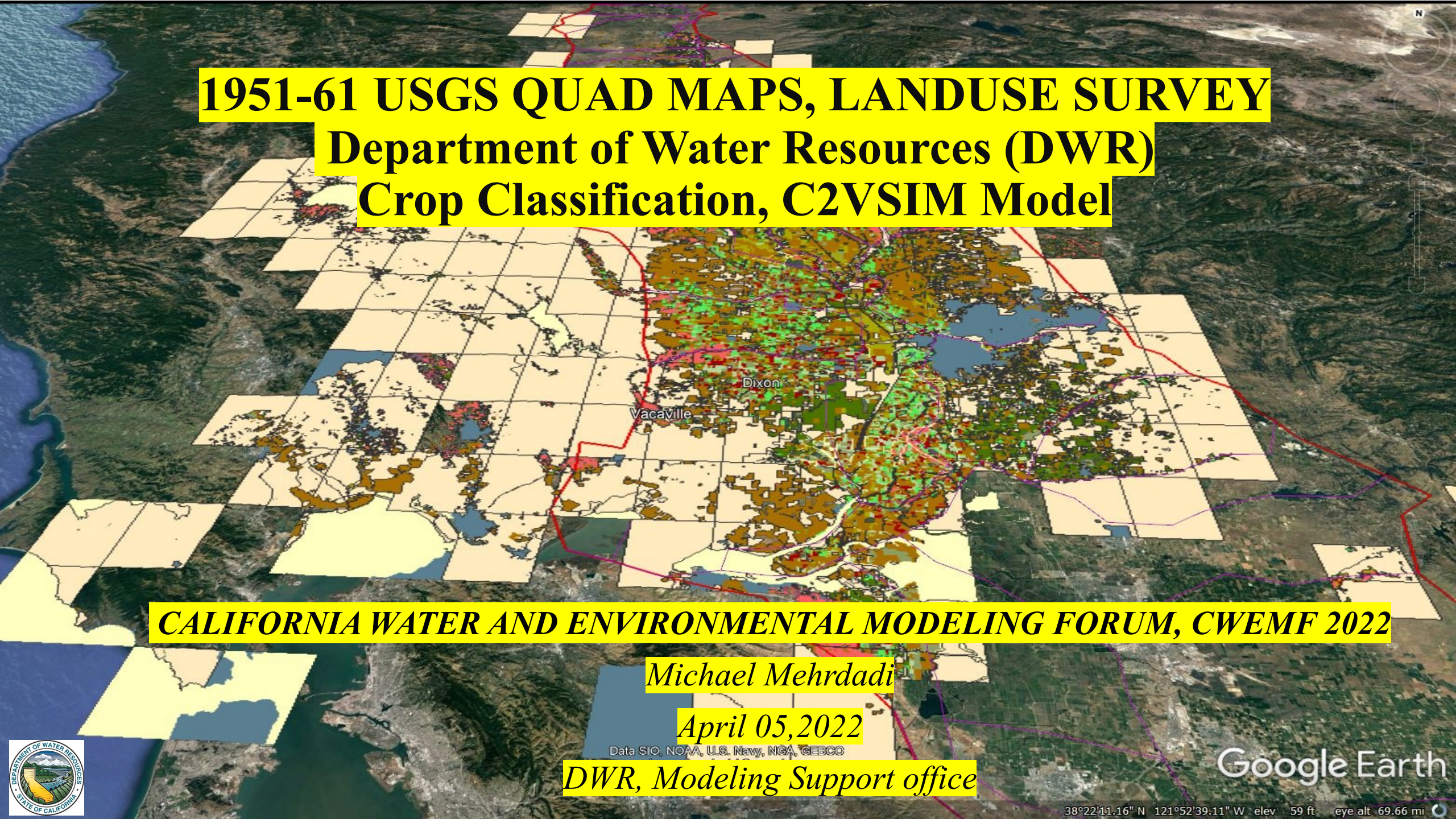


1951-61 USGS QUAD MAPS, LANDUSE SURVEY
Department of Water Resources (DWR)
Crop Classification, C2VSIM Model

CALIFORNIA WATER AND ENVIRONMENTAL MODELING FORUM, CWEMF 2022

Michael Mehrdadi

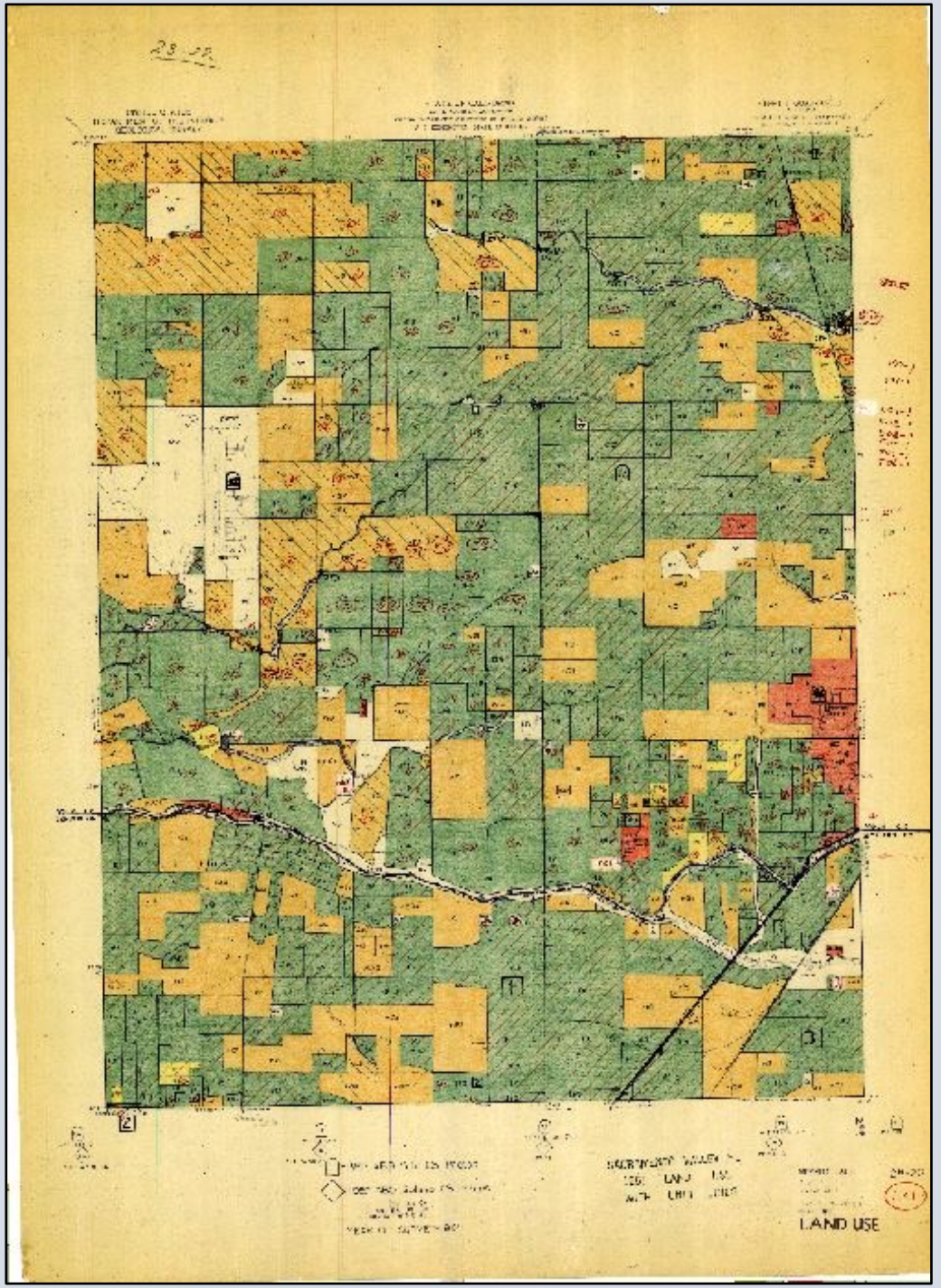
April 05,2022

DWR, Modeling Support office

The USGS Map GIS Digitization Process:

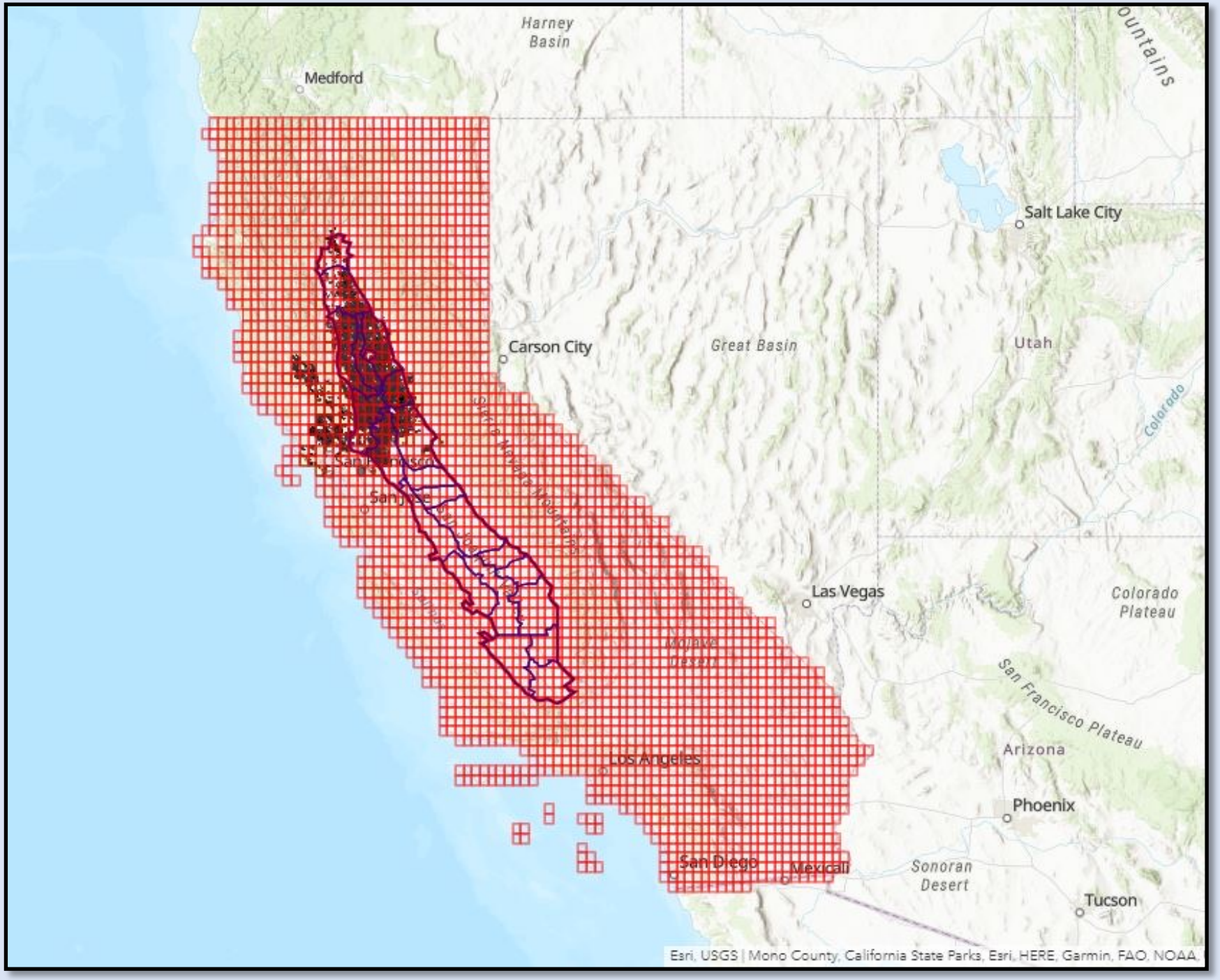
The map project was emphasized on digitizing Landuse United States Geologic Survey (USGS) crop maps (1951-61), where once after the digitization process in Tiff formatted image maps, individual polygons of each crop was made, via being incorporated in a single feature class by the means of utilizing ArcMap.

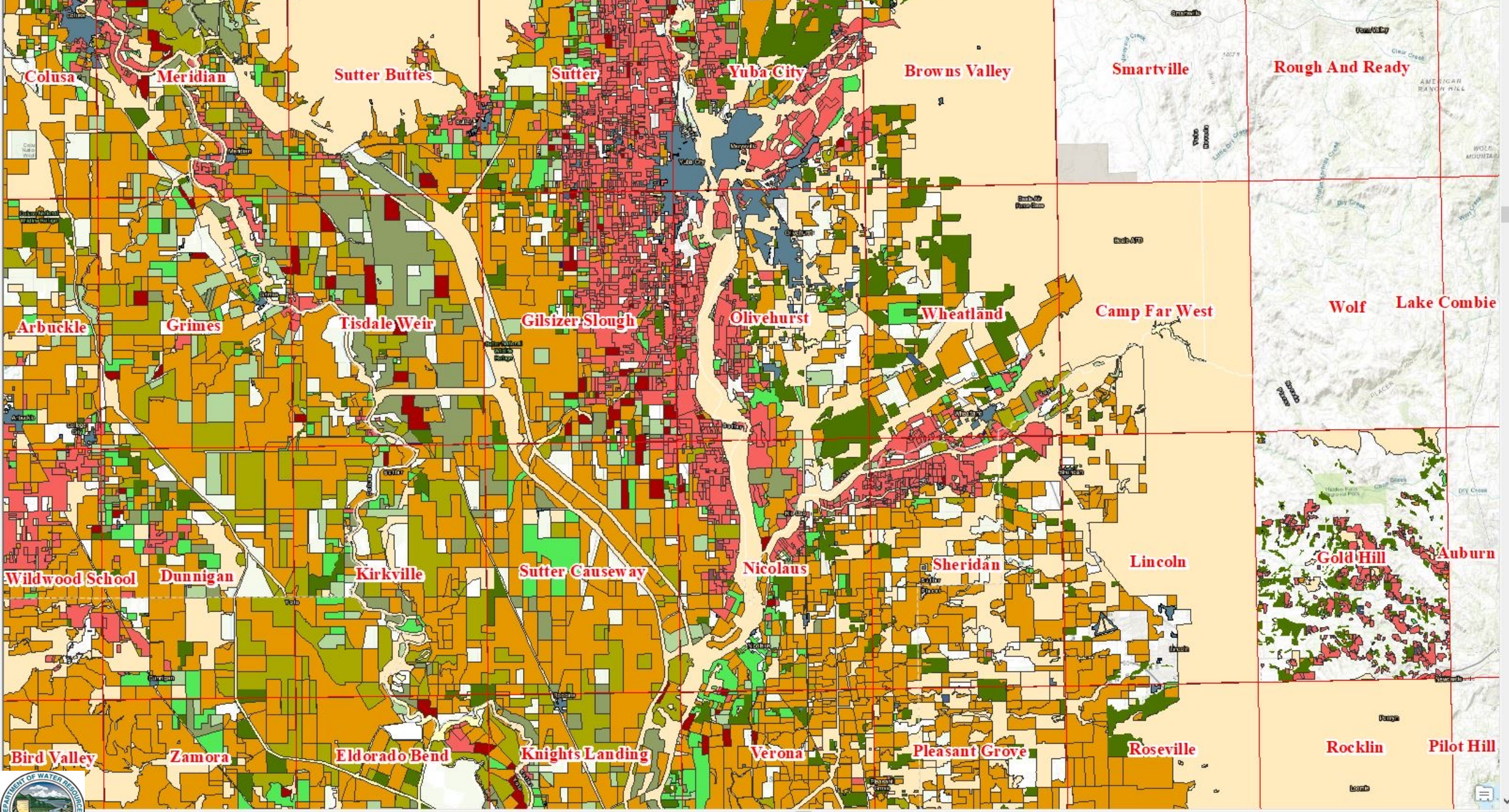
The landuse shape file encompass an overlay of the California Central Valley Groundwater Surface Water Simulation Model (C2VSIM) Coarse Grid data shapefiles, which included, Outline Model Boundary, and Subregions (21 in total). The process of completing the ArcMap project included georefrencing each USGS map, rubber sheeted to match USGS 24k Topo Map Boundaries.



This layer presents the geographic extent of USGS 1:24,000 topographic maps (7.5- by 7.5-minute quadrangles) for the conterminous U.S. forty-eight states and District of Columbia. The boundaries provide quadrangle name, identification number, publication data, and map coverage by state for each quadrangle.

This large-scale index grid was appropriate for displaying the maps at more detailed scales.




Colusa
Meridian
Sutter Buttes
Sutter
Yuba City
Browns Valley
Smartville
Rough And Ready
Arbuckle
Grimes
Tisdale Weir
Gilsizer Slough
Olivehurst
Wheatland
Camp Far West
Wolf
Lake Combie
Wildwood School
Dunnigan
Kirkville
Sutter Causeway
Nicolaus
Sheridan
Lincoln
Gold Hill
Auburn
Bird Valley
Zamora
Eldorado Bend
Knights Landing
Verona
Pleasant Grove
Roseville
Rocklin
Pilot Hill

Mapping Digitization Process continued:

The georeferenced map was analyzed in ArcCatalog, where a polyline feature class was generated and each polygon within the USGS quad map that included a specific landuse crop was created. The subsequent data for each polygon was added in the attribute data table, which comprises of Crop Type, C2VSIM Crop type identification number, USGS Quad name, total acres of each crop polygon, County name, year of the USGS survey map was completed, and to whether the crop landuse data of each polygon was either irrigated or non-irrigated.

UTM Coordinate System used: NAD 1927

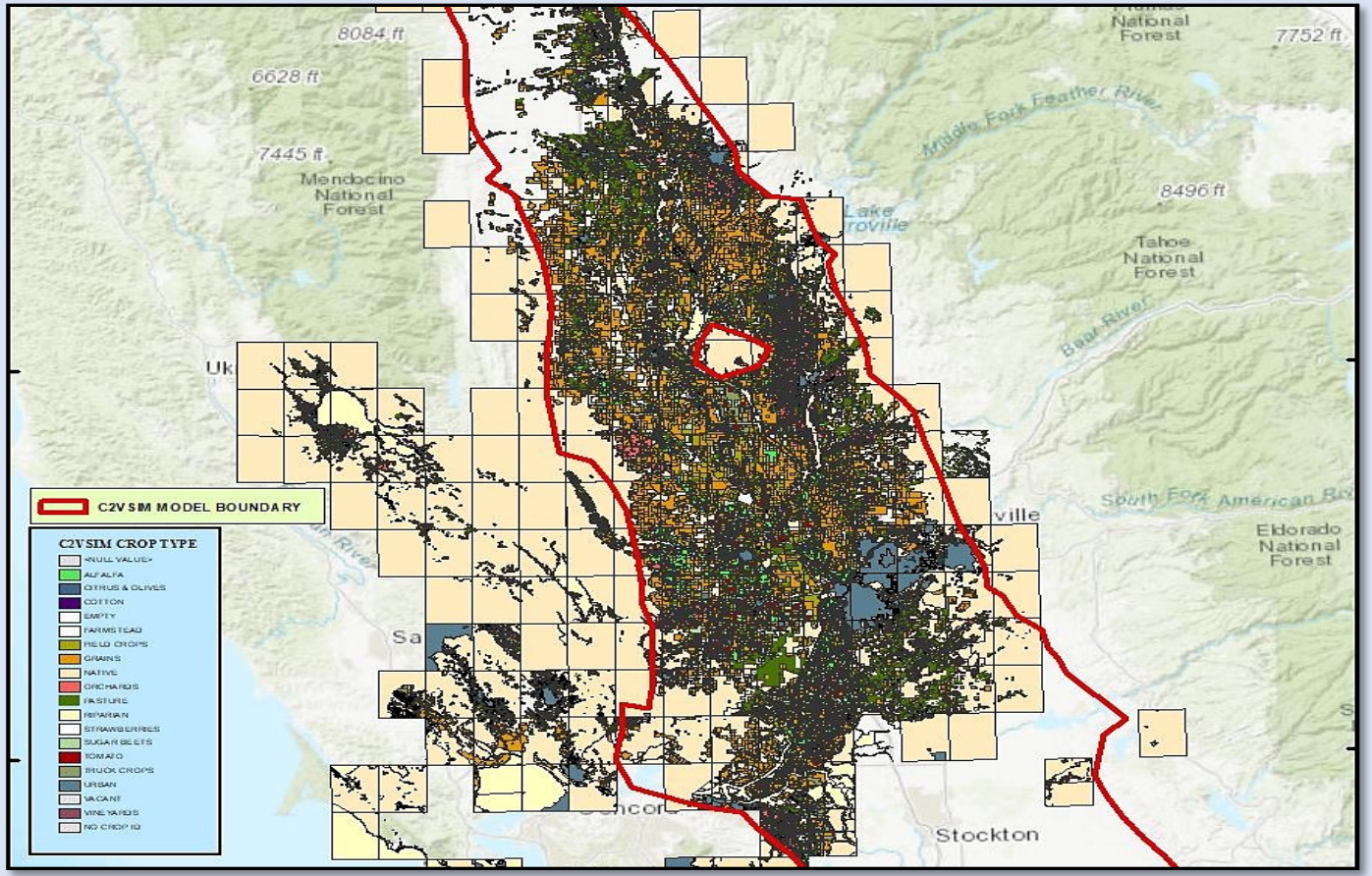
EPSG _Code: 26710, Geodetic Parameter Dataset , EPSG acronym stands for the European Petroleum Survey Group. It is now known as the Geomatics Committee of the International Association of Oil and Gas Producers (OGP).

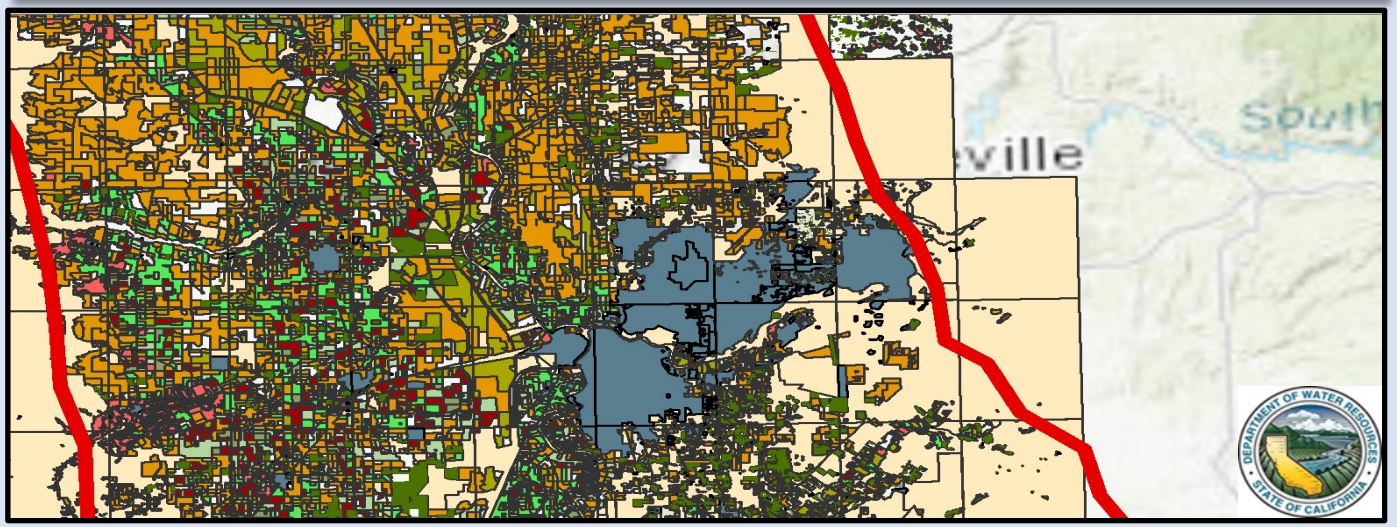
PROJECT RESULTS :

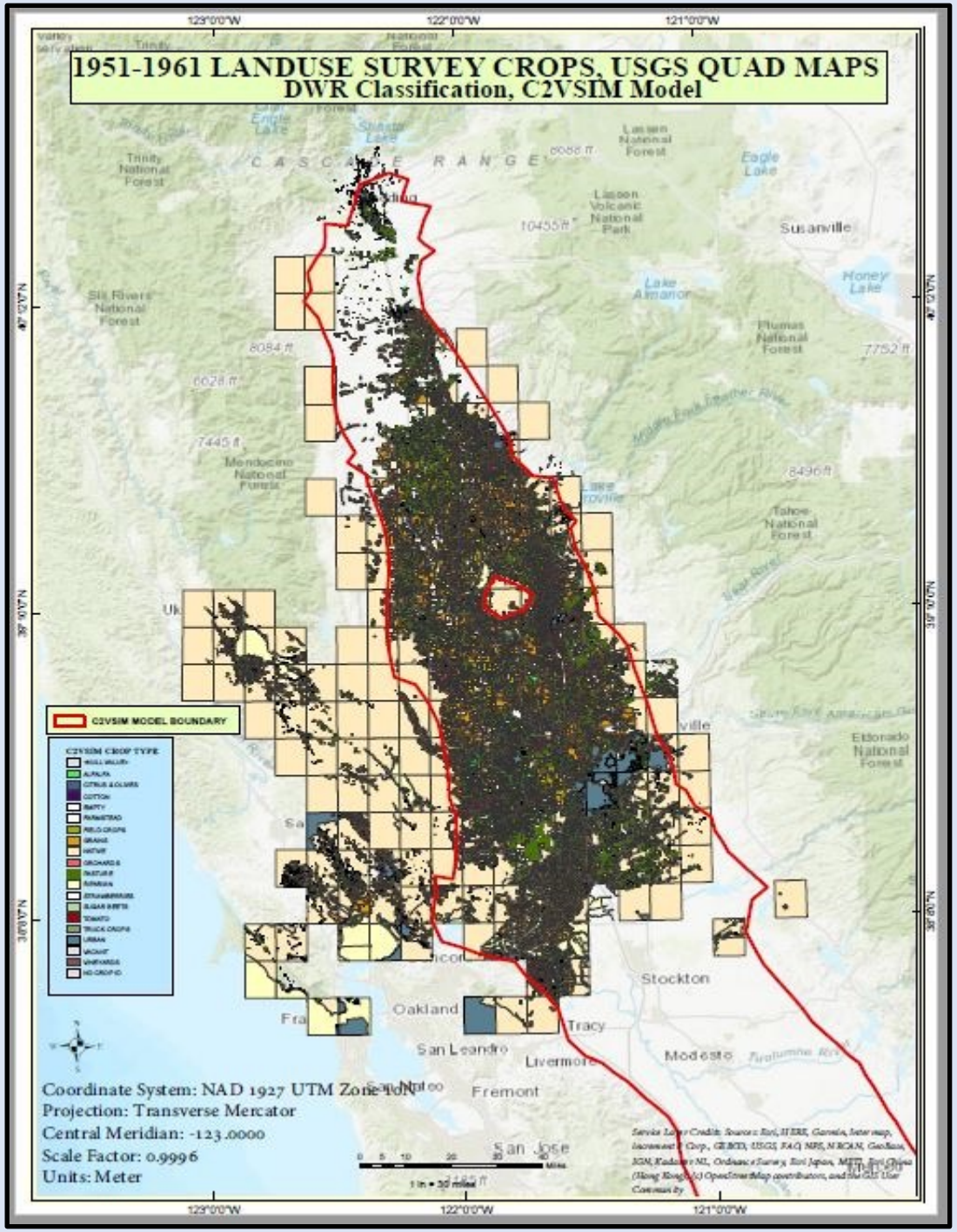
Total Color Landuse Maps: 274 , Black & White Maps: 18

Total Maps: 292 ,

Polygons: 50,000+


8084 ft
6628 ft
7445 ft
Mendocino National Forest
Middle Fork Feather River
Lake Oroville
8496 ft
Tahoe National Forest
Bear River
7752 ft
South Fork American River
Eldorado National Forest
Stockton
C2VSIM MODEL BOUNDARY
C2VSIM CROP TYPE
ALFALFA
CITRUS & OLIVES
COTTON
EMPTY
FARMSTEAD
FIELD CROPS
GRAINS
NATIVE
ORCHARDS
PASTURE
RIPARIAN
STRAWBERRIES
SUGAR BEETS
TOMATO
TRUCK CROPS
URBAN
VACANT
VINEYARDS
NO CROP ID


DEPARTMENT OF WATER RESOURCES
STATE OF CALIFORNIA


1951-1961 LANDUSE SURVEY CROPS, USGS QUAD MAPS
DWR Classification, C2VSIM Model
129°0'0"W
122°0'0"W
121°0'0"W
C2VSIM MODEL BOUNDARY
C2VSIM CROP TYPE
Coordinate System: NAD 1927 UTM Zone 10N
Projection: Transverse Mercator
Central Meridian: -123.0000
Scale Factor: 0.9996
Units: Meter
Stockton
Oakland
Tracy
San Leandro
Livermore
Modesto
Fremont
San Jose

DWR 1960 Landuse Code Classification for CV2Sim Model Additions,

IGF- Pasture
IRF- Grains, (11)
IPF- Pasture (1)
IDF- Orchards (10)
IP7- Irrigated Pasture (1)
IFF- Sugar Beets (3)
IPG- Pasture Partial (1)
ITF- Truck Crops (6)
IP3-X Pasture (1)
NDF- Orchards (10) Non-IRR
VI- Vineyards
NV-P - Native & Pasture
IFP- Pasture (1)
IFT- Truck Crop (6)
nCF – Citrus & Olives
nS-6 – No Code ID

	A	B	C
1	C2VSIM CLASSIFCATION	C2VSIM ID CODE	CROP TYPE
2	ns	6	Null
3	IGF	1	PASTURE
4	IRF	11	GRAINS
5	NGF	11	GRAINS
6	IPF	1	PASTURE
7	iDF	10	ORCHARDS
8	iPF	7	IRRIGATED PASTURE
9	iFF	3	SUGAR BEETS
10	iPG	n	PASTURE PARTIAL
11	iTF	n	TRUCK CROPS
12	iP3X	1	PASTURE
13	nDF	10	ORCHARDS
14	nVA	12	VINEYARDS
15	nGP	11	GRAINS
16	nvY	12	VINEYARDS
17	UD	n	URBAN-ORCHARDS
18	ivY	n	VINEYARDS & NON-BEARING ORCHARDS
19	NV-P	n	NATIVE & PASTURE
20	IFP	n	PASTURE
21	IFT	6	TRUCK CROPS
22	nPF	1	PASTURE
23	nFt	6	TRUCK CROPS
24	uv-P	n	URBAN-PASTURE
25			

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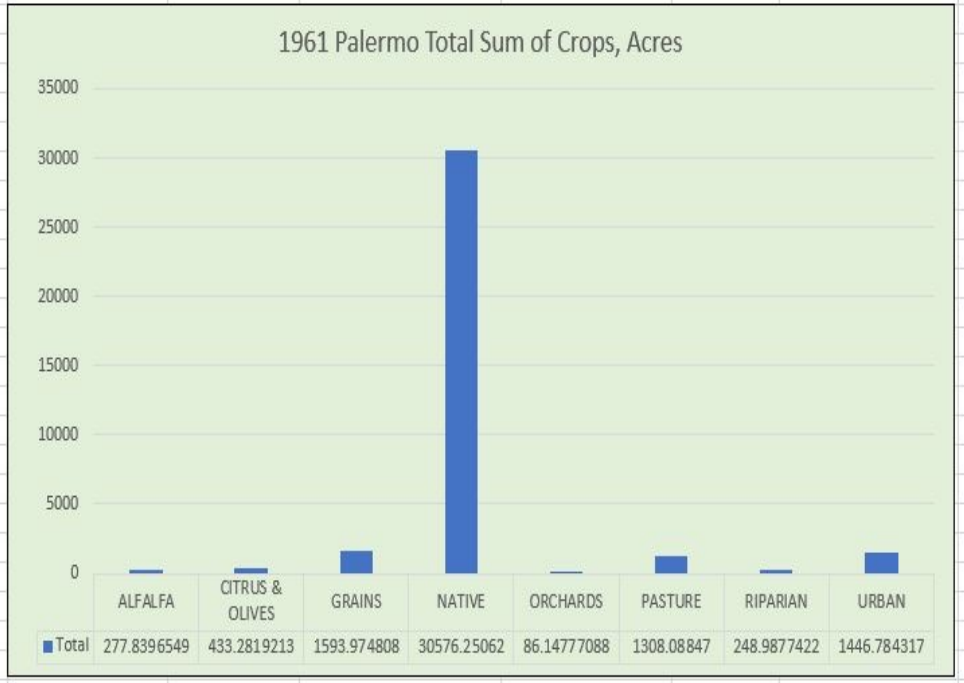
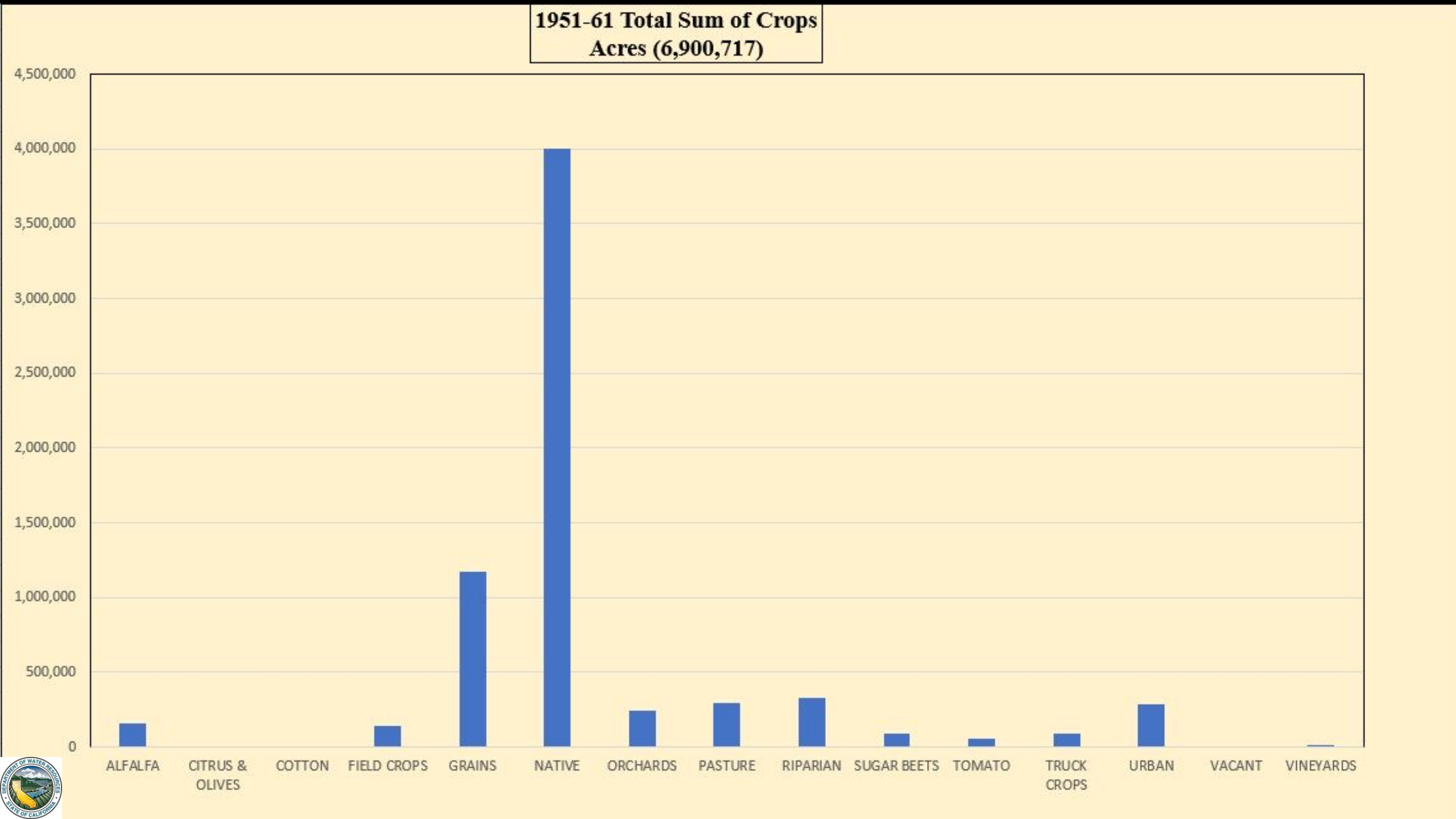
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
133	12602	iF	6	IRRIGATED	GRAINS	11	PALERMO	34.41861613	1961	1675.588041	139287.1977	PALERMO		GRAINS	34.41861725
134	12603	iP	3	IRRIGATED	PASTURE	1	PALERMO	25.50206353	1961	1443.317797	103203.1896	PALERMO		PASTURE	25.50206375
135	12604	iD	8	IRRIGATED	ORCHARDS	10	PALERMO	79.32375151	1961	2640.639697	321011.8333	PALERMO		ORCHARDS	79.32375336
136	12605	iP	4	IRRIGATED	NATIVE	16	PALERMO	43.10004633	1961	1942.601698	174419.6993	PALERMO		NATIVE	43.10004807
137	12606	NV	n	n	NATIVE	16	PALERMO	15.49788229	1961	1068.563796	62717.70446	PALERMO		NATIVE	15.49788189
138	12607	iI	1	IRRIGATED	NATIVE	16	PALERMO	8.205834778	1961	793.464331	33207.83517	PALERMO		NATIVE	8.205834389
139	12608	iP	3	IRRIGATED	PASTURE	1	PALERMO	184.9319476	1961	6023.155353	748393.0397	PALERMO		PASTURE	184.9319458
140	12609	nG	3	n	GRAINS	11	PALERMO	44.35924872	1961	2123.833793	179515.5106	PALERMO		GRAINS	44.35924911
141	12610	nG	3	n	GRAINS	11	PALERMO	65.13257476	1961	2420.994513	263582.1785	PALERMO		GRAINS	65.13257599
142	12611	nGF	n	n	GRAINS	11	PALERMO	182.4841892	1961	3943.654751	738487.3131	PALERMO		GRAINS	182.4841919
143	12612	iR	n	IRRIGATED	GRAINS	11	PALERMO	95.15560553	1961	2995.086799	385081.0734	PALERMO		GRAINS	95.15560913
144	12613	nG	1	n	GRAINS	11	PALERMO	155.9594554	1961	4404.382347	631145.5239	PALERMO		GRAINS	155.9594574
145	12614	NW	n	n	RIPARIAN	17	PALERMO	204.6325702	1961	17326.34788	828118.6311	PALERMO		RIPARIAN	204.6325684
146	12615	iP	3	IRRIGATED	PASTURE	1	PALERMO	117.3422734	1961	3078.023788	474867.3328	PALERMO		PASTURE	117.3422699

Excel Data sheet with crop acreage totals for each quad map



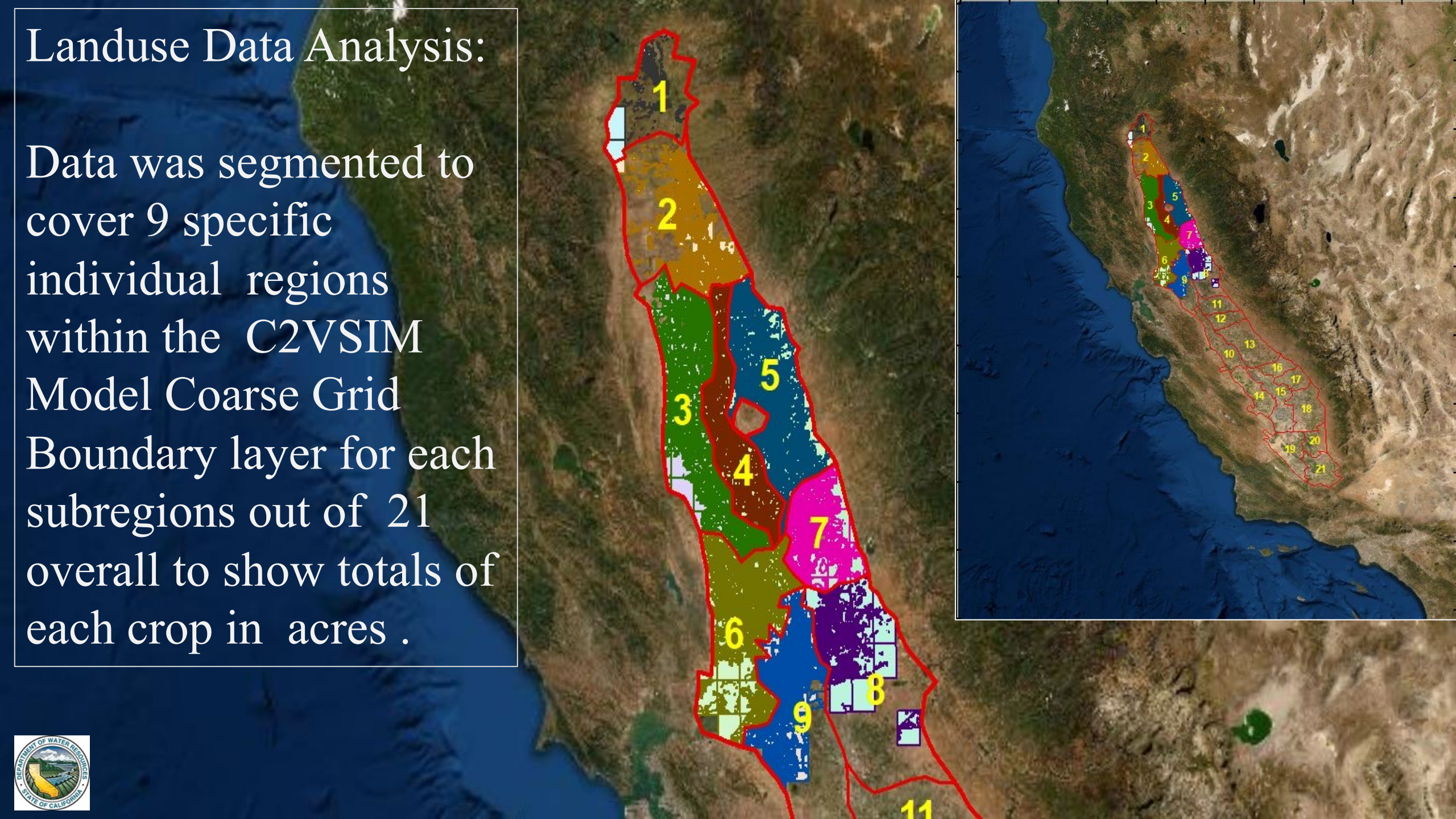
CROP_TYPE	Sum of Crop_Acerage
ALFALFA	277.840
CITRUS & OLIVES	433.282
GRAINS	1593.975
NATIVE	30576.251
ORCHARDS	86.148
PASTURE	1308.088
RIPARIAN	248.988
URBAN	1446.784
Totals	35971.355

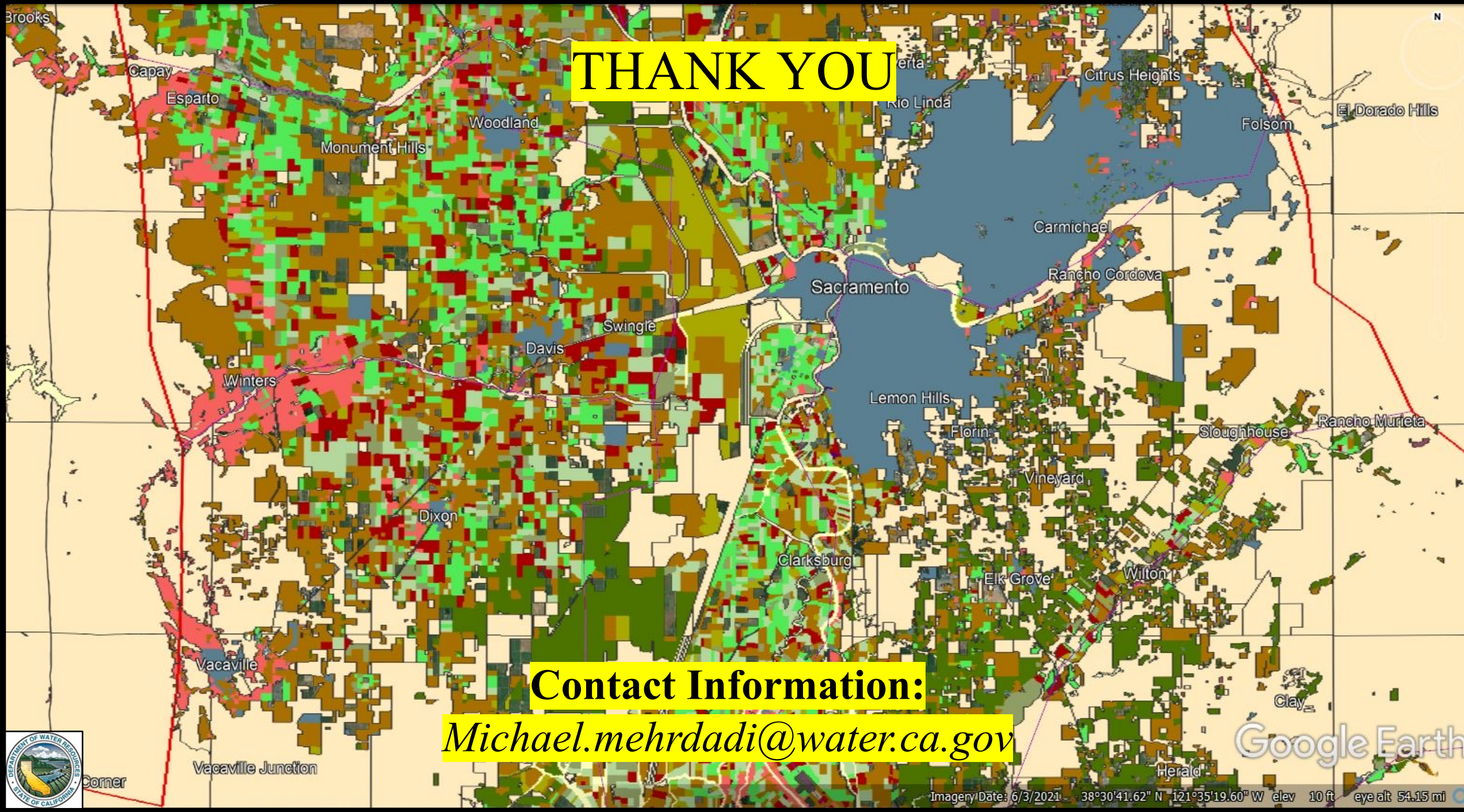
Fruto S.W. Kurand Willows Glenn Liano Seco Nelson Shippee Oroville Lodoga N.W. Logandale Princeton Butte City West Biggs Biggs Palermo Sites Moulton Weir


1951-61 Total Sum of Crops
Acres (6,900,717)
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
ALFALFA
CITRUS & OLIVES
COTTON
FIELD CROPS
GRAINS
NATIVE
ORCHARDS
PASTURE
RIPARIAN
SUGAR BEETS
TOMATO
TRUCK CROPS
URBAN
VACANT
VINEYARDS

Landuse Data Analysis:

Data was segmented to cover 9 specific individual regions within the C2VSIM Model Coarse Grid Boundary layer for each subregions out of 21 overall to show totals of each crop in acres .




THANK YOU
Capay
Esparto
Woodland
Monument Hills
Rio Linda
Citrus Heights
Folsom
El Dorado Hills
Carmichael
Rancho Cordova
Sacramento
Swingle
Davis
Winters
Lemon Hills
Florin
Sloughhouse
Rancho Murieta
Vineyard
Dixon
Clarksburg
Elk Grove
Wilton
Vacaville
Vacaville Junction
Clay
Herald
Contact Information:
Michael.mehrdadi@water.ca.gov
Google Earth
Imagery Date: 6/3/2021 38°30'41.62" N 121°35'19.60" W elev 10 ft eye alt 54.15 mi