

ARVIN-EDISON WATER STORAGE DISTRICT 2019 LAND USE SURVEY



July 7, 2020

Introduction to the 2019 Land Use Survey

Prepared by Engineering Technician Micah Clark

This report summarizes the completed Spring and Fall 2019 Land Use Surveys for the Arvin-Edison Water Storage District (AEWSD or District). The District's Engineering Department collects both Spring data (April through July) and Fall data (October through December), through field observations. The data is collected and entered in an ArcGIS geodatabase, with aerial photography, by field, in order to produce maps and summarize data.

Land Use Classes were categorized according to the State of California's Department of Water Resources (DWR) "Standard Land Use Legend" as updated in August 2016 (enclosed within). The DWR Standard Land Use Legend categorizes land use into four (4) major classes: Agricultural, Semi-Agricultural, Urban, and Native. These classes are further subdivided by land use. Agricultural lands are subdivided by crop and irrigation method.

AEWSD is composed of two main water service areas covering 131,660 acres of predominantly agricultural lands. The Surface Water Service Area (SWSA) conjunctively serves 51,423 acres (39%) with surface water, and/or previously banked and extracted groundwater, through the District's canal and pipeline system to on-farm turnouts. Private farm wells and temporary water service from the District (when available), are both utilized to irrigate in the Groundwater Service Area (GWSA) to supply the agricultural demand for up to 68,037 acres (52%). In 2019, the GWSA had about 41,512 annual irrigated acres. Also, within the GWSA, there are about 1,650 acres (1%) of the District's spreading basins and 10,550 acres (8%) of mainly urban land uses and small acreage areas.

Land Use Surveys are required by the District's Repayment Water Service Contract with the Bureau of Reclamation (USBR). Section 31 (a) on page 65 of the Repayment Contract states, "The Contractor shall establish and maintain accounts and other books and records pertaining to administration of the terms and conditions of this Contract, including: the Contractor's financial transactions, water supply data, and Project land and right-of-way agreements; **the water users' land-use (crop census)**, land ownership, land-leasing and water use data; and other matters that the Contracting Officer may require. Reports thereon shall be furnished to the Contracting Officer in such form and on such date or dates as the Contracting Officer may require..."

Additional uses of the Land Use Survey are utilized to meet DWR requirements, provide information to JMLord Inc. for the annual "Assessment of Reasonable Water Requirements" for the entire District (SWSA and GWSA) and for inclusion into the District's Water Management Plan (another USBR requirement). This information is also provided, upon request, to water users/producers within the District for their personal use as well as the Kern County Water Agency for their county-wide summaries. In addition, District staff and its' consultants use this report for various purposes, including but not limited to, Hydrologic Balance, Groundwater Management Plan including SGMA compliance, Water Use Reviews, and Lateral Prorate Studies.

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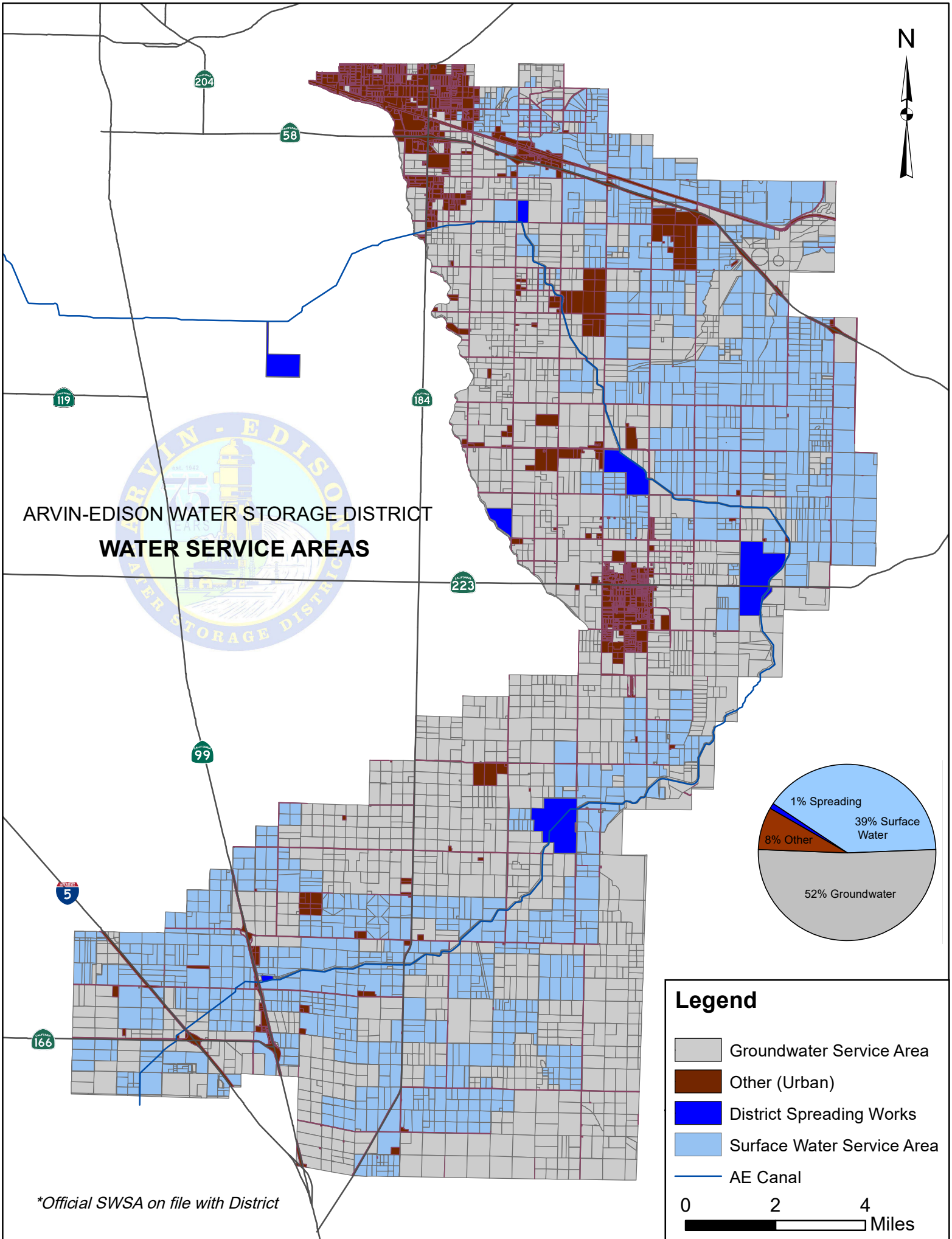
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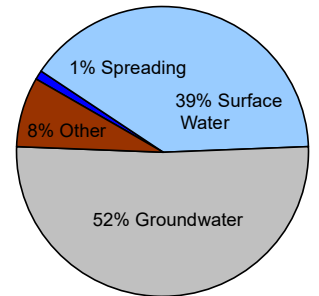
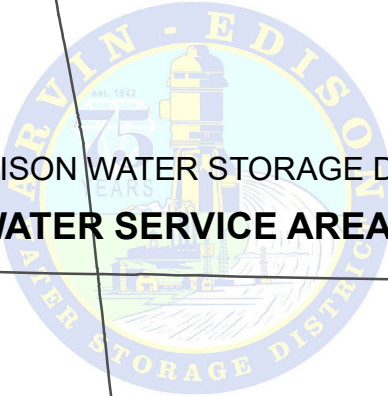
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Attachment

DWR – Standard Land Use Legend (August 2016)	
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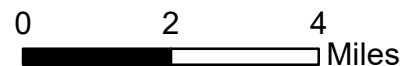


ARVIN-EDISON WATER STORAGE DISTRICT
WATER SERVICE AREAS

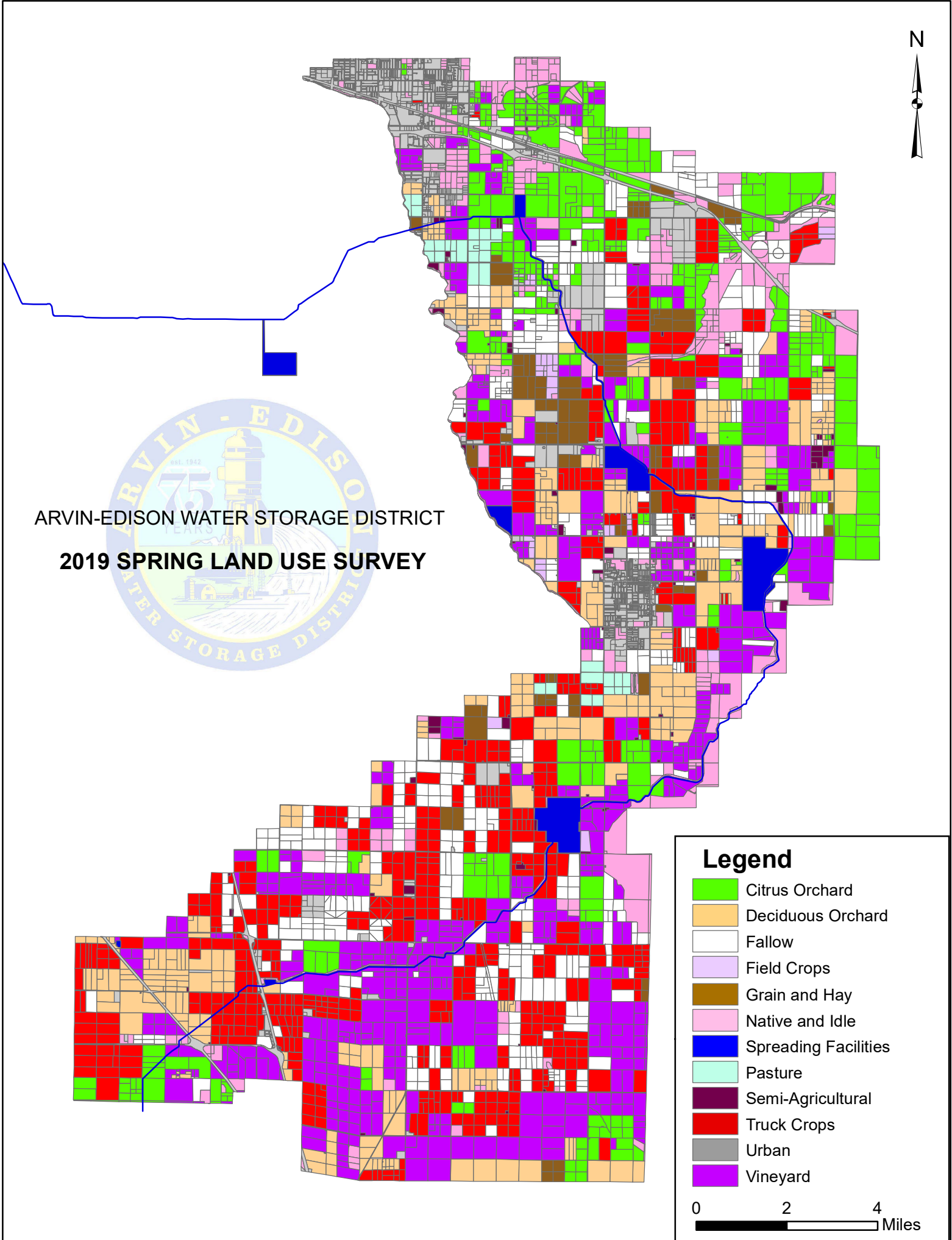


Legend

- Groundwater Service Area
- Other (Urban)
- District Spreading Works
- Surface Water Service Area
- AE Canal

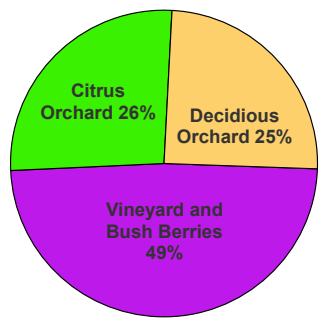
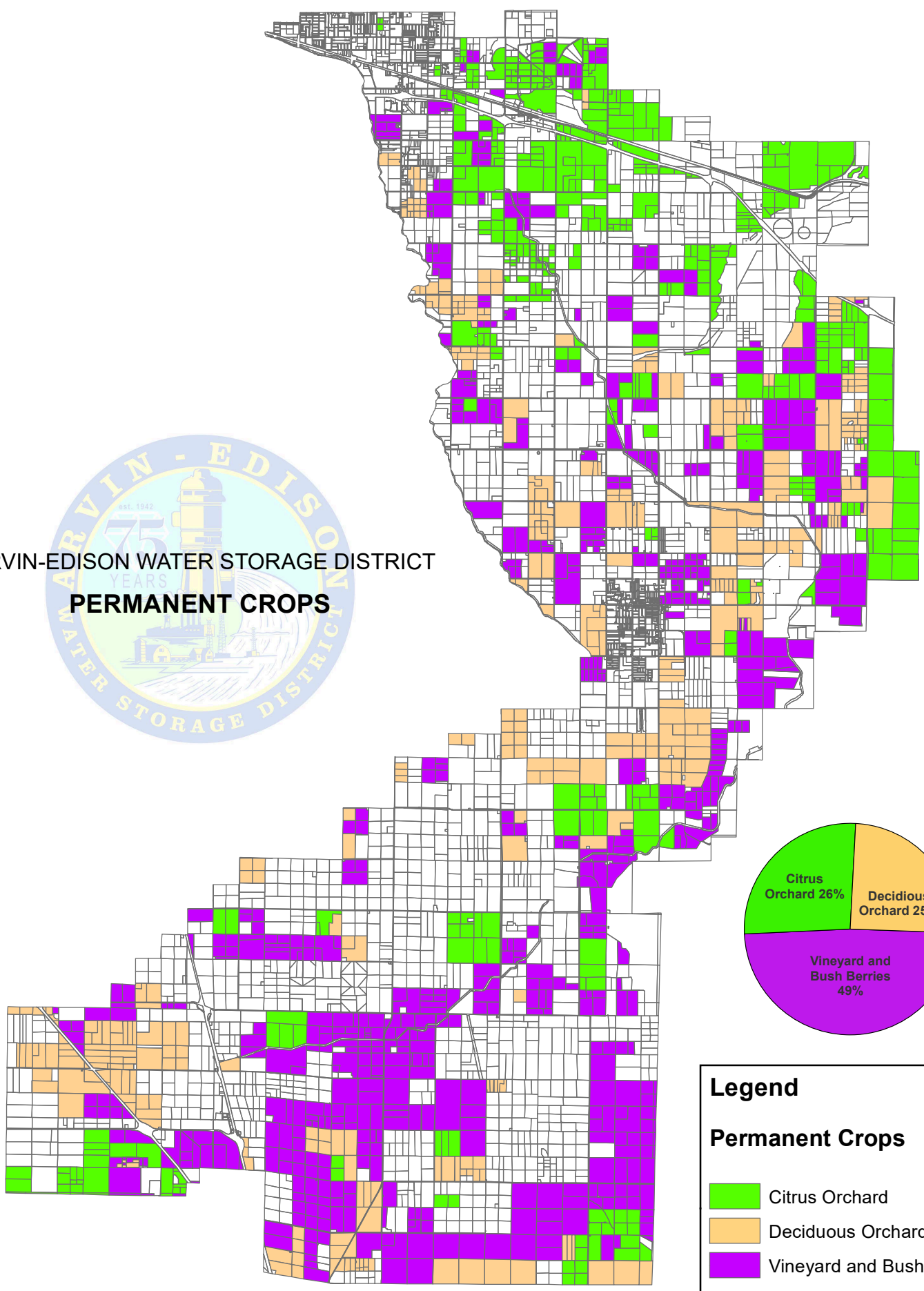


**Official SWSA on file with District*









ARVIN-EDISON WATER STORAGE DISTRICT
PERMANENT CROPS



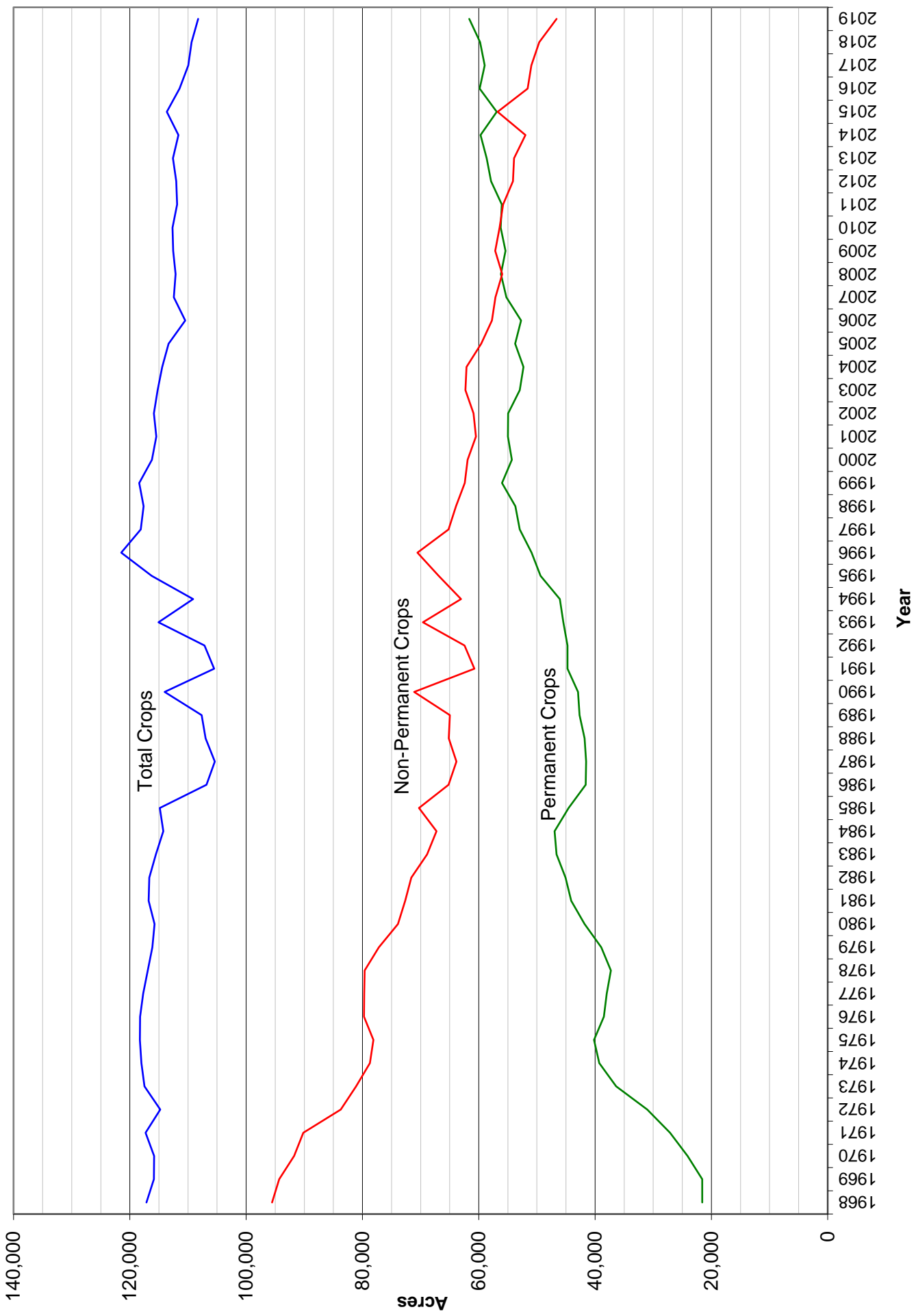
Legend

Permanent Crops

-  Citrus Orchard
-  Deciduous Orchard
-  Vineyard and Bush Berries

0 2 4
 Miles

ARVIN-EDISON WATER STORAGE DISTRICT
PERMANENT VS. NON-PERMANENT CROPPING PATTERNS



**ARVIN-EDISON WATER STORAGE DISTRICT
5 YEAR CROP SURVEY SUMMARY (2015 - 2019)**

Crop	2015			2016			2017			2018			2019		
	Spring	Fall	Total	Spring	Fall	Total	Spring	Fall	Total	Spring	Fall	Total	Spring	Fall	Total
Alfalfa/Hay ²	1,897	1,252	3,149	1,435	23	1,457	605	160	765	4,010	198	4,208	3,036	324	3,360
Almonds	9,178	969	10,147	9,044	1,054	10,099	9,146	747	9,893	9,741	976	10,717	10,540	308	10,849
Apples	23	0	23	23	0	23	23	1	24	23	0	23	13	0	13
Apricots	125	0	125	134	0	134	121	32	153	73	0	73	70	0	70
Beans (Green)	554	0	554	514	0	514	401	0	401	791	0	791	698	0	698
Carrots	3,905	8,496	12,400	3,906	10,518	14,424	3,652	9,871	13,522	3,458	9,228	12,686	4,024	9,107	13,132
Citrus ³	15,489	627	16,115	15,984	1,725	17,709	16,403	733	17,137	16,706	127	16,833	16,371	292	16,663
Cole Crops	252	221	473	120	0	120	681	729	1,411	323	412	735	321	182	503
Cotton	0	0	0	0	39	39	40	0	40	0	0	0	220	40	260
Corn (Field)	431	0	431	111	0	111	16	0	16	0	0	0	0	0	0
Irrigated Pasture ⁴	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lettuce	78	457	535	473	0	473	155	87	242	277	187	464	175	347	522
Melons	1,080	0	1,080	918	0	918	755	13	768	835	0	835	678	18	697
Misc. Deciduous ⁵	3,259	98	3,357	3,370	557	3,927	2,479	181	2,659	2,539	0	2,539	2,382	0	2,382
Misc. Truck Crops ⁶	2,464	1,514	3,977	3,671	3,174	6,845	2,944	1,573	4,518	3,111	1,861	4,972	4,083	2,135	6,218
Misc. Field Crops ⁷	0	0	0	0	442	442	191	4	195	114	38	152	359	344	703
Nursery	203	118	320	152	26	178	52	8	60	60	38	98	86	0	86
Onions	3,889	287	4,176	3,405	507	3,912	3,923	311	4,235	3,556	204	3,760	3,386	473	3,859
Peaches/Nectarines	769	37	806	964	214	1,178	858	111	969	827	0	827	800	0	800
Pears	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peppers	2,137	0	2,137	2,205	43	2,248	1,718	10	1,728	1,725	0	1,725	1,475	0	1,475
Pistachios	602	745	1,347	1,471	601	2,072	1,438	130	1,568	1,556	76	1,632	1,436	0	1,436
Plums	12	0	12	0	0	0	0	0	0	0	0	0	0	0	0
Potatoes ⁸	11,486	888	12,374	11,024	1,377	12,400	12,996	1,404	14,400	9,633	1,270	10,903	6,708	807	7,514
Safflower	365	0	365	317	0	317	0	0	0	317	0	317	50	0	50
Small Grains ⁹	2,610	422	3,032	3,831	208	4,040	3,863	1,388	5,251	2,462	308	2,770	2,096	295	2,391
Sugarbeets ¹⁰	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tomatoes	5,569	0	5,569	5,070	0	5,070	3,772	0	3,772	2,829	0	2,829	2,342	0	2,342
Vineyard	27,240	3,210	30,450	28,314	3,582	31,895	27,962	2,583	30,545	27,781	412	28,193	29,445	596	30,041
Walnuts	136	0	136	0	0	0	0	0	0	0	0	0	0	0	0
Total¹	93,752	19,340	113,092	96,455	24,090	120,545	94,194	20,079	114,273	92,748	15,334	108,082	90,795	15,270	106,065

Permanent crops include acreage for young crops in total count.

¹Includes non-irrigated crops. Does not include Native classes.

²Includes: Alfalfa, Misc. Grains and Hay, and Mixed Grains and Hay.

³Includes: Grapefruit, Jojoba, Lemons, Misc. Citrus, and Oranges.

⁴Includes: Mixed Pasture and Turf Farms.

⁵Includes: Cherries, Misc. Deciduous, and Mixed Deciduous.

⁶Includes: Asian Leafy Greens, Asparagus, Broccoli, Blueberries, Bush Berries, Cabbage, Cauliflower, Misc. Truck Crops, Mixed Truck Crops, Spinach, Strawberries, and Sweet Potatoes.

⁷Includes: Grain Sorghum, Hemp, Misc. Field and Sudan.

⁸Does not include Sweet Potatoes.

⁹Includes: Barley, Oats, and Wheat.

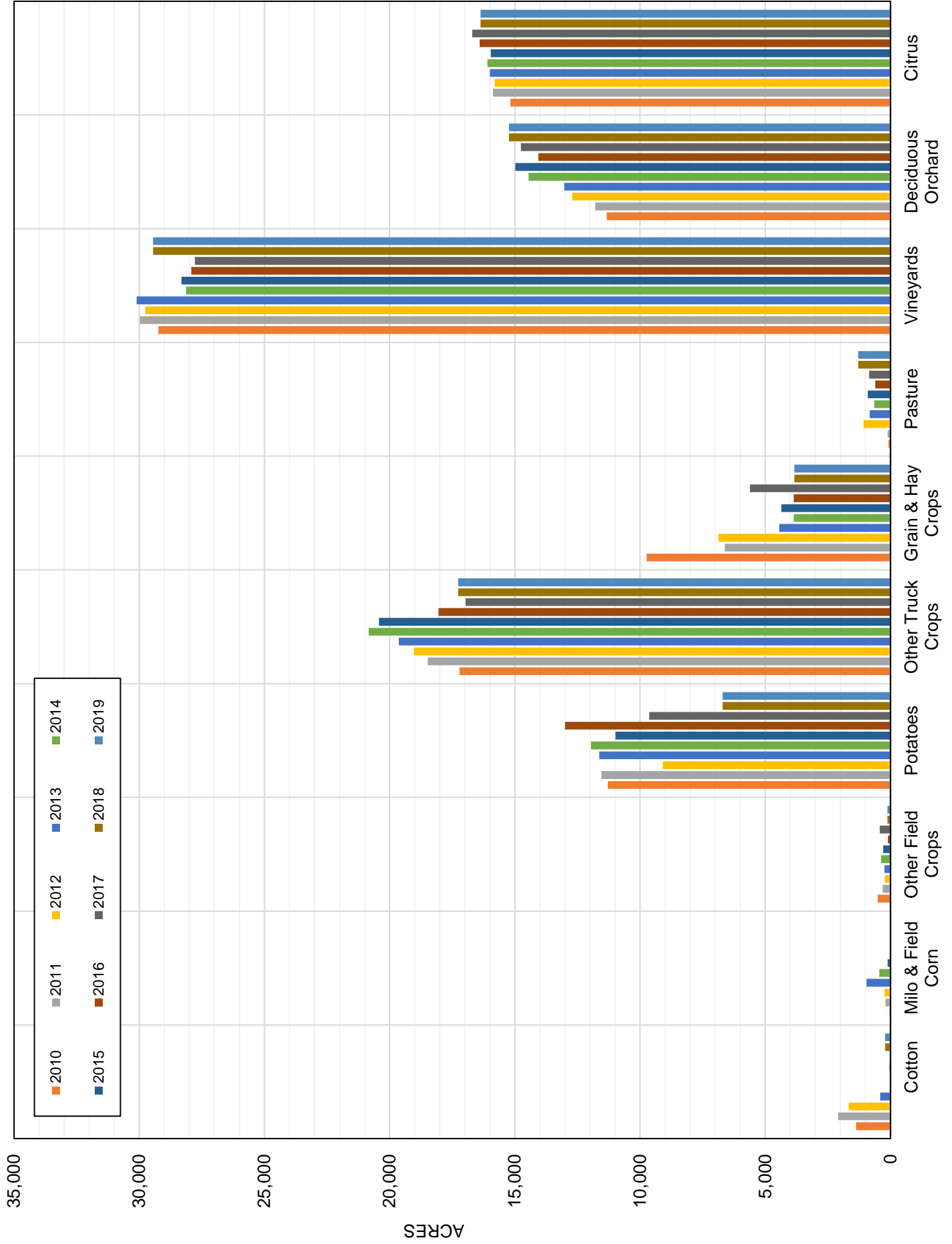
¹⁰Classified as Misc. Truck Crop.

ARVIN-EDISON WATER STORAGE DISTRICT
10 YEAR SUMMARY OF SPRING LAND USE (2010 - 2019)

LAND USE *(1) *(2) *(3)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Field Crops										
Cotton	1,443	1,375	2,088	1,664	409	0	0	40	0	220
Milo & Field Corn	77	37	201	242	962	450	111	16	0	0
Other Field Crops	289	514	307	221	240	381	290	106	431	122
Hemp	-	-	-	-	-	-	-	-	-	287
Truck Crops										
Potatoes	9,654	11,290	11,544	9,090	11,632	11,966	10,981	12,996	9,633	6,708
Other Truck Crops	16,169	17,219	18,479	19,029	19,640	20,842	20,434	18,054	16,966	17,268
Grain & Hay Crops	8,399	9,737	6,615	6,876	4,449	3,862	4362	3,863	5,613	3,838
Pasture	129	77	113	1,080	829	647	904	605	859	1,294
Vineyards	28,869	29,239	29,975	29,753	30,109	28,128	28,314	27,923	27,781	29,445
Deciduous Orchard	11,725	11,335	11,791	12,717	13,029	14,455	14,978	14,064	14,759	15,241
Citrus	15,242	15,176	15,875	15,811	15,999	16,103	15,961	16,403	16,706	16,371
Subtotal	91,996	95,999	96,988	96,483	97,298	96,833	96,334	94,071	92,748	90,795
Fallow *(4)	19,284	14,417	14,083	15,741	13,909	16,308	15,007	15,754	16,115	17,464
Total Irrigated Acres	111,280	110,416	111,071	112,224	111,207	113,141	111,341	109,824	108,863	108,259
Semi-Incidental To Agricultural	479	804	519	411	381	256	326	560	726	743
Urban and Vacant	8,841	8,821	8,924	8,938	10,313	9,377	10,401	10,515	10,562	10,219
Non-Irrigated Crops	973	1,464	954	196	449	383	121	124	0	0
Abandoned Orchards/Vineyards	0	0	0	0	0	0	0	0	0	0
Idle Land *(5)	1,590	1,226	1,018	1,015	1,112	1,832	1,530	2,211	3,174	4,283
Native Classes	8,497	8,929	9,174	8,876	8,198	6,671	7,941	8,426	8,335	8,155
Total Non-Irrigated Acres	20,380	21,244	20,589	19,436	20,453	18,519	20,319	21,836	22,797	23,401
Total District Acreage	131,660	131,660	131,660	131,660	131,660	131,660	131,660	131,660	131,660	131,660

*(1) Standard Land Use Legend as prepared by DWR, July 1993; for 2005 the 1999 Legend was used. There were minor changes in 2005 and 2009.
*(2) Land Use is surveyed during the Spring of each year
*(3) Land Use survey completed in August
*(4) Land is tilled at time of survey but current crop not identified
*(5) Land cropped within the past three years but not tilled at time of survey

ARVIN-EDISON WATER STORAGE DISTRICT
10 YEAR SUMMARY OF SPRING LAND USE (2010 - 2019)



ARVIN-EDISON WATER STORAGE DISTRICT 2019 LAND USE TABLES WITH CROPS AND ACRES

2019 Spring Land Use with Crops			
Legend	SWSA	GWSA	Total (AC)
Vineyard	10,179	15,766	25,945
Oranges	9,016	3,778	12,794
Fallow	5,944	11,520	17,464
Potatoes	2,996	3,712	6,708
Almonds	2,826	5,101	7,927
Vineyard-Young	1,833	1,667	3,500
Carrots	1,759	2,265	4,024
Almonds-Young	1,666	947	2,613
Idle	1,494	2,789	4,283
Onions	1,381	2,005	3,386
Tomatoes	1,164	1,177	2,342
Cherries	1,153	680	1,833
Oranges-Young	1,107	632	1,739
Peppers	899	576	1,475
Urban Industrial - Solar	886	773	1,658
Urban Vacant-Roads	741	2,911	3,652
Citrus-Misc.	619	877	1,497
Peaches/Nectarines	560	240	800
Pistachios	431	422	853
Cherries-Young	417	56	472
Native Grasses	412	3,895	4,307
Sweet Potatoes	392	635	1,026
Truck Crops-Misc.	348	824	1,172
Barley	284	1,124	1,408
Mixed grain and hay	262	1,407	1,669
Cabbage	228	252	480
Beans	228	470	698
Melons	226	453	678
Wheat	200	335	535
Blueberries	171	319	490
Lettuce	152	23	175
Pistachios-Young	148	435	583
Jojoba	145	4	149
Grapefruit	139	1	140
Hemp	119	168	287
Urban Industrial	121	1,353	1,474
Water Surface	103	2,614	2,717
Farmsteads	79	305	384
Cole Crops (mixed)	76	245	321
Spinach	74	42	116
Apricots	68	2	70
Urban Residential	65	2,886	2,951
Lemons	46	6	52
Nursery Crops	39	47	86
Urban Commercial	39	445	484
Deciduous-Misc.	35	8	43
Mixed Deciduous	34	0	34
Bush Berries	23	70	93
Feedlots	19	338	358
Asparagus	58	0	58
Apples	13	0	13
Strawberries	4	0	4
Native Grass/Shrubs	3	1,119	1,122
Landowner Well	0	2	2
Alfalfa	0	1,294	1,294
Mixed Truck Crops	0	572	572
Cotton	0	220	220
Oats	0	153	153
Grains & Hay	0	73	73
Cauliflower	0	72	72
Safflower	0	50	50
Misc. Field	0	40	40
Grain Sorugum	0	32	32
Native Barren	0	9	9
TOTAL	51,423	80,237	131,660

Fall Crops**	
Legend	Total
Carrots	9,107
Truck Crops-Misc.	1,639
Potatoes	807
Vineyard-Young	530
Onions	473
Lettuce	347
Hemp	344
Grains & Hay	324
Oats	295
Cabbage	254
Oranges-Young	245
Almonds-Young	193
Cole Crops (mixed)	182
Almonds	116
Asian Leafy Greens	109
Sweet Potatoes	82
Vineyard	66
Cauliflower	51
Oranges	47
Cotton	40
Melons	18
Total	15,270

*Crop is sorted by descending SWSA

**Crops grown in the Fall in addition to Spring Crops

SWSA - Surface Water Service Area

GWSA - Groundwater Service Area

ARVIN-EDISON WATER STORAGE DISTRICT 2019 COMMODITY VALUES

2019 Spring Crops				
Legend	Acres	Production Per Acre	Production (tons)	Total Value
Vineyard	25,945	12	321,459	\$1,116,358,629,375
Oranges	12,794	15	186,028	\$981,182,493,546
Almonds	7,927	1	9,116	\$4,690,42,753,683
Potatoes	6,708	26	176,820	\$245,433,394,201
Carrots ¹	4,024	26	102,778	\$455,46,760,859
Onions	3,386	28	94,171	\$230,21,659,315
Tomatoes	2,342	62	144,409	\$79,11,408,314
Cherries	1,833	1	2,254	\$7,370,16,614,882
Mixed Grain & Hay	1,669	3	5,524	\$146,808,572
Citrus-Misc.	1,497	15	21,760	\$981,21,346,123
Peppers	1,475	19	28,577	\$1,050,30,006,010
Barley	1,408	1	2,027	\$235,476,425
Alfalfa	1,294	8	10,871	\$203,22,206,813
Truck Crops-Misc.	1,172	26	29,928	\$455,13,616,189
Sweet Potatoes	1,026	26	26,211	\$455,11,925,363
Pistachios	853	2	1,706	\$4,470,17,624,211
Peaches/Nectarines ²	800	15	12,367	\$639,77,897,382
Beans	698	2	1,347	\$800,1,077,209
Melons	678	37	25,148	\$343,88,625,882
Mixed Truck Crops	572	26	14,619	\$455,66,651,329
Wheat	535	3	1,514	\$197,298,167
Blueberries	490	1	461	\$6,620,3,052,234
Cabbage	480	26	12,257	\$455,55,576,367
Cole Crops (Mixed)	321	26	8,196	\$455,33,728,775
Hemp ³	287	10	2,992	\$143,427,500
Cotton	220	1,710	375,703	\$1,418,909
Lettuce	175	26	4,479	\$455,22,037,949
Oats	153	4	598	\$148,888,438
Jojoba	149	15	2,309	\$639,1,474,812
Grapfruit	140	13	1,797	\$907,1,629,785
Spinach	116	26	2,953	\$455,1,343,703
Bush Berries	93	15	1,430	\$639,913,432
Nursery Crops	86	15,828	1,357,432	\$4,55,313,014
Grains & Hay	73	3	242	\$146,335,392
Cauliflower	70	26	1,846	\$455,839,814
Apricots	70	15	1,088	\$639,694,589
Asparagus	58	26	1,477	\$455,671,851
Lemons	52	13	699	\$1,380,965,131
Safflower	50	10	522	\$143,74,597
Deciduous-Misc.	43	15	670	\$639,428,171
Misc. Field	40	10	422	\$143,60,252
Mixed Deciduous	34	15	521	\$639,333,022
Grain Sorghum	32	10	331	\$143,47,341
Apples	13	4	46	\$771,335,157
Strawberries	4	15	60	\$639,38,060
Total	81,887	18,217	2,997,166	\$42,704,866,500,143

Orchards and vineyards only depict mature fruit and nut bearing crop acreage.

^{*}Based on 2018 unit values from "2018 Kern County Agricultural Crop Report" dated 9/18/18.

^{**}Crops grown in the Fall in addition to Spring Crops.

¹The following crops are classified into the same category according to the Kern County Crop Report: Asian Leafy Greens, Asparagus, Broccoli, Cabbage, Carrots, Cauliflower, Cole Crops, Misc. Truck, Mixed Truck, Spinach and Sweet Potatoes.

²The following crops are classified into the same category according to the Kern County Crop Report: Apricots, Jojoba, Misc. Deciduous, Mixed Deciduous, Nectarines and Peaches, and Strawberries.

³The following crops are classified into the same category according to the Kern County Crop Report: Grain Sorghum, Hemp, Misc. Field, Safflower and Sudan.

⁴The following crops are classified into the same category according to the Kern County Crop Report: Asian Leafy Greens, Asparagus, Broccoli, Cabbage, Carrots, Cauliflower, Cole Crops, Misc. Truck, Mixed Truck, Spinach and Sweet Potatoes.

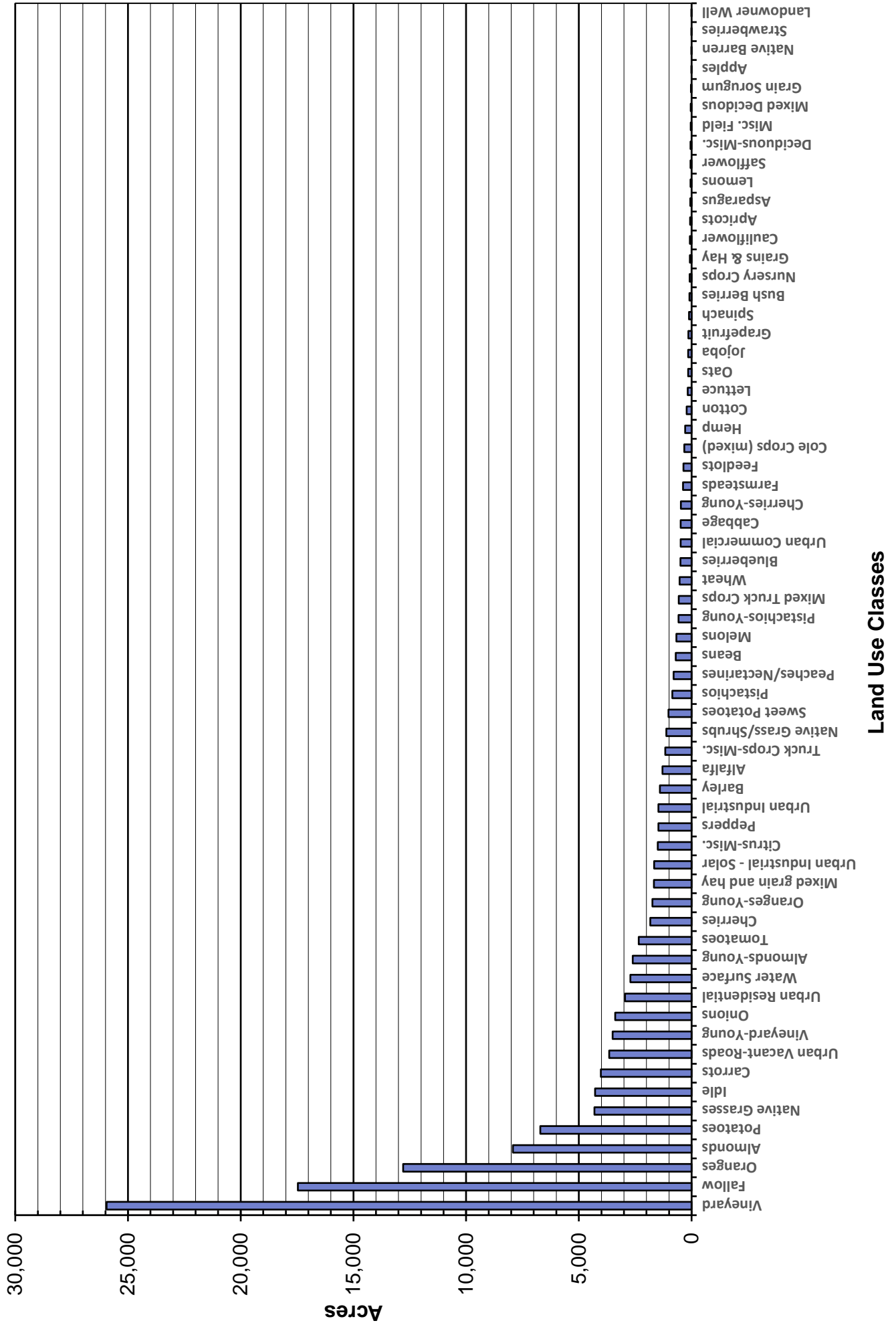
⁵Total acreage and value of Kern County for all commodities, excluding Industrial and Wood Crops, Livestock and Poultry Products, Apiary Products, and Rangeland.

2019 Fall Crops**				
Legend	Acres	Production Per Acre	Production (tons)	Total Value
Carrots ⁴	9,107	26	232,604	\$455,105,827,795
Truck Crops-Misc.	1,639	26	41,864	\$455,19,046,988
Potatoes	807	13	10,437	\$328,33,421,122
Onions	473	28	13,158	\$230,33,026,387
Lettuce	347	26	8,860	\$455,4,031,108
Hemp	344	10	3,585	\$143,512,140
Grains & Hay	324	3	1,072	\$146,156,471
Oats	295	4	1,150	\$148,170,201
Cabbage	254	26	6,497	\$455,29,956,146
Cole Crops (Mixed)	182	26	4,652	\$455,2,116,332
Almonds	116	1	133	\$4,690,623,686
Asian Leafy Greens	109	26	2,781	\$455,1,265,320
Sweet Potatoes	82	26	2,092	\$455,951,790
Vineyard	66	12	824	\$1,116,919,084
Cauliflower	51	26	1,304	\$455,593,469
Oranges	47	15	687	\$981,673,509
Cotton	40	1,710	69,209	\$1,77,167
Melons	18	37	679	\$343,232,801
Total	14,302	2,038	401,587	\$11,765,146,601,517

Legend	Acres	Value
Total Spring 2019	81,887	\$866,500,143
Total Fall 2019	14,302	\$146,601,517
Total Non-Bearing 2019	9,875	\$0
Grand Total	106,065	\$1,013,101,660

Legend	Acres	Value
Total AEWS 2019	106,065	\$1,013,101,660
Total Kern County 2018 ⁵	865,813	\$6,344,193,000
AEWS % of Total Value	12%	16%

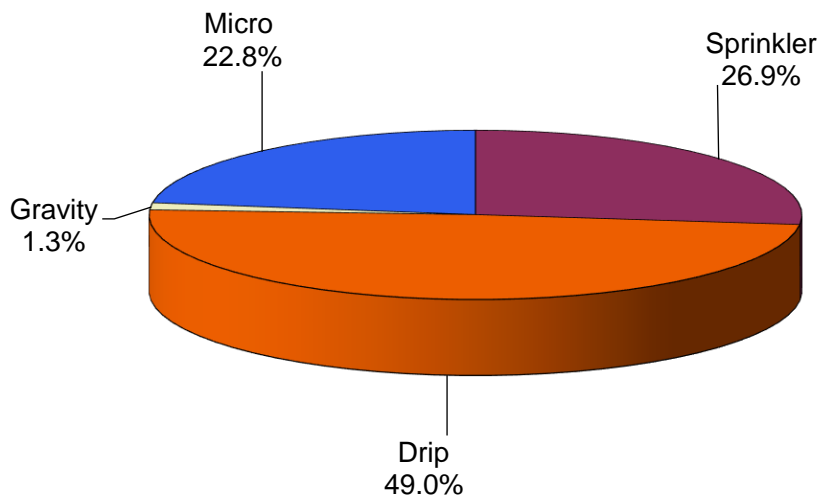
ARVIN-EDISON WATER STORAGE DISTRICT
SPRING 2019 LAND USE SURVEY

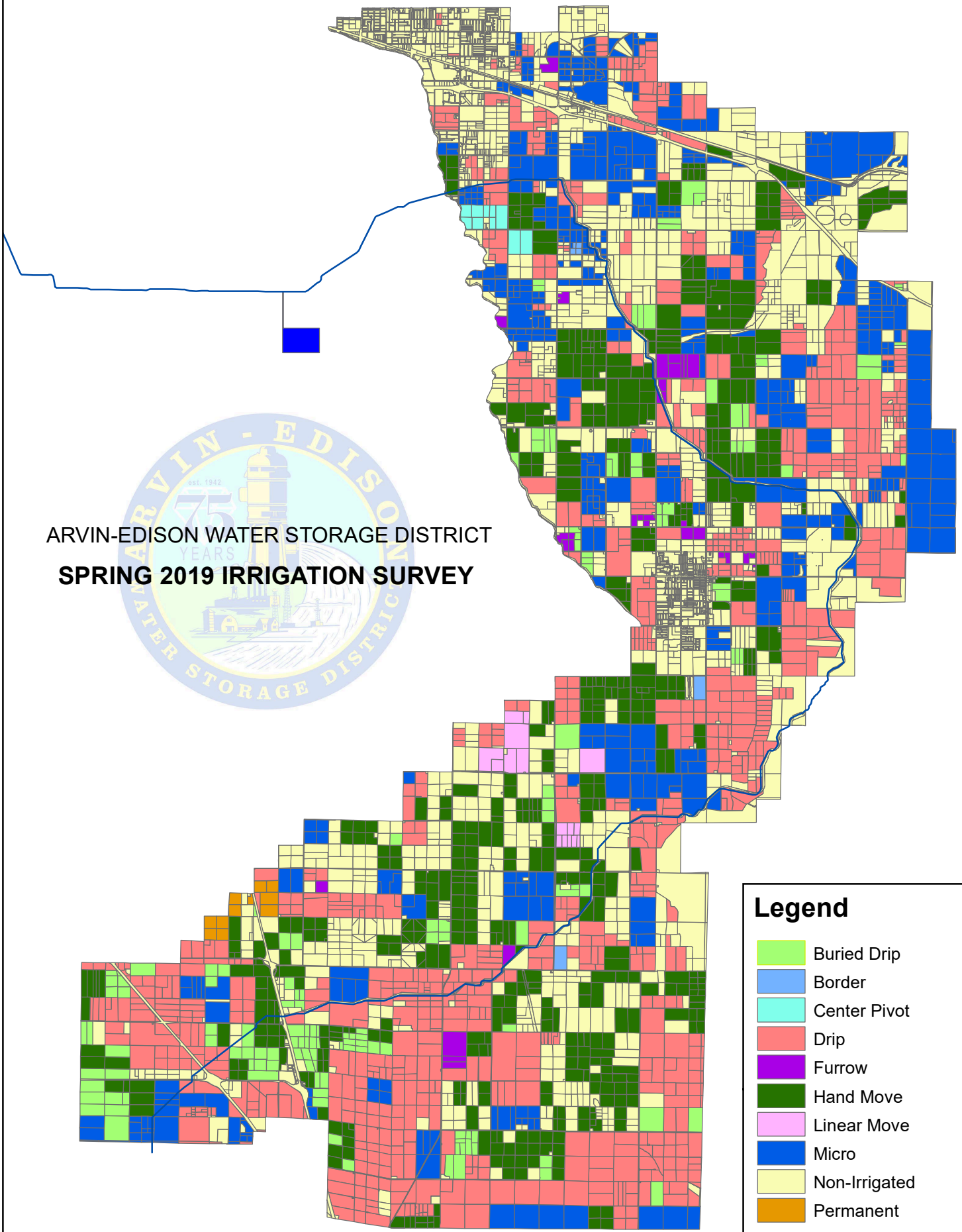


**ARVIN-EDISON WATER STORAGE DISTRICT
 SPRING 2019 IRRIGATION SUMMARY**

Method	Acres	%
Sprinkler	24,397	26.9
Drip	44,515	49.0
Gravity	1,214	1.3
Micro	<u>20,668</u>	<u>22.8</u>
Subtotal	90,795	100.0
Non-Irrigated	<u>40,865</u>	
Total	131,660	

2019 IRRIGATION SYSTEMS PERCENTAGE



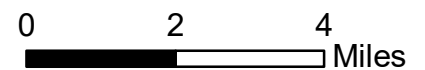


ARVIN-EDISON WATER STORAGE DISTRICT
SPRING 2019 IRRIGATION SURVEY



Legend

-  Buried Drip
-  Border
-  Center Pivot
-  Drip
-  Furrow
-  Hand Move
-  Linear Move
-  Micro
-  Non-Irrigated
-  Permanent



State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

STANDARD LAND USE LEGEND

Land and Water Use Section
Water Use and Efficiency Branch
Division of Statewide Integrated Water Management

August 2016

STANDARD LAND USE LEGEND

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I. GENERAL

The minimum breakdown of land use is according to the class symbol. More detail is obtained by adding the subclass number to the class symbol, or by use of special condition symbols. Any or all of the following information can be delineated.

1. Types of agricultural, urban, or native land use
2. Specific crops
3. Multiple land use
4. Sources of water supply
5. Type of irrigation system

This legend is for land use surveys conducted in 2016 and after.

II. AGRICULTURAL CLASSES

The vast majority of crops grown in California are irrigated. Unless preceded with an "n" if it is non-irrigated, all agricultural classes are considered irrigated. (This statement is for the agricultural classes and does not apply to the other non-agricultural classes of semiagricultural, urban, or native.)

G - GRAIN AND HAY CROPS

- | | | | |
|----|--------|----|-----------------------------|
| 1. | Barley | 6. | Miscellaneous grain and hay |
| 2. | Wheat | 7. | Mixed grain and hay |
| 3. | Oats | | |

R - RICE

- | | | | |
|----|------|----|-----------|
| 1. | Rice | 2. | Wild rice |
|----|------|----|-----------|

F - FIELD CROPS

- | | | | |
|----|----------------------|-----|----------------------|
| 1. | Cotton | 9. | Castor beans |
| 2. | Safflower | 10. | Beans (dry) |
| 3. | Flax | 11. | Miscellaneous field |
| 4. | Hops | 12. | Sunflowers |
| 5. | Sugar beets | 13. | Hybrid sorghum/sudan |
| 6. | Corn (field & sweet) | 14. | Millet |
| 7. | Grain sorghum | 15. | Sugar cane |
| 8. | Sudan | | |

P - PASTURE

- | | | | |
|----|--|-----|-----------------------|
| 1. | Alfalfa & alfalfa mixtures | 6. | Miscellaneous grasses |
| 2. | Clover | 7. | Turf farms |
| 3. | Mixed pasture | 8. | Bermuda grass |
| 4. | Native Pasture | 9. | Rye grass |
| 5. | Induced high water table
native pasture | 10. | Klein grass |

T - TRUCK, NURSERY AND BERRY CROPS

- | | |
|---|--|
| 1. Artichokes | 16. Flowers, nursery & Christmas tree farms |
| 2. Asparagus | 17. Mixed truck (four or more) |
| 3. Beans (green) | 18. Miscellaneous truck (a truck crop not specifically listed in the legend) |
| 4. Cole crops (mixture of cole crops or cole crops not specifically listed in the legend) | 19. Bush berries |
| 6. Carrots | 20. Strawberries |
| 7. Celery | 21. Peppers (chili, bell, etc.) |
| 8. Lettuce (all types) | 22. Broccoli |
| 9. Melons, squash, and cucumbers (all types) | 23. Cabbage |
| 10. Onions and garlic | 24. Cauliflower |
| 11. Peas | 25. Brussels sprouts |
| 12. Potatoes | 26. Tomatoes (market) |
| 13. Sweet Potatoes | 27. Greenhouse |
| 14. Spinach | 28. Blueberries |
| 15. Tomatoes (processing) | 29. Asian leafy vegetables |

D - DECIDUOUS FRUITS AND NUTS

- | | |
|---------------------------|---|
| 1. Apples | 10. Miscellaneous deciduous (a type of deciduous orchard not specifically listed in the legend) |
| 2. Apricots | 11. Mixed deciduous |
| 3. Cherries | 12. Almonds |
| 5. Peaches and nectarines | 13. Walnuts |
| 6. Pears | 14. Pistachios |
| 7. Plums | 15. Pomegranates |
| 8. Prunes | |
| 9. Figs | |

C - CITRUS AND SUBTROPICAL

- | | |
|---------------|-------------------------------------|
| 1. Grapefruit | 7. Miscellaneous subtropical fruits |
| 2. Lemons | 8. Kiwis |
| 3. Oranges | 9. Jojoba |
| 4. Dates | 10. Eucalyptus |
| 5. Avocados | 11. Mixed subtropical fruits |
| 6. Olives | |

V - VINEYARDS

- | | |
|-----------------|------------------|
| 1. Table grapes | 3. Raisin grapes |
| 2. Wine grapes | |

I - IDLE

(Precede with "n" in non-irrigated area, and must include subclass)

1. Land not cropped the current or previous crop season, but cropped within the past three years.
2. New lands being prepared for crop production.
4. Long term idle, land that has been fallow or idle for four or more years.

III. SEMIAGRICULTURAL CLASS

(Do not precede with "n")

S - SEMIAGRICULTURAL & INCIDENTAL TO AGRICULTURE

(Must include subclass)

- | | | | |
|----|--|----|---|
| 1. | Farmsteads (includes a farm residence) | 4. | Poultry farms |
| 2. | Livestock feed lot operations | 5. | Farmsteads (without a farm residence) |
| 3. | Dairies | 6. | Miscellaneous semi-ag (small roads, ditches, non-planted areas of cropped fields) |

IV. URBAN CLASSES

(Do not precede with "n")

U - URBAN

Residential, commercial, and industrial (may be used alone when further breakdown is not required)

UR - RESIDENTIAL

Single and multiple family units, including trailer courts (may be used alone when further breakdown is not required)

1. Single family dwellings with lot sizes greater than 1 acre up to 5 acres (ranchettes, etc.)
2. Single family dwellings with a density of 1 unit/acre up to 8+ units/acre.
3. Multiple family (apartments, condos, townhouses, barracks, bungalows, duplexes, etc.)
4. Trailer courts

WATER USE FACTOR (% of total area irrigated - will be the second digit of UR Subclass when water factor is used)

1. 0% to 25% area irrigated
2. 26% to 50% area irrigated
3. 51% to 75% area irrigated
4. 76% or greater

Example: UR32 indicates multiple family with water use factor of 26% to 50% of area irrigated.

UC - COMMERCIAL

(May be used alone when further breakdown is not required)

1. Offices, retailers, etc.
2. Hotels
3. Motels
4. Recreation vehicle parking, camp sites
5. Institutions (hospitals, prisons, reformatories, asylums, etc., having a reasonably constant 24-hour resident population)
6. Schools (yards to be mapped separately if large enough)
7. Municipal auditoriums, theaters, churches, buildings and stands associated with race tracks, football stadiums, baseball parks, rodeo arenas, amusement parks, animal boarding and/or exercise facilities, etc.
8. Miscellaneous high water use (to be used to indicate a high water use condition not covered by the above categories.)

UI - INDUSTRIAL

(May be used alone when further breakdown is not required)

1. Manufacturing, assembling, and general processing
2. Extractive industries (oil fields, rock quarries, gravel pits, rock and gravel processing plants, etc.)
3. Storage and distribution (warehouses, substations, railroad marshalling yards, tank farms, etc.)
6. Saw mills
7. Oil refineries
8. Paper mills
9. Meat packing plants
10. Steel and aluminum mills
11. Fruit and vegetable canneries and general food processing
12. Miscellaneous high water use (to be used to indicate a high water use condition not covered by other categories)
13. Sewage treatment plant including ponds.
14. Waste accumulation sites (public dumps, sewage sludge sites, landfill and hazardous waste sites, etc.)
15. Wind farms, solar collector farms, etc.

UL - URBAN LANDSCAPE

(May be used alone when further breakdown is not required)

1. Lawn area - irrigated
2. Golf course - irrigated
3. Ornamental landscape (excluding lawns) - irrigated
4. Cemeteries - irrigated
5. Cemeteries - not irrigated

UV - VACANT

(May be used alone when further breakdown is not required)

1. Unpaved areas (vacant lots, graveled surfaces, play yards, developable open lands within urban areas, etc.)
3. Railroad right of way
4. Paved areas (parking lots, paved roads, oiled surfaces, flood control channels, tennis court areas, auto sales lots, etc.)
6. Airport runways
7. Land in urban area that is not developable

V. NATIVE CLASSES

(Do not precede with "n")

NC - NATIVE CLASSES UNSEGREGATED

(May be used alone when further breakdown is not required)

NV - NATIVE VEGETATION

(May be used alone when further breakdown is not required)

- | | |
|-----------------|---------------------|
| 1. Grass land | 5. Brush and timber |
| 2. Light brush | 6. Forest |
| 3. Medium brush | 7. Oak grassland |
| 4. Heavy brush | |

NR - RIPARIAN VEGETATION

(May be used alone when further breakdown is not required)

1. Marsh lands, tules and sedges
2. Natural high water table meadow
3. Trees, shrubs or other larger stream side or watercourse vegetation
4. Seasonal duck marsh, dry or only partially wet during summer
5. Permanent duck marsh, flooded during summer

NW - WATER SURFACE

(May be used alone when further breakdown is not required)

1. River or stream (natural fresh water channels)
2. Water channel (all sizes - ditches and canals - delivering water for irrigation and urban use – e.g., State Water Project, CVP, water district canals, etc.)
3. Water channel (all sizes - ditches and canals - for removing on-farm drainage, water surface runoff and subsurface drainage – e.g., Colusa Basin Drainage Canal, drainage ditches in Imperial ID)
4. Freshwater lake, reservoir, or pond (all sizes, includes ponds for stock, recreation, groundwater recharge, managed wetlands, on-farm storage, etc.)
5. Brackish and saline water (includes areas in estuaries, inland water bodies, the ocean, etc.)
6. Wastewater pond (dairy, sewage, cannery, winery, etc)
7. Paved water conveyance channels within urban areas (mainly for flood control)

NB - BARREN AND WASTELAND

(May be used alone when further breakdown is not required)

- | | |
|------------------------|---------------|
| 1. Dry stream channels | 4. Salt flats |
| 2. Mine Tailing | 5. Sand dunes |
| 3. Barren land | |

VI. UNCLASSIFIED

NS - NOT SURVEYED

Area within the investigation area that was not mapped.

E - ENTRY DENIED

Area within the investigation area that was not mapped because entry into the area was denied.

Z - OUTSIDE

Area outside of the study area.

VI. SPECIAL CONDITIONS, IRRIGATION TYPE, AND WATER SOURCE

When any of the following special conditions, type of irrigation, or source of water is displayed on a map as a label, a (-) should precede them. When more than one is used they should be displayed in the order stated above.

1. SPECIAL CONDITIONS

(only one can be used per parcel)

A - ABANDONED ORCHARDS AND VINEYARDS

Trees or vines must be in such a condition that renewal of cultural practices would restore economic production. Indicated by "A" following crop symbol.

Example: D1-A indicates an apple orchard previously irrigated but now abandoned.

B - BURNED OVER AREAS

Indicated by "B". The type and density of natural cover destroyed by fire is obtained by examination of aerial photo.

Example: NV7-B indicates oak grassland recently burned over.

C – GREEN CHOPPED

Grain or field crops harvested early for livestock feed

D - HIGH DENSITY ORCHARDS

Indicates the density of trees is higher than normally expected (used with D and C classes).

E – ECOSYSTEM RESTORATION

Native vegetation or riparian areas that have undergone restoration (used with NV and NR classes).

F - FALLOW LANDS

Land not cropped during the current crop season, but cropped during the previous crop season.

- (1) If no crop residue is apparent or identifiable then the "F" symbol will follow the agricultural class symbol for the crop most representative of those grown in the area.

Example: T-F indicates fallow land within a truck crop area (with facilities for irrigation).

- (2) If the crop residue is apparent and identifiable but is not from the current crop season covered by the survey then the field is considered fallow and mapped as the class of the crop residue.

Example: Surveyor found an old sugar beet residue not from current season. Land would be mapped F-F.

- (3) If the crop residue is identifiable as that of a crop which was grown during the survey period, then map the field as though crop existed.

Example: Surveyor found carrot residue from current growing season. Land would be mapped T6.

G – COVER CROP

Indicates where grain, field, or pasture type crops have been planted for soil stabilization or for cover crops grown between rows of deciduous and subtropical trees and vines.

H – HARVESTED CROP

Indicates the identified crop was harvested at the time of the survey (used with truck, field, and grain crops).

K – FREEWAYS

The area within the freeway right of way.

Examples: UV-K indicates urban vacant, unsegregated, with a freeway special condition (all areas within the freeway right of way).

UV4-K indicates the urban vacant paved areas with a freeway special condition (the paved portion within the freeway right of way.)

UL3-K indicates irrigated urban landscape with a freeway special condition (irrigated landscape portion within the freeway right of way).

P – FALLOWING PROGRAM LAND

Agricultural land fallowed or idled due to participation in a water conservation, water transfer, or related program requiring fallowing.

R - RECREATIONAL

To be used with urban residential, commercial, and vacant (R.V. parks and camp sites) within primarily a seasonal recreational area.

S - SEED CROP

Indicates any crop grown for seed.

Example: P1-S indicates irrigated alfalfa seed crop.

T - TILLED LANDS

Land prepared for immediate planting, or just newly planted, including the appearance of seed lines or unidentifiable tiny seedlings.

Example: T-T indicates tilled land (either prepared for planting or just planted) in a predominately truck crop area.

U – INTERPRETED LANDUSE

Indicates that the land use was determined using other means than visual field verification.

X - PARTIALLY IRRIGATED CROPS

Crops irrigated for only part of their normal irrigation season.

Example: P3-X indicates partially irrigated mixed pasture.

Y - YOUNG CROPS

Indicates the identified crop is at early stages of growth (used with non-bearing orchards and vineyards, and truck, field, and grain crops).

Example: C3-Y indicates young non-bearing irrigated oranges.

Z - RECLAMATION

Land being leached for the removal of harmful salts. This symbol will be used following either the “Idle” symbol or symbols of crops grown as a step in the reclamation process.

Example: I2-Z indicates new lands being leached in preparation for crop production.

2. TYPE OF IRRIGATION SYSTEM

- C - Center Pivot Sprinkler
- L - Linear Move Sprinkler
- R - Side Roll Sprinkler
- H - Hand Move Sprinkler
- P - Permanent Sprinkler
- T - Solid Set Sprinkler
- F - Furrow Irrigation
- B - Border Strip Irrigation
- N - Basin Irrigation
- W - Wild Flooding
- S - Subirrigation
- D - Surface Drip Irrigation
- A - Buried Drip Irrigation
- M - Micro Sprinkler
- E - LEPA (Low Energy Precision Application)
- U - Unknown or not mapped

As part of the map symbols these irrigation type letters required a circle around them so that they are not confused with the special condition letters.

Example: P1-(B) indicates border strip irrigated alfalfa.

3. SOURCE OF IRRIGATION WATER

<u>Water Source</u>	<u>Code</u>
Surface water	1
Mixed surface & ground water	2
Ground water	3
Unknown source	4
Recycled or reclaimed	5

Example: P3-(B1) indicates border strip irrigated pasture with surface water as the water source.

VIII. MULTIPLE LAND USE

INTERCROPPING

Used with orchards or vineyards when intercropped with some other crop class. Indicated by a fractional symbol, with the orchard or vineyard symbol appearing in the numerator.

Example: D12-Y/F10 indicates young almonds intercropped with dry beans.

DOUBLE CROPS

Used when two consecutive crops are grown in the survey season. The first crop is indicated by enclosed parenthesis.

Example: (G)F6 indicates irrigated grain followed by field corn.

TRIPLE CROPS

Used when three consecutive crops are grown in the survey season. The first and second crops are indicated by enclosed parenthesis.

Example: (T8)(T23)T8 indicates irrigated lettuce followed by cabbage followed by lettuce.

MIXED LAND USE

Used when two to three land uses are present in one area but, because of the large degree of intermixing, cannot be delineated separately. Indicated by percentages following land use symbols. No more than three different land uses may be used in describing the area. Percentages are in increments of 10.

Example: D5 - 40% indicates irrigated peaches 40%
NV - 20% indicates native vegetation 20%
UR - 40% indicates urban residential 40%

IX. FURTHER INSTRUCTIONS, CLARIFICATIONS AND EXAMPLES

- 1) Land use class and subclass should come before the dash which separates the special condition, irrigation type, and source of water.
- 2) Water source should be the last symbol in the code. If the field has more than one crop, the source should follow the last crop.
- 3) Irrigation type and source of water must be enclosed in a circle.

LAND USE CODE EXAMPLES

Single Crop:

F1-(F3)

Indicates cotton that is furrow irrigated with ground water as the water source.

D12-Y(P)

Indicates young irrigated almonds that are irrigated with a permanent sprinkler system.

Intercropped:

D13-Y/F10(P1)

Indicates young irrigated walnuts intercropped with dry beans, irrigated by a permanent sprinkler system with surface water as the water source.

Double cropped:

(G-H)F6-(F2)

Indicates grain irrigated with a hand move sprinkler system followed by furrow irrigated corn, with mixed ground and surface water as the water source.

Triple Cropped:

(T8)(T23)T8-(P)

Indicates irrigated lettuce followed by irrigated cabbage followed by irrigated lettuce, all three crops irrigated by a permanent sprinkler system (when type of irrigation is not shown next to the first and second crops, the irrigation type for the last crop will be assumed for the first two crops).

(T8-U)(T23-U)T8-(H3)

Indicates irrigated lettuce with unknown irrigation type, followed by irrigated cabbage with unknown irrigation type, followed by lettuce irrigated with a hand move sprinkler system, with ground water as the water source.