyl bromide, and inert ingredients include naphthalene and ethylbenzene. Inert chemicals are chemicals contained in the pesticide that are not part of the active ingredient and are present in a formulation for reasons other than pesticidal activity, such as solvents.

Federal Anti-Degradation Policy

The federal anti-degradation policy includes minimum criteria to protect existing beneficial uses, ensure the level of water quality is offset to maintain existing uses, and prevent degradation of quality water. This policy stipulates that states adopt at a minimum the following provisions and allows states to adopt even more stringent rules (40 CFR 131.12):

(1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

(2) Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the state finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the state's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.

(3) Where high quality waters constitute an outstanding National resource, such as waters of National and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

The Proposed Program would be required to follow this policy.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) is intended to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and groundwater wells that serve more than 25 individuals. The goal of the SDWA is to ensure that drinking water is safe for human consumption and will not have adverse health effects on the typical person who drinks water. Under the SDWA, EPA has set drinking water standards for 90 chemical, microbiological, radiological, and physical contaminants (EPA 2011b). Of the contaminants regulated by the SDWA, glyphosate, xylenes, and ethylbenzene are included in the Proposed Program.

O.7.2 State Agencies, Laws, and Programs

Porter-Cologne Water Quality Control Act

In January 1970, The Porter-Cologne Act ratified the federal CWA on the State level, establishing the SWRCB and dividing California into nine regions, each overseen by a RWQCB. The Act established regulatory authority over "waters of the state," defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (California Water Code Section 13050). More specifically, the SWRCB and its nine RWQCBs have jurisdiction over any surface or groundwater to which a beneficial use may be assigned. The Act also assigned responsibility for implementing CWA Sections 303, 401, and 402 to the SWRCB and RWQCBs.

The Porter-Cologne Act requires the RWQCBs to adopt water quality control plans (Basin Plans) for the protection of surface water and groundwater quality. The Act also authorizes the RWQCBs to issue waste discharge requirements (WDRs), including NPDES Permits. Any activity, discharge, or proposed activity or discharge from a property or business that could affect California's surface, coastal, or groundwater will (in most cases) be subject to a WDR. The California Water Code authorizes the SWRCB and the RWQCBs to conditionally waive WDRs if this is in the public interest. Discharges made under the Proposed Program may be subject to WDR requirements. (California Code of Regulations, Title 22, Division 4, Chapter 15)

Title 22, Division 4, Chapter 15, of the California Code of Regulations establishes parameters for safe drinking water throughout the state. Table N-7-1 lists the chemicals which may be used under the Proposed Program, for which maximum contaminant levels have been established.

Table O.7-1. Applicable Maximum Contaminant Levels for Chemicals in Drinking Water

Chemical Name	Maximum Contaminant Level (milligram per liter)
Glyphosate	0.7
Xylenes	1.750

Source: Title 22 CCR Section 64444

Policy for Implementation of Toxics Standards for Inland Surface Waters Enclosed Bays and Estuaries of California

In 1994, the SWRCB and EPA agreed to a coordinated approach for addressing priority toxic pollutants in inland surface waters, enclosed bays, and estuaries of California. In March 2000, the SWRCB adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, commonly referred to as the State Implementation Policy. The State Implementation Policy implements NTR and CTR criteria, and applicable Basin Plan objectives, for toxic pollutants. When the RWQCBs issue any permit allowing the discharge of any toxic pollutant(s) pursuant to the CWA or the Porter-Cologne Act, the permit's promulgation and implementation must be consistent with the State Implementation Policy's substantive or procedural requirements. Any deviation from the State Implementation Policy requires the concurrence of EPA if the RWQCBs are issuing any permit pursuant to the CWA. Consistency with the State Implementation Policy occurs when water permits are issued for Proposed Program activities.

California Anti-Degradation Policy

The SWRCB enacted the Statement of Policy with Respect to Maintaining High Quality of Waters in California, which is also referred to as the California Anti-Degradation Policy. This policy incorporated the federal anti-degradation policy and is used to ensure that high quality water is maintained and limits the discharge of pollutants into high quality water in the state (Resolution Number 68-16, SWRCB 1968), as follows:

- (1) Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.
- (2) Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and

(b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

The Proposed Program would be required to follow this policy. The Proposed Program does not expect or anticipate any violation of this policy.

California Pesticide Management Plan

The California Pesticide Management Plan is a joint effort between CDPR, county agricultural commissioners, the SWRCB, and the RWQCBs to protect water quality from pesticide pollution. To reduce the possibility of pesticides entering groundwater or surface water, a four-stage approach was designed by CDPR and the SWRCB. Stage 1 involves educational outreach to the community to prevent pesticide contamination in water supplies. Stage 2 occurs after pesticides are detected in a water supply, and an appropriate response is selected that is safe and site-specific. If Stage 2 is not effective, then Stage 3 tactics are employed, which include implementing restricted material use permit requirements, regulations, and other regulatory authority by CDPR and the county agricultural commissioners. In addition, the SWRCB and RWQCBs employ Stage 4 and a variety of water quality control planning programs and other regulatory measures to protect water quality as necessary. (CDPR 1997) The Proposed Program would be subject to Stage 3 and 4 tactics that may restrict the use of pesticides used in the management activities.

Surface Water Protection Program

Implementation of the California Pesticide Management Plan for surface water protection is done by CDPR through its Surface Water Protection Program (SWPP), under a Management Agency Agreement with the SWRCB. The SWPP is designed to characterize pesticide residues, identify contamination sources, determine flow of pesticides to surface water, and prepare site-specific mitigation measures. The SWPP addresses both agricultural and nonagricultural sources of pesticide residues in surface waters. It has preventive and response components that reduce the presence of pesticides in surface waters. The preventive component includes local outreach to promote management practices that reduce pesticide runoff. Prevention also relies on CDPR's registration process, in which potential adverse effects to surface water quality, and particularly those in high-risk situations are evaluated. The response component includes mitigation options to meet water quality goals, recognizing the value of self-regulating efforts to reduce pesticides in surface water as well as regulatory authorities of CDPR, the SWRCB, and the RWQCBs. (CDPR 1997, 2010). The Proposed Program management activities would be affected during re-registration of pesticides by CDPR and would require implementation of any new mitigation options for meeting water quality goals.

Pesticide Contamination Prevention Act

The Pesticide Contamination Prevention Act (PCPA), approved in 1985, was developed to prevent further pesticide contamination of groundwater from legal agricultural pesticide applications. Pesticide pollution is defined for PCPA as "the introduction into the groundwaters of the state of an active ingredient, other specified product, or degradation product of an active ingredient of an economic poison above a level, with an adequate margin of safety that does not cause adverse health effects." CDPR has compiled a list of pesticide active ingredients on the

Groundwater Protection List that have the potential to pollute groundwater. These various pesticides are reviewed and their use is modified when found in groundwater (CDPR 1997). The following active ingredients that may be used under the Proposed Program are listed on the Groundwater Protection List (CDPR 2013): acephate, carbaryl, diazinon, dinotefuran, imidacloprid, malathion, and thiamethoxam.

Groundwater Protection Program

Implementation of PCPA is done through CDPR's Groundwater Protection Program, which is coordinated with the SWRCB under the California Pesticide Management Plan. The Groundwater Protection Program evaluates and samples pesticides to determine whether they may contaminate groundwater, identifies areas sensitive to pesticide contamination, and develops mitigation measures to prevent the movement of pesticides. CDPR may adopt regulations to carry out these mitigation measures. CDPR conducts four groundwater monitoring programs. The first is to monitor whether pesticides on the Groundwater Protection List with the potential to pollute have been found in groundwater. The second type is four-section monitoring, which monitors wells in the vicinity of a contaminated well. The third monitoring type is sensitive area monitoring that identifies areas sensitive to pesticide pollution. The fourth type is investigative monitoring, used to identify and understand the factors that affect pesticide movement into groundwater. (CDPR 1997)

O.7.3 Local/Regional Laws and Plans

The Porter-Cologne Act created nine RWQCBs in California. The RWQCB boundaries are based on watersheds, and water quality requirements are based on differences in climate, topography, geology, and hydrology for each watershed. Each RWQCB sets standards, issues permits, determines compliance with requirements, and takes enforcement actions to make water quality decisions for its region.

Basin Plans

Each RWQCB must adopt a Basin Plan, intended to protect water quality in each of the state's nine regions. A Basin Plan is unique to each region and must identify beneficial uses, establish water quality objectives for the reasonable protection of the beneficial uses, and establish a program of implementation for achieving the water quality objectives. The California Anti-Degradation Policy is incorporated into each of the basin plans (SWRCB 2011). Table N-7-2 shows water quality standards from the various Basin Plans that are applicable to the Proposed Program.

Page left intentionally blank.

Table O.7-2. Applicable RWQCB Basin Plan Water Quality Standards

Water Quality Standard	Regional Water Quality Control Board, by Number								
	1	2	3	4	5	6	7	8	9
Waters not discolored	X	X	X	X	X	X	X	X	X ⁵
No impaired tastes/odors	X	X	X	X	X	X	X	X	X ⁶
No oils/greases/visible film on surface	X	X	X	X	X	X	X	X	X
No acute/chronic toxicity of substances in waters	X	X	X	X	X	X		X	
No detectable levels of chlorinated hydrocarbons where concentrations are currently undetectable			X		X ¹				
Pesticide shall not exceed lowest levels technically, economically feasible					X				
No discharge of pesticide wastes from cleaning/ manufacturing/ processing operations								X ⁴	
No bioaccumulation of toxins in humans/aquatic life/sediment	X	X	X	X	X	X		X	
Chlorpyrifos					0.025 µg/L; one hour average for acute circumstances and 0.015 µg/L; four day average for chronic circumstances ²				
Diazinon					0.016 µg/L; one hour average for acute circumstances and 0.010 µg/L; four day average for chronic circumstances concentrations ²				

Water Quality Standard	Regional Water Quality Control Board, by Number								
	1	2	3	4	5	6	7	8	9
Glyphosate (less than 0.7 mg/L)	X	X	X	X	X	X			X
Naphthalene (less than 0.25 µg/L)						X ³			
Phenol (less than 1.0 µg/L)			X						X
Xylenes (less than 1.750 mg/L)	X	X	X	X	X	X ³			X

Notes:

1. In waters designated as “COLD” (waters that support cold water ecosystems), the Tulare Basin Plan specifically mentions that total identifiable chlorinated hydrocarbon pesticides shall not be present at detectable concentrations.
2. These maximum allowable concentrations are not to be exceeded more than once in a 3-year period.
3. The direct or indirect discharge of chlorpyrifos or diazinon into the Sacramento and Feather Rivers is prohibited if, in the previous measurement year (e.g. July 2012–June 2013), any exceedance of the chlorpyrifos or diazinon water quality objectives or loading capacities occurred (unless the discharge is subject to a waiver of waste discharge requirements implementing the chlorpyrifos or diazinon water quality objectives and load allocations for the chemicals in the Sacramento and Feather Rivers, or is governed by individual or general waste discharge requirements. Also, these prohibitions apply only to dischargers causing or contributing to the exceedance of the water quality objective or loading capacity).
4. The direct or indirect discharge of chlorpyrifos or diazinon into the San Joaquin River is prohibited during the dormant season (December 1 through March 1) if any exceedance of the chlorpyrifos or diazinon water quality objectives or loading capacities occurred during the previous dormant season. Also, direct or indirect discharge of chlorpyrifos or diazinon into the San Joaquin River is prohibited during the irrigation season (March 2 through November 30) if any exceedance of the chlorpyrifos or diazinon water quality objectives or loading capacities occurred during the previous irrigation season. (These prohibitions apply only to dischargers who discharge the pollutant causing or contributing to the exceedance of the water quality objective or loading capacity; and dischargers located in sub-areas which do not meet their allocations. The prohibitions do not apply if the discharge of chlorpyrifos or diazinon is subject to a waiver of waste discharge requirements implementing the chlorpyrifos or diazinon water quality objectives and load allocations for chlorpyrifos or diazinon in the San Joaquin River, or is governed by individual or general waste discharge requirements.)
5. The direct or indirect discharge of chlorpyrifos or diazinon into the Delta Waterways is prohibited during the dormant season (December 1 through March 1) if any exceedance of the chlorpyrifos or diazinon water quality objectives or loading capacities occurred during the previous dormant season. Also, direct or indirect discharge of chlorpyrifos or diazinon into the Delta Waterways is prohibited during the irrigation season (March 2 through November 30) if any exceedance of the chlorpyrifos or diazinon water quality objectives or loading capacities occurred during the previous irrigation season. (These prohibitions do not apply in the following situations if the discharge of chlorpyrifos or diazinon is subject to a waiver of waste discharge requirements implementing the chlorpyrifos or diazinon water quality objectives and load allocations for chlorpyrifos or diazinon in the Delta Waterways, or is governed by individual or general waste discharge requirements, nor do they apply to direct or indirect discharges to the Sacramento or San Joaquin Rivers upstream from the legal boundary of the Delta, which is defined in Section 12220 of the California Water Code. Furthermore, these prohibitions only apply to dischargers causing or contributing to

Water Quality Standard	Regional Water Quality Control Board, by Number								
	1	2	3	4	5	6	7	8	9

the exceedance of the water quality objective or loading capacity.)

6. In the Mojave Hydrologic Unit, the concentration of xylene outside of project boundaries shall not exceed the detection levels for the compounds at any time, and the concentration of naphthalene outside of project boundaries shall not exceed 25 µg/L at any time.
7. The Water Quality Control Plan for the Colorado River Basin also provides information for specific areas within the Regional boundary. In the case of the New River, waters of the River shall be free of pesticides in concentrations which could cause harmful effects to human life, fish, and wildlife. Herbicide spraying in irrigation canals must be conducted in coordination with the county agricultural commissioner, California Department of Fish and Wildlife, and the California Department of Health Care Services/California Department of Public Health. In canals used for domestic supply, no herbicides shall be applied in concentrations which are toxic or otherwise harmful to humans; also no herbicides shall be applied in concentrations that are toxic or otherwise harmful to aquatic life, except that herbicides may be used in cases where the herbicide only affects the targeted species, is a legally registered product, and is used in accordance with label requirements and in accordance with all applicable laws and regulations.
8. The RWQCB has established a threshold of 20 Color Units for inland surface waters, which shall not be exceeded more than 10 percent of the time during any 1-year period.
9. Inland surface waters shall not contain any odors for listed waterbodies in the Plan (Table 3-2 in the San Diego Basin Water Quality Control Plan); for all others, the secondary drinking water standard for odor is three odor units.

Sources:

- Region 1: North Coast Regional Water Quality Control Board 2011
- Region 2: San Francisco Bay Regional Water Quality Control Board 2013
- Region 3: Central Coast Regional Water Quality Control Board 2011
- Region 4: Los Angeles Regional Water Quality Control Board 1994
- Region 5: Central Valley Regional Water Quality Control Board 2011
- Region 6: Lahontan Regional Water Quality Control Board 2012
- Region 7: Colorado River Basin Regional Water Quality Control Board 2006
- Region 8: Santa Ana Regional Water Quality Control Board 2011
- Region 9: San Diego Regional Water Quality Control Board 2012

Page left intentionally blank.

Irrigated Lands Regulatory Program (Ag Waivers)

To prevent agricultural discharges from impairing the waters that receive these discharges, the Irrigated Lands Regulatory Program (ILRP) regulates discharges from irrigated agricultural lands. This program also is referred to as Ag Waivers. This is done by issuing WDRs or conditional waivers of WDRs (Orders) to growers. Discharges from agricultural lands include irrigation return flow, flows from tile drains, and stormwater runoff. These discharges can affect water quality by transporting pesticides and other pollutants. To control and assess the effects of discharges from irrigated agricultural lands, the Los Angeles, Central Coast, Central Valley, and San Diego RWQCBs have adopted comprehensive conditional waivers. The Colorado River Basin and North Coast RWQCBs have adopted Conditional Prohibitions as a TMDL implementation plan incorporated into their respective Basin Plans. The Santa Ana RWQCB is in the initial phase of developing an irrigated lands regulatory program. The San Francisco Bay and Lahontan RWQCBs have no immediate plans to adopt waivers for agricultural discharges, but may do so eventually to implement TMDLs.

Because of the differences in how the RWQCBs address dealing with discharges from irrigated lands, the Ag Waiver process differs, depending on which RWQCB has jurisdiction over the land. (SWRCB 2014) Each RWQCB must evaluate its program every five years. The Ag Waivers typically requires growers to obtain education on water quality issues, participate in monitoring plans, and implement BMPs that are applicable to their region and farm size.

The Irrigated Lands Regulatory Program is applicable to agricultural operations that may conduct activities under the Proposed Program. Individual growers subject to quarantines will be required to comply with regulations of irrigated agricultural lands when conducting any pesticide applications in response to quarantines.

O.8 Energy Regulatory Setting

Federal and State agencies regulate energy consumption through various policies and programs. Federal agencies such as the U.S. Department of Energy, U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA) affect energy consumption in the United States by setting fuel economy standards and energy efficiency requirements for consumer appliances.

O.8.1 Federal Regulations

Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 required that all vehicles sold in the U.S. meet certain fuel economy goals. The act gave the National Highway Traffic and Safety Administration (NHTSA, part of DOT) authority to establish additional vehicle standards and revise existing standards. NHTSA set the fuel economy standard for new passenger cars at 27.5 miles per gallon (mpg) in 1990, and 20.7 mpg for new light trucks in 1996. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) currently are not subject to fuel economy standards. The Corporate Average Fuel Economy (CAFE) program, administered by EPA, was created to determine vehicle manufacturers'

compliance with the fuel economy standards. EPA calculates a value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information generated under the CAFE program, DOT is authorized to assess penalties for noncompliance.

Renewable Fuel Standard Program

The national Renewable Fuel Standard (RFS) program was developed to increase the volume of renewable fuel that is blended into transportation fuels. As required by the Energy Policy Act of 2005, EPA finalized RFS program regulations, effective September 1, 2007. The Energy Independence and Security Act of 2007 increased and expanded this standard. By 2022, 36 billion gallons of renewable fuel must be used per year. A certain percentage of the renewable fuel blended into transportation fuels must be cellulosic biofuel, biomass-based diesel, and advanced biofuel. Cellulosic biofuel is defined as any renewable fuel derived from cellulose, hemicellulose, or lignin that achieves a 60 percent greenhouse gas (GHG) emissions reduction. Biomass-based diesel is defined as a renewable transportation fuel, transportation fuel additive, heating oil, or jet fuel that meets the definition of either biodiesel or non-ester renewable diesel, and achieves a 50 percent GHG emissions reduction. If intended for use in a motor vehicle, it also must be registered with EPA as a motor vehicle fuel or fuel additive. Renewable fuel that is co-processed with petroleum is not considered biomass-based diesel. Advanced biofuel is defined as any renewable fuel, other than ethanol derived from corn that achieves a 50 percent GHG emissions reduction.

Each year, EPA determines the Renewable Volume Obligation (RVO) for parties required to participate in the RFS program. This standard is calculated as a percentage, by dividing the amount of renewable fuel (gallons) required by the RFS to be blended into gasoline for a given year by the amount of gasoline/transportation fuel expected to be used during that year. Any party that produces gasoline for use in the United States, including refiners, importers, and blenders (other than oxygenate blenders), is considered an obligated party under the RFS program. Parties that do not produce, import, or market fuels within the 48 contiguous states are exempt from the renewable fuel tracking program.

To facilitate and track compliance with the RFS, a producer or importer of renewable fuel must generate Renewable Identification Numbers (RINs) to represent renewable fuels, produced or imported by the entity on or after September 1, 2007, assigned by gallon or batch. Assigned RINs are transferred when ownership of a batch of fuel occurs, but not when fuel only changes custody. A trading program is in place to allow obligated parties to comply with the annual RVO requirements through the purchase of RINs. Obligated parties must register with EPA to participate in the trading program. For each calendar year, an obligated party must demonstrate that it has sufficient RINs to cover its RVO. RINs may be used only for compliance purposes in the calendar year that they are generated or the following year. Obligated parties must report their ownership of RINs to EPA's Office of Transportation and Air Quality on a quarterly and annual basis.

Corporate Average Fuel Economy

CAFE standards are federal regulations that are set to reduce energy consumed by on-road motor vehicles. On May 19, 2009, President Obama presented a new national fuel economy program that adopts uniform federal standards to regulate both fuel economy and GHG

emissions. Recently issued rules include fuel economy standards for both light- and heavy-duty vehicles. On September 15, 2011, EPA and NHTSA issued a final rule of Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles model years 2014 to 2018 (76 Federal Register [FR]. 57106), intended to achieve between a 10 and 20 percent increase in fuel economy, depending on vehicle class. On August 28, 2012, EPA and the NHTSA issued a joint Final rulemaking to establish 2017 through 2025 GHG emissions and CAFE standards for light-duty vehicles (77 FR 62624), with a fuel economy equivalent to 54.5 mpg.

O.8.2 State Regulations

California Environmental Quality Act

Appendix F of the CEQA Guidelines describes the energy conservation information and analyses that should be included in an EIR. Energy conservation is defined in terms of decreased reliance on natural gas and oil, decreased per capita energy consumption, and increased reliance on renewable energy sources. An EIR should include a discussion of potentially significant energy impacts of the proposed project, with emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

Integrated Energy Policy Report

The California Energy Commission (CEC) identifies emerging trends in energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy in the Integrated Energy Policy Report. The 2013 report discusses the need for increased energy efficiency, improved demand response efforts for electricity supply reliability, electricity supply including use of bioenergy and nuclear power, strategic transmission investment planning, use of natural gas, transportation energy trends, and climate change (CEC 2013).

Pavley Rule [Assembly Bill 1493]

In California, the Pavley Rule regulations for automobile efficiency are expected to reduce GHG emissions from California passenger vehicles by about 22 percent in 2012 model year vehicles and about 30 percent in 2016 model year vehicles, while improving fuel efficiency and reducing motorists' costs.

Low Carbon Fuel Standard

California's Low Carbon Fuel Standard (LCFS) program requires a reduction in the carbon intensity of transportation fuels that are sold, supplied, or offered for sale in the state by a minimum of 10 percent by 2020. The California Air Resources Board (CARB) regulations require transportation fuel producers and importers to meet specified average carbon intensity requirements for fuel. In the regulations, carbon intensity reductions are based on reformulated gasoline mixed with 10 percent corn-derived ethanol and low-sulfur diesel fuel. Liquefied petroleum gas (propane) is exempt from LCFS requirements, as are non-biomass-based alternative fuels that are supplied in California for use in transportation at an aggregated volume of less than 3.6 million gasoline gallon equivalents per year. Other exemptions apply for transportation fuel used in specific applications. The LCFS program allows producers and importers to generate, acquire, transfer, bank, borrow, and trade

credits. Fuel producers and importers that are regulated under the LCFS must meet quarterly and annual reporting requirements. (Title 17 California Code of Regulations, Section 95480–95490; Executive Order S-01-07, 2007; and California Health and Safety Code, 38500–38599).

Vehicle Acquisition and Petroleum Reduction Requirements

The California Department of General Services (DGS) is responsible for maintaining specifications and standards for passenger cars and light-duty trucks that are purchased or leased for State office, agency, and department use. These specifications include minimum vehicle emissions standards and encourage the purchase or lease of fuel-efficient and alternative fuel vehicles (AFVs). On an annual basis, DGS must compile information including the number of AFVs and hybrid electric vehicles acquired, the locations of the alternative fuel pumps available for those vehicles, and the total amount of alternative fuels used.

Vehicles the State owns or leases that are capable of operating on alternative fuel must operate on that fuel unless the alternative fuel is not available. In addition, the California State and Consumer Services Agency, in consultation with DGS and other appropriate State agencies, must develop, implement, and submit to the California Legislature and governor a plan to increase the state fleet's use of alternative fuels, synthetic lubricants, and fuel-efficient vehicles. This must be done by reducing or displacing the fleet's consumption of petroleum products by 20 percent by January 1, 2020, as compared to the 2003 consumption level. DGS also must do the following (Executive Order S-14-2009 and Public Resources Code, 25722.5–25722.9):

- Take steps to transfer vehicles between agencies and departments so that the most fuel-efficient vehicles are used and the least fuel-efficient vehicles are eliminated from the State's motor vehicle fleet;
- Submit annual progress reports to the California Department of Finance, related legislative committees, and the general public via the DGS website;
- Encourage other agencies to operate AFVs on the alternative fuel for which they are designed, to the extent feasible;
- Encourage the development of commercial fueling infrastructure at or near State vehicle fueling or parking sites; and
- Work with other agencies to incentivize and promote State employee use of AFVs through preferential or reduced-cost parking, access to electric vehicle charging, or other means, to the extent feasible.

Zero Emission Vehicle Promotion Plan

All state agencies must support and facilitate the rapid commercialization of zero emission vehicles (ZEVs) in California. In particular, CARB, the CEC, the Public Utilities Commission, and other relevant State agencies must work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership, to establish benchmarks for achieving targets for ZEV commercialization. These targets include:

- By 2015, all major metropolitan areas in California will be able to accommodate ZEVs and have infrastructure plans and streamlined permitting in place;
- By 2020, the State will have established adequate infrastructure to support one million ZEVs;
- By 2025, 1.5 million ZEVs will be on the road in California, and clean, efficient vehicles will displace 1.5 billion gallons of petroleum fuels annually; and
- By 2050, GHG emissions from the transportation sector will be 80 percent less than 1990 levels.

The ZEV promotion plan also directs the State fleet to increase the number of ZEVs in the fleet through gradual vehicle replacement. By 2015, ZEVs should make up at least 10 percent of fleet light-duty vehicle (LDV) purchases, and by 2020, at least 25 percent of fleet LDV purchases should be ZEVs. Vehicles with special performance requirements necessary for public safety and welfare are exempt from this requirement. (Executive Order B-16, 2012)

Tire Inflation Requirement

CARB enforces regulations to reduce GHG emissions from vehicles operating inefficiently with under inflated tires. These regulations apply to vehicles with a gross vehicle weight rating of 10,000 pounds or less. Automotive service providers performing or offering to perform automotive maintenance or repair services in the state must do the following (Title 17, California Code of Regulations, Section 95550):

- Check and inflate vehicle tires to the manufacturer-recommended tire pressure rating, with air or nitrogen as appropriate, using a tire pressure gauge with a total permissible error of no more than plus/minus 2 pounds per square inch, when performing maintenance or repair;
- Indicate on the vehicle service invoice that a tire inflation service was completed and specify the resulting pressure measurements;
- Have access to a tire inflation reference, published within the last 3 years; and
- Keep a copy of the service invoice for at least 3 years and make the invoice available to ARB or an authorized representative on request.

Fleet Emissions Reduction Requirements – South Coast

The South Coast Air Quality Management District (SCAQMD) requires government fleets and private contractors that are under contract with public entities to purchase non-diesel, lower emission, and alternative fuel vehicles. The rule applies to transit bus, school bus, refuse hauler, and other vehicle fleets of at least 15 vehicles that operate in Los Angeles, San Bernardino, Riverside, and Orange counties. (SCAQMD Rules, 1186.1 and 1191-1196)

References

02. Agricultural Resources and Economics Regulatory Setting

- California Department of Conservation. 2004. *A Guide to the Farmland Mapping and Monitoring Program*. Available: http://www.conservation.ca.gov/dlrp/fmmp/Documents/fmmp_guide_2004.pdf. Accessed March 3, 2014.
- . 2010. *Important Farmland in California, 2010*. Available: ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/statewide/2010/fmmp2010_08_11.pdf. Accessed October 10, 2013.
- . 2011. *Assembly Bill 1265 Advisory Statement*.
- . 2013a. FMMP – Program Background. Available: <http://www.consrv.ca.gov/dlrp/fmmp/overview/Pages/background.aspx>. Accessed March 20, 2014.
- . 2013b. *Williamson Act Program – Farmland Security Zones*. Available: http://www.consrv.ca.gov/dlrp/lca/farmland_security_zones/Pages/index.aspx. Accessed March 20, 2014.
- California Department of Food and Agriculture. 2012. *California Agricultural Statistics Review 2012-2013*.
- . 2013a. *California Organic Program*. Available: http://www.cdfa.ca.gov/is/i_percent26_c/organic.html. Accessed November 8, 2013.
- California Department of Pesticide Regulation. 2011. *A Guide to Pesticide Regulation in California*. Available: <http://www.cdpr.ca.gov/docs/pressrls/dprguide.htm>. Accessed March 3, 2014.
- CDPR. *See* California Department of Pesticide Regulation.
- OMRI. *See* Organic Materials Review Institute.
- Organic Materials Review Institute. 2013. *About OMRI*. Available: <http://www.omri.org/about>. Accessed March 3, 2014.
- U.S. Department of Agriculture, Agricultural Marketing Service. 2012a. *What is Organic Certification?* June. Available: <http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELDEV3004346>. Accessed December 6, 2013.
- . 2012b (November). *2010–2011 Pilot Study Pesticide Residue Testing of Organic Produce*. Available: <http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5101234>. Accessed December 6, 2013.
- . 2013. *National Organic Program: About the National List*. Available: <http://www.ams.usda.gov/AMSV1.0/nop>. Accessed December 6, 2013.
- USDA AMS. *See* U.S. Department of Agriculture, Agricultural Marketing Service.

Wacker, M., A. D. Sokolow, and R. Elkins. 2001. *County Right-to-Farm Ordinances in California: An Assessment of Impact and Effectiveness*. University of California, Agricultural Issues Center. AIC Issues Brief. Available: <http://aic.ucdavis.edu/oa/brief15.pdf>. Accessed March 3, 2014.

03. Air Quality Regulatory Setting

California Air Resources Board. 2010. *Off-Road Diesel Vehicle Regulation Compliance Requirements Summary*. Available: http://www.arb.ca.gov/msprog/ordiesel/documents/post_2010_hearing_fact_sheet.pdf. Accessed August 2013.

———. 2011. *List of the Current Rules in Each of the 35 Air Districts*. Available: <http://www.arb.ca.gov/drdb/drdbltxt.htm>. Accessed February 14, 2013.

———. 2013 (June). *Ambient Air Quality Standards*. Available: <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>. Accessed: March 3, 2014.

04. Biological Resources Regulatory Setting

None.

05. Global Climate Change Regulatory Setting

———. 2012 (October 15). 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards. *Federal Register* Vol. 77, No. 199, 62624.

———. 2013 (January). *2013 State Agency Greenhouse Gas Reduction Report Card*. Available: http://www.climatechange.ca.gov/climate_action_team/reports/2013_CalEPA_Report_Card.pdf. Accessed October 2013.

California Department of Food and Agriculture. 2010 (December). *California Agricultural Vision: Strategies for Sustainability*. Available: <http://www.cdfa.ca.gov/agvision/>. Accessed March 3, 2014.

———. 2012. *California Agricultural Vision: From Strategies to Results*. Available: http://www.cdfa.ca.gov/agvision/docs/Ag_Vision_Progress_Report.pdf. Accessed March 3, 2014.

CARB. 2014. *Proposed First Update to the Climate Change Scoping Plan: Building on the Framework*. February. Available: http://www.arb.ca.gov/cc/scopingplan/2013_update/draft_proposed_first_update.pdf. Accessed March 3, 2014.

California Environmental Protection Agency. 2010 (December). *Climate Action Team Report to Governor Schwarzenegger and the California Legislature*. Available: <http://www.energy.ca.gov/2010publications/CAT-1000-2010-005/CAT-1000-2010-005.PDF>. Accessed March 3, 2014.

———. 2011a (December). *Low Carbon Fuel Standard 2011 Program Review Report*. Available: http://www.arb.ca.gov/fuels/lcfs/workgroups/advisorypanel/20111208_LCFS%20program%20review%20report_final.pdf. Accessed August 2013.

CARB. 2013b. *Clean Car Standards—Pavley, Assembly Bill 1493*. Available: <http://www.arb.ca.gov/cc/ccms/ccms.htm>. Accessed September 2013.

San Diego County. 2012 (June) *Climate Action Plan*. Available: http://www.sdcountry.ca.gov/pds/advance/Climate_Action_Plan.pdf. Accessed March 7, 2014.

Tulare County. 2010 (February). *Climate Action Plan*. Adopted August 2012. Available: <http://generalplan.co.tulare.ca.us/documents/GeneralPlan2010/ClimateActionPlan.pdf>. Accessed March 3, 2014.

City of Sacramento. 2012 (February). *City of Sacramento Climate Action Plan*. Available: <http://www.sacgp.org/cap.html>. Accessed March 7, 2012.

06. Hazards and Hazardous Materials Regulatory Setting

California Department of Toxic Substances Control. 1999. *Unified Program Consolidated Form – Conditionally Exempt – Specified Waste Streams Page*. Available: <http://www.co.fresno.ca.us/DivisionPage.aspx?id=2980#OTHW>. Accessed January 31, 2014.

———. 2002a. *Unified Program Strategic Plan for Hazardous Waste Generator Program*. Available: http://www.dtsc.ca.gov/HazardousWaste/upload/HWM_REP_UPSP.pdf. Accessed January 31, 2014.

———. 2002b. *Onsite Tiered Permitting – Flowchart*. Available: <http://www.co.fresno.ca.us/DivisionPage.aspx?id=2980#OTHW>. Accessed January 31, 2014. DTSC 1999

———. 2010. *Hazardous Waste Generator Inspection Report – A*. Available: <http://www.dtsc.ca.gov/PublicationsForms/upload/HW-Generator-CUPA-Inspection-Report-Sample-March-2010.pdf>. Accessed January 31, 2014.

California Department of Pesticide Regulation. 2011. *A Guide to Pesticide Regulation in California*. Available: <http://www.cdpr.ca.gov/docs/pressrls/dprguide.htm>. Accessed September 10, 2013.

———. 2013a. *Chemicals Known to the State to Cause Cancer or Reproductive Toxicity*. Available: http://oehha.ca.gov/prop65/prop65_list/files/P65single052413.pdf. Accessed March 3, 2014.

———. 2013b. *Pesticides and Proposition 65*. Available: <http://www.cdpr.ca.gov/docs/dept/factshts/prop65.htm>. Accessed February 3, 2014.

California Department of Forestry and Fire Protection. 2012. *FRAP Projects – State Responsibility Areas*. Available: http://frap.fire.ca.gov/projects/sra_mapping/index.php. Accessed February 3, 2014.

———. 2013. *Certified Unified Program Agency*. Available: <http://osfm.fire.ca.gov/cupa/hhmp-hmis.php>. Accessed January 31, 2014.

California Environmental Protection Agency. 2012. *Unified Program Fact Sheet*. <http://www.calepa.ca.gov/cupa/Documents/2012/FactSheet.pdf>. Accessed March 3, 2014.

CAL FIRE. See California Department of Forestry and Fire Protection.

- California Office of Emergency Services. 2014. *California Accidental Release Program (CalARP)*. Available: [http://www.caloes.ca.gov/HazardousMaterials/Pages/California-Accidental-Release-Prevention-\(CalARP\).aspx](http://www.caloes.ca.gov/HazardousMaterials/Pages/California-Accidental-Release-Prevention-(CalARP).aspx). Accessed January 31, 2014.
- Escutia, M. 2000. *Senate Bill 89*. Available: http://www.leginfo.ca.gov/pub/99-00/bill/sen/sb_0051-0100/sb_89_bill_20000927_chaptered.html. Accessed September 12, 2013.
- . 2001. *Senate Bill 32*. Available: http://www.leginfo.ca.gov/pub/01-02/bill/sen/sb_0001-0050/sb_32_bill_20011012_chaptered.html. Accessed September 12, 2013.
- Gayoso, Jose. Chemical Review Manager, U.S. Environmental Protection Agency, Washington, DC. September 16, 2013—telephone conversation with Patrick Donaldson regarding potential bilingual pesticide labeling efforts.
- Steinberg, D. 2003. *Assembly Bill No. 1360*. Available: ftp://leginfo.ca.gov/pub/03-04/bill/asm/ab_1351-1400/ab_1360_bill_20030602_amended_asm.pdf. Accessed February 3, 2014.
- U.S. Department of Labor. 2013a. *Occupational Health and Safety Administration – About OSHA*. Available: <https://www.osha.gov/about.html>. Accessed September 10, 2013.
- . 2013b. *Occupational Health and Safety Administration – OSHA Laws and Regulations*. Available: <https://www.osha.gov/law-regs.html>. Accessed September 10, 2013.
- . 2013c. *Occupational Health and Safety Administration – Recommended Format for Material Safety Data Sheets*. Available: <https://www.osha.gov/dsg/hazcom/msdsformat.html>. Accessed September 10, 2013. U.S. Department of Labor 2013a
- U.S. Environmental Protection Agency. 2011a. *CERCLA Overview*. Available: <http://www.epa.gov/superfund/policy/cercla.htm>. Accessed September 9, 2013.
- . 2011b. *SARA Overview*. Available: <http://www.epa.gov/superfund/policy/sara.htm>. Accessed September 9, 2013.
- . 2012a. *Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)*. Summary of the Federal Insecticide, Fungicide, and Rodenticide Act. Available: <http://www.epa.gov/oecaagct/lfra.html>. Accessed September 9, 2013.
- . 2012b. *EPA Seeks Comment on Petition for Bilingual Pesticide Labels*. Available: <http://www.epa.gov/pesticides/regulating/labels/bilingual-pesticide-labels.html>. Accessed September 12, 2013.
- . 2013a. *History of RCRA*. Available: <http://www.epa.gov/epawaste/laws-regs/rcrahistory.htm>. Accessed September 9, 2013.
- . 2013b. *Pesticide Emergency Exemptions*. Available: <http://www.epa.gov/opprd001/section18/>. Accessed September 24, 2013.
- . 2013c. *Registering Pesticides*. Available: <http://www.epa.gov/opp00001/regulating/registering/>. Accessed January 31, 2014. EPA 2012a

———. 2013d. *Toxics Release Inventory (TRI) Program – Learn About the Toxics Release Inventory*. Available: <http://www2.epa.gov/toxics-release-inventory-tri-program/learn-about-toxics-release-inventory>. Accessed February 3, 2014.

O7. Noise Regulatory Setting

EPA. See U.S. Environmental Protection Agency.

Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. Report No. FTA-VA-90-1003-06. Washington, DC: Department of Transportation. Available: http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf. Accessed September 2013.

HUD. See U.S. Department of Housing and Urban Development.

U.S. Department of Housing and Urban Development. 1996. HUD Noise Guidelines. 24 Code of Federal Regulations 51, Subpart B.EPA 1974

U.S. Environmental Protection Agency. 1974. *Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety*. Report No. 550/9-74-004. Washington, DC. Available: http://www.fican.org/pdf/EPA_Noise_Levels_Safety_1974.pdf. Accessed March 10, 2014.

U.S. National Archives and Records Administration 2008-2009

California Building Code 2010

O8. Water Quality Regulatory Setting

CDPR 1997

———. 2010. Overview of the Surface Water Protection Program. Available: <http://www.cdpr.ca.gov/docs/emon/surfwtr/overvw.htm>. Accessed October 27, 2011.

———. 2013. California Code of Regulations, Pesticides and Pest Control Operations. Available: <http://www.cdpr.ca.gov/docs/legbills/calcode/040101.htm>. Accessed May 28, 2014. North Coast Regional Water Quality Control Board 2011

CDPR. See California Department of Pesticide Regulation.

Central Coast Regional Water Quality Control Board. 2011 (June). Water Quality Control Plan. Available: http://www.waterboards.ca.gov/rwqcb3/publications_forms/publications/basin_plan/docs/basin_plan_2011.pdf. Accessed January 2, 2014.

Central Valley Regional Water Quality Control Board. 2011 (September). Water Quality Control Plan. Available: http://www.swrcb.ca.gov/rwqcb5/water_issues/basin_plans/sacsjr.pdf. Accessed January 2, 2013.

- Colorado River Basin Regional Water Quality Control Board. 2006 (June). Water Quality Control Plan. Available:
http://www.waterboards.ca.gov/rwqcb7/publications_forms/publications/docs/basinplan_2006.pdf. Accessed January 2, 2014.
- Los Angeles Regional Water Quality Control Board. 1994 (June). Water Quality Objectives. Available:
http://www.waterboards.ca.gov/rwqcb4/water_issues/programs/basin_plan/electronics_documents/bp3_water_quality_objectives.pdf. Accessed January 2, 2014.
- Lahontan Regional Water Quality Control Board. 2012. Water Quality Objectives. Available:
http://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/docs/ch3_wqobjjewqobje.pdf. Accessed January 2, 2014.
- North Coast Regional Water Quality Control Board. 2011. Water Quality Objectives. Available:
http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/083105-bp/04_water_quality_objectives.pdf. Accessed January 2, 2014.
- San Diego Regional Water Quality Control Board. 2012. Water Quality Objectives. Available:
http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/docs/updupd082812/Chpt_3_2012.pdf. Accessed January 2, 2014.
- San Francisco Bay Regional Water Quality Control Board. 2013. Water Quality Control Plan. Available: http://www.waterboards.ca.gov/rwqcb2/water_issues/programs/planningtmdls/basinplan/web/docs/bp_ch3+tables.pdf. Accessed January 2, 2014.
- Santa Ana Regional Water Quality Control Board. 2011 (June). Water Quality Objectives. Available:
http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/basin_plan/docs/chapter4.pdp. Accessed January 2, 2014.
- State Water Resources Control Board. 1968. California Anti-Degradation Policy. Available:
http://water.epa.gov/scitech/swguidance/standards/wqslibrary/ca_9_68_16.cfm. Accessed October 27, 2011.
- . 2011 (January 1). Porter Cologne Water Quality Control Act. Available:
http://www.swrcb.ca.gov/laws_regulations/docs/portercologne.pdf. Accessed October 27, 2011.
- . 2014. Irrigated Lands Regulatory Program. Available:
http://www.waterboards.ca.gov/water_issues/programs/agriculture/docs/about_agwaivers.pdf. Accessed January 29, 2014.
- U.S. Environmental Protection Agency. 1977. Clean Water Act. Available:
<http://www.epa.gov/npdes/pubs/cwatxt.txt>. Accessed October 27, 2011.
- . 2009a (October 23). Water Quality Standards, Establishment of Numeric Criteria for Priority Toxic Pollutants, States' Compliances. Available:
http://www.epa.gov/waterscience_keep/standards/rules/ntr.html#sectionE. Accessed October 27, 2011.
- . 2011a (July 1). Safe Drinking Water Act. Available:
<http://water.epa.gov/lawsregs/rulesregs/sdwa/>. Accessed October 27, 2011.

———. 2011b (September 19). The California Toxics Rule. Available:
<http://www.epa.gov/region9/water/ctr/>. Accessed October 27, 2011.

Appendix P

Mitigation Reporting Program

Introduction

The Proposed Program would involve implementation of a number of mitigation measures to reduce potentially significant environmental effects identified in the environmental analysis (see Volume 1, Chapter 6). These mitigation measures are listed in Tables C-2 through C-4 in Appendix C, CEQA Tiering Strategy, as they apply to physical, biological, and chemical management activities under the Proposed Program. The mitigation measures are also summarized in Attachment 2 to Appendix C.

As many of the activities proposed under the Proposed Program would be carried out by entities besides CDFA, CDFA would not monitor implementation of mitigation measures itself. Rather, CDFA would establish a mitigation reporting program and rely on reporting from those entities implementing mitigation measures on the ground (including CDFA, as applicable). Section 15097 (a) of the State CEQA Guidelines states: “A public agency may delegate reporting or monitoring responsibilities to another public agency or to a private entity which accepts the delegation; however, until mitigation measures have been completed the lead agency remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the program.” Section 15097 (c) states: “The public agency may choose whether its program will monitor mitigation, report on mitigation, or both.”

This appendix describes the mitigation reporting program for the Proposed Program. Two key components of the overall mitigation reporting program would be the application of the CEQA Tiering Strategy and the development and execution of compliance agreements, contracts, permits and other agreements.

CEQA Tiering Strategy

As described in Appendix C, the CEQA Tiering Strategy is a tool designed to assist CDFA staff in determining (1) the extent to which a specific activity has been evaluated in the PEIR; (2) the management practices (MPs), mitigation measures, and other requirements from the PEIR to apply to each activity; and (3) the level and focus of any additional CEQA analysis (and related documentation) that may be necessary before beginning the activity. The Tiering Strategy includes a series of questions and steps to enable CDFA staff to determine if proposed activities have been evaluated in the PEIR, and, if so, what the applicable PEIR requirements are for those activities (see Tables C-2 through C-4 in Appendix C).

With respect to mitigation reporting, CDFA would use the CEQA Tiering Strategy and the Tiering Strategy Checklist (see Attachment 1) to identify MPs and mitigation measures for inclusion in compliance agreements, permits, contracts, grants, or other similar means. MPs and mitigation measures identified through the tiering strategy would be written into such agreements and would thus be binding conditions. Compliance agreements, contracts and other contractual agreements are discussed in more detail below. The Tiering Strategy Checklist also includes a section where CDFA staff can verify that mitigation measures have been complied with, documenting CDFA's completion of its obligation to ensure that implementation of the mitigation measures has occurred in accordance with the program.

Contractual Agreements

As described in Volume 1, Chapter 2, Proposed Program Description, CDFA may enter into agreements with growers or other public or private entities to carry out Proposed Program activities. These agreements may include compliance agreements with regulated entities within quarantine areas (e.g., to treat commodities to standards described in quarantine regulations before moving them outside the quarantine area); contracts with city and county government, non-profit organizations, or other entities (e.g., to conduct detection, eradication or other management activities), or permits (e.g., to move certain materials outside of quarantine areas). In addition to listing the applicable PEIR requirements (i.e., MPs and mitigation measures) for the subject activities, contractual agreements would clearly describe the contractee's responsibilities for implementing and reporting those requirements.

Any grower, city or county government, or other entity that entered into such an agreement with CDFA would have to sign the document to indicate that they intend to implement all PEIR requirements included in the agreement. Upon completion of the activities authorized under the agreement, the same party would have to sign an additional document indicating that they have implemented all PEIR requirements included in the agreement. Submission of the signed documents to CDFA would constitute mitigation reporting for the purposes of CEQA, allowing CDFA to sign off on the Tiering Strategy Checklist.

Mitigation Reporting Program

The mitigation reporting program for the Proposed Program would encompass the processes described above for identifying applicable PEIR requirements through use of the CEQA Tiering Strategy, inclusion of applicable requirements into contractual agreements, and obtaining signed copies of agreements indicating requirements were adhered to/implemented. This program would be in compliance with Section 21081.6 of the CEQA Statute and Section 15097 of the CEQA Guidelines.

Attachment 1 – CEQA Tiering Checklist

Start Date:	
Project Leader:	
Description of Activity:	
Activity Surroundings (Residential, agriculture, mixed use, other regulated entities):	

Part A

	Response	Justification/Rationale
Is the proposed activity under CDFA's discretion?		
Is the activity described in the PEIR?		(If the Response is "Partially" or "No" skip to Part C)

Part B

		Check Applicable Requirements
General Requirements		
Conduct activity as described in Chapters 2 and 3 of PEIR		
Include applicable PEIR requirements in Compliance Agreements with regulated entities, based on the activities the regulated entities may conduct in response to quarantine		
Activity Site Specific Review		
Database	Date Reviewed	Mitigation If Any
California Natural Diversity Database		
303(d) List of Impaired Waters		
EnviroStor Hazardous Site		
Management Practices		
MP-SPRAY-1: Conduct a Site Assessment		
MP-SPRAY-2: Properly clean and calibrate all equipment to apply chemicals uniformly and in the correct quantities		
MP-SPRAY-3: Follow pesticide application laws and regulations, and label directions		
MP-SPRAY-4: Apply chemicals only under favorable weather conditions		
MP-SPRAY-5: Follow integrated pest management and drift reduction techniques		
MP-SPRAY-6: Clean equipment and dispose of rinse water per label directions		

	Check Applicable Requirements
Management Practices	
MP-SPRAY-7: Follow appropriate product storage procedures	
MP-AERIAL-1: Use appropriate aerial spray treatment procedures	
MP-GROUND-1: Follow appropriate ground-rig foliar treatment procedures	
MP-GROUND-2: Follow appropriate low-pressure backpack treatment procedures	
MP-GROUND-3: Train personnel in proper use of pesticides	
MP-GROUND-4: Enforce runoff and drift prevention	
MP-HAZ-1: Implement a Spill Contingency Plan	
MP-HAZ-2: Use safety and cleanup materials checklist	
MP-HAZ-3: Implement decontamination	
MP-HAZ-4: Follow appropriate disposal procedures	
Mitigation Measures	
Mitigation Measure BIO-CHEM-2: CDFG will obtain technical assistance from USFWS, CDFW and NMFS to identify site-specific buffers and other measures to protect habitats utilized by special-status species	
Mitigation Measure HAZ-GEN-4a: Determine Potential for Hazardous Materials Exposure	
Mitigation Measure HAZ-GEN-4b: Conduct a Hazardous Materials Records Search before Beginning Proposed Program Activities at a Given Site	
Mitigation Measure HAZ-GEN-4c: Stop work and implement hazardous materials investigations/ remediation for contamination health risks	
Mitigation Measure HAZ-CHEM-1a: Conduct Public Information Sessions Regarding Pesticide Safety Practices	
Mitigation Measure HAZ-CHEM-1b: Conduct Training Sessions and Prepare Educational Materials Regarding Safe Handling and Application of Pesticides	
Mitigation Measure HAZ-CHEM-3: Require Compliance with the Proposed Program’s Authorized Chemical Application Scenarios	
Mitigation Measure NOISE-PHYS-1: Conduct Activities during the Daytime	
Mitigation Measure WQ-CHEM-2: Track Emerging Water Quality Standards and Implement Additional Mitigation as Appropriate	
Mitigation Measure WQ-CHEM-5: Require Implementation of Proposed Program MPs as Part of Compliance Agreements	
Mitigation Measure WQ-CUM-1: Identify whether Proposed Program Pesticide Applications May Occur in Proximity to Impaired Waterbodies, and Implement Appropriate MPs	

Part C

	Y/N	Justification/Rationale
Step 1		
Is the Activity substantially similar to that considered in the PEIR?		(If yes go to Step 2, if no move to the next question)
If a management practice that was not included in the PEIR is being considered, would it be equivalent or more effective to the management practice originally considered in the PEIR?		(If yes go to Step 2, if no move to the next question)
If a mitigation measure that was not included in the PEIR is being considered, would it be equivalent		(If yes go to Step 2, if no move to the next question)

or more effective to the mitigation measure originally considered in the PEIR?	
Would the activity result in potentially significant impacts which were not considered in the PEIR, not considered to be significant in the PEIR, or would be substantially more significant than disclosed in the PEIR?	(If yes go to Step 3, if no go to Step 2)
Step 2	Attach supporting documentation for determination, and CEQA Addendum, as applicable
Step 3	Attach tiered CEQA document, and identify additional requirements from that document

Confirmation of Implementation (following completion of activity)	
Project Leader Name:	
Signature*:	
End Date:	

*This signature confirms that all applicable requirements identified on this checklist and related documentation has been properly implemented.

Page left intentionally blank.