



Executive Summary, 2006-2008

WHILE URBANIZATION RATES DECREASED SIGNIFICANTLY, IRRIGATED FARMLAND LOSSES ACCELERATED COMPARED WITH THE 2004-2006 PERIOD. LAND IDLING, FOCUSED IN THE SOUTHERN SAN JOAQUIN VALLEY, HAD THE GREATEST IMPACT.

Irrigated farmland in California decreased by 317 square miles (203,011 acres) between 2006 and 2008 as documented by the Farmland Mapping and Monitoring Program (FMMP). The highest-quality agricultural soils, known as Prime Farmland, comprised 49% of the loss (98,471 acres). Urban development, which totaled 72,548 acres, decreased by 29% relative to the 2004-06 period. The 2008 urbanization rate was the lowest rate recorded since the late 1990's.

The FMMP biennial mapping survey covers approximately 98% of the privately owned land in the state (49.1 million acres) in 49 counties. Land use information is gathered using aerial imagery and land management data, which is combined with soil quality data in a geographic information system (GIS) to produce maps and statistics. The earliest data for most counties is from 1984.

Urban Development

Of the 113 square miles of new Urban and Built-up land in the state, 50% occurred in Southern California (36,043 acres). Five out of the top ten urbanizing counties were in Southern California; Riverside County accounted for 21% of the state total (15,139 acres). The San Joaquin Valley ranked second at 27% of the total (19,346 acres). Kern County was by far the most active in the region; its nearly 9,400 acre urban increase was exceeded only by that of Riverside County. For the first time since the 2000-02 report, the San Francisco Bay region's urbanization edged out that of the Sacramento Valley (5,807 and 5,493 acres, respectively).

Statewide, irrigated farmland was the source of 20,381 acres or 28% of all new urban land. Prime Farmland was impacted at twice the rate of lesser quality soils (13,178 and 6,663 acres, respectively). Another 35% of new urban land came from dryland farming and grazing uses; some of which may have been idled in anticipation of development. The remaining 37% was derived from native vegetation or vacant lands. Keeping with historic precedent, the San Joaquin Valley region had the largest proportion of direct irrigated land to urban land conversion (53%). Kern County led in farmland urbanization, totaling more than 3,600 acres. The City of Bakersfield alone accounted for more than 1,250 of these acres. The Sacramento Valley region ranked second for direct irrigated farmland to urban conversions (33%).

Housing developments were the most frequent and widespread new urban uses; developments ranged up to 425 acres in size. The inland desert was also active, including more than 1,000 acres of new residential land around Victorville (San Bernardino County) and two new Sun City developments--near Apple Valley and Indio (San Bernardino and Riverside counties, respectively). Community infrastructure was also common; active counties typically hosted one or more new golf courses (190 to 300 acres each) and 300 to 500 acres of new schools and parks. Some new uses stood out: a single industrial complex covering 240 acres in Redlands (San Bernardino County), more than 3,000 acres of groundwater recharge basins in Kern County, and a number of small scale energy production facilities (solar or ethanol) in the San Joaquin Valley.

Agricultural Trends

While urbanization is an important component of agricultural land conversion, economic and resource availability factors also lead to more intensive farming or removal from irrigated uses. Conversion from

grasslands to orchards, specifically almonds and pistachios, was the most widespread form of intensification. New orchards were common along the western foothills of the Sierra Nevada and eastern flank of the coast range. Land in the Antelope Valley of Kern and Los Angeles counties continued to be brought back into production for high value crops such as carrots. Vineyard expansion has been minimal during the 2006 and 2008 map updates. Seventy percent of the land brought into irrigated uses in 2008 did not meet Prime Farmland criteria.

Land was removed from irrigated categories--to uses aside from urban--at a rate 26% higher than the prior update (207,227 acres in 2004-06 and 260,412 acres in 2006-08). Land idling was the largest factor, particularly in the southern San Joaquin Valley. Five of the region's eight counties had 10,000 or more acres of this conversion type, with Fresno County's more than 56,000 acre decrease being particularly notable. These conversions are associated with salinity and drought related land retirement on the west side of the Valley. The cessation of irrigation resulted in most of the land being reclassified to Grazing Land or Farmland of Local Importance; these conversions could be reversed if environmental factors change.

Conversion data from 24 years of Important Farmland mapping indicates that for every five acres leaving agricultural use, four convert to Urban Land and one converts to Other Land. This update cycle, conversions to Other Land declined by 23% relative to the 2006 period (from 51,611 acres to 39,959 acres). San Joaquin and Sacramento Valley counties accounted for 44% and 27% of the total, respectively. The most active counties were Fresno, San Joaquin, Stanislaus, and Yolo; at between 3,100 and 3,800 acres each. Low density rural residential expansion, vacant land resulting from stalled subdivisions, mining, and ecological restoration projects accounted for a large proportion of the Other Land conversions. New dairies and poultry facilities also contributed in some counties.

Program Additions and Improvements

The availability of new USDA soil surveys led to additions of just over 900,000 acres to the FMMP mapping area in 2008. The largest included the Carrizo Plain (San Luis Obispo County) and along the Pit River Valley (Modoc County). As part of FMMP's continuous improvement goals, a new statewide county boundary file was adopted. This file reflects recent legal boundary changes and technical improvements. The largest example was a 2008 jurisdictional change that shifted nearly 4,200 acres from Fresno County to Merced County.

Net Change

Irrigated farmland losses have accelerated through recent Important Farmland map updates. The 203,011 acre net loss in irrigated land in 2008 was 30% higher than the 2006 total. Prime Farmland's decrease of 1 was a record, breaking the 81,247 acre record set during the 2004-06 reporting period. Land idling exceeded the affect of urbanization for the first time in FMMP history during the 2008 update.

During the 12 biennial reporting cycles since FMMP was established, more than 1.3 million acres of agricultural land in California were converted to nonagricultural purposes. This represents an area larger in size than Merced County; or a rate of about one square mile every four days. The largest losses from agricultural land categories were from Prime Farmland and Grazing Land (559,743 and 386,525 acres, respectively). Unique Farmland has shown a small net increase over the 24 year period (19,279 acres) due to expansion of high value crops—mostly orchards and vineyards—on hilly terrain.

As 2010 mapping proceeds, economic and environmental challenges face California, and the nation as a whole. Agricultural lands will continue to reflect how these complex systems interact on the landscape. FMMP will support informed planning decisions with timely and accurate data capturing these trends as they evolve.



Chapter 1: The Farmland Mapping and Monitoring Program

DOCUMENTING CHANGES IN AGRICULTURAL LAND USE SINCE 1984.

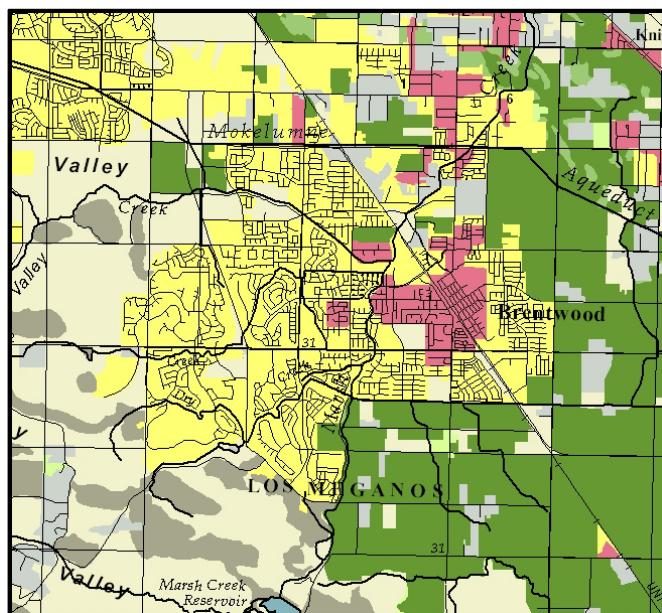
The goal of the Farmland Mapping and Monitoring Program (FMMP) is to provide consistent, timely, and accurate data to decision makers for use in assessing present status, reviewing trends, and planning for the future of California's agricultural land resources. The extent of urbanization since the Program's 1984 inception is illustrated in yellow for part of Contra Costa County (Figure 1).

Approximately 98% of the privately owned land in the state (49.1 million acres) was mapped this update cycle by FMMP. The survey area is shown on page 5 (Figure 2). Each map is updated every two years, providing an archive for tracking land use change over time.

Using a geographic information system (GIS), aerial imagery, local input, and other information, FMMP combines soil quality data and current land use information to produce Important Farmland Maps. The program is funded through the state's Soil Conservation Fund. This fund receives revenues from Williamson Act contract cancellation fees.

Advances in technology have supported significant data improvements in recent years: digital soil survey data, detailed aerial imagery, and substantial reference information via the internet. Similarly, the number of

**FIGURE 1: URBANIZATION IN THE BRENTWOOD AREA,
CONTRA COSTA COUNTY, 1984-2008**
NEW URBAN LAND IN YELLOW



products available has grown - including printed maps, PDF maps, statistics, field reports, and GIS data. The maps and data are used in environmental studies to assess the impacts of proposed development on agricultural and open space land. In recent years, FMMP data has become widely used in urbanization and environmental modeling, and comparative land cover studies.

In addition, only land that is classified in one of the four main agricultural categories on Important Farmland Maps is eligible for enrollment in Williamson Act Farmland Security Zone (FSZ) contracts. Under FSZ contracts, landowners receive substantial property tax benefits for committing to keep their land in agricultural use for 20-year periods.

This is the twelfth Farmland Conversion Report produced by the FMMP, the current report covering the 2006 to 2008 period.

Important Farmland Map Categories

FMMP's study area coincides with boundaries of U.S. Department of Agriculture (USDA) modern soil surveys. Technical soil ratings and current land use information are combined to determine the appropriate map category. The minimum land use mapping unit for all categories is 10 acres unless otherwise noted; soil units as small as one acre are maintained to most accurately represent the original USDA data.

Prime Farmland has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Farmland of Statewide Importance is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Unique Farmland consists of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

Farmland of Local Importance is land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee. The definitions for this category are detailed in Appendix E of this report.

Grazing Land is land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities.

Urban and Built-up Land is occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. Common examples include residential, industrial, commercial, institutional facilities, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, and water control structures.

Water is defined as perennial water bodies with an extent of at least 40 acres.

Other Land is land not included in any other mapping category. Common examples include low density rural developments, vegetative and riparian areas not suitable for livestock grazing, confined animal agriculture facilities, strip mines, borrow pits, and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land. More detailed data on these uses is available in counties containing the Rural Land Use Mapping categories.

Rural Land Use Mapping Categories

The Rural Land Mapping project provides more map and statistical detail than standard Important Farmland Map products by delineating Other Land into five subcategories, as described on page 5. This data is only available in the eight San Joaquin Valley counties and Mendocino County at this time; please see page 18 and the Appendix D tables.

Rural Residential Land includes residential areas of one to five structures per ten acres.

Semi-Agricultural and Rural Commercial includes farmsteads, small packing sheds, unpaved parking areas, composting facilities, firewood lots, and campgrounds.

Vacant or Disturbed Land consists of open field areas that do not qualify for an agricultural category, mineral and oil extraction areas, and rural freeway interchanges.

Confined Animal Agriculture includes aquaculture, dairies, feedlots, and poultry facilities.

Nonagricultural and Natural Vegetation covers heavily wooded, rocky or barren areas, riparian and wetland areas, grassland areas which do not qualify for Grazing Land due to their size or land management restrictions, small water bodies, and recreational water ski lakes. Constructed wetlands are also included in this category. The Rural Land classes are not designed for interpretation as habitat. Geographic data on the extent of habitat for various species may be available from other state and federal entities.

Optional Designation

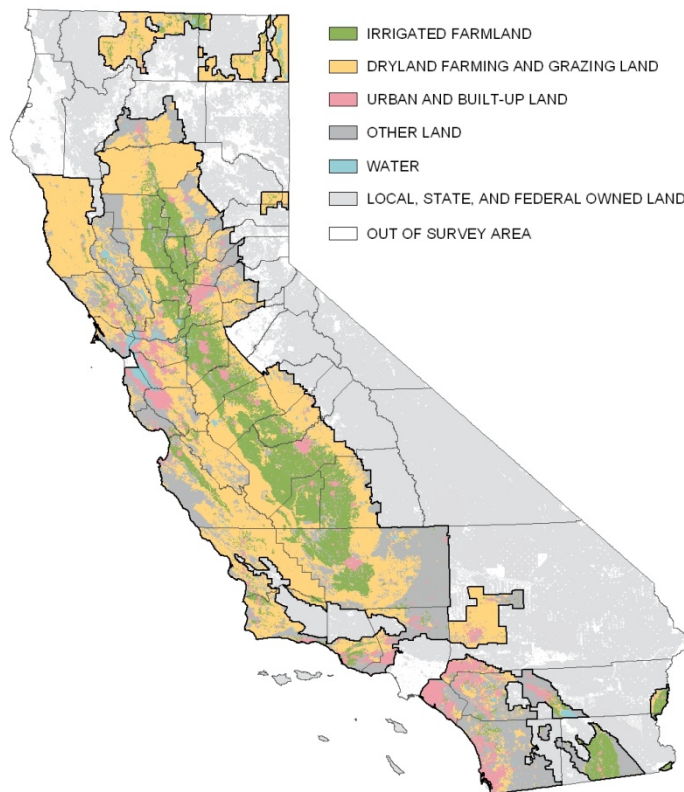
Land Committed to Nonagricultural Use is defined as existing farmland, grazing land, and vacant areas that have a permanent commitment for development. This optional designation allows local governments to provide detail on the nature of changes expected to occur in the future. It is available both statistically and as an overlay to the Important Farmland Map.

Survey Area Coverage

In Figure 2, the 'Irrigated Farmland' area includes the Prime Farmland, Farmland of Statewide Importance, and Unique Farmland categories. The 'Dryland Farming and Grazing Land' designation includes the Farmland of Local Importance and Grazing Land categories.

Locations shown as 'Out of Survey Area' may be added in the future, while those indicated as 'Local, State, and Federal Owned Land' are not planned for incorporation. Examples of government owned land include National Parks, Forests, and Bureau of Land Management property. Please note that small areas of public land are included in the Important Farmland survey area - generally appearing as 'Other Land' on the map.

FIGURE 2: 2008 IMPORTANT FARMLAND SURVEY AREA



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Chapter 2: 2006-2008 Improvements

SURVEY AREA ADDITIONS AND IMPROVED COUNTY BOUNDARY DATA HIGHLIGHT FMMP'S CONTINUOUS IMPROVEMENT.

Each update cycle provides the opportunity to make improvements to the Important Farmland data, in order to achieve increased accuracy, process efficiency, or better reporting capabilities. During the 2006-08 update, improvements included survey area additions in four counties, totaling more than 919,000 acres, and the incorporation of a new county boundary file into the 2008 data. These improvements were funded with a temporary augmentation FMMP received from the 2000 Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act (Proposition 13).

Survey Area Additions

More than 90% of the survey area additions occurred in Modoc and San Luis Obispo counties (Figure 3). In the southwestern portion of Modoc County, nearly 276,000 acres covering the Pit River basin and the town of Adin were mapped (Table A-19). Completion of the NRCS soil survey for the Carrizo Plain in San Luis Obispo County brought more than 585,000 acres into the project (Table A-31). These additions complete mapping of private lands in their respective counties. Both contain a mixture of native landscapes and agriculture; the Carrizo Plain is being considered for possible solar power generation projects.

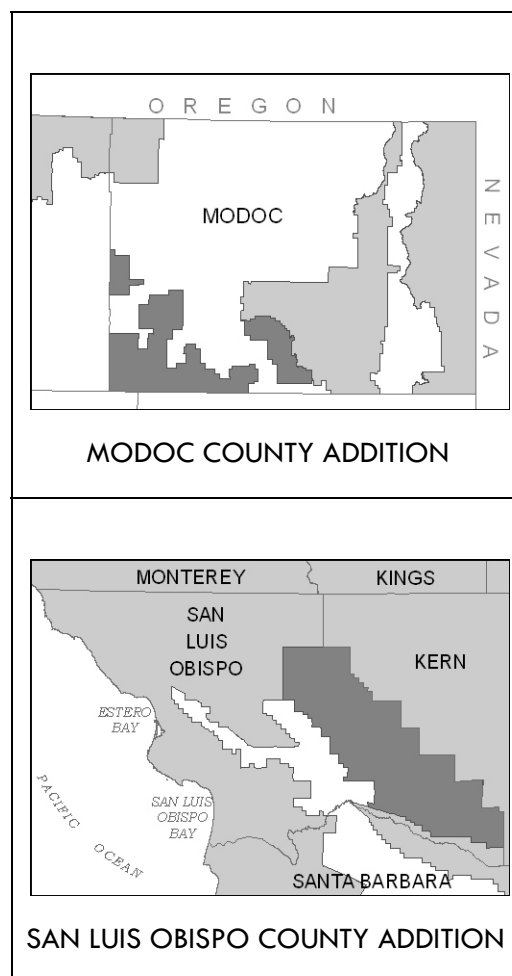
Gaps in the soil mapping of Los Angeles and Riverside counties were also filled. The Antelope Valley of Los Angeles County was completed by the incorporation of soil survey data for Edwards Air Force Base (47,000 acres); and a 10,000 acre gap was filled in Riverside County (Tables A-13 and A-25, respectively).

Improved County Boundary Data

In order to ensure mapping standardization, most state and federal agencies in California have relied on a statewide county boundary file last updated in 1997. Legal county line changes have subsequently occurred, including a shift of 4,198 acres from Fresno to Merced counties that took effect in January 2008. Legal changes are typically made to improve services, such as public safety response times.

Two other factors contributed to the revised county boundaries: physical changes as the result of land reclamation; and technical improvements made possible due to the availability of higher resolution imagery. These adjustments were assessed during a

**FIGURE 3: 2008 MAPPING ADDITIONS
SHOWN IN DARK GRAY**



multi-agency peer review process that took place between 2006 and 2008. The final product¹ was incorporated by FMMP in the 2008 data; the statistical impacts of the change are shown in Table 1 and in the individual county tables of Appendix A.

**TABLE 1: 2008 IMPORTANT FARMLAND SURVEY AREA ADDITIONS
AND COUNTY BOUNDARY ADJUSTMENTS**
(ACRES)

County	Description	Boundary Adjustments	Survey Area Additions
Fresno	Legal boundary with Merced County changed.	-4,198	
Kern	Legal boundary with Los Angeles County changed.	2,879	
Imperial	Adjustment related to Salton Sea boundary.	-58	
Lake	Technical boundary improvements.	-141	
Los Angeles	Legal boundary with Kern County changed, addition of Edwards Air Force Base soil data.	-1,037	47,597
Merced	Legal boundary with Fresno County changed.	4,198	
Mendocino	Technical boundary improvements.	116	
Modoc	Addition of Pit River area soil survey.		275,994
Orange	Legal boundary with Riverside county changed, manmade island added.	253	
Placer	Legal boundary with Yuba County changed.	-71	
Riverside	Addition of portion of San Diego soil survey and technical boundary improvements.	-194	10,043
San Bernardino	Legal boundary with Riverside County changed.	5	
San Luis Obispo	Addition of Carrizo Plain area soil survey.		585,367
Santa Barbara	Legal boundary with Ventura County changed.	-487	
Sonoma	Technical boundary improvements.	25	
Sutter	Legal boundary with Yuba County changed.	-126	
Yuba	Legal boundary with Placer and Sutter counties changed.	197	

¹ The statewide county boundary file can be downloaded here: <http://atlas.ca.gov/>.



Chapter 3: Understanding the Data

LOCATING AND INTERPRETING THE CALIFORNIA FARMLAND CONVERSION REPORT'S TABULAR DATA AND GRAPHICS.

Important Farmland information is developed on an individual county basis, taking two years to map the 49.1 million acre survey area. This report begins with each county's information, compiling it in various ways to produce the summary and analysis in Chapter 4.

Source Data: County Conversion Tables - Appendix A

These tables include acreage tallies and conversion statistics for individual counties. Figure 4 depicts how conversion tables are constructed.

Statewide Conversion – Chapter 4, Table 4

This table summarizes material from all three sections of the Appendix A tables and has the same structure as the individual county tables.

2006 and 2008 County Acreage Tallies – Appendix B

Values for the individual years (Tables B-1 and B-2) are extracted from Part I of the tables in Appendix A. These tables also indicate the proportion of each county that lies within the FMMP survey area — mapping typically ends at the boundaries of National Forests, for example. Table B-3 shows this same information for 2008, grouped by region.

FIGURE 4: CONVERSION TABLE STRUCTURE FOR COUNTY AND STATEWIDE DATA

TABLE 4
LAND USE CONVERSION SUMMARY (1)
2002-2004 Land Use Conversion

DEPARTMENT OF CONSERVATION
Division of Land Resource Protection
PART I
Land Use Totals and Net Changes

LAND USE CATEGORY	1998-00 ACREAGE CHANGES					
	TOTAL ACREAGE INVENTORIED		ACRES LOST (-)	ACRES GAINED (+)	TOTAL ACREAGE CHANGED	NET ACREAGE CHANGED
	2002	2004				
Prime Farmland (2)	1,072,125	1,072,125	84,183	44,595	126,778	39,588
Farmland of Statewide Importance	1,072,125	1,072,125	84,183	44,595	126,778	39,588
Unique Farmland of Local Importance	1,072,125	1,072,125	84,183	44,595	126,778	39,588
Imperial Valley Farmland	1,072,125	1,072,125	84,183	44,595	126,778	39,588
Grazing Land	1,072,125	1,072,125	84,183	44,595	126,778	39,588
Agricultural Land	1,072,125	1,072,125	84,183	44,595	126,778	39,588
Urban and Built-Up Land	2,335,511	2,335,511	13,755	86,277	100,032	72,500
Other Land	9,011,600	9,011,600	54,898	61,960	116,858	7,062
Water Area	637,377	643,141	491	6,255	6,746	5,769
TOTAL ACREAGE INVENTORIED	35,349,459	35,349,459	402,472	402,472	804,944	804,944

PART I:
Indicates county area mapped & overall change in each category.

Farmland Mapping and Monitoring Program
PART II
Land Committed to Nonagricultural Use

LAND USE CATEGORY	TOTAL ACREAGE
PART II: Land expected to be developed (voluntary submission by local governments).	
TOTAL ACREAGE REPORTED	167,142

PART II: Land Use Conversion from 2002 to 2004

LAND USE CATEGORY	Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Subtotal Important Farmland	Grazing Land	Total Agricultural Land	Urban and Built-Up Land	Other Land	Water Area	Total Converted To Another Use
Prime Farmland (2)	to: 4,445	3,071	34,383	41,905	11,385	53,285	16,661	12,162	2,075	84,183	5,548
Farmland of Statewide Importance	to: 4,445	3,071	34,383	41,905	11,385	53,285	16,661	12,162	2,075	84,183	5,548
Unique Farmland	to: 4,445	3,071	34,383	41,905	11,385	53,285	16,661	12,162	2,075	84,183	5,548
Farmland of Local Importance	to: 4,445	3,071	34,383	41,905	11,385	53,285	16,661	12,162	2,075	84,183	5,548
Subtotal Important Farmland	to: 4,445	3,071	34,383	41,905	11,385	53,285	16,661	12,162	2,075	84,183	5,548
Grazing Land	to: 4,445	3,071	34,383	41,905	11,385	53,285	16,661	12,162	2,075	84,183	5,548
Total Agricultural Land	to: 4,445	3,071	34,383	41,905	11,385	53,285	16,661	12,162	2,075	84,183	5,548
Urban and Built-Up Land	to: 4,445	3,071	34,383	41,905	11,385	53,285	16,661	12,162	2,075	84,183	5,548
Other Land	to: 4,445	3,071	34,383	41,905	11,385	53,285	16,661	12,162	2,075	84,183	5,548
Water Area	to: 4,445	3,071	34,383	41,905	11,385	53,285	16,661	12,162	2,075	84,183	5,548
TOTAL ACREAGE CONVERTED	to: 44,595	33,335	54,320	74,884	207,134	40,848	247,980	68,277	61,960	8,255	402,472

PART III:
Raw data from GIS provides detail on every acre of change that occurred. Changes result from revising the two-year-old linework based on new air photos and field verification.

FOOTNOTES:
Information on large or unusual conversions and other descriptive material.

County and Regional Conversion Summaries – Appendix C

The counties are grouped into geographic regions as seen in Figure 5. Much of the analysis in Chapter 4 is based on the data in Appendix C.

Table C-1	Classifies sources of new urban land for the period, by county and region.
Table C-2	Identifies conversions in or out of agriculture aside from urbanization, capturing the ebb and flow of agricultural land use change over time.
Table C-3	Documents net agricultural change from all factors, grouped by region and ranked by acreage.

Rural Land Use Mapping Tables – Appendix D

Contains data on changes associated with a more detailed subdivision of the Other Land category. Data is available for nine project counties at this time.

Simplifying Assumptions

In order to conduct comparative analysis, certain simplifying assumptions have been made. For example, Unique Farmland is considered to be an irrigated farmland category, even though a small percentage of land within the Unique Farmland category supports high value nonirrigated crops, such as some coastal vineyards. Conversely, Farmland of Local Importance is considered to be a nonirrigated category although it also supports some irrigated pasture on lower-quality soils.

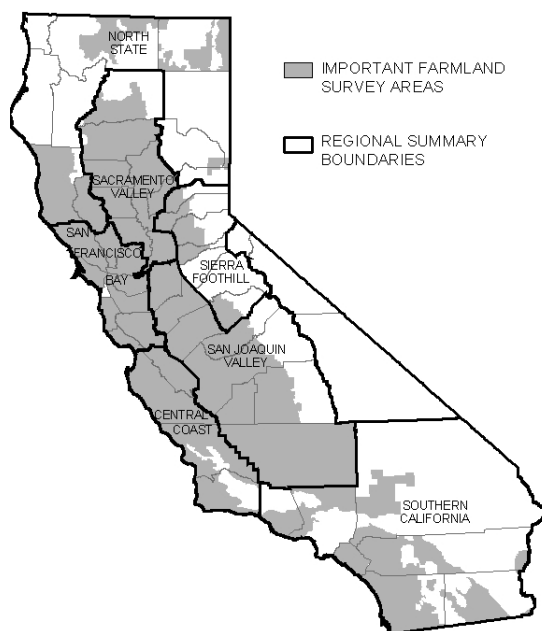
Statistical Notes

Residual polygons, those less than the 10- or 40-acre minimum land use mapping unit, are a natural result of the mapping process as changes are made to adjacent areas. In order to maintain map unit consistency, these small units are absorbed into the most appropriate adjacent land use type. This process results in shifts among categories that may appear anomalous in the conversion statistics - such as urban to agriculture or Prime Farmland to Farmland of Statewide Importance.

Once land use and digital soil data are merged to create the Important Farmland data, units of less than 1.0 acre are reclassified into the next most appropriate category to optimize the data files. Tabular data is reported in whole numbers; small variations in category totals may result from rounding to whole numbers.

Particularly large or anomalous changes are footnoted at the bottom of each table. Additional detail is available in the field analyst report produced for each county.

FIGURE 5: REGIONS USED FOR FMMP ANALYSIS





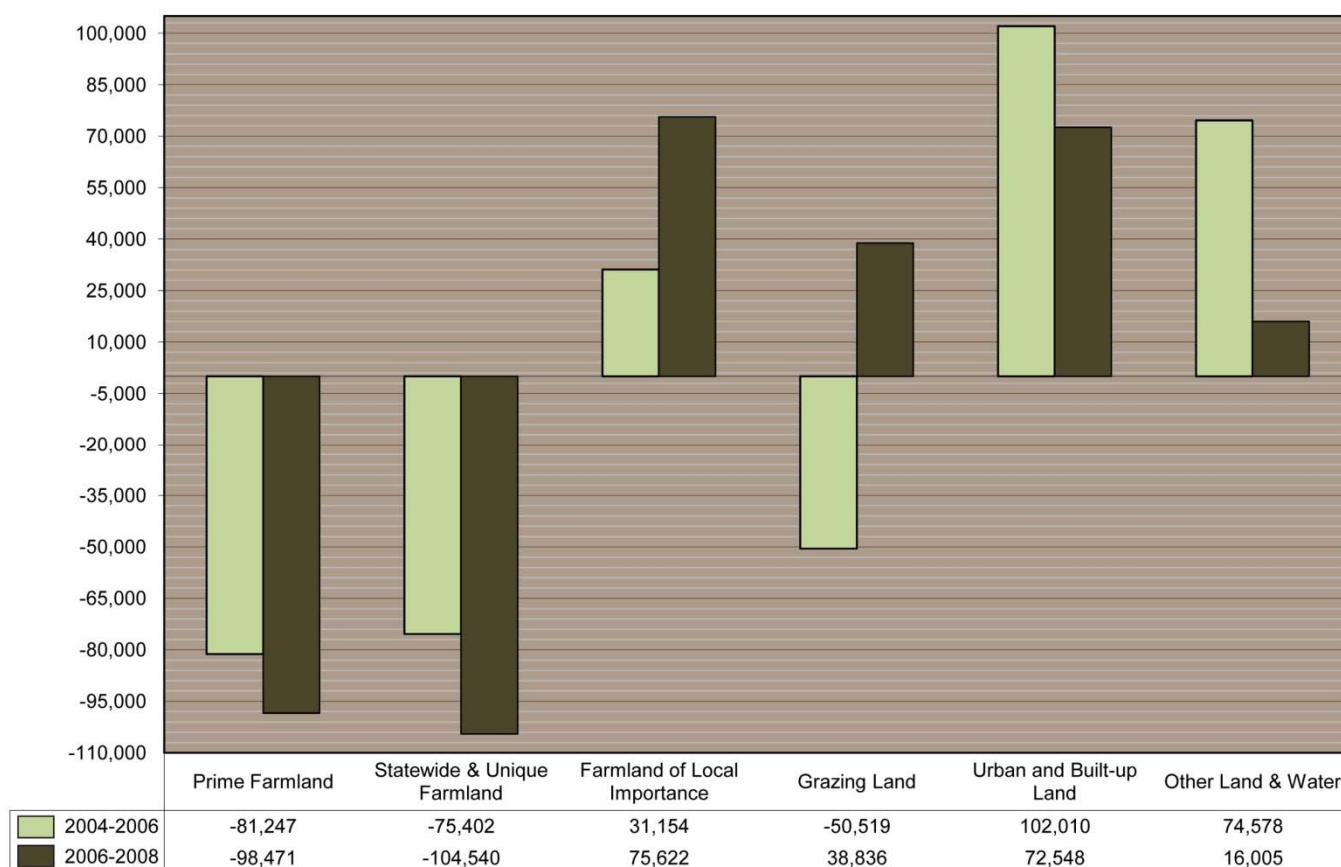
Chapter 4: Land Use Conversion, 2006-2008

URBANIZATION RATES DECREASED SHARPLY, WHILE IRRIGATED FARMLAND LOSSES ACCELERATED COMPARED WITH THE 2004-2006 PERIOD. LAND IDLING IN THE CENTRAL VALLEY WAS THE LARGEST CONTRIBUTOR TO FARMLAND LOSS.

California's agricultural landscape continues to evolve with economic and resource-related factors. Between 2006 and 2008, new development impacted 72,548 acres, a 29% decrease relative to the 102,010 acres occurring between 2004 and 2006. More than 28% of urban conversions were derived from irrigated farmland, and an additional 35% from dryland farming and grazing land.

Land idling and long-term reversion to dryland farming due to water availability issues had a pronounced effect, increasing relative to both urban and low-density rural development. The net change in irrigated lands increased 30% between 2004-06 and 2006-08 (156,650 and 203,011 acres, respectively). As a result, the categories of Farmland of Local Importance and Grazing Land exhibited large increases during the 2008 update. Changes in major categories for both periods are shown in Figure 6 below.

FIGURE 6: STATEWIDE IMPORTANT FARMLAND CONVERSION SUMMARY (ACRES)



Urbanization

Southern California counties dominated the top ten urbanizing list during the 2008 Important Farmland update, as Riverside County continued to lead in overall urbanization (Table 2). While decreasing from 2006's record-breaking development pace, the county accounted for nearly 21% of new urban land in the state. Four other counties in the region remained in the top ranks: San Bernardino, San Diego, Orange, and Los Angeles. In total, Southern California hosted 50% of the State's urbanization between 2006 and 2008. Kern and Orange counties had increased urbanization compared to 2006, while all the other top counties had decreased rates. In addition, Contra Costa County replaced Fresno County on the top ten list; as Fresno dropped to number 11 in overall urbanization.

The concentration of urbanization was similar to the 2006 update cycle, with 74% of all urban development occurring within the top ten counties.

Regional rankings were again dominated by Southern California and the San Joaquin Valley (Table 3).

Although both regions showed a decline in urbanization relative to the 2004-06 period, Southern California's decrease was larger--dropping by 24%, compared to the 17% drop for the San Joaquin Valley. The Sacramento Valley region saw the largest drop in urbanization—63%--with a rate that fell below that of the San Francisco Bay for the first time since 2002. Much of this decrease is due to the 76% slowdown in Sacramento County's growth between the two updates.

Housing developments were the most frequent and largest category of newly urbanized land.

Most of the increase was associated with single family homes located at the periphery of existing cities, and to a lesser degree, apartment complexes. Individual subdivisions ranged up to 425 acres in size. The inland desert areas were particularly active, for example, more than 1,000 acres of new residential development occurred in the Victorville area (San Bernardino County). Responding to changing demographics, there were also two new Sun City developments in the desert, near Apple Valley and Indio (San Bernardino and Riverside counties, respectively). In some areas, increased structural density or other infill projects prompted reclassification from Other Land to Urban and Built-up Land.

TABLE 2: URBANIZATION FROM ALL CATEGORIES

Urbanization from All Categories Top Ten Counties - net acres			
2004-2006		2006-2008	
Riverside	23,268	Riverside	15,139
Sacramento	9,893	Kern	9,356
San Bernardino	9,419	San Bernardino	7,005
Kern	7,512	San Diego	5,184
San Diego	6,471	Orange	3,614
Los Angeles	4,551	Los Angeles	2,881
Fresno	4,465	Placer	2,853
San Joaquin	4,426	San Joaquin	2,698
Placer	3,589	Sacramento	2,391
Orange	2,066	Contra Costa	2,371

TABLE 3: REGIONAL URBANIZATION RANKING

Regional Urbanization Ranking net acres			
2004-06		2006-08	
Southern California	47,346	Southern California	36,043
San Joaquin Valley	23,423	San Joaquin Valley	19,346
Sacramento Valley	14,856	San Francisco Bay	5,807
San Francisco Bay	7,329	Sacramento Valley	5,493
Sierra Foothill	4,687	Sierra Foothill	3,906
Central Coast	3,586	Central Coast	1,479
North State	783	North State	474

TABLE 4
CALIFORNIA FARMLAND CONVERSION SUMMARY
2006-2008 Land Use Conversion

CALIFORNIA DEPARTMENT OF CONSERVATION
Division of Land Resource Protection

Farmland Mapping and Monitoring Program

PART I
Land Use Totals and Net Changes

LAND USE CATEGORY	TOTAL ACREAGE INVENTORIED (1)		2006-08 ACREAGE CHANGES (2)			
	2006	2008	ACRES LOST (-)	ACRES GAINED (+)	TOTAL ACREAGE CHANGED	NET ACREAGE CHANGED
Prime Farmland	5,342,352	5,249,119	125,390	26,919	152,309	-98,471
Farmland of Statewide Importance	2,764,101	2,683,574	107,834	25,754	133,598	-82,080
Unique Farmland	1,353,386	1,335,390	58,441	35,981	94,422	-22,460
Farmland of Local Importance	2,894,465	3,120,280	106,070	181,692	287,762	75,622
IMPORTANT FARMLAND SUBTOTAL	12,354,304	12,388,363	397,735	270,346	668,081	-127,389
Grazing Land	18,442,154	19,175,952	118,044	156,880	274,924	38,836
AGRICULTURAL LAND SUBTOTAL	30,796,458	31,564,315	515,779	427,226	943,005	-88,553
Urban and Built-up Land	3,501,391	3,574,193	8,126	80,674	88,800	72,548
Other Land	13,142,247	13,216,975	105,524	117,248	222,772	11,724
Water Area	711,727	716,702	100	4,381	4,481	4,281
TOTAL AREA INVENTORIED (1)	48,151,823	49,072,185	629,529	629,529	1,259,058	0

PART II
Land Committed to Nonagricultural Use

LAND USE CATEGORY	TOTAL ACREAGE 2008
Prime Farmland	11,865
Farmland of Statewide Importance	2,166
Unique Farmland	3,917
Farmland of Local Importance	26,549
IMPORTANT FARMLAND SUBTOTAL	44,497
Grazing Land	55,860
AGRICULTURAL LAND SUBTOTAL	100,357
Urban and Built-up Land	0
Other Land	43,629
Water Area	0
TOTAL ACREAGE REPORTED	143,986

PART III Land Use Conversion from 2006 to 2008

LAND USE CATEGORY	Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Subtotal Important Farmland	Grazing Land	Total Agricultural Land	Urban and Built-up Land	Other Land	Water Area	Total Converted To Another Use
Prime Farmland	to: -	284	1,631	57,330	59,245	31,520	90,765	14,620	20,005	0	125,390
Farmland of Statewide Importance	to: 990	-	633	63,478	65,101	28,397	93,498	5,645	8,691	0	107,834
Unique Farmland	to: 2,047	3,558	-	15,653	21,258	24,075	45,333	1,845	11,263	0	58,441
Farmland of Local Importance	to: 8,421	8,615	9,746	-	26,782	46,684	73,446	13,411	19,203	10	106,070
IMPORTANT FARMLAND SUBTOTAL	11,458	12,457	12,010	136,461	172,386	130,656	303,042	35,521	59,162	10	397,735
Grazing Land	to: 6,721	4,634	17,655	21,450	50,460	-	50,460	13,753	53,534	297	118,044
AGRICULTURAL LAND SUBTOTAL	18,179	17,091	29,665	157,911	222,846	130,656	353,502	49,274	112,696	307	515,779
Urban and Built-up Land	to: 902	385	442	615	2,344	1,200	3,544	-	4,523	59	8,126
Other Land	to: 7,836	8,278	5,874	23,166	45,154	25,005	70,159	31,350	-	4,015	105,524
Water Area	to: 2	0	0	0	2	19	21	50	29	-	100
TOTAL ACREAGE CONVERTED	to: 26,919	25,754	35,981	181,692	270,346	156,880	427,226	80,674	117,248	4,381	629,529
2008 County Boundary Adjustment (1)	-32	-7	-4	-3	-46	-161	-207	68	1,558	0	1,419

(1) Total Area Inventoried changed in 2008 due to adoption of updated county boundary file; adjacent counties gained or lost corresponding acreages. Statistics representing this change are shown in shaded cells in Part III of table.

(2) 2006-08 Acreage Changes calculates conversions within existing mapped area; county boundary adjustment acreages not included.

Community infrastructure and commercial development were also common. Counties high on the urbanization list typically hosted one or more new golf courses (190 to 300 acres each) and 300 to 500 acres of new schools and parks. Regional differences were also noted: while large warehouse facilities were common in Riverside and San Bernardino counties (a single complex in Redlands totaled 240 acres); water infrastructure took precedence in Kern County, where more than one third of newly developed land was devoted to groundwater recharge basins or water treatment facilities. The impact of the economic recession was also seen, as a partially built 80 acre shopping mall was added in Sacramento County—all structural elements were in place to qualify the land for the Urban and Built-up category. Other notable changes included a new runway at the NASA Dryden Space Center (Kern County, 75 acres), and some of the first new energy-related uses such as a solar facility in Kern County (10 acres) and an ethanol station in San Joaquin County (20 acres).

Urbanization's impact on irrigated farmland was somewhat less concentrated in the San Joaquin Valley ('Valley') counties (Table 5 and Appendix Table C-1) this update. During the previous two updates, six Valley counties placed in the top ten ranks; while in 2008 Merced County dropped to less than 200 acres of direct irrigated farmland to urban conversion. Around the City of Bakersfield (Kern County), more than 1,250 acres were urbanized, about 69% of which was residential development. San Joaquin County's urban growth was led by Manteca and Stockton (approximately 540 and 370 acres, respectively). Stanislaus County was notable as having the highest proportion of urban development on Prime Farmland (73%), followed by Tulare County (61%).

All told, 38% of new urban land in the Valley came from Prime Farmland and an additional 16% came from Farmland of Statewide Importance and Unique Farmland during the 2006-08 period. These statistics represent a decrease from the last two updates; as recently as 2002-04, the figures were 48% and 13%, respectively. The proportion of new urban lands in the Valley on idled farmland and grazing land stood at 18% for the 2006-08 period.

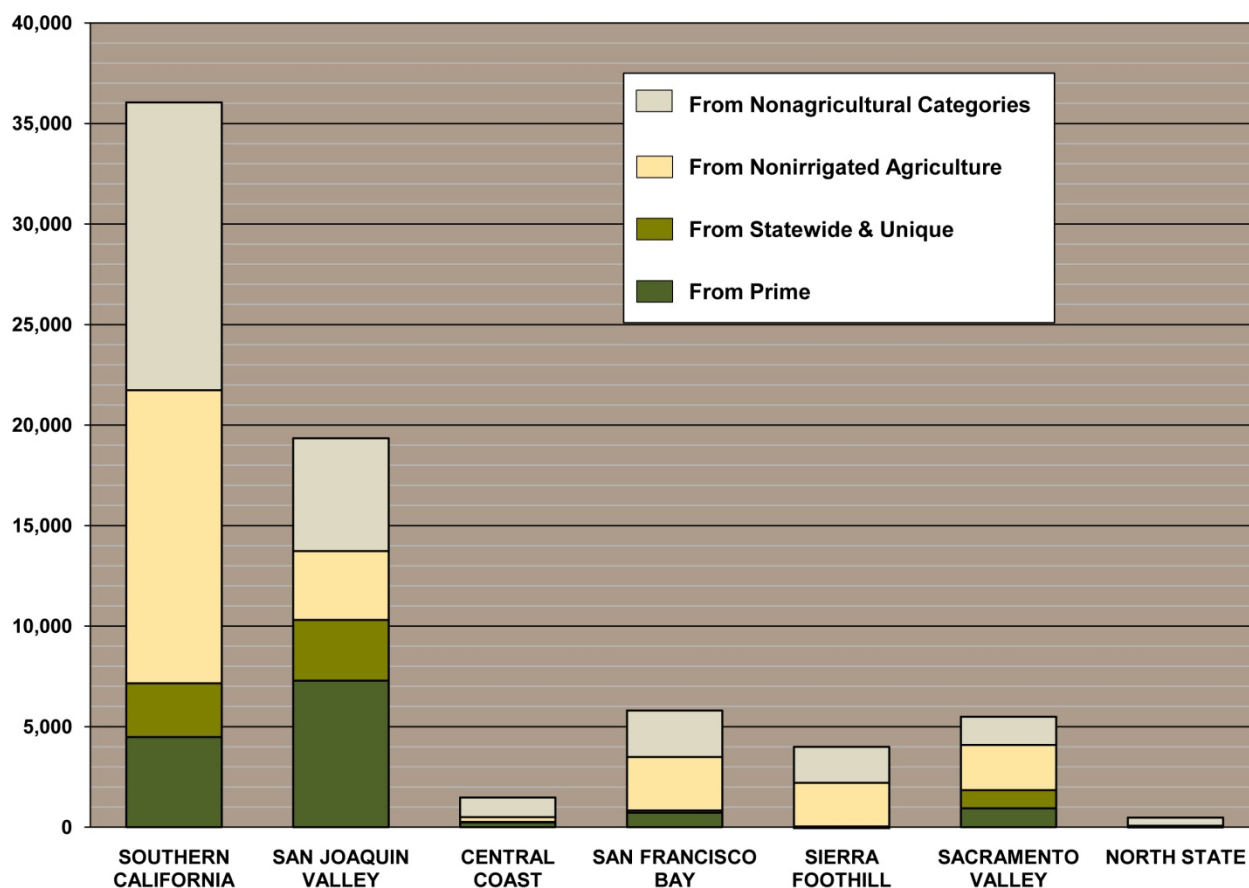
Southern California had four counties among the top ten irrigated land urbanization list: In Riverside County, communities such as San Jacinto and Arlington Heights (west county), and Indio, Coachella, and La Quinta (east county), were particularly active. Other cities with conversions of 200 acres or more included Redlands and Chino (San Bernardino County), Irvine (Orange County), and Imperial (Imperial County). Sacramento County rounded out the top ten list, primarily for additions to the cities of Elk Grove and Sacramento.

Statewide, 28% of urbanization took place on irrigated farmland (19% Prime Farmland, 9% on lesser quality soils). Another 35% came from dryland farming and grazing uses; some of which may have been idled in anticipation of development. The relative location and type of land converted to urban uses is shown graphically in Figure 7.

TABLE 5: IRRIGATED FARMLAND TO URBAN RANKS

Irrigated Farmland to Urban Top Ten Counties - net acres			
2004-2006		2006-2008	
Riverside	4,454	Kern	3,637
San Joaquin	3,136	Riverside	3,267
Kern	2,738	San Joaquin	2,006
Fresno	2,392	Tulare	1,526
Sacramento	1,417	Fresno	1,409
Stanislaus	1,359	San Bernardino	1,247
San Bernardino	1,238	Orange	1,131
Merced	1,138	Stanislaus	639
Tulare	1,001	Imperial	633
San Diego	897	Sacramento	603

**FIGURE 7: SOURCES OF URBAN LAND 2006-2008
(ACRES)**



Other Changes Affecting Agricultural Land

The goal of Important Farmland mapping is to track long-term trends in agricultural land resource use. While urbanization is an important component, economic and resource availability factors also lead to lands being more intensively farmed or being taken out of irrigated uses. Appendix Table C-2 documents the extent to which these factors affected the data during the 2006-08 mapping cycle.

Land is converted to irrigated agricultural use when dry pastures or native vegetation are converted, or when idled land is brought back into production. Conversions to irrigated categories totaled 79,511 acres between 2006 and 2008, an increase of less than 1% from the prior cycle. Fully 70% of the land brought into agricultural use did not meet the criteria for Prime Farmland; in recent updates this figure has been closer to 65%.

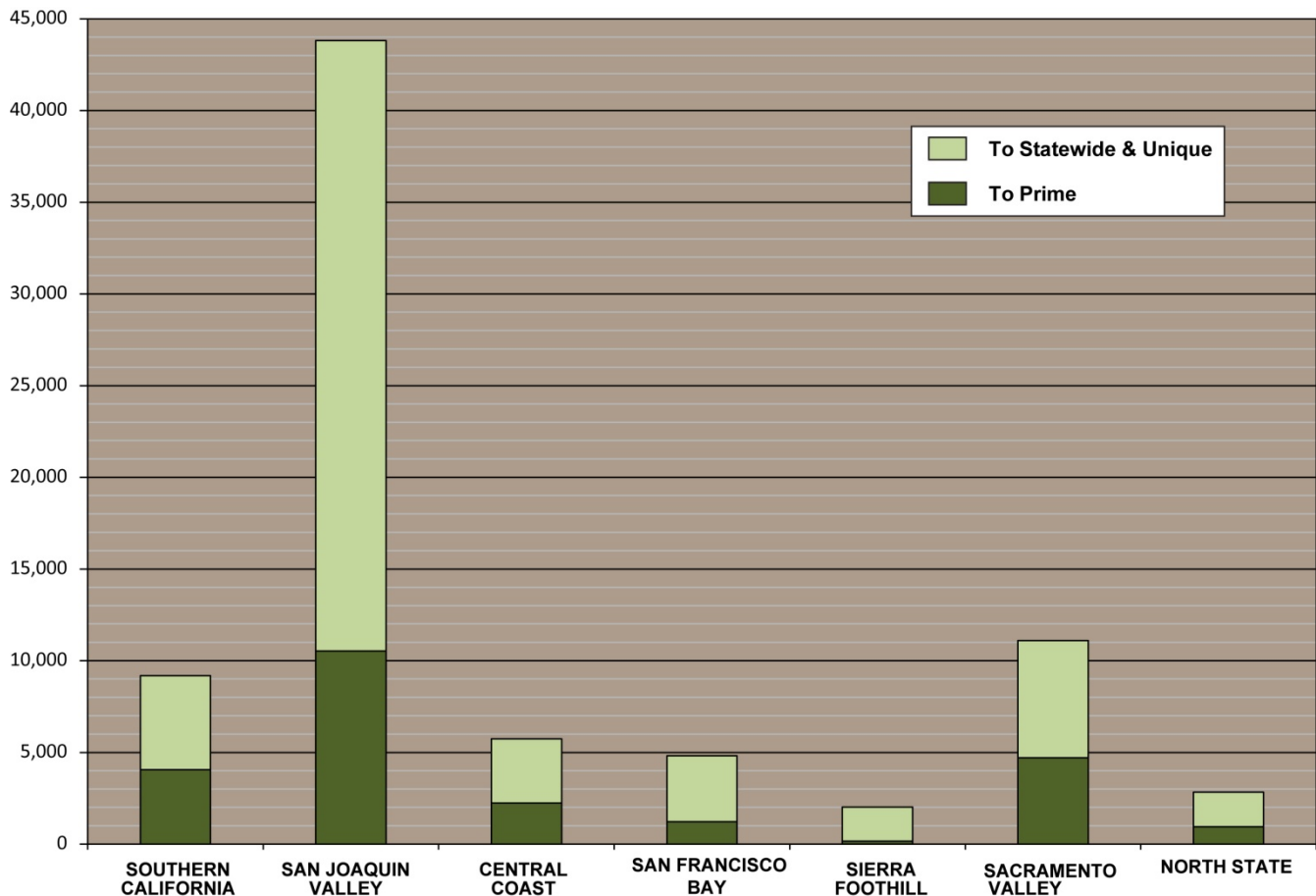
San Joaquin Valley counties accounted for 55% of the land brought into irrigated uses (Figure 8), while the Sacramento Valley and Southern California comprised 14% and 12%, respectively.

Four counties had irrigated land expansions in excess of 5,000 acres: Kern, San Joaquin, Stanislaus, and Tulare. Many of the additions were almond and pistachio orchards along the Sierra Nevada foothills. This

accounted for a large proportion of the additions in San Joaquin and Stanislaus counties. Field and row crops were also notable in Kern and Tulare counties; including high value crops such as carrots in the Antelope Valley of Kern County. Conversions to alfalfa were not noted as frequently during the 2006-08 period. This was due to a combination of high energy prices and overproduction in the dairy sector, which had been a rapidly growing part of the agricultural economy earlier in the decade².

Irrigated land expansions in the Sacramento Valley averaged just over 1,200 acres per county, and were relatively equal in distribution among the region's counties. The largest additions were new orchards along the interior Coast Range foothills. Southern California's irrigated farmland increases were largest in Los Angeles and Imperial counties. Los Angeles County's additions were primarily confined to the Antelope Valley, where center pivot irrigation system installation has become popular for a mix of crops. Imperial County's expansions were mostly in the northern part of Imperial Valley, typically for row and field crops.

**FIGURE 8: CONVERSIONS TO IRRIGATED FARMLAND 2006-2008
(ACRES)**

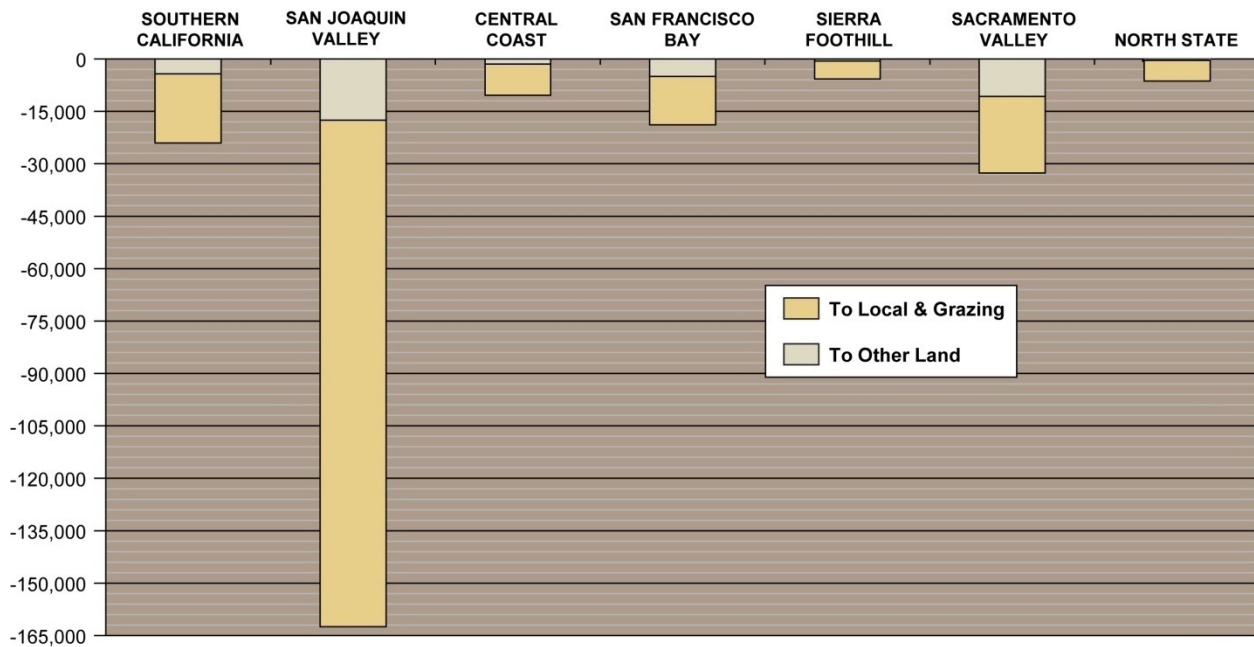


² http://www.cdfa.ca.gov/Statistics/PDFs/AgResourceDirectory2008/5_2008_LivestockAndDairy.pdf

Land is removed from irrigated categories in one of three ways: urbanization, conversion to Other Land, or reclassification to a dryland agriculture class. Dryland farming classes include Grazing Land and Farmland of Local Importance. In counties with Rural Land Mapping enhancements, more detailed information about conversions to Other Land is available.

Reclassifications to Grazing Land or Farmland of Local Importance due to land idling or long-term dryland farming have accelerated significantly in recent updates. Between 2006 and 2008, 220,453 acres were affected, a 42% increase over the prior cycle. The San Joaquin Valley experienced 66% of the long-term land idling (Figure 9).

**FIGURE 9: CONVERSIONS OUT OF IRRIGATED CATEGORIES 2006-2008
(ACRES)**



Five of the eight Valley counties had 10,000 or more acres of this conversion type; Fresno, Kings, and Kern counties accounted for more than 75% of the loss. The Fresno County decrease, more than 56,000 acres, was particularly notable. These conversions are associated with salinity and drought related land retirement on the west side of the Valley. This is a trend which has the potential to continue; FMMP field analysts have flagged in excess of 108,000 acres in the three counties as being in dryland or fallow status for two update cycles. Should conditions in the area continue, this land will be removed from irrigated farmland categories during the 2010 map update.

Elsewhere in the state, conversion to dryland farming categories was significantly smaller. Three counties had downgrades exceeding 4,000 acres: Riverside, San Benito, and Yolo. At nearly 6,600 acres, Riverside County's land idling was primarily adjacent to existing cities. In Yolo County, most of the 4,600 acre downgrade occurred east of the cities of Davis and Woodland, and in the Capay Valley. San Benito County's 4,450 acre decrease reflected both idling and long-term dryland grain cropping in the Bolsa and Quien Sabe valleys.

Reclassification to Other Land is less frequent but is typically more permanent in nature than land idling. This is because many of the new uses involve low density residential development, mining, ecological restoration, or similar changes.

Between 2006 and 2008, 39,959 acres statewide were reclassified from irrigated agriculture to Other Land. This was a 23% decrease from the prior update cycle. San Joaquin and Sacramento Valley counties accounted for 44% and 27% of the total, respectively. The most active counties for conversion to Other Land were Fresno, San Joaquin, Stanislaus, and Yolo; at between 3,100 and 3,800 acres each. While rural residential development has been most frequently cited in recent updates; vacant or disturbed land gained more prominence in 2008. This included subdivisions where development began but was abandoned before urban infrastructure was complete (Fresno and San Joaquin counties), and mining areas (San Joaquin County). The Teal Ridge and Roosevelt Ranch ecological restoration projects accounted for a large proportion of the Other Land conversions in Yolo County. Stanislaus County had a combination of the above factors as well as dairy and poultry facility expansion.

Counties with Rural Land Mapping Enhancements

Nearly 27% of the Important Farmland survey area is classified as Other Land. While urbanization has historically been the driving force in agricultural land loss, FMMP's statistics indicate that for every five acres exiting crop or grazing uses, four convert to Urban Land and one converts to Other Land. Because the Other Land category encompasses a disparate group of land uses, and conversions to Other Land are most often geographically separated from urban centers; users requested more specific information about this conversion type. A four county San Joaquin Valley pilot project, which created the subcategories of Rural Residential and Commercial, Confined Animal Agriculture, Vacant or Disturbed Land, and Nonagricultural Vegetation, began in 2002. The effort has expanded on a funds-available basis to include all eight San Joaquin Valley counties and Mendocino County, which had its initial Important Farmland Map compiled in 2006. Also in 2006, the Rural Residential uses and Rural Commercial uses were placed in separate categories, to better differentiate agricultural support infrastructure from low-density rural residences. Definitions for all five Rural Land Mapping categories are shown on page 5. County level data and summaries discussed here are located in Appendix D.

Between 2006 and 2008, expansion of Rural Land Mapping categories totaled 20,108 acres (Appendix Tables D-1 and D-2). This is numerically larger than the last update (18,410 acres), however, the number of counties available for comparison increased from four to nine.

Growth in the Rural Residential category had the largest acreage increase (13,481 acres or 8.1%); with more than 5,000 acres of the conversion occurring in Kern County. San Joaquin, Tulare, and Madera counties each had in excess of 2,000 acres of low-density residential development during the update cycle. Notably, larger proportions of Rural Residential Land were carved from grazing or dry farmed land than irrigated land in Kern, Madera, and Tulare counties; while in San Joaquin County more than half of the rural subdivision lands affected irrigated farmland. Stanislaus County had the highest percentage of new rural residences derived from irrigated farmland (1,229 out of 1,447 acres, or 85%).

Expansions of the Semi-agricultural and Rural Commercial category led on a percentage basis (8.4%), but owing to the smaller footprint of agricultural support uses, the increase totaled less than 3,100 acres. More than 1,000 acres of the increase in this category occurred in Kern County; farmsteads and compost facilities were examples of the expanded agriculture support infrastructure.

Vacant or Disturbed Land increases were significantly larger in 2006-08 compared to 2004-06 (4,620 and 901 acres, respectively). These conversions were distributed primarily in Fresno, Kern, and Merced counties. To a large degree these were formerly farmed lands which were disturbed in preparation for residential subdivisions; but infrastructure was not completed due to the downturn in the real estate market.

Confined Animal Agriculture facilities grew by 2,398 acres, mostly due to dairy expansions in Kings and Tulare counties. The acreage was slightly smaller than the 2,579 acres converted during the prior update. The only Rural Land category to show a decrease was Nongrassland Vegetation (by 3,454 acres or -0.1%). Small increases in Nongrassland Vegetation in most counties were offset by changes in Kern County, as more than 3,000 acres were brought into irrigated production in the Antelope Valley and remote parts of the San Joaquin Valley.

Net Irrigated Farmland Change

Irrigated farmland losses have accelerated through recent Important Farmland map updates. The 203,011 acre net loss in irrigated land in 2008 was 30% higher than the 2006 total (Appendix Table C-3). Land idling became a major factor in 2008, exceeding the affect of urbanization for the first time in FMMP history.

This was particularly true of the San Joaquin Valley, where the net decrease tallied 129,788 acres or 64% of the net loss. The south Valley counties of Fresno, Kings, and Kern absorbed most of the loss (Table 6). Agreements to idle land within Westlands Water District and water distribution issues affecting the Sacramento-San Joaquin Delta have the potential to accelerate this trend. FMMP tracking of fallow lands during the 2008 mapping cycle estimates that more than 156,000 acres in the San Joaquin Valley may be removed from irrigated farmland categories on the 2010 maps.

TABLE 6: DECREASES OF IRRIGATED LAND

Top Ten Counties - net acres			
2004-2006		2006-2008	
Fresno	-16,778	Fresno	-59,620
Kings	-13,262	Kings	-24,527
Tulare	-12,355	Kern	-22,959
Modoc	-9,874	San Joaquin	-10,207
Sacramento	-8,454	Tulare	-9,893
Riverside	-8,249	Riverside	-8,648
San Joaquin	-6,194	Merced	-8,165
Yolo	-5,838	Yolo	-7,340
Merced	-5,800	Colusa	-4,976
Santa Clara	-5,065	San Bernardino	-4,637

The Sacramento Valley and Southern California regions each comprised less than 12% of the net irrigated land decreases, and the San Francisco Bay Area followed at 7% of the total. While urbanization in the Sacramento Valley dropped substantially, ecological restoration remains a factor. Most wetland restoration projects were adjacent to existing wildlife refuges and river channels. In Southern California, urbanization and land idling at the outskirts of existing communities were the primary reasons for irrigated land decreases. The Bay Area's declines occurred primarily in Contra Costa and Solano counties, as each lost more than 4,100 acres of irrigated land during the update. Urbanization accounted for more than half the decrease in Contra Costa County; while Solano County was affected by restoration projects in the south county (Liberty Island area) and land idling near Vacaville.

1984-2008 Net Land Use Change

During the 12 biennial reporting cycles since FMMP was established, more than 1.3 million acres of agricultural land in California were converted to nonagricultural purposes (Table 7). This represents an area larger in size than Merced County, or a rate of about one square mile every four days.

Nearly 79% of this land was urbanized, while 19% became one of the miscellaneous land uses grouped into the Other Land category. Less than 2% of the conversion represents new water bodies—primarily Diamond

Valley Lake, Lake Sonoma, and Los Vaqueros Reservoir (in Riverside, Sonoma, and Contra Costa counties, respectively) or flooding of San Joaquin Delta islands for habitat (Contra Costa and Solano counties).

The largest losses from agricultural land categories have been from Prime Farmland and Grazing Land (559,743 and 386,525 acres, respectively). Urbanization at the periphery of California cities, many of which are located in agricultural valleys and coastal zones, is the primary reason these categories are most affected. Unique Farmland showed a small net increase over the 24 year period (19,279 acres) due to expansion of high value crops—mostly orchards and vineyards—on hilly terrain. Totals and annual averages for changes in all the categories are listed in Table 7.

As 2010 mapping proceeds, economic and environmental challenges face California, and the nation as a whole. Agricultural lands will continue to reflect how these complex systems interact on the landscape. FMMP will support informed planning decisions with timely and accurate data, capturing these trends as they evolve.

TABLE 7
NET IMPORTANT FARMLAND CONVERSION 1984-2008 (1)

DEPARTMENT OF CONSERVATION
Division of Land Resource Protection

Farmland Mapping and Monitoring Program

LAND USE CATEGORY	Acres													
	1984-1986	1986-1988	1988-1990	1990-1992	1992-1994	1994-1996	1996-1998	1998-2000	2000-2002	2002-2004	2004-2006 (3)	2006-2008	Total Change	Average Annual Change
Prime Farmland	-18,925	-6,773	-29,259	-31,002	-53,265	-37,516	-33,412	-44,126	-47,172	-78,575	-81,247	-98,471	-559,743	-23,323
Farmland of Statewide Importance	-21,449	925	7,282	-12,978	-3,049	-26,795	-20,771	-11,126	-18,281	-40,465	-57,318	-82,080	-286,105	-11,921
Unique Farmland	7,179	22,747	8,125	-12,611	-10,530	3,600	22,493	19,688	13,116	-13,984	-18,084	-22,460	19,279	803
Farmland of Local Importance	13,833	-79,060	-40,512	-22,643	16,982	7,544	8,304	-17,699	-59,039	6,687	31,154	75,622	-58,827	-2,451
Irrigated Farmland (3)	0	2,066	2,346	-5,851	-3,517	-5,116	-8,783	-6,475	-1,626	-5,620	0	0	0	-1,357
Nonirrigated Farmland (3)	0	133	96	-1,211	160	-1,895	-2,033	-4,518	-1,680	-1,615	0	0	-12,563	-523
Total Important Farmland	-19,362	-59,962	-51,922	-86,296	-53,219	-60,178	-34,202	-64,256	-114,682	-133,572	-125,495	-127,389	-930,535	-38,772
Grazing Land	-38,202	-30,481	-71,484	-43,378	-179	24,551	-70,108	-49,273	-58,878	-37,410	-50,519	38,836	-386,525	-16,105
Total Agricultural Land (Important Farmland + Grazing Land)	-57,564	-90,443	-123,406	-129,674	-53,398	-35,627	-104,310	-113,529	-173,560	-170,982	-176,014	-88,553	-1,317,060	-54,878
Urban and Built-up Land	81,778	107,567	116,530	94,876	53,344	55,859	69,885	91,258	92,750	101,825	102,010	72,548	1,040,230	43,343
Other Land	-30,190	-16,669	5,649	34,358	-1,484	-19,778	33,082	16,568	80,809	67,643	73,789	11,724	255,501	10,646
Water	5,976	-455	1,227	440	1,538	-454	1,343	5,703	1	1,514	789	4,281	21,903	913
Acres (millions)														
Total Area Inventoried For Change (2)	30.3	33.3	40.3	42.2	42.8	42.8	44.1	44.2	45.9	45.9	46.1	49.1		

(1) Figures taken from the projectwide conversion summary in each of the California Farmland Conversion Reports, supplemented with data for the counties mapped on an 'interim' basis due to lack of modern soil surveys. Along with urbanization or changes in agricultural uses, the 'net land use change' data includes technical revisions made to the lists of Prime Farmland and Farmland of Statewide Importance by NRCS in various counties.

(2) Total Area Inventoried increased as NRCS completed modern soil surveys and FMMP initiated mapping. Areas added include: 1986--central Siskiyou, Butte, Colusa; 1988--Kern, Sacramento, eastern San Mateo, Sutter, Tulare, Yuba; 1990--San Joaquin; 1992--western Merced; 1996--Lake, Butte Valley/Tulelake (covers eastern Siskiyou & western Modoc); 2000--western Stanislaus, western Fresno; 2004--northeastern Stanislaus; 2006--Mendocino County; 2008--Carrizo Plain area (San Luis Obispo County) & Adin area (Modoc County). This represents an increase of 62% in the project area between 1984 and 2008.

(3) Due to completion of NRCS soil surveys, Interim mapping classes are no longer needed as of the 2004 data.