## 2024 STANDING ACREAGE - FINAL ESTIMATE

In cooperation with the Almond Board of California

Released: November 20, 2024

### **RESULTS**

Each year Land IQ produces an in-year, statewide almond acreage estimate. This estimate is the result of extensive ground truthing and advanced remote sensing analytics, allowing Land IQ to differentiate almond orchards from other tree and annual crops.

The result is a highly accurate mapping of almonds that are a minimum of three years old. Almond orchards that are less than 3 years old cannot be consistently differentiated from other similarly aged tree crops using remotely sensed methods. The ground truthing data, proportionality of almonds to other tree crops, and other lines of evidence are used to numerically estimate acreage for orchards that are one and two years old. Both the remotely sensed and numerical estimates are combined for a total statewide acreage estimate. The 2024 estimate is 98.8% accurate.

As a result, the 2024 acreage estimate is:

- 142,306 non-bearing acres
   (defined as those orchards planted in 2022, 2023, and 2024)
- 1,383,332 bearing acres
   (defined as those orchards planted in 2021 and earlier)
- 1,525,638 total acres
   (defined as total standing acres during the growing season of 2024)
- 30,515 potentially abandoned acres
   (defined as orchards in various levels of stress or abandonment but included in the bearing and total acres above)

There is variation in the number of bearing acres between the initial and final estimates. This is the result of additional acreage (planted in 2020 or before) identified between the initial and final analyses. Additionally, the final total removed acreage was less than originally estimated. These two values account for most of the difference in final bearing acreage compared to the initial estimate.

Each mapping year, Land IQ not only maps all almond orchards within the state, but also applies a separate algorithm to quantify the age of each individual orchard. The accuracy of this estimate is greater than 95% at +/- 1 year. Based on that analysis, Land IQ determined that:

- 9 percent of California's almond orchards were 1-3 years old,
- 47 percent were between 4 and 10 years old,
- 32 percent were between 11 and 20 years old,
- 6 percent were between 21 and 25 years old, and
- 5 percent were over 25 years old.





## **APPROACH**

Land IQ draws upon multiple lines of evidence including agronomic and remote sensing knowledge, unique field boundaries, robust on-the-ground verification, customized image analysis, artificial intelligence and machine learning algorithms to classify almond orchards.

For each mapped year, the following steps are taken as the basis for determination of bearing acreage and the numerical estimate of non-bearing acreage.

#### **Imagery Acquisition**

Evaluate and acquire imagery from various sources based upon cost and spectral, spatial and temporal resolution suitability. New imagery sources allow for annual mapping of almonds.

#### **Field Boundary Delineation**

Utilize imagery and other resources to delineate individual fields defined as a homogenous crop. These boundaries are not legal boundaries of the property and do not include roads, homes or farmsteads. Irrigated field boundary positional accuracies are +/- 6 feet at a 95% confidence interval.

#### **Ground Truthing**

Identify and geo-reference crops through thousands of miles of actual verified orchards from Tehama to Kern County. These data provide necessary training data for algorithms as well as validation data for the classification.

## Remote Sensing Analysis

Utilize custom image analysis, artificial intelligence, and machine learning algorithms to determine crop type. This allows for the differentiation of almond orchards from other tree and annual crops. Accuracy assessments are performed using statistical probability and validated against ground truth information.

## Change Analysis and Update

Determine which orchards have been removed or added using a change analysis as part of the overall remote sensing efforts.

#### **Non-Bearing Estimate**

During the second mapping event, an estimate of non-bearing acreage is conducted, taking into account the data collected with ground truthing in the summer months.

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Alameda	0	0	0	0	0	0	0	0	0	0	0
Butte	4,602	14	67	298	157	175	330	150	217	259	182
Calaveras	12	0	0	0	0	0	0	0	0	5	0
Colusa	628	9	50	24	16	15	249	42	22	156	242
Contra Costa	3	0	0	0	0	0	0	0	0	0	0
Fresno	154	0	0	1	78	109	236	117	116	65	208
Glenn	845	47	58	11	6	286	162	62	130	401	357
Kern	21	2	0	0	36	117	0	46	58	76	142
Kings	0	0	0	0	0	0	0	0	2	0	0
Lake	0	0	0	0	0	0	12	0	0	32	0
Madera	1,629	2	83	4	12	81	39	105	23	390	448
Merced	5,645	194	143	323	316	512	780	456	512	748	450
Placer	0	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0
Sacramento	22	0	0	0	0	2	0	0	0	0	0
San Joaquin	3,501	213	65	140	154	221	204	95	206	368	152
San Luis Obispo	203	19	21	24	27	31	50	6	45	5	1,609
Solano	185	0	0	0	49	3	35	0	53	87	31
Stanislaus	7,490	201	170	226	307	159	637	526	431	1,101	1,065
Sutter	178	36	2	0	0	14	104	22	16	43	104
Tehama	333	7	23	0	0	11	21	0	0	0	4
Tulare	187	0	0	0	0	0	3	78	75	169	152
Yolo	134	0	0	0	29	20	128	0	3	274	42
Yuba	0	0	0	0	0	0	0	0	0	36	2
<b>Grand Total</b>	25,771	744	683	1,050	1,188	1,755	2,990	1,706	1,908	4,216	5,190

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Alameda	0	0	0	0	0	0	0	0	0	0	0
Butte	353	103	246	695	370	359	248	423	352	815	1,088
Calaveras	0	0	0	0	0	0	0	0	0	0	0
Colusa	128	304	996	351	1,540	1,001	1,346	914	1,660	4,978	3,572
Contra Costa	0	0	0	6	0	0	0	0	0	0	0
Fresno	38	224	1,054	611	1,119	1,641	1,689	3,586	3,008	6,255	9,913
Glenn	119	227	358	119	278	266	359	508	1,162	1,559	2,250
Kern	0	365	535	2,068	899	376	274	1,388	1,766	4,742	10,927
Kings	0	0	17	540	293	0	0	539	18	769	346
Lake	0	0	0	0	0	0	0	0	0	0	0
Madera	383	476	686	880	700	876	781	1,240	2,893	4,817	4,510
Merced	630	910	1,316	815	1,304	1,270	1,402	1,682	2,404	5,521	5,208
Placer	0	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	2	0	0	0	0	2	0	2
San Joaquin	224	801	637	558	1,113	748	1,063	971	1,210	2,482	2,043
San Luis Obispo	122	3	0	0	0	0	0	0	9	1	5
Solano	23	0	5	159	58	112	146	34	123	129	476
Stanislaus	678	887	1,240	2,215	1,754	1,787	1,335	2,737	2,344	9,187	6,223
Sutter	1	24	603	88	95	74	103	0	126	696	201
Tehama	18	138	97	108	146	346	301	221	107	489	224
Tulare	106	94	35	32	540	66	19	180	394	1,439	1,558
Yolo	12	130	79	103	293	127	180	79	317	825	821
Yuba	0	0	0	0	0	47	0	0	0	22	25
<b>Grand Total</b>	2,836	4,687	7,905	9,352	10,503	9,096	9,247	14,504	17,897	44,724	49,394

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Alameda	0	0	0	0	0	0	0	0	0	0	0
Butte	525	672	3,132	1,265	1,178	646	331	566	726	778	2,128
Calaveras	0	0	0	0	0	0	0	0	0	99	80
Colusa	3,238	2,085	2,879	2,505	2,069	2,058	1,219	1,885	1,299	2,210	5,512
Contra Costa	0	0	0	0	0	0	0	0	0	0	55
Fresno	10,663	8,221	5,417	5,119	5,330	8,294	8,686	11,956	16,573	19,384	25,007
Glenn	1,777	1,739	3,501	1,136	610	2,215	1,565	1,886	2,432	466	5,578
Kern	10,023	5,301	4,806	5,523	4,292	8,423	6,432	7,788	9,233	10,917	19,154
Kings	750	512	334	384	727	335	1,314	1,969	2,338	3,654	6,715
Lake	0	0	0	0	0	0	0	0	0	0	0
Madera	6,607	5,945	10,706	5,397	2,847	8,759	4,217	7,611	11,885	7,685	11,294
Merced	5,604	7,551	2,476	3,005	2,515	3,650	3,122	4,889	10,417	7,180	10,644
Placer	0	0	0	0	0	0	0	0	21	0	1,032
Riverside	6	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	1	0	2	0	0	1	68	185	915
San Joaquin	1,808	1,780	1,504	1,186	1,272	2,927	3,001	4,034	7,022	4,381	7,600
San Luis Obispo	0	0	0	0	0	0	17	0	14	0	0
Solano	361	112	25	121	38	128	13	181	2,664	4,862	4,540
Stanislaus	5,093	6,411	5,495	4,272	3,433	8,401	6,401	9,759	12,469	8,723	12,363
Sutter	494	615	207	414	172	355	61	349	380	449	2,578
Tehama	510	1,109	1,160	341	90	298	508	1,211	1,437	540	3,398
Tulare	2,017	1,633	1,244	1,992	2,231	2,849	1,908	1,081	7,592	7,511	11,177
Yolo	1,382	1,045	973	1,626	397	1,762	572	2,630	3,948	4,141	5,530
Yuba	212	3	9	0	7	31	0	222	164	216	345
Grand Total	51,069	44,731	43,870	34,286	27,211	51,133	39,365	58,016	90,682	83,382	135,645

								Bearing	Non-Bearing	
	2017	2018	2019	2020	2021	2022*	2022-2024**	Grand Total***	Estimate	Grand Total***
Alameda	0	185	0	0	0	0		0		0
Butte	1,453	2,156	1,034	1,554	1,077	810		30,726		31,536
Calaveras	0	0	0	0	45	0		242		242
Colusa	3,405	3,763	4,077	3,715	2,186	2,255		62,348		64,603
Contra Costa	236	18	133	1,598	240	379		2,289		2,668
Fresno	23,888	21,905	14,712	19,223	15,191	5,313		249,788		255,101
Glenn	4,665	4,529	2,560	5,974	4,364	4,393		54,569		58,962
Kern	12,187	18,910	12,064	11,236	7,775	6,458		177,899		184,357
Kings	2,331	2,976	2,630	2,525	1,580	1,119		33,599		34,718
Lake	0	0	0	0	0	0		44		44
Madera	11,572	7,197	8,067	7,219	5,985	3,380		144,051		147,431
Merced	8,316	13,912	12,389	11,888	6,250	4,387		146,347		150,734
Placer	0	889	418	1,706	323	65		4,389		4,453
Riverside	0	0	0	0	0	0		6		6
Sacramento	202	1,434	281	619	69	784		3,805		4,589
San Joaquin	7,170	9,245	8,548	15,952	6,070	4,157		100,669		104,826
San Luis Obispo	0	20	0	0	0	0		2,232		2,232
Solano	2,531	1,886	2,002	2,136	1,564	547		24,874		25,421
Stanislaus	9,219	13,486	11,558	11,712	6,294	7,970		177,790		185,760
Sutter	400	2,071	2,009	2,929	1,721	2,539		17,736		20,275
Tehama	819	2,066	1,200	2,952	1,178	1,239		21,412		22,651
Tulare	5,434	10,020	3,567	9,943	6,014	2,010		81,341		83,351
Yolo	3,619	3,607	1,427	3,806	3,208	1,127		43,269		44,396
Yuba	55	427	735	432	914	55		3,905		3,960
Grand Total	97,503	120,702	89,411	117,120	72,051	48,985		1,383,332	142,306	1,525,638

<sup>\*</sup>The county level, non-bearing acreages for 2022 are approximately 75% spatially mapped and age-verified orchards. The remaining 2022 acreages are numerically estimated according to the spatially mapped acreage and ground truthing during 2024. While bearing acreage mapping has been validated with an accuracy of 98.8%, non-bearing numerical acreage estimates should be understood to have an estimated +/10% potential variability.

<sup>\*\*</sup>The estimated non-bearing acreages for 2023 and 2024 are numeric estimates only and are based on extensive ground truthing, image analysis, and other lines of evidence. While bearing acreage mapping has been validated with an accuracy of 98.8%, non-bearing numerical acreage estimates should be understood to have an estimated +/-10% potential variability.

<sup>\*\*\*</sup> The Bearing Grand Total and Grand Total include standing acreage that is considered stressed or abandoned and may not be in full production. Please refer to the Removals Report for more information.

# 2024 REMOVALS, STRESSED & ABANDONED UPDATE

In cooperation with the Almond Board of California

Released: November 20, 2024

## **RESULTS**

Each year Land IQ produces an initial bearing acreage estimate in April, which includes a removals analysis as of March 31, 2024. In addition to the spatial analysis, a numerical estimate of orchards to be removed between April 1, 2024 and August 31, 2024 was provided based on actual ground truthing, historical analyses, and current conditions.

Beginning in 2021, due to extreme drought and significant water supply issues, Land IQ began performing an additional analysis to determine how many acres were removed during the crop year or in various degrees of abandonment.

As a result, the 2024 removals estimate was updated:

- 49,928 Acres removed: September 1, 2023 March 31, 2024
- 16,866 Acres removed: April 1, 2024 August 31, 2024
- 66,794 Total acres removed in 2024 crop year

The average age of removed orchards in the 2023 crop year was 21.7 years old.

Considering abandoned orchards may have the ability to recover dependent on conditions, the number of acres in various degrees of abandonment was also analyzed. These orchards are included in the standing acreage numbers provided, as they have not been removed.

- 6,675 acres Tier 1A
- 4,939 acres Tier 2
- 5,025 acres Tier 1B
- 13,876 acres Tier 3





## **DEFINITIONS**

The spatial analyses of removed and abandoned orchards resulted in varied conditions among orchards. As a result, Land IQ has defined the following conditions:

#### **Removed Orchards**

Orchards that were removed between September 1, 2023 and August 31, 2024.

#### **Potentially Abandoned Orchards**

Orchards that were in various levels of abandonment:

- **Tier 1A** Orchards show new level of low to moderate stress in the current water year, as compared to previous year.
- Tier 1B Orchards show low to moderate levels of stress in two or more consecutive water years.
- Tier 2 Orchards show moderate to high levels of stress in the current water year.
- **Tier 3** Orchards show moderate to high levels of stress in two or more consecutive water years.

Table 1. Removed and Potentially Abandoned Acreage by County

	Removed	Potentially		Removed	Potentially
County	Acreage	Abandoned Acreage	County	Acreage	Abandoned Acreage
Alameda	0	0	Placer	0	21
Butte	1,310	489	Riverside	0	6
Calaveras	0	41	Sacramento	0	4
Colusa	2,216	265	San Joaquin	2,292	1,346
Contra Costa	0	9	San Luis Obispo	7	2,230
Fresno	13,558	5,637	Solano	270	206
Glenn	1,424	606	Stanislaus	9,060	2,069
Kern	13,895	7,504	Sutter	431	105
Kings	2,653	1,464	Tehama	292	321
Lake	0	44	Tulare	3,661	598
Madera	6,334	1,048	Yolo	1,902	1,117
Merced	7,469	5,275	Yuba	21	110

			Prior to 1990					1990					1991		
	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Butte	317	91	109	0	91	0	0	0	0	3	0	0	0	0	0
Calaveras	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0
Colusa	39	0	19	0	5	39	0	57	0	12	36	0	0	0	0
Contra Costa	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
Fresno	17	0	12	0	114	0	0	10	0	31	0	0	0	0	0
Glenn	66	74	49	0	26	0	0	0	0	4	48	0	0	0	0
Kern	258	39	0	0	0	0	0	0	0	0	0	0	0	0	0
Kings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lake	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0
Madera	163	0	44	0	19	11	0	0	0	0	0	0	0	0	0
Merced	856	148	110	78	13	127	66	4	41	0	57	0	7	0	0
Placer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
San Joaquin	343	77	86	0	23	57	0	0	0	1	19	0	0	0	2
San Luis Obispo	0	0	10	0	316	0	0	0	0	49	0	0	0	0	6
Solano	36	0	0	0	29	0	0	2	0	34	0	0	0	0	0
Stanislaus	1,348	12	46	39	84	78	0	0	61	7	43	0	0	2	4
Sutter	160	0	0	0	0	25	0	13	0	0	19	0	2	0	0
Tehama	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
Tulare	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yolo	0	0	18	0	68	0	0	79	0	18	0	0	0	0	0
Yuba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	3,603	442	503	117	806	336	66	168	103	171	221	0	9	2	12

Tier 1A: Low to moderate stress observed in current water year.

Tier 1B: Low to moderate stress observed in two or more consecutive water years

Tier 2: Moderate to high stress observed in current water year.

Tier 3: Moderate to high stress observed in two or more consecutive water years.

			1992					1993					1994		
	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Butte	0	0	1	0	0	38	0	0	0	0	0	0	4	0	0
Calaveras	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0
Colusa	0	0	0	0	0	76	0	0	0	0	155	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	19	0	0	0	0	184	0	0	0	2	0	0	15	0	0
Glenn	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kern	0	0	0	0	2	1	0	0	0	0	0	0	2	0	3
Kings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lake	0	0	0	0	0	0	0	14	0	18	0	0	0	0	0
Madera	36	0	0	0	0	112	0	0	0	0	167	0	3	0	0
Merced	48	0	5	0	0	195	0	0	6	0	148	0	3	26	36
Placer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin	0	0	0	0	0	13	0	56	0	0	4	0	39	0	0
San Luis Obispo	0	0	0	0	45	7	0	0	0	5	0	0	25	0	1,583
Solano	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stanislaus	189	0	0	0	0	63	0	256	0	0	477	0	14	0	11
Sutter	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tehama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tulare	0	0	0	0	0	38	0	0	0	0	0	0	0	0	0
Yolo	0	0	0	0	0	0	0	2	0	272	0	0	0	0	0
Yuba	0	0	0	0	0	0	0	36	0	0	0	0	2	0	0
Grand Total	439	0	6	0	46	728	0	364	6	302	951	0	108	26	1,634

Tier 1A: Low to moderate stress observed in current water year.

Tier 1B: Low to moderate stress observed in two or more consecutive water years

Tier 2: Moderate to high stress observed in current water year.

Tier 3: Moderate to high stress observed in two or more consecutive water years.

			1995					1996					1997		
	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0	0	0	8	0	1	0	2
Calaveras	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colusa	15	0	0	0	0	23	10	0	0	0	214	0	0	48	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	0	0	0	0	0	27	0	0	0	33	5	0	36	0	0
Glenn	0	0	0	0	0	94	0	0	0	0	0	0	0	5	0
Kern	68	0	0	0	0	288	0	40	0	0	147	150	0	0	0
Kings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Madera	150	0	0	113	0	263	0	0	0	4	237	0	38	38	0
Merced	178	19	0	0	0	552	24	0	50	0	509	0	0	81	0
Placer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin	72	0	0	0	2	137	0	0	0	0	81	0	0	0	0
San Luis Obispo	0	0	0	0	122	0	0	0	0	3	0	0	0	0	0
Solano	86	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stanislaus	431	0	41	58	3	276	0	175	0	30	317	6	38	0	9
Sutter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tehama	0	0	0	0	0	8	0	0	0	7	0	0	4	0	0
Tulare	0	0	0	0	0	54	0	0	0	0	87	0	0	0	0
Yolo	0	0	0	11	1	102	0	0	0	0	26	0	2	0	0
Yuba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1,000	19	41	182	128	1,824	34	215	50	76	1,632	157	119	172	11

Tier 1A: Low to moderate stress observed in current water year.

Tier 1B: Low to moderate stress observed in two or more consecutive water years

Tier 2: Moderate to high stress observed in current water year.

Tier 3: Moderate to high stress observed in two or more consecutive water years.

			1998					1999					2000		
	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Butte	110	0	0	0	0	14	0	0	0	0	172	0	0	0	0
Calaveras	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colusa	196	0	0	0	0	181	6	0	0	0	26	0	0	0	0
Contra Costa	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0
Fresno	574	0	0	0	150	53	0	0	0	246	530	0	7	0	334
Glenn	33	0	0	0	0	0	0	0	0	0	129	0	0	0	0
Kern	570	0	0	210	137	178	0	75	443	0	439	0	66	0	0
Kings	15	0	0	0	529	24	0	0	0	293	123	0	0	0	0
Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Madera	94	0	33	55	0	95	0	0	38	0	250	0	0	0	0
Merced	437	0	27	0	1	315	91	0	0	0	689	0	0	0	10
Placer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin	105	154	0	0	4	71	194	0	0	15	229	0	0	0	0
San Luis Obispo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solano	0	0	0	0	0	29	0	7	0	0	0	0	0	0	0
Stanislaus	410	0	4	0	0	250	3	59	0	0	370	0	8	303	0
Sutter	13	0	20	0	0	29	0	0	0	0	0	0	0	0	0
Tehama	0	0	0	0	0	0	38	0	0	0	0	0	0	0	0
Tulare	145	0	9	0	0	31	0	0	0	0	19	0	0	0	0
Yolo	71	0	0	0	16	38	0	0	0	0	61	0	4	21	12
Yuba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2,772	154	94	265	843	1,308	332	142	481	554	3,037	0	85	324	356

Tier 1A: Low to moderate stress observed in current water year.

Tier 1B: Low to moderate stress observed in two or more consecutive water years

Tier 2: Moderate to high stress observed in current water year.

Tier 3: Moderate to high stress observed in two or more consecutive water years.

			2001					2002					2003		
	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Butte	51	0	0	0	0	24	0	0	0	0	145	5	0	0	0
Calaveras	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colusa	179	0	0	0	0	147	0	9	0	0	313	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	522	0	1	139	0	459	154	0	0	182	529	0	0	0	0
Glenn	32	0	0	17	0	28	0	0	0	0	93	0	0	23	0
Kern	491	0	0	105	0	485	0	0	107	160	2,467	0	0	38	409
Kings	160	0	0	0	0	495	0	0	0	539	110	0	0	0	0
Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Madera	189	0	0	0	0	486	0	11	39	0	571	0	0	0	0
Merced	237	20	0	0	0	239	8	0	9	2	375	0	0	0	0
Placer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin	70	0	40	0	0	81	0	0	0	5	63	7	0	0	2
San Luis Obispo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Solano	0	0	0	0	0	0	0	0	0	0	25	0	24	4	0
Stanislaus	140	0	0	25	0	187	0	5	0	0	453	0	0	39	0
Sutter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tehama	0	0	0	0	0	0	0	0	0	0	132	0	0	0	8
Tulare	0	0	0	0	0	246	0	0	0	0	221	0	0	0	0
Yolo	102	0	0	0	0	26	0	0	0	24	214	0	0	0	0
Yuba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2,175	20	41	286	0	2,905	162	25	155	911	5,712	12	24	104	429

Tier 1A: Low to moderate stress observed in current water year.

Tier 1B: Low to moderate stress observed in two or more consecutive water years

Tier 2: Moderate to high stress observed in current water year.

Tier 3: Moderate to high stress observed in two or more consecutive water years.

			2004					2005					2006		
	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Butte	186	0	0	13	0	21	0	0	0	0	0	0	0	32	0
Calaveras	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colusa	26	0	9	13	0	101	0	0	0	0	284	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	2,198	170	38	71	186	1,182	0	41	0	36	2,239	0	318	0	535
Glenn	165	0	0	0	0	206	0	0	0	0	0	0	0	0	0
Kern	2,339	17	0	0	639	2,857	159	0	241	2,047	1,837	710	0	136	468
Kings	44	0	0	0	0	439	0	0	0	0	201	0	1	0	0
Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Madera	574	0	58	77	0	888	0	0	0	0	784	0	12	67	72
Merced	599	15	0	0	0	696	0	0	494	1,341	361	0	32	504	282
Placer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Sacramento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin	22	101	0	0	2	84	115	0	0	0	28	0	0	72	0
San Luis Obispo	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0
Solano	53	0	24	0	0	0	0	0	0	0	0	0	0	0	0
Stanislaus	1,075	0	76	0	0	687	0	52	0	5	827	3	59	15	31
Sutter	48		0	0	0	0	0	0	0	0	66	15	0	0	0
Tehama	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tulare	216	0	0	0	0	406	0	0	0	63	247	0	0	0	0
Yolo	388	0	5	0	11	159	0	39	0	4	86	0	0	16	0
Yuba	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0
Grand Total	8,009	303	210	174	838	7,747	274	137	735	3,496	6,959	727	422	842	1,394

Tier 1A: Low to moderate stress observed in current water year.

Tier 1B: Low to moderate stress observed in two or more consecutive water years

Tier 2: Moderate to high stress observed in current water year.

Tier 3: Moderate to high stress observed in two or more consecutive water years.

			2007					2008					2009		
	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	148	29	42	14	44	3	0	0	0	0
Calaveras	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colusa	0	0	31	0	0	72	0	8	0	0	0	0	0	0	7
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	1,023	0	0	135	1	496	45	9	0	1	115	22	32	0	0
Glenn	0	0	0	286	0	407	0	17	44	0	0	0	0	0	0
Kern	723	0	9	0	376	192	0	0	0	257	63	0	0	56	0
Kings	14	0	0	0	0	157	0	0	28	0	67	0	0	0	0
Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Madera	255	0	0	0	67	23	0	0	0	0	69	16	44	0	0
Merced	322	657	39	0	6	119	201	0	0	0	68	0	0	0	0
Placer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin	282	29	16	0	0	66	0	4	0	0	4	18	3	0	0
San Luis Obispo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solano	0	0	0	0	32	40	0	0	0	0	0	0	0	0	0
Stanislaus	302	12	36	0	3	355	0	8	0	34	194	13	0	0	6
Sutter	0	0	0	0	0	0	0	5	0	0	0	0	46	0	0
Tehama	2	0	0	0	4	67	0	16	0	7	0	0	0	0	0
Tulare	335	0	36	0	40	303	0	1	0	0	206	0	40	0	88
Yolo	39	0	11	0	42	110	0	28	26	245	75	0	0	0	3
Yuba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Grand Total</b>	3,298	698	178	421	571	2,555	274	136	111	588	862	68	165	56	

Tier 1A: Low to moderate stress observed in current water year.

Tier 1B: Low to moderate stress observed in two or more consecutive water years

Tier 2: Moderate to high stress observed in current water year.

Tier 3: Moderate to high stress observed in two or more consecutive water years.

	2010					2011					2012				
	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Butte	0	0	3	0	0	1	0	0	0	0	25	0	0	0	0
Calaveras	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colusa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	207	131	13	78	0	97	19	0	0	20	531	50	37	0	0
Glenn	0	0	1	0	0	0	0	0	0	0	32	0	0	0	0
Kern	57	0	0	0	0	185	0	0	0	210	0	0	0	0	0
Kings	16	0	0	0	0	1	0	0	0	0	102	0	0	0	0
Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Madera	91	0	0	0	0	281	0	35	0	0	167	0	0	0	0
Merced	83	0	0	115	12	42	61	0	0	4	0	59	0	0	0
Placer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin	0	0	0	0	0	64	0	10	0	0	129	0	1	0	0
San Luis Obispo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
Solano	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stanislaus	47	0	0	0	0	46	0	28	0	0	215	0	0	0	0
Sutter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tehama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tulare	64	0	173	0	0	224	0	0	0	66	1	0	21	0	0
Yolo	0	0	5	0	18	12	0	12	0	46	0	0	0	0	0
Yuba	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	566	131	198	193	30	953	80	85	0	346	1,202	108	60	0	17

Tier 1A: Low to moderate stress observed in current water year.

Tier 1B: Low to moderate stress observed in two or more consecutive water years

Tier 2: Moderate to high stress observed in current water year.

Tier 3: Moderate to high stress observed in two or more consecutive water years.

	2013					2014					2015				
	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Calaveras	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colusa	0	0	31	0	0	78	0	0	0	0	1	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	74	17	179	0	3	275	1,028	93	0	0	650	381	4	0	24
Glenn	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kern	3	0	0	0	0	12	37	0	0	2	13	0	0	9	0
Kings	240	0	0	0	0	36	0	0	0	0	65	0	51	0	0
Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Madera	77	0	37	0	0	206	0	0	0	0	37	0	57	0	0
Merced	15	37	0	0	0	16	244	0	0	0	63	71	4	0	0
Placer	0	0	0	0	0	0	0	0	21	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin	15	0	0	0	66	38	0	93	0	0	46	0	0	0	0
San Luis Obispo	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0
Solano	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stanislaus	27	68	91	0	0	8	44	82	0	5	199	0	5	0	0
Sutter	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
Tehama	0	0	0	0	0	0	0	0	0	0	0	0	73	0	0
Tulare	0	0	4	0	0	75	0	4	0	0	21	0	20	0	0
Yolo	27	0	0	0	0	0	0	2	0	0	56	0	0	56	0
Yuba	0	0	69	0	0	0	0	0	0	0	0	0	0	0	0
<b>Grand Total</b>	482	123	414	0	69	743	1,353	274	21	21	1,151	451	214	65	24

Tier 1A: Low to moderate stress observed in current water year.

Tier 1B: Low to moderate stress observed in two or more consecutive water years

Tier 2: Moderate to high stress observed in current water year.

Tier 3: Moderate to high stress observed in two or more consecutive water years.

	2016					2017					2018				
	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Butte	5	0	0	0	0	0	0	0	0	2	43	0	0	0	0
Calaveras	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0
Colusa	0	0	0	0	0	11	0	0	0	0	2	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	306	171	51	14	10	342	1	0	0	0	307	163	9	0	0
Glenn	0	0	0	0	0	0	0	59	0	0	0	0	0	0	0
Kern	5	0	30	0	0	48	0	0	0	0	14	117	0	0	0
Kings	79	0	18	0	0	0	4	0	0	0	261	0	0	0	0
Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Madera	24	0	34	25	0	1	0	16	0	0	25	0	0	0	0
Merced	93	40	71	9	0	15	71	0	0	0	8	4	5	0	0
Placer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin	90	54	54	0	0	22	0	0	0	0	56	0	1	0	0
San Luis Obispo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
Solano	0	0	0	0	0	0	0	0	0	0	0	51	0	0	0
Stanislaus	5	0	13	0	13	0	0	0	0	0	41	10	14	0	0
Sutter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tehama	0	0	150	0	0	8	0	8	0	0	0	2	0	0	0
Tulare	279	0	6	0	0	0	0	27	0	0	444	0	0	0	0
Yolo	0	0	0	0	0	308	0	0	0	0	0	0	0	0	0
Yuba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	886	265	452	48	23	755	75	110	0	2	1,202		28	0	20

Tier 1A: Low to moderate stress observed in current water year.

Tier 1B: Low to moderate stress observed in two or more consecutive water years

Tier 2: Moderate to high stress observed in current water year.

Tier 3: Moderate to high stress observed in two or more consecutive water years.

	2019							2020			2021				
	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
Calaveras	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colusa	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fresno	2	0	0	0	0	17	0	0	0	34	574	0	0	0	0
Glenn	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Kern	152	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Madera	6	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Merced	1	0	0	0	3	5	0	0	0	0	0	0	0	0	9
Placer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Luis Obispo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solano	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stanislaus	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Sutter	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tehama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tulare	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yolo	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
Yuba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	175	0	0	0	3	30	0	0	0	39	574	0	0	0	9

Tier 1A: Low to moderate stress observed in current water year.

Tier 1B: Low to moderate stress observed in two or more consecutive water years

Tier 2: Moderate to high stress observed in current water year.

Tier 3: Moderate to high stress observed in two or more consecutive water years.

	Total										
	Removed	Tier 1A CY 2023-2024	Tier 1B CY 2023-2024	Tier 2 CY 2023-2024	Tier 3 CY 2023-2024						
Alameda	0	0	0	0	0						
Butte	1,310	124	160	59	145						
Calaveras	0	0	24	0	17						
Colusa	2,216	15	164	61	24						
Contra Costa	0	0	0	0	9						
Fresno	13,558	2,352	906	437	1,942						
Glenn	1,424	74	126	374	32						
Kern	13,895	1,228	222	1,345	4,709						
Kings	2,653	4	71	28	1,362						
Lake	0	0	14	0	30						
Madera	6,334	16	420	451	161						
Merced	7,469	1,836	306	1,414	1,719						
Placer	0	0	0	21	0						
Riverside	0	0	0	0	6						
Sacramento	0	0	0	0	4						
San Joaquin	2,292	749	403	72	123						
San Luis Obispo	7	0	40	0	2,191						
Solano	270	51	57	4	95						
Stanislaus	9,060	171	1,111	542	244						
Sutter	431	15	90	0	0						
Tehama	292	40	254	0	27						
Tulare	3,661	0	342	0	257						
Yolo	1,902	0	206	130	780						
Yuba	21	0	110	0	0						
Grand Total	66,794	6,675	5,025	4,939	13,876						

Tier 1A: Low to moderate stress observed in current water year.

Tier 1B: Low to moderate stress observed in two or more consecutive water years

Tier 2: Moderate to high stress observed in current water year.

Tier 3: Moderate to high stress observed in two or more consecutive water years.